Message

From: Cohen, Janet [cohen.janet@epa.gov]
Sent: 8/5/2019 9:04:39 PM
To: Bunker, Byron [bunker.byron@epa.gov]; Hengst, Benjamin [Hengst.Benjamin@epa.gov]; White, Thomas [thomas.white@hq.doe.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: agenda for tomorrow
Attachments: 8_6__19 RFS Small Refinery Hardships & Book & Garden Club.docx

Attached and posted on sharepoint. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

RFS Small Refinery Hardships & Book & Garden & Dog Club (Volunteer Brigade?? Forum?? Alliance?? Star Troupe??)
Gathering Date: Tuesday, August 6, 2019
NVFEL Room N-62; Ex. 6 Conference Call Numbers

Updates/Discussion

- Laminated List -- 2018/Administrator News
- Anne Idsal briefing take-aways
- Suncor
    - Information request update – Ex. 5 Deliberative Process (DP)
- Ex. 5 Deliberative Process (DP)
- Briefing for Sarah Dunham scheduled for August 9
- Litigation
- DOE?
- Other?

Discussion Topics

- Ex. 5 Deliberative Process (DP)

Volunteer Opportunities

- Ex. 5 Deliberative Process (DP)

Book Suggestions & Garden Tips

Dog Stories

Attachment 1: 2018 Petition Leads

Ex. 5 Deliberative Process (DP)/ Ex. 4 CBI

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

October 25, 2019

OFFICE OF
AIR AND RADIATION

Mr. Donald Austin
Vice President
Suncor Energy (U.S.A. Inc.)
5801 Brighton Boulevard
Commerce City, CO 80022

Dear Mr. Austin:

I am writing in response to the petitions from Suncor Energy U.S.A., Inc., ("Suncor") for a one-year small refinery exemption from the requirements of the Renewable Fuel Standard ("RFS") program for Suncor's two refineries in Commerce City, Colorado ("the East Refinery" and "the West Refinery," collectively "the Commerce City Refinery") for the 2018 compliance year. Under the Clean Air Act ("CAA") and its implementing regulations, a small refinery may petition EPA for an exemption from its RFS obligations.[1] Pursuant to these provisions, Suncor submitted petitions to EPA on December 28, 2018, for exemptions from the RFS obligations for the East Refinery and the West Refinery for the 2018 RFS compliance year.

While we appreciate the information Suncor provided in its petitions, we have determined that the East Refinery and the West Refinery are not eligible to petition for a small refinery exemption. In order to be eligible for a small refinery exemption under the RFS program, the refinery must meet the definition of a small refinery. Both the CAA and EPA's implementing regulations define a "small refinery" as "a refinery for which the average aggregate daily crude oil throughput for a calendar year . . . does not exceed 75,000 barrels."[2] EPA implemented the Energy Policy Act of 2005 ("EPAct") to provide an automatic exemption from the RFS through 2010 for refineries that satisfied the statutory 75,000 barrel per day ("bpd") average aggregate daily crude oil throughput limitation in calendar year 2004.[3] The same statutory definition was enacted in the Energy Independence and Security Act ("EISA"), and the same regulatory requirements were implemented except the relevant calendar year was changed to 2006.[4] In 2014, EPA promulgated its existing small refinery eligibility provisions which provide that "[i]n order to qualify for an extension of its small refinery exemption, a refinery must meet the definition of 'small refinery' . . . for the most recent full calendar year prior to seeking an extension and must be projected to meet the definition of 'small refinery' … for the year or years for which an exemption is sought."[5]

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[1] CAA section 211(*o*)(9)(B), 40 CFR §§ 80.1441(a)(1) and (e)(1).
[2] CAA section 211(*o*)(1)(K), 40 CFR § 80.1401.
[3] 40 CFR § 80.1141(a)(1); "Regulation of Fuels and Fuel Additives: Renewable Fuel Standard Program," 72 Fed. Reg. 23900, 23911, 23924 (May 1, 2007) ("RFS1").
[4] 40 CFR § 80.1141(a)(1) (20010); "Regulations of Fuel and Fuel Additives: Changes to Renewable Fuel Standard Program," 75 FR 14670, 14735-7 (March 26, 2010) ("RFS2").
[5] 40 CFR § 80.1441(e)(2)(iii).

ED_004187A_00000010-00001

Therefore, only a refinery with an average aggregate daily crude oil throughput less than 75,000 bpd in 2017 and projected to have an average aggregate daily crude oil throughput less than 75,0000 bpd in 2018 is eligible for an exemption for 2018.

The statute does not define the word "refinery" or the phrase "average aggregate daily crude oil throughput" in the "small refinery" definition. EPA has promulgated various definitions of the word "refinery" in its regulations which are informative but not definitive for this evaluation.[6] EPA has not defined the phrase "average aggregate daily crude oil throughput" in its regulations. The statutory and regulatory definitions provide neither guidance nor limits on how EPA must evaluate the words and phrases in the definition when determining whether a refinery meets the "small refinery" definition. EPA therefore has discretion to choose what factors and information it will consider in this evaluation.

EPA considers many different sources of information in the Agency's overall assessment of whether a refinery is eligible to petition for an RFS small refinery exemption. In evaluating eligibility when reviewing the Suncor petitions, EPA considered the extent of Suncor's integration of the East Refinery and the West Refinery with respect to production of non-renewable gasoline and diesel fuel since annual non-renewable gasoline and diesel fuel production volume is the primary basis for determining Suncor's obligation to comply with the RFS program. Suncor's East Refinery partially processes crude oil into gasoline blending components and intermediate distillate feedstocks that are ultimately converted into gasoline, CBOB, and ULSD in the West Refinery. Therefore, EPA considers the aggregate volume of crude distilled at both the East Refinery and the West Refinery when determining the eligibility of the East Refinery and the West Refinery to petition as small refineries for an exemption from the RFS.[7]

EPA recognizes that the East Refinery and the West Refinery were among the small refineries that received the original small refinery exemption in 2006.[8] However, Suncor has since done significant work to integrate the process operations of the two facilities so that they now function as a single refinery with an average aggregate daily crude oil throughput that exceeded 75,000 bpd in 2017 and 2018 and thus no longer meet the definition of a small refinery. The data Suncor submitted to the Department of Energy's ("DOE") Energy Information Administration ("EIA") on the EIA-810 form report the East Refinery's average aggregate daily crude oil throughput as 34,474 bpd in 2017 and 32,874 bpd in 2018. The West Refinery had an average aggregate daily crude oil throughput of 63,855 bpd in 2017 and 66,619 bpd in 2018, resulting in a combined average aggregate daily crude oil throughput for the Commerce City Refinery of 98,329 in 2017 and 99,493 bpd in 2018.[9]

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[6] *See, e.g.*, 40 CFR § 60.101(a) (definition of "petroleum refinery"); 40 CFR § 80.2(h) (definition of "refinery").

[7] EPA acknowledges that Suncor submitted two refinery capacity reports to EIA as of January 1, 2018, which were combined into a single report by EIA as part of a trial effort to correct an error in Suncor's reports. However, the refinery capacity report is just one of many source EPA considers. *See* email from Mike Korenblat, Director Legal Affairs, Suncor Energy U.S.A., Inc., to Chris McKenna, Staff Engineer, U.S. EPA (August 23, 2019, 17:49 EST) (on file with U.S. EPA).

[8] Letter from Vance Kopp, Fuels Quality Specialist, Suncor Energy U.S.A., Inc., to U.S. EPA (August 18, 2007) (on file with U.S. EPA).

[9] EIA, "Form EIA-810," found at http://www.eia.gov/Survey/#eia-810. Last accessed on August 7, 2019. Form EIA-810 is a monthly report filed with the EIA that "[c]ollects information regarding the balance between the supply

The extent of integration between Suncor's East Refinery and West Refinery is evident in the technical and operational features of the refineries' transportation fuel production.[10] Based on our own research of Suncor's operations, we understand that while the two refineries originally operated as two, separate refineries when owned and operated by two, separate owners, Suncor purchased and modified the two refineries to now operate as a single refinery.[11] Ex. 4 CBI

Ex. 4 CBI

(beginning stocks, receipts, and production) and disposition (inputs, shipments, fuel use and losses, and ending stocks) of crude oil and refined products located at refineries."

[10] A refinery's overall production of non-renewable gasoline and diesel establishes the basis for its RFS compliance obligations. 40 CFR § 80.1407.

[11] EPA twice asked Suncor for more information regarding process flows between the East and West refineries, but Suncor twice declined to provide more information. *See* email from Chris McKenna, Staff Engineer, U.S. EPA, to Angela Shields, Fuels Quality Specialist, Suncor Energy U.S.A., Inc. (July 12, 2019, 10:56 EST) (on file with U.S. EPA), and email from Mike Korenblat, Director of Legal Affairs, Suncor Energy U.S.A., Inc., to Chris McKenna, Staff Engineer, U.S. EPA (July 18, 2019, 16:41 EST) (on file with U.S. EPA). *See also* email from Chris McKenna, Staff Engineer, U.S. EPA, to Mike Korenblat, Director of Legal Affairs, Suncor Energy U.S.A., Inc. (July 23, 2019, 8:59 EST) (on file with U.S. EPA), and email from Mike Korenblat, Director of Legal Affairs, Suncor Energy U.S.A., Inc. (August 23, 2019, 17:49 EST) (on file with U.S. EPA). EPA has therefore had to conduct its own research to understand the present operating configuration of Suncor's Commerce City Refinery. EPA's descriptions of operations are based on that research which was obtained from previous reports submitted by Suncor to EPA, public sources, and conversations with and information provided by EIA.

Ex. 4 CBI

Ex. 4 CBI

Suncor also routinely characterizes the East Refinery and the West Refinery as a single refinery – the Commerce City Refinery – in both public presentations and business reports:

- Suncor's website describes the Commerce City Refinery as a "98,000-barrel-per-day refinery [that] produces gasoline, diesel fuel and paving-grade asphalt."[17]
- Suncor's 2018 Annual Report lists the Commerce City Refinery as a single 98,000 bpd refinery.[18]
- Suncor described the Commerce City Refinery as a "nominal 90,000 bpd Fuels Refinery" in a June 10, 2010, presentation to the Crude Oil Quality Association.[19]
- In a 2005 article following Suncor's acquisition of the East Refinery from Valero, the Oil and Automotive Marketing News quotes Suncor President and CEO, Rick George, as stating, "This acquisition provides an immediate expansion of our presence in the Rocky Mountain marketplace," and, "With a capacity of 90,000 barrels per day, the integrated operation is expected to be more competitive with refineries in Texas and Oklahoma."[20]
- Ex. 4 CBI

Additionally, the unified management chain at the Commerce City Refinery and its operation as a single profit center provide further evidence that the East Refinery and the West Refinery are in fact a single facility. There is one vice president for the Commerce City Refinery: Donald Austin. Mr. Austin, as vice president of the Commerce City Refinery, "is responsible for providing overall leadership for safe, reliable and profitable operations, and is also accountable for environmental

Ex. 4 CBI

[17] *See* Suncor, "Refining," found at https://www.suncor.com/en-CA/about-us/refining. Last accessed on September 17, 2019.

[18] *See* Suncor, "2018 Annual Report," found at https://www.suncor.com/en-CA/investor-centre/financial-reports/annual-disclosure, at 12, 27. Last accessed on September 17, 2019.

[19] *See* Randy Segato, Suncor, "Suncor Denver Refinery Overview," found at http://www.coqa-inc.org/docs/default-source/meeting-presentations/06102010_Segato.pdf, at slide 7. This slide also has a combined list of all key processing units at both refineries; it does not identify them separately by refinery.

[20] *See* Oil and Automotive Marketing News, "Suncor Acquires Colorado Refining Company," August 2005, found at http://www.kalpub.com/OANews/archives/2005/oa_08-05.html. Last accessed on September 17, 2019.

compliance and product quality of ***the facility***."[21] Suncor did not submit to EPA financial data for a separate East Refinery and a West Refinery, but rather provided only aggregated financial information for the whole Commerce City Refinery in its PI-588 form and financial statements.[22]

Suncor asserts that the East Refinery and the West Refinery should be considered separate facilities because they have been issued separate EPA facility identification ("ID") numbers for use in EPA's gasoline programs and Title V air permitting, and are referenced by these separate facility ID numbers in EPA consent decrees.[23] These separate facility ID numbers were issued and referenced when each refinery was owned by previous, separate owners, in contrast to the current Suncor ownership and operation of the single integrated refinery.[24] Additionally, the objectives of the above-mentioned programs — regulating the Reid vapor pressure, sulfur, and benzene content of gasoline, or regulating stack emissions from fired heaters or boilers — are very different than those of the RFS program, where compliance (and threshold, definitional eligibility for an exemption) is based primarily on annual transportation fuel production volume. Since these programs have separate objectives that are unrelated to the objectives of the RFS program, they are not relevant to EPA's consideration of Suncor's eligibility as a small refinery under the RFS program.

However, since Suncor raised the issue of facility ID numbers in connection with other EPA programs, it is important to note that Suncor failed to mention that the East Refinery and the West Refinery are registered as a single facility (facility ID 82133) under EPA's diesel sulfur program, consistent with EPA's description of Suncor's integrated ULSD production above. For reference, EPA has attached Suncor's cover letter and registration form for EPA's diesel sulfur program.[25] Of particular relevance is Suncor's statement in its cover letter: "Our intent is to operate these facilities as a single refinery with respect to EPA's Clean Diesel Program. This is noted on the registration forms."[26]

Based on the information available to EPA, including Suncor's own statements, it is evident that the Suncor East Refinery and the West Refinery have been integrated to the point that they are now operated as a single refinery with an average aggregate daily crude oil throughput that exceeded 75,000 bpd in both 2017 and 2018. Ex. 4 CBI

Ex. 4 CBI

[21] Suncor, "Meet Commerce City refinery VP Donald Austin," November 2017, found at https://connections.suncor.com/suncor-usa/november-2017/meet-commerce-city-refinery-vp-donald-austin. Last accessed on September 18, 2019. (emphasis added). It is important to note that Suncor did not separately identify the East Refinery or the West Refinery as being part of Mr. Austin's responsibilities, simply "the Commerce City refinery" as a single facility.
[22] Suncor Petition at 11-15, 17-22.
[23] *Id.*
[24] EPA confirmed the separate title V permits and consent decrees were carried over from the previous ownership. *See* emails between Chris McKenna, Timothy Russ, Gail Fallon and Donald Law, EPA employees, Aug. 28, 2019 to Sept. 5, 2019 (on file with U.S. EPA).
[25] Letter from Vance Kopp, Fuels Quality Specialist, Suncor Energy U.S.A., Inc., to U.S. EPA (December 13, 2005) and Diesel Programs Facility Registration (OMB form 2060-0308) (December 15, 2005) (on file with U.S. EPA).
[26] *Id.*

Ex. 4 CBI

Ex. 4 CBI In order to properly account for the integrated nature of Suncor's operation, the most reasonable boundary is one encompassing both refineries in order to combine the average aggregate daily crude oil throughput and the overall transportation fuel production volume from both refineries' operations.

Given the preceding analysis and cited information, EPA has determined that Suncor's East Refinery and Suncor's West Refinery do not meet the definition of "small refinery" in the CAA and the regulation; therefore, these entities are ineligible to petition for a small refinery exemption. Accordingly, EPA is declining to evaluate Suncor's 2018 petitions for a one-year small refinery exemption for these entities. The effect of this determination is that as of January 1, 2018, the gasoline and diesel production from the Commerce City Refinery remain subject to the percent standards of 40 CFR § 80.1405, and the Commerce City Refinery is subject to all other requirements applicable to obligated parties.

If you have any questions, please contact Byron Bunker of my staff at (734) 214-4155.

Sincerely,

Anne L. Idsal
Acting Assistant Administrator

Ex. 4 CBI

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 8/27/2019 8:09:01 PM
To: Anderson, Robert [Anderson.Robert@epa.gov]; Borgert, Kyle [borgert.kyle@epa.gov]; Boylan, Thomas [boylan.thomas@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Burch, Julia [Burch.Julia@epa.gov]; Burkholder, Dallas [burkholder.dallas@epa.gov]; Charmley, William [charmley.william@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Gustafson, Kurt [Gustafson.Kurt@epa.gov]; Herbolsheimer, Courtney [herbolsheimer.courtney@epa.gov]; Korotney, David [korotney.david@epa.gov]; Larson, Ben [Larson.Ben@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Levy, Aaron [Levy.Aaron@epa.gov]; Li, Ryland (Shengzhi) [Li.Ryland@epa.gov]; Lie, Sharyn [Lie.Sharyn@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; Manners, Mary [manners.mary@epa.gov]; Master, Barbora [Master.Barbora@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Mroz, Jessica [mroz.jessica@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Orlin, David [Orlin.David@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Pastorkovich, Anne-Marie [Pastorkovich.Anne-Marie@epa.gov]; Patulski, Meg [patulski.meg@epa.gov]; Sargeant, Kathryn [sargeant.kathryn@epa.gov]; Shelby, Michael [Shelby.Michael@epa.gov]; Simon, Karl [Simon.Karl@epa.gov]; Sobel, Aaron [Sobel.Aaron@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: Agenda for 8-28-19 weekly fuels meeting with Sarah
Attachments: 2019.08.28 Fuels Weekly with Sarah, Agenda.docx

Please see attached. Thanks—Ben

Weekly Fuels Team Meeting with Sarah Dunham

08.28.2019 Agenda

- Ex. 5 Deliberative Process (DP)
- SREs
  - Ex. 5 Deliberative Process (DP)
  - Suncor

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 8/27/2019 2:51:07 PM
To: Anderson, Robert [Anderson.Robert@epa.gov]; Borgert, Kyle [borgert.kyle@epa.gov]; Boylan, Thomas [boylan.thomas@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Burch, Julia [Burch.Julia@epa.gov]; Burkholder, Dallas [burkholder.dallas@epa.gov]; Charmley, William [charmley.william@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Gustafson, Kurt [Gustafson.Kurt@epa.gov]; Herbolsheimer, Courtney [herbolsheimer.courtney@epa.gov]; Korotney, David [korotney.david@epa.gov]; Larson, Ben [Larson.Ben@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Levy, Aaron [Levy.Aaron@epa.gov]; Li, Ryland (Shengzhi) [Li.Ryland@epa.gov]; Lie, Sharyn [Lie.Sharyn@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; Manners, Mary [manners.mary@epa.gov]; Master, Barbora [Master.Barbora@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Mroz, Jessica [mroz.jessica@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Orlin, David [Orlin.David@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Pastorkovich, Anne-Marie [Pastorkovich.Anne-Marie@epa.gov]; Patulski, Meg [patulski.meg@epa.gov]; Sargeant, Kathryn [sargeant.kathryn@epa.gov]; Shelby, Michael [Shelby.Michael@epa.gov]; Simon, Karl [Simon.Karl@epa.gov]; Sobel, Aaron [Sobel.Aaron@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: Final agenda for 11 am fuels team meeting

OTAQ Weekly Fuels Team Meeting
Agenda, August 27, 2019

- Ex. 5 Deliberative Process (DP)
-
-
-
- SREs
  - Ex. 5 Deliberative Process (DP)
  -
  - Suncor
-
- Ex. 5 Deliberative Process (DP)
-

- **Ex. 5 Deliberative Process (DP)**

- Divisional Read-outs, as time allows:
  - OGC
  - IO
  - TCD
  - CD
  - ASD

Message

From: McKenna, Chris [McKenna.Chris@epa.gov]
Sent: 9/24/2019 6:53:40 PM
To: Bunker, Byron [bunker.byron@epa.gov]
Subject: Mike Korenblat from Suncor may call you

Byron,

Just wanted to give you a heads-up that Mike Korenblat from Suncor Energy may give you a call to chat about the status of their RFS SRE petition.

Ex. 5 Deliberative Process (DP)

Sorry,
Chris

From: Korenblat, Michael <MKorenblat@Suncor.com>
Sent: Tuesday, September 24, 2019 2:45 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 3 of 3)

Chris

Thanks for the conversation today, and the contact information.

Best,
Michael

From: McKenna, Chris <McKenna.Chris@epa.gov>
Date: September 24, 2019 at 12:41:59 PM MDT
To: Korenblat, Michael <MKorenblat@Suncor.com>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 3 of 3)

My division director is Byron Bunker, his phone # is 734-214-4155.

From: McKenna, Chris
Sent: Tuesday, September 24, 2019 11:16 AM
To: Korenblat, Michael <MKorenblat@Suncor.com>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 3 of 3)

Mike,

Got your voice mail from this morning – I don't have any news to report on your petition. We're still working towards a decision, but I don't know when we'll be issuing it.

Chris

From: McKenna, Chris
Sent: Wednesday, September 11, 2019 9:03 AM
To: Korenblat, Michael <MKorenblat@Suncor.com>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 3 of 3)

Mike,

We received all 3 emails and attachments.

Thanks,
Chris

From: Korenblat, Michael <MKorenblat@Suncor.com>
Sent: Friday, August 23, 2019 5:57 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Cc: Shields, Angela <ashields@suncor.com>; Cohen, Janet <cohen.janet@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>; Spencer, Mark <spencer.mark@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 3 of 3)

CONFIDENTIAL BUSINESS INFORMAITON
CONFIDENTIAL TREAMENT REQUESTED

Chris-

Attached please find a .pdf of Suncor's Petition for Extension of Small Refinery Exemption for its Denver East Refinery (EPA Facility ID #00544), which was originally submitted on 12/28/18. Suncor requests confidential treatment of this attachment (and this e-mail) as CBI.

If you could confirm receipt of all three e-mails and the attachments, I would appreciate it.

I will be in the office next week.

Michael E. Korenblat, Esq.
Director, Legal Affairs - Downstream U.S.A.
SUNCOR ENERGY
717 17th Street, 29th Floor
Denver, CO 80202
phone-303.793.8052
mkorenblat@suncor.com

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150 – 6th Avenue S.W., Calgary, Alberta, Canada, T2P 3E3 (siège social) / www.suncor.com

Message

From: Cohen, Janet [cohen.janet@epa.gov]
Sent: 9/18/2019 1:25:02 PM
To: McKenna, Chris [McKenna.Chris@epa.gov]
CC: Nelson, Karen [nelson.karen@epa.gov]; Caballero, Kathryn [Caballero.Kathryn@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]
Subject: Re: DPP & CBI: Latest draft of Suncor Ineligibility letter

Interesting. - J. -

On Sep 18, 2019, at 9:23 AM, McKenna, Chris <McKenna.Chris@epa.gov> wrote:

Karen,

Thanks, I added a few more edits.

Ex. 4 CBI

Chris

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, September 17, 2019 4:44 PM
To: Cohen, Janet <cohen.janet@epa.gov>; Caballero, Kathryn <Caballero.Kathryn@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Michaels, Lauren <Michaels.Lauren@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>; Piotrowski, Greg <piotrowski.greg@epa.gov>
Subject: DPP & CBI: Latest draft of Suncor Ineligibility letter

Hi Team!

Here's the latest version of the Suncor ineligibility letter. Please review and send comments back as soon as you're able. I think this may be the final team review before sending it to Sue.

Thanks!
-Karen

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

Do not release without review. This email and any attached documents may contain information claimed as CBI, confidential attorney-client communications, privileged attorney work product, and/or privileged and confidential deliberative process material.

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 9/24/2019 2:59:23 PM
To: Anderson, Robert [Anderson.Robert@epa.gov]; Borgert, Kyle [borgert.kyle@epa.gov]; Boylan, Thomas [boylan.thomas@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Burch, Julia [Burch.Julia@epa.gov]; Burkholder, Dallas [burkholder.dallas@epa.gov]; Charmley, William [charmley.william@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Gustafson, Kurt [Gustafson.Kurt@epa.gov]; Herbolsheimer, Courtney [herbolsheimer.courtney@epa.gov]; Korotney, David [korotney.david@epa.gov]; Larson, Ben [Larson.Ben@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Levy, Aaron [Levy.Aaron@epa.gov]; Li, Ryland (Shengzhi) [Li.Ryland@epa.gov]; Lie, Sharyn [Lie.Sharyn@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; Manners, Mary [manners.mary@epa.gov]; Master, Barbora [Master.Barbora@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Mroz, Jessica [mroz.jessica@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Orlin, David [Orlin.David@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Pastorkovich, Anne-Marie [Pastorkovich.Anne-Marie@epa.gov]; Patulski, Meg [patulski.meg@epa.gov]; Sargeant, Kathryn [sargeant.kathryn@epa.gov]; Shelby, Michael [Shelby.Michael@epa.gov]; Simon, Karl [Simon.Karl@epa.gov]; Sobel, Aaron [Sobel.Aaron@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: final agenda for 11 am

OTAQ Weekly Fuels Team Meeting
Agenda, September 24, 2019

Ex. 5 Deliberative Process (DP)

- SREs
  - **Ex. 5 Deliberative Process (DP)**
  - Suncor
  - Other updates?

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

- Divisional Read-outs, as time allows:
  - OGC
  - IO
  - TCD
  - CD
  - ASD

Acting Assistant Administrator Idsal Ann Arbor Visit
October 9, 2019

Flight information	TBI
10:00 am	Acting AA Idsal arrives at lab
10 – 11	Ex. 5 Deliberative Process (DP)
11—12	
12 – 12:25	Lunch
12:25	Depart for Detroit Diesel Corporation

1:00	Arrive at DDC
1 – 3:30	DDC meeting and site visit
3:30	Depart for DTW
Flight information	TBI

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 8/21/2019 3:42:55 PM
To: Anderson, Robert [Anderson.Robert@epa.gov]; Borgert, Kyle [borgert.kyle@epa.gov]; Boylan, Thomas [boylan.thomas@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Burch, Julia [Burch.Julia@epa.gov]; Burkholder, Dallas [burkholder.dallas@epa.gov]; Charmley, William [charmley.william@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Gustafson, Kurt [Gustafson.Kurt@epa.gov]; Herbolsheimer, Courtney [herbolsheimer.courtney@epa.gov]; Korotney, David [korotney.david@epa.gov]; Larson, Ben [Larson.Ben@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Levy, Aaron [Levy.Aaron@epa.gov]; Li, Ryland (Shengzhi) [Li.Ryland@epa.gov]; Lie, Sharyn [Lie.Sharyn@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; Manners, Mary [manners.mary@epa.gov]; Master, Barbora [Master.Barbora@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Mroz, Jessica [mroz.jessica@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Orlin, David [Orlin.David@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Pastorkovich, Anne-Marie [Pastorkovich.Anne-Marie@epa.gov]; Patulski, Meg [patulski.meg@epa.gov]; Sargeant, Kathryn [sargeant.kathryn@epa.gov]; Shelby, Michael [Shelby.Michael@epa.gov]; Simon, Karl [Simon.Karl@epa.gov]; Sobel, Aaron [Sobel.Aaron@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
CC: OTAQ Materials [OTAQMaterials@epa.gov]
Subject: Agenda for 3:30 Fuels Weekly with Sarah
Attachments: 2019.08.21 Fuels Weekly with Sarah, Agenda.docx

RFS Small Refinery Hardships & Book & Garden & Dog Club (Volunteer Brigade?? Forum?? Alliance?? Star Troupe??)
Gathering Date: Tuesday, July 30, 2019
NVFEL Room N-62; Call-in Ex. 6 Personal Privacy (PP)

Updates/Discussion

- Laminated List -- 2018/Administrator News
- Suncor
    - Information request update
    - Request tracker intake process updated?
- Ex. 5 Deliberative Process (DP)
- Briefing for Anne Idsal today at 2 pm; for Sarah Dunham scheduled for August 9
- Litigation
- DOE?
- Other?

Discussion Topics

- Ex. 5 Deliberative Process (DP)
- Next steps on RFA/FOIA

Volunteer Opportunities

- Help with RFA FOIA/CBI substantiation
    - Reading and summarizing the substantiation responses
- Ex. 5 Deliberative Process (DP)

Book Suggestions & Garden Tips

Dog Stories

Attachment 1: 2018 Petition Leads

Ex. 5 Deliberative Process (DP)/ Ex. 4 CBI

Message

From: Boylan, Thomas [boylan.thomas@epa.gov]
Sent: 9/17/2019 3:53:18 PM
To: Hengst, Benjamin [Hengst.Benjamin@epa.gov]; Anderson, Robert [Anderson.Robert@epa.gov]; Borgert, Kyle [borgert.kyle@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Burch, Julia [Burch.Julia@epa.gov]; Burkholder, Dallas [burkholder.dallas@epa.gov]; Charmley, William [charmley.william@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Gustafson, Kurt [Gustafson.Kurt@epa.gov]; Herbolsheimer, Courtney [herbolsheimer.courtney@epa.gov]; Korotney, David [korotney.david@epa.gov]; Larson, Ben [Larson.Ben@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Levy, Aaron [Levy.Aaron@epa.gov]; Li, Ryland (Shengzhi) [Li.Ryland@epa.gov]; Lie, Sharyn [Lie.Sharyn@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; Manners, Mary [manners.mary@epa.gov]; Master, Barbora [Master.Barbora@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Mroz, Jessica [mroz.jessica@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Orlin, David [Orlin.David@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Pastorkovich, Anne-Marie [Pastorkovich.Anne-Marie@epa.gov]; Patulski, Meg [patulski.meg@epa.gov]; Sargeant, Kathryn [sargeant.kathryn@epa.gov]; Shelby, Michael [Shelby.Michael@epa.gov]; Simon, Karl [Simon.Karl@epa.gov]; Sobel, Aaron [Sobel.Aaron@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: RE: Agenda for today's 11 am fuels weekly
Attachments: EPA Slides for SIGMA conference_09_11_2019.pptx; Example Calcs for Sigma Conference_09_09_19.docx

FYI, here are the slides and example RIN holding calculations that Barbora and I presented at the Sigma conference last week.

From: Hengst, Benjamin <Hengst.Benjamin@epa.gov>
Sent: Tuesday, September 17, 2019 10:49 AM
To: Anderson, Robert <Anderson.Robert@epa.gov>; Borgert, Kyle <borgert.kyle@epa.gov>; Boylan, Thomas <boylan.thomas@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Burch, Julia <Burch.Julia@epa.gov>; Burkholder, Dallas <burkholder.dallas@epa.gov>; Charmley, William <charmley.william@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Dubey, Susmita <dubey.susmita@epa.gov>; Garfinkle, Stacey <garfinkle.stacey@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Gustafson, Kurt <Gustafson.Kurt@epa.gov>; Herbolsheimer, Courtney <herbolsheimer.courtney@epa.gov>; Korotney, David <korotney.david@epa.gov>; Larson, Ben <Larson.Ben@epa.gov>; Le, Madison <Le.Madison@epa.gov>; Levy, Aaron <Levy.Aaron@epa.gov>; Li, Ryland (Shengzhi) <Li.Ryland@epa.gov>; Lie, Sharyn <Lie.Sharyn@epa.gov>; Machiele, Paul <machiele.paul@epa.gov>; Manners, Mary <manners.mary@epa.gov>; Master, Barbora <Master.Barbora@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Michaels, Lauren <Michaels.Lauren@epa.gov>; Mroz, Jessica <mroz.jessica@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>; Orlin, David <Orlin.David@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>; Pastorkovich, Anne-Marie <Pastorkovich.Anne-Marie@epa.gov>; Patulski, Meg <patulski.meg@epa.gov>; Sargeant, Kathryn <sargeant.kathryn@epa.gov>; Shelby, Michael <Shelby.Michael@epa.gov>; Simon, Karl <Simon.Karl@epa.gov>; Sobel, Aaron <Sobel.Aaron@epa.gov>; Spencer, Mark <spencer.mark@epa.gov>; Stahle, Susan <Stahle.Susan@epa.gov>; Weihrauch, John <Weihrauch.John@epa.gov>
Subject: Agenda for today's 11 am fuels weekly

OTAQ Weekly Fuels Team Meeting
Agenda, September 17, 2019

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

- SREs
  - Ex. 5 Deliberative Process (DP)
  - Suncor
  - Other updates?

Ex. 5 Deliberative Process (DP)

- Divisional Read-outs, as time allows:
  - OGC
  - IO
  - TCD
  - CD
  - ASD

Message

From: Nelson, Karen [nelson.karen@epa.gov]
Sent: 10/23/2019 5:47:23 PM
To: Cohen, Janet [cohen.janet@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Caballero, Kathryn [Caballero.Kathryn@epa.gov]
CC: Stahle, Susan [Stahle.Susan@epa.gov]; Manners, Mary [manners.mary@epa.gov]
Subject: DPP&CBI: Suncor SRE Ineligibility Letter
Attachments: Clean_Suncor 2018 RFS SRE ineligibility letter.docx

Hi Janet,

Attached is a standalone version of the Suncor ineligibility letter. Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP) This is the final version of the letter and only requires Anne's signature.

Could you forward it to the appropriate person in OAR for her signature? Are you aware of any additional process that needs to happen before we send the letter out?

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

Do not release without review. This email and any attached documents may contain information claimed as CBI, confidential attorney-client communications, privileged attorney work product, and/or privileged and confidential deliberative process material.

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 7/26/2019 8:28:47 PM
To: Idsal, Anne [idsal.anne@epa.gov]
CC: Bunker, Byron [bunker.byron@epa.gov]; Dominguez, Alexander [dominguez.alexander@epa.gov]; Harlow, David [harlow.david@epa.gov]; Woods, Clint [woods.clint@epa.gov]
Subject: The two 'new' SRE applications: follow-up actions

Hi Anne—

Both Byron and I wanted to provide a brief update on corrective actions we've taken in light of the two 'new' SRE petitions we received. We recognize that this was a problem and we have taken steps to ensure it doesn't happen again.

Below is a bit of background regarding what happened and what we are doing now. Please note that the information includes the names of the petitioner, which we treat as CBI.

Thanks,
Ben

What follows is additional information about the two "new" small refinery exemption petitions for 2018. The petitions, submitted by Suncor Energy for its East and West refineries in Denver, were dated December 28, 2018 and arrived during the government shutdown. The circumstances that caused the lapse were unusual. Nonetheless we have added safeguards to our petition intake process to minimize the chance of recurrence.

Operating in catch-up mode when the shutdown ended in late January, the contractor that handles incoming fuels-related submissions for OTAQ properly received the Suncor petitions and logged them into OTAQ's request tracker system. The contractor believed the system to have then generated an automatic email notifying OTAQ staff that there were new petitions that required action. This notification did not happen, however, because of a computer sequencing issue related to the way the contractor logged and assigned the new request (i.e., the sequence of steps didn't match the process that automatically generates the notification e-mail).

Since discovering what happened, OTAQ has reviewed petition intake procedures with its contractor and has added backups to enhance the notification process. Specifically, the request tracking system is now set up to ensure the software generates an automatic email notification that goes to several small refinery exemption team members whenever a new petition is logged. In addition, OTAQ has granted request tracking log access to additional team members. The streamlined email generation process will ensure that the team is notified of new petitions, and the combination of broader access to the log and broader email notification will provide enough depth to ensure that more than one team member is alerted when a new petition arrives.

Message

From: Nelson, Karen [nelson.karen@epa.gov]
Sent: 9/11/2019 1:16:56 PM
To: White, Thomas [thomas.white@hq.doe.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]
Subject: RE: DPP & CBI: Draft Suncor Ineligibility Letter

Thanks Tom! I appreciate you taking the time to review it. ☺

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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From: White, Thomas <thomas.white@hq.doe.gov>
Sent: Wednesday, September 11, 2019 9:07 AM
To: Nelson, Karen <nelson.karen@epa.gov>; Stahle, Susan <Stahle.Susan@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: DPP & CBI: Draft Suncor Ineligibility Letter

Hi Karen,

I do not have any comments on this draft. It looks good to me.

Thanks,
tom

Thomas White
U.S. Department of Energy
Office of Policy
202-586-1393

From: Nelson, Karen [mailto:nelson.karen@epa.gov]
Sent: Tuesday, September 10, 2019 10:51 AM
To: Stahle, Susan <Stahle.Susan@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; White, Thomas <thomas.white@hq.doe.gov>
Subject: DPP & CBI: Draft Suncor Ineligibility Letter

Nelson, Karen has shared a OneDrive for Business file with you. To view it, click the link below.

Clean_Suncor 2018 RFS SRE ineligibility letter - draft.docx

Hi Sue, Byron, Tom, and Janet,

Attached is the clean version of the Suncor for your review. Just so you know, I'll be fixing the citations in this version while you review it.

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 9/3/2019 2:58:37 PM
To: Anderson, Robert [Anderson.Robert@epa.gov]; Borgert, Kyle [borgert.kyle@epa.gov]; Boylan, Thomas [boylan.thomas@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Burch, Julia [Burch.Julia@epa.gov]; Burkholder, Dallas [burkholder.dallas@epa.gov]; Charmley, William [charmley.william@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Gustafson, Kurt [Gustafson.Kurt@epa.gov]; Herbolsheimer, Courtney [herbolsheimer.courtney@epa.gov]; Korotney, David [korotney.david@epa.gov]; Larson, Ben [Larson.Ben@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Levy, Aaron [Levy.Aaron@epa.gov]; Li, Ryland (Shengzhi) [Li.Ryland@epa.gov]; Lie, Sharyn [Lie.Sharyn@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; Manners, Mary [manners.mary@epa.gov]; Master, Barbora [Master.Barbora@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Mroz, Jessica [mroz.jessica@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Orlin, David [Orlin.David@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Pastorkovich, Anne-Marie [Pastorkovich.Anne-Marie@epa.gov]; Patulski, Meg [patulski.meg@epa.gov]; Sargeant, Kathryn [sargeant.kathryn@epa.gov]; Shelby, Michael [Shelby.Michael@epa.gov]; Simon, Karl [Simon.Karl@epa.gov]; Sobel, Aaron [Sobel.Aaron@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: final agenda for 11 am fuels meeting
Attachments: 2019.09.03 Fuels Team Weekly Agenda.docx

OTAQ Weekly Fuels Team Meeting
Agenda, September 3, 2019

Ex. 5 Deliberative Process (DP)

- SREs
  - Ex. 5 Deliberative Process (DP)
  - Suncor

Ex. 5 Deliberative Process (DP)

- Divisional Read-outs, as time allows:
  - OGC
  - IO
  - TCD

- CD
- ASD

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 8/13/2019 8:21:22 PM
To: Anderson, Robert [Anderson.Robert@epa.gov]; Borgert, Kyle [borgert.kyle@epa.gov]; Boylan, Thomas [boylan.thomas@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Burch, Julia [Burch.Julia@epa.gov]; Burkholder, Dallas [burkholder.dallas@epa.gov]; Charmley, William [charmley.william@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Gustafson, Kurt [Gustafson.Kurt@epa.gov]; Herbolsheimer, Courtney [herbolsheimer.courtney@epa.gov]; Korotney, David [korotney.david@epa.gov]; Larson, Ben [Larson.Ben@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Levy, Aaron [Levy.Aaron@epa.gov]; Li, Ryland (Shengzhi) [Li.Ryland@epa.gov]; Lie, Sharyn [Lie.Sharyn@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; Manners, Mary [manners.mary@epa.gov]; Master, Barbora [Master.Barbora@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Mroz, Jessica [mroz.jessica@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Orlin, David [Orlin.David@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Pastorkovich, Anne-Marie [Pastorkovich.Anne-Marie@epa.gov]; Patulski, Meg [patulski.meg@epa.gov]; Sargeant, Kathryn [sargeant.kathryn@epa.gov]; Shelby, Michael [Shelby.Michael@epa.gov]; Simon, Karl [Simon.Karl@epa.gov]; Sobel, Aaron [Sobel.Aaron@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: materials for 2 fuels meetings tomorrow
Attachments: 2019.8.14 RFS RIN Generation topics for Sarah D.pptx

1. Agenda for the 4pm fuels weekly is tomorrow
2. Materials for RFS RIN Generation Topics briefing attached.

Thanks—Ben

From: Hengst, Benjamin

Weekly Fuels Team Meeting with Sarah Dunham
08.14.2019 Agenda

- SREs
  - Ex. 5 Deliberative Process (DP)
  - Suncor

Ex. 5 Deliberative Process (DP)

Message

From: Nelson, Karen [nelson.karen@epa.gov]
Sent: 9/11/2019 12:52:51 PM
To: Stahle, Susan [Stahle.Susan@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; White, Thomas [thomas.white@hq.doe.gov]
CC: McKenna, Chris [McKenna.Chris@epa.gov]; Caballero, Kathryn [Caballero.Kathryn@epa.gov]
Subject: RE: DPP & CBI: Draft Suncor Ineligibility Letter

Hi Everyone,

I had sent this letter out previously to everyone on this email, but I thought it might be a good idea to link the messages to all the various reviewers so that, if/when questions arise, we all have access to the same conversation and history.

So this email is just to add Chris and Kathryn to the original message.

Thanks!
-Karen

Do not release without review. This email and any attached documents may contain information claimed as CBI, confidential attorney-client communications, privileged attorney work product, and/or privileged and confidential deliberative process material.

From: Nelson, Karen
Sent: Tuesday, September 10, 2019 10:51 AM
To: Stahle, Susan <Stahle.Susan@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Tom White <Thomas.White@hq.doe.gov>
Subject: DPP & CBI: Draft Suncor Ineligibility Letter

Hi Sue, Byron, Tom, and Janet,

Attached is the clean version of the Suncor for your review. Just so you know, I'll be fixing the citations in this version while you review it.

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 9/3/2019 2:05:14 PM
To: Anderson, Robert [Anderson.Robert@epa.gov]; Borgert, Kyle [borgert.kyle@epa.gov]; Boylan, Thomas [boylan.thomas@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Burch, Julia [Burch.Julia@epa.gov]; Burkholder, Dallas [burkholder.dallas@epa.gov]; Charmley, William [charmley.william@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Gustafson, Kurt [Gustafson.Kurt@epa.gov]; Herbolsheimer, Courtney [herbolsheimer.courtney@epa.gov]; Korotney, David [korotney.david@epa.gov]; Larson, Ben [Larson.Ben@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Levy, Aaron [Levy.Aaron@epa.gov]; Li, Ryland (Shengzhi) [Li.Ryland@epa.gov]; Lie, Sharyn [Lie.Sharyn@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; Manners, Mary [manners.mary@epa.gov]; Master, Barbora [Master.Barbora@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Mroz, Jessica [mroz.jessica@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Orlin, David [Orlin.David@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Pastorkovich, Anne-Marie [Pastorkovich.Anne-Marie@epa.gov]; Patulski, Meg [patulski.meg@epa.gov]; Sargeant, Kathryn [sargeant.kathryn@epa.gov]; Shelby, Michael [Shelby.Michael@epa.gov]; Simon, Karl [Simon.Karl@epa.gov]; Sobel, Aaron [Sobel.Aaron@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: Draft agenda for today's 11 am fuels weekly
Attachments: 2019.09.03 Fuels Team Weekly Agenda.docx

Please let me know if you have any additions. Thanks—Ben

OTAQ Weekly Fuels Team Meeting
Agenda, September 3, 2019

Ex. 5 Deliberative Process (DP)

- SREs
  - Ex. 5 Deliberative Process (DP)
  - Suncor

Ex. 5 Deliberative Process (DP)

- Divisional Read-outs, as time allows:
  - OGC
  - IO
  - TCD
  - CD
  - ASD

Message

From: Nelson, Karen [nelson.karen@epa.gov]
Sent: 10/21/2019 2:38:25 PM
To: McKenna, Chris [McKenna.Chris@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Hengst, Benjamin [Hengst.Benjamin@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]
Subject: DPP&CBI: Suncor Letter - Clean Version

<!--[if lte mso 15 || CheckWebRef]-->

Nelson, Karen has shared a OneDrive for Business file with you. To view it, click the link below.

Clean_Suncor 2018 RFS SRE ineligibility letter - draft.docx

<!--[endif]-->

Hi Team!

The Suncor letter has completed the staff level review in OGC, and is being forwarded on to Justin Schwab for his review. I think we should discuss the next steps at tomorrow's weekly meeting.

Attached is the clean version that was sent to Justin.

Thanks!
-Karen

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

Do not release without review. This email and any attached documents may contain information claimed as CBI, confidential attorney-client communications, privileged attorney work product, and/or privileged and confidential deliberative process material.

Message

From: Cohen, Janet [cohen.janet@epa.gov]
Sent: 9/3/2019 12:45:30 PM
To: Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]; Hengst, Benjamin [Hengst.Benjamin@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]
Subject: draft agenda for 10 am
Attachments: 9_3_19 RFS Small Refinery Hardships & Book & Garden Club.docx

Linked, 9_3_19 RFS Small Refinery Hardships & Book & Garden Club, and attached

RFS Small Refinery Hardships & Book & Garden & Dog Club (Volunteer Brigade?? Forum?? Alliance?? Star Troupe??)
Gathering Date: Tuesday, September 3, 2019
NVFEL Room N-62; Call-in Ex. 6 Personal Privacy (PP)

Updates/Discussion

- Ex. 5 Deliberative Process (DP)
- Suncor
    - Ineligibility letter status
    - Next steps?
- DOE?
- Litigation
    - RFA FOIA refresher training & document review
- Other?

Discussion Topics

- 2019 petitions! Will start arriving any day!

Volunteer Opportunities

Book Suggestions & Garden Tips

Dog Stories

Message

From: Cohen, Janet [cohen.janet@epa.gov]
Sent: 9/10/2019 4:12:34 PM
To: Nelson, Karen [nelson.karen@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; White, Thomas [thomas.white@hq.doe.gov]
Subject: RE: DPP & CBI: Draft Suncor Ineligibility Letter

Thanks Karen. I have a few more editorial suggestions for this letter (fixing some awkward or wordy sentences, etc),. Can take a final look once I know the others are ok with it. – j. -

---

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, September 10, 2019 10:51 AM
To: Stahle, Susan <Stahle.Susan@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; White, Thomas <thomas.white@hq.doe.gov>
Subject: DPP & CBI: Draft Suncor Ineligibility Letter

Hi Sue, Byron, Tom, and Janet,

Attached is the clean version of the Suncor for your review. Just so you know, I'll be fixing the citations in this version while you review it.

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

Do not release without review. This email and any attached documents may contain information claimed as CBI, confidential attorney-client communications, privileged attorney work product, and/or privileged and confidential deliberative process material.

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 9/10/2019 11:16:30 AM
To: Anderson, Robert [Anderson.Robert@epa.gov]; Borgert, Kyle [borgert.kyle@epa.gov]; Boylan, Thomas [boylan.thomas@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Burch, Julia [Burch.Julia@epa.gov]; Burkholder, Dallas [burkholder.dallas@epa.gov]; Charmley, William [charmley.william@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Gustafson, Kurt [Gustafson.Kurt@epa.gov]; Herbolsheimer, Courtney [herbolsheimer.courtney@epa.gov]; Korotney, David [korotney.david@epa.gov]; Larson, Ben [Larson.Ben@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Levy, Aaron [Levy.Aaron@epa.gov]; Li, Ryland (Shengzhi) [Li.Ryland@epa.gov]; Lie, Sharyn [Lie.Sharyn@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; Manners, Mary [manners.mary@epa.gov]; Master, Barbora [Master.Barbora@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Mroz, Jessica [mroz.jessica@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Orlin, David [Orlin.David@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Pastorkovich, Anne-Marie [Pastorkovich.Anne-Marie@epa.gov]; Patulski, Meg [patulski.meg@epa.gov]; Sargeant, Kathryn [sargeant.kathryn@epa.gov]; Shelby, Michael [Shelby.Michael@epa.gov]; Simon, Karl [Simon.Karl@epa.gov]; Sobel, Aaron [Sobel.Aaron@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: Draft agenda for fuels 11 am

All—please let me know if you have changes/additions. Thanks—Ben

OTAQ Weekly Fuels Team Meeting
Agenda, September 10, 2019

Ex. 5 Deliberative Process (DP)

- SREs
  - **Ex. 5 Deliberative Process (DP)**
  - Suncor
  - Other updates?

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

- Divisional Read-outs, as time allows:
  - OGC
  - IO
  - TCD
  - CD
  - ASD

Message

From: McKenna, Chris [McKenna.Chris@epa.gov]
Sent: 8/7/2019 5:31:46 PM
To: Hengst, Benjamin [Hengst.Benjamin@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]
CC: Bunker, Byron [bunker.byron@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]
Subject: RE: are there materials for the 12:30 meeting with Sarah on SunCor?

No problem, changes were minor.

From: Hengst, Benjamin <Hengst.Benjamin@epa.gov>
Sent: Wednesday, August 07, 2019 1:31 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Cc: Bunker, Byron <bunker.byron@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: are there materials for the 12:30 meeting with Sarah on SunCor?

Oops—already sent the doc around, hopefully Chris your changes aren't major.

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Wednesday, August 7, 2019 1:30 PM
To: Nelson, Karen <nelson.karen@epa.gov>
Cc: Bunker, Byron <bunker.byron@epa.gov>; Hengst, Benjamin <Hengst.Benjamin@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: are there materials for the 12:30 meeting with Sarah on SunCor?

Karen,

FWIW, I updated the briefing with some info I got from Tom White this morning, changes are shown in attachment. If you make add'l changes to consistently say Denver or Commerce City, I'd stick with Denver (or Denver-area) since that's more recognizable.

Thanks,
Chris

From: Cohen, Janet <cohen.janet@epa.gov>
Sent: Wednesday, August 07, 2019 12:15 PM
To: OTAQ Materials <OTAQMaterials@epa.gov>
Cc: Bunker, Byron <bunker.byron@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Hengst, Benjamin <Hengst.Benjamin@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>
Subject: RE: are there materials for the 12:30 meeting with Sarah on SunCor?

From: Hengst, Benjamin <Hengst.Benjamin@epa.gov>
Sent: Wednesday, August 07, 2019 12:14 PM
To: Nelson, Karen <nelson.karen@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>
Cc: Bunker, Byron <bunker.byron@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>
Subject: are there materials for the 12:30 meeting with Sarah on SunCor?

Sorry if I missed them. If we have anything, pls send to OTAQ Materials. Thanks--Ben

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 8/7/2019 5:30:37 PM
To: Anderson, Robert [Anderson.Robert@epa.gov]; Borgert, Kyle [borgert.kyle@epa.gov]; Boylan, Thomas [boylan.thomas@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Burch, Julia [Burch.Julia@epa.gov]; Burkholder, Dallas [burkholder.dallas@epa.gov]; Charmley, William [charmley.william@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [garfinkle.stacey@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Gustafson, Kurt [Gustafson.Kurt@epa.gov]; Herbolsheimer, Courtney [herbolsheimer.courtney@epa.gov]; Korotney, David [korotney.david@epa.gov]; Larson, Ben [Larson.Ben@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Levy, Aaron [Levy.Aaron@epa.gov]; Li, Ryland (Shengzhi) [Li.Ryland@epa.gov]; Lie, Sharyn [Lie.Sharyn@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; Manners, Mary [manners.mary@epa.gov]; Master, Barbora [Master.Barbora@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Mroz, Jessica [mroz.jessica@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Orlin, David [Orlin.David@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Pastorkovich, Anne-Marie [Pastorkovich.Anne-Marie@epa.gov]; Patulski, Meg [patulski.meg@epa.gov]; Sargeant, Kathryn [sargeant.kathryn@epa.gov]; Shelby, Michael [Shelby.Michael@epa.gov]; Simon, Karl [Simon.Karl@epa.gov]; Sobel, Aaron [Sobel.Aaron@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: Materials for 3pm fuels briefing with Anne
Attachments: 2019.08.07 SRE Update.docx; 2019.08.07 Fuels Weekly with OAR, Agenda.docx; 2019.08.07 Suncor eligibility.docx

Fuels team:

Please note that the majority of today's discussion is likely to focus on SREs. **Ex. 5 Deliberative Process (DP)/ Ex. 4 CBI** **Ex. 5 Deliberative Process (DP)/ Ex. 4 CBI** then turn to SREs. Thanks—Ben

---

From: Hengst, Benjamin
Sent: Wednesday, August 7, 2019 1:27 PM
To: OTAQ Materials <OTAQMaterials@epa.gov>
Subject: Materials for 3pm fuels briefing with Anne

Attached are 3 documents for the fuels meeting at 3pm.

These materials include information claimed as CBI.

Thanks,
Ben

Weekly Fuels Team Meeting with OAR

2019.08.07

- Ex. 5 Deliberative Process (DP)/ Ex. 4 CBI
- Streamlining rule
    - Status update
- 2020 RVO Rule NPRM
    - Status update
- Reset Rule NPRM
    - Interagency meetings
- SREs: see separate hand-out

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 8/7/2019 4:37:04 PM
To: Cohen, Janet [cohen.janet@epa.gov]
CC: Bunker, Byron [bunker.byron@epa.gov]; Swain, Christine [swain.christine@epa.gov]
Subject: RE: Materials for 12:30
Attachments: 2019.08.07 SRE Update.docx

Here you go. See attached

From: Cohen, Janet <cohen.janet@epa.gov>
Sent: Wednesday, August 7, 2019 12:29 PM
To: Hengst, Benjamin <Hengst.Benjamin@epa.gov>
Cc: Bunker, Byron <bunker.byron@epa.gov>; Swain, Christine <swain.christine@epa.gov>
Subject: Materials for 12:30
Importance: High

Ben, Byron asked me to make and bring copies in AA of the 1 pager you put together with SRE topics. But sharepoint wont let me access/open the current version so can you please send that to Christine and Christine, can you please make copies? Thanks. – j. -

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 8/6/2019 6:05:37 PM
To: Bunker, Byron [bunker.byron@epa.gov]
CC: Cohen, Janet [cohen.janet@epa.gov]
Subject: RE: Raising Suncor SRE Request with Sarah

Byron—Sarah can't do 4:30 but we can get time tomorrow, maybe twenty min, around 12:30 or so. That work?

From: Bunker, Byron <bunker.byron@epa.gov>
Sent: Tuesday, August 6, 2019 1:47 PM
To: Hengst, Benjamin <Hengst.Benjamin@epa.gov>
Cc: Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: Raising Suncor SRE Request with Sarah

4:30 works for me but Sarah's calendar shows a personal appointment at 4:30. Let me know, and we can figure something out.

Thanks,

Byron

****
Byron Bunker
Director Compliance Division
Office of Transportation and Air Quality
Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, MI 48105
Bunker.Byron@epa.gov
Phone: (734) 214-4155
Mobile: (734) 353-9623
****

From: Hengst, Benjamin <Hengst.Benjamin@epa.gov>
Sent: Tuesday, August 06, 2019 1:38 PM
To: Bunker, Byron <bunker.byron@epa.gov>
Cc: Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: Raising Suncor SRE Request with Sarah

Hi Byron—

Sarah and I now have a 4pm with Anne—so 4pm won't work

However, maybe we could do 4:30?

Ex. 5 Deliberative Process (DP)

Let me know if 4:30 works.

From: Bunker, Byron <bunker.byron@epa.gov>
Sent: Tuesday, August 6, 2019 1:26 PM
To: Hengst, Benjamin <Hengst.Benjamin@epa.gov>
Cc: Cohen, Janet <cohen.janet@epa.gov>
Subject: Raising Suncor SRE Request with Sarah

Hi Ben,

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP) As you may recall, Suncor has submitted two SRE petitions for Suncor East and West **Ex. 5 Deliberative Process (DP)/ Ex. 4 CBI**

Ex. 5 Deliberative Process (DP)/ Ex. 4 CBI

Ex. 5 Deliberative Process (DP)

Long way of asking to raise both of these with Sarah at 4 and with Anne tomorrow during our biweekly.

Thanks,

Byron

****
Byron Bunker
Director Compliance Division
Office of Transportation and Air Quality
Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, MI 48105
Bunker.Byron@epa.gov
Phone: (734) 214-4155
Mobile: (734) 353-9623
****

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 8/6/2019 5:51:33 PM
To: Bunker, Byron [bunker.byron@epa.gov]
CC: Cohen, Janet [cohen.janet@epa.gov]
Subject: RE: Raising Suncor SRE Request with Sarah

Yeah, let me check with her

We could potentially get time with Sarah in the noon-1pm block tomorrow while she's in AA

From: Bunker, Byron <bunker.byron@epa.gov>
Sent: Tuesday, August 6, 2019 1:47 PM
To: Hengst, Benjamin <Hengst.Benjamin@epa.gov>
Cc: Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: Raising Suncor SRE Request with Sarah

4:30 works for me but Sarah's calendar shows a personal appointment at 4:30. Let me know, and we can figure something out.

Thanks,

Byron

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Director Compliance Division
Office of Transportation and Air Quality
Environmental Protection Agency
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Ann Arbor, MI 48105
Bunker.Byron@epa.gov
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Mobile: (734) 353-9623
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From: Hengst, Benjamin <Hengst.Benjamin@epa.gov>
Sent: Tuesday, August 06, 2019 1:38 PM
To: Bunker, Byron <bunker.byron@epa.gov>
Cc: Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: Raising Suncor SRE Request with Sarah

Hi Byron—

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However, maybe we could do 4:30?

Ex. 5 Deliberative Process (DP)

Let me know if 4:30 works.

From: Bunker, Byron <bunker.byron@epa.gov>
Sent: Tuesday, August 6, 2019 1:26 PM
To: Hengst, Benjamin <Hengst.Benjamin@epa.gov>
Cc: Cohen, Janet <cohen.janet@epa.gov>
Subject: Raising Suncor SRE Request with Sarah

Hi Ben,

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP) As you may recall, Suncor has submitted two SRE petitions for Suncor East and West Ex. 5 Deliberative Process (DP)/ Ex. 4 CBI

Ex. 5 Deliberative Process (DP)/ Ex. 4 CBI

Ex. 5 Deliberative Process (DP)

Long way of asking to raise both of these with Sarah at 4 and with Anne tomorrow during our biweekly.

Thanks,

Byron

****
Byron Bunker
Director Compliance Division
Office of Transportation and Air Quality
Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, MI 48105
Bunker.Byron@epa.gov
Phone: (734) 214-4155
Mobile: (734) 353-9623
****

Message

From: Bunker, Byron [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=DDF7BCF023D241A9A477A2DC75D5901C-BUNKER, BYRON]
Sent: 9/24/2019 10:21:43 PM
To: Nelson, Karen [nelson.karen@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]
CC: Michaels, Lauren [Michaels.Lauren@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Caballero, Kathryn [Caballero.Kathryn@epa.gov]; McKenna, Chris [mckenna.chris@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]
Subject: RE: DPP & CBI: Suncor Ineligibility Letter for your Review

Thanks Karen.

This looks great to me.

Thanks,

Byron

****
Byron Bunker
Director Compliance Division
Office of Transportation and Air Quality
Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, MI 48105
Bunker.Byron@epa.gov
Phone: (734) 214-4155
Mobile: (734) 353-9623
****

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, September 24, 2019 2:00 PM
To: Stahle, Susan <Stahle.Susan@epa.gov>
Cc: Michaels, Lauren <Michaels.Lauren@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Caballero, Kathryn <Caballero.Kathryn@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>
Subject: DPP & CBI: Suncor Ineligibility Letter for your Review

Hi Sue!

Here is a clean version of the Suncor ineligibility letter for review, whenever you have time.

Thanks Sue!
-Karen

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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Message

From: Nelson, Karen [nelson.karen@epa.gov]
Sent: 10/25/2019 8:03:53 PM
To: Stahle, Susan [Stahle.Susan@epa.gov]; McKenna, Chris [McKenna.Chris@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]
CC: Cohen, Janet [cohen.janet@epa.gov]
Subject: SRE Update

Hi Team!

Just wanted to let everyone know that we got the signed Suncor ineligibility letter from Anne Idsal today, and I sent it out just a few minutes ago. I just wanted to give the whole team an update before the weekend, though.

Thanks!
Have a nice weekend everyone! Talk to you all on Monday!
-Karen

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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Commerce City Refinery

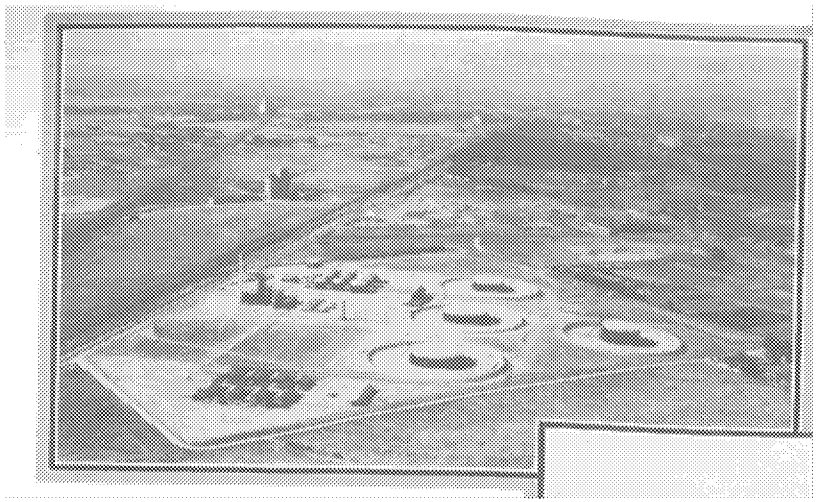
Donald Austin, VP, Commerce City Refinery
August 5, 2019

SUNCOR

Commerce City Refinery history

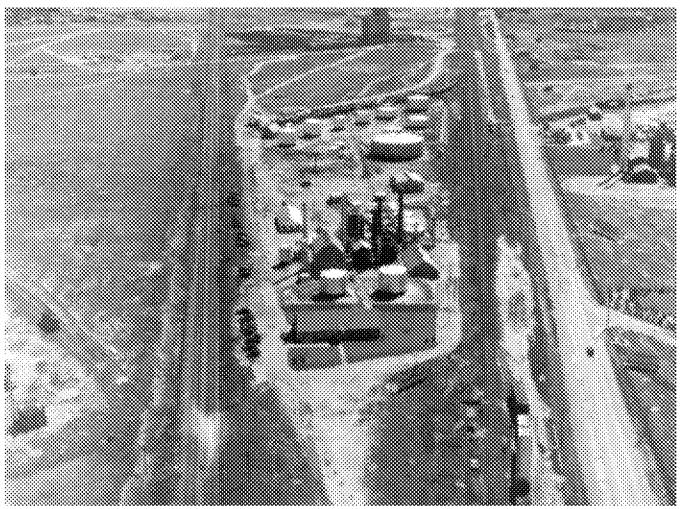
Plants 1 & 3

- Original refinery started in **1931** in what was then called "Commerce Town"
- Owned by Continental Oil Company, which later became Conoco and ConocoPhillips
- Suncor acquired legacy ConocoPhillips assets in 2003



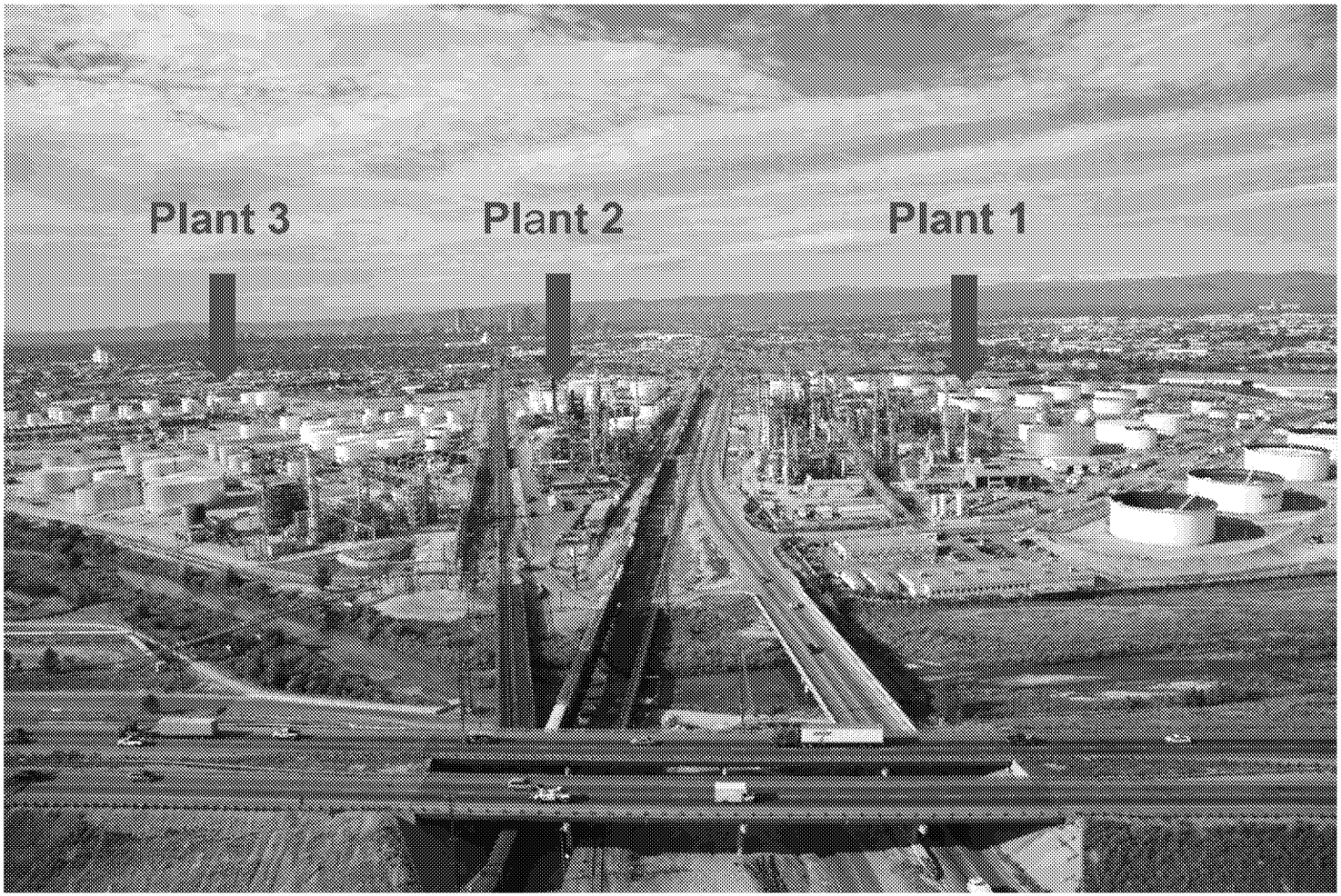
Plant 2

- Originally built by Bay Petroleum in **1937**
- Many owners since, including Tenneco, King Resources, Asamera Oil, Total, Ultramar, Diamond Shamrock and Valero
- Suncor acquired from Valero in 2005



SUNCOR

Commerce City Refinery today



SUNCOR

Commerce City Refinery: Our business at-a-glance

Colorado's **only fuels refinery** boosting economy by **~$2.5 billion** per year

Supports **local communities**

More than **$1 Billion** in refinery improvement investments since 2005

Supports **~500 direct** and **~5000 indirect jobs**

Local producer/supplier of:

- Gasoline
- Diesel
- Propane
- Jet fuel for DIA
- Asphalt for Colorado's roads
- Fuel for Western Slope

Supply **Colorado's fuel needs** through:

- Truck
- Pipeline
- Rail

Access **local crude**, Colorado's DJ Basin

Suncor wants to be part of Colorado's energy future, while making sound investments and driving environmental improvements.

SUNCOR

Data presented at Regional Air Quality Council meeting 5/22/2019

Nearly $1B in refinery improvement investments since 2005

2005 – Purchase of Valero Refinery (Plant 2) - 38,000 bpd sweet crude refining capacity

2006 – Completed $450+ million "Project Odyssey" reducing sulfur in diesel fuel to ultra-low standard

2007 – Wastewater treatment capacity and reliability improvements

2009 – Improvements to #2 FCC unit to comply with opacity regulations

2011 – Replaced waste water APIs

2012 – Gasoline Benzene Reduction (GBR) Unit completed to reduce benzene in gasoline

2012 – Built new $25 million "LEEDs Silver" Refinery Business Center in Commerce City

2013 – Replaced Plant 2 boilers to reduce NOx

2017 – Built new $65 million wastewater treatment plant to achieve mercury, arsenic reductions

2018 – Built new wastewater treatment unit to reduce selenium and installed improvements to comply with Refinery Sector Rule

2019 – Hydro-treater project to reduce sulfur in gasoline meeting new federal standards (Tier III)

SUNCOR

HCN Update

Commerce City refinery and HCN

- Hydrogen cyanide (HCN) is naturally occurring, found in foods, including spinach, almonds, lima beans, soy, apple cores
- HCN is generated by refineries with fluidized catalytic cracking (FCC) units
- EPA already regulates HCN and does not require a permit limit for HCN
- To increase transparency/efficiency, Suncor requested that Colorado Department of Public Health & Environment (CDPHE) include an HCN limit in its air permit
  - CDPHE approved its inclusion in 2018
  - Per CDPHE's current process, HCN levels are measured by a one-time, annual stack test
  - Data from the 2018 one-time test indicated higher result and Suncor applied to modify the permit (given the 2018 test result)
  - Suncor conducted 30 days of additional testing that showed there is HCN variability associated with normal plant operations and that data *average* was <u>less than</u> the permit value
  - Suncor met w/ CDPHE to share additional data
  - CDPHE have stated publicly that there is no health concern associated with HCN from refinery stack results

SUNCOR

Commerce City refinery and HCN (cont.)

- EPA reviewed the issue (2015) and determined that no specific control limit for HCN was required and existing combustion controls addressed HCN
- U.S. House Representative Diana DeGette (D-CO) introduced *federal* legislation this year re: HCN for U.S. refineries
- Suncor is working with many stakeholders to provide facts on HCN
- Suncor's goal: use actual refinery operations data to determine the complete emissions picture and establish proper HCN permit limit

Ozone Non-attainment

- Denver metro area is “non-attainment” for federal ozone standard
- Regional Air Quality Council (RAQC) considering potential strategies for reducing ozone
  - RAQC evaluating four potential, new fuel specifications (all require refinery capital investment)
  - Suncor and other stakeholders presented data to RAQC on May 22
- Suncor supports ozone reduction
- Suncor continues to be active participant in process and resource for RAQC committees, board
- Important to take wide view as RAQC gathers data, evaluates potential strategies, makes decisions
- Ozone reduction strategies should deliver meaningful benefit to air quality

SUNCOR

Thank you!

Questions?

SUNCOR

Message

From: McKenna, Chris [McKenna.Chris@epa.gov]
Sent: 10/17/2019 8:57:58 PM
To: Stahle, Susan [Stahle.Susan@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]
CC: Michaels, Lauren [Michaels.Lauren@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Bunker, Byron [bunker.byron@epa.gov]; Caballero, Kathryn [Caballero.Kathryn@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]
Subject: RE: DPP & CBI: Suncor Ineligibility Letter for your Review

Sue,

Thanks very much for reviewing this, we really appreciate it.

Chris

From: Stahle, Susan <Stahle.Susan@epa.gov>
Sent: Thursday, October 17, 2019 4:20 PM
To: Nelson, Karen <nelson.karen@epa.gov>
Cc: Michaels, Lauren <Michaels.Lauren@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Caballero, Kathryn <Caballero.Kathryn@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>
Subject: RE: DPP & CBI: Suncor Ineligibility Letter for your Review

Hello all –

I reviewed this letter this afternoon and added my edits/comments to the Sharepoint version. It's in pretty good shape, nice work all around.

I did send it to Susmita for her review so no need for any of you to do anything at the moment with it.

Once Susmita gets a chance to look at it, we can then get our edits/comments addressed and send a clean version forward to my front office at least as an FYI **Ex. 5 Deliberative Process (DP)**

Susan Stahle
Air and Radiation Law Office
Office of General Counsel
U.S. Environmental Protection Agency
WJCN-7502B
202-564-1272

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, September 24, 2019 2:00 PM
To: Stahle, Susan <Stahle.Susan@epa.gov>
Cc: Michaels, Lauren <Michaels.Lauren@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Caballero, Kathryn <Caballero.Kathryn@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>
Subject: DPP & CBI: Suncor Ineligibility Letter for your Review

Hi Sue!

Here is a clean version of the Suncor ineligibility letter for review, whenever you have time.

Thanks Sue!
-Karen

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

Do not release without review. This email and any attached documents may contain information claimed as CBI, confidential attorney-client communications, privileged attorney work product, and/or privileged and confidential deliberative process material.

Message

From: McKenna, Chris [McKenna.Chris@epa.gov]
Sent: 9/16/2019 5:22:45 PM
To: Stahle, Susan [Stahle.Susan@epa.gov]
CC: Nelson, Karen [nelson.karen@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]
Subject: FW: DPP & CBI: Draft Suncor Ineligibility Letter
Attachments: Suncor-Commerce City diesel registration.pdf

Sue,

Ex. 5 Deliberative Process (DP)

Thanks very much,
Chris

From: McKenna, Chris
Sent: Wednesday, September 11, 2019 9:19 AM
To: Nelson, Karen <nelson.karen@epa.gov>; Caballero, Kathryn <Caballero.Kathryn@epa.gov>
Subject: RE: DPP & CBI: Draft Suncor Ineligibility Letter

OK, thanks very much.

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Wednesday, September 11, 2019 9:18 AM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Caballero, Kathryn <Caballero.Kathryn@epa.gov>
Subject: FW: DPP & CBI: Draft Suncor Ineligibility Letter

Tom responded to the version that you were left off of, so I'm forwarding his response to you.

From: White, Thomas <thomas.white@hq.doe.gov>
Sent: Wednesday, September 11, 2019 9:07 AM
To: Nelson, Karen <nelson.karen@epa.gov>; Stahle, Susan <Stahle.Susan@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: DPP & CBI: Draft Suncor Ineligibility Letter

Hi Karen,

I do not have any comments on this draft. It looks good to me.

Thanks,
tom

Thomas White
U.S. Department of Energy
Office of Policy
202-586-1393

From: Nelson, Karen [mailto:nelson.karen@epa.gov]
Sent: Tuesday, September 10, 2019 10:51 AM
To: Stahle, Susan <Stahle.Susan@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; White, Thomas <thomas.white@hq.doe.gov>
Subject: DPP & CBI: Draft Suncor Ineligibility Letter

Nelson, Karen has shared a OneDrive for Business file with you. To view it, click the link below.

Clean_Suncor 2018 RFS SRE ineligibility letter - draft.docx

Hi Sue, Byron, Tom, and Janet,

Attached is the clean version of the Suncor for your review. Just so you know, I'll be fixing the citations in this version while you review it.

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

Do not release without review. This email and any attached documents may contain information claimed as CBI, confidential attorney-client communications, privileged attorney work product, and/or privileged and confidential deliberative process material.

Message

From: McKenna, Chris [McKenna.Chris@epa.gov]
Sent: 9/23/2019 5:51:09 PM
To: Cohen, Janet [cohen.janet@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Caballero, Kathryn [Caballero.Kathryn@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]
Subject: RE: move Suncor letter to new Suncor folder

All,

FYI, I moved the Suncor response letter to the following folder,

Ex. 5 Deliberative Process (DP)

Thanks,
Chris

-----Original Message-----
From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Monday, September 23, 2019 9:18 AM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Subject: RE: move Suncor letter to new Suncor folder

I think it'll be fine, just send out a short message letting folks know it's been moved, and maybe include a link? I think that'll resolve any confusion.

-----Original Message-----
From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Monday, September 23, 2019 8:48 AM
To: Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: move Suncor letter to new Suncor folder

Thanks - is it OK to move it now, or are there OTAQ people still reviewing it? If it disappears from the "2018 Decisions" folder, I didn't want to confuse Janet or any other OTAQ reviewers.

-----Original Message-----
From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Monday, September 23, 2019 8:36 AM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Subject: RE: move Suncor letter to new Suncor folder

Thanks Chris! You're right, that is a more logical place for it.

-----Original Message-----
From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Thursday, September 19, 2019 10:01 AM
To: Nelson, Karen <nelson.karen@epa.gov>
Subject: move Suncor letter to new Suncor folder

Karen,

I combined the Suncor 2018 petitions into a single folder titled "Suncor" in the 2018 petitions folder.

I think it makes more sense to move the response letter into this new folder as well, please let me know if you agree.

Thanks,
Chris

Message

From: McKenna, Chris [McKenna.Chris@epa.gov]
Sent: 8/7/2019 4:15:33 PM
To: Cohen, Janet [cohen.janet@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]
Subject: RE: Suncor 1-pager

We'll make it work one way or another.

From: Cohen, Janet <cohen.janet@epa.gov>
Sent: Wednesday, August 07, 2019 12:13 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: Suncor 1-pager
Importance: High

Good. **Ex. 5 Deliberative Process (DP)** If yes I'll have kim make copies. – j. -

---

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Wednesday, August 07, 2019 12:08 PM
To: Cohen, Janet <cohen.janet@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Cc: Schmittou, Kim <schmittou.kim@epa.gov>
Subject: RE: Suncor 1-pager

Yes, I can attend.

From: Cohen, Janet <cohen.janet@epa.gov>
Sent: Wednesday, August 07, 2019 12:04 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Cc: Schmittou, Kim <schmittou.kim@epa.gov>
Subject: RE: Suncor 1-pager

Great, thanks Chris. I'll take a quick look and get it to Kim for copying. Can you join for the 12:30 discussion? - j. -

---

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Wednesday, August 07, 2019 12:02 PM
To: Cohen, Janet <cohen.janet@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Cc: Schmittou, Kim <schmittou.kim@epa.gov>
Subject: RE: Suncor 1-pager

Ex. 5 Deliberative Process (DP)

From: Cohen, Janet <cohen.janet@epa.gov>
Sent: Wednesday, August 07, 2019 11:25 AM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Cc: Schmittou, Kim <schmittou.kim@epa.gov>
Subject: Suncor 1-pager

Chris & Karen, I'm on a call starting in 5 minutes until 12:30. Please send me an updated version when you can.

Karen, if you are able, please work with Kim to get copies made. If you can't just let me know when you've put pens down on the draft and I'll take it from there. – j. -

---

From: Bunker, Byron <bunker.byron@epa.gov>
Sent: Wednesday, August 07, 2019 11:10 AM
To: Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: NNTO: If we have a draft Suncor one-pager can you send that to me? Thanks!

Thanks Janet.

Ex. 5 Deliberative Process (DP)

Thanks!

Byron

****
Byron Bunker
Director Compliance Division
Office of Transportation and Air Quality
Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, MI 48105
Bunker.Byron@epa.gov
Phone: (734) 214-4155
Mobile: (734) 353-9623
****

From: Cohen, Janet <cohen.janet@epa.gov>
Sent: Wednesday, August 07, 2019 10:04 AM
To: Bunker, Byron <bunker.byron@epa.gov>
Subject: RE: NNTO: If we have a draft Suncor one-pager can you send that to me? Thanks!

Here's the current draft. **Ex. 5 Deliberative Process (DP)**
Ex. 5 Deliberative Process (DP)

From: Bunker, Byron <bunker.byron@epa.gov>
Sent: Wednesday, August 07, 2019 9:47 AM
To: Cohen, Janet <cohen.janet@epa.gov>
Subject: NNTO: If we have a draft Suncor one-pager can you send that to me? Thanks!

****
Byron Bunker
Director Compliance Division
Office of Transportation and Air Quality
Environmental Protection Agency

2000 Traverwood Drive
Ann Arbor, MI 48105
Bunker.Byron@epa.gov
Phone: (734) 214-4155
Mobile: (734) 353-9623
****

Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Alabama	**141,675**	**0**	**150,500**	**0**	**47,000**	**32,000**	**0**	**0**	**0**
Goodway Refining LLC									
Atmore	4,100	0	5,000	0	0	0	0	0	0
Hunt Refining Co									
Tuscaloosa	46,000	0	50,000	0	18,000	32,000	0	0	0
Shell Chemical LP									
Saraland	91,575	0	95,500	0	29,000	0	0	0	0
Alaska	**158,400**	**0**	**178,500**	**0**	**26,000**	**0**	**0**	**0**	**0**
BP Exploration Alaska Inc									
Prudhoe Bay	6,000	0	8,000	0	0	0	0	0	0
ConocoPhillips Alaska Inc									
Prudhoe Bay	15,000	0	16,000	0	0	0	0	0	0
Petro Star Inc									
North Pole	19,700	0	22,500	0	0	0	0	0	0
Valdez	55,000	0	60,000	0	0	0	0	0	0
Tesoro Alaska Company LLC									
Kenai	62,700	0	72,000	0	26,000	0	0	0	0
Arkansas	**90,500**	**0**	**92,700**	**0**	**48,850**	**0**	**0**	**0**	**0**
Cross Oil Refining & Marketing Inc									
Smackover	7,500	0	7,700	0	3,850	0	0	0	0
Lion Oil Co									
El Dorado	83,000	0	85,000	0	45,000	0	0	0	0
California	**1,892,471**	**0**	**2,014,400**	**0**	**1,199,756**	**459,300**	**52,000**	**5,000**	**0**
Chevron USA Inc									
El Segundo	269,000	0	290,500	0	169,100	76,700	0	0	0
Richmond	245,271	0	257,200	0	123,456	0	0	0	0
Kern Oil & Refining Co									
Bakersfield	26,000	0	27,000	0	0	0	0	0	0
Lunday Thagard Co									
South Gate	8,500	0	10,000	0	5,000	0	0	0	0
Phillips 66 Company									
Rodeo	120,200	0	128,000	0	93,200	51,000	0	0	0
Wilmington	139,000	0	147,000	0	82,000	53,200	0	0	0
San Joaquin Refining Co Inc									
Bakersfield	15,000	0	25,000	0	14,300	0	0	5,000	0
Santa Maria Refining Company									
Santa Maria	9,500	0	10,000	0	10,000	0	0	0	0
Shell Oil Products US									
Martinez	156,400	0	158,000	0	102,000	25,500	22,500	0	0
Tesoro Refining & Marketing Co									
Carson	243,800	0	276,000	0	140,000	67,100	0	0	0
Martinez	166,000	0	170,000	0	156,900	53,000	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
Alabama	**0**	**0**	**0**	**20,500**	**0**	**15,300**	**22,000**	**0**
Goodway Refining LLC								
Atmore	0	0	0	0	0	0	0	0
Hunt Refining Co								
Tuscaloosa	0	0	0	20,500	0	15,300	0	0
Shell Chemical LP								
Saraland	0	0	0	0	0	0	22,000	0
Alaska	**0**	**0**	**0**	**12,500**	**0**	**13,500**	**0**	**0**
BP Exploration Alaska Inc								
Prudhoe Bay	0	0	0	0	0	0	0	0
ConocoPhillips Alaska Inc								
Prudhoe Bay	0	0	0	0	0	0	0	0
Petro Star Inc								
North Pole	0	0	0	0	0	0	0	0
Valdez	0	0	0	0	0	0	0	0
Tesoro Alaska Company LLC								
Kenai	0	0	0	12,500	0	13,500	0	0
Arkansas	**21,000**	**0**	**0**	**0**	**0**	**15,300**	**0**	**7,400**
Cross Oil Refining & Marketing Inc								
Smackover	0	0	0	0	0	0	0	0
Lion Oil Co								
El Dorado	21,000	0	0	0	0	15,300	0	7,400
California	**718,500**	**14,600**	**197,700**	**283,400**	**0**	**197,800**	**210,700**	**56,000**
Chevron USA Inc								
El Segundo	73,800	0	0	55,000	0	49,000	0	0
Richmond	90,000	0	0	103,400	0	71,300	0	56,000
Kern Oil & Refining Co								
Bakersfield	0	0	0	0	0	2,500	3,300	0
Lunday Thagard Co								
South Gate	0	0	0	0	0	0	0	0
Phillips 66 Company								
Rodeo	0	0	0	65,000	0	0	34,000	0
Wilmington	51,600	0	27,500	0	0	0	36,200	0
San Joaquin Refining Co Inc								
Bakersfield	0	0	0	0	0	0	0	0
Santa Maria Refining Company								
Santa Maria	0	0	0	0	0	0	0	0
Shell Oil Products US								
Martinez	72,000	0	42,900	0	0	31,000	0	0
Tesoro Refining & Marketing Co								
Carson	102,500	0	55,000	0	0	0	47,000	0
Martinez	72,000	1,000	0	37,000	0	26,000	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
Alabama	**40,100**	**0**	**20,500**	**30,000**	**24,000**	**0**	**10,500**	**0**
Goodway Refining LLC								
Atmore	0	0	0	0	0	0	0	0
Hunt Refining Co								
Tuscaloosa	12,100	0	2,500	0	24,000	0	10,500	0
Shell Chemical LP								
Saraland	28,000	0	18,000	30,000	0	0	0	0
Alaska	**13,000**	**0**	**0**	**11,500**	**0**	**0**	**0**	**0**
BP Exploration Alaska Inc								
Prudhoe Bay	0	0	0	0	0	0	0	0
ConocoPhillips Alaska Inc								
Prudhoe Bay	0	0	0	0	0	0	0	0
Petro Star Inc								
North Pole	0	0	0	0	0	0	0	0
Valdez	0	0	0	0	0	0	0	0
Tesoro Alaska Company LLC								
Kenai	13,000	0	0	11,500	0	0	0	0
Arkansas	**20,000**	**8,750**	**0**	**35,000**	**0**	**0**	**21,000**	**13,500**
Cross Oil Refining & Marketing Inc								
Smackover	0	0	0	0	0	0	0	5,500
Lion Oil Co								
El Dorado	20,000	8,750	0	35,000	0	0	21,000	8,000
California	**424,200**	**280,500**	**194,800**	**335,100**	**123,100**	**0**	**704,100**	**70,200**
Chevron USA Inc								
El Segundo	62,500	0	41,500	51,500	14,000	0	74,000	0
Richmond	57,600	64,800	96,000	64,800	0	0	65,000	34,000
Kern Oil & Refining Co								
Bakersfield	5,000	0	0	0	9,000	0	0	0
Lunday Thagard Co								
South Gate	0	0	0	0	0	0	0	0
Phillips 66 Company								
Rodeo	27,500	0	0	35,000	0	0	0	0
Wilmington	50,800	0	12,900	32,000	0	0	55,000	0
San Joaquin Refining Co Inc								
Bakersfield	0	0	0	0	3,600	0	1,800	0
Santa Maria Refining Company								
Santa Maria	0	0	0	0	0	0	0	0
Shell Oil Products US								
Martinez	27,500	92,500	0	0	49,000	0	84,500	14,500
Tesoro Refining & Marketing Co								
Carson	45,000	37,000	10,000	22,000	0	0	95,000	0
Martinez	27,000	43,000	0	40,000	19,500	0	69,500	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
California	**1,892,471**	**0**	**2,014,400**	**0**	**1,199,756**	**459,300**	**52,000**	**5,000**	**0**
Tesoro Refining & Marketing Co									
Wilmington	97,500	0	107,000	0	65,000	42,000	0	0	0
Torrance Refining Co LLC									
Torrance	160,000	0	166,200	0	102,300	62,000	0	0	0
Ultramar Inc									
Wilmington	85,000	0	87,000	0	46,000	28,800	0	0	0
Valero Refining Co California									
Benicia	145,000	0	149,000	0	85,500	0	29,500	0	0
Wilmington	6,300	0	6,500	0	5,000	0	0	0	0
Colorado	**103,000**	**0**	**111,500**	**0**	**33,500**	**0**	**0**	**0**	**0**
Suncor Energy (USA) Inc									
Commerce City	103,000	0	111,500	0	33,500	0	0	0	0
Delaware	**182,200**	**0**	**190,200**	**0**	**104,600**	**0**	**54,500**	**0**	**0**
Delaware City Refining Co LLC									
Delaware City	182,200	0	190,200	0	104,600	0	54,500	0	0
Hawaii	**147,500**	**0**	**152,000**	**0**	**71,000**	**0**	**0**	**11,000**	**0**
Island Energy Services Downstream									
Honolulu	54,000	0	57,000	0	31,000	0	0	0	0
Par Hawaii Refining LLC									
Kapolei	93,500	0	95,000	0	40,000	0	0	11,000	0
Illinois	**976,865**	**22,000**	**1,051,700**	**23,000**	**475,400**	**211,700**	**0**	**0**	**0**
ExxonMobil Refining & Supply Co									
Joliet	238,600	0	275,000	0	126,700	57,500	0	0	0
Marathon Petroleum Co LP									
Robinson	245,000	0	258,000	0	75,000	30,500	0	0	0
PDV Midwest Refining LLC									
Lemont	179,265	0	188,700	0	77,200	40,700	0	0	0
WRB Refining LP									
Wood River	314,000	22,000	330,000	23,000	196,500	83,000	0	0	0
Indiana	**442,300**	**0**	**460,800**	**0**	**277,900**	**102,000**	**0**	**0**	**0**
BP Products North America Inc									
Whiting	413,500	0	430,000	0	263,900	102,000	0	0	0
Countrymark Cooperative Inc									
Mount Vernon	28,800	0	30,800	0	14,000	0	0	0	0
Kansas	**389,920**	**0**	**400,500**	**0**	**156,000**	**74,000**	**0**	**0**	**0**
CHS McPherson Refinery Inc									
McPherson	97,920	0	102,500	0	46,000	30,000	0	0	0
Coffeyville Resources Rfg & Mktg									
Coffeyville	132,000	0	136,000	0	46,000	25,000	0	0	0
HollyFrontier El Dorado Refining LLC									
El Dorado	160,000	0	162,000	0	64,000	19,000	0	0	0
Kentucky	**282,500**	**0**	**298,300**	**0**	**130,000**	**0**	**0**	**0**	**0**
Continental Refining Company LLC									
Somerset	5,500	0	6,300	0	0	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
California	**718,500**	**14,600**	**197,700**	**283,400**	**0**	**197,800**	**210,700**	**56,000**
Tesoro Refining & Marketing Co								
Wilmington	35,000	0	10,000	23,000	0	0	33,000	0
Torrance Refining Co LLC								
Torrance	90,000	13,600	28,300	0	0	0	20,000	0
Ultramar Inc								
Wilmington	56,300	0	0	0	0	18,000	0	0
Valero Refining Co California								
Benicia	75,300	0	34,000	0	0	0	37,200	0
Wilmington	0	0	0	0	0	0	0	0
Colorado	**30,000**	**500**	**0**	**0**	**0**	**21,900**	**0**	**0**
Suncor Energy (USA) Inc								
Commerce City	30,000	500	0	0	0	21,900	0	0
Delaware	**82,000**	**4,000**	**0**	**22,300**	**0**	**43,800**	**0**	**0**
Delaware City Refining Co LLC								
Delaware City	82,000	4,000	0	22,300	0	43,800	0	0
Hawaii	**22,000**	**0**	**2,000**	**18,000**	**0**	**13,500**	**0**	**0**
Island Energy Services Downstream								
Honolulu	22,000	0	0	0	0	0	0	0
Par Hawaii Refining LLC								
Kapolei	0	0	2,000	18,000	0	13,500	0	0
Illinois	**324,300**	**0**	**0**	**99,460**	**0**	**214,300**	**35,200**	**0**
ExxonMobil Refining & Supply Co								
Joliet	99,300	0	0	0	0	52,600	0	0
Marathon Petroleum Co LP								
Robinson	54,500	0	0	43,500	0	82,000	0	0
PDV Midwest Refining LLC								
Lemont	69,500	0	0	0	0	0	35,200	0
WRB Refining LP								
Wood River	101,000	0	0	55,960	0	79,700	0	0
Indiana	**183,600**	**7,200**	**0**	**0**	**0**	**6,500**	**65,000**	**0**
BP Products North America Inc								
Whiting	175,000	7,000	0	0	0	0	65,000	0
Countrymark Cooperative Inc								
Mount Vernon	8,600	200	0	0	0	6,500	0	0
Kansas	**104,000**	**500**	**0**	**43,000**	**0**	**58,100**	**23,500**	**0**
CHS McPherson Refinery Inc								
McPherson	24,000	500	0	43,000	0	24,600	0	0
Coffeyville Resources Rfg & Mktg								
Coffeyville	36,000	0	0	0	0	26,000	0	0
HollyFrontier El Dorado Refining LLC								
El Dorado	44,000	0	0	0	0	7,500	23,500	0
Kentucky	**104,000**	**0**	**0**	**0**	**0**	**22,000**	**34,300**	**13,000**
Continental Refining Company LLC								
Somerset	0	0	0	0	0	0	1,300	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
California	**424,200**	**280,500**	**194,800**	**335,100**	**123,100**	**0**	**704,100**	**70,200**
Tesoro Refining & Marketing Co								
Wilmington	34,000	0	19,000	10,000	23,000	0	45,000	0
Torrance Refining Co LLC								
Torrance	25,300	0	0	19,800	0	0	108,300	0
Ultramar Inc								
Wilmington	32,000	0	0	45,000	0	0	67,000	0
Valero Refining Co California								
Benicia	30,000	43,200	15,400	15,000	5,000	0	39,000	21,700
Wilmington	0	0	0	0	0	0	0	0
Colorado	**22,000**	**0**	**12,100**	**23,330**	**0**	**0**	**30,000**	**0**
Suncor Energy (USA) Inc								
Commerce City	22,000	0	12,100	23,330	0	0	30,000	0
Delaware	**50,000**	**33,000**	**16,500**	**52,000**	**0**	**0**	**0**	**0**
Delaware City Refining Co LLC								
Delaware City	50,000	33,000	16,500	52,000	0	0	0	0
Hawaii	**13,000**	**0**	**0**	**0**	**0**	**0**	**0**	**3,500**
Island Energy Services Downstream								
Honolulu	0	0	0	0	0	0	0	3,500
Par Hawaii Refining LLC								
Kapolei	13,000	0	0	0	0	0	0	0
Illinois	**439,400**	**115,500**	**66,950**	**328,300**	**0**	**0**	**0**	**6,800**
ExxonMobil Refining & Supply Co								
Joliet	169,500	0	0	78,000	0	0	0	0
Marathon Petroleum Co LP								
Robinson	74,500	41,500	0	79,500	0	0	0	0
PDV Midwest Refining LLC								
Lemont	111,100	0	13,700	94,500	0	0	0	6,800
WRB Refining LP								
Wood River	84,300	74,000	53,250	76,300	0	0	0	0
Indiana	**78,000**	**6,500**	**46,000**	**134,300**	**0**	**0**	**187,000**	**0**
BP Products North America Inc								
Whiting	69,000	0	46,000	120,800	0	0	187,000	0
Countrymark Cooperative Inc								
Mount Vernon	9,000	6,500	0	13,500	0	0	0	0
Kansas	**125,000**	**49,000**	**21,000**	**127,200**	**27,000**	**0**	**50,000**	**0**
CHS McPherson Refinery Inc								
McPherson	39,000	0	0	43,200	0	0	0	0
Coffeyville Resources Rfg & Mktg								
Coffeyville	36,000	22,000	9,000	30,000	27,000	0	0	0
HollyFrontier El Dorado Refining LLC								
El Dorado	50,000	27,000	12,000	54,000	0	0	50,000	0
Kentucky	**57,800**	**0**	**31,000**	**78,500**	**0**	**0**	**107,000**	**0**
Continental Refining Company LLC								
Somerset	1,300	0	0	1,000	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Kentucky	**282,500**	**0**	**298,300**	**0**	**130,000**	**0**	**0**	**0**	**0**
Marathon Petroleum Co LP									
Catlettsburg	277,000	0	292,000	0	130,000	0	0	0	0
Louisiana	**3,302,507**	**0**	**3,514,230**	**0**	**1,752,076**	**558,500**	**0**	**0**	**10,600**
Alon Refining Krotz Springs Inc									
Krotz Springs	80,000	0	83,000	0	36,200	0	0	0	0
Calcasieu Refining Co									
Lake Charles	125,000	0	126,000	0	36,000	0	0	0	0
Calumet Lubricants Co LP									
Cotton Valley	13,020	0	14,000	0	0	0	0	0	0
Princeton	8,300	0	8,655	0	7,000	0	0	0	0
Calumet Shreveport LLC									
Shreveport	57,000	0	60,000	0	28,000	0	0	0	0
Chalmette Refining LLC									
Chalmette	190,000	0	197,000	0	169,000	30,000	0	0	0
Citgo Petroleum Corp									
Lake Charles	418,000	0	440,000	0	230,000	110,000	0	0	0
Excel Paralubes									
Westlake	0	0	0	0	0	0	0	0	0
ExxonMobil Refining & Supply Co									
Baton Rouge	502,500	0	523,200	0	246,100	123,500	0	0	0
Marathon Petroleum Co LP									
Garyville	556,000	0	586,000	0	289,000	94,500	0	0	0
Phillips 66 Company									
Belle Chasse	249,700	0	262,875	0	104,176	26,000	0	0	0
Westlake	260,000	0	273,000	0	132,000	60,000	0	0	10,600
Placid Refining Co									
Port Allen	75,000	0	82,500	0	27,000	0	0	0	0
Shell Oil Products US									
Convent	209,787	0	260,000	0	116,300	0	0	0	0
Norco	218,200	0	250,000	0	91,300	28,500	0	0	0
Valero Refining - Meraux LLC									
Meraux	125,000	0	128,000	0	60,000	0	0	0	0
Valero Refining New Orleans LLC									
Norco	215,000	0	220,000	0	180,000	86,000	0	0	0
Michigan	**139,000**	**0**	**147,000**	**0**	**88,000**	**35,000**	**0**	**0**	**0**
Marathon Petroleum Co LP									
Detroit	139,000	0	147,000	0	88,000	35,000	0	0	0
Minnesota	**408,515**	**0**	**442,700**	**0**	**284,600**	**72,000**	**0**	**0**	**0**
Flint Hills Resources LP									
Saint Paul	310,000	0	339,000	0	234,000	72,000	0	0	0
St Paul Park Refining Co LLC									
Saint Paul	98,515	0	103,700	0	50,600	0	0	0	0
Mississippi	**389,500**	**0**	**409,800**	**0**	**338,875**	**105,000**	**0**	**0**	**0**
Chevron USA Inc									
Pascagoula	352,000	0	370,000	0	314,000	105,000	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
Kentucky	**104,000**	**0**	**0**	**0**	**0**	**22,000**	**34,300**	**13,000**
Marathon Petroleum Co LP								
Catlettsburg	104,000	0	0	0	0	22,000	33,000	13,000
Louisiana	**1,138,200**	**5,500**	**55,000**	**391,900**	**54,500**	**507,690**	**142,200**	**71,000**
Alon Refining Krotz Springs Inc								
Krotz Springs	34,000	0	0	0	0	0	13,000	0
Calcasieu Refining Co								
Lake Charles	0	0	0	0	0	0	0	0
Calumet Lubricants Co LP								
Cotton Valley	0	0	0	0	0	0	0	0
Princeton	0	0	0	0	0	0	0	0
Calumet Shreveport LLC								
Shreveport	0	0	0	0	0	12,000	0	0
Chalmette Refining LLC								
Chalmette	75,600	0	0	0	0	22,700	30,000	0
Citgo Petroleum Corp								
Lake Charles	148,000	3,000	0	51,200	0	60,000	53,200	0
Excel Paralubes								
Westlake	0	0	0	43,000	0	0	0	0
ExxonMobil Refining & Supply Co								
Baton Rouge	244,500	0	27,000	0	0	77,000	0	0
Marathon Petroleum Co LP								
Garyville	145,000	0	0	120,000	0	135,500	0	38,000
Phillips 66 Company								
Belle Chasse	105,000	2,000	0	0	0	48,490	0	0
Westlake	50,000	0	0	0	0	44,000	0	0
Placid Refining Co								
Port Allen	25,000	500	0	0	0	11,000	0	11,000
Shell Oil Products US								
Convent	92,300	0	0	0	54,500	0	46,000	0
Norco	118,800	0	0	44,000	0	40,000	0	0
Valero Refining - Meraux LLC								
Meraux	0	0	0	48,700	0	32,000	0	22,000
Valero Refining New Orleans LLC								
Norco	100,000	0	28,000	85,000	0	25,000	0	0
Michigan	**41,000**	**0**	**0**	**0**	**0**	**21,500**	**0**	**0**
Marathon Petroleum Co LP								
Detroit	41,000	0	0	0	0	21,500	0	0
Minnesota	**122,500**	**2,500**	**67,000**	**0**	**0**	**37,000**	**38,700**	**4,500**
Flint Hills Resources LP								
Saint Paul	92,000	0	67,000	0	0	37,000	13,800	0
St Paul Park Refining Co LLC								
Saint Paul	30,500	2,500	0	0	0	0	24,900	4,500
Mississippi	**88,000**	**0**	**0**	**117,500**	**0**	**61,600**	**34,000**	**0**
Chevron USA Inc								
Pascagoula	88,000	0	0	117,500	0	61,600	34,000	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
Kentucky	**57,800**	**0**	**31,000**	**78,500**	**0**	**0**	**107,000**	**0**
Marathon Petroleum Co LP								
Catlettsburg	56,500	0	31,000	77,500	0	0	107,000	0
Louisiana	**715,940**	**799,590**	**242,000**	**925,100**	**44,000**	**12,500**	**305,700**	**25,000**
Alon Refining Krotz Springs Inc								
Krotz Springs	14,000	18,000	0	0	0	0	0	0
Calcasieu Refining Co								
Lake Charles	0	0	0	0	0	0	0	0
Calumet Lubricants Co LP								
Cotton Valley	6,200	0	0	0	0	0	0	0
Princeton	0	0	0	0	0	0	0	0
Calumet Shreveport LLC								
Shreveport	16,000	0	0	14,000	0	0	21,100	1,200
Chalmette Refining LLC								
Chalmette	42,000	46,000	0	35,000	0	0	65,600	0
Citgo Petroleum Corp								
Lake Charles	121,000	85,400	68,000	100,000	0	0	0	23,800
Excel Paralubes								
Westlake	0	0	0	0	0	0	0	0
ExxonMobil Refining & Supply Co								
Baton Rouge	76,000	242,000	0	202,500	0	0	0	0
Marathon Petroleum Co LP								
Garyville	112,000	116,500	81,000	166,500	0	0	106,000	0
Phillips 66 Company								
Belle Chasse	50,540	71,190	0	74,800	0	0	0	0
Westlake	50,000	63,500	24,000	55,000	0	12,500	49,000	0
Placid Refining Co								
Port Allen	11,000	20,000	0	25,000	0	0	0	0
Shell Oil Products US								
Convent	96,000	0	42,000	76,300	0	0	40,000	0
Norco	38,500	77,000	0	70,000	0	0	0	0
Valero Refining - Meraux LLC								
Meraux	37,700	0	15,000	40,000	0	0	0	0
Valero Refining New Orleans LLC								
Norco	45,000	60,000	12,000	66,000	44,000	0	24,000	0
Michigan	**34,000**	**0**	**7,000**	**46,000**	**0**	**0**	**44,500**	**0**
Marathon Petroleum Co LP								
Detroit	34,000	0	7,000	46,000	0	0	44,500	0
Minnesota	**89,700**	**51,200**	**53,600**	**95,630**	**9,000**	**0**	**145,900**	**0**
Flint Hills Resources LP								
Saint Paul	51,300	51,200	43,500	62,000	9,000	0	115,000	0
St Paul Park Refining Co LLC								
Saint Paul	38,400	0	10,100	33,630	0	0	30,900	0
Mississippi	**57,300**	**0**	**30,000**	**37,200**	**0**	**0**	**104,000**	**70,800**
Chevron USA Inc								
Pascagoula	57,300	0	30,000	35,000	0	0	104,000	50,000

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Mississippi	**389,500**	**0**	**409,800**	**0**	**338,875**	**105,000**	**0**	**0**	**0**
Ergon Refining Inc									
Vicksburg	26,500	0	27,300	0	18,000	0	0	0	0
Hunt Southland Refining Co									
Sandersville	11,000	0	12,500	0	6,875	0	0	0	0
Montana	**205,100**	**9,600**	**212,400**	**10,000**	**126,100**	**36,700**	**10,400**	**0**	**0**
Calumet Montana Refining LLC									
Great Falls	24,000	9,600	25,000	10,000	20,000	0	0	0	0
Cenex Harvest States Coop									
Laurel	59,600	0	61,100	0	29,000	15,000	0	0	0
ExxonMobil Refining & Supply Co									
Billings	61,500	0	62,900	0	32,300	0	10,400	0	0
Phillips 66 Company									
Billings	60,000	0	63,400	0	44,800	21,700	0	0	0
Nevada	**2,000**	**0**	**5,000**	**0**	**2,750**	**0**	**0**	**0**	**0**
Foreland Refining Corp									
Ely	2,000	0	5,000	0	2,750	0	0	0	0
New Jersey	**418,000**	**0**	**430,800**	**0**	**165,000**	**27,000**	**0**	**0**	**0**
Paulsboro Refining Co LLC									
Paulsboro	160,000	0	166,000	0	90,000	27,000	0	0	0
Phillips 66 Company									
Linden	258,000	0	264,800	0	75,000	0	0	0	0
New Mexico	**136,600**	**0**	**151,100**	**0**	**33,800**	**0**	**0**	**0**	**0**
HollyFrontier Navajo Refining LLC									
Artesia	110,000	0	124,000	0	33,800	0	0	0	0
Western Refining Southwest Inc									
Gallup	26,600	0	27,100	0	0	0	0	0	0
North Dakota	**93,300**	**0**	**94,600**	**0**	**0**	**0**	**0**	**0**	**0**
Dakota Prairie Refining LLC									
Dickinson	19,500	0	20,000	0	0	0	0	0	0
Tesoro Refining & Marketing Co									
Mandan	73,800	0	74,600	0	0	0	0	0	0
Ohio	**597,800**	**0**	**633,000**	**0**	**159,500**	**58,000**	**0**	**0**	**0**
BP-Husky Refining LLC									
Toledo	155,000	0	160,000	0	71,500	35,000	0	0	0
Lima Refining Company									
Lima	177,000	0	185,000	0	53,000	23,000	0	0	0
Marathon Petroleum Co LP									
Canton	93,000	0	100,000	0	35,000	0	0	0	0
Toledo Refining Co LLC									
Toledo	172,800	0	188,000	0	0	0	0	0	0
Oklahoma	**521,800**	**0**	**551,664**	**0**	**220,342**	**38,385**	**0**	**0**	**0**
HollyFrontier Tulsa Refining LLC									
Tulsa East	70,300	0	75,500	0	27,000	0	0	0	0
Tulsa West	85,000	0	91,020	0	32,000	11,000	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
Mississippi	**88,000**	**0**	**0**	**117,500**	**0**	**61,600**	**34,000**	**0**
Ergon Refining Inc								
Vicksburg	0	0	0	0	0	0	0	0
Hunt Southland Refining Co								
Sandersville	0	0	0	0	0	0	0	0
Montana	**64,660**	**990**	**6,200**	**24,000**	**0**	**12,500**	**27,050**	**0**
Calumet Montana Refining LLC								
Great Falls	3,000	0	0	24,000	0	0	1,000	0
Cenex Harvest States Coop								
Laurel	16,500	0	0	0	0	12,500	0	0
ExxonMobil Refining & Supply Co								
Billings	23,660	0	6,200	0	0	0	12,500	0
Phillips 66 Company								
Billings	21,500	990	0	0	0	0	13,550	0
Nevada	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Foreland Refining Corp								
Ely	0	0	0	0	0	0	0	0
New Jersey	**200,000**	**0**	**0**	**0**	**0**	**66,000**	**0**	**22,000**
Paulsboro Refining Co LLC								
Paulsboro	55,000	0	0	0	0	32,000	0	0
Phillips 66 Company								
Linden	145,000	0	0	0	0	34,000	0	22,000
New Mexico	**38,500**	**3,000**	**0**	**18,000**	**0**	**24,000**	**7,300**	**18,000**
HollyFrontier Navajo Refining LLC								
Artesia	30,000	0	0	18,000	0	24,000	0	18,000
Western Refining Southwest Inc								
Gallup	8,500	3,000	0	0	0	0	7,300	0
North Dakota	**27,000**	**3,600**	**0**	**0**	**0**	**0**	**12,500**	**0**
Dakota Prairie Refining LLC								
Dickinson	0	0	0	0	0	0	0	0
Tesoro Refining & Marketing Co								
Mandan	27,000	3,600	0	0	0	0	12,500	0
Ohio	**208,300**	**0**	**52,000**	**57,000**	**0**	**63,500**	**106,800**	**0**
BP-Husky Refining LLC								
Toledo	55,000	0	0	31,000	0	42,000	0	0
Lima Refining Company								
Lima	45,300	0	0	26,000	0	0	55,000	0
Marathon Petroleum Co LP								
Canton	26,000	0	0	0	0	21,500	0	0
Toledo Refining Co LLC								
Toledo	82,000	0	52,000	0	0	0	51,800	0
Oklahoma	**154,112**	**2,000**	**14,000**	**18,200**	**0**	**64,200**	**53,593**	**4,850**
HollyFrontier Tulsa Refining LLC								
Tulsa East	25,000	2,000	0	0	0	25,000	0	0
Tulsa West	0	0	0	0	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
Mississippi	**57,300**	**0**	**30,000**	**37,200**	**0**	**0**	**104,000**	**70,800**
Ergon Refining Inc								
Vicksburg	0	0	0	2,200	0	0	0	20,800
Hunt Southland Refining Co								
Sandersville	0	0	0	0	0	0	0	0
Montana	**46,950**	**26,500**	**19,400**	**46,750**	**25,000**	**0**	**45,760**	**7,900**
Calumet Montana Refining LLC								
Great Falls	2,500	0	6,000	6,000	0	0	0	0
Cenex Harvest States Coop								
Laurel	17,000	0	0	0	25,000	0	20,000	0
ExxonMobil Refining & Supply Co								
Billings	13,900	20,500	7,600	11,000	0	0	0	7,900
Phillips 66 Company								
Billings	13,550	6,000	5,800	29,750	0	0	25,760	0
Nevada	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Foreland Refining Corp								
Ely	0	0	0	0	0	0	0	0
New Jersey	**97,500**	**37,000**	**29,100**	**154,000**	**17,500**	**0**	**0**	**0**
Paulsboro Refining Co LLC								
Paulsboro	32,000	37,000	29,100	46,000	0	0	0	0
Phillips 66 Company								
Linden	65,500	0	0	108,000	17,500	0	0	0
New Mexico	**49,600**	**0**	**15,000**	**47,500**	**0**	**0**	**18,000**	**0**
HollyFrontier Navajo Refining LLC								
Artesia	42,000	0	15,000	43,000	0	0	18,000	0
Western Refining Southwest Inc								
Gallup	7,600	0	0	4,500	0	0	0	0
North Dakota	**13,600**	**0**	**0**	**31,800**	**6,660**	**0**	**0**	**0**
Dakota Prairie Refining LLC								
Dickinson	0	0	0	8,000	0	0	0	0
Tesoro Refining & Marketing Co								
Mandan	13,600	0	0	23,800	6,660	0	0	0
Ohio	**181,400**	**107,000**	**69,500**	**82,000**	**0**	**0**	**78,000**	**0**
BP-Husky Refining LLC								
Toledo	40,000	0	0	22,000	0	0	51,000	0
Lima Refining Company								
Lima	63,000	35,000	24,000	36,000	0	0	0	0
Marathon Petroleum Co LP								
Canton	32,500	0	13,500	24,000	0	0	27,000	0
Toledo Refining Co LLC								
Toledo	45,900	72,000	32,000	0	0	0	0	0
Oklahoma	**158,411**	**102,987**	**18,500**	**134,581**	**37,590**	**0**	**58,338**	**36,032**
HollyFrontier Tulsa Refining LLC								
Tulsa East	25,000	29,000	0	45,000	0	0	0	0
Tulsa West	28,000	0	0	0	0	0	0	21,600

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Oklahoma	**521,800**	**0**	**551,664**	**0**	**220,342**	**38,385**	**0**	**0**	**0**
Phillips 66 Company									
Ponca City	206,000	0	219,144	0	89,042	27,385	0	0	0
Valero Refining Co Oklahoma									
Ardmore	86,000	0	88,000	0	32,000	0	0	0	0
Wynnewood Refining Co									
Wynnewood	74,500	0	78,000	0	40,300	0	0	0	0
Pennsylvania	**601,000**	**0**	**639,800**	**0**	**276,200**	**0**	**0**	**0**	**0**
American Refining Group Inc									
Bradford	11,000	0	11,800	0	0	0	0	0	0
Monroe Energy LLC									
Trainer	190,000	0	208,000	0	73,000	0	0	0	0
Philadelphia Energy Solutions									
Philadelphia	335,000	0	350,000	0	163,200	0	0	0	0
United Refining Co									
Warren	65,000	0	70,000	0	40,000	0	0	0	0
Tennessee	**180,000**	**0**	**185,000**	**0**	**0**	**0**	**0**	**0**	**0**
Valero Ref Company Tennessee LLC									
Memphis	180,000	0	185,000	0	0	0	0	0	0
Texas	**5,701,414**	**0**	**6,107,300**	**0**	**2,615,200**	**901,080**	**42,000**	**0**	**0**
Alon USA Energy Inc									
Big Spring	73,000	0	74,000	0	24,000	0	0	0	0
Buckeye Texas Processing LLC									
Corpus Christi	60,000	0	65,000	0	0	0	0	0	0
Calumet San Antonio Refining LLC									
San Antonio	20,000	0	21,000	0	0	0	0	0	0
Citgo Refining & Chemical Inc									
Corpus Christi	157,500	0	163,500	0	85,300	44,900	0	0	0
Deer Park Refining LTD Partnership									
Deer Park	275,000	0	340,000	0	180,000	92,000	0	0	0
Delek Refining LTD									
Tyler	75,000	0	76,000	0	28,000	7,500	0	0	0
Diamond Shamrock Refining Co LP									
Sunray	195,000	0	200,000	0	50,000	0	0	0	0
Three Rivers	89,000	0	91,000	0	33,500	0	0	0	0
Equistar Chemicals LP									
Channelview	0	0	0	0	0	0	0	0	0
ExxonMobil Refining & Supply Co									
Baytown	560,500	0	584,000	0	297,000	54,000	42,000	0	0
Beaumont	365,644	0	380,900	0	148,800	48,000	0	0	0
Flint Hills Resources LP									
Corpus Christi	319,000	0	330,000	0	87,500	15,500	0	0	0
Houston Refining LP									
Houston	263,776	0	296,300	0	196,500	100,000	0	0	0
Kinder Morgan Crude & Condensate									
Galena Park	84,000	0	100,000	0	0	0	0	0	0
Lazarus Energy LLC									
Nixon	13,765	0	15,000	0	0	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
Oklahoma	**154,112**	**2,000**	**14,000**	**18,200**	**0**	**64,200**	**53,593**	**4,850**
Phillips 66 Company								
Ponca City	76,912	0	0	0	0	0	53,593	0
Valero Refining Co Oklahoma								
Ardmore	30,000	0	14,000	0	0	20,500	0	0
Wynnewood Refining Co								
Wynnewood	22,200	0	0	18,200	0	18,700	0	4,850
Pennsylvania	**215,500**	**1,000**	**23,000**	**0**	**0**	**50,000**	**102,200**	**0**
American Refining Group Inc								
Bradford	0	0	0	0	0	0	2,200	0
Monroe Energy LLC								
Trainer	53,000	0	23,000	0	0	50,000	0	0
Philadelphia Energy Solutions								
Philadelphia	137,500	0	0	0	0	0	86,000	0
United Refining Co								
Warren	25,000	1,000	0	0	0	0	14,000	0
Tennessee	**70,000**	**0**	**26,500**	**0**	**0**	**36,000**	**0**	**0**
Valero Ref Company Tennessee LLC								
Memphis	70,000	0	26,500	0	0	36,000	0	0
Texas	**1,791,200**	**25,000**	**250,300**	**409,900**	**83,500**	**975,700**	**115,280**	**166,000**
Alon USA Energy Inc								
Big Spring	25,000	0	0	0	0	21,500	0	10,000
Buckeye Texas Processing LLC								
Corpus Christi	0	0	0	0	0	0	0	0
Calumet San Antonio Refining LLC								
San Antonio	0	0	0	0	0	0	6,000	0
Citgo Refining & Chemical Inc								
Corpus Christi	83,800	0	0	0	0	51,500	0	0
Deer Park Refining LTD Partnership								
Deer Park	74,000	5,000	0	60,000	0	44,000	24,500	0
Delek Refining LTD								
Tyler	20,250	0	0	0	0	13,000	4,500	0
Diamond Shamrock Refining Co LP								
Sunray	54,500	0	0	27,000	0	29,000	18,000	14,500
Three Rivers	23,500	0	0	28,000	0	23,500	10,000	10,500
Equistar Chemicals LP								
Channelview	0	0	0	0	0	0	0	0
ExxonMobil Refining & Supply Co								
Baytown	220,000	8,000	29,900	0	0	127,500	0	47,000
Beaumont	117,700	0	70,000	0	0	146,000	0	0
Flint Hills Resources LP								
Corpus Christi	110,000	0	0	14,100	0	0	0	0
Houston Refining LP								
Houston	110,000	0	0	0	0	0	0	0
Kinder Morgan Crude & Condensate								
Galena Park	0	0	0	0	0	0	0	0
Lazarus Energy LLC								
Nixon	0	0	0	0	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
Oklahoma	**158,411**	**102,987**	**18,500**	**134,581**	**37,590**	**0**	**58,338**	**36,032**
Phillips 66 Company								
Ponca City	51,511	58,987	18,500	31,981	37,590	0	23,888	14,432
Valero Refining Co Oklahoma								
Ardmore	27,000	0	0	32,000	0	0	34,450	0
Wynnewood Refining Co								
Wynnewood	26,900	15,000	0	25,600	0	0	0	0
Pennsylvania	**185,600**	**104,000**	**28,300**	**70,300**	**157,000**	**0**	**0**	**0**
American Refining Group Inc								
Bradford	3,600	0	0	0	0	0	0	0
Monroe Energy LLC								
Trainer	80,000	34,000	23,300	53,300	0	0	0	0
Philadelphia Energy Solutions								
Philadelphia	78,000	65,000	0	0	157,000	0	0	0
United Refining Co								
Warren	24,000	5,000	5,000	17,000	0	0	0	0
Tennessee	**52,000**	**39,000**	**0**	**38,000**	**0**	**0**	**0**	**0**
Valero Ref Company Tennessee LLC								
Memphis	52,000	39,000	0	38,000	0	0	0	0
Texas	**1,408,490**	**1,058,100**	**628,700**	**1,371,125**	**16,000**	**184,000**	**921,240**	**145,700**
Alon USA Energy Inc								
Big Spring	25,500	0	5,000	23,000	0	0	6,500	0
Buckeye Texas Processing LLC								
Corpus Christi	0	0	0	0	0	0	0	0
Calumet San Antonio Refining LLC								
San Antonio	6,000	0	0	8,000	0	0	0	0
Citgo Refining & Chemical Inc								
Corpus Christi	52,800	45,100	0	95,300	0	0	70,900	0
Deer Park Refining LTD Partnership								
Deer Park	70,000	43,000	38,000	50,000	0	0	49,500	43,000
Delek Refining LTD								
Tyler	28,000	13,000	0	36,000	0	0	0	0
Diamond Shamrock Refining Co LP								
Sunray	44,400	39,600	0	47,500	0	0	0	0
Three Rivers	24,000	0	10,000	25,000	0	0	20,000	0
Equistar Chemicals LP								
Channelview	0	0	0	0	0	0	0	0
ExxonMobil Refining & Supply Co								
Baytown	155,500	196,000	132,700	146,300	0	0	117,000	46,500
Beaumont	159,800	25,000	51,000	42,000	0	0	0	19,500
Flint Hills Resources LP								
Corpus Christi	93,800	75,000	54,000	78,000	0	0	54,000	0
Houston Refining LP								
Houston	60,500	76,000	43,500	92,175	0	0	116,100	5,200
Kinder Morgan Crude & Condensate								
Galena Park	0	0	0	0	0	0	0	0
Lazarus Energy LLC								
Nixon	0	0	0	0	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Texas	**5,701,414**	**0**	**6,107,300**	**0**	**2,615,200**	**901,080**	**42,000**	**0**	**0**
Magellan Terminal Holdings LP									
Corpus Christi	42,500	0	50,000	0	0	0	0	0	0
Marathon Petroleum Co LP									
Texas City	571,000	0	601,000	0	241,000	33,000	0	0	0
Motiva Enterprises LLC									
Port Arthur	603,000	0	635,000	0	331,800	169,000	0	0	0
Pasadena Refining Systems Inc									
Pasadena	112,229	0	115,700	0	38,000	0	0	0	0
Petromax Refining Co LLC									
Houston	25,000	0	27,500	0	0	0	0	0	0
Phillips 66 Company									
Sweeny	256,000	0	269,400	0	132,100	78,700	0	0	0
Premcor Refining Group Inc									
Port Arthur	335,000	0	415,000	0	220,000	99,600	0	0	0
South Hampton Resources Inc									
Silsbee	0	0	0	0	0	0	0	0	0
Total Petrochemicals & Refining USA									
Port Arthur	225,500	0	245,000	0	117,000	60,000	0	0	0
Valero Refining Co Texas LP									
Corpus Christi	275,000	0	282,000	0	97,000	17,000	0	0	0
Houston	199,000	0	205,000	0	38,000	0	0	0	0
Texas City	225,000	0	231,000	0	133,500	53,500	0	0	0
Western Refining Company LP									
El Paso	135,000	0	140,000	0	56,200	0	0	0	0
WRB Refining LP									
Borger	146,000	0	154,000	0	80,000	28,380	0	0	0
Utah	**196,530**	**0**	**209,100**	**0**	**34,500**	**10,000**	**0**	**0**	**0**
Big West Oil Co									
North Salt Lake	30,500	0	33,000	0	0	0	0	0	0
Chevron USA Inc									
Salt Lake City	53,200	0	56,000	0	27,500	10,000	0	0	0
HollyFrontier Woods Cross Refining LLC									
Woods Cross	39,330	0	41,400	0	0	0	0	0	0
Silver Eagle Refining									
Woods Cross	15,000	0	15,700	0	7,000	0	0	0	0
Tesoro Refining & Marketing Co									
Salt Lake City	58,500	0	63,000	0	0	0	0	0	0
Washington	**637,700**	**0**	**662,500**	**0**	**298,200**	**82,800**	**0**	**0**	**0**
BP West Coast Products LLC									
Ferndale	227,000	0	236,000	0	112,000	57,500	0	0	0
Phillips 66 Company									
Ferndale	105,000	0	110,500	0	50,700	0	0	0	0
Shell Oil Products US									
Anacortes	145,000	0	149,000	0	65,800	25,300	0	0	0
Tesoro Refining & Marketing Co									
Anacortes	120,000	0	125,000	0	50,500	0	0	0	0
US Oil & Refining Co									
Tacoma	40,700	0	42,000	0	19,200	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
Texas	**1,791,200**	**25,000**	**250,300**	**409,900**	**83,500**	**975,700**	**115,280**	**166,000**
Magellan Terminal Holdings LP								
Corpus Christi	0	0	0	0	0	0	0	0
Marathon Petroleum Co LP								
Texas City	203,500	0	78,500	0	83,500	142,500	11,000	17,000
Motiva Enterprises LLC								
Port Arthur	90,000	0	0	106,000	0	129,500	0	0
Pasadena Refining Systems Inc								
Pasadena	52,000	0	0	0	0	23,000	0	0
Petromax Refining Co LLC								
Houston	0	0	0	0	0	0	0	0
Phillips 66 Company								
Sweeny	107,700	12,000	0	0	0	40,000	0	0
Premcor Refining Group Inc								
Port Arthur	75,000	0	0	124,800	0	55,000	0	0
South Hampton Resources Inc								
Silsbee	0	0	0	0	0	1,600	0	0
Total Petrochemicals & Refining USA								
Port Arthur	80,000	0	0	0	0	43,000	0	15,500
Valero Refining Co Texas LP								
Corpus Christi	95,500	0	0	50,000	0	39,000	10,000	0
Houston	71,750	0	71,900	0	0	0	0	18,000
Texas City	86,000	0	0	0	0	18,100	0	33,500
Western Refining Company LP								
El Paso	35,000	0	0	0	0	28,000	0	0
WRB Refining LP								
Borger	56,000	0	0	0	0	0	31,280	0
Utah	**71,300**	**3,000**	**0**	**15,000**	**0**	**0**	**36,800**	**6,000**
Big West Oil Co								
North Salt Lake	12,300	0	0	0	0	0	8,500	0
Chevron USA Inc								
Salt Lake City	15,500	0	0	0	0	0	8,500	0
HollyFrontier Woods Cross Refining LLC								
Woods Cross	17,500	0	0	15,000	0	0	8,400	6,000
Silver Eagle Refining								
Woods Cross	0	0	0	0	0	0	0	0
Tesoro Refining & Marketing Co								
Salt Lake City	26,000	3,000	0	0	0	0	11,400	0
Washington	**145,700**	**3,000**	**0**	**65,000**	**0**	**115,900**	**28,500**	**24,300**
BP West Coast Products LLC								
Ferndale	0	0	0	65,000	0	65,000	0	0
Phillips 66 Company								
Ferndale	38,500	0	0	0	0	18,500	0	0
Shell Oil Products US								
Anacortes	57,900	0	0	0	0	0	21,700	0
Tesoro Refining & Marketing Co								
Anacortes	49,300	3,000	0	0	0	32,400	0	24,300
US Oil & Refining Co								
Tacoma	0	0	0	0	0	0	6,800	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
Texas	**1,408,490**	**1,058,100**	**628,700**	**1,371,125**	**16,000**	**184,000**	**921,240**	**145,700**
Magellan Terminal Holdings LP								
Corpus Christi	0	0	0	0	0	0	0	0
Marathon Petroleum Co LP								
Texas City	121,000	57,000	79,000	55,000	0	0	108,000	0
Motiva Enterprises LLC								
Port Arthur	163,150	55,000	78,000	170,800	0	0	50,000	21,000
Pasadena Refining Systems Inc								
Pasadena	23,000	40,000	0	0	16,000	0	0	0
Petromax Refining Co LLC								
Houston	0	0	0	0	0	0	0	0
Phillips 66 Company								
Sweeny	67,300	68,700	0	123,700	0	0	107,000	0
Premcor Refining Group Inc								
Port Arthur	48,700	85,000	33,000	104,600	0	0	60,000	0
South Hampton Resources Inc								
Silsbee	11,000	0	0	0	0	0	0	4,000
Total Petrochemicals & Refining USA								
Port Arthur	57,500	51,600	31,000	70,000	0	0	54,400	0
Valero Refining Co Texas LP								
Corpus Christi	64,000	60,000	11,000	63,250	0	74,000	30,000	0
Houston	9,000	33,600	16,000	0	0	0	0	0
Texas City	25,000	61,500	28,000	55,000	0	110,000	0	6,500
Western Refining Company LP								
El Paso	33,000	33,000	10,000	50,000	0	0	0	0
WRB Refining LP								
Borger	65,540	0	8,500	35,500	0	0	77,840	0
Utah	**44,900**	**8,000**	**2,900**	**49,800**	**28,800**	**0**	**0**	**7,200**
Big West Oil Co								
North Salt Lake	11,500	0	0	11,000	0	0	0	0
Chevron USA Inc								
Salt Lake City	8,500	0	0	13,300	18,000	0	0	7,200
HollyFrontier Woods Cross Refining LLC								
Woods Cross	12,500	0	2,900	0	10,800	0	0	0
Silver Eagle Refining								
Woods Cross	1,000	0	0	3,000	0	0	0	0
Tesoro Refining & Marketing Co								
Salt Lake City	11,400	8,000	0	22,500	0	0	0	0
Washington	**164,700**	**96,600**	**42,000**	**166,700**	**0**	**0**	**0**	**0**
BP West Coast Products LLC								
Ferndale	74,000	0	20,000	55,000	0	0	0	0
Phillips 66 Company								
Ferndale	19,400	22,100	0	33,400	0	0	0	0
Shell Oil Products US								
Anacortes	21,700	42,000	22,000	43,800	0	0	0	0
Tesoro Refining & Marketing Co								
Anacortes	39,200	32,500	0	26,300	0	0	0	0
US Oil & Refining Co								
Tacoma	10,400	0	0	8,200	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
West Virginia	**22,300**	**0**	**23,000**	**0**	**8,600**	**0**	**0**	**0**	**0**
Ergon West Virginia Inc									
Newell	22,300	0	23,000	0	8,600	0	0	0	0
Wisconsin	**38,000**	**0**	**50,000**	**0**	**23,500**	**0**	**0**	**0**	**0**
Superior Refining Company LLC									
Superior	38,000	0	50,000	0	23,500	0	0	0	0
Wyoming	**168,500**	**0**	**191,400**	**0**	**79,000**	**33,700**	**0**	**0**	**0**
Hermes Consolidated LLC									
New Castle	18,000	0	18,500	0	0	0	0	0	0
HollyFrontier Cheyenne Refining LLC									
Cheyenne	48,000	0	52,000	0	28,000	13,700	0	0	0
Little America Refining Co									
Evansville	24,500	0	25,500	0	0	0	0	0	0
Silver Eagle Refining									
Evanston	3,000	0	3,400	0	0	0	0	0	0
Sinclair Wyoming Refining Co									
Sinclair	75,000	0	92,000	0	51,000	20,000	0	0	0
U.S. Total	**18,566,897**	**31,600**	**19,761,494**	**33,000**	**9,076,249**	**2,837,165**	**158,900**	**16,000**	**10,600**

ED_004187A_00001878-00019

Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
West Virginia	**0**	**0**	**0**	**0**	**0**	**4,700**	**0**	**0**
Ergon West Virginia Inc								
Newell	0	0	0	0	0	4,700	0	0
Wisconsin	**11,323**	**0**	**0**	**0**	**0**	**9,300**	**0**	**0**
Superior Refining Company LLC								
Superior	11,323	0	0	0	0	9,300	0	0
Wyoming	**54,500**	**500**	**15,000**	**0**	**0**	**14,200**	**19,900**	**0**
Hermes Consolidated LLC								
New Castle	7,500	0	0	0	0	0	4,000	0
HollyFrontier Cheyenne Refining LLC								
Cheyenne	13,500	0	0	0	0	9,200	0	0
Little America Refining Co								
Evansville	11,500	500	0	0	0	5,000	0	0
Silver Eagle Refining								
Evanston	0	0	0	0	0	0	2,900	0
Sinclair Wyoming Refining Co								
Sinclair	22,000	0	15,000	0	0	0	13,000	0
U.S. Total	**6,031,195**	**76,890**	**708,700**	**1,615,660**	**138,000**	**2,685,790**	**1,115,523**	**393,050**

ED_004187A_00001878-00020

Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2018

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
West Virginia	**7,700**	**0**	**0**	**9,500**	**0**	**0**	**6,900**	**0**
Ergon West Virginia Inc								
Newell	7,700	0	0	9,500	0	0	6,900	0
Wisconsin	**12,500**	**12,500**	**8,000**	**7,500**	**0**	**0**	**0**	**0**
Superior Refining Company LLC								
Superior	12,500	12,500	8,000	7,500	0	0	0	0
Wyoming	**46,900**	**16,500**	**14,000**	**53,000**	**0**	**0**	**20,000**	**0**
Hermes Consolidated LLC								
New Castle	4,000	0	0	6,000	0	0	0	0
HollyFrontier Cheyenne Refining LLC								
Cheyenne	10,000	10,000	0	18,000	0	0	0	0
Little America Refining Co								
Evansville	7,500	6,500	0	10,500	0	0	0	0
Silver Eagle Refining								
Evanston	3,900	0	0	0	0	0	0	0
Sinclair Wyoming Refining Co								
Sinclair	21,500	0	14,000	18,500	0	0	20,000	0
U.S. Total	**4,649,691**	**2,952,227**	**1,616,850**	**4,521,716**	**515,650**	**196,500**	**2,857,938**	**386,632**

Note: Refer to Table 5 for corporate ownership information. Some names of previously independent companies have been preserved by acquiring companies.

Source: Energy Information Administration (EIA), Form EIA-820, "Annual Refinery Report."

ED_004187A_00001878-00021

Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Alabama	**141,675**	**0**	**150,500**	**0**	**47,000**	**32,000**	**0**	**0**	**0**
Goodway Refining LLC									
Atmore	4,100	0	5,000	0	0	0	0	0	0
Hunt Refining Co									
Tuscaloosa	46,000	0	50,000	0	18,000	32,000	0	0	0
Shell Chemical LP									
Saraland	91,575	0	95,500	0	29,000	0	0	0	0
Alaska	**164,200**	**0**	**178,500**	**0**	**26,000**	**0**	**0**	**0**	**0**
BP Exploration Alaska Inc									
Prudhoe Bay	6,500	0	8,000	0	0	0	0	0	0
ConocoPhillips Alaska Inc									
Prudhoe Bay	15,000	0	16,000	0	0	0	0	0	0
Petro Star Inc									
North Pole	19,700	0	22,500	0	0	0	0	0	0
Valdez	55,000	0	60,000	0	0	0	0	0	0
Tesoro Alaska Company LLC									
Kenai	68,000	0	72,000	0	26,000	0	0	0	0
Arkansas	**90,500**	**0**	**92,700**	**0**	**48,850**	**0**	**0**	**0**	**0**
Cross Oil Refining & Marketing Inc									
Smackover	7,500	0	7,700	0	3,850	0	0	0	0
Lion Oil Co									
El Dorado	83,000	0	85,000	0	45,000	0	0	0	0
California	**1,909,671**	**0**	**2,009,400**	**0**	**1,201,356**	**457,200**	**52,000**	**5,000**	**0**
Chevron USA Inc									
El Segundo	269,000	0	290,500	0	169,100	76,700	0	0	0
Richmond	245,271	0	257,200	0	123,456	0	0	0	0
Kern Oil & Refining Co									
Bakersfield	26,000	0	27,000	0	0	0	0	0	0
Lunday Thagard Co									
South Gate	8,500	0	10,000	0	5,000	0	0	0	0
Phillips 66 Company									
Rodeo	120,200	0	128,000	0	93,200	51,000	0	0	0
Wilmington	139,000	0	147,000	0	82,000	53,200	0	0	0
San Joaquin Refining Co Inc									
Bakersfield	15,000	0	25,000	0	14,300	0	0	5,000	0
Santa Maria Refining Company									
Santa Maria	9,500	0	10,000	0	10,000	0	0	0	0
Shell Oil Products US									
Martinez	156,400	0	158,000	0	102,000	25,500	22,500	0	0
Tesoro Refining & Marketing Co									
Carson	363,000	0	382,000	0	205,000	109,100	0	0	0
Martinez	161,500	0	166,000	0	158,500	50,900	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
Alabama	**0**	**0**	**0**	**20,500**	**0**	**15,300**	**22,000**	**0**
Goodway Refining LLC								
Atmore	0	0	0	0	0	0	0	0
Hunt Refining Co								
Tuscaloosa	0	0	0	20,500	0	15,300	0	0
Shell Chemical LP								
Saraland	0	0	0	0	0	0	22,000	0
Alaska	**0**	**0**	**0**	**12,500**	**0**	**13,500**	**0**	**0**
BP Exploration Alaska Inc								
Prudhoe Bay	0	0	0	0	0	0	0	0
ConocoPhillips Alaska Inc								
Prudhoe Bay	0	0	0	0	0	0	0	0
Petro Star Inc								
North Pole	0	0	0	0	0	0	0	0
Valdez	0	0	0	0	0	0	0	0
Tesoro Alaska Company LLC								
Kenai	0	0	0	12,500	0	13,500	0	0
Arkansas	**21,000**	**0**	**0**	**0**	**0**	**15,300**	**0**	**7,400**
Cross Oil Refining & Marketing Inc								
Smackover	0	0	0	0	0	0	0	0
Lion Oil Co								
El Dorado	21,000	0	0	0	0	15,300	0	7,400
California	**683,700**	**14,600**	**222,450**	**264,100**	**0**	**197,800**	**209,700**	**56,000**
Chevron USA Inc								
El Segundo	73,800	0	0	55,000	0	49,000	0	0
Richmond	90,000	0	0	103,400	0	71,300	0	56,000
Kern Oil & Refining Co								
Bakersfield	0	0	0	0	0	2,500	3,300	0
Lunday Thagard Co								
South Gate	0	0	0	0	0	0	0	0
Phillips 66 Company								
Rodeo	0	0	0	69,000	0	0	34,000	0
Wilmington	51,600	0	27,500	0	0	0	36,200	0
San Joaquin Refining Co Inc								
Bakersfield	0	0	0	0	0	0	0	0
Santa Maria Refining Company								
Santa Maria	0	0	0	0	0	0	0	0
Shell Oil Products US								
Martinez	72,000	0	42,900	0	0	31,000	0	0
Tesoro Refining & Marketing Co								
Carson	102,500	0	89,750	0	0	0	79,000	0
Martinez	72,200	1,000	0	36,700	0	26,000	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
Alabama	**40,100**	**0**	**20,500**	**30,000**	**24,000**	**0**	**10,500**	**0**
Goodway Refining LLC								
Atmore	0	0	0	0	0	0	0	0
Hunt Refining Co								
Tuscaloosa	12,100	0	2,500	0	24,000	0	10,500	0
Shell Chemical LP								
Saraland	28,000	0	18,000	30,000	0	0	0	0
Alaska	**13,000**	**0**	**0**	**11,500**	**0**	**0**	**0**	**0**
BP Exploration Alaska Inc								
Prudhoe Bay	0	0	0	0	0	0	0	0
ConocoPhillips Alaska Inc								
Prudhoe Bay	0	0	0	0	0	0	0	0
Petro Star Inc								
North Pole	0	0	0	0	0	0	0	0
Valdez	0	0	0	0	0	0	0	0
Tesoro Alaska Company LLC								
Kenai	13,000	0	0	11,500	0	0	0	0
Arkansas	**20,000**	**8,750**	**0**	**35,000**	**0**	**0**	**21,000**	**14,000**
Cross Oil Refining & Marketing Inc								
Smackover	0	0	0	0	0	0	0	6,000
Lion Oil Co								
El Dorado	20,000	8,750	0	35,000	0	0	21,000	8,000
California	**444,200**	**248,300**	**202,800**	**324,100**	**100,100**	**0**	**708,100**	**70,200**
Chevron USA Inc								
El Segundo	62,500	0	41,500	51,500	14,000	0	74,000	0
Richmond	57,600	64,800	96,000	64,800	0	0	65,000	34,000
Kern Oil & Refining Co								
Bakersfield	5,000	0	0	0	9,000	0	0	0
Lunday Thagard Co								
South Gate	0	0	0	0	0	0	0	0
Phillips 66 Company								
Rodeo	27,500	0	0	35,000	0	0	0	0
Wilmington	50,800	0	12,900	32,000	0	0	55,000	0
San Joaquin Refining Co Inc								
Bakersfield	0	0	0	0	3,600	0	1,800	0
Santa Maria Refining Company								
Santa Maria	0	0	0	0	0	0	0	0
Shell Oil Products US								
Martinez	27,500	92,500	0	0	49,000	0	84,500	14,500
Tesoro Refining & Marketing Co								
Carson	99,000	17,000	37,000	22,000	0	0	144,000	0
Martinez	27,000	30,800	0	39,000	19,500	0	69,500	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
California	**1,909,671**	**0**	**2,009,400**	**0**	**1,201,356**	**457,200**	**52,000**	**5,000**	**0**
Torrance Refining Co LLC									
Torrance	160,000	0	166,200	0	102,300	62,000	0	0	0
Ultramar Inc									
Wilmington	85,000	0	87,000	0	46,000	28,800	0	0	0
Valero Refining Co California									
Benicia	145,000	0	149,000	0	85,500	0	29,500	0	0
Wilmington	6,300	0	6,500	0	5,000	0	0	0	0
Colorado	**103,000**	**0**	**111,700**	**0**	**33,500**	**0**	**0**	**0**	**0**
Suncor Energy (USA) Inc									
Commerce City East	36,000	0	38,700	0	8,500	0	0	0	0
Commerce City West	67,000	0	73,000	0	25,000	0	0	0	0
Delaware	**182,200**	**0**	**190,200**	**0**	**104,600**	**0**	**54,500**	**0**	**0**
Delaware City Refining Co LLC									
Delaware City	182,200	0	190,200	0	104,600	0	54,500	0	0
Hawaii	**147,500**	**0**	**152,000**	**0**	**71,000**	**0**	**0**	**11,000**	**0**
Par Hawaii Refining LLC									
Kapolei	147,500	0	152,000	0	71,000	0	0	11,000	0
Illinois	**996,865**	**22,000**	**1,066,200**	**23,000**	**475,900**	**212,400**	**0**	**0**	**0**
ExxonMobil Refining & Supply Co									
Joliet	238,600	0	275,000	0	126,700	57,500	0	0	0
Marathon Petroleum Co LP									
Robinson	245,000	0	258,000	0	75,500	30,500	0	0	0
PDV Midwest Refining LLC									
Lemont	179,265	0	188,700	0	77,200	40,700	0	0	0
WRB Refining LP									
Wood River	334,000	22,000	344,500	23,000	196,500	83,700	0	0	0
Indiana	**458,800**	**0**	**470,800**	**0**	**284,000**	**102,000**	**0**	**0**	**0**
BP Products North America Inc									
Whiting	430,000	0	440,000	0	270,000	102,000	0	0	0
Countrymark Cooperative Inc									
Mount Vernon	28,800	0	30,800	0	14,000	0	0	0	0
Kansas	**393,735**	**0**	**405,400**	**0**	**157,000**	**74,000**	**0**	**0**	**0**
CHS McPherson Refinery Inc									
McPherson	99,735	0	104,400	0	46,000	30,000	0	0	0
Coffeyville Resources Rfg & Mktg									
Coffeyville	132,000	0	136,000	0	46,000	25,000	0	0	0
HollyFrontier El Dorado Refining LLC									
El Dorado	162,000	0	165,000	0	65,000	19,000	0	0	0
Kentucky	**277,000**	**5,500**	**292,000**	**6,300**	**130,000**	**0**	**0**	**0**	**0**
Continental Refining Company LLC									
Somerset	0	5,500	0	6,300	0	0	0	0	0
Marathon Petroleum Co LP									
Catlettsburg	277,000	0	292,000	0	130,000	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
California	**683,700**	**14,600**	**222,450**	**264,100**	**0**	**197,800**	**209,700**	**56,000**
Torrance Refining Co LLC								
Torrance	90,000	13,600	28,300	0	0	0	20,000	0
Ultramar Inc								
Wilmington	56,300	0	0	0	0	18,000	0	0
Valero Refining Co California								
Benicia	75,300	0	34,000	0	0	0	37,200	0
Wilmington	0	0	0	0	0	0	0	0
Colorado	**30,000**	**500**	**0**	**0**	**0**	**21,900**	**0**	**0**
Suncor Energy (USA) Inc								
Commerce City East	9,000	500	0	0	0	11,000	0	0
Commerce City West	21,000	0	0	0	0	10,900	0	0
Delaware	**82,000**	**4,000**	**0**	**22,300**	**0**	**43,800**	**0**	**0**
Delaware City Refining Co LLC								
Delaware City	82,000	4,000	0	22,300	0	43,800	0	0
Hawaii	**0**	**0**	**2,000**	**18,000**	**0**	**13,500**	**0**	**0**
Par Hawaii Refining LLC								
Kapolei	0	0	2,000	18,000	0	13,500	0	0
Illinois	**324,300**	**0**	**0**	**100,700**	**0**	**213,800**	**35,200**	**0**
ExxonMobil Refining & Supply Co								
Joliet	99,300	0	0	0	0	52,600	0	0
Marathon Petroleum Co LP								
Robinson	54,500	0	0	44,000	0	81,500	0	0
PDV Midwest Refining LLC								
Lemont	69,500	0	0	0	0	0	35,200	0
WRB Refining LP								
Wood River	101,000	0	0	56,700	0	79,700	0	0
Indiana	**185,600**	**7,200**	**0**	**0**	**0**	**6,500**	**65,000**	**0**
BP Products North America Inc								
Whiting	177,000	7,000	0	0	0	0	65,000	0
Countrymark Cooperative Inc								
Mount Vernon	8,600	200	0	0	0	6,500	0	0
Kansas	**104,000**	**500**	**0**	**43,000**	**0**	**58,100**	**23,500**	**0**
CHS McPherson Refinery Inc								
McPherson	24,000	500	0	43,000	0	24,600	0	0
Coffeyville Resources Rfg & Mktg								
Coffeyville	36,000	0	0	0	0	26,000	0	0
HollyFrontier El Dorado Refining LLC								
El Dorado	44,000	0	0	0	0	7,500	23,500	0
Kentucky	**104,000**	**0**	**0**	**0**	**0**	**24,000**	**34,300**	**13,000**
Continental Refining Company LLC								
Somerset	0	0	0	0	0	0	1,300	0
Marathon Petroleum Co LP								
Catlettsburg	104,000	0	0	0	0	24,000	33,000	13,000

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
California	**444,200**	**248,300**	**202,800**	**324,100**	**100,100**	**0**	**708,100**	**70,200**
Torrance Refining Co LLC								
Torrance	25,300	0	0	19,800	0	0	108,300	0
Ultramar Inc								
Wilmington	32,000	0	0	45,000	0	0	67,000	0
Valero Refining Co California								
Benicia	30,000	43,200	15,400	15,000	5,000	0	39,000	21,700
Wilmington	0	0	0	0	0	0	0	0
Colorado	**22,000**	**0**	**12,100**	**23,330**	**0**	**0**	**30,000**	**0**
Suncor Energy (USA) Inc								
Commerce City East	11,000	0	0	0	0	0	0	0
Commerce City West	11,000	0	12,100	23,330	0	0	30,000	0
Delaware	**50,000**	**33,000**	**16,500**	**52,000**	**0**	**0**	**0**	**0**
Delaware City Refining Co LLC								
Delaware City	50,000	33,000	16,500	52,000	0	0	0	0
Hawaii	**13,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Par Hawaii Refining LLC								
Kapolei	13,000	0	0	0	0	0	0	0
Illinois	**439,900**	**115,500**	**66,950**	**328,600**	**0**	**0**	**0**	**6,800**
ExxonMobil Refining & Supply Co								
Joliet	169,500	0	0	78,000	0	0	0	0
Marathon Petroleum Co LP								
Robinson	75,000	41,500	0	79,500	0	0	0	0
PDV Midwest Refining LLC								
Lemont	111,100	0	13,700	94,800	0	0	0	6,800
WRB Refining LP								
Wood River	84,300	74,000	53,250	76,300	0	0	0	0
Indiana	**78,000**	**6,500**	**46,000**	**134,300**	**0**	**0**	**192,000**	**0**
BP Products North America Inc								
Whiting	69,000	0	46,000	120,800	0	0	192,000	0
Countrymark Cooperative Inc								
Mount Vernon	9,000	6,500	0	13,500	0	0	0	0
Kansas	**125,500**	**49,000**	**21,000**	**128,000**	**27,000**	**0**	**50,000**	**0**
CHS McPherson Refinery Inc								
McPherson	39,500	0	0	44,000	0	0	0	0
Coffeyville Resources Rfg & Mktg								
Coffeyville	36,000	22,000	9,000	30,000	27,000	0	0	0
HollyFrontier El Dorado Refining LLC								
El Dorado	50,000	27,000	12,000	54,000	0	0	50,000	0
Kentucky	**59,300**	**0**	**31,000**	**78,500**	**0**	**0**	**107,000**	**0**
Continental Refining Company LLC								
Somerset	1,300	0	0	1,000	0	0	0	0
Marathon Petroleum Co LP								
Catlettsburg	58,000	0	31,000	77,500	0	0	107,000	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Louisiana	**3,325,990**	**0**	**3,529,825**	**0**	**1,752,070**	**563,700**	**0**	**0**	**11,800**
Alon Refining Krotz Springs Inc									
Krotz Springs	80,000	0	83,000	0	36,200	0	0	0	0
Calcasieu Refining Co									
Lake Charles	128,000	0	129,500	0	36,000	0	0	0	0
Calumet Cotton Valley Refining LLC									
Cotton Valley	13,020	0	14,000	0	0	0	0	0	0
Calumet Princeton Refining LLC									
Princeton	8,300	0	8,655	0	7,000	0	0	0	0
Calumet Shreveport Refining LLC									
Shreveport	57,000	0	60,000	0	28,000	0	0	0	0
Chalmette Refining LLC									
Chalmette	190,000	0	197,000	0	169,000	30,000	0	0	0
Citgo Petroleum Corp									
Lake Charles	418,000	0	440,000	0	230,000	110,000	0	0	0
Excel Paralubes									
Westlake	0	0	0	0	0	0	0	0	0
ExxonMobil Refining & Supply Co									
Baton Rouge	502,500	0	523,200	0	246,100	123,500	0	0	0
Marathon Petroleum Co LP									
Garyville	564,000	0	594,000	0	296,000	94,500	0	0	0
Phillips 66 Company									
Belle Chasse	253,600	0	266,970	0	104,170	26,000	0	0	0
Westlake	260,000	0	273,000	0	125,000	65,200	0	0	11,800
Placid Refining Co									
Port Allen	75,000	0	82,500	0	27,000	0	0	0	0
Shell Oil Products US									
Convent	211,270	0	260,000	0	116,300	0	0	0	0
Norco	225,300	0	250,000	0	91,300	28,500	0	0	0
Valero Refining - Meraux LLC									
Meraux	125,000	0	128,000	0	60,000	0	0	0	0
Valero Refining New Orleans LLC									
Norco	215,000	0	220,000	0	180,000	86,000	0	0	0
Michigan	**140,000**	**0**	**147,000**	**0**	**89,000**	**36,500**	**0**	**0**	**0**
Marathon Petroleum Co LP									
Detroit	140,000	0	147,000	0	89,000	36,500	0	0	0
Minnesota	**418,515**	**0**	**448,700**	**0**	**284,600**	**75,000**	**0**	**0**	**0**
Flint Hills Resources LP									
Saint Paul	320,000	0	345,000	0	234,000	75,000	0	0	0
St Paul Park Refining Co LLC									
Saint Paul	98,515	0	103,700	0	50,600	0	0	0	0
Mississippi	**393,940**	**0**	**415,000**	**0**	**354,875**	**104,000**	**0**	**0**	**0**
Chevron USA Inc									
Pascagoula	356,440	0	375,200	0	330,000	104,000	0	0	0
Ergon Refining Inc									
Vicksburg	26,500	0	27,300	0	18,000	0	0	0	0
Hunt Southland Refining Co									
Sandersville	11,000	0	12,500	0	6,875	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
Louisiana	**1,139,800**	**5,500**	**55,000**	**394,900**	**54,500**	**515,690**	**142,200**	**71,000**
Alon Refining Krotz Springs Inc								
Krotz Springs	34,000	0	0	0	0	0	13,000	0
Calcasieu Refining Co								
Lake Charles	0	0	0	0	0	0	0	0
Calumet Cotton Valley Refining LLC								
Cotton Valley	0	0	0	0	0	0	0	0
Calumet Princeton Refining LLC								
Princeton	0	0	0	0	0	0	0	0
Calumet Shreveport Refining LLC								
Shreveport	0	0	0	0	0	12,000	0	0
Chalmette Refining LLC								
Chalmette	75,600	0	0	0	0	22,700	30,000	0
Citgo Petroleum Corp								
Lake Charles	148,000	3,000	0	51,200	0	60,000	53,200	0
Excel Paralubes								
Westlake	0	0	0	43,000	0	0	0	0
ExxonMobil Refining & Supply Co								
Baton Rouge	244,500	0	27,000	0	0	80,000	0	0
Marathon Petroleum Co LP								
Garyville	145,000	0	0	123,000	0	136,500	0	38,000
Phillips 66 Company								
Belle Chasse	105,000	2,000	0	0	0	48,490	0	0
Westlake	51,600	0	0	0	0	48,000	0	0
Placid Refining Co								
Port Allen	25,000	500	0	0	0	11,000	0	11,000
Shell Oil Products US								
Convent	92,300	0	0	0	54,500	0	46,000	0
Norco	118,800	0	0	44,000	0	40,000	0	0
Valero Refining - Meraux LLC								
Meraux	0	0	0	48,700	0	32,000	0	22,000
Valero Refining New Orleans LLC								
Norco	100,000	0	28,000	85,000	0	25,000	0	0
Michigan	**41,000**	**0**	**0**	**0**	**0**	**21,500**	**0**	**0**
Marathon Petroleum Co LP								
Detroit	41,000	0	0	0	0	21,500	0	0
Minnesota	**124,800**	**2,500**	**67,000**	**0**	**0**	**37,000**	**38,700**	**4,500**
Flint Hills Resources LP								
Saint Paul	94,300	0	67,000	0	0	37,000	13,800	0
St Paul Park Refining Co LLC								
Saint Paul	30,500	2,500	0	0	0	0	24,900	4,500
Mississippi	**88,000**	**0**	**0**	**119,000**	**0**	**61,600**	**40,000**	**0**
Chevron USA Inc								
Pascagoula	88,000	0	0	119,000	0	61,600	40,000	0
Ergon Refining Inc								
Vicksburg	0	0	0	0	0	0	0	0
Hunt Southland Refining Co								
Sandersville	0	0	0	0	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
Louisiana	**676,040**	**858,740**	**237,500**	**950,600**	**0**	**13,500**	**306,200**	**25,000**
Alon Refining Krotz Springs Inc								
Krotz Springs	14,000	18,000	0	0	0	0	0	0
Calcasieu Refining Co								
Lake Charles	0	0	0	0	0	0	0	0
Calumet Cotton Valley Refining LLC								
Cotton Valley	6,500	0	0	0	0	0	0	0
Calumet Princeton Refining LLC								
Princeton	0	0	0	0	0	0	0	0
Calumet Shreveport Refining LLC								
Shreveport	16,000	0	0	14,000	0	0	21,100	1,200
Chalmette Refining LLC								
Chalmette	42,000	46,000	0	35,000	0	0	65,600	0
Citgo Petroleum Corp								
Lake Charles	121,000	85,400	68,000	100,000	0	0	0	23,800
Excel Paralubes								
Westlake	0	0	0	0	0	0	0	0
ExxonMobil Refining & Supply Co								
Baton Rouge	76,000	242,000	0	208,500	0	0	0	0
Marathon Petroleum Co LP								
Garyville	115,500	116,500	84,500	179,000	0	0	106,000	0
Phillips 66 Company								
Belle Chasse	50,540	72,340	0	74,800	0	0	0	0
Westlake	50,000	63,500	28,000	62,000	0	13,500	50,000	0
Placid Refining Co								
Port Allen	11,000	20,000	0	25,000	0	0	0	0
Shell Oil Products US								
Convent	50,000	58,000	42,000	76,300	0	0	39,500	0
Norco	38,500	77,000	0	70,000	0	0	0	0
Valero Refining - Meraux LLC								
Meraux	40,000	0	15,000	40,000	0	0	0	0
Valero Refining New Orleans LLC								
Norco	45,000	60,000	0	66,000	0	0	24,000	0
Michigan	**35,000**	**0**	**7,000**	**46,500**	**0**	**0**	**44,500**	**0**
Marathon Petroleum Co LP								
Detroit	35,000	0	7,000	46,500	0	0	44,500	0
Minnesota	**89,700**	**51,200**	**53,600**	**95,630**	**0**	**0**	**158,900**	**0**
Flint Hills Resources LP								
Saint Paul	51,300	51,200	43,500	62,000	0	0	128,000	0
St Paul Park Refining Co LLC								
Saint Paul	38,400	0	10,100	33,630	0	0	30,900	0
Mississippi	**60,800**	**0**	**34,000**	**37,700**	**0**	**0**	**104,000**	**70,800**
Chevron USA Inc								
Pascagoula	60,800	0	34,000	35,500	0	0	104,000	50,000
Ergon Refining Inc								
Vicksburg	0	0	0	2,200	0	0	0	20,800
Hunt Southland Refining Co								
Sandersville	0	0	0	0	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Montana	**205,100**	**9,600**	**214,900**	**10,000**	**129,300**	**37,700**	**10,000**	**0**	**0**
Calumet Montana Refining LLC									
Great Falls	24,000	9,600	25,000	10,000	20,000	0	0	0	0
Cenex Harvest States Coop									
Laurel	59,600	0	61,100	0	32,200	16,000	0	0	0
ExxonMobil Refining & Supply Co									
Billings	61,500	0	62,900	0	32,300	0	10,000	0	0
Phillips 66 Company									
Billings	60,000	0	65,900	0	44,800	21,700	0	0	0
Nevada	**2,000**	**0**	**5,000**	**0**	**2,750**	**0**	**0**	**0**	**0**
Foreland Refining Corp									
Ely	2,000	0	5,000	0	2,750	0	0	0	0
New Jersey	**418,500**	**0**	**438,100**	**0**	**165,000**	**27,000**	**0**	**0**	**0**
Paulsboro Refining Co LLC									
Paulsboro	160,000	0	166,000	0	90,000	27,000	0	0	0
Phillips 66 Company									
Linden	258,500	0	272,100	0	75,000	0	0	0	0
New Mexico	**136,000**	**0**	**151,000**	**0**	**33,800**	**0**	**0**	**0**	**0**
HollyFrontier Navajo Refining LLC									
Artesia	110,000	0	124,000	0	33,800	0	0	0	0
Western Refining Southwest Inc									
Gallup	26,000	0	27,000	0	0	0	0	0	0
North Dakota	**90,000**	**0**	**94,000**	**0**	**0**	**0**	**0**	**0**	**0**
Dakota Prairie Refining LLC									
Dickinson	19,000	0	20,000	0	0	0	0	0	0
Tesoro Refining & Marketing Co									
Mandan	71,000	0	74,000	0	0	0	0	0	0
Ohio	**597,800**	**0**	**633,000**	**0**	**159,500**	**58,000**	**0**	**0**	**0**
BP-Husky Refining LLC									
Toledo	155,000	0	160,000	0	71,500	35,000	0	0	0
Lima Refining Company									
Lima	177,000	0	185,000	0	53,000	23,000	0	0	0
Marathon Petroleum Co LP									
Canton	93,000	0	100,000	0	35,000	0	0	0	0
Toledo Refining Co LLC									
Toledo	172,800	0	188,000	0	0	0	0	0	0
Oklahoma	**522,800**	**0**	**555,433**	**0**	**220,342**	**38,385**	**0**	**0**	**0**
HollyFrontier Tulsa Refining LLC									
Tulsa East	70,300	0	75,500	0	27,000	0	0	0	0
Tulsa West	85,000	0	91,020	0	32,000	11,000	0	0	0
Phillips 66 Company									
Ponca City	207,000	0	222,913	0	89,042	27,385	0	0	0
Valero Refining Co Oklahoma									
Ardmore	86,000	0	88,000	0	32,000	0	0	0	0
Wynnewood Refining Co									
Wynnewood	74,500	0	78,000	0	40,300	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
Montana	**64,860**	**990**	**6,200**	**24,000**	**0**	**12,500**	**27,050**	**0**
Calumet Montana Refining LLC								
Great Falls	3,000	0	0	24,000	0	0	1,000	0
Cenex Harvest States Coop								
Laurel	16,500	0	0	0	0	12,500	0	0
ExxonMobil Refining & Supply Co								
Billings	23,660	0	6,200	0	0	0	12,500	0
Phillips 66 Company								
Billings	21,700	990	0	0	0	0	13,550	0
Nevada	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Foreland Refining Corp								
Ely	0	0	0	0	0	0	0	0
New Jersey	**200,000**	**0**	**0**	**0**	**0**	**67,900**	**0**	**22,000**
Paulsboro Refining Co LLC								
Paulsboro	55,000	0	0	0	0	32,000	0	0
Phillips 66 Company								
Linden	145,000	0	0	0	0	35,900	0	22,000
New Mexico	**39,200**	**3,000**	**0**	**18,000**	**0**	**24,000**	**7,300**	**18,000**
HollyFrontier Navajo Refining LLC								
Artesia	30,000	0	0	18,000	0	24,000	0	18,000
Western Refining Southwest Inc								
Gallup	9,200	3,000	0	0	0	0	7,300	0
North Dakota	**27,000**	**3,600**	**0**	**0**	**0**	**0**	**13,600**	**0**
Dakota Prairie Refining LLC								
Dickinson	0	0	0	0	0	0	0	0
Tesoro Refining & Marketing Co								
Mandan	27,000	3,600	0	0	0	0	13,600	0
Ohio	**208,300**	**0**	**52,000**	**57,000**	**0**	**63,500**	**106,800**	**0**
BP-Husky Refining LLC								
Toledo	55,000	0	0	31,000	0	42,000	0	0
Lima Refining Company								
Lima	45,300	0	0	26,000	0	0	55,000	0
Marathon Petroleum Co LP								
Canton	26,000	0	0	0	0	21,500	0	0
Toledo Refining Co LLC								
Toledo	82,000	0	52,000	0	0	0	51,800	0
Oklahoma	**154,112**	**2,000**	**14,000**	**18,200**	**0**	**64,200**	**53,593**	**4,850**
HollyFrontier Tulsa Refining LLC								
Tulsa East	25,000	2,000	0	0	0	25,000	0	0
Tulsa West	0	0	0	0	0	0	0	0
Phillips 66 Company								
Ponca City	76,912	0	0	0	0	0	53,593	0
Valero Refining Co Oklahoma								
Ardmore	30,000	0	14,000	0	0	20,500	0	0
Wynnewood Refining Co								
Wynnewood	22,200	0	0	18,200	0	18,700	0	4,850

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
Montana	**46,950**	**26,500**	**19,400**	**46,750**	**25,000**	**0**	**45,760**	**7,900**
Calumet Montana Refining LLC								
Great Falls	2,500	0	6,000	6,000	0	0	0	0
Cenex Harvest States Coop								
Laurel	17,000	0	0	0	25,000	0	20,000	0
ExxonMobil Refining & Supply Co								
Billings	13,900	20,500	7,600	11,000	0	0	0	7,900
Phillips 66 Company								
Billings	13,550	6,000	5,800	29,750	0	0	25,760	0
Nevada	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Foreland Refining Corp								
Ely	0	0	0	0	0	0	0	0
New Jersey	**97,500**	**37,000**	**29,100**	**154,000**	**17,500**	**0**	**0**	**0**
Paulsboro Refining Co LLC								
Paulsboro	32,000	37,000	29,100	46,000	0	0	0	0
Phillips 66 Company								
Linden	65,500	0	0	108,000	17,500	0	0	0
New Mexico	**49,600**	**0**	**15,000**	**48,500**	**0**	**0**	**18,000**	**0**
HollyFrontier Navajo Refining LLC								
Artesia	42,000	0	15,000	43,000	0	0	18,000	0
Western Refining Southwest Inc								
Gallup	7,600	0	0	5,500	0	0	0	0
North Dakota	**12,500**	**0**	**0**	**32,300**	**6,500**	**0**	**0**	**0**
Dakota Prairie Refining LLC								
Dickinson	0	0	0	8,500	0	0	0	0
Tesoro Refining & Marketing Co								
Mandan	12,500	0	0	23,800	6,500	0	0	0
Ohio	**181,400**	**107,000**	**69,500**	**82,000**	**0**	**0**	**73,500**	**0**
BP-Husky Refining LLC								
Toledo	40,000	0	0	22,000	0	0	51,000	0
Lima Refining Company								
Lima	63,000	35,000	24,000	36,000	0	0	0	0
Marathon Petroleum Co LP								
Canton	32,500	0	13,500	24,000	0	0	22,500	0
Toledo Refining Co LLC								
Toledo	45,900	72,000	32,000	0	0	0	0	0
Oklahoma	**158,411**	**102,987**	**18,678**	**139,600**	**37,590**	**0**	**58,338**	**37,000**
HollyFrontier Tulsa Refining LLC								
Tulsa East	25,000	29,000	0	45,000	0	0	0	0
Tulsa West	28,000	0	0	0	0	0	0	21,600
Phillips 66 Company								
Ponca City	51,511	58,987	18,678	34,000	37,590	0	23,888	15,400
Valero Refining Co Oklahoma								
Ardmore	27,000	0	0	35,000	0	0	34,450	0
Wynnewood Refining Co								
Wynnewood	26,900	15,000	0	25,600	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Pennsylvania	**601,000**	**0**	**639,800**	**0**	**276,200**	**0**	**0**	**0**	**0**
American Refining Group Inc									
Bradford	11,000	0	11,800	0	0	0	0	0	0
Monroe Energy LLC									
Trainer	190,000	0	208,000	0	73,000	0	0	0	0
Philadelphia Energy Solutions									
Philadelphia	335,000	0	350,000	0	163,200	0	0	0	0
United Refining Co									
Warren	65,000	0	70,000	0	40,000	0	0	0	0
Tennessee	**180,000**	**0**	**185,000**	**0**	**0**	**0**	**0**	**0**	**0**
Valero Ref Company Tennessee LLC									
Memphis	180,000	0	185,000	0	0	0	0	0	0
Texas	**5,752,494**	**35,000**	**6,158,000**	**38,000**	**2,630,700**	**910,980**	**42,000**	**0**	**0**
Alon USA Energy Inc									
Big Spring	73,000	0	74,000	0	28,000	0	0	0	0
Buckeye Texas Processing LLC									
Corpus Christi	60,000	0	65,000	0	0	0	0	0	0
Calumet San Antonio Refining LLC									
San Antonio	20,000	0	21,000	0	0	0	0	0	0
Citgo Refining & Chemical Inc									
Corpus Christi	157,500	0	163,500	0	85,300	44,900	0	0	0
Deer Park Refining LTD Partnership									
Deer Park	275,000	0	340,000	0	180,000	92,000	0	0	0
Delek Refining LTD									
Tyler	75,000	0	76,000	0	28,000	7,500	0	0	0
Diamond Shamrock Refining Co LP									
Sunray	195,000	0	200,000	0	50,000	0	0	0	0
Three Rivers	89,000	0	91,000	0	33,500	0	0	0	0
Equistar Chemicals LP									
Channelview	0	0	0	0	0	0	0	0	0
ExxonMobil Refining & Supply Co									
Baytown	560,500	0	584,000	0	297,000	54,000	42,000	0	0
Beaumont	369,024	0	384,400	0	148,800	46,500	0	0	0
Flint Hills Resources LP									
Corpus Christi	320,000	0	330,000	0	87,500	15,500	0	0	0
Houston Refining LP									
Houston	263,776	0	296,300	0	196,500	100,500	0	0	0
Kinder Morgan Crude & Condensate									
Galena Park	84,000	0	100,000	0	0	0	0	0	0
Lazarus Energy LLC									
Nixon	13,765	0	15,000	0	0	0	0	0	0
Magellan Terminal Holdings LP									
Corpus Christi	42,500	0	50,000	0	0	0	0	0	0
Marathon Petroleum Co LP									
Galveston Bay	585,000	0	616,000	0	259,000	33,000	0	0	0
Motiva Enterprises LLC									
Port Arthur	607,000	0	639,700	0	331,800	178,000	0	0	0
Pasadena Refining Systems Inc									
Pasadena	112,229	0	115,700	0	38,000	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
Pennsylvania	**215,500**	**1,000**	**23,000**	**0**	**0**	**50,000**	**102,200**	**0**
American Refining Group Inc								
Bradford	0	0	0	0	0	0	2,200	0
Monroe Energy LLC								
Trainer	53,000	0	23,000	0	0	50,000	0	0
Philadelphia Energy Solutions								
Philadelphia	137,500	0	0	0	0	0	86,000	0
United Refining Co								
Warren	25,000	1,000	0	0	0	0	14,000	0
Tennessee	**70,000**	**0**	**26,500**	**0**	**0**	**36,000**	**0**	**0**
Valero Ref Company Tennessee LLC								
Memphis	70,000	0	26,500	0	0	36,000	0	0
Texas	**1,795,190**	**13,000**	**250,300**	**425,800**	**84,500**	**979,200**	**105,280**	**168,000**
Alon USA Energy Inc								
Big Spring	23,500	0	0	0	0	21,500	0	10,000
Buckeye Texas Processing LLC								
Corpus Christi	0	0	0	0	0	0	0	0
Calumet San Antonio Refining LLC								
San Antonio	0	0	0	0	0	0	6,000	0
Citgo Refining & Chemical Inc								
Corpus Christi	83,800	0	0	0	0	51,500	0	0
Deer Park Refining LTD Partnership								
Deer Park	75,000	5,000	0	60,000	0	44,900	24,500	0
Delek Refining LTD								
Tyler	20,250	0	0	0	0	13,000	4,500	0
Diamond Shamrock Refining Co LP								
Sunray	54,500	0	0	29,000	0	29,000	18,000	14,500
Three Rivers	23,840	0	0	28,000	0	23,500	10,000	10,500
Equistar Chemicals LP								
Channelview	0	0	0	0	0	0	0	0
ExxonMobil Refining & Supply Co								
Baytown	220,000	8,000	29,900	0	0	127,500	0	47,000
Beaumont	115,000	0	70,000	0	0	143,500	0	0
Flint Hills Resources LP								
Corpus Christi	110,000	0	0	16,000	0	0	0	0
Houston Refining LP								
Houston	110,000	0	0	0	0	0	0	0
Kinder Morgan Crude & Condensate								
Galena Park	0	0	0	0	0	0	0	0
Lazarus Energy LLC								
Nixon	0	0	0	0	0	0	0	0
Magellan Terminal Holdings LP								
Corpus Christi	0	0	0	0	0	0	0	0
Marathon Petroleum Co LP								
Galveston Bay	204,500	0	78,500	0	84,500	142,500	0	19,000
Motiva Enterprises LLC								
Port Arthur	92,600	0	0	107,000	0	129,500	0	0
Pasadena Refining Systems Inc								
Pasadena	52,000	0	0	0	0	23,000	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
Pennsylvania	**187,600**	**104,000**	**28,300**	**70,300**	**157,000**	**0**	**0**	**0**
American Refining Group Inc								
Bradford	3,600	0	0	0	0	0	0	0
Monroe Energy LLC								
Trainer	80,000	34,000	23,300	53,300	0	0	0	0
Philadelphia Energy Solutions								
Philadelphia	78,000	65,000	0	0	157,000	0	0	0
United Refining Co								
Warren	26,000	5,000	5,000	17,000	0	0	0	0
Tennessee	**52,000**	**39,000**	**0**	**38,000**	**0**	**0**	**0**	**0**
Valero Ref Company Tennessee LLC								
Memphis	52,000	39,000	0	38,000	0	0	0	0
Texas	**1,405,590**	**1,117,220**	**630,200**	**1,397,420**	**16,000**	**75,000**	**1,033,640**	**145,700**
Alon USA Energy Inc								
Big Spring	25,500	0	5,000	24,000	0	0	6,500	0
Buckeye Texas Processing LLC								
Corpus Christi	0	0	0	0	0	0	0	0
Calumet San Antonio Refining LLC								
San Antonio	6,000	0	0	8,000	0	0	0	0
Citgo Refining & Chemical Inc								
Corpus Christi	52,800	45,120	0	99,320	0	0	70,900	0
Deer Park Refining LTD Partnership								
Deer Park	71,500	46,600	40,000	50,000	0	0	49,500	43,000
Delek Refining LTD								
Tyler	28,000	13,000	0	36,000	0	0	0	0
Diamond Shamrock Refining Co LP								
Sunray	44,400	39,600	0	47,500	0	0	0	0
Three Rivers	24,000	0	10,000	25,000	0	0	20,000	0
Equistar Chemicals LP								
Channelview	0	0	0	0	0	0	0	0
ExxonMobil Refining & Supply Co								
Baytown	155,500	196,000	132,700	146,300	0	0	117,000	46,500
Beaumont	159,800	71,000	51,000	42,000	0	0	0	19,500
Flint Hills Resources LP								
Corpus Christi	93,800	75,000	54,000	78,000	0	0	54,000	0
Houston Refining LP								
Houston	61,000	89,000	44,500	92,600	0	0	117,000	5,200
Kinder Morgan Crude & Condensate								
Galena Park	0	0	0	0	0	0	0	0
Lazarus Energy LLC								
Nixon	0	0	0	0	0	0	0	0
Magellan Terminal Holdings LP								
Corpus Christi	0	0	0	0	0	0	0	0
Marathon Petroleum Co LP								
Galveston Bay	121,000	57,000	79,000	55,000	0	0	108,000	0
Motiva Enterprises LLC								
Port Arthur	163,150	55,000	79,000	173,300	0	0	53,300	21,000
Pasadena Refining Systems Inc								
Pasadena	23,000	40,000	0	0	16,000	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Texas	**5,752,494**	**35,000**	**6,158,000**	**38,000**	**2,630,700**	**910,980**	**42,000**	**0**	**0**
Petromax Refining Co LLC									
Houston	25,000	0	27,500	0	0	0	0	0	0
Phillips 66 Company									
Sweeny	265,000	0	278,900	0	132,100	78,700	0	0	0
Premcor Refining Group Inc									
Port Arthur	335,000	0	415,000	0	220,000	103,000	0	0	0
South Hampton Resources Inc									
Silsbee	0	0	0	0	0	0	0	0	0
Targa Channelview LLC									
Channelview	0	35,000	0	38,000	0	0	0	0	0
Total Petrochemicals & Refining USA									
Port Arthur	225,500	0	245,000	0	117,000	60,000	0	0	0
Valero Refining Co Texas LP									
Corpus Christi	290,000	0	297,000	0	91,000	15,500	0	0	0
Houston	205,000	0	210,000	0	38,000	0	0	0	0
Texas City	225,000	0	231,000	0	133,500	53,500	0	0	0
Western Refining Company LP									
El Paso	133,700	0	138,000	0	55,700	0	0	0	0
WRB Refining LP									
Borger	146,000	0	154,000	0	80,000	28,380	0	0	0
Utah	**200,550**	**0**	**212,200**	**0**	**34,500**	**10,000**	**0**	**0**	**0**
Big West Oil Co									
North Salt Lake	30,500	0	33,000	0	0	0	0	0	0
Chevron USA Inc									
Salt Lake City	54,720	0	57,600	0	27,500	10,000	0	0	0
HollyFrontier Woods Cross Refining LLC									
Woods Cross	39,330	0	41,400	0	0	0	0	0	0
Silver Eagle Refining									
Woods Cross	15,000	0	15,700	0	7,000	0	0	0	0
Tesoro Refining & Marketing Co									
Salt Lake City	61,000	0	64,500	0	0	0	0	0	0
Washington	**651,700**	**0**	**672,500**	**0**	**298,200**	**86,800**	**0**	**0**	**0**
BP West Coast Products LLC									
Ferndale	242,000	0	251,000	0	112,000	61,500	0	0	0
Phillips 66 Company									
Ferndale	105,000	0	110,500	0	50,700	0	0	0	0
Shell Oil Products US									
Anacortes	145,000	0	149,000	0	65,800	25,300	0	0	0
Tesoro Refining & Marketing Co									
Anacortes	119,000	0	120,000	0	50,500	0	0	0	0
US Oil & Refining Co									
Tacoma	40,700	0	42,000	0	19,200	0	0	0	0
West Virginia	**22,300**	**0**	**23,000**	**0**	**8,600**	**0**	**0**	**0**	**0**
Ergon West Virginia Inc									
Newell	22,300	0	23,000	0	8,600	0	0	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
Texas	**1,795,190**	**13,000**	**250,300**	**425,800**	**84,500**	**979,200**	**105,280**	**168,000**
Petromax Refining Co LLC								
Houston	0	0	0	0	0	0	0	0
Phillips 66 Company								
Sweeny	107,700	0	0	0	0	41,500	0	0
Premcor Refining Group Inc								
Port Arthur	75,000	0	0	134,800	0	55,000	0	0
South Hampton Resources Inc								
Silsbee	0	0	0	0	0	5,200	0	0
Targa Channelview LLC								
Channelview	0	0	0	0	0	0	0	0
Total Petrochemicals & Refining USA								
Port Arthur	80,000	0	0	0	0	43,000	0	15,500
Valero Refining Co Texas LP								
Corpus Christi	95,500	0	0	51,000	0	39,000	11,000	0
Houston	75,000	0	71,900	0	0	0	0	18,000
Texas City	86,000	0	0	0	0	18,100	0	33,500
Western Refining Company LP								
El Paso	35,000	0	0	0	0	28,000	0	0
WRB Refining LP								
Borger	56,000	0	0	0	0	0	31,280	0
Utah	**70,000**	**0**	**0**	**15,000**	**0**	**0**	**36,900**	**6,000**
Big West Oil Co								
North Salt Lake	12,500	0	0	0	0	0	8,500	0
Chevron USA Inc								
Salt Lake City	15,500	0	0	0	0	0	8,500	0
HollyFrontier Woods Cross Refining LLC								
Woods Cross	17,500	0	0	15,000	0	0	8,400	6,000
Silver Eagle Refining								
Woods Cross	0	0	0	0	0	0	0	0
Tesoro Refining & Marketing Co								
Salt Lake City	24,500	0	0	0	0	0	11,500	0
Washington	**147,700**	**3,000**	**0**	**65,000**	**0**	**113,500**	**28,500**	**24,300**
BP West Coast Products LLC								
Ferndale	0	0	0	65,000	0	65,000	0	0
Phillips 66 Company								
Ferndale	38,500	0	0	0	0	18,500	0	0
Shell Oil Products US								
Anacortes	57,900	0	0	0	0	0	21,700	0
Tesoro Refining & Marketing Co								
Anacortes	51,300	3,000	0	0	0	30,000	0	24,300
US Oil & Refining Co								
Tacoma	0	0	0	0	0	0	6,800	0
West Virginia	**0**	**0**	**0**	**0**	**0**	**4,700**	**0**	**0**
Ergon West Virginia Inc								
Newell	0	0	0	0	0	4,700	0	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
Texas	**1,405,590**	**1,117,220**	**630,200**	**1,397,420**	**16,000**	**75,000**	**1,033,640**	**145,700**
Petromax Refining Co LLC								
Houston	0	0	0	0	0	0	0	0
Phillips 66 Company								
Sweeny	73,400	68,700	0	126,300	0	0	110,200	0
Premcor Refining Group Inc								
Port Arthur	48,700	85,000	33,000	104,600	0	0	60,000	0
South Hampton Resources Inc								
Silsbee	11,000	0	0	0	0	0	0	4,000
Targa Channelview LLC								
Channelview	0	0	0	0	0	0	0	0
Total Petrochemicals & Refining USA								
Port Arthur	57,500	51,600	31,000	80,000	0	0	54,400	0
Valero Refining Co Texas LP								
Corpus Christi	57,000	54,500	10,000	72,000	0	75,000	25,000	0
Houston	9,000	33,600	16,000	0	0	0	0	0
Texas City	25,000	61,500	28,000	55,000	0	0	110,000	6,500
Western Refining Company LP								
El Paso	29,000	35,000	8,500	47,000	0	0	0	0
WRB Refining LP								
Borger	65,540	0	8,500	35,500	0	0	77,840	0
Utah	**45,000**	**8,000**	**2,900**	**49,800**	**31,500**	**0**	**0**	**7,200**
Big West Oil Co								
North Salt Lake	11,500	0	0	11,000	0	0	0	0
Chevron USA Inc								
Salt Lake City	8,500	0	0	13,300	20,700	0	0	7,200
HollyFrontier Woods Cross Refining LLC								
Woods Cross	12,500	0	2,900	0	10,800	0	0	0
Silver Eagle Refining								
Woods Cross	1,000	0	0	3,000	0	0	0	0
Tesoro Refining & Marketing Co								
Salt Lake City	11,500	8,000	0	22,500	0	0	0	0
Washington	**172,000**	**100,800**	**42,000**	**175,800**	**0**	**0**	**0**	**0**
BP West Coast Products LLC								
Ferndale	75,800	0	20,000	59,000	0	0	0	0
Phillips 66 Company								
Ferndale	19,400	22,100	0	33,400	0	0	0	0
Shell Oil Products US								
Anacortes	21,700	39,100	22,000	47,700	0	0	0	0
Tesoro Refining & Marketing Co								
Anacortes	44,700	39,600	0	27,500	0	0	0	0
US Oil & Refining Co								
Tacoma	10,400	0	0	8,200	0	0	0	0
West Virginia	**7,700**	**0**	**0**	**9,500**	**0**	**0**	**6,900**	**0**
Ergon West Virginia Inc								
Newell	7,700	0	0	9,500	0	0	6,900	0

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
	Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Wisconsin	**0**	**38,000**	**0**	**50,000**	**23,500**	**0**	**0**	**0**	**0**
Superior Refining Company LLC									
Superior	0	38,000	0	50,000	23,500	0	0	0	0
Wyoming	**168,500**	**0**	**191,400**	**0**	**79,000**	**33,700**	**0**	**0**	**0**
Hermes Consolidated LLC									
New Castle	18,000	0	18,500	0	0	0	0	0	0
HollyFrontier Cheyenne Refining LLC									
Cheyenne	48,000	0	52,000	0	28,000	13,700	0	0	0
Little America Refining Co									
Evansville	24,500	0	25,500	0	0	0	0	0	0
Silver Eagle Refining									
Evanston	3,000	0	3,400	0	0	0	0	0	0
Sinclair Wyoming Refining Co									
Sinclair	75,000	0	92,000	0	51,000	20,000	0	0	0
U.S. Total	**18,692,335**	**110,100**	**19,833,258**	**127,300**	**9,121,143**	**2,859,365**	**158,500**	**16,000**	**11,800**

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Catalytic Cracking		Catalytic Hydrocracking			Catalytic Reforming		
	Fresh	Recycled	Distillate	Gas Oil	Residual	Low Pressure	High Pressure	Fuels Solvent Deasphalting
Wisconsin	**11,323**	**0**	**0**	**0**	**0**	**9,300**	**0**	**0**
Superior Refining Company LLC								
Superior	11,323	0	0	0	0	9,300	0	0
Wyoming	**54,500**	**500**	**15,000**	**0**	**0**	**14,200**	**19,900**	**0**
Hermes Consolidated LLC								
New Castle	7,500	0	0	0	0	0	4,000	0
HollyFrontier Cheyenne Refining LLC								
Cheyenne	13,500	0	0	0	0	9,200	0	0
Little America Refining Co								
Evansville	11,500	500	0	0	0	5,000	0	0
Silver Eagle Refining								
Evanston	0	0	0	0	0	0	2,900	0
Sinclair Wyoming Refining Co								
Sinclair	22,000	0	15,000	0	0	0	13,000	0
U.S. Total	**5,985,885**	**61,890**	**733,450**	**1,618,000**	**139,000**	**2,698,290**	**1,111,723**	**395,050**

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Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2019

(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Downstream Charge Capacity							
	Desulfurization (incl. Catalytic Hydrotreating)							
	Naphtha/ Reformer Feed	Gasoline	Kerosene/ Jet Fuel	Diesel Fuel	Other Distillate	Residual	Heavy Gas Oil	Other
Wisconsin	**12,500**	**12,500**	**8,000**	**7,500**	**0**	**0**	**0**	**0**
Superior Refining Company LLC								
Superior	12,500	12,500	8,000	7,500	0	0	0	0
Wyoming	**46,900**	**16,500**	**14,000**	**53,000**	**0**	**0**	**20,000**	**0**
Hermes Consolidated LLC								
New Castle	4,000	0	0	6,000	0	0	0	0
HollyFrontier Cheyenne Refining LLC								
Cheyenne	10,000	10,000	0	18,000	0	0	0	0
Little America Refining Co								
Evansville	7,500	6,500	0	10,500	0	0	0	0
Silver Eagle Refining								
Evanston	3,900	0	0	0	0	0	0	0
Sinclair Wyoming Refining Co								
Sinclair	21,500	0	14,000	18,500	0	0	20,000	0
U.S. Total	**4,642,191**	**3,042,497**	**1,626,028**	**4,580,230**	**442,190**	**88,500**	**2,988,338**	**384,600**

Note: Refer to Table 5 for corporate ownership information. Some names of previously independent companies have been preserved by acquiring companies.

Source: Energy Information Administration (EIA), Form EIA-820, "Annual Refinery Report."

ED_004187A_00001879-00021

Message

From: McKenna, Chris [McKenna.Chris@epa.gov]
Sent: 8/29/2019 4:36:35 PM
To: Nelson, Karen [nelson.karen@epa.gov]
CC: Cohen, Janet [cohen.janet@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]; Le, Madison [Le.Madison@epa.gov]
Subject: RE: draft response to Suncor 2018 RFS SRE petitions
Attachments: Suncor 2018 RFS SRE ineligibility letter - draft.docx

Karen,

I've attached an initial draft of the Suncor 2018 RFS SRE ineligibility letter, please edit as you see fit.

Thanks,
Chris

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, August 27, 2019 1:24 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Piotrowski, Greg <piotrowski.greg@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions (Suncor response)

I completely agree, thank you for looking this up and disseminating it!

From: Piotrowski, Greg <piotrowski.greg@epa.gov>
Sent: Tuesday, August 27, 2019 2:00 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions (Suncor response)

Wow, really good catch.

Gregory Piotrowski
Chemical Engineer/Contracting Officer's Representative
Data Analysis & Information Center
Compliance Division, OTAQ, NVFEL
US Environmental Protection Agency
N15, 2000 Traverwood Drive
Ann Arbor, MI, USA 48105
Tel: 734.214.4493
Fax: 734.214.4869
email: piotrowski.greg@epa.gov

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Tuesday, August 27, 2019 1:12 PM
To: Piotrowski, Greg <piotrowski.greg@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions (Suncor response)

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Piotrowski, Greg <piotrowski.greg@epa.gov>
Sent: Tuesday, August 27, 2019 11:53 AM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions (Suncor response)

Ex. 5 Deliberative Process (DP)

https://www.theglobeandmail.com/report-on-business/suncor-buys-denver-refinery-stations/article1160267/

https://www.cspdailynews.com/fuels/suncor-acquires-second-valero-refinery

Gregory Piotrowski
Chemical Engineer/Contracting Officer's Representative
Data Analysis & Information Center
Compliance Division, OTAQ, NVFEL
US Environmental Protection Agency
N15, 2000 Traverwood Drive
Ann Arbor, MI, USA 48105
Tel: 734.214.4493
Fax: 734.214.4869
email: piotrowski.greg@epa.gov

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Tuesday, August 27, 2019 11:33 AM
To: Nelson, Karen <nelson.karen@epa.gov>
Cc: Piotrowski, Greg <piotrowski.greg@epa.gov>
Subject: FW: Suncor 2018 RFS Small Refinery Hardship Petitions (Suncor response)

Karen – I've been working on draft response to Suncor, Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)

Greg – FWIW, Suncor has a single refinery manager named Donald Austin for their Commerce City refinery, Ex. 4 CBI
Ex. 4 CBI Here's some add'l info on him,

https://connections.suncor.com/suncor-usa/november-2017/meet-commerce-city-refinery-vp-donald-austin

Thanks,
Chris

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Monday, August 26, 2019 11:06 AM
To: Cohen, Janet <cohen.janet@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>; Spencer, Mark <spencer.mark@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Le, Madison <Le.Madison@epa.gov>
Subject: FW: Suncor 2018 RFS Small Refinery Hardship Petitions (Suncor response)

All,

Please see email below from Mike Korenblat at Suncor re: their 2018 RFS exemption petitions, and let me know any thoughts/comments.

Ex. 5 Deliberative Process (DP)

Thanks,
Chris

From: Korenblat, Michael <MKorenblat@Suncor.com>
Sent: Friday, August 23, 2019 5:49 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Cc: Shields, Angela <ashields@suncor.com>; Cohen, Janet <cohen.janet@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>; Spencer, Mark <spencer.mark@epa.gov>
Subject: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 1 of 3)

CONFIDENTIAL BUSINESS INFORMAITON
CONFIDENTIAL TREAMENT REQUESTED

Chris-

Per our discussion last week, after returning from vacation, I am responding to your e-mail, dated July 23rd. I have included the additional recipients you requested as ccs.

I am re-sending the attachments previously sent, as well as the additional information listed below, in three separate e-mails. This e-mail contains Nos. 1 through 7. Electronic copies of Suncor's Petitions (Nos. 8 and 9) are being sent in two separate e-mails due to their size. Suncor requests confidential treatment of all these attachments (and the e-mails) as CBI:

1. Excel spreadsheets containing Suncor's 2018 RFS Cost of Compliance for the Denver West Refinery and the Denver East Refinery, which are contained in separate tabs.
2. Excel spreadsheets containing Suncor's PI-588 Forms for the Denver West Refinery and the Denver East Refinery, which are contained in separate tabs.
3. Ex. 4 CBI
4.
5.
6.
7.
8. A .pdf of Suncor's Petition for Extension of Small Refinery Exemption for its Denver West Refinery (EPA Facility ID #01352), which was sent on 12/28/19.
9. A .pdf of Suncor's Petition for Extension of Small Refinery Exemption for its Denver East Refinery (EPA Facility ID #00544), which was sent on 12/28/19.

Ex. 4 CBI

Ex. 4 CBI

Ex. 4 CBI

Sincerely,

Michael E. Korenblat, Esq.
Director, Legal Affairs - Downstream U.S.A.
SUNCOR ENERGY
717 17th Street, 29th Floor
Denver, CO 80202
phone-303.793.8052
mkorenblat@suncor.com

From: McKenna, Chris
Sent: Wednesday, July 31, 2019 10:35 AM
To: Korenblat, Michael <MKorenblat@Suncor.com>
Cc: Shields, Angela <ashields@suncor.com>; Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

Mike,

Just wanted to check if you received my email below, and if you still wanted to discuss this.

Thanks,
Chris

From: McKenna, Chris
Sent: Tuesday, July 23, 2019 8:59 AM
To: Korenblat, Michael <MKorenblat@Suncor.com>
Cc: Shields, Angela <ashields@suncor.com>; Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

Mike,

Thanks for the feedback. Unfortunately, our email system deletes all .zip file attachments as a security precaution, would you please email the .xls files as individual attachments.

Ex. 4 CBI

Ex. 4 CBI

Suncor also characterizes the refinery as a single facility in other locations. Their website at https://www.suncor.com/en-CA/about-us/refining says that Suncor operates a 98,000 bpd refinery in Commerce City which produces gasoline, diesel and asphalt, and the 2018 annual report at https://www.suncor.com/en-CA/investor-centre/financial-reports/annual-disclosure lists Commerce City as a single 98,000 bpd refinery (see page # 12). There's also a 2010 presentation at http://www.coga-inc.org/docs/default-source/meeting-presentations/06102010_Segato.pdf which says the Denver refinery is a nominal 90,000 bpd fuels refinery (see top of slide 7).

If you'd like to discuss any of these or other comments/questions in more detail, I'm available this week at the following times (all eastern time),

7/23 12:00 - 4:00
7/24 8:00 - 4:00
7/25 8:00 - 4:00
7/26 8:00 - 12:00

Re: timing on petition responses, we at the EPA staff level have been waiting for several weeks for direction from our management on how they want to proceed with all of the petitions that have been submitted to us. Unfortunately, these petitions have become matters of intense political interest, which has basically halted our efforts to keep the petitions moving. If I hear anything more on this, I'll let you know.

Thanks again,
Chris

From: Korenblat, Michael <MKorenblat@Suncor.com>
Sent: Thursday, July 18, 2019 4:41 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Cc: Shields, Angela <ashields@suncor.com>
Subject: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

CONFIDENTIAL BUSINESS INFORMAITON
CONFIDENTIAL TREAMENT REQUESTED

Chris-

Angela forwarded your message to me, and I am responding on her behalf.

Thanks very much for your e-mail, and explaining the delay in processing Suncor's two Petition for Extension of Small Refinery Exemption.

Pursuant to your request, attached please find the following in the attached zip file. Suncor requests confidential treatment of all these attachments (and this e-mail) as CBI:

10. A .pdf of Suncor's Petition for Extension of Small Refinery Exemption for its Denver West Refinery (EPA Facility ID #01352), which was sent on 12/28/19.
11. A .pdf of Suncor's Petition for Extension of Small Refinery Exemption for its Denver East Refinery (EPA Facility ID #00544), which was sent on 12/28/19.
12. Excel spreadsheets containing Suncor's 2018 RFS Cost of Compliance for the Denver West Refinery and the Denver East Refinery, which are contained in separate tabs.
13. Excel spreadsheets containing Suncor's PI-588 Forms for the Denver West Refinery and the Denver East Refinery, which are contained in separate tabs.

If you can confirm receipt and that you can access these files, I would appreciate it.

Ex. 4 CBI

Very truly yours,

Michael Korenblat

Michael E. Korenblat, Esq.
Director, Legal Affairs - Downstream U.S.A.
SUNCOR ENERGY
717 17th Street, 29th Floor
Denver, CO 80202
phone-303.793.8052
mkorenblat@suncor.com

From: McKenna, Chris [mailto:McKenna.Chris@epa.gov]
Sent: Friday, July 12, 2019 10:56 AM
To: Shields, Angela
Subject: Suncor 2018 RFS small refinery hardship petitions

Angela,

My apologies, we just found your 2018 RFS small refinery hardship petitions. From the petition dates, it looks like they were submitted during the government shutdown in late 2018/early 2019, but when we returned from the shutdown, our contractors who process the incoming mail didn't notify EPA staff that they had received them. The petitions also mention that they were emailed to Brent Williams, but he left EPA last year, so no EPA staff person ever saw the emailed versions.

I've read through the petitions and had a couple follow-up requests/questions,

1. Please email the .xls versions of the PI-588 forms and RFS compliance cost spreadsheets.

2. Ex. 4 CBI

I'll probably have some more questions, but wanted to get these to you for starters.

Please let me know if you have any questions. Sorry again for the delayed follow-up on your petitions.

Thanks very much,

Chris McKenna
Staff Engineer
US EPA, Office of Transportation and Air Quality
1200 Pennsylvania Avenue, NW
Washington, DC 20460
202-343-9037

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Message

From: Nelson, Karen [nelson.karen@epa.gov]
Sent: 8/7/2019 1:53:09 PM
To: Cohen, Janet [cohen.janet@epa.gov]
Subject: Suncor One Pager

<!--[if lte mso 15 || CheckWebRef]-->

Nelson, Karen has shared a OneDrive for Business file with you. To view it, click the link below.

RFS small refinery eligibility (Suncor Denver East and West) - draft.docx

<!--[endif]-->

Here it is.

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

Do not release without review. This email and any attached documents may contain information claimed as CBI, confidential attorney-client communications, privileged attorney work product, and/or privileged and confidential deliberative process material.

Message

From: Nelson, Karen [nelson.karen@epa.gov]
Sent: 8/6/2019 3:12:50 PM
To: McKenna, Chris [McKenna.Chris@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]
Subject: Suncor East and West One Pager for Sarah

<!--[if lte mso 15 || CheckWebRef]-->

Nelson, Karen has shared a OneDrive for Business file with you. To view it, click the link below.

RFS small refinery eligibility (Suncor Denver East and West) - draft.docx

<!--[endif]-->

Hi Team!

Ex. 5 Deliberative Process (DP) / Ex. 4 CBI

Thanks everyone!
-Karen

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

Do not release without review. This email and any attached documents may contain information claimed as CBI, confidential attorney-client communications, privileged attorney work product, and/or privileged and confidential deliberative process material.

Message

From: Korenblat, Michael [MKorenblat@Suncor.com]
Sent: 8/23/2019 9:56:53 PM
To: McKenna, Chris [McKenna.Chris@epa.gov]
CC: Shields, Angela [ashields@suncor.com]; Cohen, Janet [cohen.janet@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 3 of 3)
Attachments: Petition for Extension of Small Refinery Exemption - Suncor Denver East Refinery (#00544).pdf

CONFIDENTIAL BUSINESS INFORMAITON
CONFIDENTIAL TREAMENT REQUESTED

Chris-

Attached please find a .pdf of Suncor's Petition for Extension of Small Refinery Exemption for its Denver East Refinery (EPA Facility ID #00544), which was originally submitted on 12/28/18. Suncor requests confidential treatment of this attachment (and this e-mail) as CBI.

If you could confirm receipt of all three e-mails and the attachments, I would appreciate it.

I will be in the office next week.

Michael E. Korenblat, Esq.
Director, Legal Affairs - Downstream U.S.A.
SUNCOR ENERGY
717 17th Street, 29th Floor
Denver, CO 80202
phone-303.793.8052
mkorenblat@suncor.com

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Message

From: Korenblat, Michael [MKorenblat@Suncor.com]
Sent: 8/23/2019 9:53:11 PM
To: McKenna, Chris [McKenna.Chris@epa.gov]
CC: Shields, Angela [ashields@suncor.com]; Cohen, Janet [cohen.janet@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 2 of 3)
Attachments: Petition for Extension of Small Refinery Exemption - Suncor Denver West Refinery (#01352).pdf

CONFIDENTIAL BUSINESS INFORMAITON
CONFIDENTIAL TREAMENT REQUESTED

Chris-

Attached please find a .pdf of Suncor's Petition for Extension of Small Refinery Exemption for its Denver West Refinery (EPA Facility ID #01352), which was originally submitted on 12/28/18. Suncor requests confidential treatment of this attachment (and this e-mail) as CBI.

Michael E. Korenblat, Esq.
Director, Legal Affairs - Downstream U.S.A.
SUNCOR ENERGY
717 17th Street, 29th Floor
Denver, CO 80202
phone-303.793.8052
mkorenblat@suncor.com

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Message

From: McKenna, Chris [McKenna.Chris@epa.gov]
Sent: 8/14/2019 8:10:32 PM
To: Korenblat, Michael [MKorenblat@Suncor.com]
CC: Cohen, Janet [cohen.janet@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

Mike,

When you respond to me, please also respond to all the EPA people on the cc: list. I'll be out of the office from 8/16 through 8/23.

Thanks,
Chris

From: McKenna, Chris
Sent: Wednesday, July 31, 2019 10:35 AM
To: Korenblat, Michael <MKorenblat@Suncor.com>
Cc: Shields, Angela <ashields@suncor.com>; Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

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Sent: Tuesday, July 23, 2019 8:59 AM
To: Korenblat, Michael <MKorenblat@Suncor.com>
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Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

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Ex. 4 CBI

Ex. 4 CBI

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From: Korenblat, Michael <MKorenblat@Suncor.com>
Sent: Thursday, July 18, 2019 4:41 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Cc: Shields, Angela <ashields@suncor.com>
Subject: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

CONFIDENTIAL BUSINESS INFORMAITON
CONFIDENTIAL TREAMENT REQUESTED

Chris-

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3. Excel spreadsheets containing Suncor's 2018 RFS Cost of Compliance for the Denver West Refinery and the Denver East Refinery, which are contained in separate tabs.
4. Excel spreadsheets containing Suncor's PI-588 Forms for the Denver West Refinery and the Denver East Refinery, which are contained in separate tabs.

If you can confirm receipt and that you can access these files, I would appreciate it.

Ex. 4 CBI

Very truly yours,

Michael Korenblat

Michael E. Korenblat, Esq.
Director, Legal Affairs - Downstream U.S.A.
SUNCOR ENERGY
717 17th Street, 29th Floor
Denver, CO 80202
phone-303.793.8052
mkorenblat@suncor.com

From: McKenna, Chris [mailto:McKenna.Chris@epa.gov]
Sent: Friday, July 12, 2019 10:56 AM
To: Shields, Angela
Subject: Suncor 2018 RFS small refinery hardship petitions

Angela,

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I've read through the petitions and had a couple follow-up requests/questions,

1. Please email the .xls versions of the PI-588 forms and RFS compliance cost spreadsheets.
2. Ex. 4 CBI

I'll probably have some more questions, but wanted to get these to you for starters.

Please let me know if you have any questions. Sorry again for the delayed follow-up on your petitions.

Thanks very much,

Chris McKenna
Staff Engineer
US EPA, Office of Transportation and Air Quality
1200 Pennsylvania Avenue, NW
Washington, DC 20460
202-343-9037

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Message

From: McKenna, Chris [McKenna.Chris@epa.gov]
Sent: 8/13/2019 7:40:58 PM
To: Le, Madison [Le.Madison@epa.gov]; Cohen, Janet [cohen.janet@epa.gov]
CC: Spencer, Mark [spencer.mark@epa.gov]
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions

Madison – Ex. 5 Deliberative Process (DP)

I cc'd Mark on this response.

From: Le, Madison <Le.Madison@epa.gov>
Sent: Tuesday, August 13, 2019 3:39 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions

Thanks, Chris for the update.

Ex. 5 Deliberative Process (DP)

Thanks,
Madison

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Tuesday, August 13, 2019 3:34 PM
To: Le, Madison <Le.Madison@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>
Subject: FW: Suncor 2018 RFS Small Refinery Hardship Petitions

Madison/Janet,

Ex. 5 Deliberative Process (DP)

Thanks,
Chris

From: McKenna, Chris
Sent: Monday, August 12, 2019 1:53 PM
To: Bunker, Byron <bunker.byron@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>
Cc: Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

FYI, I just heard back from Mike Korenblat – he said he was out of the office last week, and will be emailing responses to my questions today.

From: Bunker, Byron <bunker.byron@epa.gov>
Sent: Tuesday, August 06, 2019 11:17 AM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>
Cc: Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

Thanks Chris!

****
Byron Bunker
Director Compliance Division
Office of Transportation and Air Quality
Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, MI 48105
Bunker.Byron@epa.gov
Phone: (734) 214-4155
Mobile: (734) 353-9623
****

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Tuesday, August 06, 2019 11:13 AM
To: Cohen, Janet <cohen.janet@epa.gov>
Cc: Bunker, Byron <bunker.byron@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Subject: FW: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

I just left a voice mail for Mike Korenblat at Suncor, I'll let you know if he calls me back.

From: McKenna, Chris
Sent: Wednesday, July 31, 2019 10:35 AM
To: Korenblat, Michael <MKorenblat@Suncor.com>
Cc: Shields, Angela <ashields@suncor.com>; Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

Mike,

Just wanted to check if you received my email below, and if you still wanted to discuss this.

Thanks,
Chris

From: McKenna, Chris
Sent: Tuesday, July 23, 2019 8:59 AM
To: Korenblat, Michael <MKorenblat@Suncor.com>
Cc: Shields, Angela <ashields@suncor.com>; Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

Mike,

Thanks for the feedback. Unfortunately, our email system deletes all .zip file attachments as a security precaution, would you please email the .xls files as individual attachments.

Ex. 4 CBI

Suncor also characterizes the refinery as a single facility in other locations. Their website at https://www.suncor.com/en-CA/about-us/refining says that Suncor operates a 98,000 bpd refinery in Commerce City which produces gasoline, diesel and asphalt, and the 2018 annual report at https://www.suncor.com/en-CA/investor-centre/financial-reports/annual-disclosure lists Commerce City as a single 98,000 bpd refinery (see page # 12). There's also a 2010 presentation at http://www.coqa-inc.org/docs/default-source/meeting-presentations/06102010_Segato.pdf which says the Denver refinery is a nominal 90,000 bpd fuels refinery (see top of slide 7).

If you'd like to discuss any of these or other comments/questions in more detail, I'm available this week at the following times (all eastern time),

7/23	12:00 - 4:00
7/24	8:00 - 4:00
7/25	8:00 - 4:00
7/26	8:00 - 12:00

Re: timing on petition responses, we at the EPA staff level have been waiting for several weeks for direction from our management on how they want to proceed with all of the petitions that have been submitted to us. Unfortunately, these petitions have become matters of intense political interest, which has basically halted our efforts to keep the petitions moving. If I hear anything more on this, I'll let you know.

Thanks again,
Chris

From: Korenblat, Michael <MKorenblat@Suncor.com>
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Cc: Shields, Angela <ashields@suncor.com>
Subject: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

CONFIDENTIAL BUSINESS INFORMAITON
CONFIDENTIAL TREAMENT REQUESTED

Chris-

Angela forwarded your message to me, and I am responding on her behalf.

Thanks very much for your e-mail, and explaining the delay in processing Suncor's two Petition for Extension of Small Refinery Exemption.

Pursuant to your request, attached please find the following in the attached zip file. Suncor requests confidential treatment of all these attachments (and this e-mail) as CBI:

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2. A .pdf of Suncor's Petition for Extension of Small Refinery Exemption for its Denver East Refinery (EPA Facility ID #00544), which was sent on 12/28/19.
3. Excel spreadsheets containing Suncor's 2018 RFS Cost of Compliance for the Denver West Refinery and the Denver East Refinery, which are contained in separate tabs.
4. Excel spreadsheets containing Suncor's PI-588 Forms for the Denver West Refinery and the Denver East Refinery, which are contained in separate tabs.

If you can confirm receipt and that you can access these files, I would appreciate it.

Ex. 4 CBI

Very truly yours,

Michael Korenblat

Michael E. Korenblat, Esq.
Director, Legal Affairs - Downstream U.S.A.
SUNCOR ENERGY

717 17th Street, 29th Floor
Denver, CO 80202
phone-303.793.8052
mkorenblat@suncor.com

From: McKenna, Chris [mailto:McKenna.Chris@epa.gov]
Sent: Friday, July 12, 2019 10:56 AM
To: Shields, Angela
Subject: Suncor 2018 RFS small refinery hardship petitions

Angela,

My apologies, we just found your 2018 RFS small refinery hardship petitions. From the petition dates, it looks like they were submitted during the government shutdown in late 2018/early 2019, but when we returned from the shutdown, our contractors who process the incoming mail didn't notify EPA staff that they had received them. The petitions also mention that they were emailed to Brent Williams, but he left EPA last year, so no EPA staff person ever saw the emailed versions.

I've read through the petitions and had a couple follow-up requests/questions,

1. Please email the .xls versions of the PI-588 forms and RFS compliance cost spreadsheets.
2. Ex. 4 CBI

I'll probably have some more questions, but wanted to get these to you for starters.

Please let me know if you have any questions. Sorry again for the delayed follow-up on your petitions.

Thanks very much,

Chris McKenna
Staff Engineer
US EPA, Office of Transportation and Air Quality
1200 Pennsylvania Avenue, NW
Washington, DC 20460
202-343-9037

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Message

From: Cohen, Janet [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D94B854E69CD4F9E80DB946BF9D1C1B2-COHEN, JANET]
Sent: 10/1/2019 12:13:55 PM
To: Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [Garfinkle.stacey@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; McKenna, Chris [mckenna.chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: agenda for this morning
Attachments: 10_1_19 RFS Small Refinery Hardships & Book & Garden Club.docx

Looks a lot like last week – we can add topics as needed at beginning of meeting. – j. -

RFS Small Refinery Hardships & Book & Garden & Dog Club (Volunteer Brigade?? Forum?? Alliance?? Star Troupe??)
Gathering Date: Tuesday, October 1, 2019
NVFEL Room N-62; Call-in Ex. 6 Personal Privacy (PP)

Updates/Discussion

- Ex. 5 Deliberative Process (DP)
- Suncor
  - Ineligibility letter status
  - Next steps?
- DOE?
- FOIAs
  - RFA FOIA review documents are in Relativity
  - CBI Substantiation Process
  - Non-RFA FOIAs
- Litigation
  - Ex. 5 Deliberative Process (DP)
- Other?

Discussion Topics

- 2019 petitions! Have started arriving!
  - Do we need materials for weekly fuels meeting with AA?
  - Ex. 5 Deliberative Process (DP)

Volunteer Opportunities

Book Suggestions & Garden Tips

Dog Stories

Message

From: Cohen, Janet [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D94B854E69CD4F9E80DB946BF9D1C1B2-COHEN, JANET]
Sent: 10/1/2019 12:13:02 PM
To: White, Thomas [thomas.white@hq.doe.gov]
Subject: for this morning
Attachments: 10_1_19 RFS Small Refinery Hardships & Book & Garden Club.docx

Hi Tom, here's the agenda for today's meeting: Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Message

From: Cohen, Janet [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D94B854E69CD4F9E80DB946BF9D1C1B2-COHEN, JANET]
Sent: 8/7/2019 7:22:54 PM
To: McKenna, Chris [mckenna.chris@epa.gov]
Subject: RE: nnto - can you join 3 pm fuels weekly ((to talk with Anne about Suncor)?

Your choice but good if you can go down and be on video

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Wednesday, August 07, 2019 3:21 PM
To: Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: nnto - can you join 3 pm fuels weekly ((to talk with Anne about Suncor)?

Should I call in or go down to her office?

From: Cohen, Janet <cohen.janet@epa.gov>
Sent: Wednesday, August 07, 2019 3:18 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Subject: nnto - can you join 3 pm fuels weekly ((to talk with Anne about Suncor)?
Importance: High

Message

From: Cohen, Janet [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D94B854E69CD4F9E80DB946BF9D1C1B2-COHEN, JANET]
Sent: 8/7/2019 4:04:38 PM
To: McKenna, Chris [mckenna.chris@epa.gov]
Subject: FW: NNTO: If we have a draft Suncor one-pager can you send that to me? Thanks!
Attachments: RFS small refinery eligibility (Suncor Denver East and West) - draft.docx

And if yes bring a few copies for anyone joining in DC?

From: Cohen, Janet
Sent: Wednesday, August 07, 2019 10:04 AM
To: Bunker, Byron <bunker.byron@epa.gov>
Subject: RE: NNTO: If we have a draft Suncor one-pager can you send that to me? Thanks!

Here's the current draft Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP) – j. -

From: Bunker, Byron <bunker.byron@epa.gov>
Sent: Wednesday, August 07, 2019 9:47 AM
To: Cohen, Janet <cohen.janet@epa.gov>
Subject: NNTO: If we have a draft Suncor one-pager can you send that to me? Thanks!

****
Byron Bunker
Director Compliance Division
Office of Transportation and Air Quality
Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, MI 48105
Bunker.Byron@epa.gov
Phone: (734) 214-4155
Mobile: (734) 353-9623
****

Message

From: Cohen, Janet [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D94B854E69CD4F9E80DB946BF9D1C1B2-COHEN, JANET]
Sent: 9/4/2019 12:56:43 PM
To: Nelson, Karen [nelson.karen@epa.gov]
Subject: RE: CONTAINS CBI - Suncor ineligibility letter

Thanks. Wonder why I didn't see it in folder. – j. -

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Wednesday, September 04, 2019 8:55 AM
To: Cohen, Janet <cohen.janet@epa.gov>
Subject: CONTAINS CBI - Suncor ineligibility letter

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

Do not release without review. This email and any attached documents may contain information claimed as CBI, confidential attorney-client communications, privileged attorney work product, and/or privileged and confidential deliberative process material.

Message

From: Cohen, Janet [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D94B854E69CD4F9E80DB946BF9D1C1B2-COHEN, JANET]
Sent: 9/3/2019 12:45:30 PM
To: Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [Garfinkle.stacey@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; McKenna, Chris [mckenna.chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]; Hengst, Benjamin [Hengst.Benjamin@epa.gov]; Byron Bunker [Bunker.Byron@epa.gov]
Subject: draft agenda for 10 am
Attachments: 9_3_19 RFS Small Refinery Hardships & Book & Garden Club.docx

Linked, 9_3_19 RFS Small Refinery Hardships & Book & Garden Club, and attached

Message

From: Cohen, Janet [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D94B854E69CD4F9E80DB946BF9D1C1B2-COHEN, JANET]
Sent: 7/12/2019 5:14:15 PM
To: Tom White [Thomas.White@hq.doe.gov]; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [Garfinkle.stacey@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; McKenna, Chris [mckenna.chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: agenda for next week's small refinery meeting
Attachments: 7_16_19 RFS Small Refinery Hardships & Book & Garden Club.docx

Alll – **Ex. 6 Personal Privacy (PP)** I've prepared a draft agenda. Can someone open the phone line please? The two main topics I know of as of now are Suncor's eligibility (see email discussion) **Ex. 5 Deliberative Process (DP)**

Ex. 5 Deliberative Process (DP)

RFS Small Refinery Hardships & Book & Garden & Dog Club (Volunteer Brigade?? Forum?? Alliance?? Star Troupe??)
Gathering Date: Tuesday, July 16, 2019
NVFEL Room N-62; Call-in Ex. 6 Personal Privacy (PP)

Updates/Discussion

- Ex. 5 Deliberative Process (DP)
- RFA/FOIA/CBI substantiation status & process plan
- Other litigation?
- Ex. 5 Deliberative Process (DP)
- Suncor petitions – eligible?
- Other?

Discussion Topics

- See above

Volunteer Opportunities

- Help with RFA FOIA/CBI substantiation
- Ex. 5 Deliberative Process (DP)

Book Suggestions & Garden Tips

Dog Stories

Message

From: Cohen, Janet [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D94B854E69CD4F9E80DB946BF9D1C1B2-COHEN, JANET]
Sent: 8/7/2019 1:47:44 PM
To: Bunker, Byron [bunker.byron@epa.gov]
Subject: RE: NNTO: If we have a draft Suncor one-pager can you send that to me? Thanks!

Karen was just finishing it up when I checked with her earlier today. I'll check again now.

From: Bunker, Byron <bunker.byron@epa.gov>
Sent: Wednesday, August 07, 2019 9:47 AM
To: Cohen, Janet <cohen.janet@epa.gov>
Subject: NNTO: If we have a draft Suncor one-pager can you send that to me? Thanks!

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Byron Bunker
Director Compliance Division
Office of Transportation and Air Quality
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Phone: (734) 214-4155
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Sent: 8/5/2019 9:04:39 PM
To: Byron Bunker [Bunker.Byron@epa.gov]; Hengst, Benjamin [Hengst.Benjamin@epa.gov]; thomas.white@hq.doe.gov; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [Garfinkle.stacey@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; McKenna, Chris [mckenna.chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: agenda for tomorrow
Attachments: 8_6__19 RFS Small Refinery Hardships & Book & Garden Club.docx

Attached and posted on sharepoint. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Message

From: Cohen, Janet [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D94B854E69CD4F9E80DB946BF9D1C1B2-COHEN, JANET]
Sent: 7/24/2019 2:51:19 PM
To: McKenna, Chris [mckenna.chris@epa.gov]
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

Please let me know when you get the call scheduled. Tx. – j. -

From: McKenna, Chris
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Cc: Shields, Angela <ashields@suncor.com>; Cohen, Janet <cohen.janet@epa.gov>
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Ex. 4 CBI

Ex. 4 CBI

Very truly yours,

Michael Korenblat

Michael E. Korenblat, Esq.
Director, Legal Affairs - Downstream U.S.A.
SUNCOR ENERGY
717 17th Street, 29th Floor
Denver, CO 80202
phone-303.793.8052
mkorenblat@suncor.com

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To: Shields, Angela
Subject: Suncor 2018 RFS small refinery hardship petitions

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I've read through the petitions and had a couple follow-up requests/questions,

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2. Ex. 4 CBI

I'll probably have some more questions, but wanted to get these to you for starters.

Please let me know if you have any questions. Sorry again for the delayed follow-up on your petitions.

Thanks very much,

Chris McKenna

Staff Engineer
US EPA, Office of Transportation and Air Quality
1200 Pennsylvania Avenue, NW
Washington, DC 20460
202-343-9037

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Message

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Sent: 8/12/2019 8:55:24 PM
To: thomas.white@hq.doe.gov; Dubey, Susmita [dubey.susmita@epa.gov]; Garfinkle, Stacey [Garfinkle.stacey@epa.gov]; Le, Madison [Le.Madison@epa.gov]; Machiele, Paul [machiele.paul@epa.gov]; McKenna, Chris [mckenna.chris@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]; Spencer, Mark [spencer.mark@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Weihrauch, John [Weihrauch.John@epa.gov]
Subject: agenda for tomorrow
Attachments: 8_13_19 RFS Small Refinery Hardships & Book & Garden Club.docx

All – simple agenda sp far for tomorrow, attached and posted on sharepoint: recap from Friday, follow up from today's next steps discussion, organize for RFA-FOIA document review. I'm out for the rest of the week. I do plan to call in but Karen will run the call.

- J. -

RFS Small Refinery Hardships & Book & Garden & Dog Club (Volunteer Brigade?? Forum?? Alliance?? Star Troupe??)
Gathering Date: Tuesday, August 13, 2019
NVFEL Room N-62; Call-in Ex. 6 Personal Privacy (PP)

Updates/Discussion

- Laminated List -- 2018/Administrator/President News
    - THANK YOU!!!!
- Suncor – with Anne?
- DOE?
- Litigation?
- Other?

Discussion Topics

- 2018 next steps
- RFA-FOIA production/document review

Volunteer Opportunities

Book Suggestions & Garden Tips

Dog Stories

Ex. 5 Deliberative Process (DP); Ex. 4 CBI

Message

From: Nelson, Karen [nelson.karen@epa.gov]
Sent: 8/6/2019 8:21:32 PM
To: McKenna, Chris [McKenna.Chris@epa.gov]
CC: Cohen, Janet [cohen.janet@epa.gov]; Parsons, Nick [Parsons.Nick@epa.gov]; Stahle, Susan [Stahle.Susan@epa.gov]; Piotrowski, Greg [piotrowski.greg@epa.gov]; Michaels, Lauren [Michaels.Lauren@epa.gov]
Subject: RE: Suncor East and West One Pager for Sarah

Excellent! Thanks Chris!

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Tuesday, August 6, 2019 2:00 PM
To: Nelson, Karen <nelson.karen@epa.gov>
Cc: Cohen, Janet <cohen.janet@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>; Stahle, Susan <Stahle.Susan@epa.gov>; Piotrowski, Greg <piotrowski.greg@epa.gov>; Michaels, Lauren <Michaels.Lauren@epa.gov>
Subject: RE: Suncor East and West One Pager for Sarah

Karen,

I added some info to the Suncor "1-pager", feel free to edit further.

Thanks,
Chris

From: McKenna, Chris
Sent: Tuesday, August 06, 2019 12:17 PM
To: Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: Suncor East and West One Pager for Sarah

I will do that, I just didn't want to be editing simultaneously with you and/or Nick.

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, August 06, 2019 12:16 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Subject: RE: Suncor East and West One Pager for Sarah

Would you mind putting in the info from their petitions? Do you have time?

Thanks Chris!
-Karen

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Tuesday, August 6, 2019 12:14 PM
To: Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: Suncor East and West One Pager for Sarah

Let me know if you want me to make any edits to this.

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, August 06, 2019 12:10 PM

To: Parsons, Nick <Parsons.Nick@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Stahle, Susan <Stahle.Susan@epa.gov>; Michaels, Lauren <Michaels.Lauren@epa.gov>; Piotrowski, Greg <piotrowski.greg@epa.gov>
Subject: RE: Suncor East and West One Pager for Sarah

Thanks Nick! ☺

From: Parsons, Nick <Parsons.Nick@epa.gov>
Sent: Tuesday, August 6, 2019 11:49 AM
To: Nelson, Karen <nelson.karen@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Stahle, Susan <Stahle.Susan@epa.gov>; Michaels, Lauren <Michaels.Lauren@epa.gov>; Piotrowski, Greg <piotrowski.greg@epa.gov>
Subject: RE: Suncor East and West One Pager for Sarah

I've updated all of the background information on these two refineries.

- Nick

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, August 06, 2019 11:13 AM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Stahle, Susan <Stahle.Susan@epa.gov>; Michaels, Lauren <Michaels.Lauren@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>; Piotrowski, Greg <piotrowski.greg@epa.gov>
Subject: Suncor East and West One Pager for Sarah

Hi Team!

I started editing the Ex. 4 CBI one-pager for the Suncor briefing (which may be later today). It's attached here, but also available on the share point under the "Briefings" folder, "Refinery Specific" subfolder.

Thanks everyone!
-Karen

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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Table 11. New, Shutdown and Reactivated Refineries During 2018

PAD District / Refinery	Location	Total Atmospheric Crude Oil Distillation Capacity (bbl/cd) [a]	Total Downstream Charge Capacity (bbl/sd) [b]	Date Operable	Date of Last Operation	Date Shutdown
NEW						
PAD District III		**35,000**				
Targa Channelview LLC	Channelview, TX	35,000		01/19		
OTHER						
PAD District IV		**103,000**				
Suncor Energy (USA) Inc [c]	Commerce City West, CO	67,000				
Suncor Energy (USA) Inc [c]	Commerce City East, CO	36,000				
PAD District V		**510,500**				
Tesoro Refining & Marketing Co [d]	Carson, CA	363,000				
Par Hawaii Refining LLC [e]	Kapolei, HI	147,500				

[a] bbl/cd=Barrels per calendar day.

[b] bbl/sd=Barrels per stream day.

[c] Suncor, Commerce City East and Commerce City West resumed reporting as separate entities with the 2019 Refinery Capacity Report. They reported as one entity in 2018.

[d] Tesoro Refining and Marketing, Wilmington and Carson began reporting as one entity with the 2019 Refinery Capacity Report.

[e] Par Hawaii Refining LLC purchased the atmospheric unit at Island Energy Services Downstream and began operating as one entity in December 2018.

ED_004187A_00003202-00001

Message

From: McKenna, Chris [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=451B675850124BF4A9DB1D577EE3B9AF-MCKENNA, CH]
Sent: 10/3/2019 4:01:34 PM
To: Stahle, Susan [Stahle.Susan@epa.gov]
Subject: FW: Suncor 2018 petition status check

Sue,

I know you're totally swamped, but just wanted to check when you think you'll be able to review the Suncor response letter. Their attorney (Mike Korenblat) called me last week to check on the status of their petitions.

Thanks very much,
Chris

From: Korenblat, Michael <MKorenblat@Suncor.com>
Sent: Tuesday, September 24, 2019 2:45 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 3 of 3)

Chris

Thanks for the conversation today, and the contact information.

Best,

Michael

From: McKenna, Chris <McKenna.Chris@epa.gov>
Date: September 24, 2019 at 12:41:59 PM MDT
To: Korenblat, Michael <MKorenblat@Suncor.com>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 3 of 3)

My division director is Byron Bunker, his phone # is 734-214-4155.

From: McKenna, Chris
Sent: Tuesday, September 24, 2019 11:16 AM
To: Korenblat, Michael <MKorenblat@Suncor.com>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 3 of 3)

Mike,

Got your voice mail from this morning – I don't have any news to report on your petition. We're still working towards a decision, but I don't know when we'll be issuing it.

Chris

From: McKenna, Chris
Sent: Wednesday, September 11, 2019 9:03 AM
To: Korenblat, Michael <MKorenblat@Suncor.com>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 3 of 3)

Mike,

We received all 3 emails and attachments.

Thanks,
Chris

From: Korenblat, Michael <MKorenblat@Suncor.com>
Sent: Friday, August 23, 2019 5:57 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Cc: Shields, Angela <ashields@suncor.com>; Cohen, Janet <cohen.janet@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>; Spencer, Mark <spencer.mark@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED (Email 3 of 3)

CONFIDENTIAL BUSINESS INFORMAITON
CONFIDENTIAL TREAMENT REQUESTED

Chris-

Attached please find a .pdf of Suncor's Petition for Extension of Small Refinery Exemption for its Denver East Refinery (EPA Facility ID #00544), which was originally submitted on 12/28/18. Suncor requests confidential treatment of this attachment (and this e-mail) as CBI.

If you could confirm receipt of all three e-mails and the attachments, I would appreciate it.

I will be in the office next week.

Michael E. Korenblat, Esq.
Director, Legal Affairs - Downstream U.S.A.
SUNCOR ENERGY
717 17th Street, 29th Floor
Denver, CO 80202
phone-303.793.8052
mkorenblat@suncor.com

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Message

From: McKenna, Chris [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=451B675850124BF4A9DB1D577EE3B9AF-MCKENNA, CH]
Sent: 7/31/2019 11:31:16 AM
To: White, Thomas [thomas.white@hq.doe.gov]
Subject: FW: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED
Attachments: 20180101 EIA Table 3 (refinery unit capacities).pdf; 20190101 EIA Table 3 (refinery unit capacities).pdf

FYI, here's the email I sent to Suncor. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP) Mike Korenblat is a Suncor attorney and Angela Shields is a Suncor staff engineer.

From: McKenna, Chris
Sent: Tuesday, July 23, 2019 8:59 AM
To: Korenblat, Michael <MKorenblat@Suncor.com>
Cc: Shields, Angela <ashields@suncor.com>; Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

Mike,

Thanks for the feedback. Unfortunately, our email system deletes all .zip file attachments as a security precaution, would you please email the .xls files as individual attachments.

Ex. 4 CBI

Suncor also characterizes the refinery as a single facility in other locations. Their website at https://www.suncor.com/en-CA/about-us/refining says that Suncor operates a 98,000 bpd refinery in Commerce City which produces gasoline, diesel and asphalt, and the 2018 annual report at https://www.suncor.com/en-CA/investor-centre/financial-reports/annual-disclosure lists Commerce City as a single 98,000 bpd refinery (see page # 12). There's also a 2010 presentation at http://www.coga-inc.org/docs/default-source/meeting-presentations/06102010_Segato.pdf which says the Denver refinery is a nominal 90,000 bpd fuels refinery (see top of slide 7).

If you'd like to discuss any of these or other comments/questions in more detail, I'm available this week at the following times (all eastern time),

7/23 12:00 - 4:00
7/24 8:00 - 4:00
7/25 8:00 - 4:00
7/26 8:00 - 12:00

Re: timing on petition responses, we at the EPA staff level have been waiting for several weeks for direction from our management on how they want to proceed with all of the petitions that have been submitted to us. Unfortunately, these petitions have become matters of intense political interest, which has basically halted our efforts to keep the petitions moving. If I hear anything more on this, I'll let you know.

Thanks again,
Chris

From: Korenblat, Michael <MKorenblat@Suncor.com>
Sent: Thursday, July 18, 2019 4:41 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Cc: Shields, Angela <ashields@suncor.com>
Subject: Suncor 2018 RFS Small Refinery Hardship Petitions -- CBI/CONFIDENTIAL TREATMENT REQUESTED

CONFIDENTIAL BUSINESS INFORMAITON
CONFIDENTIAL TREAMENT REQUESTED

Chris-

Angela forwarded your message to me, and I am responding on her behalf.

Thanks very much for your e-mail, and explaining the delay in processing Suncor's two Petition for Extension of Small Refinery Exemption.

Pursuant to your request, attached please find the following in the attached zip file. Suncor requests confidential treatment of all these attachments (and this e-mail) as CBI:

1. A .pdf of Suncor's Petition for Extension of Small Refinery Exemption for its Denver West Refinery (EPA Facility ID #01352), which was sent on 12/28/19.
2. A .pdf of Suncor's Petition for Extension of Small Refinery Exemption for its Denver East Refinery (EPA Facility ID #00544), which was sent on 12/28/19.
3. Excel spreadsheets containing Suncor's 2018 RFS Cost of Compliance for the Denver West Refinery and the Denver East Refinery, which are contained in separate tabs.
4. Excel spreadsheets containing Suncor's PI-588 Forms for the Denver West Refinery and the Denver East Refinery, which are contained in separate tabs.

If you can confirm receipt and that you can access these files, I would appreciate it.

Ex. 4 CBI

Ex. 4 CBI

s

Very truly yours,

Michael Korenblat

Michael E. Korenblat, Esq.
Director, Legal Affairs - Downstream U.S.A.
SUNCOR ENERGY
717 17th Street, 29th Floor
Denver, CO 80202
phone-303.793.8052
mkorenblat@suncor.com

From: McKenna, Chris [mailto:McKenna.Chris@epa.gov]
Sent: Friday, July 12, 2019 10:56 AM
To: Shields, Angela
Subject: Suncor 2018 RFS small refinery hardship petitions

Angela,

My apologies, we just found your 2018 RFS small refinery hardship petitions. From the petition dates, it looks like they were submitted during the government shutdown in late 2018/early 2019, but when we returned from the shutdown, our contractors who process the incoming mail didn't notify EPA staff that they had received them. The petitions also mention that they were emailed to Brent Williams, but he left EPA last year, so no EPA staff person ever saw the emailed versions.

I've read through the petitions and had a couple follow-up requests/questions,

1. Please email the .xls versions of the PI-588 forms and RFS compliance cost spreadsheets.
2. Ex. 4 CBI

I'll probably have some more questions, but wanted to get these to you for starters.

Please let me know if you have any questions. Sorry again for the delayed follow-up on your petitions.

Thanks very much,

Chris McKenna
Staff Engineer
US EPA, Office of Transportation and Air Quality
1200 Pennsylvania Avenue, NW
Washington, DC 20460
202-343-9037

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Message

From: McKenna, Chris [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=451B675850124BF4A9DB1D577EE3B9AF-MCKENNA, CH]
Sent: 3/13/2019 1:59:26 PM
To: Parsons, Nick [Parsons.Nick@epa.gov]
Subject: RE: 2018 ACU input data and refinery production. (CBI info)
Attachments: 2018 refinery crude & product rates (EIA-810 prelim).xlsx

-----Original Message-----
From: Parsons, Nick
Sent: Wednesday, March 13, 2019 9:54 AM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Subject: RE: 2018 ACU input data and refinery production. (CBI info)

Hi Chris, yes please send me the data. Thanks!

- Nick

-----Original Message-----
From: McKenna, Chris
Sent: Wednesday, March 13, 2019 8:37 AM
To: White, Thomas <Thomas.White@hq.doe.gov>
Cc: Parsons, Nick <Parsons.Nick@epa.gov>
Subject: RE: 2018 ACU input data and refinery production. (CBI info)

Tom - this is great, thanks very much for sending it.

Nick - please let me know if you want a copy of EIA's refinery inputs and product data for 2018.

-----Original Message-----
From: White, Thomas <Thomas.White@hq.doe.gov>
Sent: Wednesday, March 13, 2019 8:30 AM
To: McKenna, Chris <McKenna.Chris@epa.gov>
Subject: 2018 ACU input data and refinery production. (CBI info)

Hi Chris,

Attached is EIA data on refinery inputs and production.

This is CBI information so treat it accordingly.

Thank you,

Thomas White
U.S. Department of Energy
Office of Policy
202-586-1393

Message

From: Bunker, Byron [bunker.byron@epa.gov]
Sent: 10/23/2019 5:47:25 PM
To: Nelson, Karen [nelson.karen@epa.gov]
Subject: Automatic reply: DPP&CBI: Suncor SRE Ineligibility Letter

I will be out of the office on vacation October 22-25. I will have limited access to e-mail and voicemail during this time. I can be reached on my cellphone at Ex. 6 Personal Privacy (PP)

For more timely follow up, please contact Mary Manners at (734) 214-4873 or Manners.Mary@epa.gov

Thanks,

Byron

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 10/21/2019 2:38:26 PM
To: Nelson, Karen [nelson.karen@epa.gov]
Subject: Automatic reply: DPP&CBI: Suncor Letter - Clean Version

Thanks for your message. I'll be travelling from Monday 10/21/19 through Thursday 10/24/19, and will only be checking messages intermittently. I'll be back in the office on Friday, 10/25.

-- Ben

Message

From: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Sent: 8/7/2019 5:20:53 PM
To: Parsons, Nick [Parsons.Nick@epa.gov]; Nelson, Karen [nelson.karen@epa.gov]
Subject: Suncor doc

Hey Nick, Karen—actually, I'll send out the final version of this with the other materials for the 3pm. Can you wrap up editing by 1:30 or so? I think the Denver/Commerce City thing is no big deal if you can't get it totally squared away. Ben

Message

From: Nelson, Karen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=3492ADEE9FAB4A02956FCF63F0DE048B-NELSON, KAR]
Sent: 10/25/2019 8:07:45 PM
To: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
Subject: FW: EPA decision on Suncor Energy's two Commerce City 2018 RFS hardship petitions (CONTAINS CONFIDENTIAL BUSINESS INFORMATION)
Attachments: Suncor 2018 response letter signed.pdf

Hey Ben!

I sent out the signed decision today after speaking with Janet. Just wanted to let you know.

Have a nice weekend!
-Karen

From: Nelson, Karen
Sent: Friday, October 25, 2019 3:53 PM
To: Shields, Angela <ashields@suncor.com>
Cc: Cohen, Janet <cohen.janet@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>
Subject: EPA decision on Suncor Energy's two Commerce City 2018 RFS hardship petitions (CONTAINS CONFIDENTIAL BUSINESS INFORMATION)

Good afternoon Ms. Shields,

Attached is a scanned copy of EPA's response to Suncor Energy (U.S.A.), Inc.'s 2018 RFS hardship petitions for the East Refinery and West Refinery located in Commerce City, Colorado. A paper copy will also be mailed to you. Please let me know if you have any questions.

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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Message

From: Nelson, Karen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=3492ADEE9FAB4A02956FCF63F0DE048B-NELSON, KAR]
Sent: 7/30/2019 3:51:52 PM
To: Gustafson, Kurt [Gustafson.Kurt@epa.gov]
Subject: FW: nnto - agenda for small refinery club posted on sharepoint & attached
Attachments: 7_30_19 RFS Small Refinery Hardships & Book & Garden Club.docx

---

From: Cohen, Janet
Sent: Tuesday, July 30, 2019 8:49 AM
To: Bunker, Byron <bunker.byron@epa.gov>; Hengst, Benjamin <Hengst.Benjamin@epa.gov>; White, Thomas <thomas.white@hq.doe.gov>; Dubey, Susmita <dubey.susmita@epa.gov>; Garfinkle, Stacey <garfinkle.stacey@epa.gov>; Le, Madison <Le.Madison@epa.gov>; Machiele, Paul <machiele.paul@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Michaels, Lauren <Michaels.Lauren@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>; Piotrowski, Greg <piotrowski.greg@epa.gov>; Spencer, Mark <spencer.mark@epa.gov>; Stahle, Susan <Stahle.Susan@epa.gov>; Weihrauch, John <Weihrauch.John@epa.gov>
Subject: nnto - agenda for small refinery club posted on sharepoint & attached

Message

From: Nelson, Karen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=3492ADEE9FAB4A02956FCF63F0DE048B-NELSON, KAR]
Sent: 9/24/2019 9:31:25 PM
To: Caballero, Kathryn [Caballero.Kathryn@epa.gov]
Subject: RE: DPP & CBI: Suncor Ineligibility Letter for your Review

Thanks! It was, as always, a team effort. ☺

Ex. 5 Deliberative Process (DP)

Thanks!
-Karen

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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From: Caballero, Kathryn <Caballero.Kathryn@epa.gov>
Sent: Tuesday, September 24, 2019 5:13 PM
To: Nelson, Karen <nelson.karen@epa.gov>
Subject: RE: DPP & CBI: Suncor Ineligibility Letter for your Review

This looks very good!

Kathryn Pirrotta Caballero
Supervising/Senior Attorney, Compliance Division
Office of Transportation and Air Quality
(w) 202-564-1849

Mailing Address:
US Environmental Protection Agency
Office of Transportation and Air Quality
Compliance Division
2000 Traverwood Drive
Ann Arbor, MI 48105

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, September 24, 2019 2:00 PM
To: Stahle, Susan <Stahle.Susan@epa.gov>
Cc: Michaels, Lauren <Michaels.Lauren@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Caballero, Kathryn <Caballero.Kathryn@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>
Subject: DPP & CBI: Suncor Ineligibility Letter for your Review

Hi Sue!

Here is a clean version of the Suncor ineligibility letter for review, whenever you have time.

Thanks Sue!
-Karen

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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Message

From: Nelson, Karen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=3492ADEE9FAB4A02956FCF63F0DE048B-NELSON, KAR]
Sent: 9/24/2019 7:03:13 PM
To: McKenna, Chris [mckenna.chris@epa.gov]
CC: Parsons, Nick [Parsons.Nick@epa.gov]
Subject: RE: DPP & CBI: Suncor Ineligibility Letter for your Review

Yup, it matches the address on their 2018 petitions they sent.

Thanks again!

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Tuesday, September 24, 2019 2:58 PM
To: Nelson, Karen <nelson.karen@epa.gov>
Cc: Parsons, Nick <Parsons.Nick@epa.gov>
Subject: RE: DPP & CBI: Suncor Ineligibility Letter for your Review

Karen - I finished my edits, would you please doublecheck it for me. Thanks.

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, September 24, 2019 2:36 PM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>
Subject: RE: DPP & CBI: Suncor Ineligibility Letter for your Review

Thank Chris! ☺

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Tuesday, September 24, 2019 2:35 PM
To: Nelson, Karen <nelson.karen@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>
Subject: RE: DPP & CBI: Suncor Ineligibility Letter for your Review

I'm typing it in now.

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, September 24, 2019 2:35 PM
To: Parsons, Nick <Parsons.Nick@epa.gov>
Cc: McKenna, Chris <McKenna.Chris@epa.gov>
Subject: RE: DPP & CBI: Suncor Ineligibility Letter for your Review

Oops, yeah, I have that. I'll go in and fix it now.

Thanks for catching that, Nick! Sorry for missing it, I was in too much of a rush to get it to Sue, I guess.

From: Parsons, Nick <Parsons.Nick@epa.gov>
Sent: Tuesday, September 24, 2019 2:32 PM
To: Nelson, Karen <nelson.karen@epa.gov>
Cc: McKenna, Chris <McKenna.Chris@epa.gov>
Subject: RE: DPP & CBI: Suncor Ineligibility Letter for your Review

I wanted to flag that this version is still missing the city, state, and ZIP code for Suncor's address. I presume you or Chris have that information?

- Nick

From: Nelson, Karen <nelson.karen@epa.gov>
Sent: Tuesday, September 24, 2019 2:00 PM
To: Stahle, Susan <Stahle.Susan@epa.gov>
Cc: Michaels, Lauren <Michaels.Lauren@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Caballero, Kathryn <Caballero.Kathryn@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>
Subject: DPP & CBI: Suncor Ineligibility Letter for your Review

Hi Sue!

Here is a clean version of the Suncor ineligibility letter for review, whenever you have time.

Thanks Sue!
-Karen

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

Do not release without review. This email and any attached documents may contain information claimed as CBI, confidential attorney-client communications, privileged attorney work product, and/or privileged and confidential deliberative process material.

Message

From: Nelson, Karen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=3492ADEE9FAB4A02956FCF63F0DE048B-NELSON, KAR]
Sent: 8/7/2019 2:55:30 PM
To: Stahle, Susan [Stahle.Susan@epa.gov]
Subject: Suncor One-Pager

<!--[if lte mso 15 || CheckWebRef]-->

Nelson, Karen has shared a OneDrive for Business file with you. To view it, click the link below.

RFS small refinery eligibility (Suncor Denver East and West) - draft.docx

<!--[endif]-->

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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Sent: 8/7/2019 3:29:43 PM
To: McKenna, Chris [mckenna.chris@epa.gov]
Subject: suncor one pager

<!--[if lte mso 15 || CheckWebRef]-->

Nelson, Karen has shared a OneDrive for Business file with you. To view it, click the link below.

RFS small refinery eligibility (Suncor Denver East and West) - draft.docx

<!--[endif]-->

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Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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Sent: 8/7/2019 4:04:11 PM
To: McKenna, Chris [mckenna.chris@epa.gov]
Subject: Suncor one-pager

Hey Chris,

Janet just swung by to ask me to ensure that you're aware that we're using the Suncor one-pager at the 12:30 meeting today (in a half hour). I just called, but missed you, so I'm sending this email instead.

Sorry for all the madness today, and I really don't want to add to it, but we've got a short turn around on this one-pager. Thanks again for all your help and work. Hopefully things calm down this afternoon.

Thank you for your time.

Sincerely,
Karen Nelson
Compliance Division
(734) 214-4657

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Message

From: Nelson, Karen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=3492ADEE9FAB4A02956FCF63F0DE048B-NELSON, KAR]
Sent: 8/7/2019 4:05:29 PM
To: McKenna, Chris [mckenna.chris@epa.gov]
Subject: RE: Suncor 1-pager

Please disregard my last email to you! (Except the thanks part and the hoping that things clam down soon!) ☺

From: McKenna, Chris <McKenna.Chris@epa.gov>
Sent: Wednesday, August 7, 2019 12:02 PM
To: Cohen, Janet <cohen.janet@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Cc: Schmittou, Kim <schmittou.kim@epa.gov>
Subject: RE: Suncor 1-pager

Ex. 5 Deliberative Process (DP)

From: Cohen, Janet <cohen.janet@epa.gov>
Sent: Wednesday, August 07, 2019 11:25 AM
To: McKenna, Chris <McKenna.Chris@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>
Cc: Schmittou, Kim <schmittou.kim@epa.gov>
Subject: Suncor 1-pager

Chris & Karen, I'm on a call starting in 5 minutes until 12:30. Please send me an updated version when you can.

Karen, if you are able, please work with Kim to get copies made. If you can't just let me know when you've put pens down on the draft and I'll take it from there. – j. -

---

From: Bunker, Byron <bunker.byron@epa.gov>
Sent: Wednesday, August 07, 2019 11:10 AM
To: Cohen, Janet <cohen.janet@epa.gov>
Subject: RE: NNTO: If we have a draft Suncor one-pager can you send that to me? Thanks!

Thanks Janet.

Ex. 5 Deliberative Process (DP)

too. Either way, can you please bring copies of this to the meeting at 12:30 with Sarah?

Thanks!

Byron

****
Byron Bunker
Director Compliance Division
Office of Transportation and Air Quality
Environmental Protection Agency

2000 Traverwood Drive
Ann Arbor, MI 48105
Bunker.Byron@epa.gov
Phone: (734) 214-4155
Mobile: (734) 353-9623
****

From: Cohen, Janet <cohen.janet@epa.gov>
Sent: Wednesday, August 07, 2019 10:04 AM
To: Bunker, Byron <bunker.byron@epa.gov>
Subject: RE: NNTO: If we have a draft Suncor one-pager can you send that to me? Thanks!

Here's the current draft: **Ex. 5 Deliberative Process (DP)**

Ex. 5 Deliberative Process (DP)

From: Bunker, Byron <bunker.byron@epa.gov>
Sent: Wednesday, August 07, 2019 9:47 AM
To: Cohen, Janet <cohen.janet@epa.gov>
Subject: NNTO: If we have a draft Suncor one-pager can you send that to me? Thanks!

****
Byron Bunker
Director Compliance Division
Office of Transportation and Air Quality
Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, MI 48105
Bunker.Byron@epa.gov
Phone: (734) 214-4155
Mobile: (734) 353-9623
****

Message

From: Stahle, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B25318C6014D4FB985288E15143C8596-SSTAHLE]
Sent: 8/14/2019 8:07:48 PM
To: Hengst, Benjamin [Hengst.Benjamin@epa.gov]
CC: Dubey, Susmita [dubey.susmita@epa.gov]
Subject: RE: materials for 2 fuels meetings tomorrow

Opening the conference call line?

Susan Stahle
Air and Radiation Law Office
Office of General Counsel
U.S. Environmental Protection Agency
WJCN-7502B
202-564-1272

From: Hengst, Benjamin <Hengst.Benjamin@epa.gov>
Sent: Tuesday, August 13, 2019 4:21 PM
To: Anderson, Robert <Anderson.Robert@epa.gov>; Borgert, Kyle <borgert.kyle@epa.gov>; Boylan, Thomas <boylan.thomas@epa.gov>; Bunker, Byron <bunker.byron@epa.gov>; Burch, Julia <Burch.Julia@epa.gov>; Burkholder, Dallas <burkholder.dallas@epa.gov>; Charmley, William <charmley.william@epa.gov>; Cohen, Janet <cohen.janet@epa.gov>; Dubey, Susmita <dubey.susmita@epa.gov>; Garfinkle, Stacey <garfinkle.stacey@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Gustafson, Kurt <Gustafson.Kurt@epa.gov>; Herbolsheimer, Courtney <herbolsheimer.courtney@epa.gov>; Korotney, David <korotney.david@epa.gov>; Larson, Ben <Larson.Ben@epa.gov>; Le, Madison <Le.Madison@epa.gov>; Levy, Aaron <Levy.Aaron@epa.gov>; Li, Ryland (Shengzhi) <Li.Ryland@epa.gov>; Lie, Sharyn <Lie.Sharyn@epa.gov>; Machiele, Paul <machiele.paul@epa.gov>; Manners, Mary <manners.mary@epa.gov>; Master, Barbora <Master.Barbora@epa.gov>; McKenna, Chris <McKenna.Chris@epa.gov>; Michaels, Lauren <Michaels.Lauren@epa.gov>; Mroz, Jessica <mroz.jessica@epa.gov>; Nelson, Karen <nelson.karen@epa.gov>; Orlin, David <Orlin.David@epa.gov>; Parsons, Nick <Parsons.Nick@epa.gov>; Pastorkovich, Anne-Marie <Pastorkovich.Anne-Marie@epa.gov>; Patulski, Meg <patulski.meg@epa.gov>; Sargeant, Kathryn <sargeant.kathryn@epa.gov>; Shelby, Michael <Shelby.Michael@epa.gov>; Simon, Karl <Simon.Karl@epa.gov>; Sobel, Aaron <Sobel.Aaron@epa.gov>; Spencer, Mark <spencer.mark@epa.gov>; Stahle, Susan <Stahle.Susan@epa.gov>; Weihrauch, John <Weihrauch.John@epa.gov>
Subject: materials for 2 fuels meetings tomorrow

1. Agenda for the 4pm fuels weekly is tomorrow
2. Materials for RFS RIN Generation Topics briefing attached.

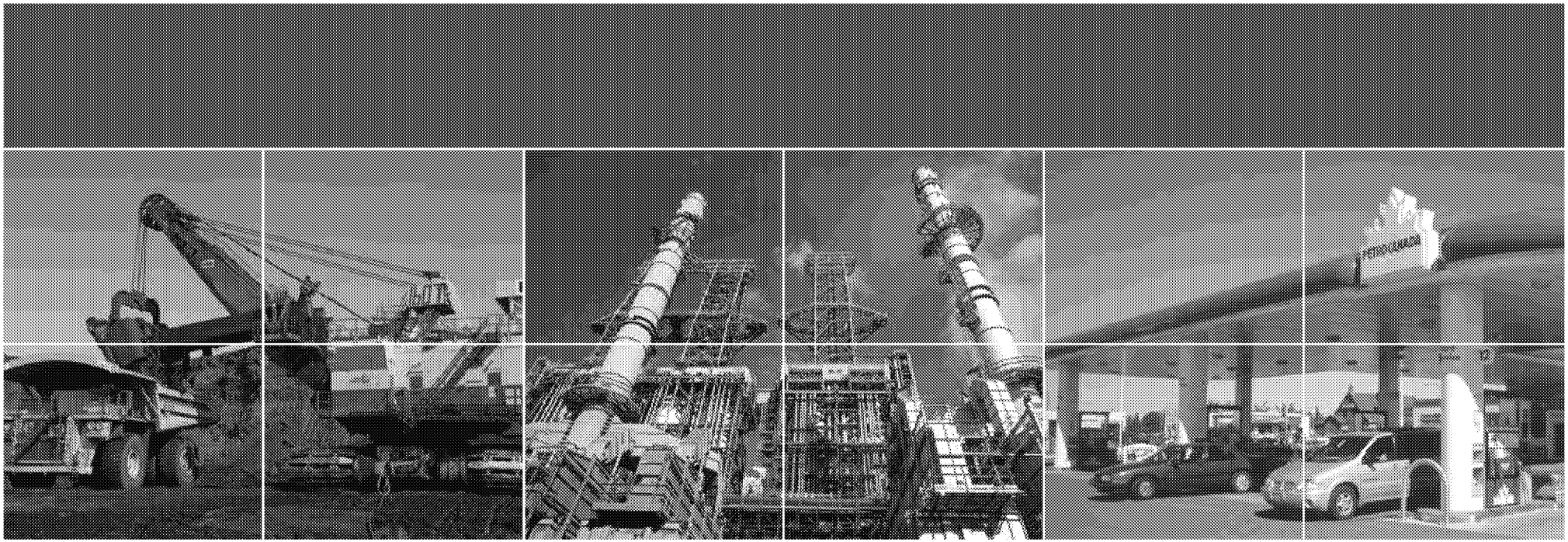
Thanks—Ben

From: Hengst, Benjamin

Weekly Fuels Team Meeting with Sarah Dunham
08.14.2019 Agenda

- SREs
  - Ex. 5 Deliberative Process (DP)
  - Suncor
  - Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)



Suncor Denver Refinery Overview

COQA June 10, 2010

Randy Segato

SUNCOR ENERGY

Denver Refinery

→Suncor History

→ Integration Projects

… Project Odyssey

→ Crude Qualities

… Suncor Synthetics
… Canadian Heavy
… Colorado Sweet
… other northern Padd2 and Padd4 crudes

SUNCOR ENERGY

Denver Refinery

2003

- Suncor acquires Conoco Philips Commerce City Refinery
- Nominal 60,000 bpd
- Formation of Suncor Energy USA (SEUSA)

Rick George, Suncor CEO

"Colorado is a growing, dynamic marketplace, and we're excited about expanding our business to this area. This acquisition provides us with the flexibility to move our products to the Denver refinery or other customers -- and gives us increased control of our product from production straight through to the consumer"

SUNCOR ENERGY

Denver Refinery

2004

- 300 M$ Planned Investment
- ULSD and integration to Oil Sands

"This Investment confirms Suncor's commitment to building our Denver operations as a key component of the company's long-term strategy."

On completion of the project, Suncor said it expects to integrate 10,000 to 15,000 barrels per day of oil sands sour crude into the refinery, and also will increase the refinery's capacity to process bitumen used in asphalt production.

SUNCOR ENERGY

Denver Refinery

2005

- Suncor acquires Valero Refinery “across the street”
- Nominal 30,000 bpd

Colorado Petroleum Association

"This isn't the first time people have talked about putting those two refineries together. It makes all the sense in the world. Any refinery that's away from the coast, that's small and only capable of handling a particular type of crude oil, the economics of refining suggest that you have to get bigger and get a big supply of crude oil”

Valero's chairman and CEO

"These two plants belong together under one company because they are much stronger and have a much brighter future together than either has individually. In addition to Suncor providing employees with compensation and benefits programs comparable to ours, the integration of these operations will provide greater opportunities for growth and a brighter future."

SUNCOR ENERGY

Denver

Assets acquired May 31, 2005
from Valero

Assets acquired Aug. 2003
from ConocoPhillips

Denver Refinery – nominal 90,000 bpd "Fuels" Refinery

Key Process Units

- Crude Units (3) - 2 Conventional / 1 High TAN capable
- FCCU (2)
- Poly (2)
- Reformer (2)
- Distillate Hydrotreating (2)
- High Sulfur High TAN Gasoil Hydrotreating (1)

Production

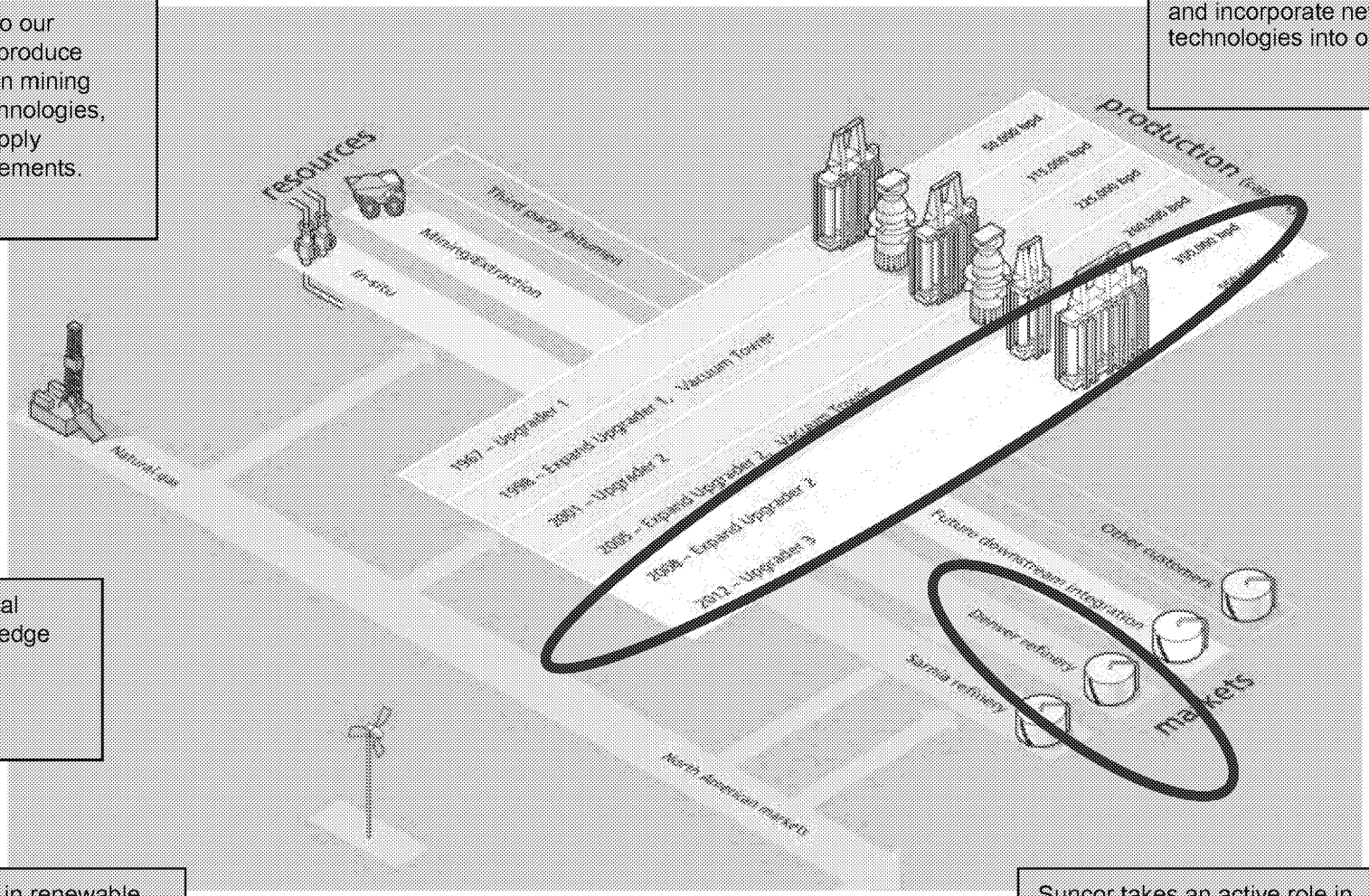
- LPG
- Gasoline (all grades, low octane "regional", ethanol blending)
- LSD/ULSD
- Jet
- Asphalt (PG grade capable)

SUNCOR ENERGY

Suncor Strategy ...as per 2005

To provide greater reliability and flexibility to our feedstock supplies, we produce bitumen through our own mining and in-situ recovery technologies, and supplement that supply through third party agreements.

A staged approach to increasing our crude oil production capacity allows Suncor to better manage capital costs and incorporate new ideas and new technologies into our facilities.



We produce conventional natural gas as a price hedge against the cost of energy consumption.

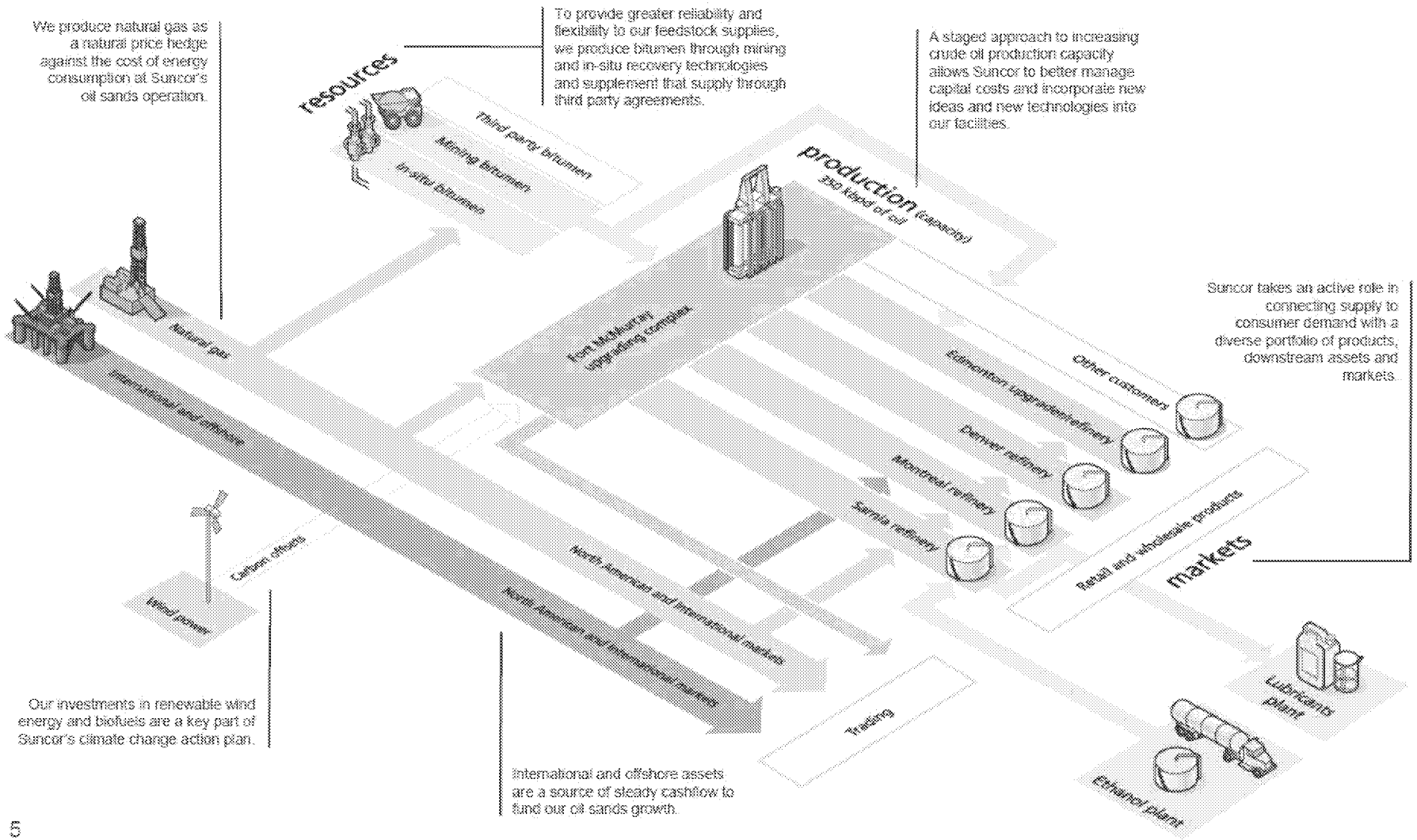
Our investments in renewable wind energy and biofuels are a key part of Suncor's climate change action plan.

Suncor takes an active role in connecting supply to consumer demand with a diverse portfolio of products, downstream assets and markets.

SUNCOR ENERGY

Suncor Strategy ...as per 2010*

The Suncor strategy



* http://www.suncor.com/pdf/suncorIRpresentationmay2010.pdf

SUNCOR ENERGY

Project Odyssey Investment

Commerce City Refinery Investment grows to 445 m$; Suncor's first major project at the refinery

→Project Odyssey is the name of the $445 million upgrade to Suncor's Commerce City refinery-the largest refinery in the Rocky Mountain region. The investment marks the second largest capital project in the Denver area, after the city's transportation expansion called T-REX. Project Odyssey consumed 2,150 tons of steel, 740,000 feet of electrical cables and 170,000 feet of pipes.

→Production Upgrades

- low sulphur diesel fuel
- improve the refinery's environmental performance
- enable Suncor to integrate a broader slate of crude oil products, including sour crude oil from the company's Canadian oil sands production.
- increase in the refinery's ability to process bitumen used in asphalt production.

→Suncor's U.S. businesses

- provides a vital link between the company's large scale oil sands resource base and the growing U.S. energy market
- major supplier of Colorado's gasoline and diesel fuel, as well as jet fuel to the Denver International Airport
- largest supplier of paving-grade asphalt in Colorado

→Over the two years of the Commerce City refinery upgrade the project employed a peak construction workforce of approximately 1,300. About 75% of the total project budget was spent purchasing goods and services from Colorado-based businesses.

→According to the Metro Denver Economic Development Corporation, the project brought more than $1 billion of economic activity to the area.

SUNCOR ENERGY

Project Odyssey – key changes

Asphalt Unit (AU) – The Asphalt Unit was modified with new metallurgy in order to run high-acid (TAN) crudes, such as those coming from oil sands. The project at the AU included a new atmospheric tower and a new vacuum tower.

Sulfur Recovery Unit (SRU) - The refinery's #2 SRU was modified to be able to add oxygen and recover more sulfur following the desulphurization process.

Tail Gas Unit (TGU) - The TGU was installed as part of a requirement to reduce the emissions from our SRU. Simply, the TGU makes both of the refinery's sulfur recovery units more efficient. Sulfur that is recovered in the SRU is recycled through the TGU resulting in a significant decrease in emissions to the air.

Hydrogen Plant - The new hydrogen plant uses natural gas to make hydrogen, which is used in the process of removing sulfur from diesel and gasoline.

#2 Hydrodesulphurization (HDS) Unit - The #2 HDS was modified to make ultra low sulfur kerosene. The refinery uses kerosene to blend with diesel fuel for cold weather properties.

#3 HDS -- The #3 HDS was modified to process ultra low sulfur diesel.

#4 HDS - The #4 HDS, which was made in Italy and came by ship across the Atlantic Ocean and by rail from the Port of Houston to the refinery, was newly installed and will treat gas oil. Once the sulfur is removed, the gas oil is the feedstock that goes to the fluidized catalytic cracking unit (FCC) to make gasoline.

Tank 774 - The refinery installed a new 120,000 barrel storage tank that will hold sour distillate, which is feedstock for the #3 HDS unit.

Propane Storage System - The refinery's propane storage system was relocated in order to install the #4 HDS.

Sour Water Stripper - The new sour water stripper cleans the water used in refinery processes so it is suitable to go to the refinery's wastewater system.

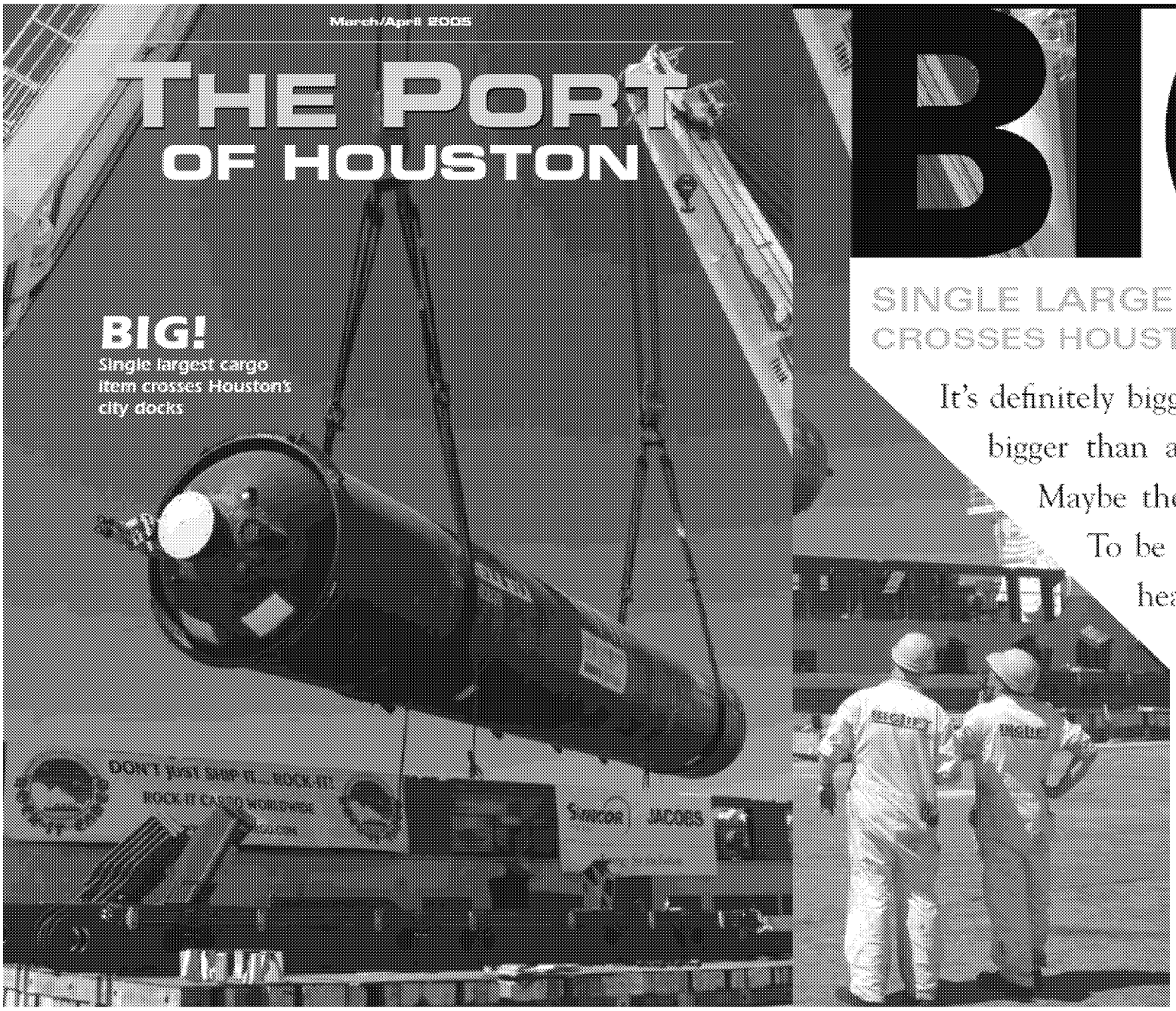
Boiler Feedwater Treatment System - The refinery uses reverse osmosis technology to purify water. The refinery uses the boiler feedwater treatment system to treat city water to make it boiler feedwater quality which is used through the refinery to make steam.

Pipeline from Xcel Energy - Modifications were made to the natural gas system that feeds the refinery.

New Cooling Tower - The new cooling tower increases the refinery's cooling water circulation capability.

SUNCOR ENERGY

Project Odyssey – Gasoil Hydrotreater



BIG!

SINGLE LARGEST CARGO ITEM CROSSES HOUSTON'S CITY DOCKS

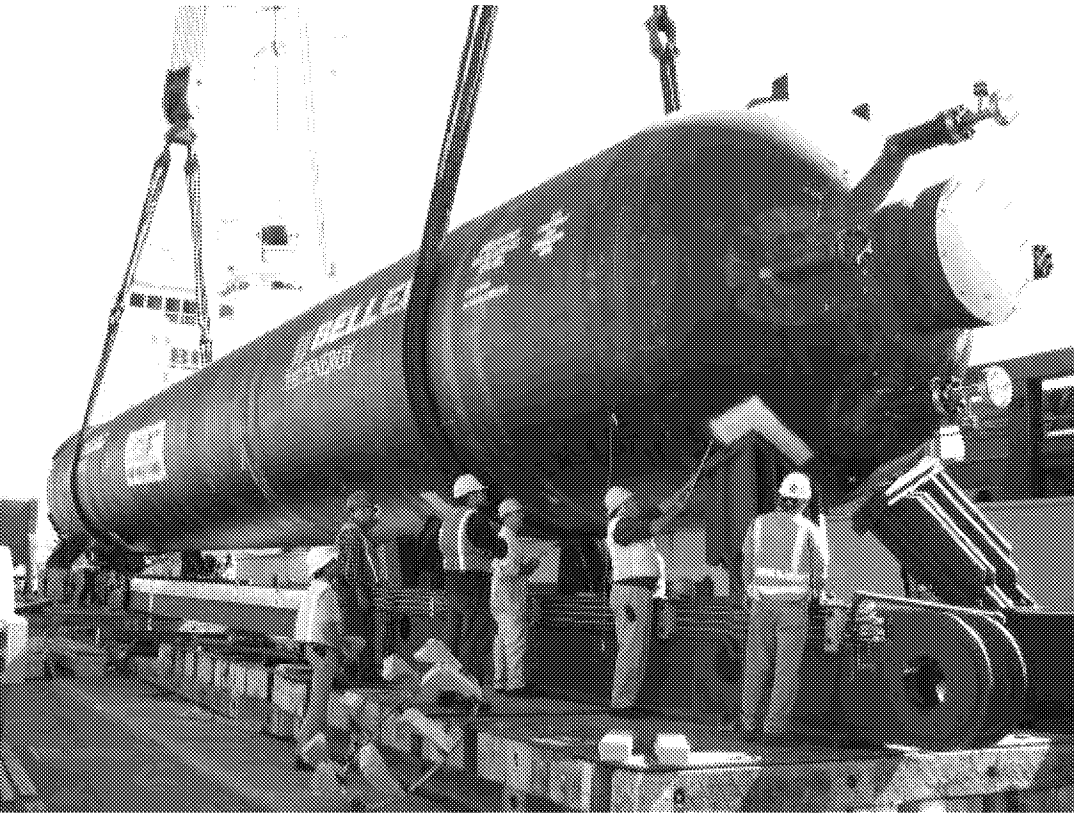
It's definitely bigger than a bread box. It's bigger than an elephant or a whale. Maybe the space shuttle is bigger. To be sure, it's the biggest and heaviest thing ever to unload at the Port of Houston.

In late March, an oil refinery reactor unit — weighing in at 570 metric tons — unloaded at City Dock 16. The unit belongs to Suncor Energy and was bound for the company's refinery in Commerce City, Colo. Located six miles northeast of Denver, the refinery produces 60,000 barrels of oil per day, and this unit, also called a hydrotreater, will be used to produce low sulfur diesel fuel.

The reactor cost about $4 million and required another $4 million in global intermodal shipping costs. It is 150 feet in length and 14 feet in diameter.

"This is the biggest and heaviest vessel not only to cross Houston's docks, but is also the biggest and heaviest vessel to be transported by rail in the U.S.," said Ron Greenlay, project director for Suncor Energy. "This reactor is going by rail from zero elevation in Houston to one mile high

Project Odyssey – Gasoil Hydrotreater



SUNCOR ENERGY

Denver Refinery – Key Metallurgical upgrades

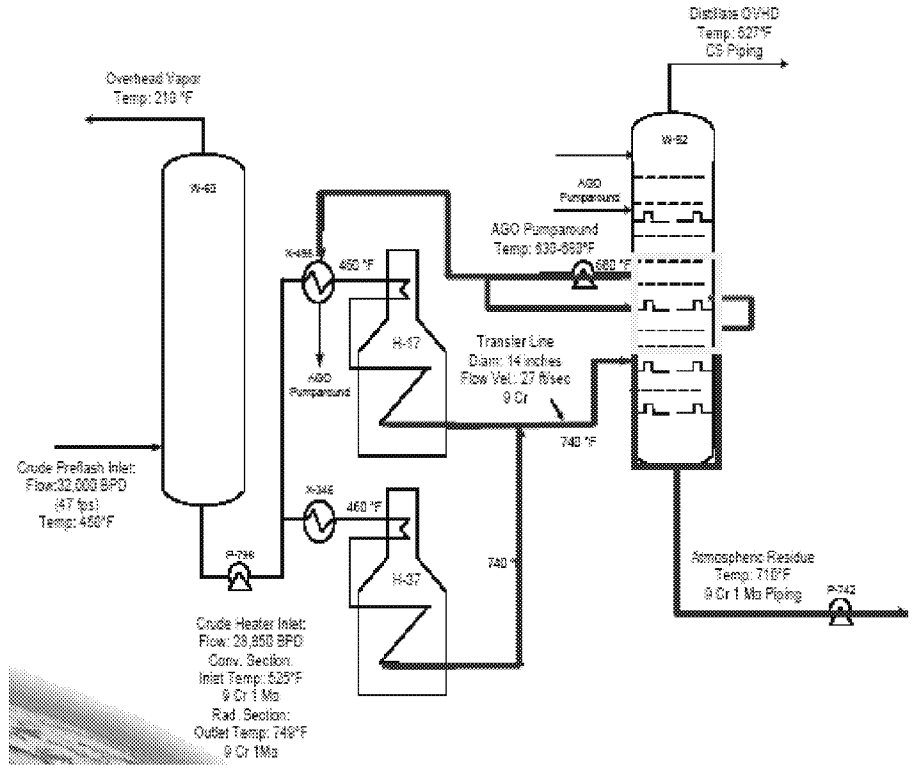
…CS, 5CR, 9CR, 12CR…
☺ 317L ☺

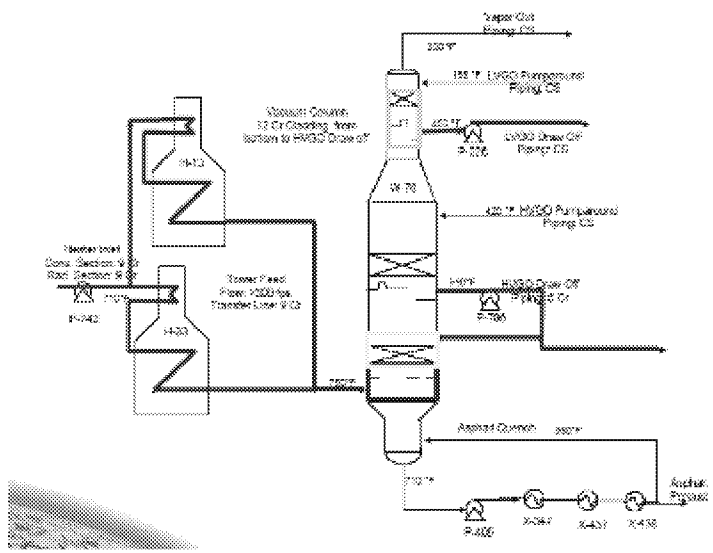
Project Odyssey upgraded metallurgy to be able to handle all High TAN crudes from standard Canadian Heavies (nominal TAN 0.6-1.0) up to OSH with a TAN of 3.5

Key Sour Crude Vacuum unit originally planned to be 317L clad but new 317L vessel built instead.

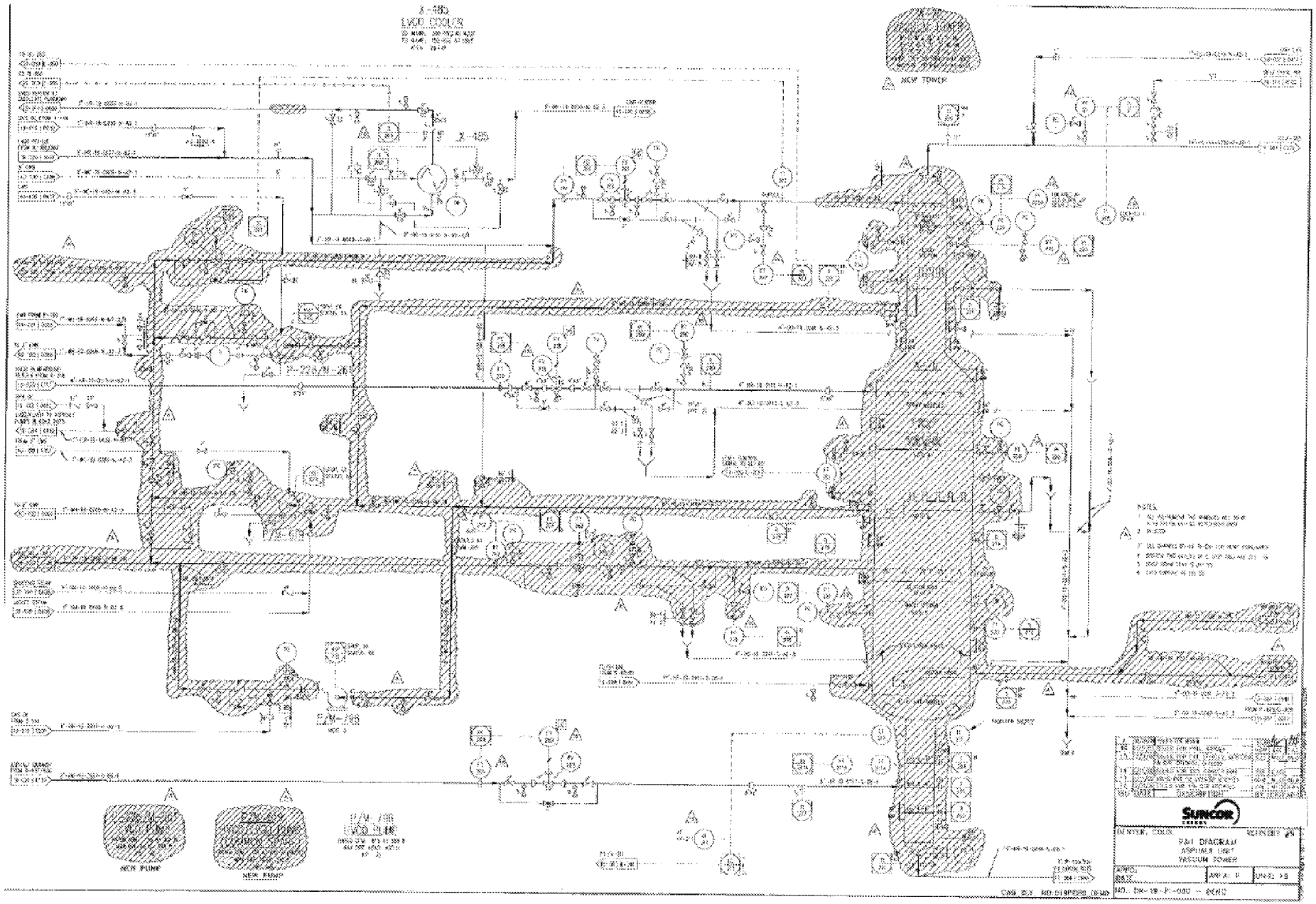
Upgraded metallurgy from atmospheric distillate draws through resid rundowns.

Once upgraded, optimization based on full yield/crude optimization – no TAN limits





Denver Refinery… "a new era" …



SUNCOR ENERGY

Crude quality breakdown

… Suncor Synthetics
… Canadian Heavy
… Colorado Sweet
… other Padd 4 crudes

SUNCOR ENERGY

Downstream integration

- Approximately 443,000 bpd of refining capacity
- Higher than average complexity
- Current and future potential oil sands integration volumes
- Over 20% of the Canadian downstream market
- High margin lubricants production

A balanced portfolio of assets, combined with our integrated model, enables optimal value creation in our Refining & Marketing division

SUNCOR ENERGY

… Suncor Synthetics

OSH - key integrated stream with Project Odyssey
- sour virgin gasoil rich crude
- integrated with Denver (project Odyssey) / Sarnia (project Genesis)

TAN = 3.5 mg KOH/g
Sulfur = 3 wt%
"resid free" at injection
"fully hydrotreated naphtha front end"

OSA - standard sweet synthetic blend
OSC - specialty sweet synthetic blends

BHB - dilbit - SAGD Bitumen plus Hydrotreated Naphtha
MKH - synbit - SAGD Bitumen plus OSA

SUNCOR ENERGY

… Canadian Heavies

Continuing with historic success running Canadian “standard”

Asphalt crudes
- Bow River
- Lloyd Blends
- Cold Lake

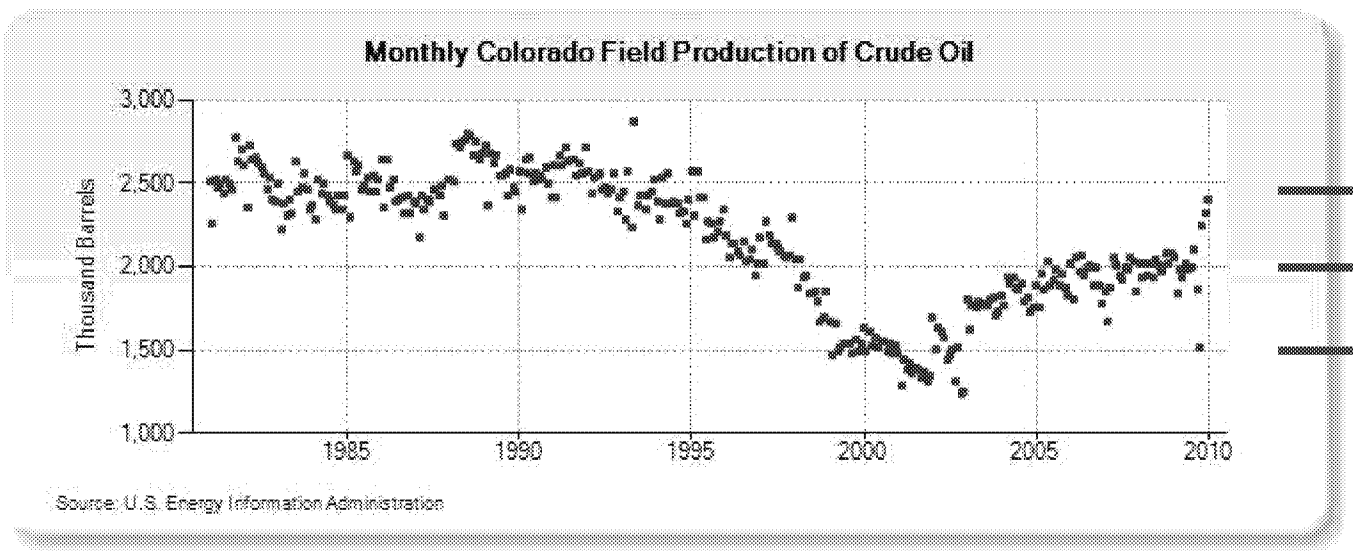
In addition, Denver is now actively running Western Canadian Select (WCS) (started shortly after stream created in 2004)

SUNCOR ENERGY

… Colorado Sweet

Continues to be an integral part of Denver Refining

- Diverse fields ranging from 35 to 60 API
- Generally very sweet conventional crude rich in Naphtha
- Truck and pipeline delivery to Refinery



Nominal 83000 bpd

Nominal 66000 bpd

Nominal 50000 bpd

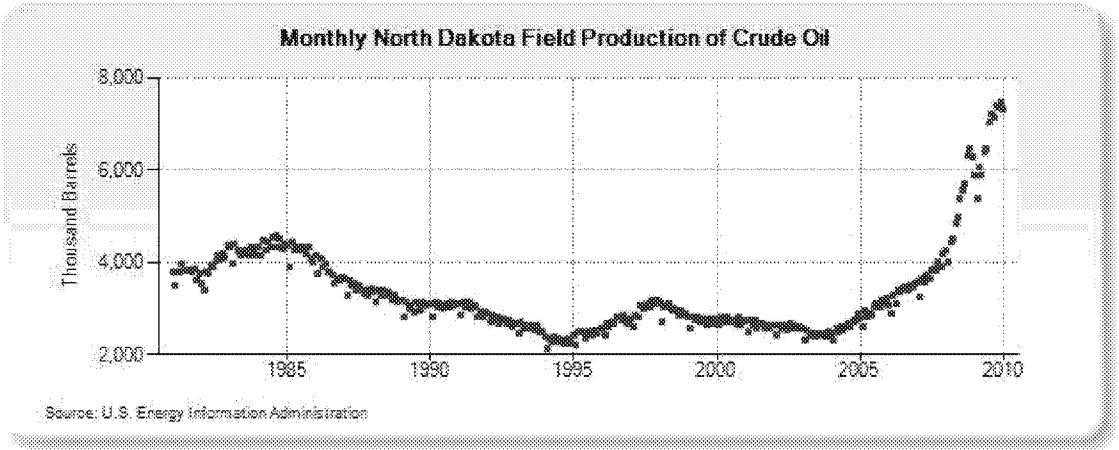
SUNCOR ENERGY

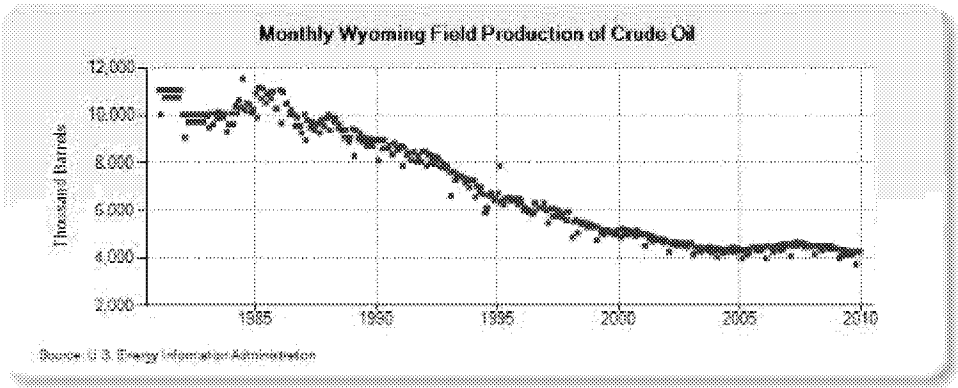
Denver Refinery - Crude Qualities

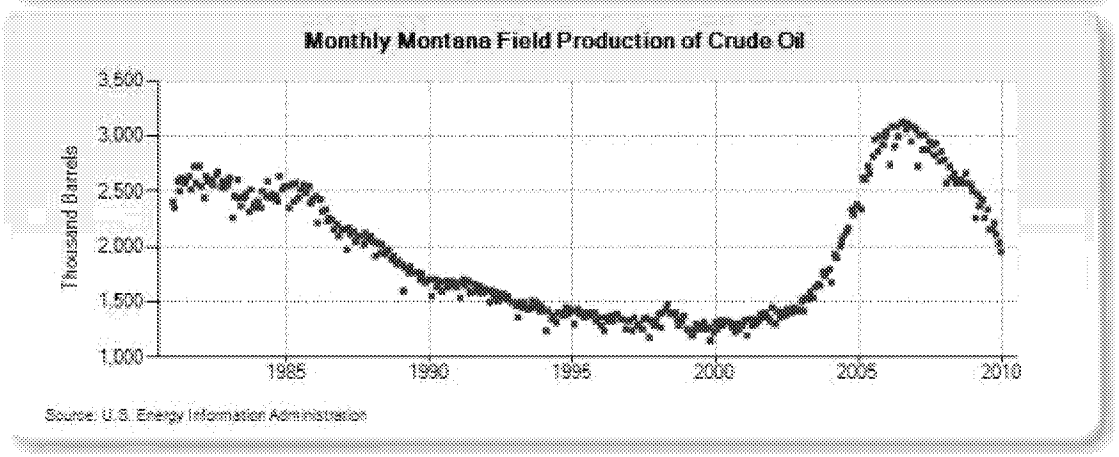
Northern PADD 2 and PADD 4 crudes

Key integration with most available conventional crudes (light sweet to medium sours)

from North Dakota (sour and sweet), from Rocky Mountain system and Wyoming



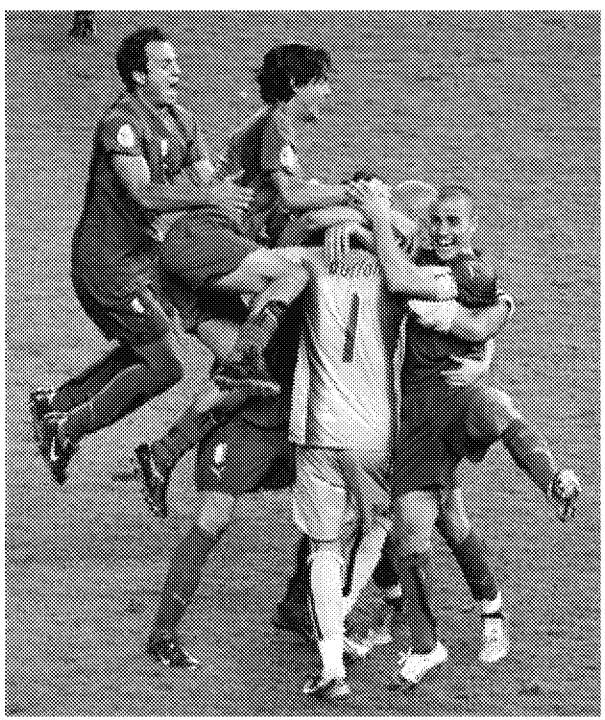




SUNCOR ENERGY

Thank you.

Forza Azzurri !



SUNCOR

ANNUAL REPORT 2018

Suncor Energy Inc.

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81 Independent Auditor's Report

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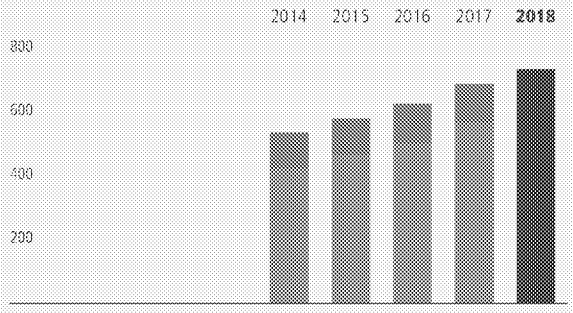
154 Share Trading Information

155 Leadership and Board Members

2018 HIGHLIGHTS

732K BARRELS
of oil equivalent per day

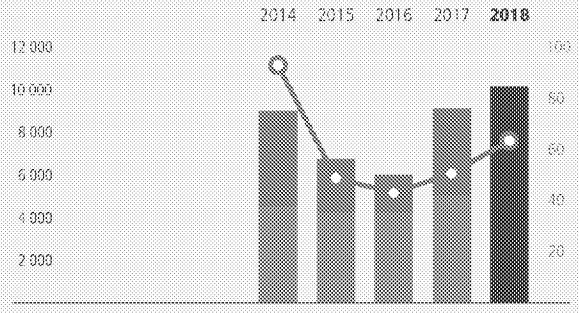
Production
(mboe/d)



	2014	2015	2016	2017	2018
Exploration and Production	113.0	114.4	117.9	121.6	**103.4**
Oil Sands	421.9	463.4	504.9	563.7	**628.6**
Total production	534.9	577.8	622.8	685.3	**732.0**

$10.2 BILLION
funds from operations

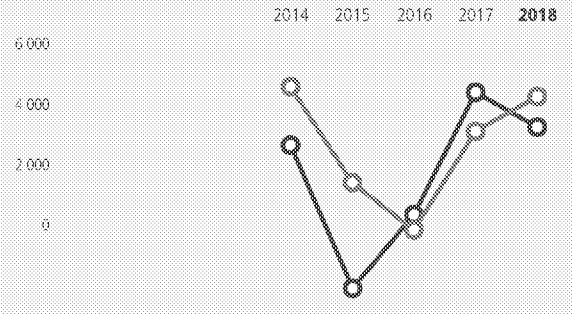
Funds Flow
($ millions)



	2014	2015	2016	2017	2018
Discretionary free funds flow	4 554	2 556	1 797	4 056	**3 862**
Sustaining capital and dividends	4 504	4 250	4 191	5 083	**6 310**
Total funds from operations	9 058	6 806	5 988	9 139	**10 172**
WTI ($US/bbl)	93.00	48.75	43.35	50.95	**64.80**

$4.3 BILLION
operating earnings

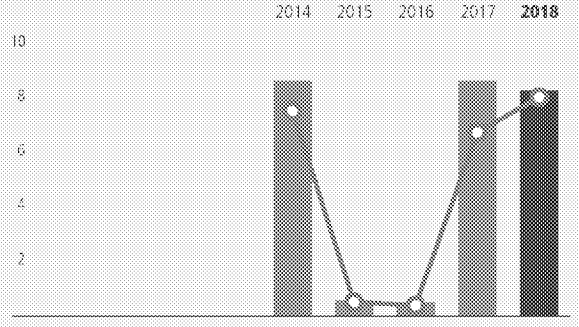
Earnings
($ millions)



	2014	2015	2016	2017	2018
Operating earnings (loss)	4 620	1 465	(83)	3 188	**4 312**
Net earnings (loss)	2 699	(1 995)	445	4 458	**3 293**

8.2% RETURN
on Capital Employed

Return on Capital Employed
(%)



	2014	2015	2016	2017	2018
ROCE	7.5	0.5	0.4	6.7	**8.0**
ROCE excluding major projects in progress	8.6	0.6	0.5	8.6	**8.2**

This Annual Report contains forward-looking statements based on Suncor's current expectations, estimates, projections and assumptions, as well as certain financial measures, namely operating earnings (loss), funds from operations, return on capital employed (ROCE), Oil Sands operations cash operating costs, Fort Hills cash operating costs, Syncrude cash operating costs, free funds flow and discretionary free funds flow, that are not prescribed by generally accepted accounting principles (GAAP). Refer to the Advisories sections of this Annual Report and Suncor's Management's Discussion and Analysis dated February 28, 2019 (MD&A).

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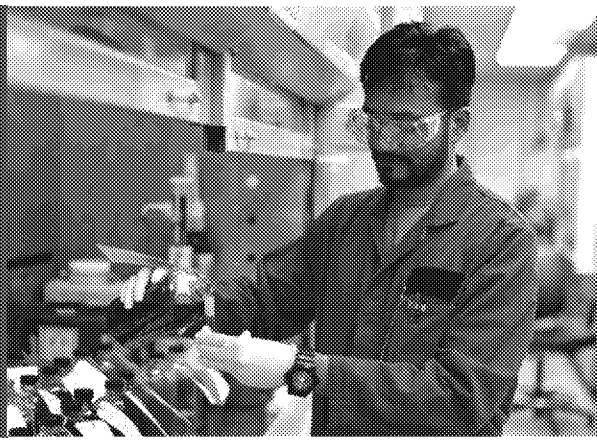
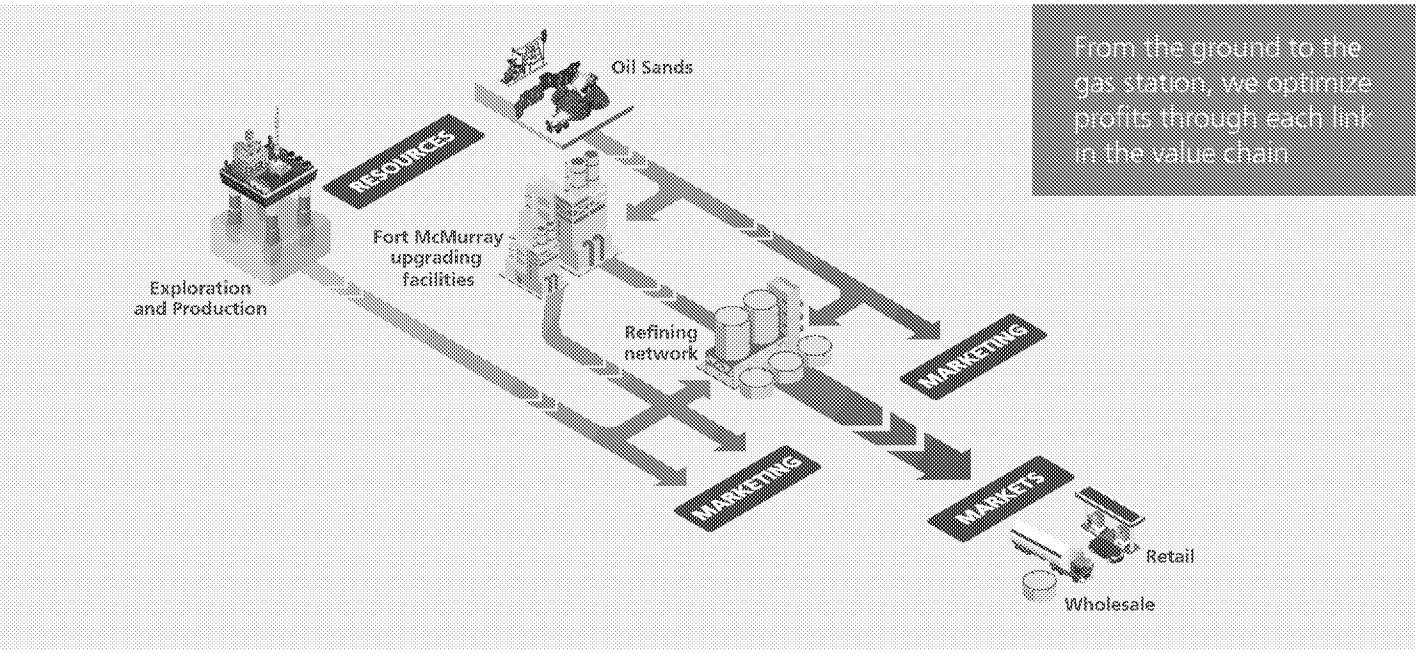
THE SUNCOR ADVANTAGE

Suncor's long-life, low-decline asset base, strong balance sheet and integrated model set us apart from our peers. These advantages are complemented by our approach to sustainability, technology and innovation, which will help us achieve our social goals, a 30% reduction in carbon emission intensity by 2030 and grow the cash flow from our business. Capitalizing on these differentiators has contributed to our industry-leading position and provides the foundation for increasing long-term returns to shareholders.



A PROVEN INTEGRATED MODEL

From the ground to the gas station, we optimize profits through each link in the value chain. Our flexible model allows us to capture the shift in value between operating segments during periods of market volatility and limits Suncor's exposure to crude differentials, with a significant portion of bitumen production being upgraded to higher priced light oil and refined products. The company's midstream assets and pipeline commitments, strategically acquired with the future in mind, provide operational flexibility through secured market access, including to the U.S. Gulf Coast and other international markets.



RESERVES BASE

Our focus on operational excellence allows us to unlock the full value of our resources.

For more information on our reserves base, refer to our *Annual Information Form* dated February 28, 2019.

28+ YEARS
proved + probable reserves life

7.6 BILLION BOE
proved + probable

4.7 BILLION BOE
proved

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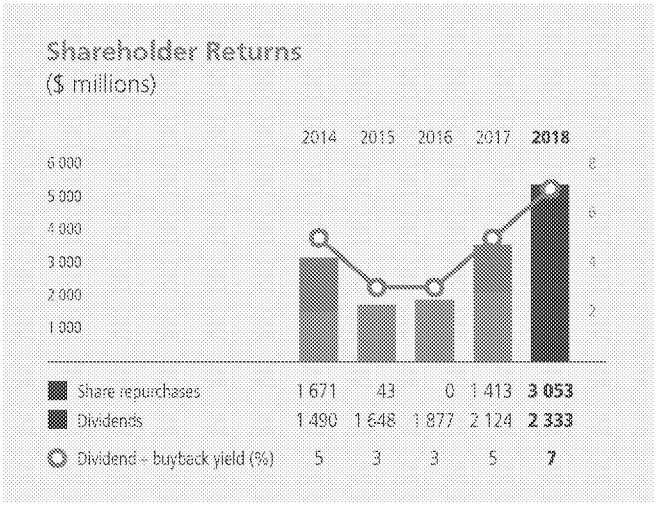
FINANCIAL STRENGTH

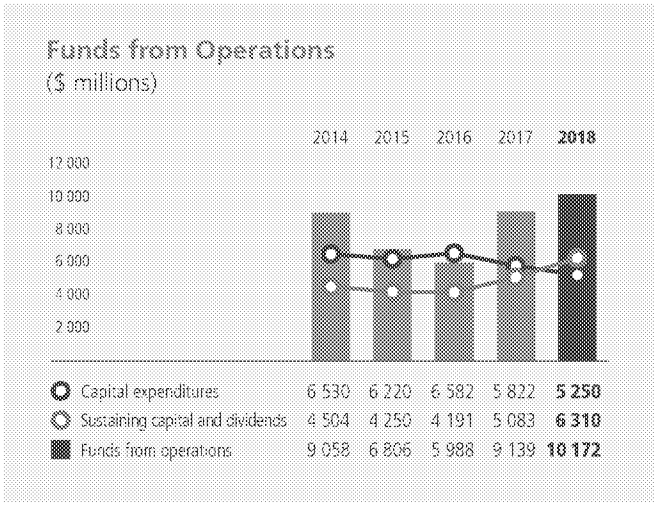
We aim to deliver competitive, sustainable and increasing returns to our shareholders, by focusing on capital discipline, operational excellence, and long-term profitable growth. We have returned value to shareholders through consistent dividend growth, with 2018 marking the sixteenth consecutive year we increased our annual dividend, while also significantly increasing our share repurchase program. This demonstrates confidence in our ability to generate cash flow across a wide range of business environments and commitment to returning it to shareholders.

Our continued pursuit of operational excellence resulted in over $10 billion in funds from operations for the year, marking a new record for the company

$5.4 BILLION
returned to shareholders in 2018 through dividends and share repurchases

$3.9 BILLION
in discretionary free funds flow demonstrates our capital discipline and flexibility





SUSTAINABILITY, TECHNOLOGY AND INNOVATION

Sustainability is about seeing the big picture and working together to enhance social and economic benefits while minimizing the environmental impacts of resource development. We believe technology and innovative thinking are critical to ensuring our resilience in a lower carbon future.

ENVIRONMENT We're advancing reclamation with our new tailings treatment process, Permanent Aquatic Storage Structure (PASS). In 2018, PASS doubled our tailings treatment to 165% of total tailings produced that year, ultimately drawing down our inventory.

SOCIAL We sought early and ongoing engagement with Indigenous stakeholders to help shape our Demonstration Pit Lake (DPL) pilot. We continue to collaborate with local communities on research, implementation and monitoring.

GOVERNANCE Suncor's climate-related disclosures are well-aligned with the Task Force on Climate-Related Disclosure (TCFD) recommendations, and we look forward to working with the task force to evolve climate risk disclosure so it meets the needs of both companies and investors.

$700 MILLION
spent with Indigenous businesses in 2018

TECHNOLOGY In 2018, we increased deployment of Autonomous Haul Systems (AHS), advanced a number of greenhouse gas reduction pilots at our in situ sites, and jointly moved forward on the Water Technology Development Centre (WTDC), expected to be operational in the second quarter of 2019.

For more information on our sustainable development, refer to the *2018 Report on Sustainability*.

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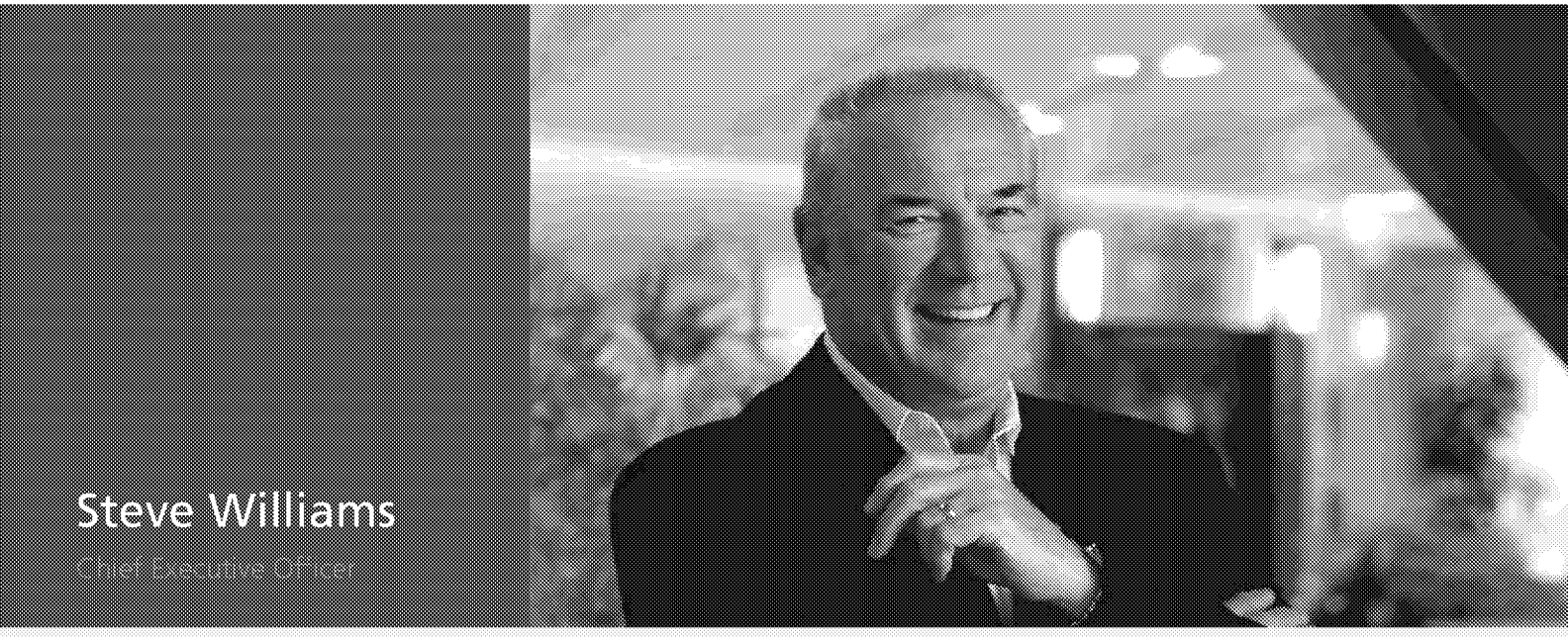
MESSAGE TO SHAREHOLDERS



Steve Williams
Chief Executive Officer

During my 17 years with Suncor – including the past seven as president and chief executive officer – investors and other stakeholders have often heard me comment: "judge us on what we do, not just on what we say." Making promises is easy – delivering results is much harder. Our laser focus on results and resilience was evident throughout 2018, a year that will help shape the future of our company for decades to come.

This past September, Suncor celebrated the official grand opening of Fort Hills, a development that exemplifies "the new face of the oil sands."

Fort Hills will use new technologies such as autonomous haul systems and paraffinic froth treatment, resulting in lower operating costs and a greenhouse gas emissions intensity which is on par with the average refined barrel in North America – a significant step forward for our industry. Fort Hills also reflects Suncor's evolving relationship with Indigenous Peoples through the equity partnership we formed with the Fort McKay and Mikisew Cree First Nations on the East Tank Farm Development – a landmark for First Nation investment in Canada.

Poised to deliver energy the world needs and be a key supplier for the next 50 years, Fort Hills is one of many reasons Suncor shareholders and other stakeholders can look forward with confidence and optimism.

Our integrated business model also continued to deliver significant results in 2018 – minimizing Suncor's exposure to heavy and light crude differentials that dramatically widened over the course of the year.

With the completion of Fort Hills and Hebron, a focus on operational excellence and the ongoing deployment of new technology to improve our operations, we are positioned to deliver reliable cash flow growth for years.

Integral to our success, and our aspirations, is Suncor's long-standing commitment to being a leader in sustainability. By continuing to invest in technology and innovation, Suncor is positioned to be a progressive, cost-efficient and carbon competitive energy provider of choice for decades.

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2018: INTEGRATION PROVES INVALUABLE DURING VOLATILE YEAR

We continued to live through interesting times in 2018, a year when Suncor's strategy and business model demonstrated value once again.

The integration of our upstream oil sands operations, downstream refining and marketing assets, as well as midstream logistics, allowed us to remain flexible, resilient and profitable even as western Canadian oil differentials widened dramatically through most of 2018.

Among the reasons we successfully mitigated the impact of volatile differentials are the fact we:

- process a majority of our produced bitumen in our upgraders where it is converted to synthetic crude oil;
- run some of the bitumen and synthetic oil through our refineries, where it is converted into transportation fuels;
- capture value through our flexible midstream and retail operations;
- and continue to maximize the profit of offshore barrels as well as volumes transported to the Gulf of Mexico markets where we achieve higher global-based pricing.

Another key reason for our resilience: Suncor has secured adequate market access for all of our current production, including our net Fort Hills barrels.

These built-in advantages – distinct and unique – didn't occur by chance. We made strategic decisions years ago to invest in value-added upgrading and refining capacity in Alberta. We also invested in obtaining committed pipeline capacity for our major growth projects.

75% BITUMEN

production from our Alberta oil sands assets is upgraded or refined locally

Over the years Suncor has invested significant capital to increase the flexibility of our Edmonton refinery, expand our upgrading capacity and develop Fort Hills, which produces partially upgraded bitumen. Today, fully 75% of what we produce in Alberta is upgraded or refined locally.

I believe the strategy we've implemented demonstrates economic, environmental and social leadership. Our value-added investments created job opportunities for tens of thousands of employees and contractors and generated significant economic benefit for all Albertans and Canadians.

These strategic decisions also lead to positive results for our shareholders. In addition to unprecedented oil differentials, 2018 was a year when Suncor underwent the largest maintenance turnaround program in our history, including significant planned refinery and upgrader maintenance. Despite these challenges, we continued to:

- generate record levels of funds from operations;
- generate profits to sustain and grow the company;
- deliver increased dividends for our shareholders for the 16th consecutive year;
- and pursue accelerated share repurchases.

Underpinning these results is Suncor's unwavering focus on capital discipline, cost management, operational excellence and sustainability.

With Fort Hills, we oversaw one of the most visible examples of operational excellence and successful project execution. Fort Hills exceeded our expectations on many metrics, including speed of ramp up and reliability, as well as hitting targeted per barrel cash operating costs. I want to thank the dedicated team that safely executed this project's careful planning, construction, handover, commissioning and start-up. In my view, their efforts were world-class.

We also continued a disciplined program of cost reductions even as we grew production. This is not a one-time event. We believe we've created sustainable reductions to the company's cost structure.

Going forward, we will continue our unrelenting focus on the many aspects of our business that we can control. However, we must also be prepared to deal with the unexpected.

In response to widening oil differentials, in December 2018, the Government of Alberta announced a mandatory production curtailment program, effectively imposing production caps for 2019. Suncor continues to work with the Government of Alberta and the Alberta Energy Regulator to manage and mitigate the unintended consequences of the curtailment orders.

Suncor's production guidance for 2019 assumes the full amount of mandatory production curtailments will be in place for three months before easing to 29% for the remainder of the year. We see this government action as a short-term response. The longer-term solution to differentials and industry competitiveness is clear – improved tidewater access for Canadian resources.

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MARKET ACCESS GOING FORWARD

While Suncor has adequate pipeline capacity for our current production, we firmly believe expanded market access is in the national interest. We further believe a new pipeline to tidewater is the best and safest option for expanding access.

This issue is vital not just to our industry, but for all Canadians. In a resource-based economy like ours, we need to ensure we are getting full value for our production.

Improved market access ensures we can help meet growing global energy needs by bringing responsibly developed Canadian crude oil to market. It strengthens our economy through jobs, royalties and taxes. It supports our quality of life by helping to fund critical social programs like health care and education. It provides Indigenous communities with increased opportunities to directly participate in resource development. And it gives us the means to continue investing in innovation and technology to improve our environmental performance and lower our carbon footprint.

SYNCRUDE SETBACKS AND PATH TO IMPROVEMENTS

I'm proud of Suncor's multi-year journey on operational reliability and the successes we've had along the way. That said, I've also been very candid in expressing my frustration over the need to improve Syncrude's operational performance. The good news is that, together with our Syncrude partners, we are now on a clear path toward improved reliability and lower cash costs – which is starting to pay off. In the fourth quarter of 2018, Syncrude achieved a new quarterly production record of 355,000 bbls/d (101% utilization).

The fact is operational excellence is never a straight line. We are taking lessons learned from our journey at Base Plant, where reliability and costs significantly improved between 2011 and 2016.

A critical part of our success at Base Plant was the construction of an interconnecting pipeline from our Firebag in situ operation to the upgrader, providing greater feedstock flexibility. We expect a similar step change in performance as we implement the memorandum of understanding signed by the Syncrude partners in the fourth quarter of 2018, which commits us to building essential pipeline links between Syncrude and our Base Plant.

355K BARRELS

of oil per day is a new quarterly production record for Syncrude

Along with other collective measures now underway, I'm confident we can achieve our average utilization rates of 90% and Syncrude cash operating costs of $30 per barrel by the end of 2020.

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CONTINUITY THROUGH CHANGE

It has been my honour and privilege to serve as part of the Suncor team through both challenging and exciting times.

Suncor's previous CEO, the late Rick George, brought me to Suncor in 2002 and I quickly came to share his passion for the oil sands. A decade later, when Rick retired, I greatly appreciated the confidence and support both he and Suncor's Board of Directors placed in my leadership.

Now, another transition is underway. In November, we announced Mark Little as president and that he would become chief executive officer upon my retirement in May 2019.

I've worked closely with Mark for a number of years and I've always been impressed by his business acumen, passion and energy, as well as his personal commitment to engagement with Indigenous communities. I'm confident in Mark's ability to lead Suncor toward an even brighter future.

This leadership transition marks another chapter in Suncor's strong succession planning – a key part of our business strategy. Though faces may change around the leadership table, our shared commitment to safety, reliability, operational excellence and capital discipline carry forward.

As I reflect back over the past seven years, I'm very proud of the progress the team has made on improving our safety results, our reliability and cost structure, improving value for shareholders by making acquisitions during the cycle at opportune times, and by advocating that our industry must be part of solving complex challenges facing all of us, including taking a leadership position on sustainability.

Shortly after I took on the role of Suncor's chief executive officer in 2012, our leadership team agreed to focus on a strategy of continuous improvement in every aspect of our business. We also agreed we would not seek growth solely for the sake of growth. Rather, we'd seek profitable growth through a relentless focus on capital discipline and operational excellence, while delivering increased returns to our shareholders.

We've stayed true to that strategy through both high-and low-price environments, and I believe it's given us a strong competitive advantage – as a company uniquely positioned to deliver value, and grow in a disciplined manner, for decades to come.

Suncor has shown leadership in understanding and advocating for the essential connection between the social, economic and environmental aspects of resource development. It's why we focus so much effort on ensuring that the communities we engage with – including Indigenous communities – benefit from our shared energy future. And it's why we are driven to continuously improve our environmental performance.

As an energy leader, and a father, I've been particularly outspoken on the need to seek collaborative solutions to a defining challenge of our time – climate change. Science and facts matter, and we all have a responsibility to work together on the transition to a low-carbon economy.

More than anything, my time at Suncor has convinced me that collaboration is at the heart of all meaningful progress. I've been part of so many positive collaborations that it seems unfair to cite just a few. But it's been a particular honour to be a member of the National Roundtable on Energy and the Environment, a founding member of the Advisory Board of the Ecofiscal Commission, which focuses on the intersection of the economy and the environment, Canada's Oil Sands Innovation Alliance (COSIA), which is advancing industry-wide technology and innovation to improve environmental performance. I've also been honoured to support Indspire, an Indigenous-led charity that invests in the education of Indigenous people, and Canada's Olympic movement.

This leadership transition marks another chapter in Suncor's strong succession planning – a key part of our business strategy. Though faces may change around the leadership table, our shared commitment to safety, reliability, operational excellence and capital discipline carry forward.

Throughout my years at Suncor, I've benefited immensely from the knowledge and counsel of our Board of Directors. I also want to thank all of Suncor's employees who, day-in and day-out, reflect our dedication and commitment to shareholders and the communities where we work.

I'm certain Suncor's brightest and most exciting days are ahead. I look forward to seeing the next chapter of this great company's history.

Steve Williams
Chief Executive Officer

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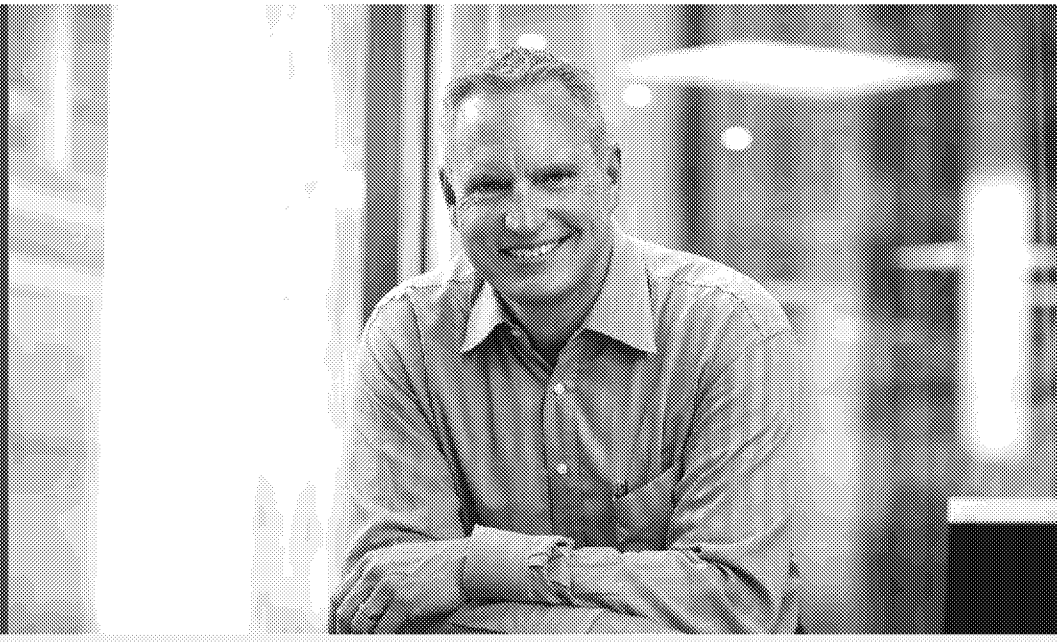
MESSAGE TO SHAREHOLDERS



Mark Little

President and
Chief Operating Officer

2018 was a pivotal year for Suncor as two long-planned major growth projects – Fort Hills and Hebron – ramped up ahead of schedule. Both projects were constructed in a lower oil price environment and are now poised to provide reliable, low-cost, high-return production for many years to come.

Much of this was achieved because of the outstanding leadership of Steve Williams. As Suncor's chief executive officer and president, Steve has led our company – and our industry – on sustainability and solutions-focused collaboration. He has helped demonstrate that the oil sands can be cost and carbon competitive on a global basis.

In November, Steve announced his plan to retire. I want to extend my personal thanks to Steve for his leadership and vision. His unrelenting focus on operational excellence, capital discipline and a healthy balance sheet helped make Suncor a more reliable and resilient energy company focused on generating value and returning it to shareholders.

I am honoured to have Steve's confidence and that of the Board of Directors as we continue to move forward, building on Suncor's strong foundation and focusing on tomorrow's opportunities and challenges.

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STRATEGIES FOR REALIZING THE SUNCOR ADVANTAGE

Suncor's integrated business model and disciplined execution of strategy have served us well through a range of market conditions. Despite a challenging oil price environment, we consistently outperformed our peer group. While many competitors retreated or withdrew, we grew production, reduced costs and increased returns to shareholders through dividends and share buybacks. We also executed counter-cyclical acquisitions (including obtaining a majority interest in Syncrude) and maintained a strong balance sheet.

We were similarly undeterred in 2018 as our industry faced the headwinds of widening differentials and Suncor underwent the largest maintenance turnaround program in its history. Despite this, Suncor continued to grow production by 7% and generated a record $10.2 billion funds from operations.

With two major capital spending projects behind us, and a strong balance sheet we see as a strategic asset, we can now lay out a plan for low-cost, reliable and profitable growth that stretches well into the 2030s.

In the immediate term, with Fort Hills fully on stream, Hebron ramping up, and continued improved reliability from Syncrude, our 2019 guidance includes a production increase, of approximately 10%, from 730,000 barrels of oil equivalent per day (boe/d) in 2018. This projection takes into account the industry-wide mandated production curtailments introduced by the Government of Alberta.

Suncor's 2019 capital spend range of $4.9 billion to $5.6 billion provides the flexibility to respond to volatile market conditions. The majority of the 2019 capital program (63%) is allocated to planned sustaining and maintenance activities to ensure continued safe, reliable and efficient operations. The remainder of the capital program is focused on low capital intensity, value-creating projects, including continued deployment of autonomous haul trucks, development of the Syncrude bi-directional pipeline and additional investment in midstream logistics infrastructure.

In the medium term (2020 to 2023), our focus is on generating "free funds flow" growth, with lower capital intensity projects that generate high-return margin improvements and cost savings while still incrementally increasing production through debottlenecks. Based on the current commodity price levels, we expect the cumulative impact of these projects and the existing asset base to increase our annual free funds flow by approximately $2 billion by 2023.

> "While many competitors retreated or withdrew, we grew production, reduced costs and increased returns to shareholders through dividends and share buybacks.

Longer term (2024 and beyond), we have the potential for funds flow growth as a result of significant production growth through the sanctioning and development of more than 350,000 barrels per day of in situ projects. But clearly, we will need to have much greater certainty on pipeline access to markets before we would proceed.

In summary, we have a long-term plan to deliver predictable, profitable growth through variable market conditions. Throughout this period, we will remain true to our strategy. We will continue to focus on operational excellence, exercising strong capital discipline, maintaining a strong balance sheet and increasing returns to our shareholders.

SUSTAINABILITY: BUILDING RESILIENCE FOR THE LONG TERM

A key part of our investor proposition is our commitment to sustainability. The economic, environmental and social dimensions of energy development are deeply integrated. We will continue to improve our performance in all of these dimensions.

Our vision for sustainability is guided by working with diverse stakeholders. We are shaped and changed by these conversations. They help make us a more sustainable and resilient energy company.

CLIMATE CHANGE

Climate change is one of the most pressing challenges of our times and demands shared solutions. Suncor believes we have an important role to play in a lower carbon world.

To remain an energy provider of choice over the long term, we must be globally competitive on both costs and carbon. I'm encouraged by the progress we're making in these areas and other dimensions of sustainability.

We continue to pursue an ambitious goal of reducing the greenhouse gas (GHG) emissions intensity of our oil and petroleum production by 30% by 2030. Technology and innovation are pointing to a realistic path for reaching that goal and a low-carbon future, which we believe will also move us towards ultimately bending the curve on our absolute GHG emissions.

We plan to remain resilient and thrive in tomorrow's low-carbon economy, and our annual Climate Risk and Resilience Report sets out why we believe we can be resilient over the long term. This year, we took another step forward on climate risk transparency by supporting the desire for consistency and transparency embodied in the Task Force on Climate-Related Disclosure, an international initiative of the Financial Stability Board.

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TECHNOLOGY

Innovation and technology are critical to achieving our climate change strategies as well as our other economic, social and environmental goals. That's why, last year alone, Suncor invested $400 million in the development and deployment of new technology. In some cases, we lead the development and deployment of new technologies on our own. In most cases, we work with consortiums like Canada's Oil Sands Innovation Alliance (COSIA) or third parties. In addition, we work closely with organizations like Evok Innovations, Clean Resource Innovation Network (CRIN) and Energy Futures Lab on clean technology solutions to advance the transition to a lower carbon economy and improve our overall performance. Collaboration is a key enabler to accelerating the development and deployment of technology.

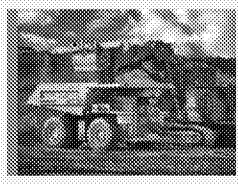
$635 MILLION

invested in technology development and deployment, including digital transformation

Fort Hills is a good example of the kind of progress that's possible. The facility employs new paraffinic froth treatment technology resulting in a GHG emissions intensity on par with the average refined barrel in North America. Fort Hills will also use autonomous haul trucks, which result in safer and more productive mining operations, with improved fuel efficiency and lower emissions.

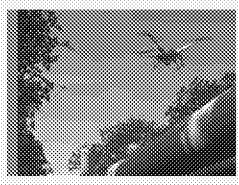
For future growth, we can and will get beyond today's technologies. That includes next-generation in situ technologies that could lower costs as well as dramatically reduce GHG emissions from operations – in some cases, potentially by 50% to 70%. We're in the process of advancing some of these technologies at commercial scale.

TECHNOLOGY AND INNOVATION IS IN OUR DNA



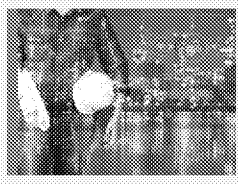
We have a history of innovation

- From bucket wheel to truck and shovel
- One of the first to use in situ
- First to surface reclaim a tailings pond



We're already extensively using digital

- Autonomous Haul Systems
- Robotics process automation
- Remote sensing and drones



We're harnessing digital technologies

- Data-based decisions provide cost and performance benefits
- Real-time data improves safety and reliability

We already extensively use information technology across our business, investing $235 million in digital technologies in 2018, and the increasingly digital world brings new and exciting opportunities. As part of our approach to innovation, we are harnessing digital technology in areas such as improved data, analytics, artificial intelligence technology and automation to help improve the safety, productivity, reliability and environmental performance of our operations. Digital solutions promise to significantly change how we do business – in a very positive way – and is a key focus area as we move forward.

INDIGENOUS PARTNERSHIPS

Fort Hills also represented a historic step forward in strengthening our relationship with Canada's Indigenous Peoples. By acquiring a 49% equity position in the East Tank Farm Development, at a value of $500 million, the Fort McKay and Mikisew Cree First Nations engaged in the largest First Nations business investment to date in Canada.

The East Tank Farm provides a hub for receiving, storing, cooling, blending and shipping bitumen to market – it's a lifeline between Fort Hills and our customers. The investment will provide a steady stream of income every year to the First Nations for at least 25 years, revenues that will help support education, health care, elder care, infrastructure and more. We are excited that we'll be joint venture partners with these two First Nations for decades.

In previous roles with Suncor, I was closely involved in talks with the First Nations Chiefs that led to this landmark equity agreement. When we began discussions five years ago, they were just that – wide-ranging conversations about our respective aspirations based on listening, learning from each other and building a sense of mutual respect and trust.

Those conversations profoundly changed my outlook. I used to think engaging Indigenous business was about supporting them. What I learned is that Indigenous businesses are incredibly strong and dynamic and can compete. Working with Indigenous businesses can be a "win-win" proposition – a point I've been stressing in my role as co-chair of the Canadian Council for Aboriginal Business' (CCABs') Aboriginal Procurement Champions Initiative.

Suncor's social sustainability goal is also about changing the way we think and act so we can work collaboratively with Indigenous Peoples to create opportunities for economic and social reconciliation.

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We already have a number of strong relationships. There are now 30 Petro-Canada stations across the country owned by First Nations. Suncor is a joint venture partner in an Ontario wind farm with the Aamjiwnaang First Nation. We also hold an equity interest in PetroNor, a Quebec-based fuel distribution company owned and operated by the James Bay Cree.

Suncor spent $703 million in goods and services with Indigenous businesses in 2018 bringing the total spend to approximately $5 billon since 1999, when we first started tracking this. Over 30% of the increased spend came from new suppliers and our Downstream business where doubled our spend.

But our social goal is about much more than business. Going forward, we will continue to support Indigenous youth, increase the participation of Indigenous Peoples in our workforce and improve Suncor employees' awareness of the history and experience of Indigenous Peoples.

Most of all, we will continue to listen and learn.

THE SUNCOR TEAM

By continuing to capture value – and at the same time launch a 50-year project like Fort Hills – Suncor again demonstrated we have the combination of people, assets and strategies to succeed for the long run.

Our ability to successfully navigate a wide range of market cycles is rooted in the talent, hard work and ingenuity of our employees. We are also indebted to our Board of Directors, whose guidance keeps us strategically focused on long-term objectives.

As we move forward, one value continues to stand above the rest – safety. Suncor is committed to eliminating all workplace injuries and providing a safe workplace for all of our people. As part of that commitment, we implemented random drug testing for employees in safety-sensitive positions in the Regional Municipality of Wood Buffalo. For Suncor, this is all about ensuring our people go home to their loved ones safely at the end of their shifts.

Whatever challenges come along, we will maintain an unwavering focus on the strengths that got us here, including capital discipline, operational excellence and sustainability.

We know investors have many choices, both within the energy sector and across the investment landscape. That's why we believe it's important to gain your confidence – not only through words, but through performance and actions.

By fully exercising the Suncor Advantage, we will continue to provide the energy the world needs while generating the increased value that you, our shareholders, have come to expect from us.

Mark Little
President and Chief Operating Officer

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2019 CORPORATE GUIDANCE

The following table highlights forecasts from Suncor's 2019 Full Year Outlook and actual results for the year ended December 31, 2018. For further details regarding Suncor's 2019 Full Year Outlook including certain assumptions, see www.suncor.com/guidance. See also the Advisory sections of this Annual Report.

	2018 Full Year Outlook October 31, 2018	Actual Year Ended December 31, 2018	2019 Full Year Outlook December 15, 2018
Oil Sands operations (bbls/d)	415 000 – 430 000	418 300	410 000 – 440 000
Fort Hills (bbls/d)	60 000 – 70 000	66 100	85 000 – 95 000
Syncrude (bbls/d)	140 000 – 145 000	144 200	160 000 – 180 000
Exploration and Production (boe/d)[1]	105 000 – 115 000	103 400	105 000 – 115 000
Oil Sands operations cash operating costs ($/bbl)	**23.00 – 26.00**	**25.25**	**24.00 – 26.50**
Fort Hills cash operating costs ($/bbl)	**28.50 – 32.50**	**31.20**	**23.00 – 26.00**
Syncrude cash operating costs ($/bbl)	**44.50 – 47.50**	**47.25**	**33.50 – 36.50**
Refinery utilization[2]	**90% – 94%**	**93%**	**93% – 97%**

(1) At the time of publication, production in Libya continues to be affected by political unrest and, therefore, no forward-looking production for Libya is factored into the Exploration and Production guidance.

(2) Refinery utilization is based on the following crude processing capacities: Montreal – 137,000 bbls/d; Sarnia – 85,000 bbls/d; Edmonton – 142,000 bbls/d; and Commerce City – 98,000 bbls/d.

Capital Expenditures[1]

($ millions)	2019 Full Year Outlook December 14, 2018	% Economic Investment
Upstream Oil Sands	3 050 – 3 400	17%
Upstream E&P	1 000 – 1 200	97%
Total Upstream	**4 050 – 4 600**	**38%**
Downstream (including Ethanol)	700 – 775	23%
Corporate	150 – 225	53%
Total	**4 900 – 5 600**	**37%**

(1) Capital expenditures exclude capitalized interest of approximately $150 million.

(2) Economic Investment capital expenditures include capital investments that result in an increase in value through adding reserves, improving processing capacity, utilization, cost or margin, including associated infrastructure. Balance of capital expenditures represents Asset Sustainment and Maintenance capital expenditures which include capital investments that deliver on existing value by: ensuring compliance or maintaining relations with regulators and other stakeholders, maintaining current processing capacity, and delivering existing developed reserves.

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ADVISORIES

All financial information in the preceding sections of this Annual Report is reported in Canadian dollars, unless otherwise noted. Production volumes are presented on a working-interest basis, before royalties, unless otherwise noted, except for 2016 to 2018 production from Libya, which is on an entitlement basis. References to "we", "our", "Suncor", or "the company" mean Suncor Energy Inc., and the company's subsidiaries and interests in associates and jointly controlled entities, unless the context requires otherwise.

FORWARD-LOOKING INFORMATION

The preceding sections of this Annual Report contain certain forward-looking information and forward-looking statements (collectively referred to herein as "forward-looking statements") within the meaning of applicable Canadian and U.S. securities laws. Forward-looking statements are based on Suncor's current expectations, estimates, projections and assumptions that were made by the company in light of information available at the time the statement was made and consider Suncor's experience and its perception of historical trends, including expectations and assumptions concerning: the accuracy of reserves and resources estimates; commodity prices and interest and foreign exchange rates; the performance of assets and equipment; capital efficiencies and cost savings; applicable laws and government policies; future production rates; the sufficiency of budgeted capital expenditures in carrying out planned activities; the availability and cost of labour, services and infrastructure; the satisfaction by third parties of their obligations to Suncor; the development and execution of projects; and the receipt, in a timely manner, of regulatory and third-party approvals. All statements and information that address expectations or projections about the future, and statements and information about Suncor's strategy for growth, expected and future expenditures or investment decisions, commodity prices, costs, schedules, production volumes, operating and financial results, future financing and capital activities, and the expected impact of future commitments are forward-looking statements. Some of the forward-looking statements may be identified by words like "expects", "anticipates", "will", "estimates", "plans", "scheduled", "intends", "believes", "projects", "indicates", "could", "focus", "vision", "goal", "outlook", "proposed", "target", "objective", "continue", "should", "may", "future", "promise", "forecast", "potential", "opportunity", "would" and similar expressions. Forward-looking statements in the preceding sections of this Annual Report include references to:

- Suncor's strategies, including focusing on capital discipline, operational excellence, maintaining a strong balance sheet, cost management, sustainability, reliability, long-term profitable growth and delivering increasing, competitive and sustainable returns to shareholders, improving performance in the economic, environmental and social dimensions of energy development, and the company's commitment to unlocking the full value of its resources and generating cash flow;
- The belief that reductions to the company's cost structure are sustainable and that Suncor is positioned to deliver reliable cash flow growth for years;
- Suncor's potential growth opportunities and its plan for low-cost, reliable and profitable growth that stretches well into the 2030s, including the focus from 2020 to 2023 on generating free funds flow growth and the expectation of increasing annual free funds flow by approximately $2 billion by 2023, and the potential for funds flow growth from 2024 and beyond through the sanctioning and development of more than 350,000 barrels per day of in situ projects, subject to greater certainty on pipeline access to markets;
- Suncor's social goal and GHG emissions intensity reduction goal, expectations around GHG emissions and emissions intensity, plans for and potential benefits of new technologies and digital solutions, and Suncor's plan to remain resilient and thrive in tomorrow's low-carbon economy;
- The belief that Fort Hills will be a key supplier of energy for the next 50 years, and that Fort Hills and Hebron are poised to provide reliable, low-cost, high-return production for many years to come;
- Suncor's reserves and reserves life estimates;
- Expectations around improving reliability and lowering cash costs at Syncrude and achieving average utilization rates at Syncrude of 90% and Syncrude cash operating costs of $30 per barrel by the end of 2020;
- The belief that Suncor is positioned to be a progressive, cost-efficient and carbon competitive energy provider of choice for decades;
- The belief that improved tidewater access for Canadian resources will be the longer-term solution to differentials and industry competitiveness;
- Suncor's commitment to eliminating all workplace injuries and providing a safe workplace; and
- Suncor's outlook for 2019 and beyond, Suncor's 2019 Corporate Guidance, and projects to which Suncor's 2019 capital expenditures are anticipated to be directed.

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Forward-looking statements are not guarantees of future performance and involve a number of risks and uncertainties, some that are similar to other oil and gas companies and some that are unique to Suncor. Suncor's actual results may differ materially from those expressed or implied by its forward-looking statements, so readers are cautioned not to place undue reliance on them. The financial and operating performance of the company's reportable operating segments, specifically Oil Sands, Exploration and Production, and Refining and Marketing, may be affected by a number of factors.

Factors that affect our Oil Sands segment include, but are not limited to, volatility in the prices for crude oil and other production, and the related impacts of fluctuating light/heavy and sweet/sour crude oil differentials; changes in the demand for refinery feedstock and diesel fuel, including the possibility that refiners that process our proprietary production will be closed, experience equipment failure or other accidents; our ability to operate our Oil Sands facilities reliably in order to meet production targets; the output of newly commissioned facilities, the performance of which may be difficult to predict during initial operations; our dependence on pipeline capacity and other logistical constraints, which may affect our ability to distribute our products to market and which may cause the company to delay or cancel planned growth projects in the event of insufficient takeaway capacity; our ability to finance Oil Sands economic investment and asset sustainment and maintenance capital expenditures; the availability of bitumen feedstock for upgrading operations, which can be negatively affected by poor ore grade quality, unplanned mine equipment and extraction plant maintenance, tailings storage, and in situ reservoir and equipment performance, or the unavailability of third-party bitumen; changes in operating costs, including the cost of labour, natural gas and other energy sources used in oil sands processes; and our ability to complete projects, including planned maintenance events, both on time and on budget, which could be impacted by competition from other projects (including other oil sands projects) for goods and services and demands on infrastructure in Alberta's Wood Buffalo region and the surrounding area (including housing, roads and schools).

Factors that affect our Exploration and Production segment include, but are not limited to, volatility in crude oil and natural gas prices; operational risks and uncertainties associated with oil and gas activities, including unexpected formations or pressures, premature declines of reservoirs, fires, blow-outs, equipment failures and other accidents, uncontrollable flows of crude oil, natural gas or well fluids, and pollution and other environmental risks; adverse weather conditions, which could disrupt output from producing assets or impact drilling programs, resulting in increased costs and/or delays in bringing on new production; political, economic and socio-economic risks associated with Suncor's foreign operations, including the unpredictability of operating in Libya due to ongoing political unrest; and market demand for mineral rights and producing properties, potentially leading to losses on disposition or increased property acquisition costs.

Factors that affect our Refining and Marketing segment include, but are not limited to, fluctuations in demand and supply for refined products that impact the company's margins; market competition, including potential new market entrants; our ability to reliably operate refining and marketing facilities in order to meet production or sales targets; and risks and uncertainties affecting construction or planned maintenance schedules, including the availability of labour and other impacts of competing projects drawing on the same resources during the same time period.

Additional risks, uncertainties and other factors that could influence the financial and operating performance of all of Suncor's operating segments and activities include, but are not limited to, changes in general economic, market and business conditions, such as commodity prices, interest rates and currency exchange rates; fluctuations in supply and demand for Suncor's products; the successful and timely implementation of capital projects, including growth projects and regulatory projects; risks associated with the development and execution of Suncor's projects and the commissioning and integration of new facilities; the possibility that completed maintenance activities may not improve operational performance or the output of related facilities the risk that projects and initiatives intended to achieve cash flow growth and/or reductions in operating costs may not achieve the expected results in the time anticipated or at all; competitive actions of other companies, including increased competition from other oil and gas companies or from companies that provide alternative sources of energy; labour and material shortages; actions by government authorities, including the imposition or reassessment of, or changes to, taxes, fees, royalties, duties, tariffs, quotas and other government-imposed compliance costs, and mandatory production curtailment orders and changes thereto; changes to laws and government policies that could impact the company's business, including environmental (including climate change), royalty and tax laws and policies; the ability and willingness of parties with whom we have material relationships to perform their obligations to us; the unavailability of, or outages, to third-party infrastructure

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that could cause disruptions to production or prevent the company from being able to transport its products; the occurrence of a protracted operational outage, a major safety or environmental incident, or unexpected events such as fires (including forest fires), equipment failures and other similar events affecting Suncor or other parties whose operations or assets directly or indirectly affect Suncor; the potential for security breaches of Suncor's information technology and infrastructure by malicious persons or entities, and the unavailability or failure of such systems to perform as anticipated as a result of such breaches; security threats and terrorist or activist activities; the risk that competing business objectives may exceed Suncor's capacity to adopt and implement change; risks and uncertainties associated with obtaining regulatory, third-party and stakeholder approvals outside of Suncor's control for the company's operations, projects, initiatives, and exploration and development activities and the satisfaction of any conditions to approvals; the potential for disruptions to operations and construction projects as a result of Suncor's relationships with labour unions that represent employees at the company's facilities; our ability to find new oil and gas reserves that can be developed economically; the accuracy of Suncor's reserves, resources and future production estimates; market instability affecting Suncor's ability to borrow in the capital debt markets at acceptable rates or to issue other securities at acceptable prices; maintaining an optimal debt to cash flow ratio; the success of the company's risk management activities using derivatives and other financial instruments; the cost of compliance with current and future environmental laws, including climate change laws; risks relating to increased activism and public opposition to fossil fuels and oil sands; risks and uncertainties associated with closing a transaction for the purchase or sale of a business, asset or oil and gas property, including estimates of the final consideration to be paid or received; the ability and willingness of counterparties to comply with their obligations in a timely manner; risks associated with joint arrangements in which the company has an interest; risks associated with land claims and Aboriginal consultation requirements; the risk that the company may be subject to litigation; the impact of technology and risks associated with developing and implementing new technologies; and the accuracy of cost estimates, some of which are provided at the conceptual or other preliminary stage of projects and prior to commencement or conception of the detailed engineering that is needed to reduce the margin of error and increase the level of accuracy. The foregoing list of important factors is not exhaustive.

Many of these risk factors and other assumptions related to Suncor's forward-looking statements are discussed in further detail throughout the MD&A, including under the heading Risk Factors, and the company's most recent Annual Information Form/Form 40-F dated February 28, 2019 available at www.sedar.com and www.sec.gov, which risk factors are incorporated by reference herein. Readers are also referred to the risk factors and assumptions described in other documents that Suncor files from time to time with securities regulatory authorities. Copies of these documents are available without charge from the company.

The forward-looking statements contained in this Annual Report are made as of the date of this Annual Report. Except as required by applicable securities laws, we assume no obligation to update publicly or otherwise revise any forward-looking statements or the foregoing risks and assumptions affecting such forward-looking statements, whether as a result of new information, future events or otherwise.

Suncor's corporate guidance is based on the following assumptions around oil prices: WTI, Cushing of US$58.00/bbl; Brent, Sullom Voe of US$66.00/bbl; and WCS, Hardisty of US$33.00/bbl. In addition, the guidance is based on the assumption of a natural gas price (AECO-C Spot) of Cdn$1.70 per gigajoule, US$/Cdn$ exchange rate of $0.76 and synthetic crude oil sales from Oil Sands operations of 315,000 to 335,000 bbls/d. Assumptions for the Oil Sands operations, Syncrude and Fort Hills 2019 production outlook include those relating to reliability and operational efficiency initiatives that the company expects will minimize unplanned maintenance in 2019. Assumptions for the Exploration and Production 2019 production outlook include those relating to reservoir performance, drilling results and facility reliability. Factors that could potentially impact Suncor's 2019 corporate guidance include, but are not limited to: Bitumen supply – Bitumen supply may be dependent on unplanned maintenance of mine equipment and extraction plants, bitumen ore grade quality, tailings storage and in situ reservoir performance; Third-party infrastructure – Production estimates could be negatively impacted by issues with third-party infrastructure, including pipeline or power disruptions, that may result in the apportionment of capacity, pipeline or third-party facility shutdowns, which would affect the company's ability to produce or market its crude oil; Performance of recently commissioned facilities or well pads – Production rates while new equipment is being brought into service are difficult to predict and can be impacted by unplanned maintenance; Unplanned maintenance – Production estimates could be negatively impacted if unplanned work is required at any of our mining, extraction, upgrading, in situ processing, refining, natural gas processing, pipeline, or offshore assets; Planned maintenance events – Production

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estimates, including production mix, could be negatively impacted if planned maintenance events are affected by unexpected events or are not executed effectively. The successful execution of maintenance and start-up of operations for offshore assets, in particular, may be impacted by harsh weather conditions, particularly in the winter season; Commodity prices – Declines in commodity prices may alter our production outlook and/or reduce our capital expenditure plans; Foreign operations – Suncor's foreign operations and related assets are subject to a number of political, economic and socio-economic risks; Government Action – Suncor's guidance reflects Suncor's expectations and assumptions regarding the production curtailments imposed by the Government of Alberta. Further action by the Government of Alberta regarding production curtailment may impact Suncor's Corporate Guidance and such impact may be material.

NON-GAAP FINANCIAL MEASURES

Certain financial measures used in the preceding sections of this Annual Report, namely operating earnings (loss), funds from operations, ROCE, Oil Sands operations cash operating costs, Fort Hills cash operating costs, Syncrude cash operating costs, free funds flow and discretionary free funds flow, are not prescribed by GAAP. Operating earnings (loss) is defined in the Advisories – Non-GAAP Financial Measures section of the MD&A and is reconciled to GAAP measures in the Financial Information section of Suncor's annual management's discussion and analysis for each respective year. Oil Sands operations cash operating costs, Fort Hills cash operating costs and Syncrude cash operating costs are defined in the Advisories – Non-GAAP Financial Measures section of the MD&A and reconciled to GAAP measures in the Segment Results and Analysis section of the MD&A. Funds from operations (previously referred to as cash flow from operations) and ROCE are defined and reconciled to GAAP measures in the Advisories – Non-GAAP Financial Measures section of Suncor's annual management's discussion and analysis for each respective year. Free funds flow is calculated by taking funds from operations and subtracting capital expenditures, including capitalized interest. Discretionary free funds flow (previously referred to as discretionary free cash flow) is defined in the MD&A, for the years 2014 to 2016 and is reconciled to GAAP measures in the Advisories – Non-GAAP Financial Measures section of Suncor's management's discussion and analysis for the year ended December 31, 2016 and for 2017 and 2018 is reconciled in the Advisories – Non-GAAP Financial Measures section of the MD&A. These non-GAAP financial measures are included because management uses this information to analyze business performance, leverage and liquidity and it may be useful to investors on the same basis. These non-GAAP measures do not have any standardized meaning and therefore are unlikely to be comparable to similar measures presented by other companies and should not be considered in isolation or as a substitute for measures of performance prepared in accordance with GAAP.

RESERVES

Reserves information presented herein is presented as Suncor's working interests (operating and non-operating) before deduction of royalties, and without including any royalty interests of Suncor, and is at December 31, 2018. For more information on Suncor's reserves, including definitions of proved and probable reserves, Suncor's interest, the location of the reserves and the product types reasonably expected, please see Suncor's most recent Annual Information Form dated February 28, 2019 available at www.sedar.com and www.sec.gov. Reserves data is based upon evaluations conducted by independent qualified reserves evaluators.

MEASUREMENT CONVERSIONS

Certain crude oil and natural gas liquids volumes have been converted to mcfe on the basis of one bbl to six mcf. Also, certain natural gas volumes have been converted to boe or mboe on the same basis. Refer to the Advisories – Measurement Conversions section of the MD&A.

RECLAMATION

Land is considered permanently reclaimed when landform construction and contouring, clean material placement (as required), reclamation material placement and revegetation has taken place. Land cannot be listed under permanent reclamation until revegetation has occurred which is reflective of the approved Reclamation and Revegetation Plans.

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MANAGEMENT'S DISCUSSION AND ANALYSIS

February 28, 2019

This Management's Discussion and Analysis (this MD&A) should be read in conjunction with Suncor's December 31, 2018 audited Consolidated Financial Statements and the accompanying notes. Additional information about Suncor filed with Canadian securities regulatory authorities and the United States Securities and Exchange Commission (SEC), including quarterly and annual reports and Suncor's Annual Information Form dated February 28, 2019 (the 2018 AIF), which is also filed with the SEC under cover of Form 40-F, is available online at www.sedar.com, www.sec.gov and our website www.suncor.com. Information on or connected to our website, even if referred to in this MD&A, does not constitute part of this MD&A.

References to "we", "our", "Suncor", or "the company" mean Suncor Energy Inc. and the company's subsidiaries and interests in associates and jointly controlled entities, unless the context requires otherwise. For a list of abbreviations that may be used in this MD&A, refer to the Advisories—Common Abbreviations section of this MD&A.

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Basis of Presentation

Unless otherwise noted, all financial information has been prepared in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB) and Canadian generally accepted accounting principles (GAAP) as contained within Part 1 of the Canadian Institute of Chartered Professional Accountants Handbook.

All financial information is reported in Canadian dollars, unless otherwise noted. Production volumes, apart from Libya, are presented on a working-interest basis, before royalties, unless otherwise noted. Libyan volumes are presented on an entitlement basis.

Non-GAAP Financial Measures

Certain financial measures in this MD&A – namely operating earnings (loss), funds from (used in) operations, return on capital employed (ROCE), Oil Sands operations cash operating costs, In Situ cash operating costs, Fort Hills cash operating costs, Syncrude cash operating costs, refining margin, refining operating expense, discretionary free funds flow, and last-in, first-out (LIFO) inventory valuation methodology – are not prescribed by GAAP. Operating earnings (loss), Oil Sands operations cash operating costs, Fort Hills cash operating costs, Syncrude cash operating costs and LIFO inventory valuation methodology are defined in the Advisories – Non-GAAP Financial Measures section of this MD&A and reconciled to the most directly comparable GAAP measures in the Financial Information and Segment Results and Analysis sections of this MD&A. ROCE, Funds from (used in) operations, discretionary free funds flow, refining margin, refining operating expense and In Situ cash operating costs are defined and reconciled to the most directly comparable GAAP measures in the Advisories – Non-GAAP Financial Measures section of this MD&A.

Measurement Conversions

Crude oil and natural gas liquids volumes have been converted to m³e on the basis of one bbl to six m³ in this MD&A. Also, certain natural gas volumes have been converted to boe or mboe on the same basis. Refer to the Advisories – Measurement Conversions section of this MD&A.

Common Abbreviations

For a list of abbreviations that may be used in this MD&A, refer to the Advisories – Common Abbreviations section of this MD&A.

Risks and Forward-Looking Information

The company's business, reserves, financial condition and results of operations may be affected by a number of factors, including, but not limited to, the factors described in the Risk Factors section of this MD&A.

This MD&A contains forward-looking information based on Suncor's current expectations, estimates, projections and assumptions. This information is subject to a number of risks and uncertainties, including those discussed in this MD&A and Suncor's other disclosure documents filed with Canadian securities regulatory authorities and the SEC, many of which are beyond the company's control. Users of this information are cautioned that actual results may differ materially. Refer to the Advisories – Forward-Looking Information section of this MD&A for information on the material risk factors and assumptions underlying our forward-looking information.

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1. FINANCIAL AND OPERATING SUMMARY

Year ended December 31 ($ millions, except per share amounts)	2018	2017	2016
Gross revenues	**39 592**	32 885	26 863
Royalties	**(1 050)**	(931)	(265)
Operating revenues, net of royalties	**38 542**	31 954	26 598
Net earnings (loss)	**3 293**	4 458	445
per common share – basic	**2.03**	2.68	0.28
per common share – diluted	**2.02**	2.68	0.28
Operating earnings (loss)[1]	**4 312**	3 188	(83)
per common share – basic	**2.65**	1.92	(0.05)
Funds from operations[1]	**10 172**	9 139	5 988
per common share – basic	**6.27**	5.50	3.72
Cash flow provided by operating activities	**10 580**	8 966	5 680
per common share – basic	**6.54**	5.40	3.53
Dividends paid on common shares	**2 333**	2 124	1 877
per common share – basic	**1.44**	1.28	1.16
Weighted average number of common shares in millions – basic	**1 623**	1 661	1 610
Weighted average number of common shares in millions – diluted	**1 629**	1 665	1 612
ROCE[1] (%)	**8.0**	6.7	0.4
ROCE[1][2] (%), excluding major projects in progress	**8.2**	8.6	0.5
Capital Expenditures[3]	**5 250**	5 822	5 986
Sustaining	**3 926**	2 916	2 275
Growth	**1 324**	2 906	3 711
Discretionary free funds flow[1]	**3 862**	4 056	1 797
Balance Sheet (at December 31)			
Total assets	**89 579**	89 494	88 702
Total debt[4]	**17 350**	15 579	17 430
Net debt[5]	**15 129**	12 907	14 414
Total liabilities	**45 574**	44 111	44 072

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

(2) Excludes capitalized costs related to major projects in progress.

(3) Excludes capitalized interest.

(4) Includes short-term debt, current portion of long-term debt and long-term debt.

(5) Net debt is equal to total debt less cash and cash equivalents.

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Operating Summary

Year ended December 31	2018	2017	2016
Production Volumes (mboe/d)			
Oil Sands	628.6	563.7	504.9
Exploration and Production	103.4	121.6	117.9
Total	732.0	685.3	622.8
Production Mix			
Crude oil and liquids / natural gas (%)	100/0	100/0	99/1
Average Price Realizations[1] ($/boe)			
Oil Sands operations	54.91	54.24	39.97
Syncrude	70.19	66.05	56.38
Fort Hills	38.46	-----	-----
Exploration and Production	86.96	66.20	53.34
Refinery crude oil processed (mbbls/d)	430.8	441.2	428.6
Refinery Utilization[2] (%)			
Eastern North America	94	93	92
Western North America	93	98	94
	93	96	93

(1) Net of transportation costs, but before royalties. Price realizations in 2017 and 2016 have been restated due to the impact of IFRS 15 adoption on January 1, 2018 and to remove the impact of risk management activities.

(2) Refinery utilization is the amount of crude oil run through crude distillation units, expressed as a percentage of the nameplate capacity of these units

Segment Summary

Year ended December 31 ($ millions)	2018	2017	2016
Net earnings (loss)			
Oil Sands	853	1 009	(1 149)
Exploration and Production	808	732	190
Refining and Marketing	3 153	2 658	1 890
Corporate, Energy Trading and Eliminations	(1 521)	59	(486)
Total	3 293	4 458	445
Operating earnings (loss)[1]			
Oil Sands	793	954	(1 109)
Exploration and Production	898	746	10
Refining and Marketing	3 153	2 164	1 890
Corporate, Energy Trading and Eliminations	(532)	(676)	(874)
Total	4 312	3 188	(83)
Funds from (used in) operations[1]			
Oil Sands	4 870	4 738	2 669
Exploration and Production	1 869	1 725	1 313
Refining and Marketing	3 794	2 841	2 606
Corporate, Energy Trading and Eliminations	(361)	(165)	(600)
Total Funds from operations	10 172	9 139	5 988
Change in non-cash working capital	408	(173)	(308)
Cash flow provided by operating activities	10 580	8 966	5 680

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

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2. SUNCOR OVERVIEW

Suncor is an integrated energy company headquartered in Calgary, Alberta, Canada. We are strategically focused on developing one of the world's largest petroleum resource basins – Canada's Athabasca oil sands. In addition, we explore for, acquire, develop, produce and market crude oil and natural gas in Canada and internationally; we transport and refine crude oil, and we market petroleum and petrochemical products primarily in Canada. We also conduct energy trading activities focused principally on the marketing and trading of crude oil, natural gas and byproducts. We also operate a renewable energy business as part of our overall portfolio of assets.

For a description of Suncor's business segments, refer to the Segment Results and Analysis section of this MD&A.

Suncor's Strategy

Delivering competitive and sustainable returns to shareholders is a top priority of the company and we aim to consistently grow these returns by focusing on our operational excellence initiatives; capital discipline with asset reliability and optimization; long-term profitable growth, and our commitment to environmental stewardship and sustainability. In an industry that has experienced volatility in recent years, Suncor is well positioned to succeed due to its competitive advantages: an industry-leading long-life, low-decline oil sands reserves base, a highly efficient, tightly integrated downstream business, an offshore business that provides geographically diversified cash flow, financial strength and industry expertise.

Key components of Suncor's strategy are to:

- Profitably operate and develop our reserves – Suncor's growth and development plan is focused on projects and initiatives that are expected to create long-term value for the company through structural cash flow growth, such as optimizing production rates at Fort Hills following the successful ramp up in 2018, Syncrude asset optimization, development of regional operating synergies, and value developments and asset extensions within our offshore business. The company's significant long-life, low-decline reserves base combined with our industry expertise allows the company to execute improvement strategies at existing assets, such as debottlenecks and the deployment of autonomous haul trucks, that are expected to generate additional value for years to come. In addition, the company's regional oil sands advantage provides the company with the economies of scale required to further develop our in situ resources in a low-cost manner under the company's replication strategy.
- Optimize value through integration and secured market access – From the ground to the gas station, Suncor optimizes profit along each step of the value chain through integration of the company's oil sands assets with our midstream and refining assets. This integration helps to significantly shield Suncor from the effects of western Canadian crude price differentials, and our midstream assets provide the logistical flexibility to move production to a wide range of markets. Production from our Exploration and Production (E&P) assets also provides Suncor with exposure to global Brent crude-based oil prices.
- Achieve industry-leading unit costs in each business segment – Suncor aims to get the most out of our assets through a focus on operational excellence, which means operating in a way that is safe, reliable, cost-efficient and environmentally responsible. Driving down costs and a continued focus on improved productivity and reliability will help us achieve maximum value from our operations.
- Be an industry leader in sustainable development – Suncor is focused on triple bottom line sustainability, which means leadership and industry collaboration in environmental performance, social responsibility and creating a strong economy.

2018 Highlights

Financial results summary

- In 2018, Suncor achieved record funds from operations[1] of $10.172 billion, compared to $9.139 billion in 2017.
- Cash flow provided by operating activities, which includes changes in non-cash working capital, was $10.580 billion in 2018, compared to $8.966 billion in 2017.
- Operating earnings[1] in 2018 were $4.312 billion, compared to $3.188 billion in 2017.
- Net earnings for 2018 were $3.293 billion, compared to $4.458 billion in 2017.
- ROCE[1] improved to 8.0% in 2018, compared to 6.7% in 2017.

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

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Successful ramp up of operations at both Fort Hills and Hebron.

- Following the commissioning of the secondary extraction assets early in 2018, Fort Hills produced an average of 66,100 bbls/d, net to Suncor, for the year and successfully ramped up to full operating rates by the fourth quarter of 2018, with 94% average plant utilization in the fourth quarter.
- Production at Hebron averaged 13,000 bbls/d in 2018, net to Suncor, with four production wells online by the end of the year. Hebron is expected to deliver 31,600 bbls/d, net to Suncor, when fully ramped up.

Oil Sands production increased to 628,600 bbls/d in 2018, compared to 563,700 bbls/d in 2017.

- Record production was achieved at both Firebag and MacKay River in 2018, with the company's In Situ assets achieving 99% utilization for the year. Total In Situ production was 240,000 bbls/d compared to nameplate capacity of 241,000 bbls/d.
- With production being impacted by an increase in major planned maintenance in 2018, Oil Sands operations produced 418,300 bbls/d in 2018, compared to 429,400 bbls/d in the prior year.
- Early in 2018, Suncor acquired an additional 5% working interest in Syncrude from Mocal Energy Limited (Mocal), adding approximately 17,500 bbls/d of SCO capacity.

Refining and Marketing (R&M) attained several new records in 2018 and achieved 93% average refinery utilization, despite the completion of the most intensive planned maintenance program in the company's history.

- Record annual financial results in R&M were achieved in 2018, with net and operating earnings of $3.153 billion and funds from operations of $3.794 billion. Record results were driven by a favourable business environment, including wider crude oil differentials, and strong refinery utilization in 2018.
- Continued strong product demand helped R&M establish a new sales volumes record through its wholesale channels in Canada.
- Crude throughput of 430,800 bbls/d was achieved in 2018, despite the completion of planned turnarounds at all of the company's refineries, including the entire Edmonton refinery undergoing the first total plant turnaround in its history. Strong throughput was maintained due to a strategic accumulation of inventory leading up to the spring turnarounds.

Exploration and Production (E&P) delivered diversified Brent crude-based cash flow in 2018 and continued to pursue development opportunities.

- E&P funds from operations increased to $1.869 billion from $1.725 billion in 2017, and operating earnings were $898 million, compared to $746 million in the prior year, as a result of increased benchmark crude prices.
- Several strategic investments were completed throughout the year, including the acquisition of an additional 10% working interest in the Rosebank future development project in the U.K. North Sea, and the acquisition of a 17.5% working interest in the Fenja project offshore Norway.
- During 2018, the company and its partners sanctioned the Buzzard Phase 2 project, with first oil expected in early 2021.
- The company continued to advance development work at the Oda project in Norway, with first oil expected in the second quarter of 2019.
- Development drilling continued to progress at existing East Coast assets throughout the year.

Suncor continued to return value to shareholders in 2018 through increased dividends and additional share repurchases.

- A total of $2.333 billion in dividends were paid in 2018, an increase of 12.5% per share over the prior year, making 2018 the 16th consecutive year of annual dividend increases for Suncor.
- The company repurchased $3.053 billion of its own shares for cancellation during 2018, compared to $1.413 billion in 2017.
- Subsequent to the end of the year, Suncor's Board of Directors approved a quarterly dividend of $0.42 per share to be paid in the first quarter of 2019, an increase of 17%, and also approved a further share repurchase program of up to $2.0 billion.

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3. FINANCIAL INFORMATION

Net Earnings

Suncor's net earnings in 2018 were $3.293 billion, compared to $4.458 billion in 2017. Net earnings were impacted by the same factors that influenced operating earnings, which are described below. Other items affecting net earnings in 2018 and 2017 included:

- The after-tax unrealized foreign exchange loss on the revaluation of U.S. dollar denominated debt was $989 million in 2018, compared to an after-tax gain of $702 million in 2017.
- In 2018, the company recorded a net non-cash loss of $90 million, after-tax, in the E&P segment related to an asset exchange with Canbriam Energy Inc. (Canbriam), a private natural gas company, as a result of the decline in benchmark natural gas prices in B.C.
- In 2018, the company recorded an after-tax gain of $60 million in the Oil Sands segment on the sale of the company's interest in the Joslyn Oil Sands mining project. 2017 net earnings included a $354 million after-tax gain in the R&M segment related to the sale of the company's lubricants business, and an after-tax gain of $83 million in the Corporate segment related to the sale of the company's interest in the Cedar Point wind facility.
- In 2017, the company recorded an adjustment to its deferred income taxes of $124 million related to tax reform legislation in the U.S., with the most significant impact resulting from a decrease in the corporate income tax rate from 35% to 21%. In 2016, the U.K. government enacted a decrease in the supplementary charge on oil and gas profits in the North Sea that reduced the statutory tax rate on Suncor's earnings in the U.K. from 50% to 40%, resulting in an adjustment to the company's deferred income taxes of $180 million.
- The company received after-tax property damage insurance proceeds of $55 million during 2017 related to a facility incident at Syncrude that occurred earlier that year, in the Oil Sands segment.
- During 2017, the company redeemed US$1.250 billion, US$600 million and $700 million of higher interest long-term debt that was originally due in 2018, reducing future financing charges for a net economic benefit. As a result of the early redemption, the company incurred an after-tax charge of $28 million, net of associated realized foreign currency hedges, in the Corporate segment.
- In 2017, the company recognized an after-tax loss on forward interest rate swaps of $20 million in the Corporate segment due to changes in long-term interest rates.

Operating Earnings

Consolidated Operating Earnings (Loss) Reconciliation[1]

Year ended December 31 ($ millions)	2018	2017	2016
Net earnings as reported	**3 293**	4 458	445
Unrealized foreign exchange loss (gain) on U.S. dollar denominated debt	**989**	(702)	(524)
(Gain) on significant disposals and loss on equity investment	**30**	(437)	—
Loss (gain) on interest rate swaps[2]	—	20	(6)
Impact of income tax adjustments on deferred income taxes[3]	—	(124)	(180)
Non-cash loss on early payment of long-term debt[4]	—	28	73
Recognition of property damage insurance proceeds	—	(55)	—
Derecognition and impairments[5]	—	—	71
Canadian Oil Sands Limited (COS) acquisition and integration costs[6]	—	—	38
Operating earnings (loss)[1]	**4 312**	3 188	(83)

(1) Non-GAAP financial measure. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

(2) Loss (gain) on forward interest rate swaps associated with issued debt, due to changes in long-term interest rates, in the Corporate segment.

(3) The year ended December 31, 2016 was impacted by an adjustment to the company's deferred income taxes resulting from a decrease from 50% to 40% in the United Kingdom tax rate on oil and gas profits from the North Sea.

(4) Charges associated with the early repayment of debt, net of associated realized foreign currency hedges, in the Corporate segment.

(5) In 2016, the company recorded after-tax derecognition charges of $40 million on certain upgrading and logistics assets in the Oil Sands segment as a result of the uncertainty of future benefits from the assets, as well as a $31 million charge in the Corporate segment relating to an initial investment in an undeveloped pipeline and on certain renewable energy development assets as a result of the uncertainty of future benefits from these assets.

(6) Transaction and related charges associated with the acquisition of COS in the Corporate segment.

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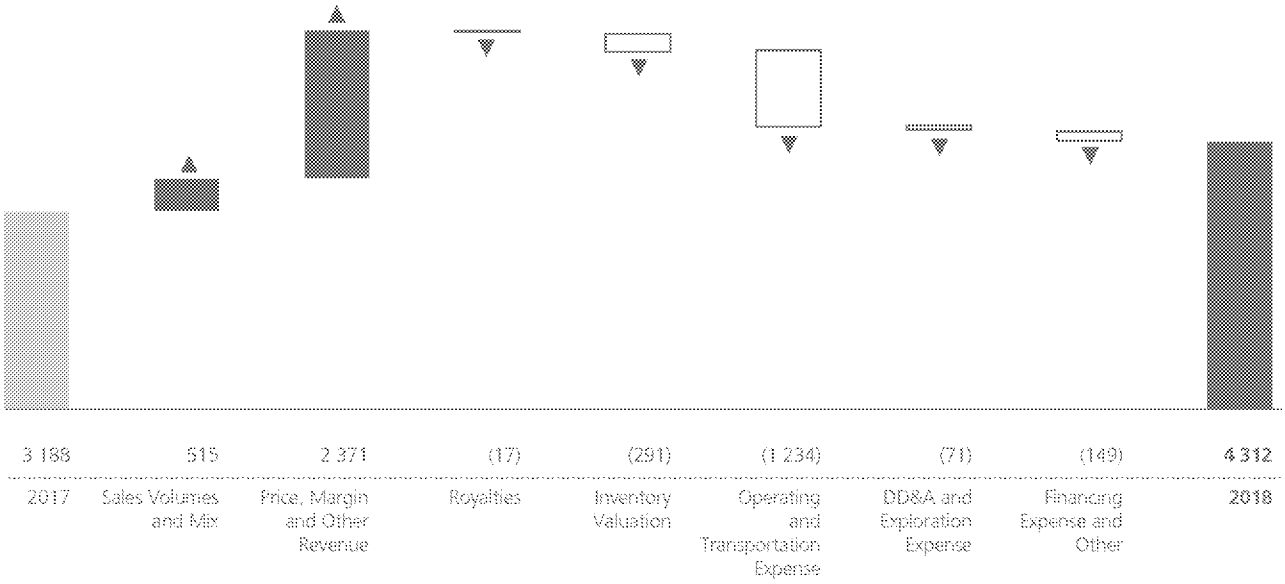
Bridge Analysis of Consolidated Operating Earnings ($ millions)[1]



(1) For an explanation of the construction of this bridge analysis, see the Advisories – Non-GAAP Financial Measures section of this MD&A.

Suncor's consolidated operating earnings in 2018 were $4.312 billion, compared to $3.188 billion in the prior year. The increase was primarily due to improved overall benchmark crude pricing, increased refining margins, higher overall upstream production, primarily attributed to the ramp up of Fort Hills and Hebron and the increased working interest in Syncrude acquired in early 2018, as well as improved energy trading earnings. These factors were partially offset by an increase in expenses associated with the expansion of the company's production in 2018, an increase in maintenance expenditures at Syncrude and Oil Sands operations resulting from an increase in planned and unplanned maintenance, a decrease in the capitalization of borrowing costs with the commissioning of the company's major growth projects, as well as a net unfavourable inventory valuation change on declining crude feedstock costs at the end of 2018.

Cash Flow Provided by Operating Activities and Funds from Operations

Consolidated funds from operations for 2018 were $10.172 billion, compared to $9.139 billion in 2017, and were impacted by the same factors as operating earnings described above.

Cash flow provided by operating activities, which includes changes in non-cash working capital, was $10.580 billion in 2018, compared to $8.966 billion in 2017, and reflected a source of cash from the company's working capital balances in 2018, compared to a use of cash in 2017, as a result of lower year end benchmark prices.

Results for 2017 Compared with 2016

Net earnings in 2017 were $4.458 million, compared to $445 million in 2016. The increase in net earnings was mainly due to the same factors impacting operating earnings described below, as well as the net earnings adjustments impacting 2017 and 2016, which are described in detail above.

Operating earnings were $3.188 billion in 2017, compared to an operating loss of $83 million in 2016. The increase was primarily due to improved benchmark crude pricing, favourable crack spreads, higher upstream production, lower DD&A, a decrease in exploration expense and higher sales volumes at R&M. These factors were partially offset by the impact of a stronger Canadian dollar, an increase in operating expenses, which was primarily due to the acquisition of additional working interests in Syncrude in 2016, increased maintenance costs at Syncrude, an increase in royalties associated with higher production and the impact of the sale of the lubricants business. Operating earnings in 2016 were significantly impacted by the shut in of production associated with the forest fires in the Fort McMurray area in the second quarter of that year.

Consolidated funds from operations for 2017 were $9.139 billion, compared to $5.988 billion in 2016. Funds from operations were impacted by the same factors as operating earnings, after removing the impact of non-cash expenses primarily related to DD&A.

Cash flow provided by operating activities, which includes changes in non-cash working capital, was $8.966 billion in 2017, compared to $5.680 billion in 2016.

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Business Environment

Commodity prices, refining crack spreads and foreign exchange rates are important factors that affect the results of Suncor's operations.

Average for the year ended December 31	2018	2017	2016
WTI crude oil at Cushing (US$/bbl)	**64.80**	50.95	43.35
Dated Brent Crude (US$/bbl)	**71.05**	54.25	43.75
Dated Brent/Maya FOB price differential (US$/bbl)	**9.10**	7.70	7.50
MSW at Edmonton (Cdn$/bbl)	**69.30**	63.20	51.90
WCS at Hardisty (US$/bbl)	**38.50**	38.95	29.55
Light/heavy differential for WTI at Cushing less WCS at Hardisty (US$/bbl)	**26.30**	11.95	13.85
Condensate at Edmonton (US$/bbl)	**61.05**	51.55	42.50
Natural gas (Alberta spot) at AECO (Cdn$/mcf)	**1.50**	2.15	2.15
Alberta Power Pool Price (Cdn$/MWh)	**50.20**	22.15	18.20
New York Harbor 3-2-1 crack[1] (US$/bbl)	**18.00**	17.70	14.05
Chicago 3-2-1 crack[1] (US$/bbl)	**15.90**	16.30	12.60
Portland 3-2-1 crack[1] (US$/bbl)	**22.80**	22.15	16.50
Gulf Coast 3-2-1 crack[1] (US$/bbl)	**17.45**	17.65	13.40
Exchange rate (US$/Cdn$)	**0.77**	0.77	0.75
Exchange rate (end of period) (US$/Cdn$)	**0.73**	0.80	0.74

(1) 3-2-1 crack spreads are indicators of the refining margin generated by converting three barrels of WTI into two barrels of gasoline and one barrel of diesel. The crack spreads presented here generally approximate the regions into which the company sells refined products through retail and wholesale channels.

Suncor's sweet SCO price realizations are influenced primarily by the price of WTI at Cushing and by the supply and demand of sweet SCO from Western Canada, which influences SCO differentials. Price realizations for sweet SCO were favourably impacted by the improvement in the WTI crude benchmark, which increased to US$64.80/bbl in 2018, from US$50.95/bbl in 2017, partially offset by wider SCO differentials impacting the latter portion of the year resulting from oversupply and takeaway constraints impacting the Alberta crude market.

Suncor also produces a specific grade of sour SCO, the price realizations for which are influenced by various crude benchmarks including, but not limited to, MSW at Edmonton and WCS at Hardisty, and which can also be affected by prices negotiated for spot sales. Prices for MSW at Edmonton increased in 2018 compared to 2017, to $69.30/bbl from $63.20/bbl, while WCS at Hardisty decreased slightly to US$38.50 in 2018 compared to US$38.95 in 2017, reflecting the impact of wider western Canadian heavy crude differentials.

Bitumen production that Suncor does not upgrade is blended with diluent to facilitate delivery on pipeline systems. Net bitumen price realizations are therefore influenced by both prices for Canadian heavy crude oil (WCS at Hardisty is a common reference) and prices for diluent (Condensate at Edmonton and SCO), and pipeline tolls. Bitumen price realizations can also be affected by bitumen quality and spot sales and, in the second half of 2018, were also impacted by a substantial widening of heavy crude differentials.

Subsequent to the end of the year, crude differentials for SCO and heavy crude improved from the significant discounts experienced in the fourth quarter of 2018, primarily as a result of the Alberta government's mandatory production curtailments.

Suncor's price realizations for production from East Coast Canada and E&P International assets are influenced primarily by the price for Brent crude, which averaged US$71.05/bbl in 2018, compared to US$54.25/bbl in 2017. Due to the nature of cargo shipments at the company's offshore assets, the timing associated with bulk cargo sales can result in price realizations that deviate from the average benchmark price over the period.

Natural gas used in Suncor's Oil Sands and Refining operations is primarily referenced to Alberta spot prices at AECO. The average AECO benchmark decreased to $1.50/mcf in 2018, from $2.15/mcf in the prior year.

Suncor's refining margins are primarily influenced by 3-2-1 benchmark crack spreads, which are industry indicators approximating the gross margin on a barrel of crude oil that is refined to produce gasoline and distillates, and crude differentials. More complex refineries can earn greater

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refining margins by processing less expensive, heavier crudes, or lighter crudes discounted relative to the WTI benchmark. Crude differentials in Alberta widened considerably during the second half of 2018, resulting in lower refinery feedstock costs for the majority of the company's refineries and improved refining margins. Crack spreads do not necessarily reflect the margins of a specific refinery. Crack spreads quoted in the market are based on current crude feedstock prices whereas actual earnings are based on first-in, first-out (FIFO) inventory accounting, where a delay exists between the time that feedstock is purchased and when it is processed and sold to a third party. A FIFO loss normally reflects a declining price environment for crude oil and finished products, whereas FIFO gains reflect an increasing price environment for crude oil and finished products. Specific refinery margins are further impacted by actual crude purchase costs, refinery configuration, production mix and realized prices for refined products sales in markets unique to each refinery.

Excess electricity produced in Suncor's Oil Sands operations business is sold to the Alberta Electric System Operator, with the proceeds netted against the Oil Sands operations cash operating costs per barrel metric. The Alberta power pool price increased to an average of $50.20/MWh in 2018 from $22.15/MWh in the prior year.

The majority of Suncor's revenues from the sale of oil and natural gas commodities are based on prices that are determined by or referenced to U.S. dollar benchmark prices. The majority of Suncor's expenditures are realized in Canadian dollars. A decrease in the value of the Canadian dollar relative to the U.S. dollar will increase the revenues received from the sale of commodities. An increase in the value of the Canadian dollar relative to the U.S. dollar will decrease revenue received from the sale of commodities. In both 2018 and 2017, the average exchange rate was US$0.77 per one Canadian dollar.

Conversely, some of Suncor's assets and liabilities, notably 75% of the company's debt, are denominated in U.S. dollars and translated to Suncor's reporting currency (Canadian dollars) at each balance sheet date. A decrease in the value of the Canadian dollar relative to the U.S. dollar from the previous balance sheet date increases the amount of Canadian dollars required to settle U.S. dollar denominated obligations.

Economic Sensitivities[1][2]

The following table illustrates the estimated effects that changes in certain factors would have had on 2018 net earnings and funds from operations[3] if the listed changes had occurred.

(Estimated change, in $ millions)	Net Earnings	Funds From Operations[3]
Crude oil +US$1.00/bbl	220	220
Natural gas +Cdn$0.10/mcf	(24)	(24)
WTI – narrowing light/heavy differential +US$1.00/bbl	31	31
3-2-1 crack spreads +US$1.00/bbl	144	144
Foreign exchange +$0.01 US$/Cdn$ related to operating activities[4]	(193)	(193)
Foreign exchange on U.S. dollar denominated debt +$0.01 US$/Cdn$	167	—

(1) Each line item in this table shows the effects of a change in that variable only, with other variables being held consistent.

(2) Changes for a variable imply that all such similar variables are impacted, such that Suncor's average price realizations increase uniformly. For instance, "Crude oil +US$1.00/bbl" implies that price realizations influenced by WTI, Brent, SCO, WCS, par crude at Edmonton and condensate all increase by US$1.00/bbl.

(3) Non-GAAP financial measure. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

(4) Excludes the foreign exchange impact on U.S. dollar denominated debt.

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4. SEGMENT RESULTS AND ANALYSIS

Suncor has classified its operations into the following segments:

OIL SANDS

Suncor's Oil Sands segment, with assets located in the Athabasca oil sands of northeast Alberta, recovers bitumen from mining and in situ operations and either upgrades this production into SCO for refinery feedstock and diesel fuel, or blends the bitumen with diluent for direct sale to market. The Oil Sands segment includes:

- **Oil Sands operations** refer to Suncor's owned and operated mining, extraction, upgrading, in situ and related logistics and storage assets in the Athabasca oil sands region. Oil Sands operations consist of:
  - **Oil Sands Base** operations include the Millennium and North Steepbank mining and extraction operations, integrated upgrading facilities known as Upgrader 1 and Upgrader 2, and the associated infrastructure for these assets – including utilities, energy, reclamation and storage facilities.
  - **In Situ** operations include oil sands bitumen production from Firebag and MacKay River and supporting infrastructure, including central processing facilities, cogeneration units, product transportation infrastructure, diluent import capabilities, storage assets, and a cooling and blending facility. In Situ also includes development opportunities which may support future in situ production, including Meadow Creek (75%), Lewis (100%), OSLO (77.78%), various interests in Chard (25% to 50%), and a non-operated interest in Kirby (10%). In Situ production is either upgraded by Oil Sands Base, or blended with diluent and marketed directly to customers.
- **Fort Hills** includes Suncor's 54.11% interest in the Fort Hills mining project, which the company operates, and the East Tank Farm Development (ETFD) in which Suncor holds a 51% interest.
- **Syncrude** refers to Suncor's 58.74% interest in the Syncrude oil sands mining and upgrading joint arrangement.

EXPLORATION AND PRODUCTION

Suncor's E&P segment consists of offshore operations off the east coast of Canada and in the North Sea, and onshore assets in Libya and Syria.

- **E&P Canada** operations include Suncor's 37.675% working interest in Terra Nova, which Suncor operates. Suncor also holds non-operated interests in Hibernia (20% in the base project and 19.190% in the Hibernia Southern Extension Unit), White Rose (27.5% in the base project and 26.125% in the extensions), and the Hebron project (21.034%). In addition, the company holds interests in several exploration licences offshore Newfoundland and Labrador. Previously, E&P Canada also included Suncor's working interest in natural gas leases in northeast B.C., which were exchanged for a 37% equity interest in Canbriam during the first quarter of 2018.
- **E&P International** operations include Suncor's non-operated interests in Buzzard (29.89%), the Golden Eagle Area Development (26.69%), the Rosebank future development project (40%), the Oda project (30%) and the Fenja project (17.5%). The first three projects are located in the U.K. sector of the North Sea, while the Oda and Fenja projects are located in the Norwegian North Sea and the Norwegian Sea, respectively. In addition, Suncor owns, pursuant to Exploration and Production Sharing Agreements (EPSAs), working interests in the exploration and development of oilfields in the Sirte Basin in Libya, although production in Libya remained partially shut in throughout 2018 due to continued political unrest. The timing of a return to normal operations in Libya remains uncertain. Suncor also owns, pursuant to a Production Sharing Contract (PSC), an interest in the Ebla gas development in Syria, which has been suspended, indefinitely, since 2011 due to political unrest in the country.

REFINING AND MARKETING

Suncor's R&M segment consists of two primary operations:

- **Refining and Supply** operations refine crude oil and intermediate feedstock into a wide range of petroleum and petrochemical products. Refining and Supply consists of:
  - **Eastern North America** operations include a 137,000 bbls/d refinery located in Montreal, Quebec and an 85,000 bbls/d refinery located in Sarnia, Ontario.
  - **Western North America** operations include a 142,000 bbls/d refinery located in Edmonton, Alberta and a 98,000 bbls/d refinery in Commerce City, Colorado.
  - Other Refining and Supply assets include interests in a petrochemical plant and a sulphur recovery facility in Montreal, Quebec, product pipelines and terminals throughout Canada and the U.S., and the St. Clair ethanol plant in Ontario.
- **Marketing** operations sell refined petroleum products to retail, commercial and industrial customers through a

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combination of company-owned, Petro-Canada® and Sunoco® branded-dealers in Canada and other non-branded retail stations in the U.S., a nationwide commercial road transportation network in Canada, and a bulk sales channel in Canada.

CORPORATE, ENERGY TRADING AND ELIMINATIONS

The grouping **Corporate, Energy Trading and Eliminations** includes the company's investments in renewable energy projects, results related to energy marketing, supply and trading activities, and other activities not directly attributable to any other operating segment.

- **Renewable Energy** includes interests in four wind farm operations in Ontario and Western Canada, being Adelaide, Chin Chute, Magrath and Sunbridge.
- **Energy Trading** activities primarily involve the marketing, supply and trading of crude oil, natural gas, power and byproducts, and the use of midstream infrastructure and financial derivatives to optimize related trading strategies.
- **Corporate** activities include stewardship of Suncor's debt and borrowing costs, expenses not allocated to the company's businesses, and the company's captive insurance activities that self-insure a portion of the company's asset base.
- Intersegment revenues and expenses are removed from consolidated results in **Eliminations**. Intersegment activity includes the sale of product between the company's segments and insurance for a portion of the company's operations by the **Corporate** captive insurance entity. The sale of product between the company's segments is primarily related to crude refining feedstock sold from Oil Sands to R&M.

OIL SANDS

2018 Highlights

- Production at Fort Hills began in the first quarter of 2018 and the project successfully ramped up to 94% of nameplate capacity ahead of schedule in the fourth quarter of 2018. Average production in the year was 66,100 bbls/d, net to Suncor.
- Record production achieved at both Firebag and MacKay River, with the company's In Situ assets achieving 99% utilization for the year, and average annual In Situ cash operating costs per barrel[1] were below $10 for the first time.
- Suncor completed the acquisition of an additional 5% working interest in Syncrude from Mocal, adding approximately 17,500 bbls/d of sweet SCO capacity and bringing the company's working interest up to 58.74%.

Strategy and Investment Update

Oil Sands has developed a significant asset base within the Athabasca oil sands and has established a regional advantage given the close proximity of the company's assets to one another. This collection of high-quality assets, combined with long-life, low-decline reserves and industry-leading expertise, provides the opportunity to create structural cash flow growth improvements through asset optimization initiatives, such as debottlenecks and further integration with Syncrude to improve operational flexibility.

Reliability at Firebag and MacKay River improved in 2018, with both facilities setting new annual production records of 204,000 bbls/d and 36,000 bbls/d, respectively. Oil Sands upgrading reliability was 80% for the year, and reflected the impact of an increase in major planned maintenance with the successful completion of the first turnaround at Upgrader 1 since moving to a five year cycle.

Oil Sands remains focused on safe, reliable and sustainable operations. The company's operational excellence initiatives are aimed at improving facility utilization and workforce productivity, and are expected to achieve steady production growth while reducing operating costs. In 2018, Suncor completed the implementation of Autonomous Haulage Systems (AHS) at our North Steepbank Extension Mine. The program is expected to include the deployment of more than 150 autonomous haul trucks across our business over approximately six years.

Following the commissioning of the Fort Hills project in 2018 and the successful ramp up to 94% of nameplate capacity in the fourth quarter of 2018, Suncor will now focus on asset optimization, including AHS and low cost debottleneck opportunities, and continue its execution of safe and reliable operations in 2019.

Suncor remains committed to profitable growth, as was demonstrated by the company's acquisition of an additional 5% working interest in Syncrude in the first quarter of 2018. In an effort to improve reliability at Syncrude, Suncor and its joint venture partners reached an agreement in 2018 to build bi-directional interconnecting pipelines, which will connect Syncrude's Mildred Lake site with Suncor's Oil Sands Base plant. The lines will provide increased operational flexibility through the ability to transfer bitumen and gas oils between the two plants, enabling higher reliability and utilization and profit optimization. The pipelines are expected to be operational by the end of 2020, subject to finalized commercial terms and regulatory approval.

(1) Non-GAAP financial measure. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

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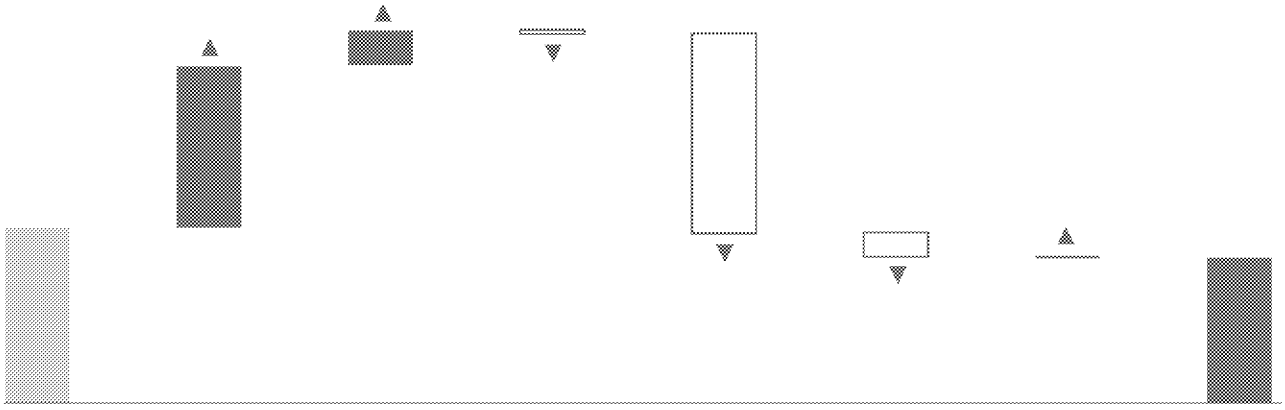
Cost management and capital discipline at Oil Sands will continue to be top priorities in 2019 as the company expects to sustainably reduce controllable operating costs through initiatives that include coordinated maintenance strategies, equipment standardization, adoption of digital technologies and inventory management improvements. Capital discipline continues to focus on managing investment opportunities, including asset synergies and sustainability priorities, such as the replacement of the coke-fired boilers at Oil Sands operations with lower carbon-intensive natural gas and accelerating tailings remediation, through a robust asset development process focused on value creation.

Financial Highlights

Year ended December 31 ($ millions)	2018	2017	2016
Gross revenues	**15 743**	13 274	9 538
Less: Royalties	**(398)**	(355)	(52)
Operating revenues, net of royalties	**15 345**	12 919	9 486
Net earnings (loss)	**853**	1 009	(1 149)
Adjusted for:			
Gain on significant disposal	**(60)**	—	—
Insurance proceeds	—	(55)	—
Derecognition and impairments	—	—	40
Operating earnings (loss)[1]	**793**	954	(1 109)
Funds from operations[1]	**4 870**	4 738	2 669

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

Bridge Analysis of Operating Earnings ($ millions)[1]



(1) For an explanation of the construction of this bridge analysis, see the Advisories – Non-GAAP Financial Measures section of this MD&A.

Operating earnings in Oil Sands operations were $793 million in 2018, compared to $954 million in 2017. The ramp up of Fort Hills in early 2018 increased both the company's sales volumes as well as operating and transportation expenses. The decrease in operating earnings was due to an unfavourable sales mix associated with a decrease in SCO production as a result of significant planned upgrader maintenance, lower bitumen price realizations and higher maintenance costs related to turnarounds, partially offset by the acquisition of an additional 5% working interest in Syncrude and record production at In Situ, combined with an increase in SCO price realizations.

Net earnings for Oil Sands were $853 million in 2018, compared to $1.009 billion in 2017 and were impacted by the same factors as operating earnings described above. In addition, 2018 net earnings included a $60 million gain on the sale of the company's interest in the Joslyn oil sands mining project. 2017 net earnings included $55 million of

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property damage insurance proceeds related to a facility incident that occurred at Syncrude earlier that year.

Funds from operations for the Oil Sands segment were $4.870 billion in 2018, compared to $4.738 billion in 2017. The increase was primarily due to the acquisition of an additional 5% working interest in Syncrude, and was also impacted by the same factors that impacted operating earnings, adjusted for the impact of non-cash DD&A.

Production Volumes[1]

Year ended December 31 (mbbls/d)	2018	2017	2016
Upgraded product (SCO and diesel)	**280.3**	317.7	258.9
In Situ non-upgraded bitumen	**138.0**	111.7	115.9
Total Oil Sands operations production	**418.3**	429.4	374.8
Fort Hills bitumen	**66.1**	----	----
Syncrude (sweet SCO and diesel)	**144.2**	134.3	130.1
Total	**628.6**	563.7	504.9

(1) Bitumen from Oil Sands Base operations is upgraded, while bitumen from In Situ operations is upgraded or sold directly to customers. Yields of SCO from Suncor's upgrading processes are approximately 79% of bitumen feedstock input. Yields of SCO from Syncrude's upgrading processes are approximately 85% of bitumen feedstock input

Oil Sands operations production decreased to 418,300 bbls/d in 2018 from 429,400 bbls/d in 2017, due to an increase in planned and unplanned upgrader maintenance in 2018, offset by an increase in non-upgraded bitumen production, with record volumes achieved at the company's In Situ facilities. Upgrader utilization was 80% in 2018, compared to 91% in 2017.

Fort Hills bitumen production averaged 66,100 bbls/d in 2018 and reflects the ramp up of operations to 94% plant utilization for the fourth quarter of 2018.

Sales Volumes and Mix

Year ended December 31 (mbbls/d)	2018	2017	2016
Oil Sands operations sales volumes			
Sweet SCO	**96.1**	107.9	87.3
Diesel	**28.8**	27.5	21.2
Sour SCO	**162.6**	183.6	153.4
Upgraded product (SCO)	**287.5**	319.0	261.9
Non-upgraded bitumen	**134.0**	110.6	117.4
Oil Sands operations	**421.5**	429.6	379.3
Fort Hills bitumen	**57.3**	—	—
Syncrude sweet SCO	**144.2**	134.3	130.1
Total	**623.0**	563.9	509.4

Sales volumes for Oil Sands operations decreased to 421,500 bbls/d in 2018, compared to 429,600 bbls/d in 2017, reflecting the same factors impacting production volumes.

Fort Hills bitumen sales averaged 57,300 bbls/d in 2018 and reflect a build of inventory due to an increase in production volumes at the end of the year and the associated transit time to market.

Suncor's share of Syncrude production and sales volumes averaged 144,200 bbls/d in 2018, compared to 134,300 bbls/d in 2017. The increase is due to the additional 5% working interest in Syncrude acquired in 2018, combined with strong reliability during the fourth quarter of 2018, partially offset by the decrease in production associated with a power outage that occurred in the second quarter of 2018. Syncrude production in 2017 was also negatively impacted by a facility event.

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Bitumen Production from Operations

Year ended December 31	2018	2017	2016
Oil Sands Base			
Bitumen production (mbbls/d)	**258.8**	305.4	238.0
Bitumen ore mined (thousands of tonnes/day)	**378.0**	464.4	351.1
Bitumen ore grade quality (bbls/tonne)	**0.68**	0.66	0.68
In Situ			
Bitumen production – Firebag (mbbls/d)	**204.0**	181.5	180.8
Steam-to-oil ratio – Firebag	**2.7**	2.7	2.6
Bitumen production – MacKay River (mbbls/d)	**36.0**	31.1	27.6
Steam-to-oil ratio – MacKay River	**2.9**	3.1	3.2
Total In Situ bitumen production (mbbls/d)	**240.0**	212.6	208.4
Total Oil Sands operations bitumen production (mbbls/d)	**498.8**	518.0	446.4
Fort Hills			
Bitumen production (mbbls/d)	**66.1**	—	—
Bitumen from froth	**1.3**	—	—
Bitumen ore mined (thousands of tonnes/day)	**106.2**	—	—
Bitumen ore grade quality (bbls/tonne)	**0.63**	—	—
Syncrude			
Bitumen production (mbbls/d)	**172.0**	163.6	151.1
Bitumen ore mined (thousands of tonnes/day)	**277.5**	252.7	245.8
Bitumen ore grade quality (bbls/tonne)	**0.62**	0.63	0.61
Total Oil Sands bitumen production	**738.2**	681.6	597.5

Oil Sands operations bitumen production decreased to 498,800 bbls/d in 2018, compared to 518,000 bbls/d in 2017. The decrease was primarily attributed to lower Oil Sands Base mined bitumen production due to lower upgrader availability associated with both planned and unplanned maintenance activities in 2018, partially offset by record production volumes from Firebag and MacKay River as a result of improved reliability.

Syncrude bitumen production increased to 172,000 bbls/d in 2018 from 163,600 bbls/d in 2017, and was impacted by the same factors as production and sales described above.

Price Realizations[1]

Year ended December 31 Net of transportation costs, but before royalties ($/bbl)	2018	2017	2016
Oil Sands operations			
SCO and diesel	**68.97**	61.47	49.75
Bitumen	**24.70**	33.47	18.48
Crude sales basket (all products)	**54.91**	54.26	40.07
Crude sales basket, relative to WTI	**(29.24)**	(11.91)	(17.73)
Fort Hills bitumen	**38.46**	—	—
Syncrude – sweet SCO	**70.19**	66.05	56.38
Syncrude, relative to WTI	**(13.97)**	(0.12)	(1.42)

(1) Price realizations for 2017 and 2016 have been restated in accordance with the new IFRS 15 revenue requirements, with no impact to net earnings or operating earnings, as well as the removal of the impact of risk management activities. For further information on the restatements associated with IFRS 15, refer to Note 5 in Suncor's audited Consolidated Financial Statements for the year ended December 31, 2018.

Price realizations for SCO and diesel were positively impacted by the increase in WTI benchmark prices, partially offset by unfavourable SCO and heavy crude differentials in the latter half of 2018 as a result of takeaway constraints in the Alberta market. Average price realizations for Oil Sands operations were $54.91/bbl in 2018, compared to $54.26/bbl in 2017.

Average price realizations for Fort Hills bitumen were $38.46/bbl in 2018 and were higher than In Situ bitumen realizations due to a higher proportion of sales being made in the U.S. mid-continent and the U.S. Gulf Coast, where Suncor is able to utilize its logistics network to access favourable pricing in the U.S. market, combined with the improved quality associated with paraffinic froth-treated bitumen produced at Fort Hills.

Suncor's average price realization for Syncrude sales increased in 2018 to $70.19/bbl, compared to $66.05/bbl in 2017, due to improved WTI benchmark pricing, partially offset by wider SCO differentials, as mentioned above.

Royalties

Royalties were higher in 2018 relative to 2017, primarily due to higher production volumes, partially offset by lower bitumen pricing.

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Expenses and Other Factors

Operating expenses for 2018 were higher relative to 2017, primarily due to increased operating and maintenance costs from the addition of Fort Hills, the company's increased working interest in Syncrude acquired early in 2018, and higher planned and unplanned maintenance expenses at Syncrude and Oil Sands operations. See the Cash Operating Costs section below for further details.

Transportation expense was higher in 2018, when compared to 2017, primarily due to the increased sales volumes associated with Fort Hills and the acquisition of the additional ownership interest in Syncrude in 2018.

DD&A expense for 2018 increased when compared to 2017 due to the addition of DD&A at Fort Hills and an increased share of Syncrude DD&A as a result of the additional working interest acquired in 2018.

Cash Operating Costs

Year ended December 31	2018	2017	2016
Oil Sands operating, selling and general expense (OS&G)	**7 570**	6 257	5 777
Oil Sands operations cash operating costs[1] reconciliation			
Oil Sands operations OS&G	**4 214**	4 062	4 028
Non-production costs[2]	**(93)**	(102)	(136)
Excess power capacity and other[3]	**(237)**	(232)	(197)
Inventory changes	**(14)**	1	(63)
Oil Sands operations cash operating costs[1] ($ millions)	**3 870**	3 729	3 632
Oil Sands operations cash operating costs[1] ($/bbl)	**25.25**	23.80	26.50
Fort Hills cash operating costs[1] reconciliation			
Fort Hills OS&G	**832**	—	—
Non-production costs[2]	**(120)**	—	—
Inventory changes	**55**	—	—
Fort Hills cash operating costs[1] ($ millions)	**767**	—	—
Fort Hills cash operating costs[1] ($/bbl)	**31.20**	—	—
Syncrude cash operating costs[1] reconciliation			
Syncrude OS&G	**2 523**	2 195	1 749
Non-production costs[2]	**(33)**	(37)	(31)
Syncrude cash operating costs[1] ($ millions)	**2 490**	2 158	1 718
Syncrude cash operating costs[1] ($/bbl)	**47.25**	44.05	35.95

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

(2) Significant non-production costs include, but are not limited to, share-based compensation expense and research expenses. Non-production costs at Fort Hills also include, but are not limited to, project start-up costs, excess power revenue from cogeneration units and an adjustment to reflect internally produced diesel from Oil Sands operations at the cost of production.

(3) Excess power capacity and other includes, but is not limited to, the operational revenue impacts of excess power from cogeneration units and the natural gas expense recorded as part of a non-monetary arrangement involving a third-party processor.

Oil Sands operations cash operating costs per barrel[1] averaged $25.25 in 2018, compared to $23.80 in 2017. The increase was due to higher maintenance costs associated with a planned Upgrader 1 turnaround in the spring and major maintenance at Upgrader 2 in the fall, as well as

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

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unplanned upgrader maintenance, partially offset by lower natural gas prices. Total Oil Sands operations cash operating costs increased to $3.870 billion from $3.729 billion in the prior year as a result of the factors described above, as well as the operating costs associated with a draw of inventory in 2018, compared to a build of inventory in the prior year.

In 2018, non-production costs, which are excluded from Oil Sands operations cash operating costs, were lower than the prior year, primarily due to a decrease in share-based compensation expense attributed to a decrease in the company's share price in the current year, as opposed to a share price increase in 2017.

Fort Hills cash operating costs per barrel[1] averaged $31.20 in 2018, reflecting the impact of the production ramp up throughout the year. Non-production costs at Fort Hills were $120 million and included commissioning and start-up costs, in addition to excess power capacity.

Syncrude cash operating costs per barrel[1] increased to $47.25 in 2018, compared to $44.05 in the previous year, primarily as a result of the increase in operating costs associated with planned and unplanned maintenance. Suncor's share of total Syncrude cash operating costs increased to $2.490 billion from $2.158 billion in 2017, with the increase primarily attributed to the increased working interest in the project acquired early in 2018, in addition to higher maintenance costs.

Planned Maintenance

Planned Upgrader 1 maintenance at Oil Sands Base and turnaround events at Firebag and Fort Hills are scheduled for the second quarter of 2019. Coker maintenance at Syncrude and maintenance events at Upgrader 2 are scheduled for the third quarter of 2019, extending into the fourth quarter of 2019, and Fort Hills expects to complete planned maintenance in the fourth quarter of 2019. The anticipated impact of these maintenance events has been reflected in the company's 2019 guidance.

EXPLORATION AND PRODUCTION

2018 Highlights

- After achieving first oil ahead of schedule in the fourth quarter of 2017, the Hebron project continued to ramp up throughout 2018 and delivered average production of 13,000 bbls/d, net to Suncor.
- Several strategic investments were completed throughout the year, including the acquisition of an additional 10% working interest in the Rosebank future development project, bringing the company's participating interest in the project to 40%, and the acquisition of a 17.5% working interest in the Fenja project offshore Norway.
- During 2018, the company and its partners sanctioned the Buzzard Phase 2 project, with first oil expected in early 2021.
- The company continued to advance development work at the Oda project offshore Norway, with first oil expected in the second quarter of 2019.

Strategy and Investment Update

The Exploration and Production segment delivers geographically diversified cash flows and focuses primarily on low-cost projects that deliver significant returns, cash flow and long-term value.

The company has ongoing development activities offshore the east coast of Canada and in the U.K. North Sea, intended to leverage existing facilities and infrastructure to provide incremental production and extend the productive life of existing fields. These activities are planned to continue in 2019, along with development drilling at Hebron as part of the continued ramp up phase, in addition to development work on the West White Rose Project, Buzzard Phase 2, the Oda project and the Fenja project. First oil from the Oda project is expected in the second quarter of 2019.

Subsequent to the end of 2018, the company received $300 million in risk mitigation proceeds for its Libyan assets (approximately $260 million after-tax). The proceeds may be subject to a provisional repayment which is dependent on the future performance and cash flows from Suncor's Libyan assets.

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

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Financial Highlights

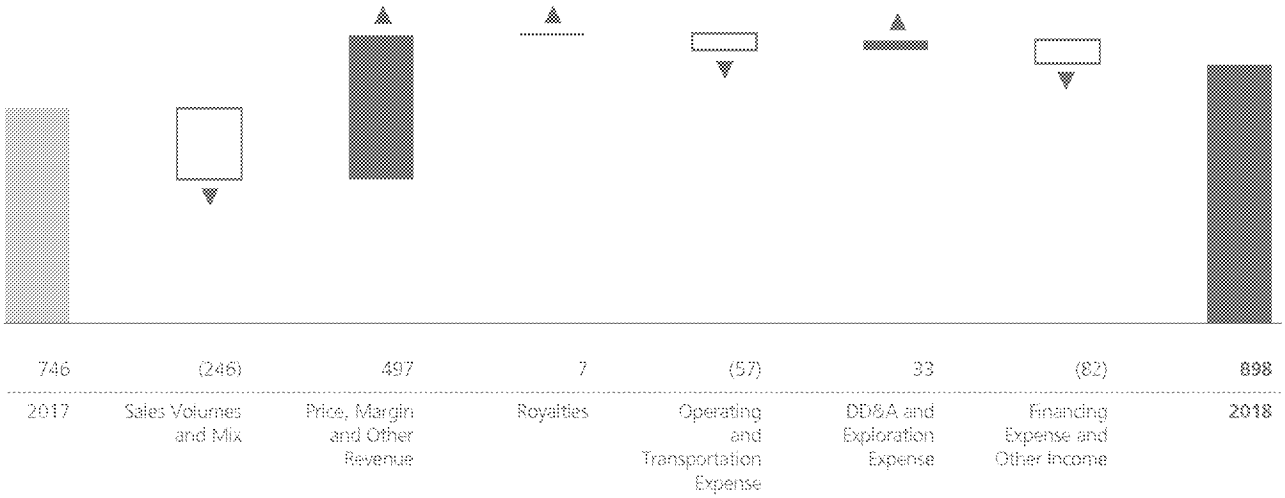
Year ended December 31 ($ millions)	2018	2017	2016
Gross revenues[1]	**3 474**	3 177	2 432
Less: Royalties	**(257)**	(266)	(201)
Operating revenues, net of royalties	**3 217**	2 911	2 231
Net earnings	**808**	732	190
Adjusted for:			
Non-cash loss on equity investment[2]	**90**	—	—
Impact of income tax rate adjustments on deferred income taxes	—	14	(180)
Operating earnings[3]	**898**	746	10
Funds from operations[3]	**1 869**	1 725	1 313

(1) Production, revenues and royalties from the company's Libya operations have been presented in the E&P section of this document on an entitlement basis and exclude an equal and offsetting gross up of revenues and royalties, which is required for presentation purposes in the company's financial statements under the working-interest basis.

(2) In 2018, the company recorded a net non-cash loss of $90 million, after-tax, in the E&P segment related to an asset exchange with Canbriam.

(3) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

Bridge Analysis of Operating Earnings ($ millions)[1]



(1) For an explanation of the construction of this bridge analysis, see the Advisories – Non-GAAP Financial Measures section of this MD&A.

Operating earnings were $898 million for E&P in 2018, compared to $746 million in the prior year. The improvement is primarily due to increased price realizations, consistent with higher Brent crude benchmarks, lower DD&A and exploration charges, partially offset by a decrease in sales volumes and increased operating expenses.

Net earnings were $808 million for E&P in 2018, compared to $732 million in 2017, and were impacted by the same factors as operating earnings described above. In addition, 2018 net earnings included a $90 million non-cash loss on an asset exchange with Canbriam, while 2017 net earnings were impacted by a $14 million charge associated with a change in the U.S. corporate tax rate.

Funds from operations were $1.869 billion in 2018, compared to $1.725 billion in 2017. The increase was largely due to the same factors that impacted operating earnings above, adjusted for the impact of non-cash DD&A.

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Production Volumes

Year ended December 31	2018	2017	2016
E&P Canada			
Terra Nova (mbbls/d)	**11.7**	11.5	12.4
Hibernia (mbbls/d)	**22.1**	28.5	26.8
White Rose (mbbls/d)	**6.6**	11.4	10.9
Hebron (mbbls/d)	**13.0**	0.4	—
North America Onshore (mboe/d)	**0.5**	1.9	2.8
	53.9	53.7	52.9
E&P International			
Buzzard (mboe/d)	**34.2**	43.8	46.0
Golden Eagle (mboe/d)	**12.4**	19.6	18.6
United Kingdom (mboe/d)	**46.6**	63.4	64.6
Libya (mbbls/d)[1]	**2.9**	4.5	0.4
	49.5	67.9	65.0
Total Production (mboe/d)	**103.4**	121.6	117.9
Production Mix (liquids/gas) (%)	**99/1**	97/3	96/4
Total Sales Volumes (mboe/d)	**102.8**	120.8	119.3

(1) Effective in 2016, production volumes for Libya are presented on an entitlement basis.

E&P Canada production volumes averaged 53,900 boe/d in 2018, compared to 53,700 boe/d in 2017, with production from Hebron and development drilling at existing facilities offsetting the impact of a major storm system at the end of 2018, natural declines, and planned and unplanned maintenance events throughout 2018. Production at the White Rose field was shut in from mid-November to late January 2019 due to unplanned maintenance. The return to normal production rates is expected to occur in a phased approach.

Production volumes in the U.K. decreased to 46,600 boe/d from 63,400 boe/d as a result of natural declines at both Golden Eagle and Buzzard, in addition to an increase in planned and unplanned maintenance at Buzzard in 2018.

Price Realizations

Year ended December 31 Net of transportation costs, but before royalties	2018	2017	2016
Exploration and Production			
E&P Canada – Crude oil and natural gas liquids ($/bbl)	**87.82**	69.14	57.37
E&P Canada – Natural gas ($/mcf)	**1.94**	1.77	1.71
E&P International ($/boe)	**86.77**	65.46	52.07
E&P average price ($/boe)	**86.96**	66.20	53.34

Average price realizations from E&P Canada and E&P International in 2018 were higher than 2017, consistent with the increase in benchmark prices for Brent crude in 2018.

Expenses and Other Factors

Operating expenses were higher in 2018, compared to 2017, primarily due to the addition of Hebron operating costs and an increase in maintenance expense.

DD&A and exploration expenses decreased in 2018, compared to the prior year, with decreased production in the U.K., White Rose and Hibernia more than offsetting additional DD&A from Hebron.

Planned Maintenance of Operated Assets

A planned two-week maintenance event at Terra Nova is scheduled to commence in the second quarter of 2019. The anticipated impact of this maintenance has been reflected in the company's 2019 guidance.

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REFINING AND MARKETING

2018 Highlights

- The Refining and Marketing segment achieved record financial results in 2018, with $3.153 billion in net and operating earnings and $3.794 billion of funds from operations, despite completing the most significant maintenance program in the company's history.
- R&M continues to be a key component of the company's integrated business model, allowing Suncor to significantly offset the impact of wider crude differentials in the Oil Sands segment in 2018 through increased refining margins by processing a crude slate comprising approximately 52% of SCO and diluted bitumen.
- Refined products sales were 527,400 bbls/d, with record Canadian wholesale sales achieved in 2018, reflecting continued strong product demand.

Strategy and Investment Update

The Refining and Marketing network serves to maximize Suncor's integrated returns by extending the value chain from oil sands production to the end customer and is a key component of the integrated business model. The company aims to operate its refineries at optimal levels of utilization to provide reliable offtake and secure pricing for a portion of the production from the Oil Sands segment.

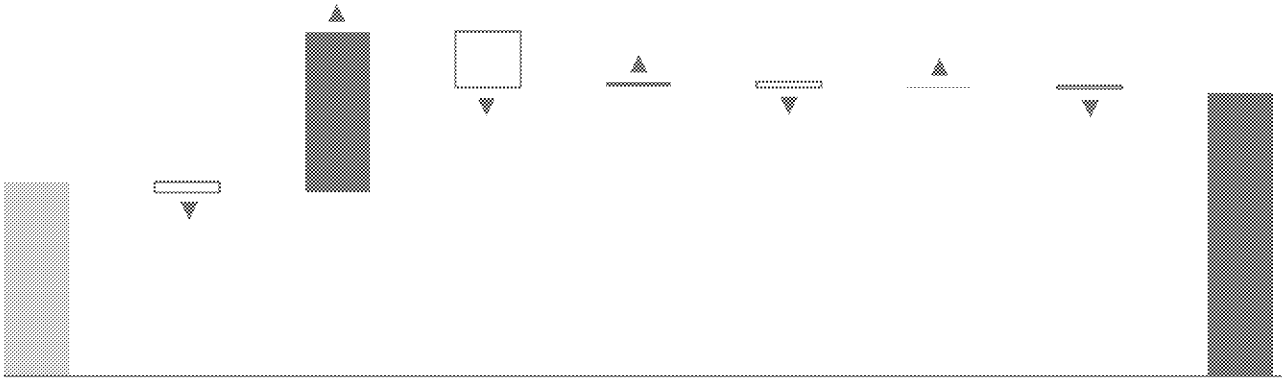
Suncor continued to grow retail market share in Canada through its Petro-Canada® branded-network. In 2018, Suncor leveraged its strong Petro-Canada® brand through a nationwide campaign to increase sales volumes and non-petroleum revenues through the company's network of convenience stores and car washes, and will continue these efforts in 2019.

Financial Highlights

Year ended December 31 ($ millions)	2018	2017	2016
Operating revenues	**23 724**	19 704	17 260
Net earnings	**3 153**	2 658	1 890
Adjusted for:			
Impact of income tax rate adjustments on deferred taxes	—	(140)	—
Gain on significant disposal	—	(354)	—
Operating earnings[1]	**3 153**	2 164	1 890
Funds from operations[1]	**3 794**	2 841	2 606

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

Bridge Analysis of Operating Earnings ($ millions)[1]



(1) For an explanation of the construction of this bridge analysis, see the Advisories – Non-GAAP Financial Measures section of this MD&A.

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R&M contributed record annual operating earnings of $3.153 billion in 2018, compared with $2.164 billion in 2017. The increase was due to improved refining margins resulting from wider crude differentials, favourable product location differentials, and improved benchmark crack spreads, partially offset by a FIFO loss and lower crude throughput due to an increase in planned maintenance.

Net earnings in 2018 were $3.153 billion, compared to net earnings of $2.658 billion in 2017, and were impacted by the same factors as operating earnings described above. 2017 net earnings also included a $354 million gain related to the sale of the company's lubricants business, and a $140 million deferred tax recovery related to changes in the U.S. corporate tax rate from 35% to 21%.

The FIFO loss was a result of the significant decline in crude oil and refined product benchmarks near the end of 2018 and was partially offset by a realization of intersegment profit associated with the consumption of internal crude feedstock from the company's Oil Sands assets, for a net inventory valuation loss of $216 million in the year. In addition, the favourable impact of wider crude differentials on refining margins partially offset the decrease in Oil Sands bitumen price realizations.

Funds from operations were also an annual record of $3.794 billion in 2018, compared to $2.841 billion in 2017, due primarily to the same factors that impacted operating earnings described above.

Volumes

Year ended December 31	2018	2017	2016
Crude oil processed (mbbls/d)			
Eastern North America	**208.1**	206.4	203.1
Western North America	**222.7**	234.8	225.5
Total	**430.8**	441.2	428.6
Refinery utilization[1] (%)			
Eastern North America	**94**	93	92
Western North America	**93**	98	94
Total	**93**	96	93
Refined Product Sales (mbbls/d)			
Gasoline	**245.6**	242.9	244.3
Distillate	**203.4**	199.3	186.1
Other	**78.4**	88.3	91.0
Total	**527.4**	530.5	521.4
Refining margin[2] ($/bbl)	**34.50**	24.20	20.45
Refining operating expense[2] ($/bbl)	**5.35**	5.05	5.10

(1) Refinery utilization is the amount of crude oil and natural gas plant liquids run through crude distillation units, expressed as a percentage of the capacity of these units.

(2) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

Refinery utilization averaged 93% in 2018, compared with 96% in 2017. The decrease in utilization was primarily due to an increase in planned maintenance in 2018 compared to 2017, with the Edmonton refinery undergoing its first full plant turnaround in its history, in addition to planned maintenance events at Montreal, Sarnia and Commerce City. The company was able to partially mitigate the impact of the planned maintenance that occurred during the second quarter of 2018 with the sale of inventory that had been strategically built up earlier in the year.

Total refined products sales in 2018 were comparable to 2017, reflecting continued strong product demand and record wholesale volumes in Canada.

Prices and Margins

Refining and Product Supply prices and margins were higher in 2018 compared to 2017, and were impacted primarily by the following factors:

- An overall favourable business environment, driven by wider crude differentials, improved product location differentials and higher benchmark distillate crack spreads, partially offset by lower gasoline crack spreads.
- In 2018, the impact of FIFO inventory accounting, as used by the company, relative to an estimated LIFO[1] basis of accounting, had a negative impact on refining margins and net income of approximately $468 million after-tax, compared to a positive impact of $157 million after-tax in 2017, for an unfavourable year-over-year impact of $625 million.

Marketing gross margins in 2018 were higher than in the prior year, primarily due to an increase in wholesale sales as well as stronger wholesale unit margins.

Expenses and Other Factors

Operating and transportation expenses were higher in 2018 compared to 2017, primarily due to an increase in refinery maintenance costs, partially offset by lower natural gas input prices.

Planned Maintenance

A less intensive maintenance program is planned in 2019 following the completion of significant turnaround events in 2018. Planned maintenance events in 2019 are focused only on certain units within each of the refineries and include a two-week turnaround at the Commerce City refinery scheduled in the first quarter, an eight-week turnaround at the Sarnia refinery and a six-week turnaround at the Montreal refinery, both scheduled to begin in the second quarter of 2019. The Edmonton refinery has a planned six-week turnaround scheduled to begin in the third quarter and extend into the fourth quarter of 2019. The estimated impact of these maintenance events has been reflected in the company's 2019 guidance.

(1) The LIFO inventory valuation methodology is a non-GAAP financial measure. See the Advisories – Non GAAP Financial Measures section of this MD&A.

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CORPORATE, ENERGY TRADING AND ELIMINATIONS

2018 Highlights

- The company returned $2.333 billion to shareholders through dividends in 2018, a 12.5% increase in the dividend per share over the prior year. 2018 was the 16th consecutive year of annual dividend increases for the company.
- The company repurchased $3.053 billion of its own shares for cancellation during 2018, compared to $1.413 billion in 2017.
- The company completed an early retirement of US$83 million in long-term debt originally due in 2019.
- Subsequent to the end of the year, Suncor's Board of Directors approved a quarterly dividend of $0.42 per share to be paid in the first quarter of 2019, an increase of 17%, and also approved a further share repurchase program of up to $2.0 billion.

Strategy and Investment Update

The Energy Trading business supports the company by securing market access, optimizing price realizations, managing inventory levels and limiting the impacts of external market factors, such as pipeline disruptions, lack of egress or outages at refining customers, while generating trading earnings through established strategies. The Energy Trading business continues to evaluate additional transportation and storage agreements to maximize crude price realizations and is developing an asset backed trading program to realize incremental value from market dislocations and arbitrage opportunities impacting Suncor's producing assets.

Returning value to shareholders continues to be a top priority for Suncor, as demonstrated by the company's history of dividend increases and commitment to its share repurchase program. Since reinstating the share repurchase program in 2017, the company has completed $4.818 billion in share repurchases as of February 25, 2019 and the Board of Directors has approved up to a further $2.0 billion in share repurchases, reinforcing the company's belief in its ongoing ability to generate cash flow and its commitment to return cash to shareholders.

Financial Highlights

Year ended December 31 ($ millions)	2018	2017	2016
Net (loss) earnings	(1 521)	59	(486)
Adjusted for:			
Unrealized foreign exchange loss (gain) on U.S. dollar denominated debt	989	(702)	(524)
Loss (gain) on interest rate swaps	—	20	(6)
Non-cash loss on early payment of long-term debt	—	28	73
Gain on significant disposal	—	(83)	—
Impact of income tax rate adjustments on deferred income taxes	—	2	—
Derecognition and impairments	—	—	31
COS acquisition and related costs	—	—	38
Operating (loss) earnings[1]	(532)	(676)	(874)
Renewable Energy	—	(4)	38
Energy Trading	92	(62)	4
Corporate	(876)	(528)	(864)
Eliminations – Intersegment profit realized (eliminated)	252	(82)	(52)
Funds used in operations[1]	(361)	(165)	(600)

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

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Renewable Energy

Year ended December 31	2018	2017	2016
Power generation marketed (gigawatt hours)[1]	**183**	255	478

(1) Power generated includes curtailed production for which the company was compensated.

Suncor's Renewable Energy assets realized nil operating earnings during the year, compared to an operating loss of $4 million in 2017. The improvement was primarily due to higher power prices.

Energy Trading

Energy Trading activities reported operating earnings of $92 million in 2018, compared to an operating loss of $62 million in 2017. The increase was primarily due to improved crude location spreads in the current year.

Corporate

Corporate incurred an operating loss of $876 million in 2018, compared with an operating loss of $528 million in 2017. The increased loss was primarily due to a decrease in the amount of capitalized interest, partially offset by a decrease in share-based compensation expense, a larger operational foreign exchange gain compared to 2017 and lower interest expense as a result of a lower amount of outstanding debt. Suncor capitalized $156 million of its borrowing costs in 2018 as part of the cost of major development assets and construction projects in progress, compared to $729 million in the prior year. The decrease was driven by the commissioning of Fort Hills in early 2018 and the completion of the Hebron project in late 2017.

Eliminations – Intersegment profit realized (eliminated)

Eliminations reflect the deferral or realization of profit on crude oil sales from Oil Sands and East Coast Canada to Refining and Marketing. Consolidated profits are only realized when the company sells the products produced from intersegment purchases of crude feedstock to third parties. In 2018, the company realized $252 million of after-tax intersegment profit, compared to an elimination of profit of $82 million in the prior year. This combined with the FIFO loss in the R&M segment resulted in a net $216 million after-tax inventory valuation loss in 2018. The change year-over-year was primarily due to the decrease in Oil Sands crude margins towards the end of 2018, as higher margin crude feedstock inventory sourced internally from Oil Sands was sold and replaced by lower margin crude feedstock inventory, resulting in a net release of profit at the enterprise level.

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5. FOURTH QUARTER 2018 ANALYSIS

Financial and Operational Highlights

Year ended December 31 ($ millions, except as noted)	2018	2017
Net (loss) earnings		
Oil Sands	(393)	670
Exploration and Production	(115)	217
Refining and Marketing	723	886
Corporate, Energy Trading and Eliminations	(495)	(391)
Total	(280)	1 382
Operating earnings (loss)[1]		
Oil Sands	(393)	615
Exploration and Production	108	231
Refining and Marketing	723	746
Corporate, Energy Trading and Eliminations	142	(282)
Total	580	1 310
Funds from (used in) operations[1]		
Oil Sands	601	1 780
Exploration and Production	367	431
Refining and Marketing	826	935
Corporate, Energy Trading and Eliminations	213	(130)
Total funds from operations	2 007	3 016
Changes in non-cash working capital	1 033	(261)
Cash flow provided by operating activities	3 040	2 755
Production volumes (mboe/d)		
Oil Sands	740.8	621.2
Exploration and Production	90.2	115.2
Total	831.0	736.4

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

Net Earnings (Loss)

Suncor had a consolidated net loss for the fourth quarter of 2018 of $280 million, compared to net earnings of $1.382 billion for the prior year quarter. Net earnings were primarily affected by the same factors that influenced operating earnings described subsequently in this section of this document. Other items affecting net earnings (loss) over these periods included:

- The after-tax unrealized foreign exchange impact on the revaluation of U.S. dollar denominated debt was a loss of $637 million for the fourth quarter of 2018, compared to a loss of $91 million for the fourth quarter of 2017.
- The fourth quarter of 2018 included a $223 million after-tax impairment charge in the E&P segment associated with the company's equity investment in Canbriam.
- In the fourth quarter of 2017, Suncor recognized a net $124 million deferred income tax recovery related to a decrease in the U.S. corporate tax rate from 35% to 21%, including a $140 million recovery in the R&M segment, offset by a $14 million expense in the E&P segment and a $2 million expense in the Corporate segment.
- In the fourth quarter of 2017, the company received after-tax proceeds of $55 million for property damage insurance related to the facility incident at Syncrude that occurred in the first quarter of 2017, in the Oil Sands segment.
- In the fourth quarter of 2017, the company recorded an after-tax loss of $18 million for early payment of debt, in the Corporate segment.
- In the fourth quarter of 2017, the company recognized an after-tax gain on forward interest rate swaps associated with issued debt of $2 million in the Corporate segment due to changes in long-term interest rates.

Cash Flow provided by Operating Activities and Funds from Operations

Funds from operations were $2.007 billion in the fourth quarter of 2018, compared to $3.016 billion in the fourth quarter of 2017, and were influenced by the same factors impacting operating earnings described in the Segmented Analysis below, excluding the recovery of non-cash share-based compensation, as well as unrealized gains on crude optimization activities.

Cash flow provided by operating activities, which includes changes in non-cash working capital, was $3.040 billion in the fourth quarter of 2018, compared to $2.755 billion in the fourth quarter of 2017, and was influenced by the same factors impacting operating earnings noted below, excluding the recovery of non-cash share-based compensation, as well as unrealized gains on crude optimization activities.

Segmented Analysis

Oil Sands

The Oil Sands segment had an operating loss of $393 million in the fourth quarter of 2018, compared to operating earnings of $615 million in the prior year quarter. The decrease was due to lower crude price realizations across all product lines, higher operating costs with the addition of Fort Hills production, as well as lower sales of SCO from Oil Sands operations due to planned and unplanned

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maintenance at Upgrader 2. These factors were partially offset by an increase in overall sales volumes.

Oil Sands operations production was 432,700 bbls/d in the fourth quarter of 2018, compared to 446,800 bbls/d in the prior year quarter. The decrease was primarily due to the completion of planned maintenance at Upgrader 2 early in the fourth quarter of 2018 and unplanned maintenance at Upgrader 2, which occurred late in the fourth quarter of 2018 and was resolved prior to the end of the quarter, partially offset by an associated increase in non-upgraded bitumen production. Upgrader utilization was 79% in the fourth quarter of 2018, compared to 93% in the prior year period.

Fort Hills exceeded target production rates with a utilization rate of 94% for the fourth quarter of 2018 and production of 98,500 bbls/d of bitumen net to Suncor.

Sales volumes for Oil Sands operations were 460,500 bbls/d in the fourth quarter of 2018, compared to 461,700 bbls/d in the prior year quarter, with an inventory draw in both non-upgraded bitumen and SCO offsetting the decline in overall production.

Bitumen sales at Fort Hills averaged 94,600 bbls/d, net to Suncor, in the fourth quarter of 2018, reflecting a small build of inventory as increased sales were transported to customers extending to the U.S. Gulf Coast.

Suncor's share of Syncrude production and sales was 209,600 bbls/d in the fourth quarter of 2018, compared to 174,400 bbls/d in the prior year quarter. The increase was primarily due to stronger reliability at Syncrude, with 101% utilization achieved in the period, in addition to the acquisition of an additional 5% working interest in Syncrude in the first quarter of 2018.

Exploration and Production

Operating earnings for the E&P segment in the fourth quarter of 2018 decreased to $108 million, from $231 million in the prior year quarter, as a result of lower overall production and an increase in operating expenses, primarily associated with the ramp up of Hebron, partially offset by lower royalties.

Production volumes for E&P Canada were 47,900 boe/d in the fourth quarter of 2018, compared to 55,500 boe/d in the prior year quarter. The decrease in production was due to a temporary production interruption at the company's East Coast Canada assets as a result of a major storm system during the quarter, in addition to natural declines, partially offset by the addition of production from Hebron, which averaged 15,700 bbls/d, net to the company. Production at the White Rose field was shut in from mid-November 2018 to late January 2019 due to operational complications, with partial production restarting at the end of January 2019.

E&P International production decreased to 42,300 boe/d in the fourth quarter of 2018, from 59,700 boe/d in the prior year quarter, primarily due to natural declines in the U.K. and an unplanned outage at Buzzard, which was resolved by the end of the fourth quarter.

E&P sales volumes decreased to 83,100 boe/d in the fourth quarter of 2018, compared to 104,800 boe/d in the prior year quarter, due to the decrease in production, as well as a larger inventory build at East Coast Canada associated with the timing of cargo sales.

Refining and Marketing

R&M operating earnings in the fourth quarter of 2018 were $723 million, compared to $746 million in the prior year quarter. The decrease was due to a FIFO loss associated with the significant decline in crude and refined product benchmarks during the quarter, partially offset by improved refining margins, primarily attributed to wider crude differentials, as well as record crude throughput.

At the company level, the FIFO loss was partially offset by a realization of intersegment profit associated with the consumption of internal crude feedstock from the company's Oil Sands assets. The favourable impact of wider crude differentials partially offset the decrease in Oil Sands price realizations.

Refinery crude throughput of 467,900 bbls/d in the fourth quarter of 2018 represents a new quarterly record, compared to 432,400 bbls/d in the prior year quarter, in which the Montreal refinery was impacted by a third-party power outage. Reliability at all of the company's refineries was strong in the fourth quarter of 2018, resulting in a utilization rate of 101%, compared to 94% in the prior year quarter.

Total refined products sales of 530,600 bbls/d in the fourth quarter of 2018 were comparable to 526,800 bbls/d in the prior year quarter, reflecting higher refinery crude throughput and strong product demand.

Corporate, Energy Trading and Eliminations

Corporate, Energy Trading and Eliminations had operating earnings of $142 million in the fourth quarter of 2018, compared to an operating loss of $282 million in the fourth quarter of 2017. The increase was due primarily to higher intersegment profit realizations, lower share-based compensation expense for the quarter, favourable trading results in the Energy Trading business, due to stronger crude location spreads, interest savings as a result of early debt repayment and higher Renewable Energy earnings as a result of higher power prices, partially offset by a significant decrease in capitalized interest during the quarter. Suncor capitalized $28 million of its borrowing costs in the fourth quarter of 2018 as part of the cost of major development assets and construction projects in progress, compared to $177 million in the prior year quarter, mainly as a result of the commissioning of the Fort Hills project early in 2018.

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6. QUARTERLY FINANCIAL DATA

Financial Summary

Three months ended ($ millions, unless otherwise noted)	Dec 31 2018	Sept 30 2018	June 30 2018	Mar 31 2018	Dec 31 2017	Sept 30 2017	June 30 2017	Mar 31 2017
Total production (mboe/d)								
Oil Sands	**740.8**	651.7	547.6	571.7	621.2	628.4	413.6	590.6
Exploration and Production	**90.2**	92.1	114.1	117.7	115.2	111.5	125.5	134.5
	831.0	743.8	661.7	689.4	736.4	739.9	539.1	725.1
Revenues and other income								
Operating revenues, net of royalties	**8 561**	10 847	10 327	8 807	8 973	7 963	7 231	7 787
Other income	**384**	16	101	(57)	41	43	16	25
	8 945	10 863	10 428	8 750	9 014	8 006	7 247	7 812
Net (loss) earnings	**(280)**	1 812	972	789	1 382	1 289	435	1 352
per common share – basic (dollars)	**(0.18)**	1.12	0.60	0.48	0.84	0.78	0.26	0.81
per common share – diluted (dollars)	**(0.18)**	1.11	0.59	0.48	0.84	0.78	0.26	0.81
Operating earnings[1]	**580**	1 557	1 190	985	1 310	867	199	812
per common share – basic[1] (dollars)	**0.36**	0.96	0.73	0.60	0.79	0.52	0.12	0.49
Funds from operations[1]	**2 007**	3 139	2 862	2 164	3 016	2 472	1 627	2 024
per common share – basic[1] (dollars)	**1.26**	1.94	1.75	1.32	1.83	1.49	0.98	1.21
Cash flow provided by operating activities	**3 040**	4 370	2 446	724	2 755	2 912	1 671	1 628
per common share – basic (dollars)	**1.90**	2.70	1.50	0.44	1.67	1.75	1.00	0.98
ROCE[1] (%) for the twelve months ended	**8.0**	9.7	8.3	6.5	6.7	5.5	4.9	3.5
ROCE[1] (%) excluding major projects in progress for the twelve months ended	**8.2**	10.4	9.5	7.8	8.6	7.0	6.2	4.4
After-tax unrealized foreign exchange (loss) gain on U.S. dollar denominated debt	**(637)**	195	(218)	(329)	(91)	412	278	103
Common share information (dollars)								
Dividend per common share	**0.36**	0.36	0.36	0.36	0.32	0.32	0.32	0.32
Share price at the end of trading								
Toronto Stock Exchange (Cdn$)	**38.13**	49.98	53.50	44.49	46.15	43.73	37.89	40.83
New York Stock Exchange (US$)	**27.97**	38.69	40.68	34.54	36.72	35.05	29.20	30.75

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A. ROCE excludes capitalized costs related to major projects in progress. Operating earnings (loss) for each quarter are defined in the Non-GAAP Financial Measures Advisory section and reconciled to GAAP measures in the Consolidated Financial Information and Segment Results and Analysis sections of each quarterly Report to Shareholders issued by Suncor (Quarterly Reports) in respect of the relevant quarter. Funds from operations and ROCE for each quarter are defined and reconciled to GAAP measures in the Non-GAAP Financial Measures Advisory section of each Quarterly Report issued by Suncor in respect of the relevant quarter.

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Business Environment

Three months ended (average for the period ended, except as noted)		Dec 31 2018	Sept 30 2018	June 30 2018	Mar 31 2018	Dec 31 2017	Sept 30 2017	June 30 2017	Mar 31 2017
WTI crude oil at Cushing	US$/bbl	**58.85**	69.50	67.90	62.90	55.40	48.20	48.30	51.85
Dated Brent crude	US$/bbl	**67.80**	75.25	74.40	66.80	61.40	52.50	49.85	53.75
Dated Brent/Maya FOB price differential	US$/bbl	**4.35**	10.20	12.40	7.70	9.60	6.30	5.80	9.05
MSW at Edmonton	Cdn$/bbl	**42.70**	82.10	80.95	72.45	69.30	57.05	62.30	64.25
WCS at Hardisty	US$/bbl	**19.50**	47.35	48.65	38.60	43.10	38.25	37.20	37.30
Light/heavy crude oil differential for WTI at Cushing less WCS at Hardisty	US$/bbl	**39.35**	22.15	19.25	24.30	12.30	9.95	11.10	14.55
Condensate at Edmonton	US$/bbl	**45.30**	66.82	68.50	63.15	57.95	47.60	48.45	52.20
Natural gas (Alberta spot) at AECO	Cdn$/mcf	**1.60**	1.19	1.20	1.77	1.70	1.45	2.80	2.70
Alberta Power Pool Price	Cdn$/MWh	**55.55**	54.45	56.00	34.95	22.35	24.55	19.30	22.40
New York Harbor 3-2-1 crack[1]	US$/bbl	**16.20**	19.65	20.65	15.50	19.40	22.35	16.35	12.55
Chicago 3-2-1 crack[1]	US$/bbl	**13.35**	19.05	18.30	12.85	20.20	19.25	14.40	11.15
Portland 3-2-1 crack[1]	US$/bbl	**21.60**	21.40	27.90	20.35	22.10	26.80	21.25	18.45
Gulf Coast 3-2-1 crack[1]	US$/bbl	**15.10**	18.85	20.25	15.55	18.25	21.45	16.80	14.00
Exchange rate	US$/Cdn$	**0.76**	0.77	0.77	0.79	0.79	0.80	0.74	0.76
Exchange rate (end of period)	US$/Cdn$	**0.73**	0.77	0.76	0.78	0.80	0.80	0.77	0.75

(1) 3-2-1 crack spreads are indicators of the refining margin generated by converting three barrels of WTI into two barrels of gasoline and one barrel of diesel. The crack spreads presented here generally approximate the regions into which the company sells refined products through retail and wholesale channels.

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Significant or Unusual Items Impacting Net Earnings

Trends in Suncor's quarterly net earnings and cash flow provided by operating activities are driven primarily by production volumes, which can be significantly impacted by major maintenance events, such as the planned upgrader maintenance and the turnaround at the Edmonton refinery that occurred in the second quarter of 2018, and unplanned outages such as the major storm system on the east coast of Canada in the fourth quarter of 2018.

Trends in Suncor's quarterly net earnings and cash flow provided by operating activities are also affected by changes in commodity prices, price differentials, refining crack spreads and foreign exchange rates, as described in the Financial Information section of this MD&A. In addition to the impacts of changes in production volumes and business environment, net earnings over the last eight quarters were affected by the following events or significant adjustments:

- The fourth quarter of 2018 included a $223 million after-tax impairment charge in the E&P segment associated with the company's equity investment in Canbriam. This included the reversal of a $133 million after-tax gain recorded in the first quarter of 2018, when the equity investment was acquired through an asset exchange, for a net after-tax impairment of $90 million in 2018.
- The third quarter of 2018 included an after-tax gain of $60 million in the Oil Sands segment relating to the sale of the company's interest in the Joslyn oil sands mining project.
- The fourth quarter of 2017 included a net deferred tax recovery of $124 million related to a decrease in the U.S. corporate tax rate from 35% to 21%, after-tax proceeds of $55 million ($76 million before tax) for property damage insurance related to the facility incident at Syncrude that occurred in the first quarter of 2017, an after-tax loss of $18 million for early payment of debt, and an after-tax gain on forward interest rate swaps of $2 million associated with issued debt.
- The third quarter of 2017 included a non-cash after-tax gain of $10 million on forward interest rate swaps.
- The second quarter of 2017 included an after-tax charge of $10 million for early payment of debt, net of associated realized foreign currency hedge gains, and a non-cash after-tax loss of $32 million on forward interest rate swaps and foreign currency derivatives.
- The first quarter of 2017 included $437 million of after-tax gains on the sale of the company's lubricants business and its interest in the Cedar Point wind facility.

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7. CAPITAL INVESTMENT UPDATE

Capital and Exploration Expenditures by Segment

Year ended December 31 ($ millions)	2018	2017	2016
Oil Sands	**3 546**	5 059	4 724
Exploration and Production	**946**	824	1 139
Refining and Marketing	**856**	634	685
Corporate, Energy Trading and Eliminations	**58**	34	34
Total	**5 406**	6 551	6 582
Less: capitalized interest on debt	**(156)**	(729)	(596)
	5 250	5 822	5 986

Capital and Exploration Expenditures by Type[1][2][3]

Year ended December 31, 2018 ($ millions)	Sustaining	Growth	Total
Oil Sands			
Oil Sands Base	1 820	32	**1 852**
In Situ	351	26	**377**
Fort Hills	250	365	**615**
Syncrude	583	3	**586**
Exploration and Production	11	898	**909**
Refining and Marketing	853	—	**853**
Corporate, Energy Trading and Eliminations	58	—	**58**
	3 926	1 324	**5 250**

(1) Capital expenditures in this table exclude capitalized interest on debt.

(2) Growth capital expenditures include capital investments that result in i) an increase in production levels at existing Oil Sands and R&M operations; ii) new facilities or operations that increase overall production; iii) new infrastructure and logistics that are required to support higher production levels; iv) new reserves or a positive change in the company's reserves profile in Exploration and Production operations; or v) margin improvement, by increasing revenues or reducing costs.

(3) Sustaining capital expenditures include capital investments that i) ensure compliance with regulations; ii) improve efficiency and reliability of operations or maintain productive capacity; iii) deliver existing proved developed reserves for Exploration and Production operations; or iv) maintain current production capacities at existing Oil Sands and R&M operations.

In 2018, Suncor's capital expenditures on property, plant and equipment and exploration activities totalled $5.250 billion, excluding capitalized borrowing costs of $156 million. Activity in 2018 included the following:

Oil Sands Base

Oil Sands Base sustaining capital expenditures were $1.820 billion in 2018 and were primarily focused on ensuring continued safe, reliable and efficient operations, as well as environmental compliance such as the continued development of tailings infrastructure. The company's planned maintenance program in 2018 included a planned turnaround at Upgrader 1 in the spring and major maintenance at Upgrader 2 in the fall, in addition to other maintenance initiatives.

Oil Sands Base growth capital of $32 million in 2018 was focused on projects expected to improve productive capacity, including development of the coke-fired boiler replacement project.

In Situ

In Situ capital expenditures were $377 million, of which $351 million was directed towards sustaining capital expenditures, which focused on the ongoing design and construction of well pads that are expected to maintain existing production levels at Firebag and MacKay River in future years as production from existing well pads declines.

Growth capital of $26 million in 2018 was related to development of emerging properties and new technologies.

Fort Hills

Fort Hills capital expenditures were $615 million in 2018, with $365 million directed toward growth spending and completion of the project within the year.

Sustaining capital of $250 million in 2018 included activities supporting the execution of the mine and tailings plan following the achievement of first oil.

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Syncrude

Syncrude capital and exploration expenditures were $586 million in 2018, the majority of which was for sustaining capital expenditures focused on maintaining assets, including capital related to turnarounds and maintenance.

Exploration and Production

Exploration and Production capital and exploration expenditures were $909 million in 2018, which was primarily directed to development drilling at all offshore assets, as well as development work on the West White Rose Project, the Norwegian Oda and Fenja projects, and pre-sanction design work on the Rosebank project in the U.K.

Refining and Marketing

Refining and Marketing capital expenditures were $853 million in 2018, all of which was directed to sustaining activities focused on planned maintenance events at the company's refineries, enhancements to retail operations and technology upgrades. In 2018, the company undertook the most significant maintenance program in its history, performing a full plant shutdown of the Edmonton refinery for the first time.

Capital Projects Update

Suncor anticipates 2019 capital expenditures to be directed to the following projects and initiatives:

Oil Sands Operations

For 2019, plans for sustaining capital will primarily be focused on tailings management, planned maintenance, which includes major maintenance on coker drums, and the naphtha and gasoil hydrotreaters. Other investments to maintain production capacity at existing facilities include continued development of new well pads at In Situ to offset natural production declines, development of an autonomous haul truck program to further improve the efficiency of mining operations and replacement of the coke-fired boilers at Oil Sands Base.

Fort Hills

Sustaining capital expenditures in 2019 for Fort Hills will be focused on tailings management and projects to preserve production capacity and maintain reliability, including mining equipment.

Syncrude

Sustaining capital expenditures in 2019 for Syncrude are expected to focus on reliability programs, planned maintenance and maintaining production capacity.

Exploration and Production

Capital expenditures in 2019 for E&P will be focused on future growth projects, including the West White Rose Project off the east coast of Canada. The West White Rose Project was sanctioned in the second quarter of 2017. Suncor is a non-operating partner with a blended working interest of approximately 26% and the company's share of peak oil is expected to be 20,000 bbls/d. The operator originally estimated first oil would be achieved in 2022; however, due to a recent delay in the tow-out schedule, achieving this first-oil date is uncertain. An update from the project operator is expected in the first half of 2019.

Additional growth capital in 2019 will include development drilling at Hibernia, White Rose, Terra Nova and Buzzard, development of the Buzzard Phase 2 project, which was sanctioned in 2018, and the Norwegian Oda and Fenja projects, as well as pre-sanction design work on the Rosebank future development project.

Refining and Marketing

The company expects that sustaining capital will focus on planned maintenance events, technological investments and routine asset replacement.

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8. FINANCIAL CONDITION AND LIQUIDITY

Liquidity and Capital Resources

At December 31 ($ millions, except as noted)	2018	2017	2016
Net cash from (used in)			
Operating activities	**10 580**	8 966	5 680
Investing activities	**(6 697)**	(5 019)	(7 507)
Financing activities	**(4 426)**	(4 223)	869
Foreign exchange gain (on cash and cash equivalents)	**92**	(68)	(75)
(Decrease) increase in cash and cash equivalents	**(451)**	(344)	(1 033)
Cash and cash equivalents, end of year	**2 221**	2 672	3 016
Return on Capital Employed (%)[1]			
Excluding major projects in progress	**8.2**	8.6	0.5
Including major projects in progress	**8.0**	6.7	0.4
Net debt to funds from operations[1] (times)	**1.5**	1.4	2.4
Interest coverage on long-term debt (times)			
Earnings basis[2]	**6.4**	6.5	0.5
Funds from operations basis[1][3]	**14.1**	11.2	6.5

(1) Non-GAAP financial measures. See the Advisories – Non-GAAP Financial Measures section of this MD&A.

(2) Net earnings plus income taxes and interest expense, divided by the sum of interest expense and capitalized interest on debt.

(3) Funds from operations plus current income taxes and interest expense, divided by the sum of interest expense and capitalized interest on debt.

Cash Flow provided by Operating Activities

Cash flow provided by operating activities was $10.580 billion in 2018 compared to $8.966 billion in 2017. The increase was primarily due to improved overall benchmark crude pricing, increased refining margins and higher overall upstream production, primarily attributed to the ramp up of Fort Hills and Hebron and the increased working interest in Syncrude. These factors were partially offset by an increase in expenses associated with the expansion of the company's production in 2018, an increase in maintenance expenditures at Syncrude and Oil Sands operations, and a decrease in the capitalization of borrowing costs.

Cash Flow used in Investment Activities

Cash flow used in investing activities was $6.697 billion in 2018 compared to $5.019 billion in 2017. The increase was primarily due to the purchase of an additional 5% interest in the Syncrude project and a decrease in proceeds from disposals, with the previous year including the sale of the company's lubricants business and its interest in two wind facilities, partially offset by a decrease in capital and exploration expenditures following the completion of the company's major growth projects in 2018.

Cash Flow used in Financing Activities

Cash flow used in financing activities was $4.426 billion in 2018, compared to $4.223 billion in 2017. The increase was primarily due to an increase in the purchase of the company's own shares under its normal course issuer bid (NCIB), an increase in dividends paid and a smaller increase in short-term debt. In addition, 2017 included a significant net reduction of long-term debt, partially offset by proceeds relating to the sale of a 49% interest in the ETFD, which was treated as a financing activity due to the existence of non-discretionary distributions within the arrangement.

Management of debt levels continues to be a priority for Suncor given the company's long-term growth plans and future expected volatility in the pricing environment. Suncor believes a phased and flexible approach to existing and future growth projects should assist the company in maintaining its ability to manage project costs and debt levels.

Capital Resources

Suncor's capital resources consist primarily of cash flow provided by operating activities, cash and cash equivalents and available credit facilities, including commercial paper. Suncor's management believes the company will have the capital resources to fund its planned 2019 capital spending program of $4.9 to $5.6 billion and to meet current and future working capital requirements through cash and cash equivalents balances, cash flow provided by operating activities, available committed credit facilities, issuing commercial paper and accessing capital markets. The company's cash flow provided by operating activities depends on a number of factors, including commodity prices, production and sales volumes, refining and marketing

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margins, operating expenses, taxes, royalties and foreign exchange rates.

The company has invested excess cash in short-term financial instruments that are presented as cash and cash equivalents. The objectives of the company's short-term investment portfolio are to ensure the preservation of capital, maintain adequate liquidity to meet Suncor's cash flow requirements and deliver competitive returns derived from the quality and diversification of investments within acceptable risk parameters. The maximum weighted average term to maturity of the short-term investment portfolio is not expected to exceed six months, and all investments will be with counterparties with investment grade debt ratings.

Available Sources of Liquidity

Cash and Cash Equivalents

Included in cash and cash equivalents of $2.221 billion at December 31, 2018 are short-term investments with weighted average terms to maturity of approximately 14 days. In 2018, the company earned approximately $32 million of interest income on this portfolio.

Financing Activities

Suncor's interest on debt (before capitalized interest) in 2018 was $897 million, a decrease from $945 million in 2017, due to the net reduction in long-term debt that occurred over the course of 2017, including the exchange of higher interest rate debt for debt issued at a lower interest rate, partially offset by an increase in short-term debt in 2018 combined with higher short-term interest rates and the unfavourable impact of the weaker Canadian dollar on U.S. dollar denominated debt.

Available lines of credit at December 31, 2018 decreased to $3.608 billion, compared to $4.489 billion at December 31, 2017, due to an increase in short-term indebtedness.

A summary of total and unutilized credit facilities at December 31, 2018 is as follows:

($ millions)	2018
Fully revolving and expires in 2022	4 000
Fully revolving and expires in 2021	2 729
Fully revolving and expires within the next two years	1 537
Can be terminated at any time at the option of the lenders	132
Total credit facilities	8 398
Credit facilities supporting outstanding commercial paper	(3 231)
Credit facilities supporting standby letters of credit	(1 269)
Total unutilized credit facilities[1]	3 898

(1) Available credit facilities for general purposes were $3.608 billion at December 31, 2018 (December 31, 2017 – $4.489 billion).

Total Debt to Total Debt Plus Shareholders' Equity

Suncor is subject to financial and operating covenants related to its bank debt and public market debt. Failure to meet the terms of one or more of these covenants may constitute an Event of Default as defined in the respective debt agreements, potentially resulting in accelerated repayment of one or more of the debt obligations. The company is in compliance with its financial covenant that requires total debt to not exceed 65% of its total debt plus shareholders' equity. At December 31, 2018, total debt to total debt plus shareholders' equity was 28.3% (December 31, 2017 – 25.6%). The company is currently in compliance with all operating covenants as at December 31, 2018.

At December 31 ($ millions, except as noted)	2018	2017
Short-term debt	**3 231**	2 136
Current portion of long-term debt	**229**	71
Long-term debt	**13 890**	13 372
Total debt	**17 350**	15 579
Less: Cash and cash equivalents	**2 221**	2 672
Net debt	**15 129**	12 907
Shareholders' equity	**44 005**	45 383
Total debt plus shareholders' equity	**61 355**	60 962
Total debt to total debt plus shareholders' equity (%)	**28.3**	25.6

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Change in Net Debt

($ millions)	
Total debt – December 31, 2017	15 579
Decrease in long-term debt	(186)
Increase in short-term debt	866
Foreign exchange on debt, and other	1 091
Total Debt – December 31, 2018	17 350
Less: Cash and cash equivalents – December 31, 2018	2 221
Net Debt – December 31, 2018	15 129

At December 31, 2018, Suncor's net debt was $15.129 billion, compared to $12.907 billion at December 31, 2017. During 2018, total debt increased by $1.771 billion, primarily due to unrealized foreign exchange losses on U.S. dollar denominated debt and an increase in short-term indebtedness due to acquisitions, partially offset by a decrease in long-term debt.

For the year ended December 31, 2018, the company's net debt to funds from operations measure was 1.5 times, which is lower than management's maximum target of less than 3.0 times.

Credit Ratings

The company's credit ratings impact its cost of funds and liquidity. In particular, the company's ability to access unsecured funding markets and to engage in certain activities on a cost-effective basis is primarily dependent upon maintaining a strong credit rating. A lowering of the company's credit rating may also have potentially adverse consequences for the company's funding capacity or access to the capital markets, may affect the company's ability, and the cost, to enter into normal course derivative or hedging transactions, and may require the company to post additional collateral under certain contracts.

As at February 28, 2019, the company's long-term senior debt ratings are:

Long-Term Senior Debt	Rating	Long-Term Outlook
Standard & Poor's	A –	Stable
Dominion Bond Rating Service	A (low)	Stable
Moody's Investors Service	Baa1	Stable

The company's commercial paper ratings are:

Commercial Paper	Cdn Program Rating	U.S. Program Rating
Standard & Poor's	A-1 (low)	A-2
Dominion Bond Rating Service	R-1 (low)	Not rated
Moody's Investors Service	Not rated	P2

Refer to the Description of Capital Structure – Credit Ratings section of Suncor's 2018 AIF for a description of credit ratings listed above.

Common Shares

Outstanding Shares

December 31, 2018 (thousands)	
Common shares	**1 584 484**
Common share options – non-exercisable	**15 374**
Common share options – exercisable	**13 561**

As at February 25, 2019, the total number of common shares outstanding was 1,577,725,157 and the total number of exercisable and non-exercisable common share options outstanding was 35,618,386. Once exercisable, each outstanding common share option may be exercised for one common share.

Share Repurchases

In May 2018, Suncor renewed its NCIB to continue to repurchase its common shares through the facilities of the Toronto Stock Exchange (TSX), New York Stock Exchange and/or alternative trading platforms between May 4, 2018 and May 3, 2019. In November 2018, following the approval by the Board of Directors to increase the company's share repurchase program to $3.0 billion, the Toronto Stock Exchange TSX accepted a notice filed by Suncor of its intention to amend its NCIB effective as of November 19, 2018. The notice provided that Suncor may increase the maximum number of common shares that may be purchased for cancellation between May 4, 2018 and May 3, 2019 from 52,285,330 common shares, or approximately 3% of Suncor's issued and outstanding common shares as at April 30, 2018, to 81,695,830 common shares, or approximately 5% of Suncor's issued and outstanding common shares as at April 30, 2018. Suncor security holders may obtain a copy of the notice, without charge, by contacting the company.

Since commencing its share buyback program in 2011, Suncor has purchased 262,664,000 common shares as of February 25, 2018 for a total return to shareholders of 10.2 billion under this program, with close to half of these share repurchases occurring in the last 2 years. Subsequent to the end of the year, Suncor's Board of Directors approved a further share repurchase program of up to $2.0 billion.

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At December 31 ($ millions, except as noted)	2018	2017	2016	2015
Share repurchase activities (thousands of common shares)				
Shares repurchased	**64 426**	33 153	—	1 230
Share repurchase cost ($ millions)	**3 053**	1 413	—	43
Weighted average repurchase price per share (dollars per share)	**47.38**	42.61	—	34.93

Contractual Obligations, Commitments, Guarantees, and Off-Balance Sheet Arrangements

In addition to the enforceable and legally binding obligations in the table below, Suncor has other obligations for goods and services that were entered into in the normal course of business, which may terminate on short notice, including commitments for the purchase of commodities for which an active, highly liquid market exists, and which are expected to be re-sold shortly after purchase.

The company does not believe it has any guarantees or off-balance sheet arrangements that have, or are reasonably likely to have, a current or future material effect on the company's financial condition or financial performance, including liquidity and capital resources.

In the normal course of business, the company is obligated to make future payments, including contractual obligations and non-cancellable commitments.

	Payment due by period						
($ millions)	2019	2020	2021	2022	2023	2024 and beyond	Total
Fixed and revolving term debt[1]	4 161	733	2 172	883	632	18 648	**27 229**
Finance lease obligations	37	39	42	46	53	1 043	**1 260**
Decommissioning and restoration costs[2]	542	462	413	348	211	11 074	**13 050**
Operating lease agreements, pipeline capacity and energy services commitments[3]	1 896	1 671	1 632	1 575	1 492	14 771	**23 037**
Exploration work commitments	33	—	44	—	—	490	**567**
Other long-term obligations[4]	2	21	21	21	21	—	**86**
Total	**6 671**	**2 926**	**4 324**	**2 873**	**2 409**	**46 026**	**65 229**

(1) Includes debt that is redeemable at Suncor's option and interest payments on fixed-term debt.

(2) Represents the undiscounted amount of decommissioning and restoration costs.

(3) Operating lease payments, apart from short-term leases, will be captured in the IFRS 16 transition adjustment effective January 1, 2019. Please refer to note 5 to Suncor's 2018 audited Consolidated Financial Statements for further details.

(4) Includes the Libya ESPA signature bonus and merger consent. See the Other Long-Term Liabilities note to the 2018 audited Consolidated Financial Statements.

Transactions with Related Parties

The company enters into transactions with related parties in the normal course of business. These transactions primarily include sales to associated entities in the company's Refining and Marketing segment and service provisions to Fort Hills. For more information on these transactions and for a summary of Compensation of Key Management Personnel, refer to note 29 to the 2018 audited Consolidated Financial Statements.

Financial Instruments

Suncor periodically enters into derivative contracts for risk management purposes. The derivative contracts hedge risks related to purchases and sales of commodities, to manage exposure to interest rates and to hedge risks specific to individual transactions, such as currency risk associated with repayment of U.S. dollar denominated debt. For the year ended December 31, 2018, the pre-tax earnings impact of risk management activities was $126 million (2017 – pre-tax loss of $19 million).

The company's Energy Trading business uses crude oil, natural gas, refined products futures contracts and other derivative financial instruments to optimize related trading and risk management strategies. For the year ended December 31, 2018, the pre-tax earnings impact for Energy Trading activities was $129 million (2017 – pre-tax loss of $37 million).

Gains or losses related to derivatives are recorded as Other Income in the Consolidated Statements of Comprehensive Income.

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($ millions)	Energy Trading	Risk Management	Total
Fair value of contracts outstanding – December 31, 2016	(36)	(18)	(54)
Cash settlements – (received) paid during the year	(12)	17	5
Unrealized losses recognized in earnings during the year	(37)	(19)	(56)
Fair value outstanding – December 31, 2017	(85)	(20)	(105)
Cash settlements – (received) during the year	(43)	(47)	(90)
Unrealized gains recognized in earnings during the year	129	126	255
Fair value outstanding – December 31, 2018	1	59	60

The fair value of derivative financial instruments is recorded on the Consolidated Balance Sheets.

Fair value of derivative contracts at December 31 ($ millions)	2018	2017
Accounts receivable	**215**	74
Accounts payable	**(155)**	(179)
	60	(105)

Risks Associated with Derivative Financial Instruments

Suncor may be exposed to certain losses in the event that counterparties to derivative financial instruments are unable to fulfil their obligations under these contracts. The company minimizes this risk by entering into agreements with investment grade counterparties. Risk is also minimized through regular management review of the potential exposure to and credit ratings of such counterparties. Suncor's exposure is limited to those counterparties holding derivative contracts with net positive fair values at a reporting date.

Suncor's risk management activities are subject to periodic reviews by management to determine appropriate hedging requirements based on the company's tolerance for exposure to market volatility, as well as the need for stable cash flow to finance future growth. Energy Trading activities are governed by a separate risk management group that reviews and monitors practices and policies and provides independent verification and valuation of these activities.

For further details on our derivative financial instruments, including assumptions made in the calculation of fair value, a sensitivity analysis of the effect of changes in commodity prices on our derivative financial instruments, and additional discussion of exposure to risks and mitigation activities, see the Financial Instruments and Risk Management note in the company's 2018 audited Consolidated Financial Statements.

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9. ACCOUNTING POLICIES AND CRITICAL ACCOUNTING ESTIMATES

Suncor's significant accounting policies are described in note 3 to the audited Consolidated Financial Statements for the year ended December 31, 2018.

(a) Recently Implemented Accounting Pronouncements

Impact of the application of IFRS 9

Effective January 1, 2018, the company adopted IFRS 9 *Financial Instruments* (IFRS 9) which replaces the multiple classification and measurement models for financial assets under IAS 39 *Financial Instruments* (IAS 39) with a new model that has two measurement categories: amortized cost and fair value, either through profit/loss (FVTPL) or through other comprehensive income. This determination is made at initial recognition. For financial liabilities, the new standard retains most of the IAS 39 requirements; however, the main change arises in cases where the company chooses to designate a financial liability as FVTPL. In these situations, the portion of the fair value change related to the company's own credit risk is recognized in other comprehensive income rather than net earnings. As a result of adopting IFRS 9, the company's financial assets classified as loans and receivables at December 31, 2017 have been reclassified to financial assets at amortized cost; however, there is no impact to the measurement of these financial assets. There were no changes to the classifications of the company's financial liabilities. The classification and measurement guidance was adopted retrospectively in accordance with the transitional provisions of IFRS 9.

The company also adopted the new hedge accounting guidance in IFRS 9. The new hedge accounting guidance replaces strict quantitative tests of effectiveness with less restrictive assessments of how well the hedging instrument accomplishes the company's risk management objectives for financial and non-financial risk exposures. IFRS 9 also allows the company to hedge risk components of non-financial items which meet certain measurability or identifiable characteristics. The company did not apply hedge accounting to any of its derivative instruments during 2018.

After adoption of IFRS 9, the company's accounting policies are substantially the same as at December 31, 2017 and there were no impacts to the company's financial statements, except for the change in financial asset categories as discussed above.

Impact of the application of IFRS 15

On January 1, 2018, the company adopted IFRS 15 *Revenue from Contracts with Customers* (IFRS 15) using the retrospective method, which sets out guidelines for the recognition of revenue.

IFRS 15 replaces IAS 18 *Revenue* and presents a new single model for recognition of revenue from contracts with customers. The model features a contract-based five-step analysis of transactions to determine the nature of an entity's obligation to perform and whether, how much, and when revenue is recognized.

Under IFRS 15, the revenue from the sale of commodities and other operating revenue the company earns represent contractual arrangements with customers. The company recognizes revenue when title of the product is transferred to the buyer and collection is reasonably assured in accordance with specified contract terms. All operating revenue is generally earned at a point in time and is based on the consideration that the company expects to receive for the transfer of the goods to the customers.

The company has reviewed its sources of revenue and major contracts with customers using the guidance found in IFRS 15 and determined there are no material changes to the timing and measurement of the company's revenue in the reporting period, as compared to the provisions of the previous standard. In accordance with the new standard, the company assessed its principal versus agent requirements and the impact was a decrease in revenue, with a corresponding decrease to Operating, Selling and General expense and Transportation expense, resulting in no impact on the company's consolidated net earnings.

Adjustments to Consolidated Statements of Comprehensive Income

($ millions, decrease)	For the twelve months ended December 31, 2017 IFRS 15
Revenues and Other Income	
Operating revenues, net of royalties	(97)
Expenses	
Operating, selling and general	(57)
Transportation	(40)
Net Earnings	-----
Total Comprehensive Income	-----

(b) Recently Announced Accounting Pronouncements

The standards, amendments and interpretations that are issued, but not yet effective up to the date of authorization of the company's audited Consolidated Financial Statements, and that may have an impact on the disclosures and financial position of the company, are disclosed below. The company intends to adopt these standards, amendments and interpretations when they become effective.

Leases

In January 2016, the IASB issued IFRS 16 *Leases* (IFRS 16) which replaces the existing leasing standard IAS 17 *Leases*

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(IAS 17) and requires the recognition of leases on the balance sheet, with optional exemptions for short-term leases where the term is twelve months or less and for leases of low-value items. IFRS 16 effectively removes the classification of leases as either finance or operating leases and treats all leases as finance leases for lessees. The accounting treatment for lessors remains essentially unchanged, with the requirement to classify leases as either finance or operating.

The company will adopt the standard on the effective date of January 1, 2019 and has selected the modified retrospective transition approach. The company has also elected to apply the optional exemptions for short-term leases. IFRS 16 will have an impact on the following components of the audited Consolidated Financial Statements of the company. The company has completed the implementation of an information technology solution, including uploading of data for identified leases into its leasing system. All contracts have been reviewed, new business processes are developed and internal controls have been implemented.

Consolidated Balance Sheets: IFRS 16 requires the recognition of lease liabilities and right-of-use (ROU) assets for all leases except for the optional exemptions for low-value assets and short-term leases. The company will recognize the lease liability at the present value of the remaining lease payments discounted using the company's incremental borrowing rate upon adoption of the new standard. Upon transition, the company will measure the ROU assets equal to the lease liability, adjusted by the amount of any prepaid payments or onerous contracts recognized in the December 31, 2018 audited Consolidated Financial Statements.

The company will recognize additional ROU assets and lease liabilities of $1.8 billion, subject to finalization of reviews, as of January 1, 2019.

Consolidated Statements of Comprehensive Income: Adoption of IFRS 16 will result in an increase to DD&A expense due to the recognition of ROU assets, an increase to Financing expense from the unwinding of the discounted value of the lease liabilities and a decrease to Operating, Selling and General expense, Purchases of Crude Oil and Products and Transportation expense. Based on the company's leases at January 1, 2019, this standard will not have a material impact on consolidated net earnings.

Consolidated Statements of Cash Flows: Due to the change in presentation of former operating lease expenses, Cash flow provided by operating activities will increase due to the decrease in Operating, Selling and General expense, Purchases of Crude Oil and Products and Transportation expense, partially offset by increased Financing expense, which represents an operating activity for the company. Cash flow from financing activities will decrease due to the addition of principal payments for former operating leases. The overall impact to cash flow for the company will be unchanged.

Uncertainty over Income Tax Treatments

In June 2017, the IASB issued IFRIC 23 *Uncertainty over Income Tax Treatments*. The interpretation clarifies the accounting for current and deferred tax liabilities and assets in circumstances in which there is uncertainty over income tax treatments. The interpretation requires an entity to consider whether it is probable that a taxation authority will accept an uncertain tax treatment. If the entity considers it to be not probable that a taxation authority will accept an uncertain tax provision, the interpretation requires the entity to use the most likely amount or the expected value. The amendments are to be applied retrospectively and are effective for annual periods beginning on or after January 1, 2019, with earlier application permitted. The adoption of this amendment will not have any impact on the company's audited Consolidated Financial Statements.

Significant Accounting Estimates and Judgments

The preparation of financial statements in accordance with IFRS requires management to make estimates and judgments that affect reported assets, liabilities, revenues, expenses, gains, losses, and disclosures of contingencies. These estimates and judgments are subject to change based on experience and new information. The financial statement areas that require significant estimates and judgments are as follows:

Oil and Gas Reserves

Measurements of depletion, depreciation, impairment and decommissioning and restoration obligations are determined in part based on the company's estimate of oil and gas reserves. The estimation of reserves is an inherently complex process and involves the exercise of professional judgment. All reserves have been evaluated at December 31, 2018 by independent qualified reserves evaluators. Oil and gas reserves estimates are based on a range of geological, technical and economic factors, including projected future rates of production, projected future commodity prices, engineering data, and the timing and amount of future expenditures, all of which are subject to uncertainty. Estimates reflect market and regulatory conditions existing at December 31, 2018, which could differ significantly from other points in time throughout the year, or future periods. Changes in market and regulatory conditions and assumptions can materially impact the estimation of net reserves.

Oil and Gas Activities

The company is required to apply judgment when designating the nature of oil and gas activities as exploration, evaluation, development or production, and

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when determining whether the costs of these activities shall be expensed or capitalized.

Exploration and Evaluation Costs

Certain exploration and evaluation costs are initially capitalized with the intent to establish commercially viable reserves. The company is required to make judgments about future events and circumstances and applies estimates to assess the economic viability of extracting the underlying resources. The costs are subject to technical, commercial and management review to confirm the continued intent to develop the project. Level of drilling success or changes to project economics, resource quantities, expected production techniques, production costs and required capital expenditures are important judgments when making this determination. Management uses judgment to determine when these costs are reclassified to Property, Plant and Equipment based on several factors including the existence of reserves, appropriate approvals from regulatory bodies and the company's internal project approval process.

Determination of Cash Generating Units (CGUs)

A CGU is the lowest grouping of integrated assets that generate identifiable cash inflows that are largely independent of the cash inflows of other assets or groups of assets. The allocation of assets into CGUs requires significant judgment and interpretations with respect to the integration between assets, the existence of active markets, similar exposure to market risks, shared infrastructure, and the way in which management monitors the operations.

Asset Impairment and Reversals

Management applies judgment in assessing the existence of impairment and impairment reversal indicators based on various internal and external factors.

The recoverable amount of CGUs and individual assets is determined based on the higher of fair value less costs of disposal or value-in-use calculations. The key estimates the company applies in determining the recoverable amount normally include estimated future commodity prices, expected production volumes, future operating and development costs, discount rates, tax rates, and refining margins. In determining the recoverable amount, management may also be required to make judgments regarding the likelihood of occurrence of a future event. Changes to these estimates and judgments will affect the recoverable amounts of CGUs and individual assets and may then require a material adjustment to their related carrying value.

Decommissioning and Restoration Costs

The company recognizes liabilities for the future decommissioning and restoration of Exploration and Evaluation assets and Property, Plant and Equipment based on estimated future decommissioning and restoration costs. Management applies judgment in assessing the existence and extent as well as the expected method of reclamation of the company's decommissioning and restoration obligations at the end of each reporting period. Management also uses judgment to determine whether the nature of the activities performed is related to decommissioning and restoration activities or normal operating activities.

Actual costs are uncertain and estimates may vary as a result of changes to relevant laws and regulations related to the use of certain technologies, the emergence of new technology, operating experience, prices and closure plans. The estimated timing of future decommissioning and restoration may change due to certain factors, including reserves life. Changes to estimates related to future expected costs, discount rates, inflation assumptions, and timing may have a material impact on the amounts presented.

Employee Future Benefits

The company provides benefits to employees, including pensions and other post-retirement benefits. The cost of defined benefit pension plans and other post-retirement benefits received by employees is estimated based on actuarial valuation methods that require professional judgment. Estimates typically used in determining these amounts include, as applicable, rates of employee turnover, future claim costs, discount rates, future salary and benefit levels, the return on plan assets, mortality rates and future medical costs. Changes to these estimates may have a material impact on the amounts presented.

Other Provisions

The determination of other provisions, including, but not limited to, provisions for royalty disputes, onerous contracts, litigation and constructive obligations, is a complex process that involves judgments about the outcomes of future events, the interpretation of laws and regulations, and estimates on the timing and amount of expected future cash flows and discount rates.

Income Taxes

Management evaluates tax positions, annually or when circumstances require, which involves judgment and could be subject to differing interpretations of applicable tax legislation. The company recognizes a tax provision when a payment to tax authorities is considered probable. However, the results of audits and reassessments and changes in the interpretations of standards may result in changes to those positions and, potentially, a material increase or decrease in the company's assets, liabilities and net earnings.

Deferred Income Taxes

Deferred tax assets are recognized when it is considered probable that deductible temporary differences will be recovered in the foreseeable future. To the extent that future taxable income and the application of existing tax laws in each jurisdiction differ significantly from the

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company's estimate, the ability of the company to realize the deferred tax assets could be impacted.

Deferred tax liabilities are recognized when there are taxable temporary differences that will reverse and result in a future outflow of funds to a taxation authority. The company records a provision for the amount that is expected to be settled, which requires judgment as to the ultimate outcome. Deferred tax liabilities could be impacted by changes in the company's judgment of the likelihood of a future outflow and estimates of the expected settlement amount, timing of reversals, and the tax laws in the jurisdictions in which the company operates.

Fair Value of Financial Instruments

The fair value of a financial instrument is determined, whenever possible, based on observable market data. If not available, the company uses third-party models and valuation methodologies that utilize observable market data that includes forward commodity prices, foreign exchange rates and interest rates to estimate the fair value of financial instruments, including derivatives. In addition to market information, the company incorporates transaction-specific details that market participants would utilize in a fair value measurement, including the impact of non-performance risk.

Functional Currency

The designation of the functional currency of the company and each of its subsidiaries is a management judgment based on the composition of revenue and costs in the locations in which it operates.

Fair Value of Share-Based Compensation

The fair values of equity-settled and cash-settled share-based payment awards are estimated using the Black-Scholes options pricing model. These estimates depend on certain assumptions, including share price, volatility, risk-free interest rate, the term of the awards, the forfeiture rate and the annual dividend yield, which, by their nature, are subject to measurement uncertainty.

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10. RISK FACTORS

Suncor is committed to a proactive program of enterprise risk management intended to enable decision-making through consistent identification and assessment of risks inherent to its assets, activities and operations. Some of these risks are common to operations in the oil and gas industry as a whole, while some are unique to Suncor. The realization of any of the following risks could have a material adverse effect on Suncor's business, financial condition, reserves or results of operations.

Volatility of Commodity Prices

Suncor's financial performance is closely linked to prices for crude oil in the company's upstream business and prices for refined petroleum products in the company's downstream business and, to a lesser extent, to natural gas prices in the company's upstream business where natural gas is both an input and output of production processes. The prices for all of these commodities can be influenced by global and regional supply and demand factors, which are factors that are beyond the company's control and can result in a high degree of price volatility.

Crude oil prices are also affected by, among other things, global economic health and global economic growth (particularly in emerging markets), market access constraints, regional and international supply and demand imbalances, political developments and government action (including the mandatory production curtailments recently imposed by the Government of Alberta), decisions by the Organization of Petroleum Exporting Countries (OPEC) to not impose quotas on its members, compliance or non-compliance with quotas agreed upon by OPEC members and other countries, and weather. These factors impact the various types of crude oil and refined products differently and can impact differentials between light and heavy grades of crude oil (including blended bitumen), and between conventional oil and SCO.

Refined petroleum product prices and refining margins are also affected by, among other things, crude oil prices, the availability of crude oil and other feedstock, levels of refined product inventories, regional refinery availability, market access, marketplace competitiveness, and other local market factors. Natural gas prices in North America are affected by, among other things, supply and demand, and by prices for alternative energy sources. Decreases in product margins or increases in natural gas prices could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

In addition, oil and natural gas producers in North America, and particularly in Canada, may receive discounted prices for their production relative to certain international prices, due in part to constraints on the ability to transport and sell such products to international markets. A failure to resolve such constraints may result in continued discounted or reduced commodity prices realized by oil and natural gas producers such as Suncor. Suncor's production from Oil Sands includes significant quantities of bitumen and SCO that may trade at a discount to light and medium crude oil. Bitumen and SCO are typically more expensive to produce and process. In addition, the market prices for these products may differ from the established market indices for light and medium grades of crude oil. As a result, the price received for bitumen and SCO may differ from the benchmark they are priced against. Future quality differentials are uncertain and unfavourable differentials could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

In the fourth quarter of 2018, there was insufficient market access capacity to remove production from the Western Canada Sedimentary Basin causing the differential between WTI and WCS to widen significantly. The situation triggered a response from the Government of Alberta in the form of a mandatory production curtailment, which commenced in early 2019. Such circumstances may result in worsening and/or prolonged price volatility and/or further negative impacts on market dynamics that cannot currently be fully anticipated. Wide differentials, such as those experienced in the fourth quarter of 2018 or a prolonged period of low and/or volatile commodity prices, particularly for crude oil, could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations, and may also lead to the impairment of assets, or to the cancellation or deferral of Suncor's growth projects.

Market Access

Suncor's production of bitumen is expected to grow. The markets for bitumen blends or heavy crude oil are more limited than those for light crude oil, making them more susceptible to supply and demand changes and imbalances (whether as a result of the availability, proximity, and capacity of pipeline facilities, railcars, or otherwise). Heavy crude oil generally receives lower market prices than light crude, due principally to the lower quality and value of the refined product yield and the higher cost to transport the more viscous product on pipelines, and this price differential can be amplified due to supply and demand imbalances.

Market access for Suncor's oil sands production may be constrained by insufficient pipeline takeaway capacity, including the lack of new pipelines due to an inability to secure required approvals and negative public perception. There is a risk that constrained market access for oil sands production, growing inland production and refinery outages could create widening differentials that could impact the profitability of product sales. Market access for refined products may also be constrained by insufficient takeaway capacity, which could create a supply/demand imbalance. The occurrence of any of the foregoing could have a material

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adverse effect on the company's business, financial condition, reserves and results of operations.

Major Operational Incidents (Safety, Environmental and Reliability)

Each of Suncor's primary operating businesses – Oil Sands, E&P, and Refining and Marketing – requires significant levels of investment in the design, operation and maintenance and decommissioning of facilities, and carries the additional economic risk associated with operating reliably or enduring a protracted operational outage. The breadth and level of integration of Suncor's operations adds complexity.

The company's businesses also carry the risks associated with environmental and safety performance, which is closely scrutinized by governments, the public and the media, and could result in a suspension of or inability to obtain regulatory approvals and permits, or, in the case of a major environmental or safety incident, delays in resuming normal operations, fines, civil suits or criminal charges against the company.

In general, Suncor's operations are subject to operational hazards and risks such as, among others, fires (including forest fires), explosions, blow-outs, power outages, severe winter climate conditions, prolonged periods of extreme cold or extreme heat, flooding, droughts and other extreme weather conditions, railcar incidents or derailments, the migration of harmful substances such as oil spills, gaseous leaks or a release of tailings into water systems, pollution and other environmental risks, and accidents, any of which can interrupt operations or cause personal injury or death, or damage to property, equipment, the environment, and information technology systems and related data and control systems.

The reliable operation of production and processing facilities at planned levels and Suncor's ability to produce higher value products can also be impacted by, among other things, failure to follow the company's policies, standards and operating procedures or operate within established operating parameters, equipment failure through inadequate maintenance, unanticipated erosion or corrosion of facilities, manufacturing and engineering flaws, and labour shortage or interruption. The company is also subject to operational risks such as sabotage, terrorism, trespass, theft and malicious software, network or cyber attacks.

In addition to the foregoing factors that affect Suncor's business generally, each business unit is susceptible to additional risks due to the nature of its business, including, among others, the following:

* Suncor's Oil Sands business is susceptible to loss of production, slowdowns, shutdowns or restrictions on its ability to produce higher value products, due to the failure of any one or more interdependent component systems, and other risks inherent to oil sands operations;
* For Suncor's E&P businesses, there are risks and uncertainties associated with drilling for oil and natural gas, the operation and development of such properties and wells (including encountering unexpected formations, pressures, or the presence of hydrogen sulphide), premature declines of reservoirs, sour gas releases, uncontrollable flows of crude oil, natural gas or well fluids and other accidents;
* E&P offshore operations occur in areas subject to hurricanes and other extreme weather conditions, such as winter storms, pack ice, icebergs and fog. The occurrence of any of these events could result in production shut-ins, the suspension of drilling operations, damage to or destruction of the equipment involved and injury or death of rig personnel. Harsh weather conditions, particularly in the winter season, may also impact the successful execution of maintenance and start-up of operations. Suncor's offshore operations could be indirectly affected by catastrophic events occurring at other third-party offshore operations, which could give rise to liability, damage to the company's equipment, harm to individuals, force a shutdown of facilities or operations, or result in a shortage of appropriate equipment or specialists required to perform planned operations; and
* Suncor's Refining and Marketing operations are subject to all of the risks normally inherent in the operation of refineries, terminals, pipelines and other distribution facilities and service stations, including, among others, loss of production, slowdowns or shutdowns due to equipment failures, unavailability of feedstock, price and quality of feedstock or other incidents.

Although the company maintains a risk management program, which includes an insurance component, such insurance may not provide comprehensive coverage in all circumstances, nor are all such risks insurable. The company self-insures some risks, and the company's insurance coverage does not cover all the costs arising out of the allocation of liabilities and risk of loss arising from Suncor operations.

The occurrence of any of the foregoing could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Government/Regulatory and Policy Effectiveness

Suncor's businesses operate under federal, provincial, territorial, state and municipal laws in numerous countries. The company is also subject to regulation and intervention by governments in oil and gas industry matters, such as, among others, land tenure, royalties, taxes (including income taxes), government fees, production rates (including restrictions on production), environmental protection, wildlife, fish, safety performance, the reduction of greenhouse gas (GHG) and other emissions, the export of crude oil, natural gas and other products, interactions with

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foreign governments, the awarding or acquisition of exploration and production rights, oil sands leases or other interests, the imposition of specific drilling obligations, control over the development, reclamation and abandonment of fields and mine sites, mine financial security requirements, approval of logistics infrastructure, and, possibly, expropriation or cancellation of contract rights. As part of ongoing operations, the company is also required to comply with a large number of Environment, Health and Safety (EH&S) regulations under a variety of Canadian, U.S., U.K., Norwegian and other foreign, federal, provincial, territorial, state and municipal laws and regulations. Failure to comply with applicable laws and regulations may result in, among other things, the imposition of fines and penalties, production constraints, a compulsory shutdown of facilities or suspension of operations, reputational damage, delays, increased costs, denial of operating and growth permit applications, censure, liability for cleanup costs and damages, and the loss of important licences and permits.

Before proceeding with most major projects, including significant changes to existing operations, Suncor must obtain various federal, provincial, territorial, state and municipal permits and regulatory approvals, and must also obtain licences to operate certain assets. These processes can involve, among other things, Aboriginal and stakeholder consultation, environmental impact assessments and public hearings, government intervention and may be subject to conditions, including security deposit obligations and other commitments. Suncor's businesses can also be indirectly impacted by a third party's inability to obtain regulatory approval for a shared infrastructure project or a third-party infrastructure project on which a portion of Suncor's business depends. Compliance can also be affected by the loss of skilled staff, inadequate internal processes and compliance auditing.

Failure to obtain, comply with, satisfy the conditions of or maintain regulatory permits, licences and approvals, or failure to obtain them on a timely basis or on satisfactory terms, could result in delays, abandonment or restructuring of projects and increased costs, all of which could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Changes in government policy, regulation or other laws, or the interpretation thereof, or opposition to Suncor's projects or third-party pipeline and infrastructure projects that delays or prevents necessary permits or regulatory approvals, or which makes current operations or growth projects less profitable or uneconomic could materially impact Suncor's operations, existing and planned projects, financial condition, reserves and results of operations. Obtaining necessary approvals or permits has become more difficult due to increased public opposition and consultation, including Aboriginal consultation requirements as well as increased political involvement. The federal government also issued Bill C-69, *An Act to enact the Impact Assessment Act and the Canadian Energy Regulator Act, to amend the Navigation Protection Act and to make consequential amendments to other Acts* (Bill C-69) in February 2018. If enacted, it will impact the manner in which large energy projects are approved. The result of these developments could also lead to significant delays and additional compliance costs and staffing and resource levels, and also increase exposure to other risks to Suncor's business, including environmental or safety non-compliance, permit approvals and project development and execution, all of which could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Suncor is subject to the mandatory production curtailments imposed by the Government of Alberta that commenced in early 2019. The duration, extent and consequences of the curtailments to Suncor's business are not fully known; however, prolonged production curtailment or changes to the curtailment levels could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Competition

The global petroleum industry is highly competitive in many aspects, including the exploration for and the development of new sources of supply, the acquisition of crude oil and natural gas interests, and the refining, distribution and marketing of refined petroleum products. Suncor competes in virtually every aspect of its business with other energy companies. The petroleum industry also competes with other industries in supplying energy, fuel and related products to consumers. The increasing volatility of the political and social landscape at provincial, federal, territorial, state, municipal and international levels adds complexity.

For Suncor's Oil Sands business, a number of other companies have entered, or may enter, the oil sands business and begin producing bitumen and SCO, or expand their existing operations. It is difficult to assess the number, level of production and ultimate timing of all potential new projects or when existing production levels may increase. During recent years, a global focus on the oil sands through increasing industry consolidation that has created competitors with financial capacity has significantly increased the supply of bitumen, SCO and heavy crude oil in the marketplace. Although current commodity pricing and increased regulatory requirements have slowed certain larger projects in the short term, the impact of this level of activity on regional infrastructure, including pipelines, has placed stress on the availability and cost of all resources required to build and run new and existing oil sands operations.

For Suncor's Refining and Marketing business, management expects that fluctuations in demand for refined products, margin volatility and overall marketplace competitiveness

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will continue. In addition, to the extent that the company's downstream business unit participates in new product markets, it could be exposed to margin risk and volatility from either cost and/or selling price fluctuations.

There is a risk that increased competition could cause costs to increase, put further strain on existing infrastructure and cause margins for refined and unrefined products to be volatile, and impact demand for Suncor's products, which could have a material adverse effect on Suncor's business, financial condition and results of operations.

Carbon Risk

Public support for climate change action and receptivity to alternative/renewable energy technologies has grown in recent years. Governments in Canada and around the world have responded to these shifting societal attitudes by adopting ambitious emissions reduction targets and supporting legislation, including measures relating to carbon pricing, clean energy and fuel standards, and alternative energy incentives and mandates. There has also been increased activism and public opposition to fossil fuels, and oil sands in particular.

Existing and future laws and regulations may impose significant liabilities on a failure to comply with their requirements. Concerns over climate change, fossil fuel extraction, GHG emissions, and water and land-use practices could lead governments to enact additional or more stringent laws and regulations applicable to Suncor and other companies in the energy industry in general, and in the oil sands industry in particular.

Changes to environmental regulations, including regulation relating to climate change, could impact the demand for, formulation or quality of the company's products, or could require increased capital expenditures, operating expenses, abandonment and reclamation obligations and distribution costs, which may not be recoverable in the marketplace and which may result in current operations or growth projects becoming less profitable or uneconomic. In addition, such regulatory changes could necessitate that Suncor develop new technologies. Such technology development could require a significant investment of capital and resources, and any delay in or failure to identify and develop such technologies could prevent Suncor from obtaining regulatory approvals for projects or being able to successfully compete with other companies. Increasing environmental regulation in the jurisdictions in which Suncor operates may also make it difficult for Suncor to compete with companies operating in other jurisdictions with fewer or less costly regulations. In addition, legislation or policies that limit the purchase of production from the oil sands may be adopted in domestic and/or foreign jurisdictions, which, in turn, may limit the world market for Suncor's upstream production and reduce the prices the company receives for its products, and could result in delayed development, stranded assets or the company being unable to further develop its resources. The complexity and breadth of changes in environmental regulation make it extremely difficult to predict the potential impact to Suncor.

Suncor continues to monitor the international and domestic efforts to address climate change. While it currently appears that GHG regulations and targets will continue to become more stringent, and while Suncor continues its efforts to reduce the intensity of its GHG emissions, the absolute GHG emissions of the company are expected to rise as it pursues a growth strategy. Increases in GHG emissions may impact the profitability of the company's projects, as Suncor will be subject to incremental levies and taxes. There is also a risk that Suncor could face litigation initiated by third parties relating to climate change, including litigation pertaining to GHG emissions, the production, sale, or promotion of fossil fuels and petroleum products, and/or disclosure. For example, the Board of County Commissioners of Boulder County, the Board of County Commissioners of San Miguel County and the City of Boulder, all of Colorado, have brought an action against Suncor and certain of its subsidiaries seeking, among other things, compensation for impacts they allege with respect to climate change. In addition, the mechanics of implementation and enforcement of the *Oil Sands Emissions Limit Act* (OSELA) are currently under review and it is not yet possible to predict the impact on Suncor. However, such impact could be material.

These developments and future developments could adversely impact the demand for Suncor's products, the ability of Suncor to maintain and grow its production and reserves, and Suncor's reputation, and could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Environmental Compliance

Water and Tailings Management

There are risks associated with Suncor's water and tailings management plans. Each mine is required under the Alberta Energy Regulator's Directive 085 – *Fluid Tailings Management for Oil Sands Mining Projects* to update its mine fluid tailings management plans. If those plans are not approved in the timelines anticipated or at all, or if any conditions to the approval for the plans are not satisfied, the operators' ability to implement additional fluid tailings treatment facilities could be adversely impacted, which could result in reductions in production and lower volumes of treated tailings. If the mine exceeds certain compliance levels specified in the Tailings Management Framework (TMF), the applicable company could be subject to enforcement actions, including being required to curtail production, and financial consequences, including being subject to a compliance levy or being required to post additional security under the Mine Financial Security Program. The full impact of the TMF, including the financial consequences of exceeding

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compliance levels, is not yet fully known, as certain associated policies and regulations are still under development. Such policies and regulations could also restrict the technologies that the company may employ for tailings management, which could adversely impact the company's business plans. There could also be risks if the company's tailings management operations fail to operate as anticipated. The occurrence of any of the foregoing could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

In addition, an integrated water management approach to support operations and successful reclamation and closure requires the release of water to the environment. An Alberta water return policy is currently being developed by the government using a multi-stakeholder approach and the federal government has started working to develop an oil sands effluent regulation. The timing and content of these policies and regulations is not yet known; however, the absence of effective government policies and regulations in this area could impact the success and timing of closure and reclamation plans, which could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Alberta's Land-Use Framework (LARP)

The implementation of, and compliance with, the terms of the Lower Athabasca Regional Plan (LARP) may adversely impact Suncor's current properties and projects in northern Alberta due to, among other things, environmental limits and thresholds. The impact of the LARP on Suncor's operations may be outside of the control of the company, as Suncor's operations could be impacted as a result of restrictions imposed due to the cumulative impact of development by the other operators in the area and not solely in relation to Suncor's direct impact. The uncertainty of changes in Suncor's future development and existing operations required as a result of the LARP could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Alberta Environment and Parks (AEP) Water Licences

Suncor currently relies on water obtained under licences from AEP to provide domestic and utility water for the company's Oil Sands business. Water licences, like all regulatory approvals, contain conditions to be met in order to maintain compliance with the licence. There can be no assurance that the licences to withdraw water will not be rescinded or that additional conditions will not be added. It is also possible that regional water management approaches may require water sharing agreements between stakeholders. In addition, the expansion of the company's projects may rely on securing licences for additional water withdrawal, and there can be no assurance that these licences will be granted in a timely manner or that they will be granted on terms favourable to Suncor. There is also a risk that future laws or changes to existing laws or regulations relating to water access could cause capital expenditures and operating expenses relating to water licence compliance to increase. The occurrence of any of the foregoing could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Species at Risk Act

Woodland caribou have been identified as "threatened" under the *Species at Risk Act* (Canada). In response to the Government of Canada's Recovery Strategy for Woodland Caribou, provincial caribou range plans are being developed. Suncor has existing, planned and potential future projects within caribou ranges in Alberta. The development and implementation of range plans in these areas may have an impact on the pace and amount of development in these areas and could potentially increase costs for restoration or offsetting requirements, which could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Air Quality Management

A number of Canadian federal and provincial air quality regulations and frameworks are currently being developed, changed and/or implemented, which could have an impact on the company's existing and planned projects by requiring the company to invest additional capital or incur additional operating and compliance expenses, including, among other things, potentially requiring the company to retrofit equipment to meet new requirements and increase monitoring and mitigation plans. The full impact of these regulations and frameworks is not yet known; however, they could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Alberta Wetland Policy

Pursuant to the Alberta Wetland Policy, development in wetland areas may be obligated to avoid wetlands or mitigate the development's effects on wetlands. Although the full impact of the policy on Suncor is not yet fully known, certain of Suncor's operations and growth projects will be affected by aspects of the policy where avoidance is not possible and wetland reclamation or replacement may be required, which could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Information Security

The efficient operation of Suncor's business is dependent on computer hardware, software and networked systems, including the systems of cloud providers and third parties with which Suncor conducts business. In the ordinary course of Suncor's business, Suncor collects and stores sensitive data, including intellectual property, proprietary business information and personal information of the company's

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employees and retail customers. Suncor's operations are also dependent upon a large and complex information framework. Suncor relies on industry accepted security measures, controls and technology to protect Suncor's information systems and securely maintain confidential and proprietary information stored on the company's information systems, and has adopted a continuous process to identify, assess and manage threats to the company's information systems. Suncor's information security risk oversight is conducted by the Audit Committee of the Board of Directors. However, the measures, controls and technology on which the company relies may not be adequate due to the increasing volume, sophistication and rapidly evolving nature of cyber threats. Suncor's information technology and infrastructure, including process control systems, may be vulnerable to attacks by malicious persons or entities motivated by, among others, geopolitical, financial or activist reasons, or breached due to employee error, malfeasance or other disruptions, including natural disasters and acts of war. Any such attack or breach could compromise Suncor's networks, and the information Suncor stores could be accessed, publicly disclosed, lost, stolen or compromised. Any such attack, breach, access, disclosure or loss of information could result in legal claims or proceedings, liability under laws that protect the privacy of personal information, regulatory penalties, disruptions to Suncor's operations, decreased performance and production, increased costs, and damage to Suncor's reputation, physical harm to people or the environment or other negative consequences to Suncor or third parties, which could have a material adverse effect on Suncor's business, financial condition and results of operations. Although the company maintains a risk management program, which includes an insurance component that may provide coverage for the operational impacts from an attack to, or breach of, Suncor's information technology and infrastructure, including process control systems, the company does not maintain stand-alone cyber insurance. Furthermore, not all cyber risks are insurable. As a result, Suncor's existing insurance may not provide adequate coverage for losses stemming from a cyber attack to, or breach of, its information technology and infrastructure.

Security and Terrorist Threats

Security threats and terrorist or activist activities may impact Suncor's personnel, which could result in injury, death, extortion, hostage situations and/or kidnapping, including unlawful confinement. A security threat, terrorist attack or activist incident targeted at a facility or office owned or operated by Suncor could result in the interruption or cessation of key elements of Suncor's operations. Outcomes of such incidents could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Project Development and Execution

There are certain risks associated with the development and execution of Suncor's major projects and the commissioning and integration of new facilities within its existing asset base.

Project development and execution risk consists of four related primary risks:

- Development – a failure to select the right projects and identify effective scope and solution;
- Engineering – a failure in the specification, design or technology selection;
- Construction – a failure to build the project in the approved time, in accordance with design, and at the agreed cost; and
- Commissioning and start-up – a failure of the facility to meet agreed performance targets, including operating costs, efficiency, yield and maintenance costs.

Project development and execution can also be impacted by, among other things:

- The effect of changing government regulation and public expectations in relation to the impact of oil sands development on the environment which could significantly impact the company's ability to obtain the necessary environmental and other regulatory approvals;
- The impact of general economic, business and market conditions and the company's ability to finance growth, including major growth projects in progress, if commodity prices were to decline and stay at low levels for an extended period;
- The complexity and diversity of Suncor's portfolio;
- Failure to comply with Suncor's Asset Development and Execution Model;
- The accuracy of project cost and schedule estimates, as actual costs and schedules for major projects can vary from estimates, and these differences can be material;
- The availability and cost of materials, equipment, qualified personnel, and logistics infrastructure, maintaining adequate quality management and risks associated with logistics and offshore fabrication, including that the cost of materials and equipment fabricated offshore may be impacted by tariffs, duties and quotas;
- The inability or unwillingness of third party vendors, contractors or service providers to provide materials, equipment, personnel and services of necessary quality in the timelines anticipated and at the agreed upon cost;
- The complexities and uncertainties associated with identification, development and integration of new technologies into the company's existing and new assets;

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- Complexities and risks associated with constructing projects within operating environments and confined construction areas;
- The commissioning and integration of new facilities within the company's existing asset base could cause delays in achieving guidance, targets and objectives;
- Risks relating to restarting projects placed in safe mode, including increased capital costs; and
- The impact of weather conditions.

The occurrence of any of the foregoing could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Technology Risk

There are risks associated with growth and other capital projects that rely largely or partly on new technologies and the incorporation of such technologies into new or existing operations, including that the results of the application of new technologies may differ from simulated, test or pilot environments; or that third party intellectual property protections may impede the development and implementation of new technology. The success of projects incorporating new technologies cannot be assured. Advantages accrue to companies that can develop and adopt emerging technologies in advance of competitors. The inability to develop, implement and monitor new technologies may impact the company's ability to develop its new or existing operations in a profitable manner or comply with regulatory requirements, which could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Cumulative Impact and Pace of Change

In order to achieve Suncor's business objectives, the company must operate efficiently, reliably and safely, and, at the same time, deliver growth and sustaining projects safely, on budget and on schedule. The ability to achieve these two sets of objectives is critically important for Suncor to deliver value to shareholders and stakeholders. These ambitious business objectives compete for resources, and may negatively impact the company should there be inadequate consideration of the cumulative impacts of prior and parallel initiatives on people, processes and systems. There is also a risk that these objectives may exceed Suncor's capacity to adopt and implement change. The occurrence of any of the foregoing could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Joint Arrangement Risk

Suncor has entered into joint arrangements and other contractual arrangements with third parties, including arrangements where other entities operate assets in which Suncor has ownership or other interests. These joint arrangements include, among others, those with respect to Syncrude, Fort Hills, In Situ assets, and operations in Suncor's E&P Canada and E&P International businesses. The success and timing of activities relating to assets and projects operated by others, or developed jointly with others, depend upon a number of factors that are outside of Suncor's control, including, among others, the timing and amount of capital expenditures, the timing and amount of operational and maintenance expenditures, the operator's expertise, financial resources and risk management practices, the approval of other participants, and the selection of technology.

These co-owners may have objectives and interests that do not coincide with and may conflict with Suncor's interests. Major capital decisions affecting joint arrangements may require agreement among the co-owners, while certain operational decisions may be made solely at the discretion of the operator of the applicable assets. While joint venture counterparties may generally seek consensus with respect to major decisions concerning the direction and operation of the assets and the development of projects, no assurance can be provided that the future demands or expectations of the parties relating to such assets and projects will be met satisfactorily or in a timely manner. Failure to satisfactorily meet demands or expectations by all of the parties may affect the company's participation in the operation of such assets or in the development of such projects, the company's ability to obtain or maintain necessary licences or approvals, or the timing for undertaking various activities. In addition, disputes may arise pertaining to the timing, funding and/or capital commitments with respect to projects that are being jointly developed, which could materially adversely affect the development of such projects and Suncor's business and operations.

The occurrence of any of the foregoing could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Financial Risks

Energy Trading and Risk Management Activities and the Exposure to Counterparties

The nature of Suncor's energy trading and risk management activities, which may make use of derivative financial instruments to manage its exposure to commodity price and other market risks, creates exposure to financial risks, which include, but are not limited to, the following:

- Unfavourable movements in commodity prices, interest rates or foreign exchange could result in a financial or opportunity loss to the company;
- A lack of counterparties, due to market conditions or other circumstances, could leave the company unable to liquidate or offset a position, or unable to do so at or near the previous market price;

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- The company may not receive funds or instruments from counterparties at the expected time or at all;
- The counterparty could fail to perform an obligation owed to Suncor;
- Loss as a result of human error or deficiency in the company's systems or controls; and
- Loss as a result of contracts being unenforceable or transactions being inadequately documented.

The occurrence of any of the foregoing could have a material adverse effect on Suncor's business, financial condition and results of operations.

Exchange Rate Fluctuations

The company's 2018 audited Consolidated Financial Statements are presented in Canadian dollars. The majority of Suncor's revenues from the sale of oil, natural gas and petroleum products are based on prices that are determined by, or referenced to, U.S. dollar benchmark prices, while the majority of Suncor's expenditures are realized in Canadian dollars. The company also owes a portion of its debt in U.S. dollars. Suncor's financial results, therefore, can be affected significantly by the exchange rates between the Canadian dollar and the U.S. dollar. The company also undertakes operations administered through international subsidiaries, and therefore, to a lesser extent, Suncor's results can be affected by the exchange rates between the Canadian dollar and the euro, the British pound and the Norwegian krone. These exchange rates may vary substantially and may give rise to favourable or unfavourable foreign currency exposure. A decrease in the value of the Canadian dollar relative to the U.S. dollar will increase the revenues received from the sale of commodities. An increase in the value of the Canadian dollar relative to the U.S. dollar will decrease revenue received from the sale of commodities. A decrease in the value of the Canadian dollar relative to the U.S. dollar from the previous balance sheet date increases the amount of Canadian dollars required to settle U.S. dollar denominated obligations. As at December 31, 2018, the Canadian dollar weakened in relation to the U.S. dollar to $0.73 from $0.80 at the start of 2018. Exchange rate fluctuations could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Interest Rate Risk

The company is exposed to fluctuations in short-term Canadian and U.S. interest rates as Suncor maintains a portion of its debt capacity in revolving and floating rate credit facilities and commercial paper, and invests surplus cash in short-term debt instruments and money market instruments. Suncor is also exposed to interest rate risk when debt instruments are maturing and require refinancing, or when new debt capital needs to be raised. The company is also exposed to changes in interest rates on derivative instruments used to manage the debt portfolio, including hedges of prospective new debt issuances. Unfavourable changes in interest rates could have a material adverse effect on Suncor's business, financial condition and results of operations.

Issuance of Debt and Debt Covenants

Suncor expects that future capital expenditures will be financed out of cash and cash equivalents balances, cash flow provided by operating activities, available committed credit facilities, issuing commercial paper and accessing capital markets. This ability is dependent on, among other factors, commodity prices, the overall state of the capital markets, and financial institutions and investor appetite for investments in the energy industry generally, and the company's securities in particular. To the extent that external sources of capital become limited or unavailable or available on unfavourable terms, the ability to make capital investments and maintain existing properties may be constrained.

If the company finances capital expenditures in whole or in part with debt, that may increase its debt levels above industry standards for oil and gas companies of similar size. Depending on future development and growth plans, additional debt financing may be required that may not be available or, if available, may not be available on favourable terms, including higher interest rates and fees. Neither the articles of Suncor (the Articles) nor its by-laws limit the amount of indebtedness that may be incurred; however, Suncor is subject to covenants in its existing credit facilities and seeks to avoid an unfavourable cost of debt. The level of the company's indebtedness, from time to time, could impair its ability to obtain additional financing on a timely basis to take advantage of business opportunities that may arise and could negatively affect its credit ratings.

Suncor is required to comply with financial and operating covenants under existing credit facilities and debt securities. Covenants are reviewed based on actual and forecast results and the company has the ability to make changes to its development plans, capital structure and/or dividend policy to comply with covenants under the credit facilities. If Suncor does not comply with the covenants under its credit facilities and debt securities, there is a risk that repayment could be accelerated and/or the company's access to capital could be restricted or only be available on unfavourable terms.

Rating agencies regularly evaluate the company, including its subsidiaries. Their ratings of Suncor's long-term and short-term debt are based on a number of factors, including the company's financial strength, as well as factors not entirely within its control, including conditions affecting the oil and gas industry generally, and the wider state of the economy. Credit ratings may be important to customers or counterparties when Suncor competes in certain markets and when it seeks to engage in certain transactions, including

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transactions involving over-the-counter derivatives. There is a risk that one or more of Suncor's credit ratings could be downgraded, which could potentially limit its access to private and public credit markets and increase the company's cost of borrowing.

The occurrence of any of the foregoing could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Royalties and Taxes

Suncor is subject to royalties and taxes imposed by governments in numerous jurisdictions.

Royalties can be impacted by changes in crude oil and natural gas pricing, production volumes, and capital and operating costs, by changes to existing legislation or PSCs, and by results of regulatory audits of prior year filings and other such events. The final determination of these events may have a material impact on the company's royalties expense.

An increase in Suncor's royalties expense, income taxes, property taxes, carbon taxes, levies, tariffs, duties, quotas, border taxes, and other taxes and government-imposed compliance costs, could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Dividends and Share Repurchases

Suncor's payment of future dividends on its common shares and future share repurchases by Suncor of its common shares will be dependent on, among other things, legislative and stock exchange requirements, the company's financial condition, results of operations, cash flow, the need for funds to finance ongoing operations and growth projects, debt covenants and other business considerations as the company's Board of Directors considers relevant. There can be no assurance that Suncor will continue to pay dividends or repurchase shares in the future.

E&P Reserves Replacement

Suncor's future offshore production, and therefore its cash flows and results of operations from E&P, are highly dependent upon success in exploiting its current reserves base and acquiring or discovering additional reserves. Without additions to its E&P reserves through exploration, acquisition or development activities, Suncor's production from its offshore assets will decline over time as reserves are depleted. The business of exploring for, developing or acquiring reserves is capital intensive. To the extent Suncor's cash flow is insufficient to fund capital expenditures and external sources of capital become limited or unavailable, Suncor's ability to make the necessary capital investments to maintain and expand its reserves will be impaired. In addition, Suncor may be unable to develop or acquire additional reserves to replace its crude oil and natural gas production at acceptable costs.

Uncertainties Affecting Reserves Estimates

There are numerous uncertainties inherent in estimating quantities of reserves, including many factors beyond the company's control. Suncor's actual production, revenues, royalties, taxes, and development and operating expenditures with respect to the company's reserves will vary from its estimates, and such variances could be material. Refer to the Statement of Reserves Data and Other Oil and Gas Information – Significant Risk Factors and Uncertainties Affecting Reserves in the 2018 AIF.

Third-Party Service Providers

Suncor's businesses are reliant on the operational integrity of a large number of third-party service providers, including input and output commodity transport (pipelines, rail, trucking, marine) and utilities associated with various Suncor and jointly owned facilities, including electricity. A disruption in service or limited availability by one of these third parties can also have a dramatic impact on Suncor's operations and growth plans. Pipeline constraints that affect takeaway capacity or supply of inputs, such as hydrogen and power for example, could impact the company's ability to produce at capacity levels. Disruptions in pipeline service could adversely affect commodity prices, Suncor's price realizations, refining operations and sales volumes, or limit the company's ability to produce and deliver production. These interruptions may be caused by the inability of the pipeline to operate or by the oversupply of feedstock into the system that exceeds pipeline capacity. Short-term operational constraints on pipeline systems arising from pipeline interruption and/or increased supply of crude oil have occurred in the past and could occur in the future. There is a risk that third-party outages could impact Suncor's production or price realizations, which could have a material adverse effect on Suncor's business, financial condition and results of operations.

Foreign Operations

The company has operations in a number of countries with different political, economic and social systems. As a result, the company's operations and related assets are subject to a number of risks and other uncertainties arising from foreign government sovereignty over the company's international operations, which may include, among other things:

- Currency restrictions and restrictions on repatriation of funds;
- Loss of revenue, property and equipment as a result of expropriation, nationalization, war, insurrection and geopolitical and other political risks;
- Increases in taxes and government royalties;
- Compliance with existing and emerging anti-corruption laws, including the *Foreign Corrupt Practices Act* (United States), the *Corruption of Foreign Public Officials Act* (Canada) and the United Kingdom *Bribery Act*;

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- Renegotiation of contracts with government entities and quasi-government agencies;
- Changes in laws and policies governing operations of foreign-based companies; and
- Economic and legal sanctions (such as restrictions against countries experiencing political violence, or countries that other governments may deem to sponsor terrorism).

If a dispute arises in the company's foreign operations, the company may be subject to the exclusive jurisdiction of foreign courts or may not be able to subject foreign persons to the jurisdiction of a court in Canada or the U.S. In addition, as a result of activities in these areas and a continuing evolution of an international framework for corporate responsibility and accountability for international crimes, there is a risk the company could also be exposed to potential claims for alleged breaches of international or local law.

The impact that future potential terrorist attacks, regional hostilities or political violence, such as that experienced in Libya and Syria, may have on the oil and gas industry, and on our operations in particular, is not known at this time. This uncertainty may affect operations in unpredictable ways, including disruptions of fuel supplies and markets, particularly crude oil, and the possibility that infrastructure facilities, including pipelines, production facilities, processing plants and refineries, could be direct targets of, or collateral damage of, an act of terror, political violence or war. Suncor may be required to incur significant costs in the future to safeguard our assets against terrorist activities or to remediate potential damage to our facilities. There can be no assurance that Suncor will be successful in protecting itself against these risks and the related safety and financial consequences.

Despite Suncor's training and policies around bribery and other forms of corruption, there is a risk that Suncor, or some of its employees or contractors, could be charged with bribery or corruption. Any of these violations could result in onerous penalties. Even allegations of such behaviour could impair Suncor's ability to work with governments or non-government organizations and could result in the formal exclusion of Suncor from a country or area, sanctions, fines, project cancellations or delays, the inability to raise or borrow capital, reputational impacts and increased investor concern.

The occurrence of any of the foregoing could have a material adverse effect on Suncor's business, financial condition, reserves and results of operations.

Skills, Resource Shortage and Reliance on Key Personnel

The successful operation of Suncor's businesses and the company's ability to expand operations will depend upon the availability of, and competition for, skilled labour and materials supply. There is a risk that the company may have difficulty sourcing the required labour for current and future operations. The risk could manifest itself primarily through an inability to recruit new staff without a dilution of talent, to train, develop and retain high-quality and experienced staff without unacceptably high attrition, and to satisfy an employee's work/life balance and desire for competitive compensation. The labour market in Alberta has been historically tight, and, while the current economic situation has partially moderated this effect, it remains a risk to be managed. The increasing age of the company's existing workforce adds further pressure. The availability of competent and skilled contractors for current and future operations is also a risk depending on market conditions. Materials may also be in short supply due to smaller labour forces in many manufacturing operations. Suncor's ability to operate safely and effectively and complete all projects on time and on budget has the potential to be significantly impacted by these risks and this impact could be material.

The company's success also depends in large measure on certain key personnel. The loss of the services of such key personnel could have a material adverse effect on the company. The contributions of the existing management team to the immediate and near-term operations of the company are likely to continue to be of central importance for the foreseeable future.

Labour Relations

Hourly employees at Suncor's Oil Sands operations facilities (excluding MacKay River), all of the company's refineries, and the majority of the company's terminal and distribution operations are represented by labour unions or employee associations. Approximately 32% of the company's employees were covered by collective agreements at the end of 2018. Negotiations for new collective agreements are in progress for 12 facilities across the company. Any work interruptions involving the company's employees (including as a result of a strike or lockout), contract trades utilized in the company's projects or operations, or any jointly owned facilities operated by another entity present a significant risk to the company and could have a material adverse effect on Suncor's business, financial condition and results of operations.

Land Claims and Aboriginal Consultation

Aboriginal Peoples have claimed Aboriginal title and rights to portions of Western Canada. In addition, Aboriginal Peoples have filed claims against industry participants relating in part to land claims, which may affect the company's business.

The requirement to consult with Aboriginal Peoples in respect of oil and gas projects and related infrastructure has also increased in recent years. In addition, the Canadian federal government and the provincial government in Alberta have made a commitment to renew their relationships with the Aboriginal Peoples of Canada. The

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federal government has stated it now fully supports the United Nations Declaration on the Rights of Indigenous Peoples (the Declaration) without qualification and that Canada intends "nothing less than to adopt and implement the Declaration in accordance with the Canadian Constitution". Recently, the federal government announced its support of a private member's bill, Bill C-262, *An Act to ensure that the laws of Canada are in harmony with the United Nations Declaration on the Rights of Indigenous Peoples*, promoting the full adoption of the Declaration into Canadian law. It is anticipated that the Bill will be passed by the Senate and become law in the second quarter of 2019. The Alberta government is also currently exploring how best to implement the principles and objectives of the Declaration in a way that is consistent with the Constitution and Alberta law. At this time, it is unclear how the Declaration will be adopted into Canadian law and the impact of the Declaration on the Crown's duty to consult with Aboriginal Peoples.

Suncor is unable to assess the effect, if any, that any such land claims, consultation requirements with Aboriginal Peoples or adoption of the Declaration into Canadian law may have on Suncor's business; however, the impact may be material.

Litigation Risk

There is a risk that Suncor or entities in which it has an interest may be subject to litigation, and claims under such litigation may be material. Various types of claims may be raised in these proceedings, including, but not limited to, environmental damage, climate change and the impacts thereof, breach of contract, product liability, antitrust, bribery and other forms of corruption, tax, patent infringement, disclosure, employment matters and in relation to an attack, breach or unauthorized access to Suncor's information technology and infrastructure. Litigation is subject to uncertainty and it is possible that there could be material adverse developments in pending or future cases. Unfavourable outcomes or settlements of litigation could encourage the commencement of additional litigation. Suncor may also be subject to adverse publicity and reputational impacts associated with such matters, regardless of whether Suncor is ultimately found liable. There is a risk that the outcome of such litigation may be materially adverse to the company and/or the company may be required to incur significant expenses or devote significant resources in defence against such litigation, the success of which cannot be guaranteed.

Trade Risk Relating to CUSMA

If the *Canada-United States-Mexico Agreement* (CUSMA) is ratified, Canada will no longer be subject to the proportionality provisions in the *North American Free Trade Agreement's* (NAFTA) energy chapter. Ratification should thus permit the expansion of oil and gas exports beyond the U.S., and a change to the oil and gas rules of origin, which will allow Canadian exporters to more easily qualify for duty-free treatment for shipments to the U.S. Canada must, however, notify the U.S. of its intention to enter into free trade talks with any "non-market economies" under CUSMA, which may include China or any other importers of Canadian oil and gas exports. Although CUSMA has been signed, legislators from each of the three countries have yet to ratify CUSMA according to their own legislative processes before it goes into effect and replaces NAFTA. The outcome of the ratification process in each of these countries is not complete and is therefore uncertain. If CUSMA is not ratified and adopted by all three countries, this may alter the terms of trade for energy resources in a manner adverse to the company. This could have a material adverse effect on the sale and transportation of Suncor's products within North America, which could have a significant negative impact on Suncor's business, financial condition and results from operations.

Control Environment

Based on their inherent limitations, disclosure controls and procedures and internal controls over financial reporting may not prevent or detect misstatements, and even those controls determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. Failure to adequately prevent, detect and correct misstatements could have a material adverse effect on Suncor's business, financial condition and results of operations.

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11. OTHER ITEMS

Control Environment

Based on their evaluation as of December 31, 2018, Suncor's Chief Executive Officer and Chief Financial Officer concluded that the company's disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the United States *Securities Exchange Act of 1934*, as amended (the Exchange Act)), are effective to ensure that information required to be disclosed by the company in reports that are filed or submitted to Canadian and U.S. securities authorities is recorded, processed, summarized and reported within the time periods specified in Canadian and U.S. securities laws. In addition, as of December 31, 2018, there were no changes in the internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) that occurred during the year ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, the company's internal control over financial reporting. Management will continue to periodically evaluate the company's disclosure controls and procedures and internal control over financial reporting and will make any modifications from time to time as deemed necessary.

The effectiveness of our internal control over financial reporting as at December 31, 2018 was audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report, which is included in our audited Consolidated Financial Statements for the year ended December 31, 2018.

Based on their inherent limitations, disclosure controls and procedures and internal control over financial reporting may not prevent or detect misstatements, and even those controls determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

Corporate Guidance

There have been no changes to the corporate guidance ranges previously issued on December 14, 2018. For further details and advisories regarding Suncor's 2019 corporate guidance, see www.suncor.com/guidance.

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12. ADVISORIES

Non-GAAP Financial Measures

Certain financial measures in this MD&A – namely operating earnings (loss), ROCE, funds from (used in) operations, discretionary free funds flow, Oil Sands operations cash operating costs, In Situ cash operating costs, Fort Hills cash operating costs, Syncrude cash operating costs, refining margin, refining operating expense and LIFO inventory valuation methodology – are not prescribed by GAAP. These non-GAAP financial measures are included because management uses the information to analyze business performance, leverage and liquidity, and it may be useful to investors on the same basis. These non-GAAP financial measures do not have any standardized meaning and, therefore, are unlikely to be comparable to similar measures presented by other companies. Therefore, these non-GAAP financial measures should not be considered in isolation or as a substitute for measures of performance prepared in accordance with GAAP. Except as otherwise indicated, these non-GAAP measures are calculated and disclosed on a consistent basis from period to period. Specific adjusting items may only be relevant in certain periods.

(a) Operating Earnings (Loss)

Operating earnings (loss) is a non-GAAP financial measure that adjusts net earnings (loss) for significant items that are not indicative of operating performance. Management uses operating earnings (loss) to evaluate operating performance, because management believes it provides better comparability between periods. For the years ended December 31, 2018, December 31, 2017 and December 31, 2016, consolidated operating earnings (loss) are reconciled to net earnings (loss) in the Financial Information section of this MD&A and operating earnings (loss) for each segment are reconciled to net earnings (loss) in the Segment Results and Analysis section of the MD&A. Operating earnings (loss) for the three months ended December 31, 2018 and December 31, 2017 are reconciled to net earnings (loss) below.

(b) Bridge Analyses of Operating Earnings

Throughout this MD&A, the company presents charts that illustrate the change in operating earnings from the comparative period through key variance factors. These factors are analyzed in the Operating Earnings narratives following the bridge analyses in that particular section of the MD&A. These bridge analyses are presented because management uses this presentation to analyze performance.

- The factor for Sales Volumes and Mix is calculated based on sales volumes and mix for the Oil Sands and Exploration and Production segments and throughput volumes and mix for the Refining and Marketing segment.
- The factor for Price, Margin and Other Revenue includes upstream price realizations before royalties, with the exception of Libya, which is net of royalties. Also included are refining and marketing margins, other operating revenues, and the net impacts of sales and purchases of third-party crude, including product purchased for use as diluent in the company's Oil Sands operations and subsequently sold as part of diluted bitumen.
- The factor for inventory valuation includes the after-tax impact of the FIFO method of inventory valuation in the company's R&M segment, as well as the impact of the deferral or realization of profit or loss on crude oil sales from the Oil Sands segment to Suncor's refineries, as both represent inventory valuation adjustments.
- The factor for Royalties excludes the impact of Libya, as royalties in Libya are taken into account in Price, Margin and Other Revenue as described above.
- The factor for Operating and Transportation Expense includes project start-up costs, operating, selling and general expense, and transportation expense.
- The factor for Financing Expense and Other Income includes financing expenses, other income, operational foreign exchange gains and losses, changes in gains and losses on disposal of assets that are not operating earnings adjustments, changes in statutory income tax rates, other income tax adjustments and the net impact of the sale of the lubricants business in the first quarter of 2017.

(c) Return on Capital Employed (ROCE)

ROCE is a non-GAAP financial measure that management uses to analyze operating performance and the efficiency of Suncor's capital allocation process. Average capital employed is calculated as a twelve-month average of the capital employed balance at the beginning of the twelve-month period and the month-end capital employed balances throughout the remainder of the twelve-month period. Figures for capital employed at the beginning and end of the twelve-month period are presented to show the changes in the components of the calculation over the twelve-month period.

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The company presents two ROCE calculations – one including and one excluding the impacts on capital employed of major projects in progress. Major projects in progress includes accumulated capital expenditures and capitalized interest for significant projects still under construction or in the process of being commissioned, and acquired assets that are still being evaluated. Management uses ROCE excluding the impacts of major projects in progress on capital employed to assess performance of operating assets.

Year ended December 31 ($ millions, except as noted)		2018	2017	2016
Adjustments to net earnings				
Net earnings attributed to common shareholders		**3 293**	4 458	434
Add after-tax amounts for:				
Unrealized foreign exchange loss (gain) on U.S. dollar denominated debt		**989**	(702)	(524)
Net interest expense		**541**	158	304
	A	**4 823**	3 914	214
Capital employed – beginning of twelve-month period				
Net debt		**12 907**	14 414	11 254
Shareholders' equity		**45 383**	44 630	39 039
		58 290	59 044	50 293
Capital employed – end of twelve-month period				
Net debt		**15 129**	12 907	14 414
Shareholders' equity		**44 005**	45 383	44 630
		59 134	58 290	59 044
Average capital employed	B	**60 347**	58 667	57 999
ROCE – including major projects in progress (%)	A/B	**8.0**	6.7	0.4
Average capitalized costs related to major projects in progress	C	**1 412**	12 901	10 147
ROCE – excluding major projects in progress (%)	A/(B-C)	**8.2**	8.6	0.5

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(d) Funds from (used in) Operations and Discretionary Free Funds Flow

Funds from (used in) operations is a non-GAAP financial measure that adjusts a GAAP measure – cash flow provided by (used in) operating activities – for changes in non-cash working capital, which management uses to analyze operating performance and liquidity. Changes to non-cash working capital can include, among other factors, the timing of offshore feedstock purchases and payments for fuel and income taxes, and the timing of cash flows related to accounts receivable and accounts payable, which management believes reduces comparability between periods.

	Oil Sands			Exploration and Production			Refining and Marketing		
Year ended December 31 ($ millions)	2018	2017	2016	2018	2017	2016	2018	2017	2016
Net (loss) earnings	**853**	1 009	(1 149)	**808**	732	190	**3 153**	2 658	1 890
Adjustments for:									
Depreciation, depletion, amortization and impairment	**4 024**	3 782	3 864	**967**	1 028	1 381	**683**	685	702
Deferred income taxes	**351**	170	(78)	**(112)**	(113)	(506)	**39**	(138)	12
Accretion	**209**	195	208	**48**	45	53	**7**	7	7
Unrealized foreign exchange (gain) loss on U.S. dollar denominated debt	**—**	—	—	**—**	—	—	**—**	—	—
Change in fair value of financial instruments and trading inventory	**(61)**	2	19	**—**	—	—	**(20)**	9	27
Loss on debt extinguishment	**—**	—	—	**—**	—	—	**—**	—	—
(Gain) loss on disposal of assets	**(108)**	(50)	(33)	**91**	—	—	**(7)**	(354)	(35)
Share-based compensation	**(28)**	(3)	41	**(5)**	6	12	**(19)**	4	21
Exploration expenses	**—**	—	—	**11**	41	204	**—**	—	—
Settlement of decommissioning and restoration liabilities	**(428)**	(305)	(248)	**(23)**	(31)	(1)	**(17)**	(17)	(20)
Other	**58**	(62)	45	**84**	17	(20)	**(25)**	(13)	2
Funds from (used in) operations	**4 870**	4 738	2 669	**1 869**	1 725	1 313	**3 794**	2 841	2 606
(Increase) decrease in non-cash working capital									
Cash flow provided by operating activities									

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Year ended December 31 ($ millions)	Corporate, Energy Trading and Eliminations 2018	2017	2016	Total 2018	2017	2016
Net (loss) earnings	**(1 521)**	59	(486)	**3 293**	4 458	445
Adjustments for:						
Depreciation, depletion, amortization and impairment	**64**	106	170	**5 738**	5 601	6 117
Deferred income taxes	**162**	330	60	**440**	249	(512)
Accretion of liabilities	**2**	—	1	**266**	247	269
Unrealized foreign exchange (gain) loss on U.S. dollar denominated debt	**1 090**	(771)	(458)	**1 090**	(771)	(458)
Change in fair value of financial instruments and trading inventory	**(98)**	117	(53)	**(179)**	128	(7)
Loss on debt extinguishment	**3**	51	99	**3**	51	99
Gain on disposal of assets	—	(70)	—	**(24)**	(474)	(68)
Share-based compensation	**(65)**	24	68	**(117)**	31	142
Exploration expenses	—	—	—	**11**	41	204
Settlement of decommissioning and restoration liabilities	**(1)**	—	—	**(469)**	(353)	(269)
Other	**3**	(11)	(1)	**120**	(69)	26
Funds (used in) from operations	**(361)**	(165)	(600)	**10 172**	9 139	5 988
(Increase) decrease in non-cash working capital				**408**	(173)	(308)
Cash flow provided by operating activities				**10 580**	8 966	5 680

Discretionary free funds flow is a non-GAAP financial measure that is calculated by taking funds from operations and subtracting sustaining capital, inclusive of associated capitalized interest, and dividends. Discretionary free funds flow reflects cash available for increasing distributions to shareholders and to fund growth investments. Management uses discretionary free funds flow to measure the capacity of the company to increase returns to shareholders and grow the business. The following is a reconciliation of discretionary free funds flow for Suncor's last three years of operations.

($ millions)	2018	2017	2016
Funds from operations	**10 172**	9 139	5 988
Sustaining capital and dividends	**(6 310)**	(5 083)	(4 191)
Discretionary free funds flow	**3 862**	4 056	1 797

(e) Oil Sands Operations, In Situ, Fort Hills and Syncrude Cash Operating Costs

Oil Sands operations, In Situ, Fort Hills and Syncrude cash operating costs are non-GAAP financial measures. Oil Sands operations cash operating costs are calculated by adjusting Oil Sands segment OS&G expense (a GAAP measure based on sales volumes) for i) costs pertaining to Fort Hills and Syncrude operations; ii) non production costs that management believes do not relate to the production performance of Oil Sands operations, including, but not limited to, share-based compensation adjustments, research and the expense recorded as part of a non-monetary arrangement involving a third party processor; iii) revenues associated with excess capacity, including excess power generated and sold that is recorded in operating revenue; iv) project start-up costs; and v) the impacts of changes in inventory levels, such that the company is able to present cost information based on production volumes. To determine In Situ cash operating costs, Oil Sands operations cash operating costs are further adjusted to remove costs pertaining to Oil Sands operations mining and upgrading. Syncrude and Fort Hills cash operating costs are calculated by adjusting Syncrude OS&G expense and Fort Hills OS&G expense, respectively, for non-production costs that management believes do not relate to the production performance of Syncrude operations or Fort Hills operations, respectively, including, but not limited to, share-based compensation, research and project start-up costs, if applicable. Oil Sands operations, Fort Hills and Syncrude cash operating costs are reconciled in the Segment Results and Analysis – Oil Sands section of this document. Management uses cash operating costs to measure operating performance. Oil Sands operations cash operating costs in 2018 were $3.870 billion and included $740 million related to In Situ production for In Situ cash operating costs per barrel of $8.45, based on total In Situ production of 240,000 bbls/d.

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(f) Refining Margin and Refining Operating Expense

Refining margin and refining operating expense are non-GAAP financial measures. Refining margin is calculated by adjusting R&M segment operating revenues, other income and purchases of crude oil and products (GAAP measures) for non-refining margin pertaining to the company's supply, marketing and ethanol businesses, and the company's former lubricants business, which was disposed of in early 2017. Refinery operating expense is calculated by adjusting R&M segment OS&G for i) non-refining costs pertaining to the company's supply, marketing and ethanol businesses and the company's former lubricants business; and ii) non-refining costs that management believes do not relate to the production of refined products, including, but not limited to, share-based compensation and enterprise shared service allocations. Management uses refining margin and refining operating expense to measure operating performance on a production barrel basis.

Year ended December 31 ($ millions, except as noted)	2018	2017	2016
Refining margin reconciliation			
Gross margin, operating revenues less purchases of crude oil and products[1]	7 068	5 692	5 506
Other income	21	73	16
Non-refining margin	(1 250)	(1 546)	(2 074)
Refining margin	5 839	4 219	3 448
Refinery production[2] (mbbls)	169 138	174 461	168 798
Refining margin ($/bbl)	34.50	24.20	20.45
Refining operating expense reconciliation			
Operating, selling and general expense[1]	1 979	1 950	2 147
Non-refining costs	(1 078)	(1 068)	(1 287)
Refining operating expense	901	882	860
Refinery production[2]	169 138	174 461	168 798
Refining operating expense ($/bbl)	5.35	5.05	5.10

(1) 2017 and 2016 have been restated due to IFRS 15 adoption and for the removal of risk management activities

(2) Refinery production is the output of the refining process, and differs from crude oil processed as a result of volumetric adjustments for non-crude feedstock, volumetric gain associated with the refining process, and changes in unfinished product inventories.

(g) Impact of First-in, First-out Inventory Valuation on Refining and Marketing Net Earnings

GAAP requires the use of a FIFO valuation methodology. For Suncor, this results in a lag between the sales prices for refined products, which reflects current market conditions, and the amount recorded as the cost of sale for the related refinery feedstock, which reflects market conditions at the time when the feedstock was purchased.

Suncor prepares and presents an estimate of the impact of using a FIFO inventory valuation methodology compared to a LIFO methodology, because management uses the information to analyze operating performance and compare itself against refining peers that are permitted to use LIFO inventory valuation under United States GAAP (U.S. GAAP).

The company's estimate is not derived from a standardized calculation and, therefore, may not be directly comparable to similar measures presented by other companies, and should not be considered in isolation or as a substitute for measures of performance prepared in accordance with GAAP or U.S. GAAP.

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(h) Operating Earnings Reconciliations – Fourth Quarter 2018 and 2017

Three months ended December 31 ($ millions)	Oil Sands 2018	Oil Sands 2017	Exploration and Production 2018	Exploration and Production 2017	Refining and Marketing 2018	Refining and Marketing 2017	Corporate, Energy Trading and Eliminations 2018	Corporate, Energy Trading and Eliminations 2017	Total 2018	Total 2017
Net earnings (loss) as reported	**(393)**	670	**(115)**	217	**723**	886	**(495)**	(391)	**(280)**	1 382
Unrealized foreign exchange loss on U.S. dollar denominated debt	—	—	—	—	—	—	**637**	91	**637**	91
Non-cash loss on equity investment	—	—	**223**	—	—	—	—	—	**223**	—
Impact of income tax rate adjustment on deferred taxes	—	—	—	14	—	(140)	—	2	—	(124)
Insurance Proceeds	—	(55)	—	—	—	—	—	—	—	(55)
Loss on early repayment of long term debt	—	—	—	—	—	—	—	18	—	18
Non-cash mark to market gain on interest rate swaps	—	—	—	—	—	—	—	(2)	—	(2)
Operating earnings (loss)	**(393)**	615	**108**	231	**723**	746	**142**	(282)	**580**	1 310

(i) Funds from Operations Reconciliations – Fourth Quarter 2018 and 2017

Three months ended December 31 ($ millions)	Oil Sands 2018	Oil Sands 2017	Exploration and Production 2018	Exploration and Production 2017	Refining and Marketing 2018	Refining and Marketing 2017	Corporate, Energy Trading and Eliminations 2018	Corporate, Energy Trading and Eliminations 2017	Total 2018	Total 2017
Net earnings (loss)	**(393)**	670	**(115)**	217	**723**	886	**(495)**	(391)	**(280)**	1 382
Adjustments for:	—		—		—		—			
Depreciation, depletion, amortization and impairment	**1 019**	1 055	**199**	219	**184**	196	**17**	18	**1 419**	1 488
Deferred income taxes	**89**	181	**3**	5	**(51)**	(161)	**119**	78	**160**	103
Accretion of liabilities	**53**	49	**12**	12	**2**	2	—	—	**67**	63
Unrealized foreign exchange loss on U.S. dollar denominated debt	—	—	—	—	—	—	**688**	74	**688**	74
Change in fair value of financial instruments and trading inventory	**(74)**	2	—	—	**(15)**	9	**(59)**	5	**(148)**	16
Gain on disposal of assets	**(1)**	(46)	**253**	—	**(2)**	(2)	—	—	**250**	(48)
Loss on debt extinguishment	—	—	—	—	—	—	**3**	26	**3**	26
Share-based compensation	**(22)**	34	**(3)**	4	**(10)**	17	**(53)**	61	**(88)**	116
Exploration expenses	—	—	**11**	—	—	—	—	—	**11**	—
Settlement of decommissioning and restoration liabilities	**(91)**	(76)	**(8)**	(15)	**(5)**	(7)	—	—	**(104)**	(98)
Other	**21**	(89)	**15**	(11)	—	(5)	**(7)**	(1)	**29**	(106)
Funds from (used in) operations	**601**	1 780	**367**	431	**826**	935	**213**	(130)	**2 007**	3 016
Increase (decrease) in non-cash working capital									**1 033**	(261)
Cash flow provided by (used in) operating activities									**3 040**	2 755

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Measurement Conversions

Certain crude oil and natural gas liquids volumes have been converted to mcfe or mmcfe on the basis of one bbl to six mcf. Also, certain natural gas volumes have been converted to boe or mboe on the same basis. Any figure presented in mcfe, mmcfe, boe or mboe may be misleading, particularly if used in isolation. A conversion ratio of one bbl of crude oil or natural gas liquids to six mcf of natural gas is based on an energy equivalency conversion method primarily applicable at the burner tip and does not necessarily represent value equivalency at the wellhead. Given that the value ratio based on the current price of crude oil as compared to natural gas is significantly different from the energy equivalency of 6:1, conversion on a 6:1 basis may be misleading as an indication of value.

Common Abbreviations

The following is a list of abbreviations that may be used in this MD&A:

Measurement

bbl	barrel
bbls/d	barrels per day
mbbls/d	thousands of barrels per day
boe	barrels of oil equivalent
boe/d	barrels of oil equivalent per day
mboe	thousands of barrels of oil equivalent
mboe/d	thousands of barrels of oil equivalent per day
mcf	thousands of cubic feet of natural gas
mcfe	thousands of cubic feet of natural gas equivalent
mmcf	millions of cubic feet of natural gas
mmcf/d	millions of cubic feet of natural gas per day
mmcfe	millions of cubic feet of natural gas equivalent
mmcfe/d	millions of cubic feet of natural gas equivalent per day
m^3	cubic metres
MW	Megawatts
MWh	Megawatt hour

Places and Currencies

U.S.	United States
U.K.	United Kingdom
B.C.	British Columbia
$ or Cdn$	Canadian dollars
US$	United States dollars
£	Pounds sterling
€	Euros

Financial and Business Environment

DD&A	Depreciation, depletion and amortization
WTI	West Texas Intermediate
WCS	Western Canadian Select
SCO	Synthetic crude oil
MSW	Mixed Sweet Blend
NYMEX	New York Mercantile Exchange

Forward-Looking Information

This MD&A contains certain forward-looking statements and forward-looking information (collectively, forward-looking statements) within the meaning of applicable Canadian and U.S. securities laws and other information based on Suncor's current expectations, estimates, projections and assumptions that were made by the company in light of information available at the time the statement was made and consider Suncor's experience and its perception of historical trends, including expectations and assumptions concerning: the accuracy of reserves and resources estimates; commodity prices and interest and foreign exchange rates; the performance of assets and equipment; capital efficiencies and cost savings; applicable laws and government policies; future production rates; the sufficiency of budgeted capital expenditures in carrying out planned activities; the availability and cost of labour, services and infrastructure; the satisfaction by third parties of their obligations to Suncor; the development and execution of projects; and the receipt, in a timely manner, of regulatory and third-party approvals. All statements and information that address expectations or projections about the future, and statements and information about Suncor's strategy for growth, expected and future expenditures or investment decisions, commodity prices, costs, schedules, production volumes, operating and financial results, future financing and capital activities, and the expected impact of future commitments are forward-looking statements. Some of the forward-looking statements may be identified by words like "expects", "anticipates", "will", "estimates", "plans", "scheduled", "intends", "believes", "projects", "indicates", "could", "focus", "vision", "goal", "outlook", "proposed", "target", "objective", "continue", "should", "may", "potential", "future", "opportunity", "would", "priority", "strategy", "aim" and similar expressions.

Forward-looking statements in this MD&A include references to:

Suncor's strategy, business plans and expectations about projects, the performance of assets, production volumes and capital expenditures, including:

- *Suncor's strategies and priorities, including delivering competitive and sustainable returns to shareholders and aiming to consistently grow these returns by focusing on operational excellence initiatives, including capital discipline with asset reliability and optimization, long-term profitable growth and the company's commitment to environmental stewardship and sustainability, and the key components of its strategy, including profitably operating and developing the*

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company's reserves, optimizing value through integration and secured market access, achieving industry-leading unit costs in each business segment, and being an industry leader in sustainable development;

- *Suncor's belief that it is well positioned to succeed due to its competitive advantages of an industry-leading long-life, low-decline oil sands reserves base, a highly efficient, tightly integrated downstream business, an offshore business that provides geographically diversified cash flow, financial strength, and industry expertise;*
- *The expectation that long-term value will be created for the company through structural cash flow growth as a result of projects and initiatives such as optimizing production rates at Fort Hills following the successful ramp up in 2018, Syncrude asset optimization, development of regional operating synergies and value developments and asset extensions within the company's offshore business, improvement strategies at existing assets, such as debottlenecks and the deployment of autonomous haul trucks, and the company's regional oil sands advantage; including the expectation that it will provide the company with the economies of scale required to further develop its in situ resources in a low cost manner under the company's replication strategy;*
- *The company's belief that driving down costs and a continued focus on improved productivity and reliability will help achieve maximum value from the company's operations;*
- *Expectations about Hebron, including that it is expected to deliver 31,600 bbl/d, net to Suncor, when fully ramped up;*
- *Expectations about the Buzzard Phase 2 project, including that first oil from the project is expected in early 2021;*
- *Expectations about the Oda project, including that first oil from the project is expected in the second quarter of 2019;*
- *The belief that Suncor's midstream assets provide the logistical flexibility to move production to a wide range of markets;*
- *The opportunity to create structural cash flow growth improvements in Oil Sands through asset optimization initiatives like debottlenecks and further integration with Syncrude;*
- *Expectations for the Oil Sands segment, including the focus on safe, reliable and sustainable operations, the aim of the company's operational excellence initiatives to improve facility utilization and workforce productivity and the expectation that these initiatives will achieve steady production growth while reducing operating costs, the expectation that more than 150 autonomous haul trucks will be deployed across the company's business over approximately six years, the focus in 2019 on asset optimization and execution of safe and reliable operations at Fort Hills, Suncor's commitment to profitable growth, expectations for the interconnecting pipelines between Syncrude's Mildred Lake site and Suncor's Oil Sands Base plant, including that the lines will provide increased operational flexibility through the ability to transfer bitumen and gas oils between the two plants, enabling higher reliability and utilization and profit optimization and that they will be operational by the end of 2020, subject to finalized commercial terms and regulatory approval, and priorities around cost management and capital discipline at Oil Sands in 2019, including the expectation that the company will sustainably reduce controllable operating costs, and focus on managing investment opportunities through a robust asset development process which is focused on value creation;*
- *Expectations for the E&P segment, including the segment's focus on low-cost projects that deliver significant returns, cash flow and long-term value, and development activities offshore the east coast of Canada and in the U.K. North Sea intended to leverage existing facilities and infrastructure to provide incremental production and extend the productive life of existing fields which are planned to continue in 2019, along with development drilling at Hebron as part of the continued ramp-up phase and development work on the West White Rose Project, Buzzard Phase 2, Oda project and Fenja project;*
- *The expectation that the return to normal operations at the White Rose field will occur in a phased approach;*
- *The company's aim to operate its refineries at optimal levels of utilization to provide reliable offtake and secure pricing for a portion of the production from the Oil Sands segment, and Suncor's plan to continue to leverage the Petro-Canada® brand to increase sales volumes and non-petroleum revenues through the company's network of convenience stores and car washes;*
- *Additional transportation and storage agreements being evaluated and the asset backed trading program being developed;*
- *Expectations about the West White Rose Project, including the operator's original estimate that first oil would be achieved in 2022, the expectation of an update from the project operator in the first half of 2019, and that the company's share of peak oil production is expected to be 20,000 bbl/d;*
- *Plans for the projects and initiatives to which capital expenditures are anticipated to be directed in 2019 at Oil Sands operations, Syncrude, Fort Hills, E&P and R&M,*

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and the expected impact of those projects and initiatives; and

- *The expectation that well pads being designed and constructed will maintain existing production levels at Firebag and MacKay River in future years as production from existing well pads declines.*

The expected timing, duration and impact of planned maintenance events, including:

- *Planned Upgrader 1 maintenance at Oil Sands Base and turnaround events at Firebag and Fort Hills in the second quarter of 2019, Syncrude coker maintenance and maintenance events at Upgrader 2 in the third and fourth quarters of 2019, and planned maintenance expected to be completed at Fort Hills in the fourth quarter of 2019;*
- *The planned two-week maintenance event at Terra Nova scheduled to commence in the second quarter of 2019; and*
- *That a less intensive maintenance program is planned in 2019 for R&M following the completion of significant turnaround events in 2018 that will only focus on certain units within each of the refineries, including the planned two-week turnaround at the Commerce City refinery in the first quarter of 2019, the eight-week turnaround at the Sarnia refinery and the six-week turnaround at the Montreal refinery scheduled to begin in the second quarter of 2019 and the planned six-week turnaround at the Edmonton refinery scheduled to begin in the third quarter and extend into the fourth quarter of 2019.*

Also:

- *Economic sensitivities;*
- *The company's priority regarding returning value to shareholders, statements about the company's share repurchase program, and the company's belief in its ongoing ability to generate cash flow and its commitment to return cash to shareholders;*
- *The company's belief that it does not have any guarantees or off-balance sheet arrangements that have, or are reasonably likely to have, a current or future material effect on the company's financial condition or financial performance, including liquidity and capital resources;*
- *Suncor's planned 2019 capital spending program of $4.9 to $5.6 billion and the belief that the company will have the capital resources to fund its planned 2019 capital spending program and to meet current and future working capital requirements through cash and cash equivalents balances, cash flow provided by operating activities, available committed credit facilities, issuing commercial paper and accessing capital markets;*
- *The objectives of the company's short-term investment portfolio and the expectation that the maximum weighted average term to maturity of the company's short-term investment portfolio will not exceed six months, and all investments will be with counterparties with investment grade debt ratings;*
- *Management of debt levels continuing to be a priority for Suncor given the company's long-term growth plans and future expected volatility in the commodity pricing environment, and Suncor's belief that a phased and flexible approach to existing and future growth projects should assist Suncor in maintaining its ability to manage project costs and debt levels;*
- *Management's maximum target for the company's net debt to funds from operations of less than 3.0 times; and*
- *Expectations with respect to changes to law and government policy.*

Forward-looking statements are not guarantees of future performance and involve a number of risks and uncertainties, some that are similar to other oil and gas companies and some that are unique to Suncor. Suncor's actual results may differ materially from those expressed or implied by its forward-looking statements, so readers are cautioned not to place undue reliance on them.

The financial and operating performance of the company's reportable operating segments, specifically Oil Sands, E&P, and R&M, may be affected by a number of factors.

Factors that affect Suncor's Oil Sands segment include, but are not limited to, volatility in the prices for crude oil and other production, and the related impacts of fluctuating light/heavy and sweet/sour crude oil differentials; changes in the demand for refinery feedstock and diesel fuel, including the possibility that refiners that process the company's proprietary production will be closed, experience equipment failure or other accidents; Suncor's ability to operate its Oil Sands facilities reliably in order to meet production targets; the output of newly commissioned facilities, the performance of which may be difficult to predict during initial operations; Suncor's dependence on pipeline capacity and other logistical constraints, which may affect the company's ability to distribute products to market and which may cause the company to delay or cancel planned growth projects in the event of insufficient takeaway capacity; Suncor's ability to finance Oil Sands economic investment and asset sustainment and maintenance capital expenditures; the availability of bitumen feedstock for upgrading operations, which can be negatively affected by poor ore grade quality, unplanned mine equipment and extraction plant maintenance, tailings storage, and in situ reservoir and equipment performance, or the unavailability of third-party bitumen; changes in operating costs, including the cost of labour, natural gas and other energy sources used in oil sands processes; and the company's ability to complete projects, including planned maintenance events, both on time and on budget, which could be impacted by competition from other projects

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(including other oil sands projects) for goods and services and demands on infrastructure in Alberta's Wood Buffalo region and the surrounding area (including housing, roads and schools).

Factors that affect Suncor's E&P segment include, but are not limited to, volatility in crude oil and natural gas prices; operational risks and uncertainties associated with oil and gas activities, including unexpected formations or pressures, premature declines of reservoirs, fires, blow outs, equipment failures and other accidents, uncontrollable flows of crude oil, natural gas or well fluids, and pollution and other environmental risks; adverse weather conditions, which could disrupt output from producing assets or impact drilling programs, resulting in increased costs and/or delays in bringing on new production; political, economic and socio-economic risks associated with Suncor's foreign operations, including the unpredictability of operating in Libya due to ongoing political unrest; and market demand for mineral rights and producing properties, potentially leading to losses on disposition or increased property acquisition costs.

Factors that affect Suncor's R&M segment include, but are not limited to, fluctuations in demand and supply for refined products that impact the company's margins; market competition, including potential new market entrants; the company's ability to reliably operate refining and marketing facilities in order to meet production or sales targets; and risks and uncertainties affecting construction or planned maintenance schedules, including the availability of labour and other impacts of competing projects drawing on the same resources during the same time period.

Additional risks, uncertainties and other factors that could influence the financial and operating performance of all of Suncor's operating segments and activities include, but are not limited to, changes in general economic, market and business conditions, such as commodity prices, interest rates and currency exchange rates; fluctuations in supply and demand for Suncor's products; the successful and timely implementation of capital projects, including growth projects and regulatory projects; risks associated with the development and execution of Suncor's projects and the commissioning and integration of new facilities; the possibility that completed maintenance activities may not improve operational performance or the output of related facilities; the risk that projects and initiatives intended to achieve cash flow growth and/or reductions in operating costs may not achieve the expected results in the time anticipated or at all; competitive actions of other companies, including increased competition from other oil and gas companies or from companies that provide alternative sources of energy; labour and material shortages; actions by government authorities, including the imposition or reassessment of, or changes to, taxes, fees, royalties, duties, tariffs, quotas and other government-imposed compliance costs, and mandatory production curtailment orders and changes thereto; changes to laws and government policies that could impact the company's business, including environmental (including climate change), royalty and tax laws and policies; the ability and willingness of parties with whom Suncor has material relationships to perform their obligations to the company; the unavailability of, or outages to third-party infrastructure that could cause disruptions to production or prevent the company from being able to transport its products; the occurrence of a protracted operational outage, a major safety or environmental incident, or unexpected events such as fires (including forest fires), equipment failures and other similar events affecting Suncor or other parties whose operations or assets directly or indirectly affect Suncor; the potential for security breaches of Suncor's information technology and infrastructure by malicious persons or entities, and the unavailability or failure of such systems to perform as anticipated as a result of such breaches; security threats and terrorist or activist activities; the risk that competing business objectives may exceed Suncor's capacity to adopt and implement change; risks and uncertainties associated with obtaining regulatory, third-party and stakeholder approvals outside of Suncor's control for the company's operations, projects, initiatives, and exploration and development activities and the satisfaction of any conditions to approvals; the potential for disruptions to operations and construction projects as a result of Suncor's relationships with labour unions that represent employees at the company's facilities; the company's ability to find new oil and gas reserves that can be developed economically; the accuracy of Suncor's reserves, resources and future production estimates; market instability affecting Suncor's ability to borrow in the capital debt markets at acceptable rates or to issue other securities at acceptable prices; maintaining an optimal debt to cash flow ratio; the success of the company's risk management activities using derivatives and other financial instruments; the cost of compliance with current and future environmental laws, including climate change laws; risks relating to increased activism and public opposition to fossil fuels and oil sands; risks and uncertainties associated with closing a transaction for the purchase or sale of a business, asset or oil and gas property, including estimates of the final consideration to be paid or received; the ability of counterparties to comply with their obligations in a timely manner; risks associated with joint arrangements in which the company has an interest; risks associated with land claims and Aboriginal consultation requirements; the risk that the company may be subject to litigation; the impact of technology and risks associated with developing and implementing new technologies; and the accuracy of cost estimates, some of which are provided at the conceptual or other preliminary stage of projects and prior to commencement or conception of the detailed engineering that is needed to reduce the margin of error and increase the level of accuracy. The foregoing important factors are not exhaustive.

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Many of these risk factors and other assumptions related to Suncor's forward-looking statements are discussed in further detail throughout this MD&A, including under the heading Risk Factors, and the company's 2018 AIF and Form 40-F on file with Canadian securities commissions at www.sedar.com and the United States Securities and Exchange Commission at www.sec.gov. Readers are also referred to the risk factors and assumptions described in other documents that Suncor files from time to time with securities regulatory authorities. Copies of these documents are available without charge from the company.

The forward-looking statements contained in this MD&A are made as of the date of this MD&A. Except as required by applicable securities laws, we assume no obligation to update publicly or otherwise revise any forward-looking statements or the foregoing risks and assumptions affecting such forward-looking statements, whether as a result of new information, future events or otherwise.

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MANAGEMENT'S STATEMENT OF RESPONSIBILITY FOR FINANCIAL REPORTING

The management of Suncor Energy Inc. is responsible for the presentation and preparation of the accompanying consolidated financial statements of Suncor Energy Inc. and all related financial information contained in the Annual Report, including Management's Discussion and Analysis.

The consolidated financial statements have been prepared in accordance with Canadian generally accepted accounting principles applicable to publicly accountable enterprises, which is within the framework of International Financial Reporting Standards as issued by the International Accounting Standards Board incorporated into the Canadian Institute of Chartered Professional Accountants Handbook Part 1. They include certain amounts that are based on estimates and judgments.

In management's opinion, the consolidated financial statements have been properly prepared within reasonable limits of materiality and within the framework of the significant accounting policies adopted by management. If alternate accounting methods exist, management has chosen those policies it deems the most appropriate in the circumstances. In discharging its responsibilities for the integrity and reliability of the financial statements, management maintains and relies upon a system of internal controls designed to ensure that transactions are properly authorized and recorded, assets are safeguarded against unauthorized use or disposition and liabilities are recognized. These controls include quality standards in hiring and training of employees, formalized policies and procedures, a corporate code of conduct and associated compliance program designed to establish and monitor conflicts of interest, the integrity of accounting records and financial information, among others, and employee and management accountability for performance within appropriate and well-defined areas of responsibility.

The system of internal controls is further supported by the professional staff of an internal audit function who conduct periodic audits of the company's financial reporting.

The Audit Committee of the Board of Directors, currently composed of four independent directors, reviews the effectiveness of the company's financial reporting systems, management information systems, internal control systems and internal auditors. It recommends to the Board of Directors the external auditor to be appointed by the shareholders at each annual meeting and reviews the independence and effectiveness of their work. In addition, it reviews with management and the external auditor any significant financial reporting issues, the presentation and impact of significant risks and uncertainties, and key estimates and judgments of management that may be material for financial reporting purposes. The Audit Committee appoints the independent reserve consultants. The Audit Committee meets at least quarterly to review and approve interim financial statements prior to their release, as well as annually to review Suncor's annual financial statements and Management's Discussion and Analysis, Annual Information Form/Form 40-F, and annual reserves estimates, and recommend their approval to the Board of Directors. The internal auditors and the external auditor, PricewaterhouseCoopers LLP, have unrestricted access to the company, the Audit Committee and the Board of Directors.

Steven W. Williams
Chief Executive Officer

Alister Cowan
Executive Vice President and Chief Financial Officer

February 28, 2019

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The following report is provided by management in respect of the company's internal control over financial reporting (as defined in Rule 13a-15(f) and 15d-15(f) under the U.S. Securities Exchange Act of 1934):

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

1. Management is responsible for establishing and maintaining adequate internal control over the company's financial reporting.
2. Management has used the Committee of Sponsoring Organizations of the Treadway Commission (COSO) framework (2013) in Internal Control – Integrated Framework to evaluate the effectiveness of the company's internal control over financial reporting.
3. Management has assessed the effectiveness of the company's internal control over financial reporting as at December 31, 2018, and has concluded that such internal control over financial reporting was effective as of that date. In addition, based on this assessment, management determined that there were no material weaknesses in internal control over financial reporting as at December 31, 2018. Because of inherent limitations, systems of internal control over financial reporting may not prevent or detect misstatements and even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.
4. The effectiveness of the company's internal control over financial reporting as at December 31, 2018 has been audited by PricewaterhouseCoopers LLP, independent auditor, as stated in their report which appears herein.

Steven W. Williams
Chief Executive Officer

Alister Cowan
Executive Vice President and Chief Financial Officer

February 28, 2019

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and Board of Directors of
Suncor Energy Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting
We have audited the accompanying Consolidated Balance Sheets of Suncor Energy Inc. and its subsidiaries, (together, the "Company") as of December 31, 2018 and 2017, and the related Consolidated Statements of Comprehensive Income, Changes in Equity and Cash Flows for the years then ended, including the related notes (collectively referred to as the "Consolidated Financial Statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO").

In our opinion, the Consolidated Financial Statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and their financial performance and their cash flows for the years then ended in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board ("IFRS"). Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework (2013) issued by the COSO.

Basis for Opinions
The Company's management is responsible for these Consolidated Financial Statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on the Company's Consolidated Financial Statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the Consolidated Financial Statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the Consolidated Financial Statements included performing procedures to assess the risks of material misstatement of the Consolidated Financial Statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the Consolidated Financial Statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the Consolidated Financial Statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and limitations of internal control over financial reporting
A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and

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directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

PricewaterhouseCoopers LLP

Chartered Professional Accountants
Calgary, Alberta, Canada

February 28, 2019

We have served as the Company's auditor since 1972.

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CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

For the years ended December 31 ($ millions)	Notes	2018	2017
			(restated – note 5)
Revenues and Other Income			
Operating revenues, net of royalties	6	38 542	31 954
Other income	7	444	125
		38 986	32 079
Expenses			
Purchases of crude oil and products		14 133	11 121
Operating, selling and general	8 and 24	10 573	9 188
Transportation		1 319	997
Depreciation, depletion, amortization and impairment	15	5 738	5 601
Exploration		122	104
Gain on disposal of assets	33, 34 and 36	(24)	(602)
Financing expenses (income)	9	2 142	(246)
		34 003	26 163
Earnings before Income Taxes		4 983	5 916
Income Tax Expense	10		
Current		1 250	1 209
Deferred		440	249
		1 690	1 458
Net Earnings		3 293	4 458
Other Comprehensive Income (Loss)			
Items That May be Subsequently Reclassified to Earnings:			
Foreign currency translation adjustment		267	(198)
Items That Will Not be Reclassified to Earnings:			
Actuarial gain on employee retirement benefit plans, net of income taxes		103	31
Other Comprehensive Income (Loss)		370	(167)
Total Comprehensive Income		3 663	4 291
Per Common Share (dollars)	11		
Net earnings – basic		2.03	2.68
Net earnings – diluted		2.02	2.68
Cash dividends		1.44	1.28

The accompanying notes are an integral part of the consolidated financial statements.

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CONSOLIDATED BALANCE SHEETS

($ millions)	Notes	December 31 2018	December 31 2017
Assets			
Current assets			
Cash and cash equivalents	12	**2 221**	2 672
Accounts receivable		**3 206**	3 281
Inventories	14	**3 159**	3 468
Income taxes receivable		**114**	156
Total current assets		**8 700**	9 577
Property, plant and equipment, net	15, 31-34 and 36	**74 245**	73 493
Exploration and evaluation	16	**2 319**	2 052
Other assets	17	**1 126**	1 211
Goodwill and other intangible assets	18	**3 061**	3 061
Deferred income taxes	10	**128**	100
Total assets		**89 579**	89 494
Liabilities and Shareholders' Equity			
Current liabilities			
Short-term debt	19	**3 231**	2 136
Current portion of long-term debt	19	**229**	71
Accounts payable and accrued liabilities		**5 647**	6 203
Current portion of provisions	22	**667**	722
Income taxes payable		**535**	425
Total current liabilities		**10 309**	9 557
Long-term debt	19	**13 890**	13 372
Other long-term liabilities	20 and 35	**2 346**	2 412
Provisions	22	**6 984**	7 237
Deferred income taxes	10	**12 045**	11 533
Equity		**44 005**	45 383
Total liabilities and shareholders' equity		**89 579**	89 494

The accompanying notes are an integral part of the consolidated financial statements.

Approved on behalf of the Board of Directors:

Steven W. Williams
Director
February 27, 2019

Patricia M. Bedient
Director

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CONSOLIDATED STATEMENTS OF CASH FLOWS

For the years ended December 31 ($ millions)	Notes	2018	2017
Operating Activities			
Net earnings		3 293	4 458
Adjustments for:			
Depreciation, depletion, amortization and impairment		5 738	5 601
Deferred income taxes		440	249
Accretion		266	247
Unrealized foreign exchange loss (gain) on U.S. dollar denominated debt		1 090	(771)
Change in fair value of financial instruments and trading inventory		(179)	128
Gain on disposal of assets	33, 34 and 36	(24)	(474)
Loss on extinguishment of long-term debt	9	3	51
Share-based compensation		(117)	31
Exploration		11	41
Settlement of decommissioning and restoration liabilities		(469)	(353)
Other		120	(69)
Decrease (increase) in non-cash working capital	13	408	(173)
Cash flow provided by operating activities		10 580	8 966
Investing Activities			
Capital and exploration expenditures		(5 406)	(6 551)
Acquisitions	31, 32 and 36	(1 230)	(308)
Proceeds from disposal of assets		84	1 611
Other investments	36	(170)	(38)
Decrease in non-cash working capital	13	25	267
Cash flow used in investing activities		(6 697)	(5 019)
Financing Activities			
Net increase in short-term debt		866	981
Net decrease in long-term debt	19	(186)	(3 283)
Issuance of long-term debt	19	—	905
Issuance of common shares under share option plans		286	228
Purchase of common shares	23	(3 053)	(1 413)
(Distributions) and proceeds from sale, relating to non-controlling interest	35	(6)	483
Dividends paid on common shares		(2 333)	(2 124)
Cash flow used in financing activities		(4 426)	(4 223)
Decrease in Cash and Cash Equivalents		(543)	(276)
Effect of foreign exchange on cash and cash equivalents		92	(68)
Cash and cash equivalents at beginning of year		2 672	3 016
Cash and Cash Equivalents at End of Year		2 221	2 672
Supplementary Cash Flow Information			
Interest paid		800	941
Income taxes paid		645	557

The accompanying notes are an integral part of the consolidated financial statements.

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CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

($ millions)	Notes	Share Capital	Contributed Surplus	Accumulated Other Comprehensive Income	Retained Earnings	Total	Number of Common Shares (thousands)
At December 31, 2016		26 942	588	1 007	16 093	44 630	1 667 914
Net earnings		—	—	—	4 458	4 458	—
Foreign currency translation adjustment		—	—	(198)	—	(198)	—
Actuarial gain on employee retirement benefit plans, net of income taxes of $19		—	—	—	31	31	—
Total comprehensive (loss) income		—	—	(198)	4 489	4 291	—
Issued under share option plans		297	(69)	—	—	228	6 223
Purchase of common shares for cancellation	23	(536)	—	—	(877)	(1 413)	(33 154)
Change in liability for share purchase commitment	23	(97)	—	—	(180)	(277)	—
Share-based compensation		—	48	—	—	48	—
Dividends paid on common shares		—	—	—	(2 124)	(2 124)	—
At December 31, 2017		26 606	567	809	17 401	45 383	1 640 983
Net earnings		—	—	—	3 293	3 293	—
Foreign currency translation adjustment		—	—	267	—	267	—
Actuarial gain on employee retirement benefit plans, net of income taxes of $39		—	—	—	103	103	—
Total comprehensive income		—	—	267	3 396	3 663	—
Issued under share option plans		358	(73)	—	—	285	7 927
Purchase of common shares for cancellation	23	(1 040)	—	—	(2 013)	(3 053)	(64 426)
Change in liability for share purchase commitment	23	(14)	—	—	28	14	—
Share-based compensation		—	46	—	—	46	—
Dividends paid on common shares		—	—	—	(2 333)	(2 333)	—
At December 31, 2018		25 910	540	1 076	16 479	44 005	1 584 484

The accompanying notes are an integral part of the consolidated financial statements.

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1. REPORTING ENTITY AND DESCRIPTION OF THE BUSINESS

Suncor Energy Inc. (Suncor or the company) is an integrated energy company headquartered in Canada. Suncor's operations include oil sands development and upgrading, onshore and offshore oil and gas production, petroleum refining, and product marketing primarily under the Petro-Canada® brand.

The address of the company's registered office is 150 – 6th Avenue S.W., Calgary, Alberta, Canada, T2P 3E3.

2. BASIS OF PREPARATION

(a) Statement of Compliance

These consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB) and Canadian generally accepted accounting principles (GAAP) as contained within Part 1 of the Canadian Institute of Chartered Professional Accountants Handbook.

Suncor's accounting policies are based on IFRS issued and outstanding for all periods presented in these consolidated financial statements. These consolidated financial statements were approved by the Board of Directors on February 27, 2019.

(b) Basis of Measurement

The consolidated financial statements are prepared on a historical cost basis except as detailed in the accounting policies disclosed in note 3. The accounting policies described in note 3 have been applied consistently to all periods presented in these consolidated financial statements.

(c) Functional Currency and Presentation Currency

These consolidated financial statements are presented in Canadian dollars, which is the company's functional currency.

(d) Use of Estimates, Assumptions and Judgments

The timely preparation of financial statements requires that management make estimates and assumptions and use judgment. Accordingly, actual results may differ from estimated amounts as future confirming events occur. Significant estimates and judgments used in the preparation of the consolidated financial statements are described in note 4.

3. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

(a) Principles of Consolidation

The company consolidates its interests in entities it controls. Control comprises the power to govern an entity's financial and operating policies to obtain benefits from its activities, and is a matter of judgment. All intercompany balances and transactions are eliminated on consolidation.

(b) Joint Arrangements

Joint arrangements represent arrangements in which two or more parties have joint control established by a contractual agreement. Joint control only exists when decisions about the activities that most significantly affect the returns of the investee are unanimous. Joint arrangements can be classified as either a joint operation or a joint venture. The classification of joint arrangements requires judgment. In determining the classification of its joint arrangements, the company considers the contractual rights and obligations of each investor and whether the legal structure of the joint arrangement gives the entity direct rights to the assets and obligations for the liabilities.

Where the company has rights to the assets and obligations for the liabilities of a joint arrangement, such arrangement is classified as a joint operation and the company's proportionate share of the joint operation's assets, liabilities, revenues and expenses are included in the consolidated financial statements, on a line-by-line basis.

Where the company has rights to the net assets of an arrangement, the arrangement is classified as a joint venture and accounted for using the equity method of accounting. Under the equity method, the company's initial investment is recognized at cost and subsequently adjusted for the company's share of the joint venture's income or loss, less distributions received.

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(c) Foreign Currency Translation

Functional currencies of the company's individual entities are the currency of the primary economic environment in which the entity operates. Transactions in foreign currencies are translated to the appropriate functional currency at foreign exchange rates that approximate those on the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are translated to the appropriate functional currency at foreign exchange rates as at the balance sheet date. Foreign exchange differences arising on translation are recognized in net earnings. Non-monetary assets that are measured in a foreign currency at historical cost are translated using the exchange rate at the date of the transaction.

In preparing the company's consolidated financial statements, the financial statements of each entity are translated into Canadian dollars. The assets and liabilities of foreign operations are translated into Canadian dollars at exchange rates as at the balance sheet date. Revenues and expenses of foreign operations are translated into Canadian dollars using foreign exchange rates that approximate those on the date of the underlying transaction. Foreign exchange differences are recognized in Other Comprehensive Income.

If the company or any of its entities disposes of its entire interest in a foreign operation, or loses control, joint control, or significant influence over a foreign operation, the accumulated foreign currency translation gains or losses related to the foreign operation are recognized in net earnings.

(d) Revenues

Revenue from the sale of crude oil, natural gas, natural gas liquids, purchased products and refined petroleum products is recorded when title passes to the customer and collection is reasonably assured, in accordance with specified contract terms, and is based on the consideration that the company expects to receive for the transfer of the goods to the customer.

Revenue from properties in which the company has an interest with other producers is recognized on the basis of the company's net working interest. For operations not pursuant to production sharing contracts (PSCs), crude oil and natural gas sold below or above the company's working-interest share of production results in production underlifts or overlifts, respectively. Underlifts are recorded as a receivable at market value with a corresponding increase to revenue, while overlifts are recorded as a payable at market value with a corresponding decrease to revenue. Changes in the value of underlifted or overlifted barrels are recognized in revenue when the barrels are settled. Revenue from oil and natural gas production is recorded net of royalty expense.

International operations conducted pursuant to PSCs are reflected in the consolidated financial statements based on the company's working interest. Each PSC establishes the exploration, development and operating costs the company is required to fund and establishes specific terms for the company to recover these costs and to share in the production profits. Cost recovery is generally limited to a specified percentage of production during each fiscal year (Cost Recovery Oil). Any Cost Recovery Oil remaining after costs have been recovered is referred to as Excess Petroleum and is shared between the company and the respective government. Assuming collection is reasonably assured, the company's share of Cost Recovery Oil and Excess Petroleum are reported as revenue when the sale of product to a third party occurs. Revenue also includes income taxes paid on the company's behalf by government joint venture partners.

(e) Cash and Cash Equivalents

Cash and cash equivalents consist primarily of cash in banks, term deposits, certificates of deposit and all other highly liquid investments at the time of purchase.

(f) Inventories

Inventories of crude oil and refined products, other than inventories held for trading purposes, are valued at the lower of cost, using the first-in, first-out method, and net realizable value. Costs include direct expenditures incurred in bringing an item or product to its existing condition and location. Materials and supplies are valued at the lower of average cost and net realizable value.

Inventories held for trading purposes in the company's energy trading operations are carried at fair value less costs of disposal, and any changes in fair value are recognized within Other Income.

(g) Assets Held for Sale

Assets and associated liabilities are classified as held for sale if their carrying amounts are expected to be recovered through a disposition rather than through continued use. The assets or disposal groups are measured at the lower of their carrying amount or estimated fair value less costs of disposal. Impairment losses on initial classification as well as subsequent gains or losses on remeasurement are recognized in Depreciation, Depletion, Amortization and Impairment. When the assets or

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disposal groups are sold, the gains or losses on the sale are recognized in Gain on Disposal of Assets. Assets classified as held for sale are not depreciated, depleted or amortized.

(h) Exploration and Evaluation Assets

The costs to acquire non-producing oil and gas properties or licences to explore, drill exploratory wells and the costs to evaluate the commercial potential of underlying resources, including related borrowing costs, are initially capitalized as Exploration and Evaluation assets. Certain exploration costs, including geological, geophysical and seismic expenditures and delineation on oil sands properties, are charged to Exploration expense as incurred.

Exploration and Evaluation assets are subject to technical, commercial and management review to confirm the continued intent to develop and extract the underlying resources. If an area or exploration well is no longer considered commercially viable, the related capitalized costs are charged to Exploration expense.

When management determines with reasonable certainty that an Exploration and Evaluation asset will be developed, as evidenced by the classification of proved or probable reserves and the appropriate internal and external approvals, the asset is transferred to Property, Plant and Equipment.

(i) Property, Plant and Equipment

Property, Plant and Equipment are initially recorded at cost.

The costs to acquire developed or producing oil and gas properties, and to develop oil and gas properties, including completing geological and geophysical surveys and drilling development wells, and the costs to construct and install development infrastructure, such as wellhead equipment, well platforms, well pairs, offshore platforms and subsea structures, are capitalized as oil and gas properties within Property, Plant and Equipment.

The costs to construct, install and commission, or acquire, oil and gas production equipment, including oil sands upgraders, extraction plants, mine equipment, processing and power generation facilities, utility plants, and all renewable energy, refining, and marketing assets, are capitalized as plant and equipment within Property, Plant and Equipment.

Stripping activity required to access oil sands mining resources incurred in the initial development phase is capitalized as part of the construction cost of the mine. Stripping costs incurred in the production phase are charged to expense as they normally relate to production for the current period.

The costs of planned major inspection, overhaul and turnaround activities that maintain Property, Plant and Equipment and benefit future years of operations are capitalized. Recurring planned maintenance activities performed on shorter intervals are expensed as operating costs. Replacements outside of a major inspection, overhaul or turnaround are capitalized when it is probable that future economic benefits will be realized by the company and the associated carrying amount of the replaced component is derecognized.

Leases that transfer substantially all the benefits and risks of ownership of the leased asset to the company are recorded as finance lease assets within Property, Plant and Equipment. Costs for all other leases are recorded within Purchases of Crude Oil and Products, Operating, Selling and General, and/or Transportation expense as incurred. The expense line item classification is determined based on the business activity associated with the leased asset.

Borrowing costs relating to assets that take over one year to construct are capitalized as part of the asset. Capitalization of borrowing costs ceases when the asset is in the location and condition necessary for its intended use, and is suspended when construction of an asset is ceased for extended periods.

(j) Depreciation, Depletion and Amortization

Exploration and Evaluation assets are not subject to depreciation, depletion and amortization. Once transferred to oil and gas properties within Property, Plant and Equipment and commercial production commences, these costs are depleted on a unit-of-production basis over proved developed reserves, with the exception of exploration and evaluation costs associated with oil sands mines, which are depreciated on a straight-line basis over the life of the mine, and property acquisition costs, which are depleted over proved reserves.

Capital expenditures are not depreciated or depleted until assets are substantially complete and ready for their intended use.

Costs to develop oil and gas properties other than certain oil sands mining assets, including costs of dedicated infrastructure, such as well pads and wellhead equipment, are depleted on a unit-of-production basis over proved developed reserves. A portion of these costs may not be depleted if they relate to undeveloped reserves. Costs related to offshore facilities are depleted over proved and probable reserves. Costs to develop and construct oil sands mines are depreciated on a straight-line basis over the life of the mine.

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Major components of Property, Plant and Equipment are depreciated on a straight-line basis over their expected useful lives.

Oil sands upgraders, extraction plants and mine facilities	20 to 40 years
Oil sands mine equipment	5 to 15 years
Oil sands in situ processing facilities	30 years
Power generation and utility plants	30 to 40 years
Refineries and other processing plants	20 to 40 years
Marketing and other distribution assets	10 to 40 years

The costs of major inspection, overhaul and turnaround activities that are capitalized are depreciated on a straight-line basis over the period to the next scheduled activity, which varies from two to five years.

Depreciation, depletion and amortization rates are reviewed annually or when events or conditions occur that impact capitalized costs, reserves or estimated service lives.

Finance lease assets within Property, Plant and Equipment are depreciated on a straight-line basis over the shorter of the estimated useful life of the leased asset or the lease term.

(k) Goodwill and Other Intangible Assets

The company accounts for business combinations using the acquisition method. The excess of the purchase price over the fair value of the identifiable net assets represents goodwill, and is allocated to the cash generating units (CGUs) or groups of CGUs expected to benefit from the business combination.

Other intangible assets include acquired customer lists and brand value.

Goodwill and brand value have indefinite useful lives and are not subject to amortization. Customer lists are amortized over their expected useful lives, which range from five to ten years. Expected useful lives of other intangible assets are reviewed on an annual basis.

(l) Impairment of Assets

Non-Financial Assets

Property, Plant and Equipment and Exploration and Evaluation assets are reviewed quarterly to assess whether there is any indication of impairment. Goodwill and intangible assets that have an indefinite useful life are tested for impairment annually. Exploration and Evaluation assets are also tested for impairment immediately prior to being transferred to Property, Plant and Equipment.

If any indication of impairment exists, an estimate of the asset's recoverable amount is calculated as the higher of the fair value less costs of disposal and value-in-use. In determining fair value less costs of disposal, recent market transactions are considered, if available. In the absence of such transactions, an appropriate valuation model is used. Value-in-use is assessed using the present value of the expected future cash flows of the relevant asset. If the asset does not generate cash inflows that are largely independent of those from other assets or groups of assets, the asset is tested as part of a CGU, which is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. An impairment loss is the amount by which the carrying amount of the individual asset or CGU exceeds its recoverable amount.

Impairments may be reversed for all CGUs and individual assets, other than goodwill, if there has been a change in the estimates and judgments used to determine the asset's recoverable amount. If such indication exists, the carrying amount of the CGU or asset is increased to its revised recoverable amount which cannot exceed the carrying amount that would have been determined, net of depletion, depreciation and amortization, had no impairment been recognized.

Impairments and impairment reversals are recognized within Depreciation, Depletion, Amortization and Impairment.

Financial Assets

At each reporting date, the company assesses whether there is evidence indicating that financial assets measured at amortized cost may be impaired. If a financial asset measured at amortized cost is determined to be impaired, the impairment is recognized in Operating, Selling and General expense.

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(m) Provisions

Provisions are recognized by the company when it has a legal or constructive obligation as a result of past events, it is probable that an outflow of economic resources will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

Provisions are recognized for decommissioning and restoration obligations associated with the company's Exploration and Evaluation assets and Property, Plant and Equipment. Provisions for decommissioning and restoration obligations are measured at the present value of management's best estimate of the future cash flows required to settle the present obligation, using the credit-adjusted risk-free interest rate. The value of the obligation is added to the carrying amount of the associated asset and amortized over the useful life of the asset. The provision is accreted over time through Financing Expense with actual expenditures charged against the accumulated obligation. Changes in the future cash flow estimates resulting from revisions to the estimated timing or amount of undiscounted cash flows are recognized as a change in the decommissioning and restoration provision and related asset.

(n) Income Taxes

The company follows the liability method of accounting for income taxes whereby deferred income taxes are recorded for the effect of differences between the accounting and income tax basis of an asset or liability. Deferred income tax assets and liabilities are measured using enacted or substantively enacted income tax rates as at the balance sheet date that are anticipated to apply to taxable income in the years in which temporary differences are anticipated to be recovered or settled. Changes to these balances are recognized in net earnings or in Other Comprehensive Income in the period they occur. Investment tax credits are recorded as a reduction to the related expenditures.

The company recognizes the financial statement impact of a tax filing position when it is probable, based on the technical merits, that the position will be sustained upon audit. The company assesses possible outcomes and their associated probabilities. If the company determines payment is probable, it measures the tax provision at the best estimate of the amount of tax payable.

(o) Pensions and Other Post-Retirement Benefits

The company sponsors defined benefit pension plans, defined contribution pension plans and other post-retirement benefits.

The cost of pension benefits earned by employees in the defined contribution pension plan is expensed as incurred. The cost of defined benefit pension plans and other post-retirement benefits are actuarially determined using the projected unit credit method based on present pay levels and management's best estimates of demographic and financial assumptions. Pension benefits earned during the current year are recorded in Operating, Selling and General expense. Interest costs on the net unfunded obligation are recorded in Financing Expense. Any actuarial gains or losses are recognized immediately through Other Comprehensive Income and transferred directly to Retained Earnings.

The liability recognized on the balance sheet is the present value of the defined benefit obligations net of the fair value of plan assets.

(p) Share-Based Compensation Plans

Under the company's share-based compensation plans, share-based awards may be granted to executives, employees and non-employee directors. Compensation expense is recorded in Operating, Selling and General expense.

Share-based compensation awards that settle in cash or have the option to settle in cash or shares are accounted for as cash-settled plans. These are measured at fair value each reporting period using the Black-Scholes options pricing model. The expense is recognized over the vesting period, with a corresponding adjustment to the outstanding liability. When awards are surrendered for cash, the cash settlement paid reduces the outstanding liability. When awards are exercised for common shares, consideration paid by the holder and the previously recognized liability associated with the options are recorded to Share Capital.

Stock options that give the holder the right to purchase common shares are accounted for as equity-settled plans. The expense is based on the fair value of the options at the time of grant using the Black-Scholes options pricing model and is recognized over the vesting periods of the respective options. A corresponding increase is recorded to Contributed Surplus. Consideration paid to the company on exercise of options is credited to Share Capital and the associated amount in Contributed Surplus is reclassified to Share Capital.

(q) Financial Instruments

The company classifies its financial instruments into one of the following categories: fair value through profit or loss (FVTPL), fair value through other comprehensive income, or at amortized cost. This determination is made at initial recognition. All

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financial instruments are initially recognized at fair value on the balance sheet, net of any transaction costs except for financial instruments classified as fair value through profit and loss, where transaction costs are expensed as incurred. Subsequent measurement of financial instruments is based on their classification. The company classifies its derivative financial instruments as FVTPL, cash and cash equivalents and accounts receivable as financial assets at amortized cost, and accounts payable and accrued liabilities, debt, and other long-term liabilities as financial liabilities at amortized cost.

In circumstances where the company consolidates a subsidiary in which there are other owners with a non-controlling interest and the subsidiary has a non-discretionary obligation to distribute cash based on a predetermined formula to the non-controlling owners, the non-controlling interest is classified as a financial liability rather than equity in accordance with IAS 32 *Financial Instruments: Presentation*. The non-controlling interest liability is classified as an amortized cost liability and is presented within Other Long-Term Liabilities. The balance is accreted based on current period interest expense recorded using the effective interest method and decreased based on distributions made to the non-controlling owners.

The company uses derivative financial instruments, such as physical and financial contracts, either to manage certain exposures to fluctuations in interest rates, commodity prices and foreign exchange rates, as part of its overall risk management program. Earnings impacts from derivatives used to manage a particular risk are reported as part of Other Income in the related operating segment. Gains or losses from trading activities are reported in Other Income as part of the Corporate, Energy Trading and Eliminations segment.

Certain physical commodity contracts, when used for trading purposes, are deemed to be derivative financial instruments for accounting purposes. Physical commodity contracts entered into for the purpose of receipt or delivery in accordance with the company's expected purchase, sale or usage requirements are not considered to be derivative financial instruments.

Derivatives embedded in other financial instruments or other host contracts are recorded as separate derivatives when their risks and characteristics are not closely related to those of the host contract.

(r) Hedging Activities

The company may apply hedge accounting to arrangements that qualify for designated hedge accounting treatment. Documentation is prepared at the inception of a hedge relationship in order to qualify for hedge accounting. Designated hedges are assessed at each reporting date to determine if the relationship between the derivative and the underlying hedged item accomplishes the company's risk management objectives for financial and non-financial risk exposures.

If the derivative is designated as a fair value hedge, changes in the fair value of the derivative and in the fair value of the underlying hedged item are recognized in net earnings. If the derivative is designated as a cash flow hedge, the effective portions of the changes in fair value of the derivative are initially recorded in Other Comprehensive Income and are recognized in net earnings when the hedged item is realized. Ineffective portions of changes in the fair value of cash flow hedges are recognized in net earnings immediately. Changes in the fair value of a derivative designated in a fair value or cash flow hedge are recognized in the same line item as the underlying hedged item.

The company did not apply hedge accounting to any of its derivative instruments during 2017 or 2018.

(s) Share Capital

Common shares are classified as equity. Incremental costs directly attributable to the issuance of common shares are recognized as a deduction from equity, net of any tax effects. When the company repurchases its own common shares, share capital is reduced by the average carrying value of the shares repurchased. The excess of the purchase price over the average carrying value is recognized as a deduction from Retained Earnings. Shares are cancelled upon repurchase.

(t) Dividend Distributions

Dividends on common shares are recognized in the period in which the dividends are declared by the company's Board of Directors.

(u) Earnings per Share

Basic earnings per share is calculated by dividing the net earnings for the period by the weighted average number of common shares outstanding during the period.

Diluted earnings per share is calculated by adjusting the weighted average number of common shares outstanding for dilutive common shares related to the company's share-based compensation plans. The number of shares included is computed using the treasury stock method. As these awards can be exchanged for common shares of the company, they are considered potentially dilutive and are included in the calculation of the company's diluted net earnings per share if they have a dilutive impact in the period.

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(v) Emissions Obligations

Emissions obligations are measured at the weighted average cost per unit of emissions expected to be incurred in the compliance period and are recorded in the period in which the emissions occur.

Purchases of emissions rights are recognized as Other Assets on the balance sheet and are measured at historical cost. Emissions rights received by way of grant are recorded at a nominal amount.

4. SIGNIFICANT ACCOUNTING ESTIMATES AND JUDGMENTS

The preparation of financial statements in accordance with IFRS requires management to make estimates and judgments that affect reported assets, liabilities, revenues, expenses, gains, losses, and disclosures of contingencies. These estimates and judgments are subject to change based on experience and new information. The financial statement areas that require significant estimates and judgments are as follows:

Oil and Gas Reserves

Measurements of depletion, depreciation, impairment, and decommissioning and restoration obligations are determined in part based on the company's estimate of oil and gas reserves. The estimation of reserves is an inherently complex process and involves the exercise of professional judgment. All reserves have been evaluated at December 31, 2018 by independent qualified reserves evaluators. Oil and gas reserves estimates are based on a range of geological, technical and economic factors, including projected future rates of production, projected future commodity prices, engineering data, and the timing and amount of future expenditures, all of which are subject to uncertainty. Estimates reflect market and regulatory conditions existing at December 31, 2018, which could differ significantly from other points in time throughout the year, or future periods. Changes in market and regulatory conditions and assumptions can materially impact the estimation of net reserves.

Oil and Gas Activities

The company is required to apply judgment when designating the nature of oil and gas activities as exploration, evaluation, development or production, and when determining whether the costs of these activities shall be expensed or capitalized.

Exploration and Evaluation Costs

Certain exploration and evaluation costs are initially capitalized with the intent to establish commercially viable reserves. The company is required to make judgments about future events and circumstances and applies estimates to assess the economic viability of extracting the underlying resources. The costs are subject to technical, commercial and management review to confirm the continued intent to develop the project. Level of drilling success or changes to project economics, resource quantities, expected production techniques, production costs and required capital expenditures are important judgments when making this determination. Management uses judgment to determine when these costs are reclassified to Property, Plant and Equipment based on several factors, including the existence of reserves, appropriate approvals from regulatory bodies and the company's internal project approval process.

Determination of Cash Generating Units (CGUs)

A CGU is the lowest grouping of integrated assets that generate identifiable cash inflows that are largely independent of the cash inflows of other assets or groups of assets. The allocation of assets into CGUs requires significant judgment and interpretations with respect to the integration between assets, the existence of active markets, similar exposure to market risks, shared infrastructure, and the way in which management monitors the operations.

Asset Impairment and Reversals

Management applies judgment in assessing the existence of impairment and impairment reversal indicators based on various internal and external factors.

The recoverable amount of CGUs and individual assets is determined based on the higher of fair value less costs of disposal or value-in-use calculations. The key estimates the company applies in determining the recoverable amount normally include estimated future commodity prices, expected production volumes, future operating and development costs, discount rates, tax rates, and refining margins. In determining the recoverable amount, management may also be required to make judgments regarding the likelihood of occurrence of a future event. Changes to these estimates and judgments will affect the recoverable amounts of CGUs and individual assets and may then require a material adjustment to their related carrying value.

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Decommissioning and Restoration Costs

The company recognizes liabilities for the future decommissioning and restoration of Exploration and Evaluation assets and Property, Plant and Equipment based on estimated future decommissioning and restoration costs. Management applies judgment in assessing the existence and extent as well as the expected method of reclamation of the company's decommissioning and restoration obligations at the end of each reporting period. Management also uses judgment to determine whether the nature of the activities performed is related to decommissioning and restoration activities or normal operating activities.

Actual costs are uncertain and estimates may vary as a result of changes to relevant laws and regulations related to the use of certain technologies, the emergence of new technology, operating experience, prices and closure plans. The estimated timing of future decommissioning and restoration may change due to certain factors, including reserves life. Changes to estimates related to future expected costs, discount rates, inflation assumptions, and timing may have a material impact on the amounts presented.

Employee Future Benefits

The company provides benefits to employees, including pensions and other post-retirement benefits. The cost of defined benefit pension plans and other post-retirement benefits received by employees is estimated based on actuarial valuation methods that require professional judgment. Estimates typically used in determining these amounts include, as applicable, rates of employee turnover, future claim costs, discount rates, future salary and benefit levels, the return on plan assets, mortality rates and future medical costs. Changes to these estimates may have a material impact on the amounts presented.

Other Provisions

The determination of other provisions, including, but not limited to, provisions for royalty disputes, onerous contracts, litigation and constructive obligations, is a complex process that involves judgment about the outcomes of future events, the interpretation of laws and regulations, and estimates on the timing and amount of expected future cash flows and discount rates.

Income Taxes

Management evaluates tax positions, annually or when circumstances require, which involves judgment and could be subject to differing interpretations of applicable tax legislation. The company recognizes a tax provision when a payment to tax authorities is considered probable. However, the results of audits and reassessments and changes in the interpretations of standards may result in changes to those positions and, potentially, a material increase or decrease in the company's assets, liabilities and net earnings.

Deferred Income Taxes

Deferred tax assets are recognized when it is considered probable that deductible temporary differences will be recovered in the foreseeable future. To the extent that future taxable income and the application of existing tax laws in each jurisdiction differ significantly from the company's estimate, the ability of the company to realize the deferred tax assets could be impacted.

Deferred tax liabilities are recognized when there are taxable temporary differences that will reverse and result in a future outflow of funds to a taxation authority. The company records a provision for the amount that is expected to be settled, which requires judgment as to the ultimate outcome. Deferred tax liabilities could be impacted by changes in the company's judgment of the likelihood of a future outflow and estimates of the expected settlement amount, timing of reversals, and the tax laws in the jurisdictions in which the company operates.

Fair Value of Financial Instruments

The fair value of a financial instrument is determined, whenever possible, based on observable market data. If not available, the company uses third-party models and valuation methodologies that utilize observable market data that includes forward commodity prices, foreign exchange rates and interest rates to estimate the fair value of financial instruments, including derivatives. In addition to market information, the company incorporates transaction-specific details that market participants would utilize in a fair value measurement, including the impact of non-performance risk.

Functional Currency

The designation of the functional currency of the company and each of its subsidiaries is a management judgment based on the composition of revenue and costs in the locations in which it operates.

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Fair Value of Share-Based Compensation

The fair values of equity-settled and cash-settled share-based payment awards are estimated using the Black-Scholes options pricing model. These estimates depend on certain assumptions, including share price, volatility, risk-free interest rate, the term of the awards, the forfeiture rate and the annual dividend yield, which, by their nature, are subject to measurement uncertainty.

5. NEW IFRS STANDARDS

(a) Adoption of New IFRS Standards

Impact of the application of IFRS 9

Effective January 1, 2018, the company adopted IFRS 9 *Financial Instruments* (IFRS 9) which replaces the multiple classification and measurement models for financial assets under IAS 39 *Financial Instruments* (IAS 39) with a new model that has two measurement categories: amortized cost and fair value, either through profit/loss (FVTPL) or through other comprehensive income. This determination is made at initial recognition. For financial liabilities, the new standard retains most of the IAS 39 requirements; however, the main change arises in cases where the company chooses to designate a financial liability as FVTPL. In these situations, the portion of the fair value change related to the company's own credit risk is recognized in other comprehensive income rather than net earnings. As a result of adopting IFRS 9, the company's financial assets classified as loans and receivables at December 31, 2017 have been reclassified to financial assets at amortized cost; however, there is no impact to the measurement of these financial assets. There were no changes to the classifications of the company's financial liabilities. The classification and measurement guidance was adopted retrospectively in accordance with the transitional provisions of IFRS 9.

The company also adopted the new hedge accounting guidance in IFRS 9. The new hedge accounting guidance replaces strict quantitative tests of effectiveness with less restrictive assessments of how well the hedging instrument accomplishes the company's risk management objectives for financial and non-financial risk exposures. IFRS 9 also allows the company to hedge risk components of non-financial items which meet certain measurability or identifiable characteristics. The company did not apply hedge accounting to any of its derivative instruments during 2018.

After adoption of IFRS 9, the company's accounting policies are substantially the same as at December 31, 2017 and there were no impacts to the company's financial statements, except for the change in financial asset categories as discussed above.

Impact of the application of IFRS 15

On January 1, 2018, the company adopted IFRS 15 *Revenue from Contracts with Customers* (IFRS 15), which sets out guidelines for the recognition of revenue, using the retrospective method,.

IFRS 15 replaces IAS 18 *Revenue* and presents a new single model for recognition of revenue from contracts with customers. The model features a contract-based five-step analysis of transactions to determine the nature of an entity's obligation to perform and whether, how much, and when revenue is recognized.

Under IFRS 15, the revenue from the sale of commodities and other operating revenue the company earns represent contractual arrangements with customers. The company recognizes revenue when title of the product is transferred to the buyer and collection is reasonably assured in accordance with specified contract terms. All operating revenue is generally earned at a point in time and is based on the consideration that the company expects to receive for the transfer of the goods to the customers.

The company has reviewed its sources of revenue and major contracts with customers using the guidance found in IFRS 15 and determined there are no material changes to the timing and measurement of the company's revenue in the reporting period, as compared to the provisions of the previous standard. In accordance with the new standard, the company assessed its principal versus agent requirements and the impact was a decrease in revenue, with a corresponding decrease to Operating, Selling and General expense and Transportation expense, resulting in no impact on the company's consolidated net earnings.

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Adjustments to Consolidated Statements of Comprehensive Income

($ millions, decrease)	For the twelve months ended December 31 2017 IFRS 15
Revenues and Other Income	
Operating revenues, net of royalties	(97)
Expenses	
Operating, selling and general	(57)
Transportation	(40)
Net Earnings	—
Total Comprehensive Income	—

(b) Recently Announced Accounting Pronouncements

The standards, amendments and interpretations that are issued, but not yet effective up to the date of authorization of the company's consolidated financial statements, and that may have an impact on the disclosures and financial position of the company are disclosed below. The company intends to adopt these standards, amendments and interpretations when they become effective.

IFRS 16 Leases

In January 2016, the IASB issued IFRS 16 *Leases* (IFRS 16) which replaces the existing leasing standard IAS 17 *Leases* and requires the recognition of leases on the balance sheet, with optional exemptions for short-term leases where the term is twelve months or less and for leases of low-value items. IFRS 16 effectively removes the classification of leases as either finance or operating leases and treats all leases as finance leases for lessees. The accounting treatment for lessors remains essentially unchanged, with the requirement to classify leases as either finance or operating.

The company will adopt the standard on the effective date of January 1, 2019 and has selected the modified retrospective transition approach. The company has also elected to apply the optional exemption for short-term leases. The company has completed the implementation of an information technology solution, including uploading of data for identified leases into its leasing system. All contracts have been reviewed, new business processes have been developed and internal controls have been implemented.

IFRS 16 will have an impact on the following components of the consolidated financial statements of the company:

Consolidated Balance Sheets: IFRS 16 requires the recognition of lease liabilities and right of use (ROU) assets for all leases except for the optional exemptions for low-value assets and short-term leases. The company will recognize the lease liability at the present value of the remaining lease payments discounted using the company's incremental borrowing rate upon adoption of the new standard. Upon transition, the company will measure the ROU assets equal to the lease liability, adjusted by the amount of any prepaid payments or onerous contracts recognized in the December 31, 2018 consolidated financial statements. The company will recognize additional ROU assets and lease liabilities of approximately $1.8 billion, subject to finalization of reviews, as of January 1, 2019.

Consolidated Statements of Comprehensive Income: Adoption of IFRS 16 will result in an increase to Depreciation, Depletion and Amortization expense due to the recognition of ROU assets, an increase to Financing expense from the unwinding of the discounted value of the lease liabilities and a decrease to Operating, Selling and General expense, Purchases of Crude Oil and Products expense, and Transportation expense. Based on the company's leases at January 1, 2019, this standard will not have a material impact on consolidated net earnings.

Consolidated Statements of Cash Flows: Due to the change in the presentation of former operating lease expenses, Cash flow from operating activities will increase due to the decrease in Operating, Selling and General expense, Purchases of Crude Oil and Products expense, and Transportation expense, partially offset by increased Financing expense, which represents an operating activity for the company. Cash flow from financing activities will decrease due to the addition of principal payments for former operating leases. The overall impact to cash flow for the company will be unchanged.

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Uncertainty over Income Tax Treatments

In June 2017, the IASB issued IFRIC 23 *Uncertainty over Income Tax Treatments*. The interpretation clarifies the accounting for current and deferred tax liabilities and assets in circumstances in which there is uncertainty over income tax treatments. The interpretation requires an entity to consider whether it is probable that a taxation authority will accept an uncertain tax treatment. If the entity considers it to be not probable that a taxation authority will accept an uncertain tax provision the interpretation requires the entity to use the most likely amount or the expected value. The amendments are to be applied retrospectively and are effective for annual periods beginning on or after January 1, 2019, with earlier application permitted. The adoption of this amendment will not have any impact on the company's consolidated financial statements.

6. SEGMENTED INFORMATION

The company's operating segments are reported based on the nature of their products and services and management responsibility. The following summary describes the operations in each of the segments:

- Oil Sands includes the company's operations in the Athabasca oil sands in Alberta to develop and produce bitumen, synthetic crude oil and related products, through the recovery and upgrading of bitumen from mining and in situ operations. This segment also includes the company's joint interest in the Fort Hills partnership, partnership in the East Tank Farm blending and storage facility, as well as its ownership interest in the Syncrude oil sands mining and upgrading joint operation, located near Fort McMurray, Alberta. The individual operating segments related to mining operations, in situ, Fort Hills and Syncrude have been aggregated into one reportable segment (Oil Sands) due to the similar nature of their business activities, including the production of bitumen, and the single geographic area and regulatory environment in which they operate.
- Exploration and Production (E&P) includes offshore activity in East Coast Canada, with interests in the Hibernia, Terra Nova, White Rose and Hebron oilfields, the exploration and production of crude oil and natural gas at Buzzard and Golden Eagle Area Development, as well as development of the North Sea Rosebank Project, all in the United Kingdom (U.K.) and the development of the Oda and Fenja fields in Norway, and in Libya and Syria. Due to unrest in Syria, the company has declared force majeure under its contractual obligations, and Suncor's operations in Syria have been suspended indefinitely. Production in Libya remains partially shutin due to political unrest, and the timing of a return to normal operations continues to be uncertain.
- Refining and Marketing includes the refining of crude oil products, and the distribution and marketing of these and other purchased products through retail stations located in Canada and the United States (U.S.), as well as a previously owned lubricants plant located in Eastern Canada which was sold on February 1, 2017 (note 33).

The company also reports activities not directly attributable to an operating segment under Corporate, Energy Trading and Eliminations. This includes investments in renewables projects.

Intersegment sales of crude oil and natural gas are accounted for at market values and included, for segmented reporting, in revenues of the segment making the transfer and expenses of the segment receiving the transfer. Intersegment balances are eliminated on consolidation. Intersegment profit will not be recognized until the related product has been sold to third parties.

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For the years ended December 31 ($ millions)	Oil Sands 2018	Oil Sands 2017	Exploration and Production 2018	Exploration and Production 2017	Refining and Marketing 2018	Refining and Marketing 2017	Corporate, Energy Trading and Eliminations 2018	Corporate, Energy Trading and Eliminations 2017	Total 2018	Total 2017
		(restated – note 5)				(restated – note 5)		(restated – note 5)		(restated – note 5)
Revenues and Other Income										
Gross revenues	12 039	9 723	3 869	3 487	23 655	19 612	29	63	39 592	32 885
Intersegment revenues	3 704	3 551	—	—	69	92	(3 773)	(3 643)	—	—
Less: Royalties	(398)	(355)	(652)	(576)	—	—	—	—	(1 050)	(931)
Operating revenues, net of royalties	15 345	12 919	3 217	2 911	23 724	19 704	(3 744)	(3 580)	38 542	31 954
Other income (loss)	288	86	(71)	(14)	21	73	206	(20)	444	125
	15 633	13 005	3 146	2 897	23 745	19 777	(3 538)	(3 600)	38 986	32 079
Expenses										
Purchases of crude oil and products	1 563	623	—	—	16 656	14 011	(4 086)	(3 513)	14 133	11 121
Operating, selling and general	7 570	6 257	503	422	1 979	1 950	521	559	10 573	9 188
Transportation	1 144	827	85	86	137	110	(47)	(26)	1 319	997
Depreciation, depletion, amortization and impairment	4 024	3 782	967	1 028	683	685	64	106	5 738	5 601
Exploration	44	15	78	89	—	—	—	—	122	104
(Gain) loss on asset exchange and disposal of assets	(108)	(50)	91	—	(7)	(455)	—	(97)	(24)	(602)
Financing expenses (income)	320	180	46	36	7	15	1 769	(477)	2 142	(246)
	14 557	11 634	1 770	1 661	19 455	16 316	(1 779)	(3 448)	34 003	26 163
Earnings (Loss) before Income Taxes	1 076	1 371	1 376	1 236	4 290	3 461	(1 759)	(152)	4 983	5 916
Income Tax Expense (Recovery)										
Current	(128)	192	680	617	1 098	941	(400)	(541)	1 250	1 209
Deferred	351	170	(112)	(113)	39	(138)	162	330	440	249
	223	362	568	504	1 137	803	(238)	(211)	1 690	1 458
Net Earnings (Loss)	853	1 009	808	732	3 153	2 658	(1 521)	59	3 293	4 458
Capital and Exploration Expenditures	3 546	5 059	946	824	856	634	58	34	5 406	6 551

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Disaggregation of Revenue from Contracts with Customers and Intersegment Revenue

The company derives revenue from the transfer of goods mainly at a point in time in the following major commodities, revenue streams and geographical regions:

For the twelve months ended December 31 ($ millions)	2018 North America	2018 International	2018 Total	2017 North America	2017 International	2017 Total
Oil Sands						
SCO and diesel	**11 659**	—	**11 659**	11 244	—	11 244
Bitumen	**4 084**	—	**4 084**	2 030	—	2 030
	15 743	—	**15 743**	13 274	—	13 274
Exploration and Production						
Crude oil and natural gas liquids	**1 741**	**2 112**	**3 853**	1 326	2 133	3 459
Natural gas	**3**	**13**	**16**	10	18	28
	1 744	**2 125**	**3 869**	1 336	2 151	3 487
Refining and Marketing						
Gasoline	**10 819**	—	**10 819**	9 075	—	9 075
Distillate	**9 698**	—	**9 698**	7 800	—	7 800
Other	**3 207**	—	**3 207**	2 829	—	2 829
	23 724	—	**23 724**	19 704	—	19 704
Corporate, Energy Trading and Eliminations	**(3 744)**	—	**(3 744)**	(3 580)	—	(3 580)
Total Revenue from Contracts with Customers	**37 467**	**2 125**	**39 592**	30 734	2 151	32 885

Geographical Information

Operating Revenues, net of Royalties

($ millions)	2018	2017 (restated – note 5)
Canada	**30 418**	25 551
United States	**5 999**	4 252
Other foreign	**2 125**	2 151
	38 542	31 954

Non-Current Assets[1]

($ millions)	December 31 2018	December 31 2017
Canada	**76 708**	76 091
United States	**1 889**	1 712
Other foreign	**2 154**	2 014
	80 751	79 817

(1) Excludes deferred income tax assets.

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7. OTHER INCOME

Other income consists of the following:

($ millions)	2018	2017
Energy trading activities		
Unrealized gains (losses) recognized in earnings	129	(37)
Gains (losses) on inventory valuation	13	(39)
Risk management activities[1]	126	(19)
Investment and interest income	34	162
Insurance proceeds[2]	120	76
Change in value of pipeline commitments and other	22	(18)
	444	125

(1) Includes fair value changes related to short-term derivative contracts in the Oil Sands and Refining and Marketing segments.

(2) 2018 includes business interruption and property damage insurance proceeds for Syncrude and 2017 includes property damage insurance proceeds for Syncrude, in each case within the Oil Sands segment

8. OPERATING, SELLING AND GENERAL

Operating, Selling and General expense consists of the following:

($ millions)	2018	2017
		(restated – note 5)
Contract services[1]	4 552	3 551
Employee costs[1]	3 263	3 290
Materials	765	706
Energy	1 095	1 121
Equipment rentals and leases	360	279
Travel, marketing and other	538	241
	10 573	9 188

(1) The company incurred $8.3 billion of contract services and employee costs for the year ended December 31, 2018 (2017 – $7.3 billion), of which $7.8 billion (2017 – $6.8 billion) was recorded in Operating, Selling and General expense and $0.5 billion was recorded as Property, Plant and Equipment (2017 – $0.5 billion). Employee costs include salaries, benefits and share-based compensation.

9. FINANCING (INCOME) EXPENSES

($ millions)	2018	2017
Interest on debt and finance leases	897	945
Capitalized interest at 5.4% (2017 – 5.5%)	(156)	(729)
Interest expense	741	216
Interest on partnership liability (note 35)	56	5
Interest on pension and other post-retirement benefits	56	58
Accretion	266	247
Foreign exchange loss (gain) on U.S. dollar denominated debt	1 090	(771)
Foreign exchange and other	(70)	(52)
Loss on extinguishment of long-term debt	3	113
Realized gain on foreign currency hedges	—	(62)
	2 142	(246)

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10. INCOME TAXES

Income Tax Expense (Recovery)

($ millions)	2018	2017
Current:		
Current year	1 270	1 150
Adjustments to current income tax of prior years	(20)	59
Deferred:		
Origination and reversal of temporary differences	345	476
Adjustments in respect of deferred income tax of prior years	13	(70)
Changes in tax rates and legislation	—	(106)
Movement in unrecognized deferred income tax assets	82	(51)
Total income tax expense	1 690	1 458

Reconciliation of Effective Tax Rate

The provision for income taxes reflects an effective tax rate that differs from the statutory tax rate. A reconciliation of the difference is as follows:

($ millions)	2018	2017
Earnings before income tax	4 983	5 916
Canadian statutory tax rate	27.04%	27.01%
Statutory tax	1 347	1 598
Add (deduct) the tax effect of:		
Non-taxable component of capital losses (gains)	146	(90)
Share-based compensation and other permanent items	31	(1)
Assessments and adjustments	(7)	(11)
Impact of income tax rate and legislative changes	—	(106)
Foreign tax rate differential	111	180
Non-taxable component of acquisitions and dispositions	(14)	(41)
Movement in unrecognized deferred income tax assets	82	(51)
Other	(6)	(20)
Total income tax expense	1 690	1 458
Effective tax rate	33.9%	24.6%

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Deferred Income Tax Balances

The significant components of the company's deferred income tax (assets) liabilities and deferred income tax expense (recovery) are comprised of the following:

	Deferred Income Tax Expense (Recovery)		Deferred Income Tax Liability (Asset)	
($ millions)	2018	2017	December 31 2018	December 31 2017
Property, plant and equipment	**484**	157	**14 705**	14 252
Decommissioning and restoration provision	**46**	19	**(1 854)**	(1 910)
Employee retirement benefit plans	**15**	(5)	**(585)**	(639)
Tax loss carry-forwards	**(63)**	—	**(172)**	(109)
Other	**(42)**	78	**(177)**	(161)
Net deferred income tax expense and liability	**440**	249	**11 917**	11 433

Change in Deferred Income Tax Balances

($ millions)	2018	2017
Net deferred income tax liability, beginning of year	**11 433**	11 180
Recognized in deferred income tax expense	**440**	249
Recognized in other comprehensive income	**39**	19
Foreign exchange, disposition and other	**5**	(15)
Net deferred income tax liability, end of year	**11 917**	11 433

Deferred Tax in Shareholders' Equity

($ millions)	2018	2017
Deferred Tax in Other Comprehensive Income		
Actuarial gain on employment retirement benefit plans	**39**	19
Total income tax expense reported in equity	**39**	19

Deferred income tax assets are recognized for tax loss carry-forwards to the extent that the realization of the related tax benefit is probable based on estimated future earnings. Suncor has not recognized a $153 million (2017 – $75 million) deferred income tax asset on $1 134 million (2017 – $556 million) of capital losses related to foreign exchange on U.S. dollar denominated debt, which can only be utilized against future capital gains.

No deferred tax liability has been recognized at December 31, 2018, on temporary differences of approximately $9.7 billion (2017 – $9.6 billion) associated with earnings retained in our investments in foreign subsidiaries, as the company is able to control the timing of the reversal of these differences. Based on current plans, repatriation of funds in excess of foreign reinvestment will not result in material additional income tax expense. Deferred distribution taxes associated with international business operations have not been recorded.

In the fourth quarter of 2017, the U.S. government enacted a decrease in the federal corporate tax rate from 35% to 21% effective January 1, 2018. As a result, the company revalued its deferred income tax balances, resulting in a deferred income tax recovery of $124 million.

In the fourth quarter of 2017, the Government of British Columbia (B.C.) enacted an increase to the provincial corporate income tax rate from 11% to 12%. As a result, the company revalued its deferred income tax balances, resulting in a deferred income tax expense of $18 million.

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11. EARNINGS PER COMMON SHARE

($ millions)	2018	2017
Net earnings	3 293	4 458
Dilutive impact of accounting for awards as equity-settled[1]	—	(1)
Net earnings – diluted	3 293	4 457
(millions of common shares)		
Weighted average number of common shares	1 623	1 661
Dilutive securities:		
Effect of share options	6	4
Weighted average number of diluted common shares	1 629	1 665
(dollars per common share)		
Basic earnings per share	2.03	2.68
Diluted earnings per share	2.02	2.68

(1) Cash payment alternatives are accounted for as cash-settled plans. As these awards can be exchanged for common shares of the company, they are considered potentially dilutive and are included in the calculation of the company's diluted net earnings per share if they have a dilutive impact in the period. Accounting for these awards as equity-settled was determined to have a dilutive impact for the year ended December 31, 2017.

12. CASH AND CASH EQUIVALENTS

($ millions)	December 31 2018	December 31 2017
Cash	1 285	1 184
Cash equivalents	936	1 488
	2 221	2 672

13. SUPPLEMENTAL CASH FLOW INFORMATION

The decrease (increase) in non-cash working capital is comprised of:

($ millions)	2018	2017
Accounts receivable	219	(79)
Inventories	316	(268)
Accounts payable and accrued liabilities	(503)	68
Current portion of provisions	(110)	(48)
Income taxes payable (net)	511	421
	433	94
Relating to:		
Operating activities	408	(173)
Investing activities	25	267
	433	94

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Reconciliation of movements of liabilities to cash flows arising from financing activities:

($ millions)	Short-Term Debt	Current Portion of Long-Term Debt	Long-Term Debt	Partnership Liability	Dividends Payable
At December 31, 2017	2 136	71	13 372	483	—
Changes from financing cash flows:					
Net issuance of commercial paper	866	—	—	—	—
Repayment of long-term debt	—	(109)	—	—	—
Realized foreign exchange losses	131	1	—	—	—
Dividends paid on common shares	—	—	—	—	(2 333)
Payments of finance lease liabilities	—	—	(74)	—	—
Distributions to non-controlling interest	—	—	—	(6)	—
Non-cash changes:					
Dividends declared on common shares	—	—	—	—	2 333
Unrealized foreign exchange losses	98	9	851	—	—
Deferred financing costs	—	—	(14)	—	—
Modification to finance lease liabilities	—	—	12	—	—
Reclassification from long-term debt to current portion of long-term debt	—	257	(257)	—	—
At December 31, 2018	3 231	229	13 890	477	—

14. INVENTORIES

($ millions)	December 31 2018	December 31 2017
Crude oil	**1 177**	1 203
Refined products	**1 033**	1 268
Materials, supplies and merchandise	**702**	664
Energy trading commodity inventories	**247**	333
	3 159	3 468

During 2018, product inventories of $14.8 billion (2017 – $11.6 billion) were recorded as an expense. There was no write-down of crude oil (2017 – nil) and no write-down of materials, supplies and merchandise in 2018 (2017 – nil million). Energy trading commodity inventories are measured at fair value less costs of disposal based on Level 1 and Level 2 fair value inputs.

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15. PROPERTY, PLANT AND EQUIPMENT

($ millions)	Oil and Gas Properties	Plant and Equipment	Total
Cost			
At December 31, 2016	34 141	73 537	107 678
Additions	1 235	5 875	7 110
Acquisitions (note 32)	25	310	335
Changes in decommissioning and restoration	821	22	843
Disposals and derecognition	—	(884)	(884)
Foreign exchange adjustments	(13)	(256)	(269)
Reclassified from assets held for sale (note 34)	—	35	35
At December 31, 2017	36 209	78 639	114 848
Additions	**1 221**	**3 958**	**5 179**
Transfers from exploration and evaluation	**31**	—	**31**
Acquisitions (notes 31, 32 and 36)	**289**	**948**	**1 237**
Changes in decommissioning and restoration	**85**	**(22)**	**63**
Disposals and derecognition	**(375)**	**(4 785)**	**(5 160)**
Foreign exchange adjustments	**385**	**291**	**676**
At December 31, 2018	**37 845**	**79 029**	**116 874**
Accumulated provision			
At December 31, 2016	(16 062)	(20 357)	(36 419)
Depreciation and depletion	(1 916)	(3 514)	(5 430)
Disposals and derecognition	—	368	368
Foreign exchange adjustments	3	126	129
Reclassified from assets held for sale (note 34)	—	(3)	(3)
At December 31, 2017	(17 975)	(23 380)	(41 355)
Depreciation and depletion	**(1 739)**	**(3 849)**	**(5 588)**
Disposals and derecognition	**255**	**4 545**	**4 800**
Foreign exchange adjustments	**(324)**	**(162)**	**(486)**
At December 31, 2018	**(19 783)**	**(22 846)**	**(42 629)**
Net property, plant and equipment			
December 31, 2017	18 234	55 259	73 493
December 31, 2018	**18 062**	**56 183**	**74 245**

	December 31, 2018			December 31, 2017		
($ millions)	Cost	Accumulated Provision	Net Book Value	Cost	Accumulated Provision	Net Book Value
Oil Sands	**80 295**	**(22 654)**	**57 641**	79 625	(22 664)	56 961
Exploration and Production	**21 867**	**(14 075)**	**7 792**	21 007	(12 990)	8 017
Refining and Marketing	**13 627**	**(5 092)**	**8 535**	13 137	(4 906)	8 231
Corporate, Energy Trading and Eliminations	**1 085**	**(808)**	**277**	1 079	(795)	284
	116 874	**(42 629)**	**74 245**	114 848	(41 355)	73 493

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At December 31, 2018, the balance of assets under construction and not subject to depreciation or depletion was $4.7 billion (December 31, 2017 – $15.9 billion).

At December 31, 2018, Property, Plant and Equipment included finance leases with a net book value of $1.4 billion (December 31, 2017 – $1.4 billion).

16. EXPLORATION AND EVALUATION ASSETS

($ millions)	2018	2017
Beginning of year	**2 052**	2 038
Acquisitions and additions (Note 31)	**316**	53
Transfers to oil and gas assets	**(31)**	—
Dry hole expenses	**(11)**	(41)
Disposals	**(16)**	—
Amortization	**(1)**	(1)
Foreign exchange adjustments	**10**	3
End of year	**2 319**	2 052

17. OTHER ASSETS

($ millions)	December 31 2018	December 31 2017
Investments	**237**	224
Prepaids and other	**889**	987
	1 126	1 211

Prepaids and other includes long-term accounts receivable related to deposits paid on Notices of Reassessments that have been received from the Canada Revenue Agency (CRA) and are unlikely to be settled within one year.

18. GOODWILL AND OTHER INTANGIBLE ASSETS

	Oil Sands	Refining and Marketing			
($ millions)	Goodwill	Goodwill	Brand Name	Customer Lists	Total
At December 31, 2016	2 752	148	166	9	3 075
Disposal (note 33)	—	(8)	(4)	(1)	(13)
Additions	—	—	—	2	2
Amortization	—	—	—	(3)	(3)
At December 31, 2017	2 752	140	162	7	3 061
Additions	—	—	—	**4**	**4**
Amortization	—	—	—	**(4)**	**(4)**
At December 31, 2018	**2 752**	**140**	**162**	**7**	**3 061**

The company performed a goodwill impairment test at December 31, 2018 on its Oil Sands CGUs. Recoverable amounts were based on fair value less costs of disposal calculated using the present value of the CGUs' expected future cash flows. The primary sources of cash flow information are derived from business plans approved by executives of the company, which

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were developed based on macroeconomic factors such as forward price curves for benchmark commodities, inflation rates and industry supply-demand fundamentals. When required, the projected cash flows in the business plans have been updated to reflect current market assessments of key assumptions, including long-term forecasts of commodity prices, inflation rates, foreign exchange rates and discount rates specific to the asset (Level 3 fair value inputs).

Cash flow forecasts are also based on past experience, historical trends and third-party evaluations of the company's reserves and resources to determine production profiles and volumes, operating costs, maintenance and capital expenditures. Production profiles, reserves volumes, operating costs, maintenance and capital expenditures are consistent with the estimates approved through the company's annual reserves evaluation process and determine the duration of the underlying cash flows used in the discounted cash flow test.

Future cash flow estimates are discounted using after-tax risk-adjusted discount rates. The discount rates are calculated based on the weighted average cost of capital of a group of relevant peers that is considered to represent the rate of return that would be required by a typical market participant for similar assets. The after-tax discount rate applied to cash flow projections was 8% (2017 – 8%). The company based its cash flow projections on an average West Texas Intermediate price of US$58.00 per barrel in 2019, US$70.40 per barrel in 2020, US$75.30 per barrel in 2021, US$80.10 per barrel in 2022 and then escalating at an average of 3% per year from 2023 to 2024 and at an average of 2% thereafter, adjusted for applicable quality and location differentials depending on the underlying CGU. The forecast cash flow period ranged from 20 years to 50 years based on the reserves life of the respective CGU. As a result of this analysis, management did not identify impairment within any of the CGUs comprising the Oil Sands operating segment and the associated allocated goodwill.

The company also performed a goodwill impairment test of its Refining and Marketing CGUs. The recoverable amounts are based on the fair value less costs of disposal calculated using the present value of the CGUs' expected future cash flows, based primarily on the business plan and historical results adjusted for current economic conditions, and escalated using an inflation rate of 2% of revenue and operating costs. The after-tax discount rates applied to the cash flow projection were between 10% and 12% (2017 – between 10% and 12%). As a result of this analysis, no impairment was identified within the operating segment or the associated allocated goodwill.

19. DEBT AND CREDIT FACILITIES

Debt and credit facilities are comprised of the following:

Short-Term Debt

($ millions)	December 31 2018	December 31 2017
Commercial paper[1]	**3 231**	2 136

(1) The commercial paper is supported by a revolving credit facility with a syndicate of lenders. The company is authorized to issue commercial paper to a maximum of $5.0 billion having a term not to exceed 365 days. The weighted average interest rate as at December 31, 2018 was 2.88% (December 31, 2017 – 1.56%).

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Long-Term Debt

($ millions)	December 31 2018	December 31 2017
Fixed-term debt[2][3]		
7.75% Notes, due 2019 (US$140)[4]	191	288
3.10% Series 5 Medium Term Notes, due 2021	749	749
9.25% Debentures, due 2021 (US$300)	431	406
9.40% Notes, due 2021 (US$220)[4][5]	315	298
4.50% Notes, due 2022 (US$182)[4]	234	212
3.60% Notes, due 2024 (US$750)	1 020	936
3.00% Series 5 Medium Term Notes, due 2026	698	698
7.875% Debentures, due 2026 (US$275)	393	365
8.20% Notes, due 2027 (US$59)[4]	87	81
7.00% Debentures, due 2028 (US$250)	346	319
7.15% Notes, due 2032 (US$500)	681	626
5.35% Notes, due 2033 (US$300)	379	344
5.95% Notes, due 2034 (US$500)	680	625
5.95% Notes, due 2035 (US$600)	786	718
5.39% Series 4 Medium Term Notes, due 2037	599	599
6.50% Notes, due 2038 (US$1 150)	1 565	1 439
6.80% Notes, due 2038 (US$900)	1 249	1 151
6.85% Notes, due 2039 (US$750)	1 021	938
6.00% Notes, due 2042 (US$152)[4]	158	140
4.34% Series 5 Medium Term Notes, due 2046	300	300
4.00% Notes, due 2047 (US$750)[6]	1 018	936
Total unsecured long-term debt	12 900	12 168
Finance leases[7]	1 260	1 319
Deferred financing costs	(41)	(44)
	14 119	13 443
Current portion of long-term debt		
Finance leases	(38)	(71)
Long-term debt	(191)	—
	(229)	(71)
Total long-term debt	13 890	13 372

(2) The value of debt includes the unamortized balance of premiums or discounts.

(3) Certain securities are redeemable at the option of the company.

(4) Debt acquired through the acquisition of Canadian Oil Sands Limited (COS)

(5) Subsequent to the acquisition of COS, Moody's Investors Service downgraded COS long-term senior debt rating from Baa3 (negative outlook) to Ba3 (stable outlook). This triggered a change in the coupon rate of the note from 7.9% to 9.4%

(6) During the fourth quarter of 2017, the company issued US$750 million of senior unsecured notes maturing on November 15, 2047. The notes have a coupon of 4.00% and were priced at $99.498 per note for an effective yield of 4.029%. Interest is paid semi-annually.

(7) Interest rates range from 2.9% to 16.5% and maturity dates range from 2027 to 2062.

During the fourth quarter of 2018, the company completed an early retirement of US$83 million (book value of $109 million) of subsidiary debt acquired through the acquisition of COS with a coupon of 7.75% originally scheduled to mature on

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May 15, 2019 for US$88 million ($116 million). The early retirement payment included US$3 million ($4 million) of accrued interest, resulting in a debt extinguishment loss of $3 million ($2 million after-tax).

During the second quarter of 2017, the company redeemed its US$1.250 billion (book value of $1.700 billion) senior unsecured notes originally scheduled to mature on June 1, 2018 for US$1.344 billion ($1.830 billion), including US$31 million ($42 million) of accrued interest. In conjunction with the early retirement of the notes, the company also realized gains of $62 million on foreign currency hedges, resulting in an overall debt extinguishment loss of $25 million ($10 million after-tax).

During the fourth quarter of 2017, the company redeemed its US$600 million (book value of $771 million) senior unsecured notes with a coupon of 6.05% originally scheduled to mature on May 15, 2018 for US$614 million ($788 million), including US$3 million ($4 million) of accrued interest. The company also redeemed its $700 million senior unsecured Series 4 Medium Term notes with a coupon of 5.80% originally scheduled to mature on May 22, 2018 for $715 million, including $3 million of accrued interest. The company realized an overall debt extinguishment loss of $26 million ($18 million after-tax).

Scheduled Debt Repayments

Scheduled principal repayments as at December 31, 2018 for finance leases, short-term debt and long-term debt are as follows:

($ millions)	Repayment
2019	3 459
2020	39
2021	1 501
2022	295
2023	53
Thereafter	12 108
	17 455

Credit Facilities

A summary of available and unutilized credit facilities is as follows:

($ millions)	2018
Fully revolving and expires in 2021	4 000
Fully revolving and expires in 2020	2 729
Fully revolving and expires in 2019/2020	1 537
Can be terminated at any time at the option of the lenders	132
Total credit facilities	8 398
Credit facilities supporting outstanding commercial paper	(3 231)
Credit facilities supporting standby letters of credit[1]	(1 269)
Total unutilized credit facilities[2]	3 898

(1) To reduce costs, the company supported certain credit facilities with $108 million cash collateral as at December 31, 2018 (December 31, 2017 – $733 million).

(2) Available credit facilities for liquidity purposes at December 31, 2018 decreased to $3.608 billion, compared to $4.489 billion at December 31, 2017.

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20. OTHER LONG-TERM LIABILITIES

($ millions)	December 31 2018	December 31 2017
Pensions and other post-retirement benefits (note 21)	1 420	1 369
Share-based compensation plans (note 24)	259	361
Partnership liability (note 35)	470	483
Deferred revenue	46	49
Libya Exploration and Production Sharing Agreement (EPSA) signature bonus[1]	83	77
Other	68	73
	2 346	2 412

(1) As part of the 2009 acquisition of Petro-Canada, the company assumed the remaining US$500 million obligation for a signature bonus relating to Petro-Canada's ratification of six EPSAs in Libya. At December 31, 2018, the carrying amount of the Libya EPSAs signature bonus was $85 million (December 31, 2017 – $79 million). The current portion is $2 million (December 31, 2017 – $2 million) and is recorded in Accounts Payable and Accrued Liabilities.

21. PENSIONS AND OTHER POST-RETIREMENT BENEFITS

The company's defined benefit pension plans provide pension benefits at retirement based on years of service and final average earnings (if applicable). These obligations are met through funded registered retirement plans and through unregistered supplementary pensions that are funded through retirement compensation arrangements, and/or paid directly to recipients. The company's contributions to the funded plans are deposited with independent trustees who act as custodians of the plans' assets, as well as the disbursing agents of the benefits to recipients. Plan assets are managed by a pension committee on behalf of beneficiaries. The committee retains independent managers and advisors.

Asset-liability matching studies are performed by a third-party consultant to set the asset mix by quantifying the risk-and-return characteristics of possible asset mix strategies. Investment and contribution policies are integrated within this study, and areas of focus include asset mix as well as interest rate sensitivity.

Funding of the registered retirement plans complies with applicable regulations that require actuarial valuations of the pension funds at least once every three years in Canada and every year in the United States. The most recent valuations for the registered Canadian plans were performed as at January 31, 2017, and for the International plans were performed as at December 31, 2016. The company uses a measurement date of December 31 to value the plan assets and remeasure the accrued benefit obligation for accounting purposes.

The company's other post-retirement benefits programs are unfunded and include certain health care and life insurance benefits provided to retired employees and eligible surviving dependants.

The company reports its share of Syncrude's defined benefit and defined contribution pension plans and Syncrude's other post-retirement benefits plan.

The company also provides a number of defined contribution plans, including a U.S. 401(k) savings plan, that provide for an annual contribution of 5% to 11.5% of each participating employee's pensionable earnings.

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Defined Benefit Obligations and Funded Status

($ millions)	Pension Benefits 2018	Pension Benefits 2017	Other Post-Retirement Benefits 2018	Other Post-Retirement Benefits 2017
Change in benefit obligation				
Benefit obligation at beginning of year	**6 717**	6 280	**597**	587
Obligations acquired through acquisition (note 31)	**185**	—	**8**	—
Current service costs	**235**	193	**13**	14
Plan participants' contributions	**15**	14	—	—
Benefits paid	**(296)**	(294)	**(23)**	(21)
Interest costs	**236**	236	**21**	22
Disposal (note 33)	—	(69)	—	(9)
Foreign exchange	**14**	(2)	**1**	(1)
Settlements	**5**	7	—	—
Actuarial remeasurement:				
Experience (gain) loss arising on plan liabilities	**(26)**	2	**(18)**	(12)
Actuarial gain arising from changes in demographic assumptions	**(1)**	(4)	—	(9)
Actuarial (gain) loss arising from changes in financial assumptions	**(354)**	354	**(42)**	26
Benefit obligation at end of year	**6 730**	6 717	**557**	597
Change in plan assets				
Fair value of plan assets at beginning of year	**5 799**	5 356	—	—
Assets acquired through acquisition (note 31)	**153**	—	—	—
Employer contributions	**182**	160	—	—
Plan participants' contributions	**15**	14	—	—
Benefits paid	**(273)**	(269)	—	—
Disposal (note 33)	—	(71)	—	—
Foreign exchange	**14**	(3)	—	—
Settlements	**5**	7	—	—
Administrative costs	**(2)**	(2)	—	—
Income on plan assets	**201**	200	—	—
Actuarial remeasurement:				
Return on plan assets (less than) greater than discount rate	**(299)**	407	—	—
Fair value of plan assets at end of year	**5 795**	5 799	—	—
Net unfunded obligation	**935**	918	**557**	597

Of the total net unfunded obligations as at December 31, 2018, 60% relates to Canadian pension plans and other post-retirement benefits obligation (excluding Syncrude) (December 31, 2017 – 67%). The weighted average duration of the defined benefit obligation under the Canadian pension plans and other post-retirement plans (excluding Syncrude) is 13.70 years (2017 – 13.91 years).

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The net unfunded obligation is recorded in Accounts Payable and Accrued Liabilities and Other Long-Term Liabilities (note 20) in the Consolidated Balance Sheets.

($ millions)	Pension Benefits 2018	Pension Benefits 2017	Other Post-Retirement Benefits 2018	Other Post-Retirement Benefits 2017
Analysis of amount charged to earnings:				
Current service costs	**235**	193	**13**	14
Interest costs	**35**	36	**21**	22
Defined benefit plans expense	**270**	229	**34**	36
Defined contribution plans expense	**77**	74	**—**	—
Total benefit plans expense charged to earnings	**347**	303	**34**	36

Components of defined benefit costs recognized in Other Comprehensive Income:

($ millions)	Pension Benefits 2018	Pension Benefits 2017	Other Post-Retirement Benefits 2018	Other Post-Retirement Benefits 2017
Return on plan assets (excluding amounts included in net interest expense)	**299**	(407)	**—**	—
Experience (gain) loss arising on plan liabilities	**(26)**	2	**(18)**	(12)
Actuarial (gain) loss arising from changes in financial assumptions	**(354)**	354	**(42)**	26
Actuarial gain arising from changes in demographic assumptions	**(1)**	(4)	**—**	(9)
Actuarial (gain) loss recognized in other comprehensive income	**(82)**	(55)	**(60)**	5

Actuarial Assumptions

The cost of the defined benefit pension plans and other post-retirement benefits received by employees is actuarially determined using the projected unit credit method of valuation that includes employee service to date and present pay levels, as well as the projection of salaries and service to retirement.

The significant weighted average actuarial assumptions were as follows:

(%)	Pension Benefits December 31 2018	Pension Benefits December 31 2017	Other Post-Retirement Benefits December 31 2018	Other Post-Retirement Benefits December 31 2017
Discount rate	**3.80**	3.40	**3.90**	3.40
Rate of compensation increase	**3.00**	3.00	**3.00**	3.00

The discount rate assumption is based on the interest rate on high-quality bonds with maturity terms equivalent to the benefit obligations.

The defined benefit obligation reflects the best estimate of the mortality of plan participants both during and after their employment. The mortality assumption is based on a standard mortality table adjusted for actual experience over the past five years.

In order to measure the expected cost of other post-retirement benefits, it was assumed for 2018 that the health care costs would increase annually by 6.50% per person (2017 – 6.50%). This rate will remain constant until 2019 and then will decrease 0.5% annually to 5% by 2022, and remain at that level thereafter.

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Assumed discount rates and health care cost trend rates may have a significant effect on the amounts reported for pensions and other post-retirement benefits obligations for the company's Canadian plans. A change of these assumptions would have the following effects:

($ millions)	Pension Benefits Increase	Pension Benefits Decrease
1% change in discount rate		
Effect on the aggregate service and interest costs	(23)	30
Effect on the benefit obligations	(874)	1 127

($ millions)	Other Post-Retirement Benefits Increase	Other Post-Retirement Benefits Decrease
1% change in discount rate		
Effect on the benefit obligations	(65)	81
1% change in health care cost		
Effect on the aggregate service and interest costs	1	(1)
Effect on the benefit obligations	27	(23)

Plan Assets and Investment Objectives

The company's long-term investment objective is to secure the defined pension benefits while managing the variability and level of its contributions. The portfolio is rebalanced periodically, as required, to the plans' target asset allocation as prescribed in the Statement of Investment Policies and Procedures approved by the Board of Directors. Plan assets are restricted to those permitted by legislation, where applicable. Investments are made through pooled, mutual, segregated or exchange traded funds.

The company's weighted average pension plan asset allocations, based on market values as at December 31, are as follows:

(%)	2018	2017
Equities, comprised of:		
– Canada	13	18
– United States	17	19
– Foreign	18	19
	48	56
Fixed income, comprised of:		
– Canada	43	39
Real estate, comprised of:		
– Canada	9	5
Total	100	100

Equity securities do not include any direct investments in Suncor shares. The fair value of equity and fixed income securities is based on the trading price of the underlying fund. The fair value of real estate investments is based on independent third-party appraisals.

During the year, the company made cash contributions of $182 million (2017 – $160 million) to its defined benefit pension plans, of which $2 million (2017 – $3 million) was contributed to the solvency reserve account in Alberta. The company expects to make cash contributions to its defined benefit pension plans in 2019 of $172 million.

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22. PROVISIONS

($ millions)	Decommissioning and Restoration[1]	Royalties	Other[2]	Total
At December 31, 2016	6 746	307	270	7 323
Liabilities incurred	494	29	34	557
Change in discount rate	255	—	—	255
Changes in estimates	92	(89)	(6)	(3)
Liabilities settled	(353)	(7)	(42)	(402)
Accretion	247	—	—	247
Asset acquisitions	5	—	—	5
Foreign exchange	(21)	—	(2)	(23)
At December 31, 2017	7 465	240	254	7 959
Less: current portion	(434)	(240)	(48)	(722)
	7 031	—	206	7 237
At December 31, 2017	7 465	240	254	7 959
Liabilities incurred	345	9	101	455
Change in discount rate	(663)	—	—	(663)
Changes in estimates	114	(67)	(16)	31
Liabilities settled	(469)	(84)	(25)	(578)
Accretion	266	—	—	266
Asset acquisitions	133	—	—	133
Foreign exchange	48	—	—	48
At December 31, 2018	**7 239**	**98**	**314**	**7 651**
Less: current portion	(538)	(98)	(31)	(667)
	6 701	—	283	6 984

(1) Represents decommissioning and restoration provisions associated with the retirement of Property, Plant and Equipment and Exploration and Evaluation assets. The total undiscounted amount of estimated future cash flows required to settle the obligations at December 31, 2018 was approximately $13.0 billion (December 31, 2017 – $12.2 billion). A weighted average credit-adjusted risk-free interest rate of 4.20% was used to discount the provision recognized at December 31, 2018 (December 31, 2017 – 3.70%). The credit-adjusted risk-free interest rate used reflects the expected time frame of the provisions. Payments to settle the decommissioning and restoration provisions occur on an ongoing basis and will continue over the lives of the operating assets, which can exceed 50 years.

(2) Includes legal, environmental and lease inducement provisions.

Sensitivities

Changes to the discount rate would have the following impact on Decommissioning and Restoration liabilities:

As at December 31	2018	2017
1% Increase	(1 099)	(1 218)
1% Decrease	1 521	1 758

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23. SHARE CAPITAL

Authorized

Common Shares

The company is authorized to issue an unlimited number of common shares without nominal or par value.

Preferred Shares

The company is authorized to issue an unlimited number of senior and junior preferred shares in series, without nominal or par value.

Normal Course Issuer Bid

On April 26, 2017, the company announced its intention to commence a Normal Course Issuer Bid (the 2017 NCIB) to repurchase common shares through the facilities of the Toronto Stock Exchange (the TSX), New York Stock Exchange (the NYSE) and/or alternative trading platforms. Pursuant to the 2017 NCIB, the company was permitted to purchase for cancellation up to approximately 50,079,795 of its common shares between May 2, 2017 and May 1, 2018.

On May 1, 2018, the company announced its intention to renew the 2017 NCIB (the 2018 NCIB) to continue to repurchase common shares through the facilities of the TSX, the NYSE and/or alternative trading platforms. Pursuant to the 2018 NCIB, the company was permitted to purchase for cancellation up to 52,285,330 of its common shares between May 4, 2018 and May 3, 2019. On November 14, 2018, Suncor announced an amendment to the 2018 NCIB, effective as of November 19, 2018, which allows the company to increase the maximum number of common shares that may be repurchased between May 4, 2018 and May 3, 2019 to 81,695,830. Subsequent to the end of the year, Suncor's Board of Directors approved a further share repurchase program of up to $2.0 billion.

The following table summarizes the share repurchase activities during the period:

($ millions except as noted)	2018	2017
Share repurchase activities (thousands of common shares)		
Shares repurchased	**64 426**	33 154
Amounts charged to		
Share capital	**1 040**	536
Retained earnings	**2 013**	877
Share repurchase cost	**3 053**	1 413
Average repurchase cost per share	**47.38**	42.61

Under an automatic repurchase plan agreement with an independent broker, the company has recorded the following liability for share repurchases that may take place during its internal blackout period:

($ millions)	December 31 2018	December 31 2017
Amounts charged to		
Share capital	**111**	97
Retained earnings	**152**	180
Liability for share purchase commitment	**263**	277

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24. SHARE-BASED COMPENSATION

Share-Based Compensation Expense

Reflected in the Consolidated Statements of Comprehensive Income within Operating, Selling and General expense are the following share-based compensation amounts:

($ millions)	2018	2017
Equity-settled plans	46	48
Cash-settled plans	181	334
Total share-based compensation expense	227	382

Liability Recognized for Share-Based Compensation

Reflected in the Consolidated Balance Sheets within accounts payable and accrued liabilities and other long-term liabilities are the following fair value amounts for the company's cash-settled plans:

($ millions)	2018	2017
Current liability	286	344
Long-term liability (note 20)	259	361
Total Liability	545	705

The intrinsic value of the vested awards at December 31, 2018 was $328 million (December 31, 2017 – $399 million).

Stock Option Plans

Suncor grants stock option awards as a form of retention and incentive compensation.

(a) Active Stock Option Plan

Stock options granted by the company on or after August 1, 2010 provide the holder with the right to purchase common shares at the market price on the grant date, subject to fulfilling vesting terms. This plan replaced the pre-merger stock option plan of legacy Suncor and legacy Petro-Canada. Options granted have a seven-year life, vest annually over a three-year period and are accounted for as equity-settled awards.

The weighted average fair value of options granted during the period and the weighted average assumptions used in their determination are as noted below:

	2018	2017
Annual dividend per share	$1.44	$1.28
Risk-free interest rate	2.03%	1.09%
Expected life	5 years	5 years
Expected volatility	24%	25%
Weighted average fair value per option	$6.73	$6.42

The expected life is based on historical stock option exercise data and current expectations. The expected volatility considers the historical volatility in the price of Suncor's common shares over a period similar to the life of the options, and is indicative of future trends.

(b) Discontinued Stock Option Plans

Executive and Key Contributor Stock Options

Options granted under these plans generally have a seven- to ten-year life and vest over a three-year period. These plans were in place prior to August 1, 2009, at the time of the merger between Petro-Canada and Suncor, and are accounted for as equity-settled awards.

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Suncor Energy Inc. Stock Options with Tandem Stock Appreciation Rights

Options granted between August 1, 2009 and July 31, 2010, have a seven-year life and vest annually over a three-year period. Each option included a tandem stock appreciation right (TSAR), allowing the option holder the right to receive a cash payment equal to the excess of the market price of Suncor's common shares at the time of exercise over the exercise price of the option. These awards are accounted for as cash-settled. All options granted under this plan expired at December 31, 2017.

The following table presents a summary of the activity related to Suncor's stock option plans:

	2018		2017	
	Number (thousands)	Weighted Average Exercise Price ($)	Number (thousands)	Weighted Average Exercise Price ($)
Outstanding, beginning of year	**31 110**	**36.96**	31 442	35.98
Granted	**7 231**	**43.19**	7 401	42.04
Exercised for cash payment	**—**	**—**	(6)	32.00
Exercised as options for common shares	**(7 927)**	**35.95**	(6 223)	36.65
Forfeited/expired	**(1 479)**	**47.88**	(1 504)	42.21
Outstanding, end of year	**28 935**	**38.25**	31 110	36.96
Exercisable, end of year	**15 374**	**36.10**	17 363	36.53

Options are exercised regularly throughout the year. Therefore, the weighted average share price during the year of $46.99 (2017 – $41.09) is representative of the weighted average share price at the date of exercise.

For the options outstanding at December 31, 2018, the exercise price ranges and weighted average remaining contractual lives are shown below:

	Outstanding			Exercisable	
Exercise Prices ($)	Number (thousands)	Weighted Average Remaining Contractual Life (years)	Weighted Average Exercise Price ($)	Number (thousands)	Weighted Average Exercise Price ($)
24.50-34.99	**7 821**	3	30.90	**5 589**	31.16
35.00-39.99	**7 214**	3	37.74	**7 195**	37.74
40.00-44.99	**13 714**	6	42.53	**2 590**	42.19
45.00-49.99	**58**	7	47.82	**—**	**—**
50.00-54.27	**128**	7	52.40	**—**	**—**
Total	**28 935**	4	38.25	**15 374**	36.10

Common shares authorized for issuance by the Board of Directors that remain available for the granting of future options:

(thousands)	2018	2017
	21 929	28 972

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Share Unit Plans

Suncor grants share units as a form of retention and incentive compensation. Share unit plans are accounted for as cash-settled awards.

(a) Performance Share Units (PSUs)

A PSU is a time-vested award entitling employees to receive varying degrees of cash (0% – 200% of the company's share price at time of vesting) contingent upon Suncor's total shareholder return (stock price appreciation and dividend income) relative to a peer group of companies. PSUs vest approximately three years after the grant date.

(b) Restricted Share Units (RSUs)

A RSU is a time-vested award entitling employees to receive cash calculated based on an average of the company's share price leading up to vesting. RSUs vest approximately three years after the grant date.

(c) Deferred Share Units (DSUs)

A DSU is redeemable for cash or a common share for a period of time after a unitholder ceases employment or Board membership. The DSU Plan is limited to executives and members of the Board of Directors. Members of the Board of Directors receive an annual grant of DSUs as part of their compensation and may elect to receive their fees in cash only or in increments of 50% or 100% allocated to DSUs. Executives may elect to receive their annual incentive bonus in cash only or in increments of 25%, 50%, 75% or 100% allocated to DSUs.

The following table presents a summary of the activity related to Suncor's share unit plans:

(thousands)	PSU	RSU	DSU
Outstanding, December 31, 2016	2 413	18 158	1 218
Granted	1 570	5 009	202
Redeemed for cash	(1 663)	(6 354)	(118)
Forfeited/expired	(53)	(741)	—
Outstanding, December 31, 2017	2 267	16 072	1 302
Granted	**1 553**	**4 796**	**192**
Redeemed for cash	**(1 623)**	**(5 962)**	**(189)**
Forfeited/expired	—	**(314)**	—
Outstanding, December 31, 2018	**2 197**	**14 592**	**1 305**

Stock Appreciation Rights (SARs)

A SAR entitles the holder to receive a cash payment equal to the difference between the stated exercise price and the market price of the company's common shares on the date the SAR is exercised, and is accounted for as a cash-settled award.

SARs have a seven-year life and vest annually over a three-year period.

The following table presents a summary of the activity related to Suncor's SARs plan:

	2018		2017	
	Number (thousands)	Weighted Average Exercise Price ($)	Number (thousands)	Weighted Average Exercise Price ($)
Outstanding, beginning of year	**387**	**36.38**	485	34.90
Granted	**108**	**43.09**	107	42.05
Exercised	**(126)**	**35.65**	(176)	35.59
Forfeited/expired	**(6)**	**38.36**	(29)	37.32
Outstanding, end of year	**363**	**38.60**	387	36.38
Exercisable, end of year	**170**	**36.57**	162	35.39

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25. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

The company's financial instruments consist of cash and cash equivalents, accounts receivable, derivative contracts, substantially all accounts payable and accrued liabilities, debt, and certain portions of other assets and other long-term liabilities.

Non-Derivative Financial Instruments

The fair values of cash and cash equivalents, accounts receivable, short-term debt, and accounts payable and accrued liabilities approximate their carrying values due to the short-term maturities of those instruments.

The company's long-term debt and long-term financial liabilities are recorded at amortized cost using the effective interest method. At December 31, 2018, the carrying value of fixed-term debt accounted for under amortized cost was $12.9 billion (December 31, 2017 – $12.1 billion) and the fair value at December 31, 2018 was $14.2 billion (December 31, 2017 – $14.7 billion). The estimated fair value of long-term debt is based on pricing sourced from market data, which is considered a Level 2 fair value input.

Suncor entered into a partnership with Fort McKay First Nation (FMFN) and Mikisew Cree First Nation (MCFN) where FMFN and MCFN acquired a combined 49% partnership interest in the East Tank Farm Development. The partnership liability is recorded at amortized cost using the effective interest method. At December 31, 2018, the carrying value of the Partnership liability accounted for under amortized cost was $477 million (December 31, 2017 – $483 million) (note 35).

Derivative Financial Instruments

(a) Non-Designated Derivative Financial Instruments

- Energy Trading Derivatives – The company's Energy Trading group uses physical and financial energy derivative contracts, including swaps, forwards and options to earn trading revenues.
- Risk Management Derivatives – The company periodically enters into derivative contracts in order to manage exposure to interest rates, commodity price and foreign exchange movements and which are a component of the company's overall risk management program.

The changes in the fair value of non-designated Energy Trading and Risk Management derivatives are as follows:

($ millions)	Energy Trading	Risk Management	Total
Fair value outstanding at December 31, 2016	(36)	(18)	(54)
Cash Settlements – (received) paid during the year	(12)	17	5
Unrealized losses recognized in earnings during the year (note 7)	(37)	(19)	(56)
Fair value outstanding at December 31, 2017	(85)	(20)	(105)
Cash Settlements – received during the year	**(43)**	**(47)**	**(90)**
Unrealized gains recognized in earnings during the year (note 7)	**129**	**126**	**255**
Fair value outstanding at December 31, 2018	**1**	**59**	**60**

(b) Fair Value Hierarchy

To estimate the fair value of derivatives, the company uses quoted market prices when available, or third-party models and valuation methodologies that utilize observable market data. In addition to market information, the company incorporates transaction-specific details that market participants would utilize in a fair value measurement, including the impact of non-performance risk. However, these fair value estimates may not necessarily be indicative of the amounts that could be realized or settled in a current market transaction. The company characterizes inputs used in determining fair value using a hierarchy that prioritizes inputs depending on the degree to which they are observable. The three levels of the fair value hierarchy are as follows:

- Level 1 consists of instruments with a fair value determined by an unadjusted quoted price in an active market for identical assets or liabilities. An active market is characterized by readily and regularly available quoted prices where the prices are representative of actual and regularly occurring market transactions to assure liquidity.
- Level 2 consists of instruments with a fair value that is determined by quoted prices in an inactive market, prices with observable inputs, or prices with insignificant non-observable inputs. The fair value of these positions is determined using observable inputs from exchanges, pricing services, third-party independent broker quotes, and published

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transportation tolls. The observable inputs may be adjusted using certain methods, which include extrapolation over the quoted price term and quotes for comparable assets and liabilities.

- Level 3 consists of instruments with a fair value that is determined by prices with significant unobservable inputs. As at December 31, 2018, the company does not have any derivative instruments measured at fair value Level 3.

In forming estimates, the company utilizes the most observable inputs available for valuation purposes. If a fair value measurement reflects inputs of different levels within the hierarchy, the measurement is categorized based upon the lowest level of input that is significant to the fair value measurement.

The following table presents the company's derivative financial instrument assets and liabilities and assets available for sale measured at fair value for each hierarchy level as at December 31, 2018 and 2017.

($ millions)	Level 1	Level 2	Level 3	Total Fair Value
Accounts receivable	21	53	—	74
Accounts payable	(74)	(105)	—	(179)
Balance at December 31, 2017	(53)	(52)	—	(105)
Accounts receivable	**63**	**152**	—	**215**
Accounts payable	**(43)**	**(112)**	—	**(155)**
Balance at December 31, 2018	**20**	**40**	—	**60**

During the year ended December 31, 2018, there were no transfers between Level 1 and Level 2 fair value measurements.

Offsetting Financial Assets and Liabilities

The company enters into arrangements that allow for offsetting of derivative financial instruments and accounts receivable (payable), which are presented on a net basis on the balance sheet, as shown in the table below as at December 31, 2018 and 2017.

Financial Assets

($ millions)	Gross Assets	Gross Liabilities Offset	Net Amounts Presented
Derivatives	1 126	(1 052)	74
Accounts receivable	2 405	(1 252)	1 153
Balance at December 31, 2017	3 531	(2 304)	1 227
Derivatives	**1 599**	**(1 384)**	**215**
Accounts receivable	**1 837**	**(882)**	**955**
Balance at December 31, 2018	**3 436**	**(2 266)**	**1 170**

Financial Liabilities

($ millions)	Gross Liabilities	Gross Assets Offset	Net Amounts Presented
Derivatives	(1 231)	1 052	(179)
Accounts payable	(2 270)	1 252	(1 018)
Balance at December 31, 2017	(3 501)	2 304	(1 197)
Derivatives	**(1 539)**	**1 384**	**(155)**
Accounts payable	**(1 798)**	**882**	**(916)**
Balance at December 31, 2018	**(3 337)**	**2 266**	**(1 071)**

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Risk Management

The company is exposed to a number of different risks arising from financial instruments. These risk factors include market risks, comprising commodity price risk, foreign currency risk and interest rate risk, as well as liquidity risk and credit risk.

The company maintains a formal governance process to manage its financial risks. The company's Commodity Risk Management Committee (CRMC) is charged with the oversight of the company's trading and credit risk management activities. Trading activities are defined as activities intended to manage risk associated with open price exposure of specific volumes in transit or storage, enhance the company's operations, and enhance profitability through informed market calls, market diversification, economies of scale, improved transportation access, and leverage of assets, both physical and contractual. The CRMC, acting under the authority of the company's Board of Directors, meets regularly to monitor limits on risk exposures, review policy compliance and validate risk-related methodologies and procedures.

The nature of the risks faced by the company and its policies for managing such risks remains unchanged from December 31, 2017.

1) Market Risk

Market risk is the risk or uncertainty arising from market price movements and their impact on the future performance of the business. The market price movements that could adversely affect the value of the company's financial assets, liabilities and expected future cash flows include commodity price risk, foreign currency exchange risk and interest rate risk.

(a) Commodity Price Risk

Suncor's financial performance is closely linked to crude oil prices (including pricing differentials for various product types) and, to a lesser extent, natural gas and refined product prices. The company may reduce its exposure to commodity price risk through a number of strategies. These strategies include entering into option contracts to limit exposure to changes in crude oil prices during transportation.

An increase of US$10.00 per barrel of crude oil as at December 31, 2018 would decrease pre-tax earnings for the company's outstanding derivative financial instruments by approximately $39 million (2017 – $196 million).

(b) Foreign Currency Exchange Risk

The company is exposed to foreign currency exchange risk on revenues, capital expenditures, or financial instruments that are denominated in a currency other than the company's functional currency (Canadian dollars). As crude oil is priced in U.S. dollars, fluctuations in US$/Cdn$ exchange rates may have a significant impact on revenues. This exposure is partially offset through the issuance of U.S. dollar denominated debt. A 1% strengthening in the Cdn$ relative to the US$ as at December 31, 2018 would increase pre-tax earnings related to the company's debt by approximately $167 million (2017 – $142 million).

(c) Interest Rate Risk

The company is exposed to interest rate risk as changes in interest rates may affect future cash flows and the fair values of its financial instruments. The primary exposure is related to its revolving-term debt of commercial paper and future debt issuances.

To manage the company's exposure to interest rate volatility, the company may periodically enter into interest rate swap contracts to fix the interest rate of future debt issuances. As at December 31, 2018, the company had no outstanding forward starting swaps. The weighted average interest rate on total debt for the year ended December 31, 2018 was 5.4% (2017 – 5.7%).

The company's net earnings are sensitive to changes in interest rates on the floating rate portion of the company's debt, which are offset by cash balances. To the extent interest expense is not capitalized, if interest rates applicable to floating rate instruments increased by 1%, it is estimated that the company's pre-tax earnings would decrease by approximately $10 million (2017 – increase by approximately $6 million). This assumes that the amount and mix of fixed and floating rate debt remains unchanged from December 31, 2018. The proportion of floating interest rate exposure at December 31, 2018 was 18.6% of total debt outstanding (2017 – 14.9%).

2) Liquidity Risk

Liquidity risk is the risk that Suncor will not be able to meet its financial obligations when due. The company mitigates this risk by forecasting spending requirements as well as cash flow from operating activities, and maintaining sufficient cash, credit facilities, and debt shelf prospectuses to meet these requirements. Suncor's cash and cash equivalents and total credit facilities at December 31, 2018 were $2.2 billion and $8.4 billion, respectively. Of Suncor's $8.4 billion in total credit facilities,

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$3.9 billion were available at December 31, 2018. In addition, Suncor has $3.0 billion of unused capacity under a Canadian debt shelf prospectus and an unused capacity of US$3.0 billion under a U.S. debt shelf prospectus.

Surplus cash is invested into a range of short-dated money market securities. Investments are only permitted in high credit quality government or corporate securities. Diversification of these investments is managed through counterparty credit limits.

The following table shows the timing of cash outflows related to trade and other payables and debt.

	December 31, 2017		
($ millions)	Trade and Other Payables[1]	Gross Derivative Liabilities[2]	Debt[3]
Within one year	6 024	1 231	3 027
1 to 3 years	38	—	1 949
3 to 5 years	38	—	3 184
Over 5 years	—	—	20 160
	6 100	1 231	28 320

	December 31, 2018		
($ millions)	Trade and Other Payables[1]	Gross Derivative Liabilities[2]	Debt[3]
Within one year	**5 492**	**1 539**	**4 314**
1 to 3 years	**42**	—	**3 362**
3 to 5 years	**42**	—	**1 827**
Over 5 years	—	—	**20 611**
	5 576	**1 539**	**30 114**

(1) Trade and other payables exclude net derivative liabilities of $155 million (2017 – $179 million).

(2) Gross derivative liabilities of $1 539 million (2017 – $1 231 million) are offset by gross derivative assets of $1 384 million (2017 – $1 052 million), resulting in a net amount of $155 million (2017 – $179 million).

(3) Debt includes short-term debt, long-term debt, finance leases and interest payments on fixed-term debt and commercial paper.

3) Credit Risk

Credit risk is the risk that a customer or counterparty will fail to perform an obligation or fail to pay amounts due, causing a financial loss. The company's credit policy is designed to ensure there is a standard credit practice throughout the company to measure and monitor credit risk. The policy outlines delegation of authority, the due diligence process required to approve a new customer or counterparty and the maximum amount of credit exposure per single entity. Before transactions begin with a new customer or counterparty, its creditworthiness is assessed, a credit rating and a maximum credit limit are assigned. The assessment process is outlined in the credit policy and considers both quantitative and qualitative factors. The company constantly monitors the exposure to any single customer or counterparty along with the financial position of the customer or counterparty. If it is deemed that a customer or counterparty has become materially weaker, the company will work to reduce the credit exposure and lower the assigned credit limit. Regular reports are generated to monitor credit risk and the Credit Committee meets quarterly to ensure compliance with the credit policy and review the exposures.

A substantial portion of the company's accounts receivable are with customers in the oil and gas industry and are subject to normal industry credit risk. At December 31, 2018, substantially all of the company's trade receivables were current.

The company may be exposed to certain losses in the event that counterparties to derivative financial instruments are unable to meet the terms of the contracts. The company's exposure is limited to those counterparties holding derivative contracts owing to the company at the reporting date. At December 31, 2018, the company's exposure was $1 599 million (December 31, 2017 – $1 126 million).

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26. CAPITAL STRUCTURE FINANCIAL POLICIES

The company's primary capital management strategy is to maintain a conservative balance sheet, which supports a solid investment grade credit rating profile. This objective affords the company the financial flexibility and access to the capital it requires to execute on its growth objectives.

The company's capital is primarily monitored by reviewing the ratios of net debt to funds from operations[1] and total debt to total debt plus shareholders' equity.

Net debt to funds from operations is calculated as short-term debt plus total long-term debt less cash and cash equivalents, divided by funds from operations for the year then ended.

Total debt to total debt plus shareholders' equity is calculated as short-term debt plus total long-term debt divided by short-term debt plus total long-term debt plus shareholders' equity. This financial covenant under the company's various banking and debt agreements shall not be greater than 65%.

The company's financial covenant is reviewed regularly and controls are in place to maintain compliance with the covenant. The company complied with financial covenants for the years ended December 31, 2018 and 2017. The company's financial measures, as set out in the following schedule, were unchanged from 2017. The company believes that achieving its capital target helps to provide the company access to capital at a reasonable cost by maintaining solid investment grade credit ratings. The company operates in a fluctuating business environment and ratios may periodically fall outside of management's targets. The company addresses these fluctuations by capital expenditure reductions and sales of non-core assets to ensure net debt achieves management's targets.

($ millions)	Capital Measure Target	December 31, 2018	December 31, 2017
Components of ratios			
Short-term debt		3 231	2 136
Current portion of long-term debt		229	71
Long-term debt		13 890	13 372
Total debt		17 350	15 579
Less: Cash and cash equivalents		2 221	2 672
Net debt		15 129	12 907
Shareholders' equity		44 005	45 383
Total capitalization (total debt plus shareholders' equity)		61 355	60 962
Funds from operations[1]		10 172	9 139
Net debt to funds from operations	<3.0 times	1.5	1.4
Total debt to total debt plus shareholders' equity		28%	26%

(1) Funds from operations is calculated as cash flow from operating activities before changes in non-cash working capital, and is a non-GAAP financial measure.

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27. JOINT ARRANGEMENTS

Joint Operations

The company's material joint operations as at December 31 are set out below:

Material Joint Operations	Principal Activity	Country of Incorporation and Principal Place of Business	Ownership % 2018	Ownership % 2017
Oil Sands				
Operated by Suncor:				
Fort Hills Energy Limited Partnership	Oil sands development	Canada	54.11	53.06
Non-operated:				
Syncrude	Oil sands development	Canada	58.74	53.74
Exploration and Production				
Operated by Suncor:				
Terra Nova	Oil and gas production	Canada	37.68	37.68
Non-operated:				
Buzzard	Oil and gas production	United Kingdom	29.89	29.89
Fenja Development JV	Oil and gas production	Norway	17.50	—
Golden Eagle Area Development	Oil and gas production	United Kingdom	26.69	26.69
Hibernia and the Hibernia South Extension Unit	Oil and gas production	Canada	19.19-20.00	19.19-20.00
Hebron	Oil and gas production	Canada	21.03	21.03
Harouge Oil Operations	Oil and gas production	Libya	49.00	49.00
North Sea Rosebank Project	Oil and gas production	United Kingdom	40.00	30.00
Oda	Oil and gas production	Norway	30.00	30.00
White Rose and the White Rose Extensions	Oil and gas production	Canada	26.13-27.50	26.13-27.50

Joint Ventures and Associates

The company does not have any joint ventures or associates that are considered individually material. Summarized aggregate financial information of the joint ventures and associates, which are all included in the company's Exploration and Production and Refining and Marketing operations, are shown below:

	Joint ventures		Associates	
($ millions)	2018	2017	2018	2017
Net earnings (loss)	**11**	1	**(19)**	(3)
Other comprehensive income	—	—	—	—
Total comprehensive income (loss)	**11**	1	**(19)**	(3)
Carrying amount as at December 31	**75**	51	**110**	89

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28. SUBSIDIARIES

Material subsidiaries, each of which is wholly owned, either directly or indirectly, by the company as at December 31, 2018 are shown below:

Material Subsidiaries	Principal Activity
Canadian Operations	
Suncor Energy Oil Sands Limited Partnership	This partnership holds most of the company's Oil Sands operations assets.
Suncor Energy Ventures Corporation	A subsidiary which indirectly owns a 36.74% ownership in the Syncrude joint operation previously owned by COS.
Suncor Energy Ventures Partnership	A subsidiary which owns a 22% ownership in the Syncrude joint operation.
Suncor Energy Products Partnership	This partnership holds substantially all of the company's Canadian refining and marketing assets.
Suncor Energy Marketing Inc.	Through this subsidiary, production from the upstream Canadian businesses is marketed. This subsidiary also administers Suncor's energy trading activities and power business, markets certain third-party products, procures crude oil feedstock and natural gas for its downstream business, and procures and markets natural gas liquids (NGLs) and liquefied petroleum gas (LPG) for its downstream business.
U.S. Operations	
Suncor Energy (U.S.A.) Marketing Inc.	A subsidiary that procures and markets third-party crude oil, in addition to procuring crude oil feedstock for the company's refining operations.
Suncor Energy (U.S.A.) Inc.	A subsidiary through which the company's U.S. refining and marketing operations are conducted.
International Operations	
Suncor Energy UK Limited	A subsidiary through which the majority of the company's North Sea operations are conducted.

The table does not include wholly owned subsidiaries that are immediate holding companies of the operating subsidiaries. For certain foreign operations of the company, there are restrictions on the sale or transfer of production licences, which would require approval of the applicable foreign government.

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29. RELATED PARTY DISCLOSURES

Related Party Transactions

The company enters into transactions with related parties in the normal course of business, which includes purchases of feedstock, distribution of refined products, and sale of refined products and byproducts. These transactions are with joint ventures and associated entities in the company's Refining and Marketing operations, including pipeline, refined product and petrochemical companies. A summary of the significant related party transactions as at and for the year ended December 31, 2018 and 2017 are as follows:

($ millions)	2018	2017
Sales[1]	**723**	590
Purchases	**237**	223
Accounts receivable	**33**	44
Accounts payable and accrued liabilities	**15**	28

(1) Includes sales to Parachem Chemicals Inc. of $338 million (2017 – $301 million).

Compensation of Key Management Personnel

Compensation of the company's Board of Directors and members of the Executive Leadership Team for the years ended December 31 is as follows:

($ millions)	2018	2017
Salaries and other short-term benefits	**15**	12
Pension and other post-retirement benefits	**5**	5
Share-based compensation	**32**	49
	52	66

30. COMMITMENTS, CONTINGENCIES AND GUARANTEES

(a) Commitments

Future payments under the company's commitments, including service arrangements for pipeline transportation agreements and for various premises, service stations and other property and equipment, are as follows:

	Payment Due by Period						
($ millions)	2019	2020	2021	2022	2023	2024 and Beyond	Total
Commitments							
Product transportation and storage	1 053	948	1 058	1 181	1 149	13 211	**18 600**
Energy services	139	136	173	116	118	183	**865**
Exploration work commitments	33	—	44	—	—	490	**567**
Other	358	283	135	75	69	195	**1 115**
Operating leases	346	304	266	203	156	1 182	**2 457**
	1 929	1 671	1 676	1 575	1 492	15 261	**23 604**

The operating leases noted above will be captured in the IFRS 16 transition adjustment effective January 1, 2019, except for short-term leases (see note 5). The operating leases expire at various dates through 2058. For the year ended December 31, 2018, operating lease expense was $324 million (2017 – $400 million).

In addition to the commitments in the above table, the company has other obligations for goods and services and raw materials entered into in the normal course of business, which may terminate on short notice. Such obligations include commodity purchase obligations which are transacted at market prices.

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(b) Contingencies

Legal and Environmental Contingent Liabilities

The company is defendant and plaintiff in a number of legal actions that arise in the normal course of business. The company believes that any liabilities that might arise pertaining to such matters would not have a material effect on its consolidated financial position.

The company may also have environmental contingent liabilities, beyond decommissioning and restoration liabilities (recognized in note 22), which are reviewed individually and are reflected in the company's consolidated financial statements if material and more likely than not to be incurred. These contingent environmental liabilities primarily relate to the mitigation of contamination at sites where the company has had operations. For any unrecognized environmental contingencies, the company believes that any liabilities that might arise pertaining to such matters would not have a material effect on its consolidated financial position.

Costs attributable to these commitments and contingencies are expected to be incurred over an extended period of time and to be funded from the company's cash flow from operating activities. Although the ultimate impact of these matters on net earnings cannot be determined at this time, the impact is not expected to be material.

Operational Risk

The company also has exposure to some operational risks, which is reduced by maintaining an insurance program.

The company carries property damage and business interruption insurance with varying coverage limits and deductible amounts based on the asset. As of December 31, 2018, Suncor's insurance program included coverage of up to US$1.2 billion for oil sands risks, up to US$0.975 billion for offshore risks and up to US$1.2 billion for refining risks. These limits are all net of deductible amounts or waiting periods and subject to certain price and daily volume limits. The company also has primary property insurance for up to US$400 million, also net of the deductible that covers all of Suncor's physical assets.

(c) Guarantees

At December 31, 2018, the company provides loan guarantees to certain retail licensees and wholesale marketers. Suncor's maximum potential amount payable under these loan guarantees is $125 million.

The company has also agreed to indemnify holders of all notes and debentures and the company's credit facility lenders (see note 19) for added costs relating to withholding taxes. Similar indemnity terms apply to certain facility and equipment leases. There is no limit to the maximum amount payable under these indemnification agreements. The company is unable to determine the maximum potential amount payable as government regulations and legislation are subject to change without notice. Under these agreements, the company has the option to redeem or terminate these contracts if additional costs are incurred.

The company also has guaranteed its working-interest share of certain joint operation undertakings related to transportation services agreements entered into with third parties. The guaranteed amount is limited to the company's share in the joint arrangement. As at December 31, 2018, the probability is remote that these guarantee commitments will impact the company.

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31. ACQUISITION OF ADDITIONAL OWNERSHIP INTEREST IN THE SYNCRUDE PROJECT

On February 23, 2018, Suncor completed the purchase of an additional 5% working interest in the Syncrude project from Mocal Energy Limited for $923 million cash. Suncor's share in the Syncrude project has increased to 58.74%.

The acquisition has been accounted for as a business combination using the acquisition method. The preliminary purchase price allocation is based on management's best estimates of fair values of Syncrude's assets and liabilities as at February 23, 2018.

($ millions)	
Accounts receivable	2
Inventory	15
Property, plant and equipment	998
Exploration and evaluation	163
Total assets acquired	**1 178**
Accounts payable and accrued liabilities	(51)
Employee future benefits	(33)
Decommissioning provision	(169)
Deferred income taxes	(2)
Total liabilities assumed	**(255)**
Net assets acquired	**923**

The fair values of accounts receivable and accounts payable approximate their carrying values due to the short-term maturity of the instruments. The fair value of materials and supplies inventory approximates book value due to short-term turnover rates. The fair values of property, plant and equipment, and the decommissioning provision were determined using an expected future cash flow approach. Key assumptions used in the calculations were discount rates, future commodity prices and costs, timing of development activities, projections of oil reserves, and cost estimates to abandon and reclaim the mine and facilities.

The additional working interest in Syncrude contributed $270 million to gross revenues and a $7 million net loss to consolidated net earnings from the acquisition date to December 31, 2018.

Had the acquisition occurred on January 1, 2018, the additional working interest would have contributed an additional $64 million to gross revenues and $4 million to consolidated net earnings, which would have resulted in gross revenues of $39.66 billion and consolidated net earnings of $3.30 billion for the twelve months ended December 31, 2018.

32. FORT HILLS

On December 21, 2017, the Fort Hills partners resolved their commercial dispute and reached an agreement. As a result, Suncor acquired an additional 2.26% interest in the project for consideration of $308 million. Subsequently, in the first quarter of 2018, Suncor acquired an additional 1.05% interest in the Fort Hills project for consideration of $145 million. Suncor's share in the project has increased to 54.11% and Teck Resources Limited's share has increased to 21.31% with Total E&P Canada Ltd.'s share decreasing to 24.58%.

33. SALE OF LUBRICANTS BUSINESS

On February 1, 2017, the company completed the previously announced sale of its lubricants business for proceeds of $1.1 billion before closing adjustments and other closing costs. The sale of this business resulted in an after-tax gain of $354 million, including a current tax expense of $101 million and a deferred tax recovery of $11 million, in the Refining and Marketing segment.

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34. SALE OF CEDAR POINT

The company sold its interest in the Cedar Point wind facility in southwest Ontario for proceeds of $291 million before closing adjustments and other closing costs, with an effective date of January 1, 2017. The disposition resulted in an after-tax gain of $83 million, including a current tax expense of $29 million and a deferred tax recovery of $15 million, in the Corporate, Energy Trading and Eliminations segment.

35. EAST TANK FARM DEVELOPMENT PARTNERSHIP (ETFD)

The ETFD consists of bitumen storage, blending and cooling facilities, and connectivity to third-party pipelines and began operations on July 14, 2017. ETFD will be solely responsible for moving the product of the Fort Hills joint operation to market. On November 22, 2017, the company completed the sale of a 49% ownership interest in the ETFD to the FMFN and the MCFN for gross proceeds of $503 million. Suncor retained a 51% ownership interest and remains as operator of the assets. The assets are held by a limited partnership, which has a non-discretionary obligation to distribute the variable monthly residual cash in ETFD to the partners. Therefore, the company recorded a liability within Other Long-Term Liabilities to reflect the 49% non-controlling interest of the third parties. As a result, the company continues to consolidate 100% of the results of the Partnership. During the year ended December 31, 2018, the company paid $62 million (2017 – $25 million) in distributions to the partners, of which $56 million (2017 – $5 million) was allocated to interest expense and $6 million (2017 – $20 million) to the principal.

36. OTHER TRANSACTIONS

On September 29, 2018, Suncor along with the other working-interest partners in the Joslyn Oil Sands Mining project, agreed to sell 100% of their respective working interests to Canadian Natural Resources Limited for gross proceeds of $225 million, $82.7 million net to Suncor. Suncor held a 36.75% working interest in Joslyn prior to the transaction. The working-interest partners received cash proceeds of $100 million ($36.8 million net to Suncor) upon closing, with the remaining $125 million ($45.9 million net to Suncor) to be received in equal instalments over the next five years. As a result, Suncor has recorded a long-term receivable of $36.7 million within the Other Assets line item and the first instalment of $9.2 million is recorded within the Accounts Receivable line item. The transaction resulted in a gain of $83 million in the Oil Sands segment.

On May 31, 2018, the company completed the previously announced transaction to acquire a 17.5% interest in the Fenja development project in Norway from Faroe Petroleum Norge AS for acquisition costs of US$55 million (approximately $70 million), plus interim settlement costs of $22 million under the acquisition method. This project was sanctioned by its owners in December 2017.

On March 23, 2018, Suncor completed an exchange of its northeast B.C. mineral landholdings, including associated production, and consideration of $52 million for a 37% equity interest in Canbriam Energy Inc. (Canbriam) (a private natural gas company). The investment is accounted for using the equity method of accounting. In the fourth quarter of 2018, the company wrote down its interest in Canbriam as a result of the company's assessment of expected future commodity prices and net cash flows, for a net loss in the year of $90 million after-tax. The remaining carrying value of the company's interest in Canbriam is nil.

37. SUBSEQUENT EVENT

Subsequent to the end of the year, the company received $300 million in risk mitigation proceeds for its Libyan assets (approximately $260 million after-tax). The proceeds may be subject to a provisional repayment, which is dependent on the future performance and cash flows from Suncor's Libyan assets.

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SUPPLEMENTAL FINANCIAL AND OPERATING INFORMATION
QUARTERLY FINANCIAL SUMMARY

(unaudited)

($ millions except per share amounts)	For the Quarter Ended Mar 31 2018	June 30 2018	Sept 30 2018	Dec 31 2018	Total Year 2018	For the Quarter Ended Mar 31 2017	June 30 2017	Sept 30 2017	Dec 31 2017	Total Year 2017
Revenues and other income[A]	**8 750**	**10 428**	**10 863**	**8 945**	**38 986**	7 812	7 247	8 006	9 014	32 079
Net earnings (loss)										
Oil Sands	**82**	**368**	**796**	**(393)**	**853**	302	(277)	314	670	1 009
Exploration and Production	**395**	**311**	**217**	**(115)**	**808**	172	182	161	217	732
Refining and Marketing	**806**	**685**	**939**	**723**	**3 153**	829	346	597	886	2 658
Corporate, Energy Trading and Eliminations	**(494)**	**(392)**	**(140)**	**(495)**	**(1 521)**	49	184	217	(391)	59
	789	**972**	**1 812**	**(280)**	**3 293**	1 352	435	1 289	1 382	4 458
Operating earnings (loss)[B]										
Oil Sands	**82**	**368**	**736**	**(393)**	**793**	302	(277)	314	615	954
Exploration and Production	**262**	**311**	**217**	**108**	**898**	172	182	161	231	746
Refining and Marketing	**806**	**685**	**939**	**723**	**3 153**	475	346	597	746	2 164
Corporate, Energy Trading and Eliminations	**(165)**	**(174)**	**(335)**	**142**	**(532)**	(137)	(52)	(205)	(282)	(676)
	985	**1 190**	**1 557**	**580**	**4 312**	812	199	867	1 310	3 188
Funds from (used in) operations[B]										
Oil Sands	**979**	**1 446**	**1 844**	**601**	**4 870**	1 109	573	1 276	1 780	4 738
Exploration and Production	**502**	**545**	**455**	**367**	**1 869**	481	438	375	431	1 725
Refining and Marketing	**965**	**884**	**1 119**	**826**	**3 794**	575	504	827	935	2 841
Corporate, Energy Trading and Eliminations	**(282)**	**(13)**	**(279)**	**213**	**(361)**	(141)	112	(6)	(130)	(165)
Total Funds from operations	**2 164**	**2 862**	**3 139**	**2 007**	**10 172**	2 024	1 627	2 472	3 016	9 139
Change in non-cash working capital	**(1 440)**	**(416)**	**1 231**	**1 033**	**408**	(396)	44	440	(261)	(173)
Cash flow provided by operating activities	**724**	**2 446**	**4 370**	**3 040**	**10 580**	1 628	1 671	2 912	2 755	8 966
Per common share										
Net earnings (loss) – basic	**0.48**	**0.60**	**1.12**	**(0.18)**	**2.03**	0.81	0.26	0.78	0.84	2.68
Net earnings (loss) – diluted	**0.48**	**0.59**	**1.11**	**(0.18)**	**2.02**	0.81	0.26	0.78	0.84	2.68
Operating earnings – basic[B]	**0.60**	**0.73**	**0.96**	**0.36**	**2.65**	0.49	0.12	0.52	0.79	1.92
Cash dividends – basic	**0.36**	**0.36**	**0.36**	**0.36**	**1.44**	0.32	0.32	0.32	0.32	1.28
Funds from operations – basic[B]	**1.32**	**1.75**	**1.94**	**1.26**	**6.27**	1.21	0.98	1.49	1.83	5.50
Cash flow provided by operating activities – basic	**0.44**	**1.50**	**2.70**	**1.90**	**6.54**	0.98	1.00	1.75	1.67	5.40

	For the Twelve Months Ended Mar 31 2018	Jun 30 2018	Sep 30 2018	Dec 31 2018	For the Twelve Months Ended Mar 31 2017	Jun 30 2017	Sep 30 2017	Dec 31 2017
Return on capital employed[B]								
– excluding major projects in progress (%)	**7.8**	**9.5**	**10.4**	**8.2**	4.4	6.2	7.0	8.6
– including major projects in progress (%)	**6.5**	**8.3**	**9.7**	**8.0**	3.5	4.9	5.5	6.7

(A) Prior periods have been restated due to IFRS 15 adoption; see note 5 in the consolidated financial statements

(B) Non-GAAP financial measures. See the Operating Summary Information – Non-GAAP Financial Measures section of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

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QUARTERLY OPERATING SUMMARY

(unaudited)

Oil Sands	For the Quarter Ended Mar 31 2018	June 30 2018	Sept 30 2018	Dec 31 2018	Total Year 2018	For the Quarter Ended Mar 31 2017	June 30 2017	Sept 30 2017	Dec 31 2017	Total Year 2017
Total Production (mbbls/d)	571.7	547.6	651.7	740.8	628.6	590.6	413.6	628.4	621.2	563.7
Oil Sands operations										
Production (mbbls/d)										
Upgraded product (sweet SCO, sour SCO and diesel)	279.4	237.9	330.1	273.4	280.3	332.8	288.6	324.4	324.9	317.7
Non-upgraded bitumen	125.4	121.0	146.0	159.3	138.0	115.7	64.0	144.9	121.9	111.7
Oil Sands operations production	404.8	358.9	476.1	432.7	418.3	448.5	352.6	469.3	446.8	429.4
Bitumen production (mbbls/d)										
Mining	241.6	195.4	323.4	278.3	258.8	311.1	293.1	328.1	296.7	305.4
In Situ – Firebag	205.8	201.9	211.0	197.2	204.0	202.8	110.9	203.6	208.5	181.5
In Situ – MacKay River	35.1	34.4	37.1	37.0	36.0	35.6	30.0	30.8	28.3	31.1
Total bitumen production	482.5	431.7	571.5	512.5	498.8	549.5	434.0	562.5	533.5	518.0
Sales (mbbls/d)										
Light sweet crude oil	84.2	59.6	129.5	110.2	96.1	124.9	104.4	105.9	95.5	107.9
Diesel	20.4	32.4	34.7	27.6	28.8	30.3	29.6	30.4	21.1	27.5
Light sour crude oil	178.2	159.0	162.8	150.7	162.6	176.4	160.1	183.2	214.4	183.6
Upgraded product (SCO and diesel)	282.8	251.0	327.0	288.5	287.5	331.6	294.1	319.5	331.0	319.0
Non-upgraded bitumen	118.2	113.7	131.4	172.0	134.0	104.9	86.0	120.3	130.7	110.6
Sales	401.0	364.7	458.4	460.5	421.5	436.5	380.1	439.8	461.7	429.6
Cash operating costs – Average[1][B] ($/bbl)*										
Cash costs	25.05	27.45	21.05	22.80	23.85	20.15	25.70	20.40	22.55	21.95
Natural gas	1.80	1.20	0.95	1.70	1.40	2.40	2.10	1.20	1.65	1.85
	26.85	28.65	22.00	24.50	25.25	22.55	27.80	21.60	24.20	23.80
Cash operating costs – Mining bitumen production only[1][B][C] ($/bbl)										
Cash costs	26.50	32.15	20.35	23.65	25.20	18.45	19.70	19.15	22.70	20.00
Natural gas	0.65	0.30	0.15	0.35	0.35	0.60	0.60	0.25	0.45	0.45
	27.15	32.45	20.50	24.00	25.55	19.05	20.30	19.40	23.15	20.45
Cash operating costs – In Situ bitumen production only[1][B] ($/bbl)										
Cash costs	6.55	6.10	6.20	5.75	6.15	7.00	10.95	6.75	6.20	7.35
Natural gas	3.00	1.80	1.85	2.55	2.30	4.00	4.00	2.20	2.65	3.15
	9.55	7.90	8.05	8.30	8.45	11.00	14.95	8.95	8.85	10.50
Fort Hills										
Bitumen production (mbbls/d)	29.8	70.9	69.4	98.5	67.4	—	—	—	—	—
Internally upgraded bitumen from froth (mbbls/d)	(5.2)	—	—	—	(1.3)	—	—	—	—	—
Total Fort Hills Bitumen	24.6	70.9	69.4	98.5	66.1	—	—	—	—	
Bitumen Sales (mbbls/d)	8.1	64.0	61.6	94.6	57.3	—	—	—	—	—
Fort Hills Cash operating costs[1][B] ($/bbl)*										
Cash costs	50.45	27.60	32.55	23.85	30.00	—	—	—	—	—
Natural gas	3.20	0.95	0.90	1.00	1.20	—	—	—	—	—
	53.65	28.55	33.45	24.85	31.20	—	—	—	—	—
Syncrude										
Sweet SCO Production (mbbls/d)	142.3	117.8	106.2	209.6	144.2	142.1	61.0	159.1	174.4	134.3
Bitumen production (mbbls/d)	173.3	142.7	130.9	240.7	172.0	170.0	82.4	193.7	207.5	163.6
Intermediate sour SCO (mbbls/d)[2]	138.2	119.9	107.2	206.3	143.0	140.9	61.3	157.1	177.1	132.9
Syncrude cash operating costs[1][B] ($/bbl)*										
Cash costs	49.25	53.80	62.80	30.85	46.15	43.25	89.90	34.00	31.75	42.50
Natural gas	1.50	2.45	1.05	0.90	1.10	1.90	7.90	1.00	1.05	1.55
	50.75	56.25	63.85	31.75	47.25	45.15	97.80	35.00	32.80	44.05

(B) Non-GAAP financial measures. See the Operating Metrics Reconciliation and the Operating Summary Information – Non-GAAP Financial Measures sections of this Annual Report.

(C) Cash operating costs – Mining bitumen production per barrel costs have been restated.

See accompanying footnotes and definitions to the operating summaries.

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QUARTERLY OPERATING SUMMARY (continued)

(unaudited)

Oil Sands Operating Netbacks[A][B][D]	For the Quarter Ended Mar 31 2018	June 30 2018	Sept 30 2018	Dec 31 2018	Total Year 2018	For the Quarter Ended Mar 31 2017	June 30 2017	Sept 30 2017	Dec 31 2017	Total Year 2017
Bitumen ($/bbl)										
Average price realized	33.55	47.08	42.03	7.96	30.22	33.89	36.45	38.57	42.80	38.32
Royalties	(0.90)	(3.27)	(3.20)	(0.06)	(1.70)	(0.54)	(0.69)	(0.50)	(1.02)	(0.71)
Transportation costs	(5.98)	(4.24)	(5.41)	(5.53)	(5.52)	(6.57)	(7.06)	(3.78)	(3.06)	(4.85)
Net operating expenses	(8.75)	(7.37)	(7.01)	(7.61)	(7.68)	(9.98)	(14.05)	(8.26)	(7.61)	(9.59)
Operating netback	17.92	32.20	26.41	(5.24)	15.32	16.80	14.65	26.03	31.11	23.17
SCO and diesel ($/bbl)										
Average price realized	74.65	85.06	86.71	46.07	73.07	66.29	64.23	59.76	70.55	65.28
Royalties	(0.56)	(2.60)	(2.70)	(0.91)	(1.63)	(0.59)	(1.19)	(1.03)	(1.14)	(0.98)
Transportation costs	(4.14)	(5.06)	(3.76)	(3.63)	(4.10)	(3.98)	(3.72)	(3.65)	(3.87)	(3.81)
Net operating expenses – bitumen	(25.33)	(27.52)	(20.49)	(23.72)	(24.04)	(19.78)	(22.70)	(20.29)	(21.70)	(21.08)
Net operating expenses – upgrading	(6.05)	(8.13)	(5.03)	(6.49)	(6.32)	(4.81)	(5.60)	(4.65)	(4.90)	(4.97)
Operating netback	38.57	41.75	54.73	11.32	36.98	37.13	31.02	30.14	38.94	34.44
Average Oil Sands operations ($/bbl)										
Average price realized	62.54	73.21	73.90	31.84	59.46	58.50	57.94	53.96	62.69	58.34
Royalties	(0.66)	(2.81)	(2.84)	(0.59)	(1.70)	(0.58)	(1.07)	(0.89)	(1.11)	(0.91)
Transportation costs	(4.68)	(4.80)	(4.23)	(4.34)	(4.55)	(4.60)	(4.47)	(3.68)	(3.64)	(4.08)
Net operating expenses – bitumen and upgrading	(24.71)	(26.83)	(20.21)	(21.78)	(23.15)	(21.07)	(25.08)	(20.38)	(21.23)	(21.82)
Operating netback	32.49	38.77	46.62	5.13	30.06	32.25	27.32	29.01	36.71	31.53
Fort Hills ($/bbl)										
Average price realized	40.58	60.81	64.33	30.57	48.48	—	—	—	—	—
Royalties	(1.54)	(0.73)	(3.07)	(1.41)	(1.67)	—	—	—	—	—
Transportation costs	(8.10)	(8.95)	(10.90)	(10.31)	(10.01)	—	—	—	—	—
Net operating expenses – bitumen and upgrading	(106.07)	(22.73)	(30.69)	(28.79)	(30.32)	—	—	—	—	—
Operating netback	(75.13)	28.40	19.67	(9.94)	6.48	—	—	—	—	—
Syncrude ($/bbl)										
Average price realized	77.33	86.73	89.50	48.07	70.68	66.37	62.27	60.68	73.64	66.59
Royalties	(1.57)	(2.41)	(2.49)	(1.53)	(1.90)	(2.96)	—	(3.18)	(7.94)	(4.32)
Transportation costs	(0.48)	(0.57)	(0.70)	(0.36)	(0.49)	(0.38)	(1.83)	(0.38)	(0.36)	(0.54)
Net operating expenses – bitumen and upgrading	(45.30)	(52.27)	(62.61)	(28.33)	(43.81)	(39.70)	(90.72)	(31.48)	(28.81)	(39.46)
Operating netback	29.98	31.48	23.70	17.85	24.48	23.33	(30.28)	25.64	36.53	22.27

(A) Prior periods have been restated due to IFRS 15 adoption, see note 5 in the consolidated financial statements.

(B) Non-GAAP financial measures. See the Operating Metrics Reconciliation and the Operating Summary Information – Non-GAAP Financial Measures sections of this Annual Report.

(D) Netbacks are based on sales volumes.

See accompanying footnotes and definitions to the operating summaries.

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QUARTERLY OPERATING SUMMARY (continued)

(unaudited)

Exploration and Production	For the Quarter Ended Mar 31 2018	June 30 2018	Sept 30 2018	Dec 31 2018	Total Year 2018	For the Quarter Ended Mar 31 2017	June 30 2017	Sept 30 2017	Dec 31 2017	Total Year 2017
Total Sales Volumes (mboe/d)	**121.9**	**110.2**	**96.5**	**83.1**	**102.8**	136.8	130.3	112.6	104.8	120.8
Total Production (mboe/d)	**117.7**	**114.1**	**92.1**	**90.2**	**103.4**	134.5	125.5	111.5	115.2	121.6
Production Volumes										
Exploration and Production Canada										
East Coast Canada										
Terra Nova (mbbls/d)	**15.4**	**13.6**	**8.6**	**9.5**	**11.7**	14.7	11.0	5.8	14.6	11.5
Hibernia (mbbls/d)	**26.1**	**25.5**	**17.9**	**19.0**	**22.1**	30.3	30.0	26.6	27.1	28.5
White Rose (mbbls/d)	**8.8**	**6.0**	**8.0**	**3.7**	**6.6**	13.1	12.9	9.0	10.6	11.4
Hebron (mbbls/d)	**8.2**	**13.5**	**14.4**	**15.7**	**13.0**	—	—	—	1.8	0.4
North America Onshore (mboe/d)	**2.0**	—	—	—	**0.5**	2.8	1.8	1.5	1.4	1.9
	60.5	**58.6**	**48.9**	**47.9**	**53.9**	60.9	55.7	42.9	55.5	53.7
Exploration and Production International										
Buzzard (mboe/d)	**40.4**	**39.4**	**29.6**	**27.7**	**34.2**	49.0	45.3	44.3	36.6	43.8
Golden Eagle (mboe/d)	**14.3**	**12.6**	**12.0**	**10.7**	**12.4**	20.2	20.1	20.5	17.9	19.6
United Kingdom (mboe/d)	**54.7**	**52.0**	**41.6**	**38.4**	**46.6**	69.2	65.4	64.8	54.5	63.4
Libya (mbbls/d)[3]	**2.5**	**3.5**	**1.6**	**3.9**	**2.9**	4.4	4.4	3.8	5.2	4.5
	57.2	**55.5**	**43.2**	**42.3**	**49.5**	73.6	69.8	68.6	59.7	67.9
Netbacks[B,D]										
East Coast Canada ($/bbl)										
Average price realized	**84.63**	**97.30**	**99.50**	**76.19**	**90.04**	69.75	66.26	67.23	81.49	71.06
Royalties	**(14.34)**	**(13.02)**	**(18.75)**	**(5.04)**	**(13.31)**	(15.94)	(14.05)	(13.01)	(13.21)	(14.26)
Transportation costs	**(1.84)**	**(2.24)**	**(2.28)**	**(2.71)**	**(2.22)**	(1.72)	(1.60)	(2.13)	(2.27)	(1.90)
Operating costs	**(9.70)**	**(11.21)**	**(16.06)**	**(23.71)**	**(14.43)**	(9.28)	(10.58)	(14.72)	(11.16)	(11.24)
Operating netback	**58.75**	**70.83**	**62.41**	**44.73**	**60.08**	42.81	40.03	37.37	54.85	43.66
United Kingdom ($/boe)										
Average price realized	**83.22**	**93.88**	**94.28**	**85.31**	**89.10**	67.55	63.46	62.99	76.46	67.25
Transportation costs	**(2.14)**	**(2.20)**	**(2.22)**	**(2.14)**	**(2.18)**	(1.81)	(1.88)	(1.77)	(1.80)	(1.81)
Operating costs	**(5.36)**	**(5.39)**	**(6.04)**	**(8.94)**	**(6.27)**	(3.75)	(4.57)	(4.51)	(5.89)	(4.62)
Operating netback	**75.72**	**86.29**	**86.02**	**74.23**	**80.65**	61.99	57.01	56.71	68.77	60.82

(B) Non-GAAP financial measures. See the Operating Metrics Reconciliation and the Operating Summary Information – Non-GAAP Financial Measures sections of this Annual Report.

(D) Netbacks are based on sales volumes.

See accompanying footnotes and definitions to the operating summaries.

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QUARTERLY OPERATING SUMMARY (continued)

(unaudited)

Refining and Marketing	For the Quarter Ended Mar 31 2018	June 30 2018	Sept 30 2018	Dec 31 2018	Total Year 2018	For the Quarter Ended Mar 31 2017	June 30 2017	Sept 30 2017	Dec 31 2017	Total Year 2017
Refined product sales (mbbls/d)	**512.9**	**500.0**	**565.5**	**530.6**	**527.4**	508.0	521.9	564.5	526.8	530.5
Crude oil processed (mbbls/d)	**453.5**	**344.1**	**457.2**	**467.9**	**430.8**	429.9	435.5	466.8	432.4	441.2
Utilization of refining capacity (%)	**98**	**74**	**99**	**101**	**93**	93	94	101	94	96
Refining margin[B][E] ($/bbl)	**30.50**	**30.25**	**34.45**	**41.50**	**34.50**	22.30	18.85	23.80	31.75	24.20
Refining operating expense[B] ($/bbl)	**4.90**	**6.25**	**5.00**	**5.45**	**5.35**	5.50	5.05	4.50	5.25	5.05
Eastern North America										
Refined product sales (mbbls/d)										
Transportation fuels										
Gasoline	**113.6**	**117.8**	**122.0**	**117.8**	**117.8**	112.8	114.8	121.2	121.1	117.5
Distillate	**81.8**	**93.4**	**96.7**	**100.2**	**95.8**	82.2	82.9	92.6	89.2	86.8
Total transportation fuel sales	**195.4**	**211.2**	**218.7**	**218.0**	**213.6**	195.0	197.7	213.8	210.3	204.3
Petrochemicals	**14.1**	**11.8**	**9.0**	**10.3**	**11.3**	15.5	12.2	10.6	10.5	12.2
Asphalt	**13.1**	**13.3**	**20.5**	**15.2**	**15.5**	12.6	18.0	20.6	15.8	16.8
Other	**36.6**	**25.9**	**26.5**	**25.7**	**26.0**	34.5	35.5	32.4	31.4	33.4
Total refined product sales	**259.2**	**262.2**	**274.7**	**269.2**	**266.4**	257.6	263.4	277.4	268.0	266.7
Crude oil supply and refining										
Processed at refineries (mbbls/d)	**217.8**	**182.0**	**211.6**	**221.0**	**208.1**	214.6	208.6	213.9	188.7	206.4
Utilization of refining capacity (%)	**98**	**82**	**95**	**100**	**94**	97	94	96	85	93
Western North America										
Refined product sales (mbbls/d)										
Transportation fuels										
Gasoline	**120.1**	**124.2**	**139.0**	**127.8**	**127.8**	117.1	122.0	136.4	125.7	125.4
Distillate	**109.9**	**88.3**	**121.0**	**109.5**	**107.6**	110.1	108.3	119.9	111.7	112.5
Total transportation fuel sales	**230.0**	**212.5**	**260.0**	**237.3**	**235.4**	227.2	230.3	256.3	237.4	237.9
Asphalt	**11.3**	**14.3**	**16.1**	**11.3**	**13.3**	9.2	14.6	16.0	9.3	12.3
Other	**12.4**	**11.0**	**14.7**	**12.8**	**12.3**	14.0	13.6	14.8	12.1	13.6
Total refined product sales	**253.7**	**237.8**	**290.8**	**261.4**	**261.0**	250.4	258.5	287.1	258.8	263.8
Crude oil supply and refining										
Processed at refineries (mbbls/d)	**235.7**	**162.1**	**245.6**	**246.9**	**222.7**	215.3	226.9	252.9	243.7	234.8
Utilization of refining capacity (%)	**98**	**68**	**102**	**103**	**93**	90	95	105	102	98

(B) Non-GAAP financial measures. See the Operating Metrics Reconciliation and the Operating Summary Information – Non-GAAP Financial Measures sections of this Annual Report.

(E) Refining Margins are a non-GAAP measure and have been restated to remove the impact of risk management activities.

See accompanying footnotes and definitions to the operating summaries.

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FIVE-YEAR FINANCIAL SUMMARY

(unaudited)

($ millions)	2018	2017	2016	2015	2014
Revenues and other income[A]	**38 986**	32 079	26 759	29 479	40 381
Net earnings (loss)					
Oil Sands	**853**	1 009	(1 149)	(856)	1 776
Exploration and Production	**808**	732	190	(758)	653
Refining and Marketing	**3 153**	2 658	1 890	2 306	1 767
Corporate, Energy Trading and Eliminations	**(1 521)**	59	(486)	(2 687)	(1 497)
	3 293	4 458	445	(1 995)	2 699
Operating earnings (loss)[B]					
Oil Sands	**793**	954	(1 109)	(111)	2 771
Exploration and Production	**898**	746	10	7	857
Refining and Marketing	**3 153**	2 164	1 890	2 274	1 767
Corporate, Energy Trading and Eliminations	**(532)**	(676)	(874)	(705)	(775)
	4 312	3 188	(83)	1 465	4 620
Funds from (used in) operations[B]					
Oil Sands	**4 870**	4 738	2 669	2 835	5 400
Exploration and Production	**1 869**	1 725	1 313	1 386	1 909
Refining and Marketing	**3 794**	2 841	2 606	2 921	2 262
Corporate, Energy Trading and Eliminations	**(361)**	(165)	(600)	(336)	(513)
Total Funds from operations	**10 172**	9 139	5 988	6 806	9 058
Change in non-cash working capital	**408**	(173)	(308)	78	(122)
Cash flow provided by operating activities	**10 580**	8 966	5 680	6 884	8 936
Capital and exploration expenditures (including capitalized interest)					
Oil Sands	**3 546**	5 059	4 724	4 181	3 826
Exploration and Production	**946**	824	1 139	1 459	1 819
Refining and Marketing	**856**	634	685	821	1 024
Corporate, Energy Trading and Eliminations	**58**	34	34	206	292
	5 406	6 551	6 582	6 667	6 961
Total assets	**89 579**	89 494	88 702	77 527	79 671

(A) Prior periods have been restated due to IFRS 15 adoption; see note 5 in the consolidated financial statements

(B) Non-GAAP financial measures. See the Operating Metrics Reconciliation and the Operating Summary Information – Non-GAAP Financial Measures sections of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

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(unaudited)

($ millions)	2018	2017	2016	2015	2014
Ending capital employed					
Short-term and long-term debt, less cash and cash equivalents	**15 129**	12 907	14 414	11 254	7 834
Shareholders' equity	**44 005**	45 383	44 630	39 039	41 603
	59 134	58 290	59 044	50 293	49 437
Less capitalized costs related to major projects in progress	**(1 412)**	(12 901)	(10 147)	(7 195)	(6 203)
	57 722	45 389	48 897	43 098	43 234
Total Suncor employees (number at year end)	**12 480**	12 381	12 837	13 190	13 980
Dollars per common share					
Net earnings (loss)	**2.03**	2.68	0.28	(1.38)	1.84
Operating earnings (loss)[B]	**2.65**	1.92	(0.05)	1.01	3.15
Cash dividends	**1.44**	1.28	1.16	1.14	1.02
Funds from operations[B]	**6.27**	5.50	3.72	4.71	6.19
Cash flow provided by operating activities – basic	**6.54**	5.40	3.53	4.76	6.11
Ratios					
Return on capital employed (%)[B][F]	**8.2**	8.6	0.5	0.6	8.6
Return on capital employed (%)[B][G]	**8.0**	6.7	0.4	0.5	7.5
Debt to debt plus shareholders' equity (%)[H]	**28**	26	28	28	24
Net debt to funds from operations (times)[B][I]	**1.5**	1.4	2.4	1.7	0.9
Interest coverage – funds from operations basis (times)[B][J]	**14.1**	11.2	6.5	9.3	15.5
Interest coverage – net earnings (loss) basis (times)[K]	**6.4**	6.5	0.5	(1.8)	6.6

(B) Non-GAAP financial measures. See the Operating Summary information – Non-GAAP Financial Measures section of this Annual Report.

(F) Net earnings (loss) adjusted for after-tax interest expense and after-tax foreign exchange loss (gain) on U.S. denominated long-term debt for the twelve-month period ended, divided by average capital employed. Average capital employed is the sum of shareholders' equity and short-term debt plus long-term debt less cash and cash equivalents, less average capitalized costs related to major projects in progress, on a weighted average basis.

(G) Average capital employed including capitalized costs related to major projects in progress.

(H) Short-term debt plus long-term debt, divided by the sum of short-term debt, long-term debt and shareholders' equity.

(I) Short-term debt plus long-term debt less cash and cash equivalents, divided by funds from operations for the year then ended.

(J) Funds from operations plus current income taxes and interest expense, divided by the sum of interest expense and capitalized interest.

(K) Net earnings (loss) plus income taxes and interest expense, divided by the sum of interest expense and capitalized interest.

See accompanying footnotes and definitions to the operating summaries.

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FIVE-YEAR OPERATING SUMMARY

(unaudited)

Oil Sands	2018	2017	2016	2015	2014
Total Production (mbbls/d)	628.6	563.7	504.9	463.4	421.9
Oil Sands Operations					
Production (mbbls/d)					
Upgraded product (sweet SCO, sour SCO and diesel)	280.3	317.7	258.9	320.1	289.1
Non-upgraded bitumen	138.0	111.7	115.9	113.5	101.8
Oil Sands operations production	418.3	429.4	374.8	433.6	390.9
Bitumen production (mbbls/d)					
Mining	258.8	305.4	238	307.3	274.4
In Situ – Firebag	204.0	181.5	180.8	186.9	172.0
In Situ – MacKay River	36.0	31.1	27.6	30.7	27.0
Total bitumen production	498.8	518.0	446.4	524.9	473.4
Sales (mbbls/d)					
Light sweet crude oil	96.1	107.9	87.3	107.0	99.7
Diesel	28.8	27.5	21.2	31.3	30.7
Light sour crude oil	162.6	183.6	153.4	182.5	158.9
Upgraded product (SCO and diesel)	287.5	319.0	261.9	320.8	289.3
Non-upgraded bitumen	134.0	110.6	117.4	107.7	101.4
Sales	421.5	429.6	379.3	428.5	390.7
Cash operating costs – Average[(1)(B)] ($/bbl)					
Cash costs	23.85	21.95	24.35	25.65	30.00
Natural gas	1.40	1.85	2.15	2.20	3.80
	25.25	23.80	26.50	27.85	33.80
Cash operating costs – Mining bitumen production only[(1)(B)(C)] ($/bbl)					
Cash costs	25.20	20.00	23.75	21.95	25.90
Natural gas	0.35	0.45	0.60	0.55	0.80
	25.55	20.45	24.35	22.50	26.70
Cash operating costs – In Situ bitumen production only[(1)(B)] ($/bbl)					
Cash costs	6.15	7.35	7.60	9.00	10.20
Natural gas	2.30	3.15	3.30	3.80	6.45
	8.45	10.50	10.90	12.80	16.65
Fort Hills					
Bitumen production (mbbls/d)	67.4	—	—	—	—
Internally upgraded bitumen from froth (mbbls/d)	(1.3)	—	—	—	—
Total Fort Hills Bitumen	66.10	—	—	—	—
	—				
Bitumen Sales (mbbls/d)	57.3				
Fort Hills Cash operating costs[(1)(B)] ($/bbl)*	—	—	—	—	—
Cash costs	30.00	—	—	—	—
Natural gas	1.20	—	—	—	—
	31.20	—	—	—	—
Syncrude					
Sweet SCO Production (mbbls/d)	144.2	134.3	130.1	29.8	31.0
Cash operating costs[(1)(B)] ($/bbl)*					
Cash costs	46.15	42.50	34.60	40.35	46.75
Natural gas	1.10	1.55	1.35	1.65	2.40
	47.25	44.05	35.95	42.00	49.15

(B) Non-GAAP financial measures. See the Operating Metrics Reconciliation and the Operating Summary Information – Non-GAAP Financial Measures sections of this Annual Report.

(C) Cash operating costs – Mining bitumen production per barrel costs have been restated

See accompanying footnotes and definitions to the operating summaries.

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FIVE-YEAR OPERATING SUMMARY (continued)

(unaudited)

Oil Sands Operating Netbacks[A][B][D]	2018	2017	2016	2015	2014
Bitumen ($/bbl)					
Average price realized	**30.22**	38.32	23.86	31.20	64.67
Royalties	**(1.70)**	(0.71)	(0.23)	(0.41)	(4.52)
Transportation costs	**(5.52)**	(4.85)	(5.38)	(6.26)	(5.27)
Net operating expenses	**(7.68)**	(9.59)	(11.25)	(11.76)	(15.30)
Operating netback	**15.32**	23.17	7.00	12.77	39.58
SCO and diesel ($/bbl)					
Average price realized	**73.07**	65.28	53.51	59.70	98.68
Royalties	**(1.63)**	(0.98)	0.50	(0.65)	(7.00)
Transportation costs	**(4.10)**	(3.81)	(3.76)	(3.36)	(3.21)
Net operating expenses – bitumen	**(24.04)**	(21.08)	(23.69)	(23.71)	(26.90)
Net operating expenses – upgrading	**(6.32)**	(4.97)	(6.54)	(7.18)	(9.68)
Operating netback	**36.98**	34.44	20.02	24.80	51.89
Average Oil Sands operations ($/bbl)					
Average price realized	**59.46**	58.34	44.33	52.53	89.86
Royalties	**(1.70)**	(0.91)	0.28	(0.59)	(6.36)
Transportation costs	**(4.55)**	(4.08)	(4.26)	(4.09)	(3.75)
Net operating expenses – bitumen and upgrading	**(23.15)**	(21.82)	(24.37)	(26.07)	(31.04)
Operating netback	**30.06**	31.53	15.98	21.78	48.71
Fort Hills ($/bbl)					
Average price realized	**48.48**	—	—	—	—
Royalties	**(1.67)**	—	—	—	—
Transportation costs	**(10.01)**	—	—	—	—
Net operating expenses – bitumen and upgrading	**(30.32)**	—	—	—	—
Operating netback	**6.48**	—	—	—	—
Syncrude ($/bbl)					
Average price realized	**70.68**	66.59	56.91	60.28	96.65
Royalties	**(1.90)**	(4.32)	(1.90)	(1.89)	(6.70)
Transportation costs	**(0.49)**	(0.54)	(0.53)	(0.54)	(0.59)
Net operating expenses – bitumen and upgrading	**(43.81)**	(39.46)	(32.05)	(35.69)	(43.12)
Operating netback	**24.48**	22.27	22.43	22.16	46.24

(A) Prior periods have been restated due to IFRS 15 adoption (see note 5 in the consolidated financial statements) as well as the removal of the impact of risk management activities.

(B) Non-GAAP financial measures. See the Operating Metrics Reconciliation and the Operating Summary Information – Non-GAAP Financial Measures sections of this Annual Report.

(D) Netbacks are based on sales volumes.

See accompanying footnotes and definitions to the operating summaries.

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FIVE-YEAR OPERATING SUMMARY (continued)

(unaudited)

Exploration and Production	2018	2017	2016	2015	2014
Total Sales Volumes (mboe/d)	**102.8**	120.8	119.3	110.6	107.5
Total Production (mboe/d)	**103.4**	121.6	117.9	114.4	113.0
Production Volumes					
Exploration and Production Canada					
East Coast Canada					
Terra Nova (mbbls/d)	**11.7**	11.5	12.4	13.5	17.3
Hibernia (mbbls/d)	**22.1**	28.5	26.8	18.1	23.1
White Rose (mbbls/d)	**6.6**	11.4	10.9	12.2	14.6
Hebron (mbbls/d)	**13.0**	0.4	—	—	—
North America Onshore (mboe/d)	**0.5**	1.9	2.8	3.2	3.6
	53.9	53.7	52.9	47.0	58.6
Exploration and Production International					
Production (mboe/d)					
North Sea					
Buzzard	**34.2**	43.8	46.0	49.8	47.1
Golden Eagle	**12.4**	19.6	18.6	14.8	0.6
Other International					
Libya[3]	**2.9**	4.5	0.4	2.8	6.7
	49.5	67.9	65.0	67.4	54.4
Netbacks[B][D]					
East Coast Canada ($/bbl)					
Average price realized	**90.04**	71.06	59.31	65.12	108.21
Royalties	**(13.31)**	(14.26)	(10.64)	(12.49)	(25.97)
Transportation costs	**(2.22)**	(1.90)	(1.91)	(2.18)	(1.97)
Operating costs	**(14.43)**	(11.24)	(12.67)	(14.15)	(13.11)
Operating netback	**60.08**	43.66	34.09	36.30	67.16
United Kingdom ($/boe)					
Average price realized	**89.10**	67.25	53.91	63.85	106.96
Transportation costs	**(2.18)**	(1.81)	(1.84)	(2.41)	(2.84)
Operating costs	**(6.27)**	(4.62)	(5.62)	(6.29)	(6.42)
Operating netback	**80.65**	60.82	46.45	55.15	97.70

(B) Non-GAAP financial measures. See the Operating Metrics Reconciliation and the Operating Summary Information – Non-GAAP Financial Measures sections of this Annual Report.

(D) Netbacks are based on sales volumes.

See accompanying footnotes and definitions to the operating summaries.

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FIVE-YEAR OPERATING SUMMARY (continued)

(unaudited)

Refining and Marketing	2018	2017	2016	2015	2014
Refined product sales (mbbls/d)	**527.4**	530.5	521.4	523.3	531.7
Crude oil processed (mbbls/d)	**430.8**	441.2	428.6	432.1	427.5
Utilization of refining capacity (%)	**93**	96	93	94	93
Refining margin ($/bbl)[B][E]	**34.50**	24.20	20.45	24.60	24.50
Refining operating expense ($/bbl)[B]	**5.35**	5.05	5.10	5.10	6.00
Eastern North America					
Refined product sales (mbbls/d)					
Transportation fuels					
Gasoline	**117.8**	117.5	115.2	118.9	120.6
Distillate	**95.8**	86.8	76.3	91.1	81.9
Total transportation fuel sales	**213.6**	204.3	191.5	210.0	202.5
Petrochemicals	**11.3**	12.2	9.2	10.8	12.1
Asphalt	**15.5**	16.8	16.7	13.1	13.6
Other	**26.0**	33.4	35.9	28.9	32.5
Total refined product sales	**266.4**	266.7	253.3	262.8	260.7
Crude oil supply and refining					
Processed at refineries (mbbls/d)	**208.1**	206.4	203.1	208.1	199.2
Utilization of refining capacity (%)	**94**	93	92	94	90
Western North America					
Refined product sales (mbbls/d)					
Transportation fuels					
Gasoline	**127.8**	125.4	129.1	127.3	122.8
Distillate	**107.6**	112.5	109.8	106.9	117.8
Total transportation fuel sales	**235.4**	237.9	238.9	234.2	240.6
Asphalt	**13.3**	12.3	11.8	11.9	10.6
Other	**12.3**	13.6	17.4	14.4	19.8
Total refined product sales	**261.0**	263.8	268.1	260.5	271.0
Crude oil supply and refining					
Processed at refineries (mbbls/d)	**222.7**	234.8	225.5	224.0	228.3
Utilization of refining capacity (%)	**93**	98	94	93	95
Retail outlets	**1 766**	1 749	1 731	1 768	1 773

(B) Non-GAAP financial measures. See the Operating Metrics Reconciliation and the Operating Summary Information – Non-GAAP Financial Measures sections of this Annual Report.

(E) Refining Margins are a non-GAAP financial measure and have been restated to remove the impact of risk management activities.

See accompanying footnotes and definitions to the operating summaries.

ED_004187B_00000017-00142

OPERATING METRICS RECONCILIATION

(unaudited)

Oil Sands Netbacks[A][B]
($ millions except per barrel amounts)

For the quarter ended December 31, 2018	Bitumen	SCO and Diesel	Oil Sands Operations	Fort Hills	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	405	1 326	1 731	508	940	(30)	**3 149**
Other income	—	76	76	111	93	—	**280**
Purchases of crude oil and products	(267)	(16)	(283)	(218)	(14)	—	**(515)**
Gross realization adjustment[5]	(12)	(164)	(176)	(136)	(93)		
Gross realizations	126	1 222	1 348	265	926		
Royalties	(1)	(24)	(25)	(12)	(30)	—	**(67)**
Transportation	(88)	(116)	(204)	(106)	(9)	—	**(319)**
Transportation adjustment[6]	—	20	20	16	2		
Net transportation expenses	(88)	(96)	(184)	(90)	(7)		
Operating, selling and general (OS&G)	(167)	(949)	(1 116)	(291)	(619)	30	**(1 996)**
OS&G adjustment[7]	47	147	194	41	73		
Net operating expenses	(120)	(802)	(922)	(250)	(546)		
Gross (loss) profit	(83)	300	217	(87)	343		
Sales volumes (mbbls)	15 825	26 545	42 370	8 706	19 286		
Operating netback per barrel	**(5.24)**	**11.32**	**5.13**	**(9.94)**	**17.85**		

For the quarter ended September 30, 2018	Bitumen	SCO and Diesel	Oil Sands Operations	Fort Hills	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	729	2 696	3 425	532	884	(26)	**4 815**
Other (loss) income	—	(8)	(8)	(2)	4	—	**(6)**
Purchases of crude oil and products	(211)	(15)	(226)	(143)	(10)	1	**(378)**
Gross realization adjustment[5]	(10)	(63)	(73)	(23)	(4)		
Gross realizations	508	2 610	3 118	364	874		
Royalties	(39)	(81)	(120)	(17)	(24)	—	**(161)**
Transportation	(65)	(152)	(217)	(78)	(13)	—	**(308)**
Transportation adjustment[6]	—	39	39	17	6		
Net transportation expenses	(65)	(113)	(178)	(61)	(7)		
Operating, selling and general (OS&G)	(119)	(915)	(1 034)	(214)	(635)	29	**(1 854)**
OS&G adjustment[7]	35	145	180	40	24		
Net operating expenses	(84)	(770)	(854)	(174)	(611)		
Gross profit	320	1 646	1 966	112	232		
Sales volumes (mbbls)	12 092	30 080	42 172	5 664	9 769		
Operating netback per barrel	**26.41**	**54.73**	**46.62**	**19.67**	**23.70**		

(A) Prior periods have been restated due to IFRS 15 adoption (see note 5 in the consolidated financial statements) as well as the removal of the impact of risk management activities.

(B) Non-GAAP financial measures. See the Operating Summary information – Non-GAAP Financial Measures section of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

ED_004187B_00000017-00143

(unaudited)

Oil Sands Netbacks[A][B]
($ millions except per barrel amounts)

For the quarter ended June 30, 2018	Bitumen	SCO and Diesel	Oil Sands Operations	Fort Hills	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	703	2 020	2 723	558	938	(39)	**4 180**
Other income (loss)	2	(11)	(9)	(10)	36	—	**17**
Purchases of crude oil and products	(204)	(13)	(217)	(177)	(8)	2	**(400)**
Gross realization adjustment[5]	(14)	(54)	(68)	(16)	(36)		
Gross realizations	487	1 942	2 429	355	930		
Royalties	(34)	(60)	(94)	(4)	(26)	—	**(124)**
Transportation	(44)	(148)	(192)	(87)	(12)	—	**(291)**
Transportation adjustment[6]	—	33	33	34	6		
Net transportation expenses	(44)	(115)	(159)	(53)	(6)		
OS&G	(113)	(981)	(1 094)	(184)	(608)	38	**(1 848)**
OS&G adjustment[7]	37	166	203	51	48		
Net operating expenses	(76)	(815)	(891)	(133)	(560)		
Gross profit	333	952	1 285	165	338		
Sales volumes (mbbls)	10 351	22 838	33 189	5 828	10 718		
Operating netback per barrel	**32.20**	**41.75**	**38.77**	**28.40**	**31.48**		

For the quarter ended March 31, 2018	Bitumen	SCO and Diesel	Oil Sands Operations	Fort Hills	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	572	1 960	2 532	77	1 003	(13)	**3 599**
Other (loss) income	(4)	—	(4)	(2)	3	—	**(3)**
Purchases of crude oil and products	(211)	(35)	(246)	(17)	(16)	9	**(270)**
Gross realization adjustment[5]	—	(25)	(25)	(28)	—		
Gross realizations	357	1 900	2 257	30	990		
Royalties	(10)	(14)	(24)	(2)	(20)	—	**(46)**
Transportation	(64)	(126)	(190)	(26)	(10)	—	**(226)**
Transportation adjustment[6]	—	21	21	20	4		
Net transportation expenses	(64)	(105)	(169)	(6)	(6)		
OS&G	(127)	(945)	(1 072)	(143)	(661)	4	**(1 872)**
OS&G adjustment[7]	34	146	180	66	81		
Net operating expenses	(93)	(799)	(892)	(77)	(580)		
Gross profit (loss)	190	982	1 172	(55)	384		
Sales volumes (mbbls)	10 635	25 453	36 088	729	12 810		
Operating netback per barrel	**17.92**	**38.57**	**32.49**	**(75.13)**	**29.98**		

(A) Prior periods have been restated due to IFRS 15 adoption (see note 5 in the consolidated financial statements) as well as the removal of the impact of risk management activities.

(B) Non-GAAP financial measures. See the Operating Summary Information – Non-GAAP Financial Measures section of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

ED_004187B_00000017-00144

(unaudited)

Oil Sands Netbacks[A][B]
($ millions except per barrel amounts)

For the quarter ended December 31, 2017	Bitumen	SCO and Diesel	Oil Sands Operations	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	710	2 235	2 945	1 202	1	**4 148**
Other (loss) income	(10)	(8)	(18)	79	—	**61**
Purchases of crude oil and products	(179)	(38)	(217)	(14)	(2)	**(233)**
Gross realization adjustment[5]	(7)	(40)	(47)	(85)		
Gross realizations	514	2 149	2 663	1 182		
Royalties	(12)	(35)	(47)	(128)	—	**(175)**
Transportation	(39)	(144)	(183)	(18)	—	**(201)**
Transportation adjustment[6]	3	26	29	12		
Net transportation expenses	(36)	(118)	(154)	(6)		
OS&G	(119)	(958)	(1 077)	(536)	(3)	**(1 616)**
OS&G adjustment[7]	27	148	175	74		
Net operating expenses	(92)	(810)	(902)	(462)		
Gross profit	374	1 186	1 560	586		
Sales volumes (mbbls)	12 019	30 454	42 473	16 049		
Operating netback per barrel	**31.11**	**38.94**	**36.71**	**36.53**		

For the quarter ended September 30, 2017	Bitumen	SCO and Diesel	Oil Sands Operations	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	543	1 818	2 361	905	2	**3 268**
Other (loss) income	(5)	(2)	(7)	1	—	**(6)**
Purchases of crude oil and products	(103)	(18)	(121)	(12)	(2)	**(135)**
Gross realization adjustment[5]	(10)	(42)	(52)	(5)		
Gross realizations	425	1 756	2 181	889		
Royalties	(5)	(30)	(35)	(47)	—	**(82)**
Transportation	(46)	(138)	(184)	(15)	—	**(199)**
Transportation adjustment[6]	4	31	35	10		
Net transportation expenses	(42)	(107)	(149)	(5)		
OS&G	(115)	(870)	(985)	(525)	(3)	**(1 513)**
OS&G adjustment[7]	24	137	161	63		
Net operating expenses	(91)	(733)	(824)	(462)		
Gross profit	287	886	1 173	375		
Sales volumes (mbbls)	11 075	29 390	40 465	14 636		
Operating netback per barrel	**26.03**	**30.14**	**29.01**	**25.64**		

(A) Prior periods have been restated due to IFRS 15 adoption (see note 5 in the consolidated financial statements) as well as the removal of the impact of risk management activities.

(B) Non-GAAP financial measures. See the Operating Summary information – Non-GAAP Financial Measures section of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

ED_004187B_00000017-00145

(unaudited)

Oil Sands Netbacks[A][B]
($ millions except per barrel amounts)

For the quarter ended June 30, 2017	Bitumen	SCO and Diesel	Oil Sands Operations	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	377	1 793	2 170	363	2	**2 535**
Other income (loss)	12	(1)	11	—	6	**17**
Purchases of crude oil and products	(101)	(21)	(122)	(15)	(2)	**(139)**
Gross realization adjustment[5]	(3)	(53)	(56)	(2)		
Gross realizations	285	1 718	2 003	346		
Royalties	(5)	(32)	(37)	—	—	**(37)**
Transportation	(55)	(135)	(190)	(15)	—	**(205)**
Transportation adjustment[6]	—	35	35	5		
Net transportation expenses	(55)	(100)	(155)	(10)		
OS&G	(126)	(900)	(1 026)	(551)	2	**(1 575)**
OS&G adjustment[7]	16	143	159	47		
Net operating expenses	(110)	(757)	(867)	(504)		
Gross profit (loss)	115	829	944	(168)		
Sales volumes (mbbls)	7 827	26 764	34 590	5 549		
Operating netback per barrel	**14.65**	**31.02**	**27.32**	**(30.28)**		

For the quarter ended March 31, 2017	Bitumen	SCO and Diesel	Oil Sands Operations	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	400	2 050	2 450	873	—	**3 323**
Other income	9	3	12	2	—	**14**
Purchases of crude oil and products	(75)	(22)	(97)	(19)	—	**(116)**
Gross realization adjustment[5]	(15)	(53)	(68)	(7)		
Gross realizations	319	1 978	2 297	849		
Royalties	(5)	(18)	(23)	(38)	—	**(61)**
Transportation	(62)	(146)	(208)	(14)	—	**(222)**
Transportation adjustment[6]	—	28	28	9		
Net transportation expenses	(62)	(118)	(180)	(5)		
OS&G	(123)	(875)	(998)	(583)	28	**(1 553)**
OS&G adjustment[7]	29	141	170	76		
Net operating expenses	(94)	(734)	(828)	(507)		
Gross profit	158	1 108	1 266	299		
Sales volumes (mbbls)	9 444	29 844	39 288	12 788		
Operating netback per barrel	**16.80**	**37.13**	**32.25**	**23.33**		

(A) Prior periods have been restated due to IFRS 15 adoption (see note 5 in the consolidated financial statements) as well as the removal of the impact of risk management activities.

(B) Non-GAAP financial measures. See the Operating Summary Information – Non-GAAP Financial Measures section of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

ED_004187B_00000017-00146

(unaudited)

Oil Sands Netbacks[A][B]
($ millions except per barrel amounts)

For the year ended December 31, 2018	Bitumen	SCO and Diesel	Oil Sands Operations	Fort Hills	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	2 409	8 002	10 411	1 675	3 765	(108)	**15 743**
Other (loss) income	(2)	57	55	97	136	—	**288**
Purchases of crude oil and products	(893)	(79)	(972)	(555)	(48)	12	**(1 563)**
Gross realization adjustment[5]	(36)	(306)	(342)	(203)	(133)		
Gross realizations	1 478	7 674	9 152	1 014	3 720		
Royalties	(84)	(179)	(263)	(35)	(100)	—	**(398)**
Transportation	(261)	(542)	(803)	(297)	(44)	—	**(1 144)**
Transportation adjustment[6]	—	113	113	87	18		
Net transportation expenses	(261)	(429)	(690)	(210)	(26)		
OS&G	(526)	(3 790)	(4 316)	(832)	(2 523)	101	**(7 570)**
OS&G adjustment[7]	153	604	757	197	226		
Net operating expenses	(373)	(3 186)	(3 559)	(635)	(2 297)		
Gross profit	760	3 880	4 640	134	1 297		
Sales volumes (mbbls)	48 903	104 916	153 819	20 927	52 583		
Operating netback per barrel	**15.32**	**36.98**	**30.06**	**6.48**	**24.48**		

For the year ended December 31, 2017	Bitumen	SCO and Diesel	Oil Sands Operations	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	2 031	7 898	9 929	3 341	4	**13 274**
Other income (loss)	9	(9)	—	82	4	**86**
Purchases of crude oil and products	(458)	(99)	(557)	(61)	(5)	**(623)**
Gross realization adjustment[5]	(36)	(187)	(223)	(98)		
Gross realizations	1 546	7 603	9 149	3 264		
Royalties	(28)	(115)	(143)	(212)	—	**(355)**
Transportation	(202)	(563)	(765)	(62)	—	**(827)**
Transportation adjustment[6]	7	120	127	35		
Net transportation expenses	(195)	(443)	(638)	(27)		
OS&G	(484)	(3 604)	(4 088)	(2 195)	26	**(6 257)**
OS&G adjustment[7]	96	569	665	261		
Net operating expenses	(388)	(3 035)	(3 423)	(1 934)		
Gross profit	935	4 010	4 945	1 091		
Sales volumes (mbbls)	40 365	116 451	156 816	49 022		
Operating netback per barrel	**23.17**	**34.44**	**31.53**	**22.27**		

(A) Prior periods have been restated due to IFRS 15 adoption (see note 5 in the consolidated financial statements) as well as the removal of the impact of risk management activities.

(B) Non-GAAP financial measures. See the Operating Summary information – Non-GAAP Financial Measures section of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

ED_004187B_00000017-00147

(unaudited)

Oil Sands Netbacks[A][B]
($ millions except per barrel amounts)

For the year ended December 31, 2016	Bitumen	SCO and Diesel	Oil Sands Operations	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	1 434	5 348	6 782	2 807	—	**9 589**
Other income	6	2	8	17	1	**26**
Purchases of crude oil and products	(431)	(60)	(491)	(57)	—	**(548)**
Gross realization adjustment[5]	17	(162)	(145)	(57)		
Gross realizations	1 026	5 128	6 154	2 710		
Royalties	(10)	48	38	(90)	—	**(52)**
Transportation	(231)	(452)	(683)	(50)	—	**(733)**
Transportation adjustment[6]	—	92	92	25		
Net transportation expenses	(231)	(360)	(591)	(25)		
OS&G	(595)	(3 468)	(4 063)	(1 749)	35	**(5 777)**
OS&G adjustment[7]	112	568	680	223		
Net operating expenses	(483)	(2 900)	(3 383)	(1 526)		
Gross profit	302	1 916	2 218	1 069		
Sales volumes (mbbls)	42 973	95 852	138 825	47 614		
Operating netback per barrel	**7.00**	**20.02**	**15.98**	**22.43**		

For the year ended December 31, 2015	Bitumen	SCO and Diesel	Oil Sands Operations	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	1 480	7 282	8 762	673	—	**9 435**
Other income	49	96	145	—	1	**146**
Purchases of crude oil and products	(228)	(75)	(303)	(16)	—	**(319)**
Gross realization adjustment[5]	(75)	(314)	(389)	5		
Gross realizations	1 226	6 989	8 215	662		
Royalties	(16)	(77)	(93)	(21)	—	**(114)**
Transportation	(246)	(496)	(742)	(6)	—	**(748)**
Transportation adjustment[6]	—	103	103	—		
Net transportation expenses	(246)	(393)	(639)	(6)		
OS&G	(577)	(4 195)	(4 772)	(471)	23	**(5 220)**
OS&G adjustment[7]	115	580	695	77		
Net operating expenses	(462)	(3 615)	(4 077)	(394)		
Gross profit	502	2 904	3 406	241		
Sales volumes (mbbls)	39 297	117 094	156 391	10 875		
Operating netback per barrel	**12.77**	**24.80**	**21.78**	**22.16**		

(A) Prior periods have been restated due to IFRS 15 adoption (see note 5 in the consolidated financial statements) as well as the removal of the impact of risk management activities.

(B) Non-GAAP financial measures. See the Operating Summary Information – Non-GAAP Financial Measures section of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

ED_004187B_00000017-00148

(unaudited)

Oil Sands Netbacks[A][B]
($ millions except per barrel amounts)

For the year ended December 31, 2014	Bitumen	SCO and Diesel	Oil Sands Operations	Syncrude	Other[4]	Oil Sands Segment
Operating revenues	2 753	10 794	13 547	1 122	—	**14 669**
Other income	92	23	115	—	—	**115**
Purchases of crude oil and products	(334)	(94)	(428)	(29)	—	**(457)**
Gross realization adjustment[5]	(119)	(304)	(423)	—		
Gross realizations	2 392	10 419	12 811	1 093		
Royalties	(167)	(739)	(906)	(76)	—	**(982)**
Transportation	(195)	(447)	(642)	(7)	—	**(649)**
Transportation adjustment[6]	—	108	108	—		
Net transportation expenses	(195)	(339)	(534)	(7)		
OS&G	(688)	(4 626)	(5 314)	(564)	(62)	**(5 940)**
OS&G adjustment[7]	122	766	888	77		
Net operating expenses	(566)	(3 860)	(4 426)	(487)		
Gross profit	1 464	5 481	6 945	523		
Sales volumes (mbbls)	36 994	105 588	142 582	11 302		
Operating netback per barrel	**39.58**	**51.89**	**48.71**	**46.24**		

Syncrude Cash Operating Costs[B]
($ millions except per barrel amounts)

	For the quarter ended							
	Mar 31 2018	June 30 2018	Sept 30 2018	Dec 31 2018	Mar 31 2017	June 30 2017	Sept 30 2017	Dec 31 2017
Syncrude OS&G	**661**	**608**	**635**	**619**	583	551	525	536
Non-production costs[8]	**(10)**	**(5)**	**(11)**	**(7)**	(6)	(8)	(13)	(10)
Syncrude cash operating costs	**651**	**603**	**624**	**612**	577	543	512	526
Syncrude sales volumes (mbbls)	**12 810**	**10 718**	**9 769**	**19 286**	12 788	5 549	14 636	16 049
Syncrude cash operating costs ($/bbl)	**50.75**	**56.25**	**63.85**	**31.75**	45.15	97.80	35.00	32.80

	For the year ended				
	2018	2017	2016	2015	2014
Syncrude OS&G	**2 523**	2 195	1 749	471	564
Non-production costs[8]	**(33)**	(37)	(31)	(14)	(9)
Syncrude cash operating costs	**2 490**	2 158	1 718	457	555
Syncrude sales volumes (mbbls)	**52 583**	49 022	47 614	10 876	11 302
Syncrude cash operating costs ($/bbl)	**47.25**	44.05	35.95	42.00	49.15

(A) Prior periods have been restated due to IFRS 15 adoption (see note 5 in the consolidated financial statements) as well as the removal of the impact of risk management activities.

(B) Non-GAAP financial measures. See the Operating Summary Information – Non-GAAP Financial Measures section of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

ED_004187B_00000017-00149

(unaudited)

Exploration and Production Netbacks[8]
($ millions except per barrel amounts)

	For the quarter ended December 31, 2018				For the quarter ended December 31, 2017			
	United Kingdom	East Coast Canada	Other[9]	E&P Segment	United Kingdom	East Coast Canada	Other[9]	E&P Segment
Operating revenues	301	286	184	**771**	383	328	238	**949**
Royalties	—	(19)	(120)	**(139)**	—	(53)	(147)	**(200)**
Transportation	(8)	(10)	(1)	**(19)**	(9)	(9)	(2)	**(20)**
OS&G	(39)	(101)	(14)	**(154)**	(36)	(55)	(10)	**(101)**
Non-production costs[10]	8	12			7	10		
Gross realizations	262	168			345	221		
Sales volumes (mboe)	3 531	3 758			5 011	4 023		
Operating netback per barrel	**74.23**	**44.73**			**68.77**	**54.85**		

	For the quarter ended September 30, 2018				For the quarter ended September 30, 2017			
	United Kingdom	East Coast Canada	Other[9]	E&P Segment	United Kingdom	East Coast Canada	Other[9]	E&P Segment
Operating revenues	361	488	100	**949**	375	263	128	**766**
Royalties	—	(91)	(74)	**(165)**	—	(51)	(81)	**(132)**
Transportation	(8)	(12)	—	**(20)**	(11)	(8)	(2)	**(21)**
OS&G	(27)	(90)	(8)	**(125)**	(31)	(68)	(10)	**(109)**
Non-production costs[10]	3	11			5	10		
Gross realizations	329	306			338	146		
Sales volumes (mboe)	3 827	4 905			5 963	3 906		
Operating netback per barrel	**86.02**	**62.41**			**56.71**	**37.37**		

	For the quarter ended June 30, 2018				For the quarter ended June 30, 2017			
	United Kingdom	East Coast Canada	Other[9]	E&P Segment	United Kingdom	East Coast Canada	Other[9]	E&P Segment
Operating revenues	444	484	204	**1 132**	378	354	120	**852**
Royalties	—	(65)	(122)	**(187)**	—	(75)	(46)	**(121)**
Transportation	(10)	(11)	(1)	**(22)**	(11)	(9)	(2)	**(22)**
OS&G	(30)	(69)	(14)	**(113)**	(31)	(65)	(15)	**(111)**
Non-production costs[10]	4	13			4	9		
Gross realizations	408	352			340	214		
Sales volumes (mboe)	4 728	4 973			5 954	5 345		
Operating netback per barrel	**86.29**	**70.83**			**57.01**	**40.03**		

(8) Non-GAAP financial measures. See the Operating Summary Information – Non-GAAP Financial Measures section of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

ED_004187B_00000017-00150

(unaudited)

Exploration and Production Netbacks[8]
($ millions except per barrel amounts)

	For the quarter ended March 31, 2018				For the quarter ended March 31, 2017			
	United Kingdom	East Coast Canada	Other[9]	E&P Segment	United Kingdom	East Coast Canada	Other[9]	E&P Segment
Operating revenues	409	478	130	**1 017**	421	379	120	**920**
Royalties	—	(82)	(79)	**(161)**	—	(87)	(36)	**(123)**
Transportation	(11)	(10)	(3)	**(24)**	(11)	(9)	(3)	**(23)**
OS&G	(32)	(68)	(10)	**(110)**	(28)	(60)	(13)	**(101)**
Non-production costs[10]	7	14			4	10		
Gross realizations	373	332			386	233		
Sales volumes (mboe)	4 920	5 647			6 228	5 432		
Operating netback per barrel	**75.72**	**58.75**			**61.99**	**42.81**		

For the year ended December 31, 2018	United Kingdom	East Coast Canada	Other[9]	E&P Segment
Operating revenues	1 515	1 736	618	**3 869**
Royalties	—	(257)	(395)	**(652)**
Transportation	(37)	(43)	(5)	**(85)**
OS&G	(129)	(328)	(46)	**(503)**
Non-production costs[10]	23	50		
Gross realizations	1 372	1 158		
Sales volumes (mboe)	17 006	19 283		
Operating netback per barrel	**80.65**	**60.08**		

For the year ended December 31, 2017	United Kingdom	East Coast Canada	Other[9]	E&P Segment
Operating revenues	1 557	1 323	607	**3 487**
Royalties	—	(266)	(310)	**(576)**
Transportation	(42)	(35)	(9)	**(86)**
OS&G	(127)	(248)	(47)	**(422)**
Non-production costs[10]	20	39		
Gross realizations	1 408	813		
Sales volumes (mboe)	23 157	18 623		
Operating netback per barrel	**60.82**	**43.66**		

(8) Non-GAAP financial measures. See the Operating Summary Information – Non-GAAP Financial Measures section of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

ED_004187B_00000017-00151

(unaudited)

Exploration and Production Netbacks[A][B]
($ millions except per barrel amounts)

For the year ended December 31, 2016	United Kingdom	East Coast Canada	Other[9]	E&P Segment
Operating revenues	1 276	1 119	54	**2 449**
Royalties	—	(201)	(12)	**(213)**
Transportation	(44)	(36)	(11)	**(91)**
OS&G	(151)	(278)	(54)	**(483)**
Non-production costs[10]	18	39		
Gross realizations	1 099	643		
Sales volumes (mboe)	23 653	18 849		
Operating netback per barrel	**46.45**	**34.09**		

For the year ended December 31, 2015	United Kingdom	East Coast Canada	Other[9]	E&P Segment
Operating revenues	1 505	1 019	101	**2 625**
Royalties	—	(195)	(72)	**(267)**
Transportation	(57)	(34)	(20)	**(111)**
OS&G	(175)	(258)	(69)	**(502)**
Non-production costs[10]	27	36		
Gross realizations	1 300	568		
Sales volumes (mboe)	23 580	15 643		
Operating netback per barrel	**55.15**	**36.30**		

For the year ended December 31, 2014	United Kingdom	East Coast Canada	Other[9]	E&P Segment
Operating revenues	1 814	2 151	763	**4 728**
Royalties	—	(516)	(156)	**(672)**
Transportation	(48)	(39)	(16)	**(103)**
OS&G	(119)	(297)	(142)	**(558)**
Non-production costs[10]	10	36		
Gross realizations	1 657	1 335		
Sales volumes (mboe)	16 954	19 875		
Operating netback per barrel	**97.70**	**67.16**		

(A) Prior periods have been restated due to IFRS 15 adoption, see note 5 in the consolidated financial statements.

(B) Non-GAAP financial measures. See the Operating Summary Information – Non-GAAP Financial Measures section of this Annual Report.

See accompanying footnotes and definitions to the operating summaries.

ED_004187B_00000017-00152

(unaudited)

Refining and Marketing[A][E]
($ millions except per barrel amounts)

	For the quarter ended							
	Mar 31 2018	June 30 2018	Sept 30 2018	Dec 31 2018	Mar 31 2017	June 30 2017	Sept 30 2017	Dec 31 2017
Gross margin[11]	1 773	1 628	1 972	1 695	1 328	1 102	1 456	1 807
Other (loss) income	(7)	(14)	1	41	19	19	48	(13)
Non-refining margin[12]	(413)	(610)	(407)	180	(431)	(329)	(392)	(394)
Refining margin[B]	1 353	1 004	1 566	1 916	916	792	1 112	1 400
Refinery production (mbbls)[13]	44 363	33 165	45 465	46 145	41 540	42 629	46 491	43 801
Refining margin ($/bbl)	**30.50**	**30.25**	**34.45**	**41.50**	**22.05**	**18.60**	**23.90**	**31.95**
Last-in, first out (LIFO) Adjustment	(11)	(96)	—	444	(6)	33	16	(139)
Adjusted LIFO Refining Margin[B]	1 342	908	1 566	2 360	910	825	1 128	1 261
Adjusted LIFO refining margin ($/bbl)[B]	30.25	27.40	34.45	51.15	21.95	19.30	24.25	28.75
OS&G	480	478	499	522	503	448	467	532
Non-refining costs[14]	(262)	(272)	(272)	(272)	(274)	(233)	(258)	(303)
Net operating expenses	218	206	227	250	229	215	209	229
Refinery production (mbbls)[13]	44 363	33 165	45 465	46 145	41 540	42 629	46 491	43 801
Refining operating expense ($/bbl)	**4.90**	**6.25**	**5.00**	**5.45**	**5.50**	**5.05**	**4.50**	**5.25**

	For the year ended				
	2018	2017	2016	2015	2014
Gross margin[11]	7 068	5 692	5 506	5 987	5 431
Other income	21	73	16	86	184
Non-refining margin[12]	(1 250)	(1 546)	(2 074)	(1 854)	(1 487)
Refining margin[B]	5 839	4 219	3 448	4 219	4 128
Refinery production (mbbls)[13]	169 138	174 461	168 798	171 581	168 536
Refining margin ($/bbl)	**34.50**	**24.20**	**20.45**	**24.60**	**24.50**
LIFO Adjustment	337	(96)	(63)	149	256
Adjusted LIFO Refining Margin[B]	6 176	4 123	3 385	4 368	4 384
Adjusted LIFO refining margin ($/bbl)[B]	36.50	23.65	20.05	25.45	26.00
OS&G	1 979	1 950	2 147	2 164	2 441
Non-refining costs[14]	(1 078)	(1 068)	(1 287)	(1 283)	(1 436)
Refining operating expense	901	882	860	881	1 005
Refinery production (mbbls)[13]	169 138	174 461	168 798	171 581	168 536
Refining operating expense ($/bbl)	**5.35**	**5.05**	**5.10**	**5.10**	**6.00**

(A) Prior periods have been restated due to IFRS 15 adoption; see note 5 in the consolidated financial statements.

(B) Non-GAAP financial measures. See the Operating Summary information – Non-GAAP Financial Measures section of this Annual Report.

(E) Refining Margins are a non-GAAP financial measure and have been restated to remove the impact of risk management activities.

See accompanying footnotes and definitions to the operating summaries.

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Non-GAAP Financial Measures

Certain financial measures in this Supplemental Financial and Operating information – namely operating earnings (loss), funds from (used in) operations (previously referred to as cash flow from (used in) operations), return on capital employed (ROCE), Oil Sands operations cash operating costs (previously referred to as Oil Sands cash operating costs), Syncrude cash operating costs, Fort Hills cash operating costs, In Situ cash operating costs, mining cash operating costs, refining margin, refining operating expense and netbacks – are not prescribed by generally accepted accounting principles (GAAP). Suncor uses this information to analyze business performance, leverage and liquidity and includes these financial measures because investors may find such measures useful on the same basis. These non-GAAP financial measures do not have any standardized meaning and, therefore, are unlikely to be comparable to similar measures presented by other companies. The additional information should not be considered in isolation or as a substitute for measures of performance prepared in accordance with GAAP.

Operating earnings (loss), Oil Sands operations cash operating costs and Fort Hills cash operating costs for each quarter in 2018 and 2017 are defined in the Non-GAAP Financial Measures Advisory section and reconciled to the most directly comparable GAAP measures in the Consolidated Financial Information and Segment Results and Analysis sections in each respective quarterly Report to Shareholders issued by Suncor in respect of the relevant quarter (Quarterly Reports). Funds from (used in) operations and ROCE for each quarter in 2018 and 2017 are defined and reconciled to the most directly comparable GAAP measures in the Non-GAAP Financial Measures Advisory section of each respective Quarterly Report. Operating earnings (loss), funds from (used in) operations, ROCE and Oil Sands operations cash operating costs for the years ended December 31, 2015 and 2014 are defined and reconciled in Suncor's Management's Discussion and Analysis for the year ended December 31, 2016 and for the years ended December 31, 2018, 2017 and 2016 are defined and reconciled in Suncor's Management's Discussion and Analysis for the year ended December 31, 2018, which is contained in the annual report (the 2018 MD&A). Refining margin, refining operating expense and Syncrude cash operating costs for each quarter in 2018 and 2017 and for the years ended December 31, 2018, 2017, 2016, 2015 and 2014 are defined in the 2018 MD&A and reconciled to the most directly comparable GAAP measures in the Operating Metrics Reconciliation section of this Supplemental Financial and Operating Information. Netbacks for each quarter in 2018 and 2017 and for the years ended December 31, 2018, 2017, 2016, 2015 and 2014 are defined below and are reconciled to the most directly comparable GAAP measures in the Operating Metrics Reconciliation section of this Supplemental Financial and Operating Information. The remainder of the non-GAAP financial measures not otherwise mentioned in this paragraph are defined and reconciled in the 2018 MD&A.

Oil Sands Netbacks

Oil Sands operating netbacks are a non-GAAP measure, presented on a crude product and sales barrel basis, and are derived from the Oil Sands segmented statement of net earnings (loss), after adjusting for items not directly attributable to the revenues and costs associated with production and delivery. Management uses Oil Sands operating netbacks to measure crude product profitability on a sales barrel basis.

Exploration and Production (E&P) Netbacks

E&P netbacks are a non-GAAP measure, presented on an asset location and sales barrel basis, and are derived from the E&P segmented statement of net earnings (loss), after adjusting for items not directly attributable to the costs associated with production and delivery. Management uses E&P operating netbacks to measure asset profitability by location on a sales barrel basis.

Definitions

(1) Cash operating costs – include cash costs that are defined as operating, selling and general expenses (excluding inventory changes and non-production costs), and are net of operating revenues associated with excess power from cogeneration units. Oil Sands operations cash operating costs are presented on a production basis by adjusting for inventory impacts, while Syncrude production volumes are equal to sales volumes.

(2) Syncrude's capacity to upgrade bitumen to an intermediary sour SCO is 350,000 bbls/d.

(3) Effective 2016, Libyan production volumes reflect the company's entitlement share of production sold in the period.

(4) Reflects non-producing Oil Sands assets and enterprise shared service allocations and recoveries.

(5) Reflects the impact of items not directly attributed to revenues received from the sale of proprietary crude and net non-proprietary activity at its deemed point of sale.

(6) Reflects adjustments for expenses or credits not directly related to the transportation of the crude product to its deemed point of sale. For Oil Sands operations bitumen and SCO, the point of sale is at the final customer, whereas Syncrude sweet SCO is deemed to be sold into the sweet synthetic crude oil pool in Edmonton, Alberta. Expenses or credits adjusted out of the netback transportation line include, but are not limited to, costs associated with the sale of non-proprietary product on pipelines with unutilized capacity under minimum volume commitment agreements.

(7) Reflects adjustments for general and administrative costs not directly attributed to the production of each crude product type, as well as the revenues associated with excess power from cogeneration units.

(8) Reflects adjustments for operating, selling and general expenses not directly attributable to Syncrude production.

(9) Reflects other E&P assets, such as North America Onshore, Norway and Libya for which netbacks are not provided.

(10) Reflects adjustments for general and administrative costs not directly attributed to production.

(11) Operating revenues less purchases of crude oil and products.

(12) Reflects the gross margin associated with the company's supply, marketing and ethanol businesses, as well as a previously owned lubricants business.

(13) Refinery production is the output of the refining process, and differs from crude oil processed as a result of volumetric adjustments for non-crude feedstock, volumetric gain associated with the refining process, and changes in unfinished product inventories.

(14) Reflects operating, selling and general costs associated with the company's supply, marketing, lubricants (previously owned) and ethanol businesses, as well as certain general and administrative costs not directly attributable to refinery production.

Explanatory Note

* Users are cautioned that the Oil Sands operations cash operating costs, Fort Hills cash operating costs and Syncrude cash costs per barrel measure may not be fully comparable to similar information calculated by other entities due to differing operations of each entity as well as their respective accounting policy choices.

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Abbreviations

bbl	barrel
bbls/d	barrels of oil per day
mbbls	thousands of barrels
mbbls/d	thousands of barrels per day
boe	barrels of oil equivalent
boe/d	barrels of oil equivalent per day
mboe	thousands of barrels of oil equivalent
mboe/d	thousands of barrels of oil equivalent per day
m^3/d	cubic metres per day
SCO	synthetic crude oil

Metric Conversion

Crude oil, refined products, etc. 1 m^3 (cubic metre) = approx. 6.29 barrels

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SHARE TRADING INFORMATION

(unaudited)

Common shares are listed on the Toronto Stock Exchange and New York Stock Exchange under the symbol SU.

	For the Quarter Ended				For the Quarter Ended			
	Mar 31 2018	June 30 2018	Sept 30 2018	Dec 31 2018	Mar 31 2017	June 30 2017	Sept 30 2017	Dec 31 2017
Share ownership								
Average number outstanding, weighted monthly (thousands)[a]	**1 633 816**	**1 627 222**	**1 611 116**	**1 584 484**	1 668 710	1 667 968	1 659 027	1 649 587
Share price (dollars)								
Toronto Stock Exchange								
High	**47.69**	**54.39**	**55.47**	**51.78**	44.90	44.19	43.88	46.66
Low	**40.49**	**43.26**	**49.65**	**35.53**	39.65	37.72	36.09	41.88
Close	**44.49**	**53.50**	**49.98**	**38.13**	40.83	37.89	43.73	46.15
New York Stock Exchange – US$								
High	**38.39**	**41.82**	**42.55**	**40.08**	33.47	32.48	35.16	36.92
Low	**31.33**	**33.47**	**37.73**	**25.81**	29.39	28.46	27.96	32.83
Close	**34.54**	**40.68**	**38.69**	**27.97**	30.75	29.20	35.03	36.72
Shares traded (thousands)								
Toronto Stock Exchange	**196 070**	**207 263**	**156 451**	**282 618**	182 999	165 718	155 540	152 378
New York Stock Exchange	**215 310**	**226 242**	**177 746**	**296 852**	231 032	187 434	192 368	189 857
Per common share information (dollars)								
Net earnings (loss) attributable to common shareholders	**0.48**	**0.60**	**1.12**	**(0.18)**	0.81	0.26	0.78	0.84
Dividend per common share	**0.36**	**0.36**	**0.36**	**0.36**	0.32	0.32	0.32	0.32

(a) The company had approximately 6,437 registered holders of record of common shares as at January 31, 2019

Information for Security Holders Outside Canada

Cash dividends paid to shareholders resident in countries other than Canada (non-Canadian shareholders) are subject to Canadian withholding tax. The statutory rate of Canadian withholding tax on dividends is 25%, subject to reduction under an applicable tax treaty between Canada and another country. For example, under the tax treaty between Canada and the United States, the withholding tax rate is generally reduced to 15% on dividends paid to residents of the United States that are eligible for the benefit of that tax treaty. The Canada Revenue Agency has released forms, applicable after 2012, for non-Canadian shareholders to evidence entitlement to a reduced withholding tax rate under a tax treaty. The agents responsible for withholding tax on dividends will generally need to have a duly completed form from a non-Canadian shareholder on file by a particular dividend record date in order for such agents to withhold tax at an applicable treaty-reduced rate, rather than the full statutory rate of 25%. Non-Canadian shareholders are encouraged to contact their broker (or other applicable agent) regarding the completion and delivery of these forms.

As shareholders are responsible to ensure compliance with Canadian Tax laws and regulations, shareholders are strongly encouraged to seek professional tax and legal counsel with respect to any and all tax matters.

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Leadership

Steve Williams
Chief Executive Officer

Eric Axford
Executive Vice President and Chief Sustainability Officer

Alister Cowan
Executive Vice President and Chief Financial Officer

Paul Gardner
Senior Vice President, Human Resources

Mark Little
President and Chief Operating Officer

Mike MacSween
Executive Vice President, Upstream

Janice Odegaard
Senior Vice President, General Counsel and Corporate Secretary

Steve Reynish
Executive Vice President, Strategy & Operations Services

Kris Smith
Executive Vice President, Downstream

Board of Directors

Michael Wilson
Chair of the Board
Bragg Creek, Alberta

Steve Williams
Chief Executive Officer
Suncor Energy Inc.
Calgary, Alberta

Patricia Bedient[1][4]
Chair, Audit Committee
Sammamish, Washington

Mel Benson[3][4]
Calgary, Alberta

Dominic D'Alessandro[1][2]
Chair, Governance Committee
Toronto, Ontario

John Gass[2][3]
Chair, Human Resources and Compensation Committee
Palm Coast, Florida

Dennis Houston[3][4]
Spring, Texas

Brian MacDonald[1][2]
Naples, Florida

Maureen McCaw[1][2]
Edmonton, Alberta

Eira Thomas[3][4]
Chair, EH&S and Sustainable Development Committee
West Vancouver, British Columbia

(1) Audit committee member
(2) Governance committee member
(3) Human resources and compensation committee member
(4) Environment, health, safety and sustainability development committee member

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Suncor.com

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Meet Commerce City refinery VP Donald Austin

[HYPERLINK "https://connections.suncor.com/issue/86"] Nov. 2017

In July, Commerce City refinery VP Donald Austin celebrated the 150th anniversary of Canada's confederation alongside a Royal Canadian Mounted Police Sergeant and Stéphane Lessard, Canada's Consul General in Denver.

In June, Suncor welcomed **Donald Austin as vice president of the Commerce City refinery**. In the facility's top role, Donald is responsible for providing overall leadership for safe, reliable and profitable operations, and is also accountable for environmental compliance and product quality of the facility.

While new to the refinery, Donald has been with Suncor since 2009, working primarily in the company's oil sands operations in northern Alberta, Canada. He brings 35 years of experience in the oil and petro-chemical business, as well as a passion for personal and process safety, to our Commerce City operations.

"We've been here only a few months and have found Commerce City, Denver and the surrounding area to be such a friendly and welcoming community," said Donald. "I'm looking forward to meeting many more of our stakeholders in the coming months."

Donald is originally from Linlithgow, Scotland and earned his degree in chemical engineering from Strathclyde University in Glasgow. He and his wife Elizabeth are the proud parents of two adult children who both attend the University of Calgary in Alberta. Outside of work, he is a keen golfer and enjoys spending time with his family at their cottage in Northern Idaho.

Welcome, Donald!

A message from Donald Austin, vice president, Commerce City Refinery

[HYPERLINK "https://connections.suncor.com/suncor-usa/june-2018/a-message-from-donald-austin-vice-president-commerce-city-refinery"] June 2018

You may have seen some recent media coverage regarding hydrogen cyanide (HCN) emissions at Suncor's Commerce City refinery. At Suncor, we are always striving for continuous improvement across our business, including reducing emissions. Our employees and the community can feel assured that the Colorado Department of Public Health & Environment (CDPHE) has stated that modeled HCN concentrations near the refinery are well below known health risk thresholds.

I hope the following information helps you understand more about these emissions at our facility.

The refinery uses crude oil to make many products used by Colorado consumers. When we process crude oil into gasoline using specific equipment at the refinery (known as a fluidized catalytic cracker, or FCC), one of the by-products is HCN; this is true at many fuel refineries that use processing equipment like ours. What's important is that we calculate HCN levels hourly and report our emissions annually to the required regulatory authority.

You may be wondering what is HCN? It's naturally occurring in foods such as spinach and lima beans; it's also present in fruits that have pits and seeds, including cherry, apricot and peach pits, and in apple cores and seeds. In its gaseous form, HCN is a light gas that rises and disperses in the atmosphere. The refinery's vent stacks are built high into the air to allow for dispersion. Suncor is able to model the dispersion of HCN emissions, which shows that HCN disperses quickly to parts-per-billion levels that are below the most stringent limits set in the U.S. The modeling has also shown that HCN doesn't reach ground level.

You may also be curious why this issue has come up. I want you to know there has been no change in how we are operating the refinery in relation to HCN emissions or in our reporting. Last year, Suncor asked CDPHE to add the HCN emission into the refinery's "Title V" operating permit to align with our other air emissions. This approach makes sense because it simplifies reporting and brings efficiencies to the refinery's air regulations under one regulatory agency.

CDPHE reviewed and issued the revised permit earlier this year, requiring Suncor to report the refinery's HCN emissions data annually in the form of total emissions. Suncor is in full compliance with the limits and "maximum permissible" value CDPHE set for HCN. In fact, Suncor's actual HCN emissions data in 2016 and 2017 were below the new limit.

I applaud the work of CDPHE, which diligently oversees and regulates the refinery's air emissions. CDPHE makes the public health determinations for Colorado; it ensures that Suncor is meeting its requirements.

Suncor will continue to report all emissions as we have in the past. That won't change. As well, Suncor will continue to work closely with all stakeholders, including regulators, emergency response agencies and the community. We're trying to be more open. We do believe that a clearly stated HCN emissions limit in the refinery's permit is the right thing to do and drives us to improve.

This story contains forward-looking information. Please see legal advisories for more information

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FUELS

Suncor Acquires Second Valero Refinery

Canadian oil company expanding downstream capacity, seeking opportunities

[HYPERLINK "https://www.cspdailynews.com/fuels/suncor-acquires-second-valero-refinery"]

Jun. 01, 2005

CALGARY, Alberta -- Suncor Energy Inc. said that its U.S. subsidiary has expanded its refining operations by acquiring a Valero Energy Corp. refinery adjacent to Suncor's refinery in Commerce City, Colo., just outside of Denver.

Suncor Energy (U.S.A.) Inc. has purchased the Colorado Refining Co., an indirect, wholly owned subsidiary of Valero. The purchase price was $30 million U.S. ($37 million Canadian) plus working capital and associated oil and product inventory.

Colorado Refining's principal assets are Valero's Commerce City [image-nocss] refinery and a products terminal located in Grand Junction, Colo. The purchase is not subject to regulatory approval.

The 30,000-barrel-per-day (bpd) refinery is located next to Suncor's existing refinery, which was acquired in 2003. Suncor intends to fully integrate the two operations, providing a combined refining capacity of approximately 90,000 bpd.

With the purchase, Suncor is assuming Valero's 140 employees and union obligations. Suncor will continue to provide refined products to retail customers through Phillips 66 gas stations in Colorado and to commercial customers throughout the U.S. Rocky Mountain region.

This acquisition provides an immediate expansion of our presence in the Rocky Mountain marketplace, said Rick George, Suncor's president and CEO. With a capacity of 90,000 [bpd], the integrated operation is expected to be more competitive with refineries in Texas and Oklahoma.

Valero's chairman and CEO Bill Greehey added, These two plants belong together under one company because they are much stronger and have a much brighter future together than either has individually. In addition to Suncor providing employees with compensation and benefits programs comparable to ours, the integration of these operations will provide greater opportunities for growth and a brighter future.

Suncor, which operates an oil sands production facility in northern Alberta, Canada, has long-term plans that include integrating its growing crude oil production into the U.S. energy market through investments in refining assets; however, local crude oil suppliers currently providing feedstock to the Valero refinery would not be affected by the transaction.

With a target to increase our oilsands production to more than a half million barrels per day, building stable access to strategic markets is a key part of our long-term growth strategy, said George.

Suncor will continue seeking additional downstream integration opportunities as part of its growth strategy. Such opportunities could include long-term contracts, joint ventures and the potential purchase of further refining assets or the expansion of Suncor's existing assets.

Suncor Energy Inc. is an integrated energy company headquartered in Calgary. Suncor's oil sands business, located near Fort McMurray, Alberta, extracts and upgrades oil sands and markets refinery feedstock and diesel fuel, while operations throughout Western Canada produce natural gas. Suncor operates a refining and marketing business in Ontario with retail distribution under the Sunoco brand. U.S. downstream assets include refining operations in Colorado and retail sales in the Denver area under the Phillips 66 brand.

San Antonio-based Valero Energy owns and operates 15 refineries throughout the United States, Canada and the Caribbean. It also operates more than 4,700 retail and wholesale branded outlets in the United States, Canada and the Caribbean under brand names including Diamond Shamrock, Shamrock, Ultramar, Valero and Beacon.