Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 7/18/2019 7:17:07 PM
To: Keller, Peter [keller.peter@epa.gov]
Subject: RE: Administrator Response on Biomass

Thanks!

From: Keller, Peter
Sent: Thursday, July 18, 2019 3:16 PM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: FW: Administrator Response on Biomass

Peter

From: Keller, Peter
Sent: Wednesday, March 27, 2019 3:02 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Administrator Response on Biomass

Thanks. Attached is the draft PEA NPRM that is at OMB as well as the ppt that we will use for the meeting tomorrow.

Peter

From: Baker, Sarah
Sent: Wednesday, March 27, 2019 2:49 PM
To: Keller, Peter <keller.peter@epa.gov>
Subject: Administrator Response on Biomass

Here is Wheeler's response to the Congressional questions. The biomass question is #159 on page 126.
https://www.eenews.net/assets/2019/01/29/document_pm_02.pdf#page=126

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 12/10/2018 9:35:59 PM
To: Montanez, Jessica (Montanez.Jessica@epa.gov) [Montanez.Jessica@epa.gov]
Subject: NAFO Meeting Notes - December 10, 2018

- Someone brought a summary of all the comments NAFO has put in the docket for our consideration.
- Schedule – we are hearing from the Administrator that there is a priority on thinking about the carbon neutrality of biomass. His plan was to get a proposed rule out in the next 6-8 months and a final rule by the end of 2019. Is that correct?
    - Biomass rule – doing something by the end of 2019 is definitely possible. We are at the beginning stages of this.
    - Final ACE rule is on a faster track.
    - Are the ACE rule people connected with the standalone people or is that something we need to facilitate? Bill, you are talking to the ACE rule people in the room. Anna, we definitely have connectivity. The permitting part of ACE comes from Anna's shop.
- Final ACE Rule comments – biomass as a compliance option? If we are going to keep biomass as a compliance option, EPA needs to provide a rationale and the same rationale should apply to other programs like permitting.
- International competitiveness of biomass issue – is there anything they should be doing to move the ball forward on this to align with Europe? It is a difficult decision and something that is still being explored by the Agency. Sarah D.: The Agency science has been developed and the policy folks shop need to make a decision.
- Any need to meet with the legal folks soon? They have done so in the past and would like to do so again if that helps move things forward. We are in communications with the legal folks.

Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 10/9/2018 5:28:59 PM
To: duke, gerallyn [duke.gerallyn@epa.gov]
Subject: RE: Biogenic CO2 Sources- Request for Information by noon on Friday, October 5.

Thanks for the reminder Gerallyn.

From: duke, gerallyn
Sent: Tuesday, October 09, 2018 1:24 PM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: RE: Biogenic CO2 Sources- Request for Information by noon on Friday, October 5.

Hi Jessica. Just a reminder you can take me off these kinds of distribution lists as I am back to being a basic staffer. Zelma Maldonado is the acting ADD here and I note you copied her, too. Thanks!

Gerallyn Duke
Office of Permits and State Programs 3AP10
US EPA Region III
1650 Arch Street
Philadelphia, PA 19103
215-814-2084

From: Montanez, Jessica
Sent: Tuesday, October 09, 2018 9:24 AM
To: Biton, Leiran <biton.leiran@epa.gov>; Bray, Dave <Bray.Dave@epa.gov>; Ceron, Heather <Ceron.Heather@epa.gov>; Chan, Suilin <Chan.Suilin@epa.gov>; Dahl, Donald <dahl.donald@epa.gov>; Damico, Genevieve <damico.genevieve@epa.gov>; Davis, Scott <Davis.ScottR@epa.gov>; duke, gerallyn <duke.gerallyn@epa.gov>; Fallon, Gail <fallon.gail@epa.gov>; Hardesty, Doug <Hardesty.Doug@epa.gov>; Knodel, Jon <Knodel.Jon@epa.gov>; Maldonado, Zelma <Maldonado.Zelma@epa.gov>; McFadden, Kelly <McFadden.Kelly@epa.gov>; Mooney, John <Mooney.John@epa.gov>; Rao, Raj <Rao.Raj@epa.gov>; Rios, Gerardo <Rios.Gerardo@epa.gov>; Robinson, Jeffrey <Robinson.Jeffrey@epa.gov>; Smith, Mark A. <Smith.Marka@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Werner, Leslye <Werner.Leslye@epa.gov>; Wortman, Eric <Wortman.Eric@epa.gov>
Subject: RE: Biogenic CO2 Sources- Request for Information by noon on Friday, October 5.

Thanks to all who were able to submit this information to us. We really appreciate your efforts. We will keep you posted if we have any questions or if we need to follow up on the information that was submitted.

Thanks again,

Jessica

From: Toups, Brad
Sent: Monday, October 01, 2018 4:44 PM
To: Biton, Leiran <biton.leiran@epa.gov>; Bray, Dave <Bray.Dave@epa.gov>; Ceron, Heather <Ceron.Heather@epa.gov>; Chan, Suilin <Chan.Suilin@epa.gov>; Dahl, Donald <dahl.donald@epa.gov>; Damico, Genevieve <damico.genevieve@epa.gov>; Davis, Scott <Davis.ScottR@epa.gov>; duke, gerallyn <duke.gerallyn@epa.gov>; Fallon, Gail <fallon.gail@epa.gov>; Hardesty, Doug <Hardesty.Doug@epa.gov>; Knodel, Jon <Knodel.Jon@epa.gov>; Maldonado, Zelma <Maldonado.Zelma@epa.gov>; McFadden, Kelly

<McFadden.Kelly@epa.gov>; Mooney, John <Mooney.John@epa.gov>; Rao, Raj <Rao.Raj@epa.gov>; Rios, Gerardo <Rios.Gerardo@epa.gov>; Robinson, Jeffrey <Robinson.Jeffrey@epa.gov>; Smith, Mark A. <Smith.Marka@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Werner, Leslye <Werner.Leslye@epa.gov>; Wortman, Eric <Wortman.Eric@epa.gov>
Subject: Biogenic CO2 Sources- Request for Information by noon on Friday, October 5.

Hi APMs,

I am Brad Toups, Region 6's representative on this workgroup, I am assisting Jessica with this request. You can contact me a 214 665-7258 or toups.brad@epa.gov. Jessica's request follows:

Dear APMs,

As you know, we are working on a rulemaking on how to address biogenic CO_2 emissions in permitting. We are currently awaiting for the Early Guidance briefing for this rulemaking to be scheduled and in the meantime OAR management has asked us to start exploring approximately how many and what types of sources (i.e., facilities) could potentially take advantage of any type of biogenic CO_2 exemption if we were to propose one. We have asked for this information already from the regions that are part of the rulemaking workgroup, but we also wanted to extend this request to the other regions that are not currently in the workgroup.

OAR has two requests and would like to receive the most data we can gather by noon on Friday, October 5. The data request is from what your region might know about biogenic CO_2 emitting sources, we would <u>not</u> like to poll the states for this information at this time as we might get into Information Collection Request issues otherwise.

For the first and most important request, we are wondering if your region can provide some examples of the types of biogenic CO_2 emitting sources that you are aware are subject to permitting (PSD major or minor NSR) and what is the amount of biogenic CO_2 emissions they are emitting or plan to emit from their overall CO_2 equivalent emissions projections. We are thinking sources under the categories of biobased transportation fuels production, biopower production and biobased product development, but let us know if there could be other categories. For each of the examples, can you include the following information, if available, in the first request tab of the attached spreadsheet:

1. Permit Number
2. Source Name
3. State
4. Source Type (power plant, biofuel production, pellet plant, cement plant, landfill, etc.)
5. Type of Biomass They are Burning/Plan to Burn (forest biomass, wood waste, etc.)
6. Projected Amount of GHG emissions, including the biomass emissions separately, if available.

The second request is to compile a list of any type of biogenic CO_2 emission sources that you are aware that you or your states have permitted or can quickly confirm that were permitted.

- To aid in this request, I did a quick online data search and found that Biomass Magazine publishes a list of what they consider the number of biomass power plants, pellet plants and biogas plants as of September 2018 that are operational, under construction or proposed (see tab titled Second Request in attached spreadsheet). I do not know the quality of this information, therefore, can you quickly confirm if some of these sources have been permitted or are in the process of being permitted by you

or your states? The capacity of some of these sources might be small enough to not require an NSR permit. In addition, if you are aware of other biogenic CO_2 emitting sources that have been permitted in or outside of those categories (power plants, pellet plants or biogas plants), can you add them to the list? If it is not possible to confirm or obtain this data in the time we have available to collect it, just let us know. We know that this data is not readily available.

- I also did a quick search in the RBLC and found that the following sources were permitted for one or more types of biomass feedstocks. I have not added them to the list since I am not sure what their current status is (operational, under construction or even on hold/will never get built). Can you confirm the status of the following list of sources, if possible, and add them to the second request list as appropriate? These could also serve as some of the examples for the first request above. I added them to the first request tab in case that information is available to you.
  1. CA - Sierra Pacific Anderson (RBLC ID: CA-1225)
  2. IN - Abengoa Bioenergy of Indiana (RBLC ID: IN-0186)
  3. KS - Abengoa Bioenergy of Kansas (RBLC ID: KS-0034)
  4. MI - Wolverine Power (RBLC ID: MI-0400)
  5. OK – Broken Bow OSB Mill, Huber Engineered Woods (RBLC ID: OK-0145)
  6. PR – Energy Answers (RBLC ID: PR-0009)
  7. MI – Grayling Particleboard, Arauco North America (RBLC ID: MI-0425)

Thanks in advance and let me know if you have any questions,

Jessica

Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 10/1/2018 8:29:15 PM
To: Toups, Brad [Toups.Brad@epa.gov]
Subject: Biogenic CO2 Sources- Request for Information by noon on Friday, October 5.
Attachments: BiomassData10012018.xlsx

Brad,

Can you forward this email to the APMs? Let me know if I missed anything.

Jessica

Dear APMs,

As you know, we are working on a rulemaking on how to address biogenic CO_2 emissions in permitting. We are currently awaiting for the Early Guidance briefing for this rulemaking to be scheduled and in the meantime OAR management has asked us to start exploring approximately how many and what types of sources (i.e., facilities) could potentially take advantage of any type of biogenic CO_2 exemption if we were to propose one. We have asked for this information already from the regions that are part of the rulemaking workgroup, but we also wanted to extend this request to the other regions that are not currently in the workgroup.

OAR has two requests and would like to receive the most data we can gather by noon on Friday, October 5. The data request is from what your region might know about biogenic CO_2 emitting sources, we would <u>not</u> like to poll the states for this information at this time as we might get into Information Collection Request issues otherwise.

For the first and most important request, we are wondering if your region can provide some examples of the types of biogenic CO_2 emitting sources that you are aware are subject to permitting (PSD major or minor NSR) and what is the amount of biogenic CO_2 emissions they are emitting or plan to emit from their overall CO_2 equivalent emissions projections. We are thinking sources under the categories of biobased transportation fuels production, biopower production and biobased product development, but let us know if there could be other categories. For each of the examples, can you include the following information, if available, in the first request tab of the attached spreadsheet:

1. Permit Number
2. Source Name
3. State
4. Source Type (power plant, biofuel production, pellet plant, cement plant, landfill, etc.)
5. Type of Biomass They are Burning/Plan to Burn (forest biomass, wood waste, etc.)
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The second request is to compile a list of any type of biogenic CO_2 emission sources that you are aware that you or your states have permitted or can quickly confirm that were permitted.

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September 2018 that are operational, under construction or proposed (see tab titled Second Request in attached spreadsheet). I do not know the quality of this information, therefore, can you quickly confirm if some of these sources have been permitted or are in the process of being permitted by you or your states? The capacity of some of these sources might be small enough to not require an NSR permit. In addition, if you are aware of other biogenic CO_2 emitting sources that have been permitted in or outside of those categories (power plants, pellet plants or biogas plants), can you add them to the list? If it is not possible to confirm or obtain this data in the time we have available to collect it, just let us know. We know that this data is not readily available.

- I also did a quick search in the RBLC and found that the following sources were permitted for one or more types of biomass feedstocks. I have not added them to the list since I am not sure what their current status is (operational, under construction or even on hold/will never get built). Can you confirm the status of the following list of sources, if possible, and add them to the second request list as appropriate? These could also serve as some of the examples for the first request above. I added them to the first request tab in case that information is available to you.
  1. CA - Sierra Pacific Anderson (RBLC ID: CA-1225)
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  5. OK – Broken Bow OSB Mill, Huber Engineered Woods (RBLC ID: OK-0145)
  6. PR – Energy Answers (RBLC ID: PR-0009)
  7. MI – Grayling Particleboard, Arauco North America (RBLC ID: MI-0425)

Thanks in advance and let me know if you have any questions,

Jessica

Message

From: Montanez, Jessica [Montanez.Jessica@epa.gov]
Sent: 9/28/2018 9:21:59 PM
To: Toups, Brad [Toups.Brad@epa.gov]
Subject: Re: Biogenic CO2 Sources
Attachments: BiomassData09272018.xlsx

Brad,

Thoughts? I will send the email in a few minutes, since it took me so long to get it together, but we can edit later if there are any details you think I might not be considering. Also, we can raise this as an agenda item in the monthly call, but it might be too late then to receive adequate feedback. What do you think?

Jessica

Workgroup, particularly the regions:

While we wait for the next Early Guidance briefing to be scheduled, OAR management has asked us to start exploring approximately how many and what types of sources (i.e., facilities) could potentially take advantage of any type of biogenic CO_2 exemption, like the exemptions we are exploring through our rulemaking workgroup.

OAR has two requests and would like to receive the most data we can gather by noon on Friday, October 5. For the first and most important request, can you provide some examples of all the types of biogenic CO_2 emitting sources that you are aware are subject to permitting and what is the amount of biogenic CO_2 emissions they are emitting or plan to emit from their overall CO_2 equivalent emissions projections? We are thinking sources under the categories of biobased transportation fuels production, biopower production and biobased product development, but let us know if there could be other categories. For each of these examples can you include:

1. What is their source type (power plant, biofuel production, pellet plant, cement plant, landfill, etc.)
2. The type(s) of biomass they are burning/plan to burn
3. Projected amount of GHG emissions including the biomass emissions separately, if available.

The second request is to compile a list of any type of biogenic CO_2 emission sources that you are aware that you or your states have permitted or can quickly confirm that were permitted.

- To aid in this request, I did a quick online data search and found that Biomass Magazine publishes a list of what they consider the number of biomass power plants, pellet plants and biogas plants as of September 2018 that are operational, under construction or proposed. I do not know the quality of this information, therefore, can you quickly confirm if most of these sources have been permitted or are in the process of being permitted by you or your states? The capacity of some of these sources might be small enough to not require an NSR permit. In addition, if you are aware of other biogenic CO_2

emitting sources that have been permitted in or outside of those categories (power plants, pellet plants or biogas plants), can you add them to the list? If it is not possible to confirm or obtain this data in the time we have available to collect it, just let us know. We know that this data is not readily available.

- I also did a quick search in the RBLC and found that the following sources were permitted for one or more types of biomass feedstocks. I have not added them to the list since I am not sure what their current status is (operational, under construction or even on hold/will never get built). Can you confirm the status of the following list of sources, if possible, and add them to the list as appropriate? These could also serve as some of the examples for the first request above.
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  2. IN - Abengoa Bioenergy of Indiana (RBLC ID: IN-0186)
  3. KS - Agengoa Bioenergy of Kansas (RBLC ID: KS-0034)
  4. MI - Wolverine Power (RBLC ID: MI-0400)
  5. OK – Broken Bow OSB Mill, Huber Engineered Woods (RBLC ID: OK-0145)
  6. PR – Energy Answers (RBLC ID: PR-0009)
  7. MI – Grayling Particleboard, Arauco North America (RBLC ID: MI-0425)

Thanks in advance and let me know if you have any questions,

Jessica

Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 8/27/2018 7:27:11 PM
To: Massey, Lana [massey.lana@epa.gov]; Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]
CC: Long, Pam [Long.Pam@epa.gov]
Subject: RE: Treatment of Biogenic CO2 Emissions in Permitting

Thanks Lana!

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

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From: Massey, Lana
Sent: Monday, August 27, 2018 3:26 PM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>; Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Cc: Long, Pam <Long.Pam@epa.gov>
Subject: RE: Treatment of Biogenic CO2 Emissions in Permitting

Ex. 5 Deliberative Process (DP)

Lana V. Massey, Administrative Specialist
Air Quality Policy Division
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
Office: (919) 541-5366

From: Montanez, Jessica
Sent: Monday, August 27, 2018 3:23 PM
To: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>; Massey, Lana <massey.lana@epa.gov>
Cc: Long, Pam <Long.Pam@epa.gov>
Subject: RE: Treatment of Biogenic CO2 Emissions in Permitting

Yvonne and Lana,

What is the calling number for this meeting? The regions are asking.

Thanks,

Jessica

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

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-----Original Appointment-----
From: Wood, Anna
Sent: Thursday, August 16, 2018 10:07 PM
To: Wood, Anna; Vetter, Cheryl; Montanez, Jessica; Kornylak, Vera S.; Fawcett, Allen; Irving, Bill; Gunning, Paul; Kocchi, Suzanne; Ohrel, Sara; Steller, John; Birnbaum, Rona; Doster, Brian; Greenglass, Nora; Orlin, David; Zenick, Elliott; Charmley, William; Lie, Sharyn; Simon, Karl; Wortman, Eric; Greene, Cynthia; Conroy, David; Moskal, John; Bird, Patrick; Robinson, Jeffrey; Donaldson, Guy; Stenger, Wren
Subject: Treatment of Biogenic CO2 Emissions in Permitting
When: Wednesday, August 29, 2018 10:15 AM-11:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: RTP-OAQPS-C501A/RTP-OAQPS-BLDG-C

Purpose: Pre-brief for Anna ahead of the OAR management pre-briefs for this rulemaking. We are preparing to have the Early Guidance Meeting at the end of September.

Meeting POC: Jessica Montanez

Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 7/24/2018 6:32:16 PM
To: Robinson, Jeffrey [Robinson.Jeffrey@epa.gov]
CC: Rao, Raj [Rao.Raj@epa.gov]
Subject: RE: PEA Rulemaking

Hi Jeff,

Ex. 5 Deliberative Process (DP)

On Biomass, you can say that we are getting ready to have the Early Guidance meeting with the Administrator by the end of September.

I hope this helps, but let me know if you need any more information.

Jessica

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

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From: Robinson, Jeffrey
Sent: Tuesday, July 24, 2018 8:10 AM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Cc: Rao, Raj <Rao.Raj@epa.gov>
Subject: PEA Rulemaking

Ex. 5 Deliberative Process (DP)

Jeff Robinson, Section Chief
Air Permits Section
EPA Region 6
214-665-6435

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 5/30/2018 12:48:08 PM
To: Long, Pam [Long.Pam@epa.gov]
Subject: RE: Biomass Rule Schedule
Attachments: BiogenicCO2PermittingRulemakingSchedule_05102018.docx

I think you have an old schedule. Do you have this one?

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

Looking for a speaker for your school or community event? http://www.epa.gov/rtpspeakers/

From: Long, Pam
Sent: Wednesday, May 30, 2018 7:00 AM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: RE: Biomass Rule Schedule

My next milestone show the EG meeting projected for 6/15. It may be an old schedule. Let me know. Thanks.

From: Montanez, Jessica
Sent: Tuesday, May 29, 2018 3:36 PM
To: Long, Pam <Long.Pam@epa.gov>
Subject: Biomass Rule Schedule

Pam,

I hope you had a great long weekend. Juan mentioned to me this afternoon that we might be getting close to a milestone for this rule and that you were trying to confirm that. Is the milestone early guidance? If so, are you trying to check if we are going to meet the 07/19 deadline?

Jessica

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

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Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 5/21/2018 8:05:11 PM
To: Toups, Brad [Toups.Brad@epa.gov]
Subject: RE: Montanez, Jessica has shared 'TreatmentOfBiogenicCO2EmissionsInPermitting'

Sure. That is in the SAB website, but I will provide you the link.

Jessica

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

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From: Toups, Brad
Sent: Monday, May 21, 2018 4:04 PM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: RE: Montanez, Jessica has shared 'TreatmentOfBiogenicCO2EmissionsInPermitting'

Hi Jessica,
Can you also make available the research and work done and reference in the overview:

- ***August 2017*** - The Chartered SAB could not come to an agreement with the recommendations provided by the BCE SAB panel, particularly on the time frame over which emissions impacts are measured. Future work on the SAB peer review of the EPA's second draft Framework report will be led by Chartered SAB members working with the BCE SAB panel.

Thanks

From: Montanez, Jessica [mailto:no-reply@sharepointonline.com]
Sent: Monday, May 21, 2018 9:51 AM
To: Moskal, John <Moskal.John@epa.gov>; Johnson, Terry <Johnson.Terry@epa.gov>; Toups, Brad <Toups.Brad@epa.gov>; McFadden, Kelly <McFadden.Kelly@epa.gov>; Elman, Barry <Elman.Barry@epa.gov>; Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>
Cc: Montanez, Jessica <Montanez.Jessica@epa.gov>

Ex. 5 Deliberative Process (DP)

Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 3/30/2020 10:01:17 PM
To: Baker, Sarah [baker.sarah@epa.gov]
CC: Long, Pam [Long.Pam@epa.gov]
Subject: FW: Biogenic CO2 Rulemaking Tiering Form
Attachments: Tiering Form Biogenic CO2 Rulemaking March 19 2018 + JS.docx

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From: Santiago, Juan <Santiago.Juan@epa.gov>
Sent: Monday, March 19, 2018 9:34 AM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Cc: Rao, Raj <Rao.Raj@epa.gov>; Long, Pam <Long.Pam@epa.gov>
Subject: RE: Biogenic CO2 Rulemaking Tiering Form

Attached is the file with my edits. Anna has asked Mike to check in with Mandy about including this in the reg agenda as a long term action so stay tuned to see what they want to do.

Let me know if there are any questions on my edits.

Thanks!
Juan

From: Montanez, Jessica
Sent: Monday, March 19, 2018 8:54 AM
To: Santiago, Juan <Santiago.Juan@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Cc: Rao, Raj <Rao.Raj@epa.gov>; Long, Pam <Long.Pam@epa.gov>
Subject: Biogenic CO2 Rulemaking Tiering Form

Cheryl and Juan,

Pam reminded me on Friday that rules that we need to propose have to appear in the Regulatory Agenda or they cannot be proposed. That led to a discussion on having to tier the biomass rule ASAP since the Regulatory Agenda is currently being finalized. I prepared the tiering form and it is attached. Please review and let me know your thoughts on it and how would you like to proceed. Please note that I left the abstract vague since I think we got direction to focus on forest feedstocks, but this could change as OAP moves forward from the policy pronouncement and seeks internal comments on it.

Jessica

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

Looking for a speaker for your school or community event? http://www.epa.gov/rtpspeakers/

Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 5/16/2018 5:42:09 PM
To: Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]
CC: Santiago, Juan [Santiago.Juan@epa.gov]
Subject: RE: can you please update biogenics slide
Attachments: NACAASlide_05162018.pptx

Hi Yvonne,

Here is the revised slide. It includes the updates to the talking points. Let me know if you have any questions.

Jessica

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

Looking for a speaker for your school or community event? http://www.epa.gov/rtpspeakers/

From: Johnson, Yvonne W
Sent: Wednesday, May 16, 2018 12:33 PM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: RE: can you please update biogenics slide

I am going to go ahead and use the slide. When you have a chance to update the TPs you just let me know and we will get that switched out in Anna's notebook before she leaves. Tomorrow is her last day in the office before meeting. Thanks.

Thank you,

Yvonne W. Johnson
Special Assistant to the Director
Air Quality Policy Division
Office of Air Quality Planning & Standards
U.S. Environmental Protection Agency
919-541-3921
johnson.yvonnew@epa.gov

From: Montanez, Jessica
Sent: Wednesday, May 16, 2018 12:32 PM
To: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Cc: Santiago, Juan <Santiago.Juan@epa.gov>
Subject: RE: can you please update biogenics slide

Yes, the slide is fine. See previous email from Juan. He left the office for the day.

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

Looking for a speaker for your school or community event? http://www.epa.gov/rtpspeakers/

From: Johnson, Yvonne W
Sent: Wednesday, May 16, 2018 12:30 PM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Cc: Santiago, Juan <Santiago.Juan@epa.gov>
Subject: RE: can you please update biogenics slide
Importance: High

If it is just the TPs that need revising I can go ahead and do what I need to do which is to finalize for Nancy. Can you confirm the slide itself is good to use now.

Thank you,

Yvonne W. Johnson
Special Assistant to the Director
Air Quality Policy Division
Office of Air Quality Planning & Standards
U.S. Environmental Protection Agency
919-541-3921
johnson.yvonnew@epa.gov

From: Montanez, Jessica
Sent: Wednesday, May 16, 2018 10:50 AM
To: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Subject: RE: can you please update biogenics slide

I would have to do that this afternoon. I have to run to my meetings.

Jessica

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

Looking for a speaker for your school or community event? http://www.epa.gov/rtpspeakers/

From: Johnson, Yvonne W
Sent: Wednesday, May 16, 2018 10:48 AM
To: Santiago, Juan <Santiago.Juan@epa.gov>; Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: RE: can you please update biogenics slide

Thank you!

Thank you,

Yvonne W. Johnson
Special Assistant to the Director
Air Quality Policy Division
Office of Air Quality Planning & Standards
U.S. Environmental Protection Agency
919-541-3921
johnson.yvonnew@epa.gov

From: Santiago, Juan
Sent: Wednesday, May 16, 2018 10:46 AM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Cc: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Subject: RE: can you please update biogenics slide

Thanks Jessica. The slide looks fine. See the attached TPs I put together when the policy came out. I suggest Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Juan

From: Montanez, Jessica
Sent: Wednesday, May 16, 2018 10:39 AM
To: Santiago, Juan <Santiago.Juan@epa.gov>
Cc: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Subject: RE: can you please update biogenics slide

Juan,

Since Yvonne needs this slide by this afternoon, here is my take on it. Let us know if you have any edits.

Jessica

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407

Note: Positions or views expressed here do not represent official EPA policy.

Looking for a speaker for your school or community event? http://www.epa.gov/rtpspeakers/

From: Johnson, Yvonne W
Sent: Wednesday, May 16, 2018 10:21 AM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Cc: Santiago, Juan <Santiago.Juan@epa.gov>
Subject: RE: can you please update biogenics slide

Yes, that will be fine. I need to get the presentation to NACAA later this evening though. thanks.

Thank you,

Yvonne W. Johnson
Special Assistant to the Director
Air Quality Policy Division
Office of Air Quality Planning & Standards
U.S. Environmental Protection Agency
919-541-3921
johnson.yvonnew@epa.gov

From: Montanez, Jessica
Sent: Wednesday, May 16, 2018 8:37 AM
To: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Cc: Santiago, Juan <Santiago.Juan@epa.gov>
Subject: RE: can you please update biogenics slide

Hi Yvonne,

Thanks. I sending you something this afternoon OK? I have a lot going on this morning.

Jessica

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

Looking for a speaker for your school or community event? http://www.epa.gov/rtpspeakers/

From: Johnson, Yvonne W
Sent: Wednesday, May 16, 2018 8:30 AM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Cc: Santiago, Juan <Santiago.Juan@epa.gov>
Subject: can you please update biogenics slide
Importance: High

Attached is a slide anna plans to use for NACAA next week can you please update. thanks.

Thank you,

Yvonne W. Johnson
Special Assistant to the Director
Air Quality Policy Division
Office of Air Quality Planning & Standards
U.S. Environmental Protection Agency
919-541-3921
johnson.yvonnew@epa.gov

Treatment of Biogenic CO_2 Emissions in Permitting

- **On April 23, 2018, the EPA Administrator issued a policy statement on the treatment of forest biomass for energy production at stationary sources**
- Statement addresses congressional directives and stakeholder concerns specific to the use of forest biomass for energy. It specifically:
  - Provides clear recognition of the benefits of using forest biomass for energy production at stationary sources.
  - Signals the Agency's intent to treat forest biomass biogenic CO_2 emissions from energy production at stationary sources as carbon neutral in future regulatory actions and in various programmatic contexts, which include permitting.
- The statement was not a scientific determination nor did it revise or amend any scientific determinations that the EPA has previously made.
- Policy found at: https://www.epa.gov/sites/production/files/2018-04/documents/biomass_policy_statement_2018_04_23.pdf

This policy statement follows the February 13, 2018 letter from Administrator Pruitt to Governor Sununu of New Hampshire, outlining EPA's work to advance and promote the responsible use of forest resources.
The policy statement clarifies that the EPA's policy in forthcoming regulatory actions will be to treat biogenic CO2 emissions resulting from the combustion of biomass from managed forests at stationary sources for energy production as carbon neutral.
The policy statement:
Is not a scientific determination and does not revise or amend any scientific determinations that EPA has previously made.
Does not directly address the treatment of biogenic CO2 emissions at any particular stationary source or in any specific regulatory context or other EPA program. These changes will be accomplished through the appropriate mechanisms, including, as necessary, a notice of any proposed rulemaking, the basis for such changes, and an opportunity for public comment.
Aims to provide clarity and consistency across Agency programs.
Seeks to ensure that biomass from managed forests plays a key role in addressing the energy needs of the U.S., furthering U.S. energy dominance, in an environmentally and economically beneficial way.
Does not itself alter sources' obligations with regard to GHGs and CO2 in any particular regulatory program.

In the policy, the EPA:
Recognizes the importance of the nation's forest resources and related industries, and the role that biomass can play in renewable energy strategies.
States that biomass from forest management activities can provide significant energy, economic, and environmental benefits to the U.S.
For example, it can reduce the risk of forest fires, while simultaneously providing an energy source for the electric grid.
States that The Consolidated Appropriations Act, 2018 explicitly directed EPA, the Department of Energy and the Department of Agriculture to establish policies that "reflect the carbon neutrality of forest biomass for energy production, provided the use of biomass for energy does not result in the conversion of forested lands to non-forest use."
States that this policy is also consistent with Executive Order 13783, Promoting Energy Independence and Economic Growth, which requires executive agencies to review requirements that may hinder domestic energy production.
Mentions that the Agency may need to consider the tradeoffs and benefits of different accounting approaches and other practical implementation issues to inform policy choices when assessing biogenic CO2 emissions from stationary sources and as acknowledged by the SAB.

Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 2/6/2018 2:43:05 PM
To: Rao, Raj [Rao.Raj@epa.gov]
Subject: RE: Tracker - please check formatting
Attachments: NSR_Improvements_Project_Tracker_02062018.docx

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

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-----Original Message-----
From: Rao, Raj
Sent: Monday, February 05, 2018 9:34 PM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: Tracker - please check formatting

Jessica, attached is the revised tracker. I played with it some and fixed formatting. Please try to fix it such that the text in each row remains at the same position even if some text is deleted or added in the column. Thanks for your help. I do not need USEPA in the header. I fixed the header in Cheryl's table.

I need this by 9.30 am tomorrow.

Raj

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

	Project	Target Completion Date	Current Status	Key Milestones	OAQPS staff	OGC staff	Comments
Ex. 5 Deliberative Process (DP)							
Biomass	***Policy Direction*** - *TBD*	TBD	Brainstorming session held on 1/25/18	Developing issue paper listing prioritized options for OAQPS, OGC and OAP for editing and discussion. Plan to brief Bill Wehrum in about 3 weeks.	Jessica Montanez Carrie Wheeler	Nora Greenglass	

Message

From: Montanez, Jessica [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8BAD9A5AE95F4FACB0403F05B50F7512-JMONTA02]
Sent: 5/17/2017 8:30:02 PM
To: Rao, Raj [Rao.Raj@epa.gov]
Subject: AWMA Slides
Attachments: GHG-PermittingRegulationsRecap-05172017.pptx

Raj,

Here are the slides for AWMA. Let me know if you need anything else of have any questions.

Jessica

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407, Fax: 919-541-5509
Note: Positions or views expressed here do not represent official EPA policy.

Looking for a speaker for your school or community event? http://www.epa.gov/rtpspeakers/

REGULATORY and PROGRAM UPDATES: NATIONAL OVERVIEW

GHG Permitting Regulations Update

PSD and Title V Permitting for GHGs

- On June 3, 2010, the EPA published the final **Tailoring Rule**.
- The **Tailoring Rule** phased in GHG permitting requirements into the PSD and title V permitting programs
  - **Step 1** (January 2, 2011 to June 30, 2011) only applied to sources that were already required to obtain a PSD or title V permit (i.e., "anyway sources").
  - **Step 2** (on or after July 1, 2011) extended the PSD and title V requirements to sources that only emitted GHGs if those emissions exceeded certain levels.
  - **Step 3** (issued on June 29, 2012) retained the permitting thresholds that were established in Steps 1 and 2 and improved the usefulness of plantwide applicability limitations (PALs) by, among other things, allowing GHG PALs to be established on a carbon dioxide equivalent (CO2e) basis.
  - **Step 4** would have required EPA to study and consider further phasing-in the GHG permitting requirements at lower GHG emission thresholds.

Tailoring Rule Litigation

- On June 23, 2014, the U.S. Supreme Court issued a decision in **Utility Air Regulatory Group v. EPA** that held that the EPA may:
  - Not treat GHGs as an air pollutant for the specific purpose of determining whether a source is required to obtain a PSD or title V permit. In other words, the Supreme Court invalidated Step 2 of the Tailoring Rule.
  - Continue to require "anyway sources" to conduct a BACT analysis for GHGs and recognized EPA's authority to limit the application of BACT to those situations where a source has the potential to emit a pollutant, including GHGs, above a specified threshold (or de minimis) level.

- On April 10, 2015, the D.C. Circuit issued an Amended Judgment in **Coalition for Responsible Regulation v. EPA** that:
  - Identified the permitting regulations that were vacated by UARG v EPA.
  - Ordered EPA to rescind or revise the vacated provisions "as expeditiously as practicable" and consider whether further revisions are appropriate in light of the Supreme Court decision. No timeline described.

Regulatory Revisions in Light of the Litigation

- In April 2015, the EPA issued a final rulemaking revising the EPA's PSD regulations at 40 CFR Part 52 to enable the EPA and delegated permitting authorities to rescind EPA-issued **Step 2** PSD permits.
  - Direct Final Rule – 80 FR 26183 Parallel Proposal – 80 FR 26210.
  - Necessary because permit rescission provision contained a date restriction that limited the use of this provision to permits issued based on the rules in effect on or before July 30, 1987.
- In August 2015, the EPA issued a good cause final rule that amended the PSD and title V regulations to remove those **vacated provisions** that could be removed from the regulations through a ministerial action.
  - Final Rule – 80 FR 50199.
  - The removed regulations included portions of Step 2 of the Tailoring Rule as applicable to the PSD program, and the portion of the PSD and title V regulations that required EPA to study and consider further phasing-in the GHG permitting requirements at lower GHG emission thresholds (Step 4).

Regulatory Revisions in Light of the Litigation (Continued)

- In November 2016, the EPA issued a final rulemaking amending the **permit rescission provision** at 40 CFR 52.21(w), which applies to EPA issued permits and permits issued by delegated states.
  - Final Rule – 81 FR 78043.
  - Amended the permit rescission provision to remove the July 30, 1987 date restriction.
  - Added this permit rescission provision to the major Nonattainment NSR Rules in Indian country to provide permit rescission authority for all federal major source permitting programs.
  - Clarified that permit rescissions continue to be case-by-case determinations
    - No permit rescission criteria was finalized.
    - Review of a rescission request requires an in depth evaluation of the source, the rules in place at the time, and the court decisions or other events affecting the source.

Proposed Revisions to the PSD and Title V Permitting Regulations for GHG and Establishment of a GHG Significant Emissions Rate (SER)

- On October 2016, the EPA published a proposed rule to (81 FR 68110):
  - Remove or revise certain regulatory provisions from the PSD and title V regulations to **ensure that GHG-only sources are no longer required to obtain PSD or title V permits**. Specifically, the rule revises:
    - Certain PSD and title V definitions
      - PSD: definitions of major stationary source, major modification and subject to regulation
      - Title V: definition of major source and subject to regulation
    - The GHG Plantwide Applicability Limitations (PAL) provisions
      - Mainly to eliminate any references to GHG-only sources
    - A few state-specific PSD and title V permitting provisions
      - PSD Provisions in the states of Minnesota, Texas, Wisconsin that were mainly put in place to incorporate the Tailoring Rule Step 2 GHG permitting thresholds
      - Title V provisions in 33 state and local programs (Appendix A to Part 70) that were also put in place to narrow the programs and implement the Tailoring Rule
  - Propose a **75,000 tpy CO2e Significant Emission Rate (SER) for GHGs**.
    - The SER will establish a de minimis level below which BACT is not required for "anyway sources."

Proposed Revisions to the PSD and Title V Permitting Regulations for GHG and Establishment of a GHG Significant Emissions Rate (SER) (Continued)

- Proposal received **47 comments.**
- Comments centered on:
  - Various GHG SER levels
    - 20 commenters support the proposed 75K CO_2e GHG SER
    - 19 commenters support a GHG SER higher than 75K CO_2e
    - 1 commenter would support a lower GHG SER
  - Support and alleged flaws in the legal authority and technical basis for setting the GHG SER
  - Economic impacts of the proposed rule
    - Allege that EPA failed to consider the economic impacts or degree of administrative burdens at various *de minimis* levels
  - Requesting EPA to exempt biogenic CO_2 emissions from permitting as they consider those emissions carbon neutral
  - Supporting most of the proposed changes to the regulatory text to conform with the Court decisions and suggesting some additional changes

Message

Sent: 5/6/2020 8:39:39 PM
To: Kornylak, Vera S. [Kornylak.Vera@epa.gov]; Baker, Sarah [baker.sarah@epa.gov]
Subject: FW: AF&PA/AWC Stakeholder Meeting

Well, as usual AF&PA knows more about the Administrator's thinking on biomass than we do (read all the way down). I am not planning on involving Brian or Nora on this call – they have better things to do. I plan to just say what Juan has identified below. The rule is still at OMB, and the intersection with ACE is in active litigation.

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Santiago, Juan <Santiago.Juan@epa.gov>
Sent: Wednesday, May 06, 2020 4:24 PM
To: Dunkins, Robin <Dunkins.Robin@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Cc: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Subject: RE: AF&PA/AWC Stakeholder Meeting

I have not and wasn't planning on it. We do this type of meeting all the time and know to say "We can't talk about that since there is active litigation"… I am happy for them to be included if they would like to, just don't see the need.

Juan

From: Dunkins, Robin <Dunkins.Robin@epa.gov>
Sent: Wednesday, May 06, 2020 4:22 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Santiago, Juan <Santiago.Juan@epa.gov>
Cc: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Subject: Fwd: AF&PA/AWC Stakeholder Meeting

Checking to see if you've checked In with your general counsel reps on your rulemaking. I'm sharing with Mark regarding ACE

Robin Dunkins, Group Leader
Natural Resources Group
USEPA OAR/OAQPS
Research Triangle Park, NC 27711
919-541-5335 office
919-605-1178 mobile
dunkins.robin@epa.gov

Begin forwarded message:

From: "Anderson, Lea" <anderson.lea@epa.gov>
Date: May 6, 2020 at 3:30:35 PM EDT
To: "Dunkins, Robin" <Dunkins.Robin@epa.gov>, "Bradfield, John" <Bradfield.John@epa.gov>

Cc: "Thrift, Mike" <thrift.mike@epa.gov>, "Jordan, Scott" <Jordan.Scott@epa.gov>
Subject: RE: AF&PA/AWC Stakeholder Meeting

Ex. 5 Attorney Client (AC)

From: Dunkins, Robin <Dunkins.Robin@epa.gov>
Sent: Wednesday, May 06, 2020 2:37 PM
To: Bradfield, John <Bradfield.John@epa.gov>
Cc: Anderson, Lea <anderson.lea@epa.gov>; Thrift, Mike <thrift.mike@epa.gov>; Jordan, Scott <Jordan.Scott@epa.gov>
Subject: Re: AF&PA/AWC Stakeholder Meeting

I don't think we need to invite DOJ to thus meeting.

Robin Dunkins, Group Leader
Natural Resources Group
USEPA OAR/OAQPS
Research Triangle Park, NC 27711
919-541-5335 office
919-605-1178 mobile
dunkins.robin@epa.gov

On May 6, 2020, at 2:32 PM, Bradfield, John <Bradfield.John@epa.gov> wrote:

Thanks Lea. Should we invite Andrew or just make him aware of the discussion?

John Bradfield
Environmental Engineer
U.S. EPA I Natural Resources Group I Sector Policies and Programs Division, OAQPS
109 T.W. Alexander Drive (Mail Drop E143-03) I Research Triangle Park, NC 27711
Phone: 919.541.3062 I Cell: 240.731.4597 I email: Bradfield.John@epa.gov

From: Anderson, Lea <anderson.lea@epa.gov>
Sent: Wednesday, May 06, 2020 2:14 PM
To: Thrift, Mike <thrift.mike@epa.gov>; Bradfield, John <Bradfield.John@epa.gov>; Jordan, Scott <Jordan.Scott@epa.gov>
Subject: RE: AF&PA/AWC Stakeholder Meeting

LEAN is Andy Doyle's case. (Andrew.Doyle@usdoj.gov).

FYI, Scott, in case you're interested in attending as well.

From: Thrift, Mike <thrift.mike@epa.gov>
Sent: Wednesday, May 06, 2020 1:39 PM
To: Bradfield, John <Bradfield.John@epa.gov>; Jordan, Scott <Jordan.Scott@epa.gov>; Anderson, Lea <anderson.lea@epa.gov>
Subject: RE: AF&PA/AWC Stakeholder Meeting

Neither are my cases, so I don't know who in doj is handling either ace or lean

From: Bradfield, John <Bradfield.John@epa.gov>
Sent: Wednesday, May 06, 2020 10:33 AM
To: Thrift, Mike <thrift.mike@epa.gov>; Jordan, Scott <Jordan.Scott@epa.gov>; Anderson, Lea <anderson.lea@epa.gov>
Subject: RE: AF&PA/AWC Stakeholder Meeting

Good point. Who is that counsel?

I will forward this response warning to Robin.

John Bradfield
Environmental Engineer
U.S. EPA I Natural Resources Group I Sector Policies and Programs Division, OAQPS
109 T.W. Alexander Drive (Mail Drop E143-03) I Research Triangle Park, NC 27711
Phone: 919.541.3062 I Cell: 240.731.4597 I email: Bradfield.John@epa.gov

From: Thrift, Mike <thrift.mike@epa.gov>
Sent: Wednesday, May 06, 2020 1:28 PM
To: Bradfield, John <Bradfield.John@epa.gov>; Jordan, Scott <Jordan.Scott@epa.gov>; Anderson, Lea <anderson.lea@epa.gov>
Subject: RE: AF&PA/AWC Stakeholder Meeting

Ex. 5 Deliberative Process

[redacted]

From: Bradfield, John <Bradfield.John@epa.gov>
Sent: Wednesday, May 06, 2020 10:17 AM
To: Jordan, Scott <Jordan.Scott@epa.gov>; Anderson, Lea <anderson.lea@epa.gov>; Thrift, Mike <thrift.mike@epa.gov>
Subject: AF&PA/AWC Stakeholder Meeting

Lea, Scott & Mike,

Robin suggested I send each of you a copy of Tim Hunt's questions for Peter. Here they are

From: "Hunt, Tim" <Tim_Hunt@afandpa.org>
Date: May 6, 2020 at 10:41:31 AM EDT
To: "Lassiter, Penny" <Lassiter.Penny@epa.gov>, "Dunkins, Robin" <Dunkins.Robin@epa.gov>
Subject: May 7 questions

Penny and Robin, As requested, here are some broad questions to get our conversation going tomorrow with Peter on biomass and the court decision. Do these work for you?

Biomass
Administrator Wheeler told us he still hopes to complete administration review within 90 days and get the proposed rule out next month. Does that match how you perceive the timing?
Who has the responsibility for resolving any questions about how the biomass rule may affect the defense of the ACE rule, and vice versa?

LEAN decision
We are developing our thoughts about how EPA could interpret the *LEAN v EPA* decision to allow EPA to conduct effective rulemaking to produce reasonable rules.
Does EPA have a process underway to decide how to apply the decision to ongoing RTRs like PCWP or ultimately Subpart MM? How could we most effectively provide input to that process?

Tim Hunt
Senior Director, Air Quality Programs
American Forest & Paper Association
American Wood Council
tim_hunt@afandpa.org
thunt@awc.org
202-463-2588

John Bradfield
Environmental Engineer
U.S. EPA I Natural Resources Group I Sector Policies and Programs Division, OAQPS
109 T.W. Alexander Drive (Mail Drop E143-03) I Research Triangle Park, NC 27711
Phone: 919.541.3062 I Cell: 240.731.4597 I email: Bradfield.John@epa.gov

Appointment

From: Wood, Anna [Wood.Anna@epa.gov]
Sent: 2/23/2018 6:41:10 PM
To: Wood, Anna [Wood.Anna@epa.gov]; Santiago, Juan [Santiago.Juan@epa.gov]; Rao, Raj [Rao.Raj@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Wayland, Richard [Wayland.Richard@epa.gov]; Johnson, Steffan [johnson.steffan@epa.gov]; Fox, Tyler [Fox.Tyler@epa.gov]; Bridgers, George [Bridgers.George@epa.gov]; Owen, Chris [Owen.Chris@epa.gov]; Svendsgaard, Dave [Svendsgaard.Dave@epa.gov]; Keller, Peter [keller.peter@epa.gov]; Buckler, Charles [Buckler.Charles@epa.gov]; Montanez, Jessica [Montanez.Jessica@epa.gov]
CC: Hemby, James [Hemby.James@epa.gov]

Subject: AF&PA RTP Visit (permitting)
Attachments: AF&PA May 2018.docx
Location: C-112

Start: 5/9/2018 6:00:00 PM
End: 5/9/2018 7:00:00 PM
Show Time As: Tentative

Full agenda and AF&PA attendees attached.

Meet with AQPD & AQAD

- **2:00 – 3:00**
  - Biomass rulemaking – schedule, scope, rationale
  - NSR/PSD Improvements – ambient air, project aggregation, RMRR, PALs, others
  - SSM SIP Call

Message

From: Baker, Sarah [baker.sarah@epa.gov]
Sent: 2/21/2019 7:40:17 PM
To: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: Biomass Meeting Notes
Attachments: February 14 2019 AA Briefing Notes.docx

Here are the notes for your review.

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

February 14, 2019

Biomass Meeting with Assistant Administrator

Purpose: To present non-regulatory approaches for implementing policy statement on biogenic CO2 emissions.

- Three options were presented:
  - ACE Rule
    - Ex. 5 Deliberative Process (DP)
  - BACT Guidance
    - Ex. 5 Deliberative Process (DP)
  - ANPR
    - Ex. 5 Deliberative Process (DP)

Comments:

- AA Wehrum expressed that the Administrator has received inquiries from Sen. Collins on status.
- The Administrator wants to do something meaningful this year.
  - Ex. 5 Deliberative Process (DP)
- Brian reminded the group that CO2 emissions are not subject to PSD on their own, this was resolved by the Supreme Ct. in UARG.
- Ex. 5 Deliberative Process (DP)

Next Steps:

- AA Wehrum expressed a desire to have the Administrator hear the discussion at a briefing.

Message

From: Hunt, Tim [Tim_Hunt@afandpa.org]
Sent: 8/8/2019 2:35:55 PM
To: Kornylak, Vera S. [Kornylak.Vera@epa.gov]
CC: Vetter, Cheryl [Vetter.Cheryl@epa.gov]; jerry_schwartz@afandpa.org; Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]
Subject: RE: Your call

Thanks Vera. I am including my colleague Jerry who is picking this up while I am on vacation. Tim

---

From: Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Sent: Thursday, August 8, 2019 8:26 AM
To: Hunt, Tim <Tim_Hunt@afandpa.org>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Subject: Your call

Hi Tim, thanks for your voicemail and the heads up that you would like to schedule time to talk with EPA about the biogenic CO2/PSD rule.

Please coordinate with Yvonne Johnson (919-541-3921) (also on this email) to set up a time when the relevant folks here in OAQPS would be able to attend. I appreciate you are also coordinating with OAP, but for our office, I'd request that you coordinate with Yvonne.

I hope you have a nice vacation.

Vera

Vera Kornylak || Acting Associate Director
Air Quality Policy Division || OAQPS
919-541-4067 || kornylak.vera@epa.gov

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Message

From: Baker, Sarah [baker.sarah@epa.gov]
Sent: 1/27/2020 9:00:22 PM
To: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: RE: Slight revision to draft biogenic CO2 NPRM
Attachments: EO12866_Biogenic CO2_Proposal_2060-AU03_20200117 with Approp comment.docx

Here is a revised copy with the new language included in the requesting comment section.

From: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Sent: Monday, January 27, 2020 3:45 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Subject: FW: Slight revision to draft biogenic CO2 NPRM

Sarah –

Here is the change that OAR made. To be consistent, I think that it also needs to be added to the section about what we are asking for comment on.

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Harlow, David <harlow.david@epa.gov>
Sent: Monday, January 27, 2020 1:30 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Cc: Tsirigotis, Peter <Tsirigotis.Peter@epa.gov>; Dominguez, Alexander <dominguez.alexander@epa.gov>
Subject: Slight revision to draft biogenic CO2 NPRM

Cheryl,

Peter indicated that you'd be the best person for us to send this to. It's a bit of a long story, but we wanted to add a couple of sentences, and a citation, to the draft that is currently in the OAR IO.

Attached is an RLSO that reflects the revision. The only pages affected are 35-36.

We've shared this additional text (and the reason and thought behind it) with David Fotouhi (who indicated that he'd loop in Matt Leopold). OGC (the politicals, anyhow) is okay with this.

If you'd like to discuss, feel free to give me a call ((202-424-0212).

David S. Harlow
Senior Counsel
Immediate Office of the Acting Assistant Administrator
Office of Air and Radiation, USEPA
WJC-N Room 5409K
1200 Pennsylvania Avenue NW
Washington, DC 20460
202-564-1233
Harlow.David@epa.gov

Message

From: Kornylak, Vera S. [Kornylak.Vera@epa.gov]
Sent: 1/9/2020 8:36:41 PM
To: Massey, Lana [massey.lana@epa.gov]; Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]
CC: Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Baker, Sarah [baker.sarah@epa.gov]
Subject: FW: Biomass Briefing Document
Attachments: Revised Proposed Biogenic CO2 Rule Briefing 1-8-20.docx

Hi Lana, this is ready to go to the 4th floor for the biogenic CO2 briefing with Anne on Monday (currently scheduled for 12:45pm on Monday).

Thanks,
Vera

Vera Kornylak || Acting Associate Director
Air Quality Policy Division || OAQPS
919-541-4067 || kornylak.vera@epa.gov

This message, including attachments, contains information that may be deliberative and confidential, and may be protected by attorney work-product, attorney-client or other applicable privileges. Further, this message, including attachments, may be exempt from disclosure by the U.S. EPA under applicable law. This message, including attachments, is intended to be conveyed only to the named recipient(s). If you received this message in error, or if you are not the intended recipient, please notify the sender listed above and delete the message from your system immediately. The unauthorized use, dissemination, distribution or reproduction of this message, including attachments, by unintended recipients is prohibited and may be unlawful.

Message

From: Baker, Sarah [baker.sarah@epa.gov]
Sent: 7/16/2019 2:41:16 PM
To: Massey, Lana [massey.lana@epa.gov]
CC: Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]; Long, Pam [Long.Pam@epa.gov]
Subject: Biomass Briefing Document
Attachments: Idsal Biogenic CO2 Briefing 7-18-19.docx

Importance: High

Lana-

Attached is the briefing document for our Biogenic CO2 briefing with Anne Idsal scheduled for this Thursday, July 18th. Please let me know if you need anything else. Thanks.
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Karen Mongoven [kmongoven@4cleanair.org]
Sent: 11/12/2019 3:09:16 PM
To: Rao, Raj [Rao.Raj@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Montanez, Jessica [Montanez.Jessica@epa.gov]; Svendsgaard, Dave [Svendsgaard.Dave@epa.gov]; Castro, Grecia [Castro.Grecia@epa.gov]; Torres, Elineth [Torres.Elineth@epa.gov]
CC: Deroeck, Dan [Deroeck.Dan@epa.gov]; Keller, Peter [keller.peter@epa.gov]; Abrahamian, Tanya [abrahamian.tanya@epa.gov]
Subject: RE: Planning agenda for 11/13 NACAA Permitting & NSR Committee Call

Thanks, all.

From: Rao, Raj [mailto:Rao.Raj@epa.gov]
Sent: Tuesday, November 12, 2019 9:19 AM
To: Karen Mongoven; Vetter, Cheryl; Montanez, Jessica; Svendsgaard, Dave; Castro, Grecia; Torres, Elineth
Cc: Deroeck, Dan; Keller, Peter; Abrahamian, Tanya
Subject: RE: Planning agenda for 11/13 NACAA Permitting & NSR Committee Call

Karen, for the NSR portion
E-Guidance update – Tanya A
Reasonable Possibility Reconsideration - Peter K
Ambient Air guidance Update – Dan D

raj

Raj Rao, P.E.
Group Leader, New Source Review Group,
Air Quality Policy Division,
Office of Air Quality Planning and Standards (MD-C504-03)
US Environmental Protection Agency
919-541-5344

Note: Positions or views expressed here do not represent official EPA policy. Interagency Deliberative and Confidential

---

From: Karen Mongoven <kmongoven@4cleanair.org>
Sent: Thursday, November 07, 2019 12:42 PM
To: Rao, Raj <Rao.Raj@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Montanez, Jessica <Montanez.Jessica@epa.gov>; Svendsgaard, Dave <Svendsgaard.Dave@epa.gov>; Castro, Grecia <Castro.Grecia@epa.gov>; Torres, Elineth <Torres.Elineth@epa.gov>
Subject: Planning agenda for 11/13 NACAA Permitting & NSR Committee Call

Hello everyone,

The next NACAA Permitting and New Source Review Committee call is scheduled for Wednesday, November 13 beginning at 12:00 p.m. Eastern. What items would EPA like to include on the agenda this month? Here are potential items on my list:

Ethanol plants NSR reconsideration rule
Rulemaking on biogenic CO2 in permitting

Upcoming finalization of Title V petitions process rule

Please let me know about the topics above and any other topics you would like to address on next week's call – and who will be speaking about them. Thank you!

Karen

* * *

Karen K. Mongoven
Senior Staff Associate
National Association of Clean Air Agencies
444 North Capitol Street, NW, Suite 307
Washington, DC 20001
Phone: (202) 624-7864
Fax: (202) 624-7863
kmongoven@4cleanair.org

Message

From: Karen Mongoven [kmongoven@4cleanair.org]
Sent: 11/8/2019 8:03:48 PM
To: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
CC: Rao, Raj [Rao.Raj@epa.gov]; Wheeler, Carrie [Wheeler.Carrie@epa.gov]; Baker, Sarah [baker.sarah@epa.gov]; Mataway-Novak, Dylan [Mataway-Novak.Dylan@epa.gov]
Subject: RE: Planning agenda for 11/13 NACAA Permitting & NSR Committee Call

Okay, thanks.

From: Vetter, Cheryl [mailto:Vetter.Cheryl@epa.gov]
Sent: Friday, November 08, 2019 1:07 PM
To: Karen Mongoven
Cc: Rao, Raj; Wheeler, Carrie; Baker, Sarah; Mataway-Novak, Dylan
Subject: RE: Planning agenda for 11/13 NACAA Permitting & NSR Committee Call

No one here. I think this is coming out of OGC, but I am not sure.

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Karen Mongoven <kmongoven@4cleanair.org>
Sent: Friday, November 08, 2019 12:30 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Cc: Rao, Raj <Rao.Raj@epa.gov>; Wheeler, Carrie <Wheeler.Carrie@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>; Mataway-Novak, Dylan <Mataway-Novak.Dylan@epa.gov>
Subject: RE: Planning agenda for 11/13 NACAA Permitting & NSR Committee Call

Thanks very much. Could someone also talk about EPA's proposal to modify/curtail the EAB permit review process?

From: Vetter, Cheryl [mailto:Vetter.Cheryl@epa.gov]
Sent: Thursday, November 07, 2019 3:54 PM
To: Karen Mongoven
Cc: Rao, Raj; Wheeler, Carrie; Baker, Sarah; Mataway-Novak, Dylan
Subject: RE: Planning agenda for 11/13 NACAA Permitting & NSR Committee Call

Karen –

Dylan Mataway-Novak will cover ethanol
Sarah Baker will cover biogenic CO2
Carrie Wheeler will cover the title V petitions rule

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Karen Mongoven <kmongoven@4cleanair.org>
Sent: Thursday, November 07, 2019 12:42 PM
To: Rao, Raj <Rao.Raj@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Montanez, Jessica <Montanez.Jessica@epa.gov>; Svendsgaard, Dave <Svendsgaard.Dave@epa.gov>; Castro, Grecia <Castro.Grecia@epa.gov>; Torres, Elineth <Torres.Elineth@epa.gov>
Subject: Planning agenda for 11/13 NACAA Permitting & NSR Committee Call

Hello everyone,

The next NACAA Permitting and New Source Review Committee call is scheduled for Wednesday, November 13 beginning at 12:00 p.m. Eastern. What items would EPA like to include on the agenda this month? Here are potential items on my list:

Ethanol plants NSR reconsideration rule
Rulemaking on biogenic CO2 in permitting
Upcoming finalization of Title V petitions process rule

Please let me know about the topics above and any other topics you would like to address on next week's call – and who will be speaking about them. Thank you!

Karen

* * *

Karen K. Mongoven
Senior Staff Associate
National Association of Clean Air Agencies
444 North Capitol Street, NW, Suite 307
Washington, DC 20001
Phone: (202) 624-7864
Fax: (202) 624-7863
kmongoven@4cleanair.org

Message

From: Baker, Sarah [baker.sarah@epa.gov]
Sent: 8/19/2019 1:20:48 PM
To: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: RE: Biogenic CO2 Status
Attachments: Biogenic CO2 Status Update 8-19-19.docx

Cheryl-

Attached are a couple of bullet points. Just let me know if you want me to add any more. I did not include anything about the reg agenda. Thanks.
Sarah

From: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Sent: Friday, August 16, 2019 1:01 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: FW: Biogenic CO2 Status

Sarah – I talked to Mike about this. You need to put together the current status – waiting for meeting between OGC, OAR and Administrator to get direction on scope/basis for rule before moving forward.

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Koerber, Mike <Koerber.Mike@epa.gov>
Sent: Friday, August 16, 2019 12:18 PM
To: Mathias, Scott <Mathias.Scott@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Cc: Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Smith, Darcie <Smith.Darcie@epa.gov>
Subject: FW: Biogenic CO2 Status

OAR has asked for a one pager on the background, timeline, and current status of this action. Please provide a draft by early next week – Monday or no later than Tuesday. Thanks.

Mike

From: Koerber, Mike
Sent: Friday, July 12, 2019 4:19 PM
To: Woods, Clint <woods.clint@epa.gov>; Harlow, David <harlow.david@epa.gov>; Dominguez, Alexander <dominguez.alexander@epa.gov>; Lewis, Josh <Lewis.Josh@epa.gov>
Subject: Biogenic CO2 Status

Here is a short blurb on where we're at on biogenic CO2.

> **From:** "Kornylak, Vera S." <Kornylak.Vera@epa.gov>
> **Date:** July 12, 2019 at 3:32:50 PM EDT
> **To:** "Koerber, Mike" <Koerber.Mike@epa.gov>

Cc: "Long, Pam" <Long.Pam@epa.gov>, "Mathias, Scott" <Mathias.Scott@epa.gov>, "Vetter, Cheryl" <Vetter.Cheryl@epa.gov>, "Baker, Sarah" <baker.sarah@epa.gov>
Subject: RE: Briefings for OAR-IO

Hi Mike: here's a blurb on biomass per your request below. Note that OGC (Brian and Nora) have not yet been able to connect with Justin and have concerns about waiving ADP milestones as well as the timing that would be necessary to make this happen.

EPA has been working on developing a potential rule to exempt Biogenic CO2 emissions from certain biomass feedstocks from regulation under the Prevention of Significant Deterioration (PSD) and title V operating permitting programs. Based on recent direction, we are working in an expedited manner to develop the legal authority and to prepare an outline of the rule. With the expedited process, we are working towards an options selection briefing with the Administrator in late August or early September. Waivers are necessary from key offices, such as OGC, to effectuate that. In addition, we are initiating the process to open a docket to support the rulemaking and reconvening the ADP workgroup to let them know about the expedited timeline. We are planning a briefing for the OAR IO in July to cover background and seek feedback on details regarding the process for expediting the rulemaking as well as options to bring forward for options selection.

Vera Kornylak

From: Dominguez, Alexander
Sent: Thursday, July 11, 2019 5:08 PM
To: Ward, Hillary <Ward.Hillary@epa.gov>; Koerber, Mike <Koerber.Mike@epa.gov>
Cc: Rakosnik, Delaney <rakosnik.delaney@epa.gov>
Subject: Briefings for OAR-IO

Hillary and Mike,

Hope all is well. Happy to call and discus if needed, but I want to make sure we get a couple briefings on the books for Anne. I spoke with Delaney and she recommended you send her a briefing request form for each – i.e so she knows who to include on the calendar invite etc. They do not need to happen immediately, but sometime this month.

- Biogenic CO2 – similar to the 6/24 meeting (Treatment of Biogenic CO2 emissions at stationary sources). The Administrator has again expressed wanting to have a deliverable on this.
- Small Remote Incinerators
- PVC MACT
- New Source Review Rulemaking (I believe David spoke with the NSR team earlier today about getting this teed up)
- Woodheaters (although I believe this is already on the books)

Can jump on the phone tomorrow if you'd like. Appreciate it.

Alex

Alex Dominguez

Policy Advisor to the Assistant Administrator
Office of Air and Radiation
U.S. Environmental Protection Agency
D: 202-564-3164
M: 202-578-5985

Treatment of Biogenic Carbon Dioxide (CO_2) Emissions in New Source Review (NSR)/Prevention of Significant Deterioration (PSD) Permitting August 19, 2019, Update

- OAQPS held a briefing for OAR on July 18th presenting potential paths for exempting biogenic CO_2 emissions from PSD and title V permitting requirements. The direction from that briefing was Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP) and be prepared to discuss with the Administrator in early August.
- OAQPS submitted a meeting request for OGC, OAR, and the Administrator to discuss the legal theories and to finalize direction on the scope and basis for the rule before moving forward. The meeting has not yet been scheduled.
- OAQPS has convened the workgroup and begun drafting the framework for the rule but needs the legal rationale in order to complete portions on the scope of the rule, including feedstocks covered and entities affected.
- OAQPS has met with and provided information to the economists assigned to the action so they may begin an initial economic analysis of a potential rulemaking. They will also need information regarding the scope of the rule to complete any analysis.

Message

From: Baker, Sarah [baker.sarah@epa.gov]
Sent: 7/12/2019 1:05:41 PM
To: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: Biomass Paragraph

Can you review this before I send it to Vera? I'm still a bit unclear on the information we need to convey.

EPA has been working on developing a potential rule to exempt Biogenic CO2 emissions from certain biomass feedstocks from regulation under the Prevention of Significant Deterioration (PSD) and title V operating permitting programs. Based on recent direction, we are working in an expedited manner to develop the legal authority and to prepare an outline of the rule. With the expedited process, we are working towards an options selection briefing with the Administrator in late August or early September.

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [baker.sarah@epa.gov]
Sent: 10/22/2019 2:25:11 PM
To: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: FW: Biogenic PSD 11/1 meeting
Attachments: Policy Option Considerations 10-19.pdf; 2019 Carbon Accounting Science Fundamentals with signatures.pdf

---

From: Ohrel, Sara <Ohrel.Sara@epa.gov>
Sent: Tuesday, October 22, 2019 10:21 AM
To: Irving, Bill <Irving.Bill@epa.gov>; Fawcett, Allen <Fawcett.Allen@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Subject: FW: Biogenic PSD 11/1 meeting

FYI

From: Hunt, Tim <Tim_Hunt@afandpa.org>
Sent: Monday, October 21, 2019 5:59 PM
To: Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>; Steller, John <Steller.John@epa.gov>
Cc: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>; Noe, Paul <Paul_Noe@afandpa.org>; Chip Murray <cmurray@nafoalliance.org>
Subject: Biogenic PSD 11/1 meeting

Vera, Sara, and John,

Thank you and Yvonne again for pulling together OAQPS and Climate Programs staff to meet with us on November 1 at 10 AM at EPA's offices in DC.

To make the meeting as productive as possible, we are providing that attached paper titled, "Policy Option Considerations". Please share it with others expected to attend the meeting or involved with the rulemaking. We hope that attendees can read it in advance so we can spend our limited time discussing key aspects of the paper and answering your questions. Knowing that you are developing a proposed rule and understanding your procedures, we would expect this material to be placed in the rulemaking docket.

In addition, we are attaching a recent statement from members of the National Association of University Forest Resources Programs, which reiterates key points in their prior letter to Administrator McCarthy on November 6, 2014 on the science fundamentals of forest biomass carbon accounting.

Finally, as for an agenda for the meeting, after introductions it would be focused on the points presented in the paper concerning how forest planting and growth will offset bioenergy demands given forest economics. If helpful, we could break the discussion into each of the four major sections of the paper:

- Introductions
- Review of SAB work
- Biomass residuals and biowastes
- Next steps

I will provide you a list of attendees from AF&PA, AWC, NAFO and Enviva closer to the meeting to help with security clearance into the building. Let me know which room we will be gathering in.

Thank you,

Timothy Hunt
Senior Director, Air Quality Programs
AMERICAN FOREST & PAPER ASSOCIATION
AMERICAN WOOD COUNCIL
1101 K Street, NW, Suite 700, Washington, DC 20005
Office: 202-463-2588
Email: thunt@awc.org or Tim_Hunt@afandpa.org

Message

From: Mills, Kathy [Mills.Kathy@epa.gov]
Sent: 5/7/2020 2:29:54 PM
To: Santiago, Juan [Santiago.Juan@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: FW: (From Robin Dunkins) 5/7 AF&PA Meeting - OGC concerns with agenda

fyi

Kathy "KB" Mills ~ SPPD ~ U. S. EPA, OAQPS ~ 919-541-1599

From: Doster, Brian <Doster.Brian@epa.gov>
Sent: Thursday, May 07, 2020 10:04 AM
To: Mills, Kathy <Mills.Kathy@epa.gov>; Dunkins, Robin <Dunkins.Robin@epa.gov>; Srinivasan, Gautam <Srinivasan.Gautam@epa.gov>
Cc: Vijayan, Abi <Vijayan.Abi@epa.gov>
Subject: RE: (From Robin Dunkins) 5/7 AF&PA Meeting - OGC concerns with agenda

Ex. 5 Attorney Client (AC)

From: Mills, Kathy <Mills.Kathy@epa.gov>
Sent: Thursday, May 07, 2020 9:56 AM
To: Doster, Brian <Doster.Brian@epa.gov>; Dunkins, Robin <Dunkins.Robin@epa.gov>; Srinivasan, Gautam <Srinivasan.Gautam@epa.gov>
Cc: Vijayan, Abi <Vijayan.Abi@epa.gov>
Subject: RE: (From Robin Dunkins) 5/7 AF&PA Meeting - OGC concerns with agenda

Ex. 5 Attorney Client (AC)

Kathy "KB" Mills ~ SPPD ~ U. S. EPA, OAQPS ~ 919-541-1599

From: Doster, Brian <Doster.Brian@epa.gov>
Sent: Thursday, May 07, 2020 9:09 AM
To: Dunkins, Robin <Dunkins.Robin@epa.gov>; Mills, Kathy <Mills.Kathy@epa.gov>; Srinivasan, Gautam <Srinivasan.Gautam@epa.gov>
Cc: Vijayan, Abi <Vijayan.Abi@epa.gov>
Subject: RE: (From Robin Dunkins) 5/7 AF&PA Meeting - OGC concerns with agenda

Ex. 5 Attorney Client (AC)

From: Greenglass, Nora <Greenglass.Nora@epa.gov>
Sent: Thursday, May 07, 2020 8:47 AM
To: Doster, Brian <Doster.Brian@epa.gov>
Subject: FW: (From Robin Dunkins) 5/7 AF&PA Meeting

Ex. 5 Attorney Client (AC)

From: Mills, Kathy <Mills.Kathy@epa.gov>
Sent: Thursday, May 07, 2020 7:53 AM
To: Greenglass, Nora <Greenglass.Nora@epa.gov>; Vijayan, Abi <Vijayan.Abi@epa.gov>
Cc: Dunkins, Robin <Dunkins.Robin@epa.gov>
Subject: (From Robin Dunkins) 5/7 AF&PA Meeting

Robin requested that I send today's AF&PA meeting agenda to you. Given the topics, Robin and other managers want to ensure OGC is aware and on today's call. Peter is scheduled from 11:45am-12:15pm and Tim Hunt sent the questions below for that session. We certainly appreciate your assistance.
Thank you,
KB

Questions from Tim Hunt for Peter: Here are some broad questions to get our conversation going tomorrow with Peter on biomass and the court decision. Do these work for you?
Biomass
Administrator Wheeler told us he still hopes to complete administration review within 90 days and get the proposed rule out next month. Does that match how you perceive the timing?
Who has the responsibility for resolving any questions about how the biomass rule may affect the defense of the ACE rule, and vice versa?

***LEAN* decision**
We are developing our thoughts about how EPA could interpret the *LEAN v EPA* decision to allow EPA to conduct effective rulemaking to produce reasonable rules.
Does EPA have a process underway to decide how to apply the decision to ongoing RTRs like PCWP or ultimately Subpart MM? How could we most effectively provide input to that process?

Kathy "KB" Mills ~ SPPD ~ U. S. EPA, OAQPS ~ 919-541-1599

Message

From: Abrahamian, Tanya [abrahamian.tanya@epa.gov]
Sent: 8/8/2019 3:43:51 PM
To: Rao, Raj [Rao.Raj@epa.gov]; Santiago, Juan [Santiago.Juan@epa.gov]; Svendsgaard, Dave [Svendsgaard.Dave@epa.gov]; Modak, Nabanita [Modak.Nabanita@epa.gov]; Baker, Sarah [baker.sarah@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Wheeler, Carrie [Wheeler.Carrie@epa.gov]
Subject: Notes from David Harlow Check-In
Attachments: Harlowbriefing_080819.docx

Team,

Please find attached my notes from today's briefing with David Harlow, in case you find them helpful. As always, please don't hesitate to reach out with questions/comments.

Thanks,
Tanya

Check in with David Harlow
08/08/19

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

5. Biomass Update – Administrator meeting
    a. Sarah provided David Harlow with update on OGC stance
    b. David Harlow stated that there is disconnect between what Administrator wants (a proposal by the end of the year) and Matt Leopold direction, who fears blowback in legal system
        i. David Harlow suggests that Matt Leopold may have discussion with Administration expressing his concerns which could lead Administrator to make a decision one way or another
    c. Sarah also informed David Harlow that AFPA is attempting to schedule meeting claiming that it is what Administrator wants
        i. David Harlow says he will find out what this is about but states that EPA does not have to accept meeting with them

Ex. 5 Deliberative Process (DP)

Message

From: Wood, Anna [Wood.Anna@epa.gov]
Sent: 10/18/2018 2:00:12 PM
To: Kyle Harris [kharris@corn.org]
CC: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: RE: Ag Biogenic CO2

Hi Kyle, thanks for your email. I think you may be mistaken. I am ccing Cheryl Vetter on this email and have asked her to follow-up with you on this. Thanks for reaching out, Anna

---

From: Kyle Harris [mailto:kharris@corn.org]
Sent: Wednesday, October 17, 2018 4:10 PM
To: Wood, Anna <Wood.Anna@epa.gov>
Subject: RE: Ag Biogenic CO2

Hi Anna,

It seems as if "Treatment of Biogenic CO2 Emissions Under the Clean Air Act Permitting Programs" that was on the Spring 2018 Reg Agenda (as a long term action) is no longer present on the Fall 2018 Agenda.... I was wondering if you could elaborate on this.... Would it be combined into another proposed rulemaking that is on the Fall Agenda? Am I missing something?

Just hoping you could elaborate on this.

Best,

Kyle

Kyle A. Harris
Director, Environmental Affairs/Workplace Safety

Corn Refiners Association
1701 Pennsylvania Avenue, N.W.
Suite 400
Washington, D.C. 20006
Office: 202-534-3501
Cell: 410-924-2629

From: Wood, Anna <Wood.Anna@epa.gov>
Sent: Tuesday, October 09, 2018 9:40 AM
To: Kyle Harris <kharris@corn.org>
Cc: Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Subject: Re: Ag Biogenic CO2

Thanks Kyle, appreciate the follow-up- nothing to update at this time. Thanks for reaching out. Anna

Sent from my iPhone

On Oct 9, 2018, at 9:21 AM, Kyle Harris <kharris@corn.org> wrote:

> Hi Anna,

As we approach mid October I wanted to reach out and see if there are any updates on Biogenic CO2.

Best,

Kyle

Kyle A. Harris
Director, Environmental Affairs & Workplace Safety

image003.png>

CORN REFINERS ASSOCIATION
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Washington, DC 20006-5806
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C (410) 924-2629
CORN.ORG

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<image004.gif>

From: Wood, Anna <Wood.Anna@epa.gov>
Sent: Wednesday, September 12, 2018 2:01 PM
To: Kyle Harris <kharris@corn.org>
Cc: Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Subject: RE: Ag Biogenic CO2

Hi Kyle, my apologies for the delay in getting back to you. Thank you for reaching out on biogenic CO2 and appreciate your offer. At this point we are working to provide the senior OAR managers with a briefing on potential paths to address biogenic CO2. Please feel free to follow up in mid-October as I am hopeful that we will have more insight on the path forward on this important subject. Hope this email finds you well and thanks again for reaching out, Anna

---

From: Kyle Harris [mailto:kharris@corn.org]
Sent: Monday, September 10, 2018 8:37 AM
To: Wood, Anna
Subject: Ag Biogenic CO2

Ms. Wood,

My name is Kyle Harris, I am Director of Environmental Affairs for the Corn Refiners Association, who run the Biogenic CO2 Coalition (the ag component of the larger Biomass discussion). Its been a little over a month since our meeting with Mandy and David (I believe you were on the phone) at EPA headquarters and I wanted to follow up with you to see if there was any updates with regard to the regulation of Biogenic CO2. We want to be as helpful as possible/appropriate and would love to set up a call (or come down to RTP) to further discuss.

Best Regards,

Kyle

Kyle A. Harris
Director, Environmental Affairs/ Workplace Safety
Corn Refiners Association
www.corn.org
1701 Pennsylvania Ave NW
Suite 400, Washington, DC 20006
Office: (202) 534-3501
Cell: (410) 924-2629

<image005.png>

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<image004.gif>

Message

From: Montanez, Jessica [Montanez.Jessica@epa.gov]
Sent: 11/7/2018 7:17:31 PM
To: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: RE: Planning agenda for 11/14 NACAA Permitting & NSR Committee Call

Ex. 5 Deliberative Process (DP)

From: Vetter, Cheryl
Sent: Wednesday, November 07, 2018 2:15 PM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: RE: Planning agenda for 11/14 NACAA Permitting & NSR Committee Call

Yes. They may have questions that we can't answer…

From: Montanez, Jessica
Sent: Wednesday, November 07, 2018 2:06 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: RE: Planning agenda for 11/14 NACAA Permitting & NSR Committee Call

I can talk to them on the biomass rule and state what is in the reg agenda, long term action. I can also give them an update on last week's statement in case they are not aware of that. OK?

From: Karen Mongoven <kmongoven@4cleanair.org>
Sent: Wednesday, November 07, 2018 1:50 PM
To: Rao, Raj <Rao.Raj@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Svendsgaard, Dave <Svendsgaard.Dave@epa.gov>; Dalcher, Debra <dalcher.debra@epa.gov>; Montanez, Jessica <Montanez.Jessica@epa.gov>; Santiago, Juan <Santiago.Juan@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Wood, Anna <Wood.Anna@epa.gov>
Subject: Planning agenda for 11/14 NACAA Permitting & NSR Committee Call

Hello all,

The next NACAA Permitting and New Source Review Committee call is scheduled for one week from today: **Wednesday, November 14 beginning at 12:00 noon Eastern**. What would you like to include on the EPA portion of the agenda?

We will obviously want to talk about the project aggregation reconsideration final action announced today. Whom shall I put down to talk about that?

We would also appreciate updates on the ambient air guidance, the project emissions accounting rulemaking, the OIAI rulemaking, any rulemaking on biogenic CO2 permitting, and anything else in the pipeline. Please let me know what you are able to report on – thanks so much!

-Karen

* * *
Karen K. Mongoven
Senior Staff Associate

Appointment

From: Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]
Sent: 5/7/2018 7:35:55 PM
To: Santiago, Juan [Santiago.Juan@epa.gov]; Rao, Raj [Rao.Raj@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Wayland, Richard [Wayland.Richard@epa.gov]; Johnson, Steffan [johnson.steffan@epa.gov]; Fox, Tyler [Fox.Tyler@epa.gov]; Bridgers, George [Bridgers.George@epa.gov]; Owen, Chris [Owen.Chris@epa.gov]
CC: Hemby, James [Hemby.James@epa.gov]

Subject: AF&PA RTP Visit (permitting)
Attachments: AF&PA May 2018.docx
Location: C-112

Start: 5/9/2018 6:00:00 PM
End: 5/9/2018 7:00:00 PM
Show Time As: Tentative

Full agenda and AF&PA attendees attached.

Meet with AQPD & AQAD

- **2:00 – 3:00**
  - Biomass rulemaking – schedule, scope, rationale
  - NSR/PSD Improvements – ambient air, project aggregation, RMRR, PALs, others
  - SSM SIP Call

Message

From: Santiago, Juan [Santiago.Juan@epa.gov]
Sent: 5/10/2018 3:28:38 PM
To: Harlow, David [harlow.david@epa.gov]
CC: Wood, Anna [Wood.Anna@epa.gov]; Rao, Raj [Rao.Raj@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: Agenda for today's check in
Attachments: Agenda for check in with David H 051018.docx

David, attached is the agenda for our discussion. Talk to you soon!

Juan

Check in with David Harlow

05/10/18

Agenda

Ex. 5 Deliberative Process (DP)

6. Biomass NPRM – Tentative Target – Tier 2 - 3/2019 (per ADP Process) Now Tier 1 – TBD - ADP process meetings with Administrator

Ex. 5 Deliberative Process (DP)

Message

From: Wood, Anna [Wood.Anna@epa.gov]
Sent: 2/6/2018 8:07:14 PM
To: Santiago, Juan [Santiago.Juan@epa.gov]
CC: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: Re: Biomass

Adding Cheryl so she sees this - in case she has not seen it.

Sent from my iPhone

On Feb 6, 2018, at 10:45 AM, Santiago, Juan <Santiago.Juan@epa.gov> wrote:

> Here are the notes from the biomass discussion with OGC.
>
> Juan
>
> ---
>
> **From:** Montanez, Jessica
> **Sent:** Monday, January 29, 2018 12:47 PM
> **To:** Santiago, Juan <Santiago.Juan@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
> **Cc:** Wheeler, Carrie <Wheeler.Carrie@epa.gov>; Rao, Raj <Rao.Raj@epa.gov>
> **Subject:** RE: Biomass
>
> Juan,
>
> Here are my notes from the meeting. Cheryl and Carrie, feel free to edit it with anything I might have missed.
>
> Jessica
>
> **Biomass Brainstorming Meeting**
>
> **In attendance:**
> - <!--[if !supportLists]--><!--[endif]-->Cheryl Vetter, Raj Rao, Carrie Wheeler, Jessica Montanez, Brian Doster, John Krallman, Nora Greenglass
>
> **Notes:**
> - Ex. 5 Deliberative Process (DP)

-

Ex. 5 Deliberative Process (DP)

-

Next Steps:

- <!--[if !supportLists]--><!--[endif]-->Develop an issue paper that lists all potential options and circulate it between OAQPS, OGC and OAP for editing and discussion. Currently working on it to post it on One Drive for editing ASAP.
- <!--[if !supportLists]--><!--[endif]-->Use this issue paper to brief Bill Wehrum in about 3 weeks.

Jessica Montañez
Office of Air Quality Planning and Standards
Air Quality Policy Division
New Source Review Group
109 TW Alexander Drive MD: C504-03 RTP, NC 27711
Phone: 919-541-3407
Note: Positions or views expressed here do not represent official EPA policy.

Looking for a speaker for your school or community event? http://www.epa.gov/rtpspeakers/

From: Santiago, Juan
Sent: Monday, January 29, 2018 9:47 AM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: Biomass

Cheryl / Jessica,

I'd like to get a summary of the biomass discussion held last week. Biomass is one of the topic areas on the agenda for discussion with Bill Wehrum when he visits RTP later this week. Our goal would be to provide Bill with the results of the discussions with OGC and share any ideas we think may be workable to advance the policy direction.

Is it possible to get a summary today?

Thanks!

Juan

Message

From: Santiago, Juan [Santiago.Juan@epa.gov]
Sent: 3/7/2018 5:32:22 PM
To: Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Montanez, Jessica [Montanez.Jessica@epa.gov]
Subject: Draft agenda for biomass meeting
Attachments: DRAFT AGENDA - Biomass meeting with OAR 3-8-18.docx

Here's what I have so far. I plan to walk Peter through this later today. Let me know if you have any feedback/thoughts/edits.

Thanks!
Juan

Project	Target Completion Date	Current Status	Key Milestones	OAQPS/OGC Staff	Comments

Ex. 5 Deliberative Process (DP)

Project	Target Completion Date	Current Status	Key Milestones	OAQPS/OGC Staff	Comments

Ex. 5 Deliberative Process (DP)

Project	Target Completion Date	Current Status	Key Milestones	OAQPS/OGC Staff	Comments

Ex. 5 Deliberative Process (DP)

Project	Target Completion Date	Current Status	Key Milestones	OAQPS/OGC Staff	Comments

Ex. 5 Deliberative Process (DP)

Project	Target Completion Date	Current Status	Key Milestones	OAQPS/OGC Staff	Comments
Ex. 5 Deliberative Process (DP)					Ex. 5 Deliberative Process (DP)

Project	Target Completion Date	Current Status	Key Milestones	OAQPS/OGC Staff	Comments
Ex. 5 Deliberative Process (DP)					

Project	Target Completion Date	Current Status	Key Milestones	OAQPS/OGC Staff	Comments
Biomass Explore options for exempting or providing regulatory relief for biomass (biogenic CO2 emissions resulting from the combustion of biomass) from permitting.	TBD – Completion date will depend on separate policy document or rulemaking that OAP has been asked to develop	Team developing issue/options paper that currently depends on a separate policy document or rulemaking that OAP is beginning to brainstorm about. Options for permitting will follow.	TBD	Jessica Montañez, Carrie Wheeler/Nora Greenglass	

Message

From: Vetter, Cheryl [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31CF6512CDD44F02BDFDA975E406C194-VETTER, CHERYL]
Sent: 1/21/2020 2:31:06 PM
To: Hodson Marten, Elke L. EOP/OMB [Elke.L.HodsonMarten@ Ex. 6 Personal Privacy (PP)
Subject: RE: Setting up meetings on biogenic CO2

Got it, thanks.

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Hodson Marten, Elke L. EOP/OMB <Elke.L.HodsonMarten@ Ex. 6 Personal Privacy (PP)
Sent: Tuesday, January 21, 2020 9:17 AM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Cc: Baker, Sarah <baker.sarah@epa.gov>; Elman, Barry <Elman.Barry@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Subject: RE: Setting up meetings on biogenic CO2

Just sent you a calendar invitation with the call-in number.

From: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Sent: Tuesday, January 21, 2020 9:01 AM
To: Hodson Marten, Elke L. EOP/OMB <Elke.L.HodsonMarten@ Ex. 6 Personal Privacy (PP)
Cc: Baker, Sarah <baker.sarah@epa.gov>; Elman, Barry <Elman.Barry@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Subject: RE: Setting up meetings on biogenic CO2

Okay, I will set it up on our calendars. Do you need me to reserve a conference line, or will you do that? The full title of the rule is "Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs" RIN 2060-AU03

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Hodson Marten, Elke L. EOP/OMB <Elke.L.HodsonMarten@ Ex. 6 Personal Privacy (PP)
Sent: Friday, January 17, 2020 4:21 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Cc: Baker, Sarah <baker.sarah@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Elman, Barry <Elman.Barry@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: RE: Setting up meetings on biogenic CO2

Let's aim for Friday 3-4 on Jan 24.

From: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Sent: Monday, January 13, 2020 5:05 PM
To: Hodson Marten, Elke L. EOP/OMB <Elke.L.HodsonMarten@ Ex. 6 Personal Privacy (PP)
Cc: Baker, Sarah <baker.sarah@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Elman, Barry <Elman.Barry@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: Setting up meetings on biogenic CO2

Elke –

I have looked at calendars here and have found the following times when we have availability to discuss the biogenic CO2 proposal that we will be sending you soon. Looks like the following times work for us:

Thursday 1/16 between 9 am and noon (preferably between 10:30 and noon)
Wednesday 1/22 9-10 or 11:30 – 12
Thursday 1/23 9-12
Friday 1/24 9-11, 1-2 or 3-4

I hope one of those times could work, if not, I will see whether people have things that could move.

Thanks, and feel free to call me with any questions.

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

Message

From: Vetter, Cheryl [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31CF6512CDD44F02BDFDA975E406C194-VETTER, CHERYL]
Sent: 5/21/2020 7:31:47 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: RE: Biomass Controlled Correspondence

So he basically invited them to do an appropriations rider for ag…

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, May 21, 2020 3:31 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: RE: Biomass Controlled Correspondence

I can't remember that far back now so I had to check our briefing papers from way back when. It looks like ag is phase 2 and waste is phase 3. Other than that, we don't have any direction.
Also, a weird note and not sure if we want to include it in the response letter, but the transcript from CSPAN is slightly different than the one from Nora. The CSPAN one omitted that he mentioned we are doing woody biomass first based on the appropriations language. I checked the video and he does say that.

From: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Sent: Thursday, May 21, 2020 3:26 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biomass Controlled Correspondence

Has he told us whether that is phase 2 or 3????

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, May 21, 2020 2:05 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Biomass Controlled Correspondence

Cheryl-
I was able to get the transcript of the hearing from CSPAN. I've copied the statement about agriculture below. I made very minor tweaks to the letter which I highlighted. I didn't state anything about timing but can add that in. I also looked up the PM2.5 hearings and they are having the last one next week. As you suggested, I can write Jan and see if I can sit in to see the format. Thanks!
Sarah

Senator Braun
GOOD TO SEE YOU AGAIN, ADMINISTRATOR WHEELER. THE FIRST TIME WE MET I TOLD YOU HOW DEAR THE ENVIRONMENT IS TO ME. I SPENT MANY YEARS INVOLVED IN AGRICULTURE, STILL DUE TO THE EXTENT I CAN AND I HAVE BEEN A TREE FARMER. WE HAVE ALSO GOTTEN NOW A SENATE CLIMATE CAUCUS, THE FIRST ACROSS THE THRESHOLD AS A REPUBLICAN. HAVE SIX OTHERS ON IT COME ALONG WITH SEVEN DEMOCRATS. I THINK THE POSITION YOU ARE IN NOW MORE THAN EVER HAS SUCH IMPORTANCE, AND I VIEW THAT BECAUSE I'VE GOT FOUR KIDS. YOUNGER GENERATIONS REALLY BELIEVE THAT WE NEED TO DO A REALLY PROTECTIVE JOB OF TAKING CARE OF MOTHER EARTH, AND I THINK YOU CITED THE PROGRESS WE HAVE MADE OVER TIME. ALSO, I HEARD SENATOR WICKER ASK YOU ABOUT FOREST BIOMASS AND THE RULING WILL BE FLESHED OUT IN JUNE. THAT IS GREAT TO HEAR. AGRICULTURE, ACCORDING TO THE LETTER FROM THE 21 EXPERTS SAID -- SCIENTISTS AND SO FORTH, SAID IT PROBABLY EVEN HAS MORE APPLICABLE -- APPLICABILITY WITH THAT SAME PRINCIPLE. IS THERE CURRENTLY IN THE EPA CONSIDERATION OF A DIMINISHED -- DIMINOMOUS RULE FOR CROPS SIMILAR TO WHAT YOU WANT WITH TREES?
Administrator Wheeler
WE ARE DOING THAT IN A THREE-PHASE PROCESS. WE ARE DOING THE WOODY BIOMASS FIRST. WE WILL BE LOOKING AT THE CROPS. I'M SORRY, I DON'T REMEMBER IF THAT IS PHASE TWO OR THREE BUT OVER THE NEXT YEAR AND A HALF WE WILL ROLLOUT THE OTHER CO2.

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Vetter, Cheryl [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31CF6512CDD44F02BDFDA975E406C194-VETTER, CHERYL]
Sent: 12/12/2019 3:56:47 PM
To: Santiago, Juan [Santiago.Juan@epa.gov]
Subject: FW: Talking Points on biomass

As discussed -

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Sent: Tuesday, December 10, 2019 3:37 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Cc: Mathias, Scott <Mathias.Scott@epa.gov>
Subject: RE: Talking Points

Looks good to me!

Vera Kornylak || Acting Associate Director
Air Quality Policy Division || OAQPS
919-541-4067 || kornylak.vera@epa.gov

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From: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Sent: Tuesday, December 10, 2019 3:34 PM
To: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Cc: Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Mathias, Scott <Mathias.Scott@epa.gov>
Subject: FW: Talking Points

Talking points for Peter's conversation with AFandPA

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Tuesday, December 10, 2019 3:32 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Talking Points

Cheryl-

Here are some (extremely brief) talking points for Peter. I took most from the latest congressional letter.

- We have engaged a workgroup that continues to make progress on developing a regulatory proposal for the treatment of biogenic CO2 emissions from certain biomass feedstocks under Clean Air Act permitting programs.
- As part of the process, we will be working with our inter-agency partners in USDA and DOE
- We are on track to propose the rule in the Spring of 2020 as reflected in the Fall 2019 Unified Agenda.

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Vetter, Cheryl [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31CF6512CDD44F02BDFDA975E406C194-VETTER, CHERYL]
Sent: 2/20/2019 9:46:56 PM
To: Rao, Raj [Rao.Raj@epa.gov]
Subject: NSR Improvements Phase 2 Projects Target Date Tracker 022019
Attachments: NSR Improvements Phase 2 Projects Target Date Tracker 022019.docx

Here are the updates on mine – didn't I just do this?

DRAFT -For Internal use only-NSR Improvements Phase 2 Projects Target Date Tracker 02/20/19

Project	Current Status	Target Date	Comments

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Biomass Rulemaking	Awaiting direction from OAR	TBD	Currently - Tier 1 Rule

Ex. 5 Deliberative Process (DP)

Message

From: Vetter, Cheryl [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31CF6512CDD44F02BDFDA975E406C194-VETTER, CHERYL]
Sent: 9/4/2019 8:35:48 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: AFPA Meeting 9-4-19
Attachments: AFPA Meeting 9-4-19.docx

I made a couple of changes.

AF&PA Meeting
September 4, 2019

Purpose

- AF&PA scheduled the meeting to present its position supporting a rule exempting biogenic CO2 from PSD and title V regulations.
    - AF&PA distributed documents during the meeting.

Attendees

- AF&PA
- NAFO
- NCASI
- USDA (Bill Hohenstein was invited by AF&PA to participate)
- EPA

AF&PA Positions

- AF&PA discussed two approaches for evaluating carbon stocks:
    - Modeling Approach – AF&PA believes this approach would lead to false predictions.
    - Carbon stocks approach – this is their preferred approach as they believe it is more direct and straight forward and more in line with how other countries calculate carbon stocks.
- AF&PA believes that forest derived biogenic CO2 should be categorically excluded from regulation because:
    - Regulating this pollutant would have a de minimis impact;
        - There is no regulatory benefit in regulating since it does not result in an increase of CO2. Burning biomass today will cause more to be sequestered because of the free market, i.e. if biomass is incentivized than the market will support forest increases.
    - EPA is not bound by the SAB findings because the SAB can't set policy
    - Using the PSD regulations to exempt biomass is consistent with current regulation
- AF&PA has confidence that carbon stocks will be maintained or increase in the near future and that burning biomass will not affect these stocks.
- Regardless of regulation of forest biomass, residuals and waste are net negative and must be exempted

Message

From: Vetter, Cheryl [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31CF6512CDD44F02BDFDA975E406C194-VETTER, CHERYL]
Sent: 8/8/2019 5:44:58 PM
To: Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]
CC: Baker, Sarah [baker.sarah@epa.gov]
Subject: FW: Your call

Yvonne – Tim is also asking for a meeting with OAP (probably OGC too!), so when you set this up, please include these offices as well. If Tim doesn't give you the list of people to include, Sarah or I can. Also, I am out the last week in September, so I think that would be an excellent time to schedule this! ☺

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Hunt, Tim <Tim_Hunt@afandpa.org>
Sent: Thursday, August 08, 2019 10:36 AM
To: Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; jerry_schwartz@afandpa.org; Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Subject: RE: Your call

Thanks Vera. I am including my colleague Jerry who is picking this up while I am on vacation. Tim

---

From: Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Sent: Thursday, August 8, 2019 8:26 AM
To: Hunt, Tim <Tim_Hunt@afandpa.org>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Subject: Your call

Hi Tim, thanks for your voicemail and the heads up that you would like to schedule time to talk with EPA about the biogenic CO2/PSD rule.

Please coordinate with Yvonne Johnson (919-541-3921) (also on this email) to set up a time when the relevant folks here in OAQPS would be able to attend. I appreciate you are also coordinating with OAP, but for our office, I'd request that you coordinate with Yvonne.

I hope you have a nice vacation.

Vera

Vera Kornylak || Acting Associate Director
Air Quality Policy Division || OAQPS
919-541-4067 || kornylak.vera@epa.gov

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Message

From: Vetter, Cheryl [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31CF6512CDD44F02BDFDA975E406C194-VETTER, CHERYL]
Sent: 5/7/2018 9:55:44 PM
To: Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]
Subject: RE: AF&PA to be here at RTP Wednesday. would you like staff to attend?

That is fine – keep it where it is. Juan can cover. I will be on the APM call.

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Johnson, Yvonne W
Sent: Monday, May 07, 2018 5:49 PM
To: Wood, Anna <Wood.Anna@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Brachtl, Megan <Brachtl.Megan@epa.gov>; Jones, Rhea <Jones.Rhea@epa.gov>; Rao, Raj <Rao.Raj@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Ling, Michael <Ling.Michael@epa.gov>; Mathias, Scott <Mathias.Scott@epa.gov>; Santiago, Juan <Santiago.Juan@epa.gov>
Subject: Re: AF&PA to be here at RTP Wednesday. would you like staff to attend?

I can try but how important is it that we transition from the discussion with Peter followed directly by the more in-depth one with AQPD as it is set up now

Thank you,
Yvonne W. Johnson

Sent from my EPA iPhone

On May 7, 2018, at 5:17 PM, Wood, Anna <Wood.Anna@epa.gov> wrote:

> <image001.gif>
> I am fine with it if we can make it work--thx
>
> ---
>
> **From:** Vetter, Cheryl
> **Sent:** Monday, May 07, 2018 5:05 PM
> **To:** Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>; Brachtl, Megan <Brachtl.Megan@epa.gov>; Jones, Rhea <Jones.Rhea@epa.gov>; Rao, Raj <Rao.Raj@epa.gov>
> **Cc:** Wood, Anna <Wood.Anna@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Ling, Michael <Ling.Michael@epa.gov>; Mathias, Scott <Mathias.Scott@epa.gov>; Santiago, Juan <Santiago.Juan@epa.gov>
> **Subject:** RE: AF&PA to be here at RTP Wednesday. would you like staff to attend?
>
> Any chance we could switch the order? Raj and I (and our key staff people) will be on the APM call starting at 2. There is a good chance that we could be done by 3.

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Johnson, Yvonne W
Sent: Monday, May 07, 2018 3:52 PM
To: Brachtl, Megan <Brachtl.Megan@epa.gov>; Jones, Rhea <Jones.Rhea@epa.gov>; Rao, Raj <Rao.Raj@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Cc: Wood, Anna <Wood.Anna@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Ling, Michael <Ling.Michael@epa.gov>; Mathias, Scott <Mathias.Scott@epa.gov>; Santiago, Juan <Santiago.Juan@epa.gov>
Subject: AF&PA to be here at RTP Wednesday. would you like staff to attend?

AF&PA will be here on Wednesday. Currently, it is shown on the calendars of those noted below. GLs, if you would like someone from your staff to attend in your place or along with you please let me know.

2 to 4 PM Meet with AQPD & AQAD

- **2:00 – 3:00 (invited Anna, Juan, Raj, Cheryl)**
  - Biomass rulemaking – schedule, scope, rationale
  - NSR/PSD Improvements – ambient air, project aggregation, RMRR, PALs, others
  - SSM SIP Call

- **3:00 – 4:00 (invited Anna, Michael, Scott, Vera, Megan, Rhea)**
  - NAAQS implementation improvements – international transport, 126 petitions, non-attainment designations for ozone, offset policies, other issues from 4/12 Presidential memo
  - Regional Haze
  - Any other issues identified by EPA or AF&PA/AWC

Thank you,

Yvonne W. Johnson
Special Assistant to the Director
Air Quality Policy Division
Office of Air Quality Planning & Standards
U.S. Environmental Protection Agency
919-541-3921
johnson.yvonnew@epa.gov

Message

From: Vetter, Cheryl [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31CF6512CDD44F02BDFDA975E406C194-VETTER, CHERYL]
Sent: 3/7/2018 9:38:42 PM
To: Wheeler, Carrie [Wheeler.Carrie@epa.gov]
Subject: FW: Biomass meeting tomorrow
Attachments: Biomass (AQPD).ics; DRAFT AGENDA - Biomass meeting with OAR 3-8-18.docx

Just making sure you get the agenda, too.

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Santiago, Juan
Sent: Wednesday, March 07, 2018 4:37 PM
To: Doster, Brian <Doster.Brian@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Krallman, John <krallman.john@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: Biomass meeting tomorrow

Folks, my apologies for not having done this earlier. As you might have heard, the OAR political team will be in RTP tomorrow for a series of meetings. One such meeting is a discussion on biomass with Mandy G, David H, and Justin S. We will have OAP on the line and our OAQPS team in the room. I am sending you this email to invite you to participate in tomorrow's discussion if you have the availability. Attached is the draft agenda I have put together. I have shared the agenda with OAP and they are fine with it. If you have any thoughts, we can tweak it tomorrow morning as it is not part of any meeting materials. I am also including the call-in information and meeting time.

Hopefully all of you (or some subset) will be available at this time. Again, my apologies for not giving you the heads up any sooner.

Thanks!
Juan

Message

From: Vetter, Cheryl [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31CF6512CDD44F02BDFDA975E406C194-VETTER, CHERYL]
Sent: 6/24/2019 3:14:15 PM
To: Rafferty, Sean [rafferty.sean@epa.gov]
Subject: FW: Treatment of Biogenic CO2 emissions at stationary sources
Attachments: Final Wehrum June Briefing Document.docx

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Ward, Hillary
Sent: Friday, June 21, 2019 11:06 AM
To: Tsirigotis, Peter <Tsirigotis.Peter@epa.gov>; Harnett, Bill <Harnett.Bill@epa.gov>; Mathias, Scott <Mathias.Scott@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>; Svendsgaard, Dave <Svendsgaard.Dave@epa.gov>; Spangler, Matthew <Spangler.Matthew@epa.gov>; Massey, Lana <massey.lana@epa.gov>; Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>; Long, Pam <Long.Pam@epa.gov>
Subject: Treatment of Biogenic CO2 emissions at stationary sources

Please see the attached materials for the following meeting:

6/24/19, 1:00-1:45, Treatment of Biogenic CO2 emissions at stationary sources

Hillary Ward
USEPA, Office of Air Quality Planning and Standards
(919)541-3154

Appointment

From: Vetter, Cheryl [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31CF6512CDD44F02BDFDA975E406C194-VETTER, CHERYL]
Sent: 5/10/2017 1:25:04 PM
To: Wheeler, Carrie [Wheeler.Carrie@epa.gov]

Subject: FW: AF&PA Visit to EPA/RTP (Permitting)
Attachments: AF&PA DOC Air Permit Streamlining Comments 3.31.17.pdf
Location: C-111C

Start: 5/10/2017 6:00:00 PM
End: 5/10/2017 7:00:00 PM
Show Time As: Tentative

The GHG threshold rule is now at 2 – can you stay in the meeting (after biomass) in case I am not done on the APM call?

-----Original Appointment-----
From: Johnson, Yvonne W
Sent: Wednesday, April 26, 2017 10:28 AM
To: Johnson, Yvonne W; Rao, Raj; Vetter, Cheryl; Santiago, Juan; Fox, Tyler; Bridgers, George; Keller, Peter
Cc: Brachtl, Megan; Kornylak, Vera S.; Ling, Michael; Mathias, Scott; Wayland, Richard; Bradfield, John; Svendsgaard, Dave; Montanez, Jessica; Hemby, James; Wheeler, Carrie; Tim_hunt@afandpa.org
Subject: AF&PA Visit to EPA/RTP (Permitting)
When: Wednesday, May 10, 2017 2:00 PM-3:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: C-111C

Topics will focus on the following:

1. GHG Threshold rule
2. Permitting applicability issues including debottlenecking, actual to potential, project netting, PSD applicability test, offset policies, aggregation, PALs, Clean unit and pollution control projects
3. PSD permitting issues – ambient air, probabilistic tools/methods, background concentrations, intermittent sources

AF&PA Attendees

Jim Balik
Lisa Bauer-Lotto
Corey Brandt
Traylor Champion
Rob Crawford
Phil Ferguson
Ryan Gesser
Gary Heroux
Tim Hunt
Rob Kaufmann
Amy Marshall

Paul Noe
Glen Rives
Furqan Shaikh
Clayton Steele
Russell Strader
Vipin Varma
Katherine Wiedeman
Denise Wlodyka
Steve Woock

Appointment

From: Vetter, Cheryl [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31CF6512CDD44F02BDFDA975E406C194-VETTER, CHERYL]
Sent: 5/2/2017 4:53:21 PM
To: Wheeler, Carrie [Wheeler.Carrie@epa.gov]

Subject: FW: AF&PA Visit to EPA/RTP (Permitting)
Attachments: AF&PA DOC Air Permit Streamlining Comments 3.31.17.pdf
Location: C-111C

Start: 5/10/2017 6:00:00 PM
End: 5/10/2017 7:00:00 PM
Show Time As: Tentative

FYI – note time change.

-----Original Appointment-----
From: Johnson, Yvonne W
Sent: Wednesday, April 26, 2017 10:28 AM
To: Johnson, Yvonne W; Rao, Raj; Vetter, Cheryl; Santiago, Juan; Fox, Tyler; Bridgers, George; Keller, Peter
Cc: Brachtl, Megan; Kornylak, Vera S.; Ling, Michael; Mathias, Scott; Wood, Anna; Wayland, Richard; Bradfield, John; Svendsgaard, Dave; Montanez, Jessica; Hemby, James
Subject: AF&PA Visit to EPA/RTP (Permitting)
When: Wednesday, May 10, 2017 2:00 PM-3:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: C-111C

Topics will focus on the following:

1. GHG Threshold rule and biomass
2. Permitting applicability issues including debottlenecking, actual to potential, project netting, PSD applicability test, offset policies, aggregation, PALs, Clean unit and pollution control projects
3. PSD permitting issues – ambient air, probabilistic tools/methods, background concentrations, intermittent sources

Message

From: Noe, Paul [Paul_Noe@afandpa.org]
Sent: 1/3/2020 10:04:25 PM
To: Hyman, Alana [Hyman.Alana@epa.gov]
CC: Seidman, Laura [Laura_Seidman@afandpa.org]; Pickard, Laura [Laura_Pickard@afandpa.org]; Wheeler, Andrew [wheeler.andrew@epa.gov]; Dickerson, Aaron [dickerson.aaron@epa.gov]
Subject: PPRC Meeting Request: February 4-6
Attachments: ATT00001.txt; PPRC Meeting Request Wheeler 12-18-19.pdf

Dear Alana,

I am writing to request a meeting with EPA Administrator Andrew Wheeler and representatives of the Pulp and Paperworkers' Resource Council (PPRC), who will be visiting Washington, DC from Tuesday, February 4th through Thursday, February 6th. We would be pleased if a group of PPRC members could meet with Administrator Wheeler to discuss several policy priorities, including the carbon neutrality of biomass, clean air and water issues, and the pending EPA regulation on cost-benefit analysis under the Clean Air Act.

Thank you for your help. I am copying Laura Seidman who can help find a convenient time. Please do not hesitate to contact me if you have any questions.

Best regards,

Paul

PAUL NOE
Vice President, Public Policy
Paul_Noe@afandpa.org
(202) 463-2777
AMERICAN FOREST & PAPER ASSOCIATION
1101 K Street, N.W., Suite 700
Washington, D.C. 20005

PULP & PAPERWORKERS' RESOURCE COUNCIL

Representing members of: USW, AWPPW, IAM, IBEW, IBT, UBC, Firemen & Oilers and Forest Products Industry Workers
www.pprc.info

December 18, 2019

Andrew Wheeler
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Administrator Wheeler:

Representatives of the Pulp and Paperworkers' Resource Council (PPRC) will be visiting Washington, DC next year Tuesday, February 4th through Thursday, February 6th, 2020. We would be pleased if a group of our members could meet with you and your staff to discuss several policy priorities, including the carbon neutrality of biomass, clean air and water issues, and the pending EPA regulation on cost-benefit analysis under the Clean Air Act.

The PPRC is a non-profit grassroots organization made up of ground floor hourly union workers in the forest products industries. We come from all across the United States. The PPRC is committed to educating our legislators and policy makers on issues of importance to the forest products industry and the impact policies have on our jobs and the economies of the cities and small rural communities where our industries are located.

We would appreciate an opportunity to meet and discuss issues of concern with you. We will follow up with your office soon, but if you have any questions, please feel free to contact me. Thank you for your consideration.

Regards,

David M. Wise

Pulp and Paperworkers' Resource Council
National Steering Committee Chairman
Southeast Region Director
WestRock
Florence Mill
Florence, SC 29505
david.wise@westrock.com
(843)269-0164

Message

From: Posey, Rachel [Posey.Rachel@epa.gov]
Sent: 11/8/2019 6:14:28 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: RE: Biomass energy information
Attachments: Copy of ECHO+GHGR-Edited with GHRP Overlap.xlsx; Copy of ghgp_data_2018_edited.xlsx

Sarah,

Ex. 5 Deliberative Process (DP)

Rachel

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Wednesday, November 6, 2019 11:48 AM
To: Posey, Rachel <Posey.Rachel@epa.gov>
Subject: RE: Biomass energy information

Rachel-

Ex. 5 Deliberative Process (DP)

GHG Reporting Data
https://www.epa.gov/ghgreporting/ghg-reporting-program-data-sets
ECHO Website
https://echo.epa.gov/facilities/facility-search

Thanks!
Sarah

From: Posey, Rachel <Posey.Rachel@epa.gov>
Sent: Thursday, October 24, 2019 3:48 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biomass energy information

Ex. 5 Deliberative Process (DP)

From: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Sent: Thursday, October 24, 2019 3:41 PM
To: Posey, Rachel <Posey.Rachel@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biomass energy information

Ex. 5 Deliberative Process (DP)

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Posey, Rachel <Posey.Rachel@epa.gov>
Sent: Thursday, October 24, 2019 3:28 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Biomass energy information

Sarah and Cheryl,

Ex. 5 Deliberative Process (DP)

Data: https://www.eia.gov/electricity/data/eia923/

Renewable energy report: https://www.eia.gov/state/seds/sep_use/notes/use_renew.pdf

Message

From: Petesch, Theresa (Tess) [petesch.theresa@epa.gov]
Sent: 10/21/2019 5:40:50 PM
To: Baker, Sarah [baker.sarah@epa.gov]; Sorrels, Larry [Sorrels.Larry@epa.gov]
Subject: RE: Biogenic CO2 Update

Hi Sarah,

Thanks for the update. Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)

Tess

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, October 21, 2019 1:08 PM
To: Petesch, Theresa (Tess) <petesch.theresa@epa.gov>; Sorrels, Larry <Sorrels.Larry@epa.gov>
Subject: Biogenic CO2 Update
Importance: High

Hi Tess and Larry. I wanted to provide you with the latest update for biomass. Last week Anne Idsal met with the

Ex. 5 Deliberative Process (DP)

Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Wheeler, Carrie [Wheeler.Carrie@epa.gov]
Sent: 9/23/2019 6:25:11 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: Information Requested
Attachments: **Ex. 5 Deliberative Process (DP)**

Hi Sarah,

I think you asked about biogenic sources info last week – here is what I found up to this point. Mind you, I've not read it all, but maybe it will contain something useful?

Best,
Carrie

Carrie Wheeler
Cutting Edge Speaker Series
Operating Permits Group
AQPD/OAQPS/OAR/EPA
Research Triangle Park, NC 27711
919.541.9771

Message

From: Ohrel, Sara [Ohrel.Sara@epa.gov]
Sent: 9/23/2019 4:00:49 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: FW: Biogenic CO2 Briefing Paper
Attachments: Ex. 5 Deliberative Process (DP)

FYI

From: Ohrel, Sara
Sent: Monday, September 23, 2019 12:00 PM
To: Irving, Bill <Irving.Bill@epa.gov>; Fawcett, Allen <Fawcett.Allen@epa.gov>
Cc: Steller, John <Steller.John@epa.gov>
Subject: RE: Biogenic CO2 Briefing Paper

Hi all,

Ex. 5 Deliberative Process (DP)

Thanks,
Sara

Sara Bushey Ohrel
Climate Change Division
U.S. Environmental Protection Agency
(202) 343-9712
ohrel.sara@epa.gov

***deliberative

From: Irving, Bill <Irving.Bill@epa.gov>
Sent: Monday, September 23, 2019 10:06 AM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>; Steller, John <Steller.John@epa.gov>; Fawcett, Allen <Fawcett.Allen@epa.gov>
Subject: RE: Biogenic CO2 Briefing Paper

A few thoughts

Ex. 5 Deliberative Process (DP)

From: Ohrel, Sara
Sent: Monday, September 23, 2019 9:41 AM
To: Steller, John <Steller.John@epa.gov>; Irving, Bill <Irving.Bill@epa.gov>; Fawcett, Allen <Fawcett.Allen@epa.gov>
Subject: RE: Biogenic CO2 Briefing Paper

Hi all,

Ex. 5 Deliberative Process (DP)

Please let know how you want to proceed.
Sara

From: Steller, John <Steller.John@epa.gov>
Sent: Monday, September 23, 2019 9:17 AM
To: Irving, Bill <Irving.Bill@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>; Fawcett, Allen <Fawcett.Allen@epa.gov>
Subject: FW: Biogenic CO2 Briefing Paper
Importance: High

Adding Bill

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Friday, September 20, 2019 1:23 PM
To: Doster, Brian <Doster.Brian@epa.gov>; Fawcett, Allen <Fawcett.Allen@epa.gov>
Cc: Greenglass, Nora <Greenglass.Nora@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>; Steller, John <Steller.John@epa.gov>

Subject: Biogenic CO2 Briefing Paper
Importance: High

Brian and Allen-

Ex. 5 Deliberative Process (DP)

Respectfully,
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
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Message

From: Ohrel, Sara [Ohrel.Sara@epa.gov]
Sent: 9/23/2019 1:41:56 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: FW: Biogenic CO2 Briefing Paper
Attachments: Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Friday, September 20, 2019 1:23 PM
To: Doster, Brian <Doster.Brian@epa.gov>; Fawcett, Allen <Fawcett.Allen@epa.gov>
Cc: Greenglass, Nora <Greenglass.Nora@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>; Steller, John <Steller.John@epa.gov>
Subject: Biogenic CO2 Briefing Paper
Importance: High

Brian and Allen-

Ex. 5 Deliberative Process (DP)

Respectfully,
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Ashley, Jackie [Ashley.Jackie@epa.gov]
Sent: 9/13/2019 4:55:12 PM
To: Baker, Sarah [baker.sarah@epa.gov]
CC: Mocka, Corey [mocka.corey@epa.gov]
Subject: RE: Biogenic CO2 Administrator Comments

Sarah –
Also, you mentioned the Shelby QFR from January 2019. I've pasted the final text of that here for you as well.
-Jackie

Senator Shelby:
159. The Consolidated Appropriations Act of 2018 included language directing the Secretaries of Energy and Agriculture and the Administrator of the Environmental Protection Agency to establish clear and simple policies that reflect the carbon-neutrality of forest bioenergy and recognize biomass as a renewable energy source provided the use of forest biomass does not cause the conversion of forests to non-forest use. I appreciate the EPA issuing guidance in April 2018 stating that future EPA regulatory actions for energy production from stationary sources will recognize biomass from managed forests as carbon neutral. I also appreciate the tri-agency statement in October 2018 affirming these principles.

Mr. Wheeler, would please provide an update on the EPA's progress towards implementing a regulation on carbon neutrality of biomass?

EPA staff have made an in-depth assessment of the various options available for moving forward, including the potential for issuing guidance under the Prevention of Significant Deterioration (PSD) permitting program that would, on a site-specific basis where appropriate, recognize the use of biomass feedstocks as Best Available Control Technology (BACT). Longer-term, EPA is assessing the value of undertaking a rulemaking in this area. If undertaken, EPA estimates that a proposed rule could be developed by the end of this year.

Jackie Ashley - US EPA - Office of Air Quality Planning and Standards - 919-541-7664 – ashley.jackie@epa.gov

Message

From: Ohrel, Sara [Ohrel.Sara@epa.gov]
Sent: 7/29/2019 6:42:38 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: RE: ok?
Attachments: Cherubini_et_al-2012-GCB_Bioenergy.pdf

Ex. 5 Deliberative Process (DP)

From: Baker, Sarah
Sent: Monday, July 29, 2019 12:04 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: ok?

Does around 2 work?

From: Ohrel, Sara
Sent: Monday, July 29, 2019 12:03 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: ok?

Sure thing – I can chat this afternoon. Any particular time good for you?

From: Baker, Sarah
Sent: Monday, July 29, 2019 12:02 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: ok?

Ex. 5 Deliberative Process (DP)

From: Ohrel, Sara
Sent: Monday, July 29, 2019 11:55 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: ok?

Ok, thanks. whew
☺

From: Baker, Sarah
Sent: Monday, July 29, 2019 11:44 AM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: ok?

No worries!!! I am definitely more of a listener than a speaker ☺

From: Ohrel, Sara
Sent: Monday, July 29, 2019 11:43 AM

To: Baker, Sarah <baker.sarah@epa.gov>
Subject: ok?

I hope that was ok – I didn't mean to overstep any bounds, and apologize if I did.

Sara Bushey Ohrel
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***deliberative

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BIOENERGY

GCB Bioenergy (2012) 4, 784–798, doi: 10.1111/j.1757-1707.2011.01156.x

Application of probability distributions to the modeling of biogenic CO_2 fluxes in life cycle assessment

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Abstract

In life cycle assessment (LCA), the same characterization factors are conventionally applied irrespective of when the emissions occur (the same importance is given to emissions in the past, present, and future). When the assessment is constrained by fixed timeframes, the appropriateness of this paradigm is questioned and the temporal distribution of emissions becomes of relevance. One typical example is the accounting for biogenic CO_2 emissions and removals. This article proposes a methodology for assessing the climate impact of time-distributed CO_2 fluxes using probability distributions. Three selected wood applications, such as fuel, nonstructural panels, and housing construction materials are assessed. In all the cases, CO_2 sequestration in growing trees is modeled with an appropriate forest growth function, whereas CO_2 emissions from wood oxidation are modeled with different probability distributions, such as the delta function, the uniform distribution, the exponential distribution, and the chi-square distribution. The combination of these CO_2 fluxes with the global carbon cycle provides the respective changes caused in CO_2 atmospheric concentration and hence in the radiative forcing. The latter is then used as basis for climate impact metrics. Results demonstrate the utility of using emission and removal functions rather than single pulses, which generally overestimate the climate impact of CO_2 emissions, especially in presence of short time horizons. Characterization factors for biogenic CO_2 are provided for selected combinations of biomass species, rotation periods, and probability distributions. The time discrepancy between biogenic CO_2 emissions and capture through regrowth results in a certain climate impact, even for a system that is carbon neutral over time. For the oxidation rate of wooden products, the use of a chi-square distribution appears the most reliable and appropriate option under a methodological perspective. The feasibility of its adoption in LCA and emission accounting from harvested wood products deserves further scientific considerations.

Keywords: bioenergy, biomass, distributed emissions, global warming, LCA

Received 30 September 2011 and accepted 27 October 2011

Introduction

Background

With the increasing acknowledgement of the threats caused by global warming (GW) and the continuous international efforts on reaching a post-Kyoto agreement on greenhouse gas emission reduction (GHG), there is a growing scientific, political, and economic interest to ensure that we have robust and scientifically sound methods to appropriately account for GHG fluxes caused by human activities. Life cycle assessment (LCA) is the dominant framework for the assessment of environmental impacts, including GHGs, from production systems. Even if the accounting procedures in LCA may keep track of temporal distribution of emissions from different processes (e.g., at different phases in a product life cycle), the prevailing paradigm assumes equal importance across time for all stressors. The appropriateness of this assumption for specific cases has resurfaced in last few years. In particular, tipping point issues and commitment periods and targets provide motivation for time-constrained assessment approaches. Time boundaries are also implicit in the utilization of the Global Warming Potential (GWP) index, which has fixed time horizons (THs). Because of them, the climate impact caused by an instantaneous single pulse emission is different from the impact due to the same magnitude released in a different year or at a small rate over a certain number of years. In general, the issues associated with the timing of emissions and removals in LCA have been recognized in earlier studies (Azar & Sterner, 1996; Hellweg *et al.*, 2003; Hofstetter, 1996). In particular, Hellweg *et al.* (2003) explored the possibility to use economic discounting in the con-

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text of LCA, arguing that temporal cutoffs are a special case of discounting with a discount rate of zero for the TH considered and of infinity thereafter (because emissions occurring beyond the temporal cutoff are entirely disregarded).

In recent years, the debate around timing of emissions has been revitalized by the need to consistently include in bioenergy LCA emissions from essentially two sources: direct and indirect effects associated with land-use change (LUC), and delayed emissions from biomass storage in the anthroposphere or biosphere. Concerning LUC emissions, they usually occur in the first years after establishment of bioenergy systems, and a straight-line amortization of these emissions over a certain time period is traditionally applied. Examples of this practice can be found both in primary research studies (Cherubini & Ulgiati, 2010; Gnansonou *et al.*, 2008; Searchinger *et al.*, 2008) and methodological standards or guidelines (EU, 2009; IPCC, 2003; PAS2050, 2008). Concerning delayed emissions due to carbon storage, the majority of the papers assumes that CO_2 is released as a single pulse after a specific storage period in the biosphere (Fearnside *et al.*, 2000; Kirschbaum, 2003, 2006; Moura Costa & Wilson, 2000) or in the anthroposphere (Clift & Brandão, 2008). Moura Costa & Wilson (2000) calculate the time period over which sequestered carbon should be stored to counteract the radiative forcing (RF) effect of a CO_2 emission. Kirschbaum, (2003, 2006) addresses the consequences for the climate of storing carbon in vegetation, concluding that permanent storage can lower atmospheric CO_2 concentration, whereas temporary storage can be beneficial for climate impacts related to cumulative CO_2, but can be counterproductive if other metrics are considered. Fearnside *et al.* (2000) quantify the benefits for the climate of delaying emissions, thanks to the proportional shift of the impact beyond the selected TH. Clift & Brandão (2008) follow this approach to assess the credits from storing carbon in products.

Besides single pulse, some studies also considered emissions as distributed over time. At first, these papers were in the context of emissions from harvested wood products (HWP) in national GHG inventories (Ford-Robertson, 2003; IPCC, 2006; Karjalainen *et al.*, 1994; Marland & Marland, 2003; Marland *et al.*, 2010; Pingoud & Wagner, 2006; Row & Phelps, 1996). Karjalainen *et al.* (1994) propose the use of a logistic curve to model the CO_2 emission rate, Row & Phelps (1996) use a three segment curve, and Ford-Robertson (2003) compares the linear and exponential decay. Marland & Marland (2003) and Pingoud & Wagner (2006) model the changes in stocks of wood products using differential equations to describe the rates of production and oxidation with first-order exponential decay. The IPCC (2006) Guidelines[1] recommend the adoption of a first order decay for the oxidation of wood products based on their half-life, at the same time acknowledging that this is not the only possible assumption (IPCC, 2006). Marland *et al.* (2010) insightfully propose the use of a distributed approach to account for carbon in wood products. In addition to the debate around HWP, time-distributed emissions have been increasingly investigated within a pure LCA context as well (Cherubini *et al.*, 2011; Kendall *et al.*, 2009; Levasseur *et al.*, 2010; Müller-Wenk & Brandão, 2010; O'Hare *et al.*, 2009). Kendall *et al.* (2009) elaborate a time correction factor to be applied to emissions from LUC treated as a single pulse amortized over time. O'Hare *et al.* (2009) develop alternatives to simple discounting and summing of GWPs over the life cycle after straight-line amortization of emissions. Levasseur *et al.* (2010) investigate the challenges in harmonizing the TH used in GWP and the time boundaries of the analysis: the climate impact of an emission at year 50 is considered for 100 years in GWP, that is, from year 50 to 150, even if the analysis has a time boundary of 100 years. They overcome this issue making the TH for the integral in GWP flexible, so to get dynamic characterization factors for each year of the assessment period. Müller-Wenk & Brandão (2010) assume that LUC emissions occur as a pulse, but sequestration for restoring the ecosystem occurs over several years, so that the lifetime of biogenic CO_2 in the air is directly proportional to the ecosystem relaxation time. While developing characterization factors for the climate impact of CO_2 emissions from biomass combustion, Cherubini *et al.* (2011) focus on the interaction between biogenic CO_2 emissions and the global carbon cycle, modeling the carbon sink created by biomass regrowth as a dynamic CO_2 removal flux from the atmosphere.

Aims and objectives

Greenhouse gas balances of bioenergy systems generally follow the standard conventions regarding no-preference for time (zero discount rate) in LCA, and therefore, they usually bypass the temporal issue of time discrepancy between CO_2 emissions (through combustion or oxidation) and removals (through vegetation growth). This results in implicitly adopting the common conven-

[1]The IPCC 1996 guidelines suggested the default assumption that in a given year, there is no net change in the carbon stored in the pool of HWP. The rationale for this was the assumption that the oxidation rate is equal to the production rate, on an annual basis. This is mathematically equivalent to assuming that all the carbon is released to the atmosphere soon after harvesting as a single pulse.

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tion of the carbon and climate neutrality of bioenergy. In the recent years, this convention has been criticized by an increasing number of studies (Cherubini *et al.*, 2011; Johnson, 2009; Möllersten & Grönkvist, 2007; Reilly & Asadoorian, 2007; Searchinger, 2010; Searchinger *et al.*, 2009). Neglecting the distribution over time of CO_2 fluxes is appropriate if the analysis has an infinite time frame, but is questioned when specific time boundaries are set. The international debate on climate mitigation policies and agreements make extensive use of time-related targets. Tipping point concerns have strengthened demand for short-term targets. This also has some implications for LCA practices related to GHG and climate impacts. As the questions posed by policy makers change, the tools and metrics to answer them might also need some adaptations.

In this article, we aim at providing more insights into the modeling of time-distributed CO_2 fluxes and their climate impacts, investigating options to assess delayed and distributed emissions from biogenic sources with different metrics. In theory, estimating the rate of CO_2 fluxes to and from the atmosphere can be based on statistical data on production and fate of all organic products, but this implies a considerable accounting effort. This article proposes a simpler approach, showing a methodology where relatively simple mathematical methods are used to model time-distributed CO_2 flows and their climate effects. Different probability distributions are used to model the oxidation rate of three biomass products (wood as fuel, nonstructural panels, and housing construction material), whereas the Schnute function (parameterized with the default values from IPCC for boreal forest) is used to model CO_2 sequestration through biomass regrowth. In the next section, the methodology to account for the change in CO_2 atmospheric concentration caused by time-distributed fluxes is presented. Then, each distribution is described and applied to the selected wood applications. The resulting CO_2 atmospheric profiles are used to calculate the respective changes in RF, and then the corresponding climate impacts are quantified and discussed using different metrics. The focus here is placed on CO_2 fluxes from biomass systems, which are a perfect example of distributed emissions (through combustion or oxidation) and removals (i.e., sequestration from biomass growth), but the same methodology can be successfully applied to other types of emissions or resources.

Methods

Dynamics of atmospheric CO_2 concentration

All types of CO_2 emissions and removals cause a perturbation to the CO_2 atmospheric concentration, thereby causing a climate impact. The change in atmospheric CO_2 concentration can be modeled by means of the impulse response function (IRF), which describes the perturbation of a dynamic system caused by some external change. Among the existing IRFs, the IRF from the Bern CC model is here used to predict the atmospheric decay of anthropogenic CO_2. This function represents the fraction of CO_2 remaining in the atmosphere after a single pulse emission depending on the interactions between the atmosphere, the oceans, and the terrestrial biosphere (Joos *et al.*, 1996, 2001). This IRF $y(t)$ has the following analytic form (Forster *et al.*, 2007):

$$y(t) = A_0 + \sum_{i=1}^{3} A_i e^{-t/\beta_i}, \tag{1}$$

where $A_0 = 0.217$, $A_1 = 0.259$, $A_2 = 0.338$, $A_3 = 0.186$, $\beta_1 = 172.9$, $\beta_2 = 18.51$, $\beta_3 = 1.186$. The profile of this curve is shown as a benchmark in the Results section. The amplitude A_0 represents the asymptotic airborne fraction of CO_2 which remains in the atmosphere because of the equilibrium response of the ocean–atmosphere system. The amplitudes A_i may be interpreted as the relative capacity of the other sinks, which are filled up by the atmospheric input at rates characterized by the relaxation time scales β_i.

The time-distributed emissions and removals of CO_2 follow this decay, and the analytical combination of these fluxes with the IRF for anthropogenic CO_2 provides the corresponding change in CO_2 atmospheric concentration. In mathematical terms, this is implemented with a convolution between the emission and removal functions with the CO_2 decay from the air:

$$f(t) = \int_0^t \left[C_0 e(t') - C_0^* g(t')\right] y(t-t')\mathrm{d}t' \tag{2}$$

where t' is the integration variable from the time since harvest, t is the time dimension, C_0 is the intensity of the emission (here a unit pulse is assumed, so $C_0 = 1$), C_0^* is the intensity of the removal (a carbon neutral system is modeled, so $C_0 = C_0^* = 1$), $e(t')$ is the emission function, $g(t')$ is the CO_2 removal rate from the atmosphere (due to biomass regrowth), and $y(t)$ is the IRF from the carbon cycle climate model. This equation integrates the dynamics of the biomass system within the global carbon cycle to get the resulting CO_2 atmospheric profile. Further physical implications and interactions of the biomass system with the global CO_2 fluxes and sinks can be found in more specific papers (Cherubini *et al.*, 2011; Sitch *et al.*, 2003; Strassmann *et al.*, 2008). Following Eqn (2), we can write:

$$f(t) = \int_0^t e(t')y(t-t')\mathrm{d}t' - \int_0^t g(t')y(t-t')\mathrm{d}t'. \tag{3}$$

The first part of the integral represents the atmospheric CO_2 concentration response to distributed CO_2 emissions, whereas the second integral considers distributed CO_2 removals due to biomass regrowth, here modeled as a negative emission. Solutions are computed via numerical approximations.

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Distributed CO_2 removal

In this article, we consider that biomass comes from a plantation kept under continuous rotation. This means that once biomass resources are harvested and converted into products, the same species are replanted and they start sequestering CO_2 from the atmosphere, sometimes before the harvested carbon is oxidized. In this article, the Schnute model (a comprehensive growth model with statistically stable parameters; Schnute, 1981) is used to reproduce the sequestration of atmospheric CO_2 in the growing forest, following common practice in forest modeling (Feng, 1997; Yuancai *et al.*, 1997; Zhao-gang & Feng-ri, 2003). The growth model can be expressed by the following function:

$$G(t) = \left(\alpha + \beta e^{\gamma t}\right)^{\delta}, \tag{4}$$

where

$$\alpha = y_1^b + \frac{\left(y_2^b / y_1^b\right)}{1 - e^{-a(T_2 - T_1)}}, \tag{5}$$

$$\beta = \frac{e^{aT_1}\left(y_2^b - y_1^b\right)}{1 - e^{-a(T_2 - T_1)}} \tag{6}$$

$$\gamma = -a \quad \text{and} \quad \delta = \frac{1}{b}, \tag{7}$$

The variable t is the time dimension, T_1 and T_2 are the initial and final age of the interval, y_1 and y_2 are the corresponding values of the function at T_1 and T_2, a is the constant acceleration in growth rate, and b is the incremental acceleration in growth rate. Equation (4) represents the cumulative growth. The annual growth rate needed for Eqn (3) is given by its derivative:

$$g(t) = \delta\beta\gamma e^{\gamma t}\left(\alpha + \beta e^{\gamma t}\right)^{\delta - 1}. \tag{8}$$

The IPCC default factors for managed and native coniferous boreal forest (with average above ground carbon stock of 40 and 50 t C ha^{-1}, respectively) are used to customize this growth curve. Additional conditions and details about the definition of the other parameters for this function can be found in a recent paper (Cherubini *et al.*, 2011), together with the resulting curve profile.

Distributed CO_2 emissions

In this section, we investigate the use of probability distributions to model the oxidation rate of C over time. We assume specific mean lifetimes (τ) for the three selected wood uses: 2 years for fuel (Marland *et al.*, 2010), 30 years for nonstructural panels (IPCC, 2003),[2] and 150 years for housing construction material (Skog, 2008).[3] The following probability distributions are modeled: a delta dirac function (simply called delta function), used to simulate a single pulse emission; a uniform distribution, where the emission is equally spread over a certain number of years; an exponential distribution, based on a first-order decay; a chi-square distribution, where the emissions are distributed around the expected lifetime. All these distributions are normalized, so that their emission intensity is always equal to one (in mathematical terms: the integral of all the curves from zero to infinity is one). Figure 1 shows the profiles of these distributions for wood use as fuel and Fig. 2 for wood as nonstructural panels (distributions for wood as housing construction material are not shown because the curves are similar to those in Fig. 2, but translated over t to model the mean lifetime at 150 years). The analytical derivations and logical implications of these functions are explained hereinafter.

*Delta function $\delta(t)$*We use the delta function to model CO_2 emissions occurring at a specific point in time as a single pulse. The use of this function is a common practice in the literature, both for emissions occurring at $t = 0$ or after a certain number of years if a storage period in the anthroposphere or biosphere is considered (Kirschbaum, 2003, 2006; Pingoud & Wagner, 2006). The delta function is a generalized function that it is zero for all values of the parameter but a single point, when all the carbon is oxidized to the atmosphere. We assume that this point corresponds to the expected lifetime, τ, except when wood is used as fuel (for which we assume $\tau = 0$, so to better reproduce mainstream practice in LCA). This function, which can be formally defined as a distribution, has the following analytical form:

$$\delta(t;\tau) = \begin{cases} \infty & t = \tau \\ 0 & t \neq \tau \end{cases}, \tag{9}$$

and its integral over time is by definition constrained to satisfy the identity (i.e., equal to one). The delta function is then included in Eqn (3) in place of $e(t')$ to get the biogenic CO_2 decay corresponding to this emission profile:

$$f(t) = \int_0^t \delta(t';\tau) y(t - t')\mathrm{d}t' - \int_0^t g(t') y(t - t')\mathrm{d}t'. \tag{10}$$

Thanks to the sifting property of the delta function (Bracewell, 1999), we have:

$$\int \delta(t';\tau) y(t - t')\mathrm{d}t' = y(t - \tau). \tag{11}$$

So that Eqn (6) can be written as follows:

$$f(t) = \begin{cases} -\int_0^\tau g(t') y(t - t')\mathrm{d}t', & \text{for } 0 \le t < \tau \quad \text{(a)} \\ y(t - \tau) - \int_\tau^t g(t') y(t - t')\mathrm{d}t', & \text{for } t \ge \tau \quad \text{(b)} \end{cases}, \tag{12}$$

where $y(t - \tau)$ represents the onward decay of the pulse emission from $t = \tau$ ahead. The term (12a) describes the change in

[2]Table 3a.1.3 of the IPCC Good Practice and Guidance reports a default value of 20 years for the half-life ($t_{1/2}$) of nonstructural panels, like particle board. The mean lifetime is calculated using the formula $\tau = t_{1/2}/\ln(2)$, and corresponds to 28.85 (rounded to 30).

[3]Skog estimates a half-life of solid wood for single-family housing of 105 years in 2010, which corresponds to a mean lifetime of 151.5 years (rounded to 150 years).

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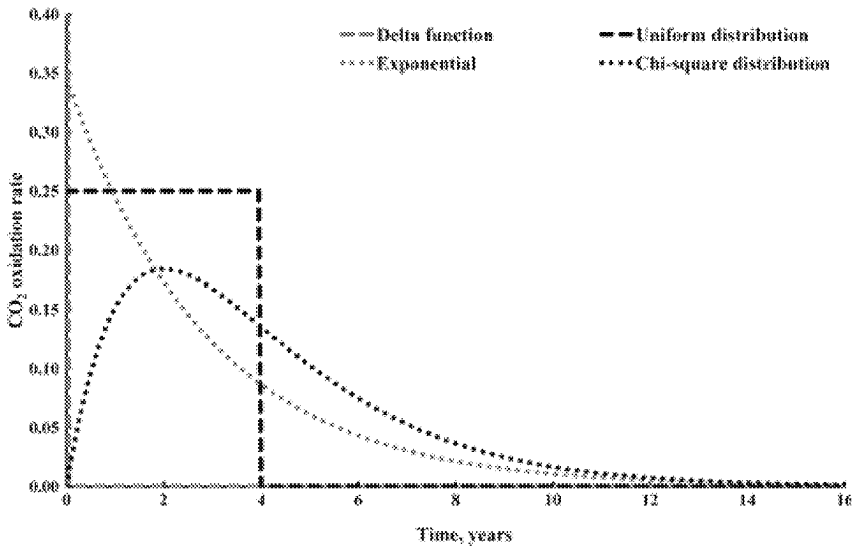

Fig. 1 Comparison of the probability distributions used to model the CO_2 emission rate for wood use as fuel.

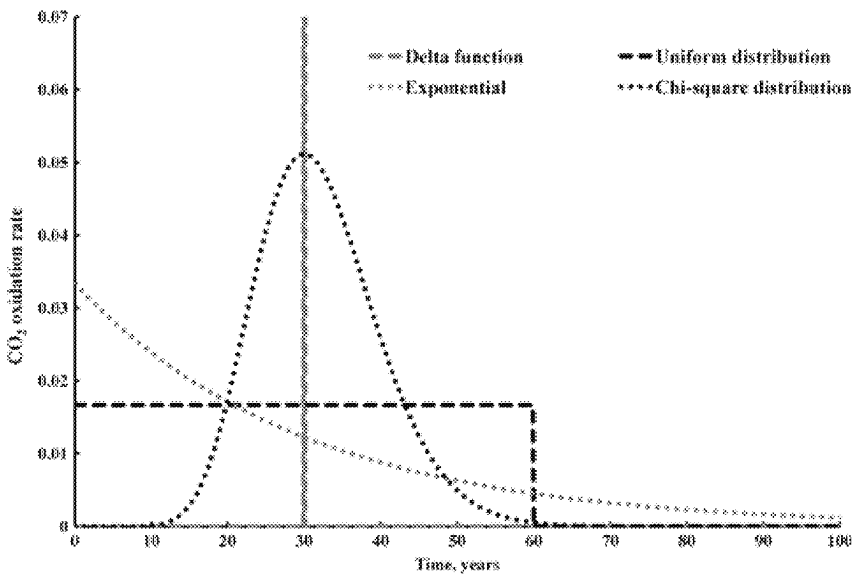

Fig. 2 Comparison of the probability distributions used to model the CO_2 emission rate for wood use as nonstructural panels.

CO_2 atmospheric concentration for the time period before the pulse emission, where the CO_2 sequestration from biomass regrowth is the only flux, whereas (12b) describes the decay after the pulse emission (with the remaining part of the growth).

Uniform distribution $v(t)$Rather than as a single pulse, emissions can be distributed over time. For instance, LUC emissions are frequently linearly amortized over a certain timeframe, implicitly assuming that each year has an equal share of CO_2 emissions. This practice, which can also be applied to wood products, is here modeled with a uniform distribution, where the amortization occurs over a period equal to two times the mean lifetime of the products:

$$v(t) = \begin{cases} \frac{1}{2\tau} & 0 < t < 2\tau \\ 0 & \text{otherwise.} \end{cases} \tag{13}$$

This function is then included as $e(t')$ in Eqn (3).

Exponential distribution $\varepsilon(t)$The exponential distribution is currently the dominant approach to model CO_2 emissions from wood products, as recommended by the IPCC guidelines for national GHG inventories. This is a first-order decay model, that is, the oxidation rate is proportional to the size of the pool (here assumed to be one, representing the carbon in a single product), which has the following expression:

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$$\varepsilon(t) = e^{(-t/\tau)}. \tag{14}$$

The C oxidation rate, to be included in Eqn (3) as $e(t')$, is the first derivative of this equation. The adoption of this probability distribution means that the largest rate of oxidation occurs in the first years after production, and then gradually decreases over time, up to asymptotically approaching zero. Such an oxidation rate can be appropriate for few products only, because, in general, it is most likely that a particular product is oxidized at various times, but with the highest probability near its expected lifetime. Even wood used as fuel does not usually decay within the first year after harvest, because most of it is seasoned over several months to lower its water content so to increase its energy density and combustion efficiency. In the next paragraph, a more realistic oxidation rate is introduced.

Chi-square distribution $\chi^2(t)$A recent paper suggested the use of a gamma distribution to model the oxidation rate of wooden products (Marland *et al.*, 2010). The gamma distribution, largely adopted for expected lifetime in probability theory and statistics, has two parameters that are used to customize the distribution to the specific case: a scale parameter β and a shape parameter α. Since no simple closed form expressions exist for the cumulative distribution function (Tadikamalla, 1978), these parameters can be estimated via numerical approximation using at least two data points, such as the expected lifetime and another point of the decay (e.g., the year when 95% of the biomass is oxidized). Due to the absence of extensive data on decay rates of wooden products besides expected lifetimes, this distribution has limitations for being routinely applied in LCA. To overcome this issue, a special case of the gamma distribution is considered in this article. When $\alpha = k/2$ and $\beta = 2$, where k is a positive integer, the chi-square distribution with k degrees of freedom is obtained. This distribution is of course less flexible than the gamma distribution, because it has a single variable parameter, but is sufficiently appropriate to model the oxidation rate of wooden products using their expected lifetime. In this article, we estimate k assuming that the year of maximum oxidation rate (e.g., the peak of the distribution) occurs in correspondence of the mean lifetime τ, knowing that the mode of the distribution is equal to $\max[k - 2, 0]$. For the wood products considered in this analysis, k is equal to $\tau + 2$, that is, 4, 32, and 152 for wood as fuel, nonstructural panels, and housing construction material, respectively.

The chi-square distribution can be analytically expressed in terms of the gamma function, with $t \geq 0$:

$$\chi^2(t;k) = \frac{1}{2^{k/2}\Gamma(k/2)} t^{((k/2)-1)} e^{(-t/2)}, \tag{15}$$

where t is the time dimension and $\Gamma(k/2)$ is the gamma function, defined as:

$$\Gamma(k/2) = \int_0^\infty x^{k/2-1} e^{-x} \mathrm{d}x. \tag{16}$$

Equation (15) can be included in Eqn (3) as $e(t')$ to model the resulting effect in atmospheric CO_2 concentration.

Climate metrics

Two main types of climate metrics can be identified, in relation to the treatment of time (Peters *et al.*, 2011): absolute metrics, which compare the climate impact caused by different emissions over time (e.g., change in CO_2 atmospheric concentration, instantaneous and cumulative RF, instantaneous and cumulative temperature change), and normalized metrics, which quantify the climate impact relative to a reference gas (e.g., GWP). In the LCA community, the latter are dominating.

Marginal changes in atmospheric CO_2 concentration are computed using the following equation:

$$\Delta CO_2 = h_{CO_2} f(t), \tag{17}$$

with

$$h_{CO_2} = \frac{10^6 \text{ ppmv}/\text{MW}_{CO_2}}{m_{air}/\text{MW}_{air}} \left[\frac{\text{ppmv}}{\text{kg}}\right], \tag{18}$$

where MW_{CO_2} is the molecular weight of CO_2 (44 kg kmol^{-1}), m_{air} is the mass of the atmosphere (5.14×10^{-14} kg), and MW_{air} is the molecular weight of air (28.97 kg kmol^{-1}). Results are calculated assuming a constant background CO_2 atmospheric concentration (conservative estimate).

The function $f(t)$ is also the basis for the estimation of the resulting impact on GW through the concept of RF. The latter is the perturbation of the earth energy balance at the top of the atmosphere by a climate change mechanism. The time evolution of a change in radiative forcing, ΔRF, from 1 kg of emission at time zero is proportional to the atmospheric decay of the gas. This is the instantaneous RF equal to:

$$\Delta \text{RF} = \alpha_{CO_2} f(t), \tag{19}$$

where α_{CO_2} is the radiative efficiency of CO_2 per kg of emission (1.81×10^{-15} W m^{-2} kg^{-1}), assumed to be constant over time (Forster *et al.*, 2007). The absolute global warming potential (AGWP) is given by the integral of ΔRF from zero up to a specific TH (either 20, 100, or 500 years). This value is compared with that of anthropogenic CO_2 in the GWP index. For the particular case of CO_2 emissions from biomass, we use the recently introduced notation GWP_{bio} (Cherubini *et al.*, 2011):

$$\text{GWP}_{bio} = \frac{\text{AGWP}_{bioCO_2}}{\text{AGWP}_{CO_2}} = \frac{\int_0^{TH} \alpha_{CO_2} f(t)\mathrm{d}t}{\int_0^{TH} \alpha_{CO_2} y(t)\mathrm{d}t}. \tag{20}$$

Instead of considering only a pulse emission, we elaborate GWP_{bio} indices for emission distributed over time using the selected probability distributions.

One common criticism about GWP relates to the fact that, despite its name, it does not purport to represent the impact of gaseous emissions on surface temperature. In this article, we explore the possibility to use another indicator for GW, the global temperature change potential (GTP), which is gaining increasing interest in the research community (Boucher & Reddy, 2008; Fuglestvedt *et al.*, 2010; Shine *et al.*, 2005). This metric is a step further down in the cause and effect chain of the potential climate effect of emissions, and hence more relevant

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than GWP, and provides the surface temperature change at a particular time in the future. The AGTP is defined as the global change in surface temperature at a TH induced by 1 kg of emission and has a unit of K kg^{-1}. It is computed here as a convolution of an impulse temperature response function $\delta T(t)$ with the time profile of the change in RF. The function $\delta T(t)$ is the climate response in terms of global surface temperature change and is estimated from an IRF to RF:

$$\delta T(t) = \sum_{i}^{2} \frac{c_i}{d_i} e^{-t/d_i}, \tag{21}$$

where $c_1 = 0.631$ and $c_2 = 0.429$ in $K(W\ m^{-2})^{-1}$ and $d_1 = 8.4$ and $d_2 = 409.5$ in years. This function was derived from more than 1000 simulated years of an experiment with the HadCM3 climate model (Boucher & Reddy, 2008). The climate responds with a short time scale d_1 and a longer time scale d_2, and the equilibrium climate sensitivity, as the sum of the c_i coefficients, is 1.06 K $(W\ m^{-2})^{-1}$. This function is used to estimate the global surface temperature change at a TH from a given RF profile:

$$\mathrm{AGTP} = \int_0^{\mathrm{TH}} \Delta \mathrm{RF}(t)\delta T(\mathrm{TH} - t)\mathrm{d}t. \tag{22}$$

The GTP is finally presented as the ratio between the AGTP for a given species to that of CO_2:

$$\mathrm{GTP} = \frac{\mathrm{AGTP}_{\mathrm{bioCO_2}}}{\mathrm{AGTP}_{\mathrm{CO_2}}} = \frac{\int_0^{\mathrm{TH}} \Delta \mathrm{RF}_{\mathrm{bioCO_2}}(t)\delta T(\mathrm{TH} - t)\mathrm{d}t}{\int_0^{\mathrm{TH}} \Delta \mathrm{RF}_{\mathrm{CO_2}}(t)\delta T(\mathrm{TH} - t)\mathrm{d}t}. \tag{23}$$

Results

Absolute metrics

The first tier results from our modeling efforts are the curves portraying the outcomes of the absolute metrics: changes in atmospheric CO_2 concentration (proportional to the instantaneous RF), cumulative (or integrated, AGWP) RF, and instantaneous and integrated change in surface temperature.

Figure 3 shows the perturbation response functions (PRFs) obtained for the different wood uses (constant background atmospheric CO_2 concentration is assumed and the value at year zero is set equal to zero). These curves are obtained by combining the global carbon cycle model with the different probability distributions introduced above (used to model the oxidation rate of the three selected wood applications) and the Schnute function that simulates the CO_2 sequestration from growing trees. The graph compares the profiles of atmospheric CO_2 concentration when the delta function (δ-PRF), the uniform distribution (υ-PRF), the exponential distribution (ε-PRF), and the chi-squared distribution (χ-PRF) are used to model CO_2 oxidation rates. The atmospheric decay of anthropogenic CO_2, emitted as a single pulse at $t = 0$, is also shown for comparison in Fig. 3a. The latter is appropriate for biogenic CO_2 in case of biomass combustion soon after harvest and deforestation (i.e., no biomass regrowth). The profiles of the curves in Fig. 3a show differences for the first decade after harvest, and then follow a similar trend. The δ-PRF is the case in which forest wood is directly used for bioenergy and all the CO_2 is released as a single pulse at $t = 0$. It shows a profile similar to anthropogenic CO_2 in the early years, and then accelerates its decay trend when the sequestration rate from growing trees increases. Even if a C neutral system is modeled here (the same quantity C_0 of CO_2 is emitted and removed), the effect of this biogenic CO_2 emission on atmospheric concentration is evident, and the biomass system is not climate neutral.

When other emission functions are used, the intensity of the pulse is distributed over time and the maximum value of the resulting PRF is lower, because a fraction of the CO_2 emitted at time $t - 1$ has already decayed at time t. The larger the distribution of the emission over time, the smaller the maximum value of the respective PRF is. In the long run, all the curves asymptotically tend to zero. At first sight, the presence of negative values, especially for the δ-PRF, may appear inconsistent, because the amount of CO_2 in the atmosphere is lower than the level before the emission, even if a carbon neutral system is modeled. There is a physical interpretation for this effect (Cherubini *et al.*, 2011). Soon after the emission, when the biomass growth rate is still slow, a significant fraction of the CO_2 originally released is quickly stored in the ocean upper layer. The following transport of this C to the deep ocean layers is slower, and when the uptake by the onsite biomass regrowth increases, the C initially stored in the ocean upper layer will be released back to the atmosphere at a low rate to compensate the initial over-absorption (out-gassing). In the long term, the airborne fraction of CO_2 approaches zero.

Figure 3b shows the profiles of the atmospheric CO_2 concentration when the different distributions are used to model the oxidation rate of wood used as nonstructural panels. Here, the differences among the curves are more pronounced. The δ-PRF starts with a sequestration and then emission at $t = 30$ years as a single pulse, the χ-PRF goes below zero in the first two decades because emissions are distributed around $t = 30$ years and the other PRFs are based on functions where emissions are distributed over time starting from year zero. Because of that, they do not turn to negative values soon after $t = 0$, as the δ-PRF and χ-PRF. The υ-PRF reaches a constant value until a clear inflection point at $t = 60$ years, when the emission function goes to zero, and so does

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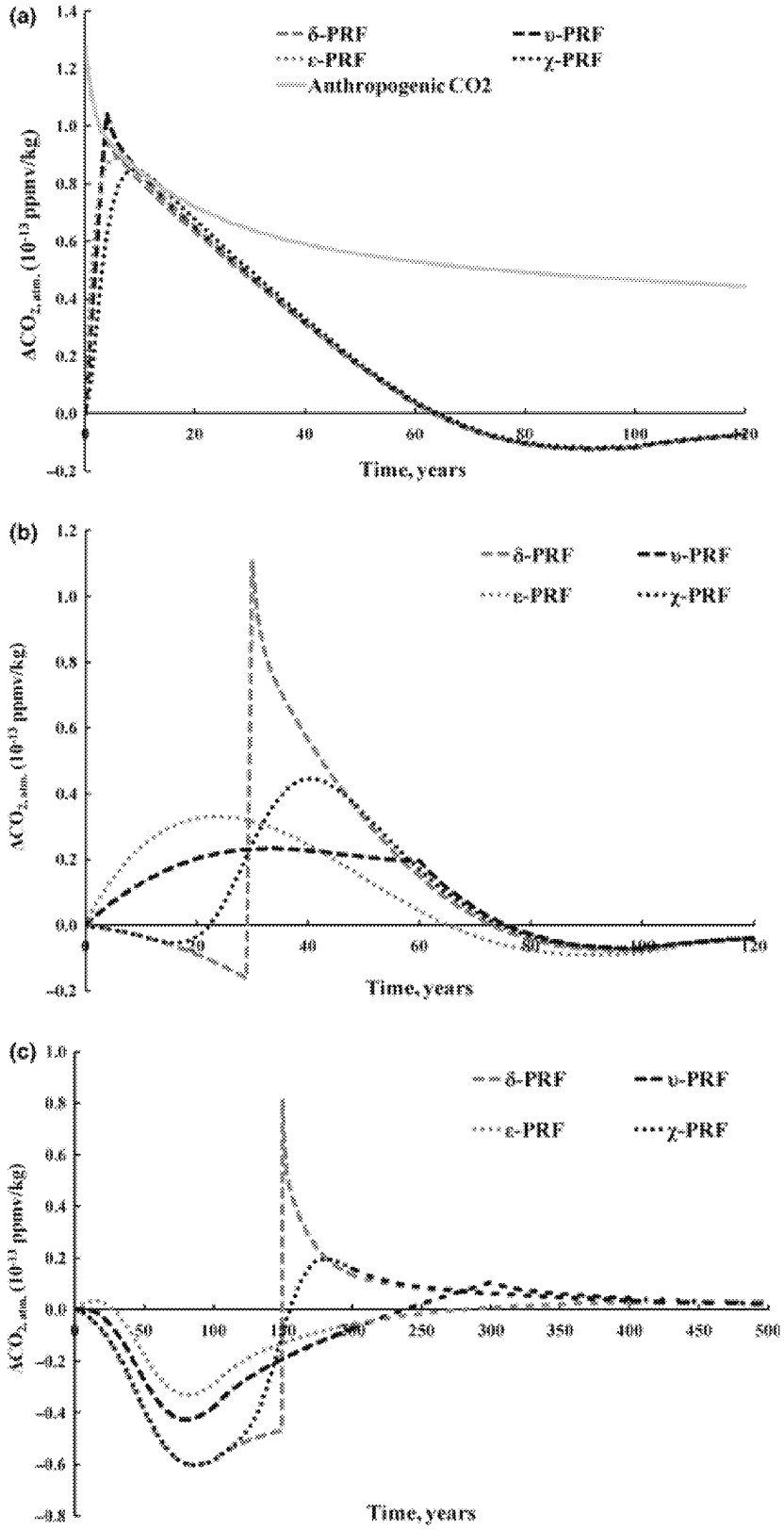

Fig. 3 Marginal changes in CO_2 atmospheric concentrations when wood is used as (a) fuel (τ = 2), (b) nonstructural panel (τ = 30), and (c) housing material (τ = 150) according to different emission functions.

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the PRF. After approximately 100 years, the curves show similar profiles.

Figure 3c shows the results obtained by modeling the oxidation rate of wood for housing construction materials with different distributions. In this case, the differences among the curves are largely distributed over time, suggesting that the influence of the emission function on the results increases with the mean lifetime of the products. All the PRFs have negative values for a relatively long timeframe and the δ-PRF reaches the lowest negative values, because it has no emissions until year 150, where all the CO_2 is released as a single pulse. During this time period, the sequestration of CO_2 through biomass regrowth is the only perturbation of the system. The χ-PRF has a profile similar to δ-PRF for the first years, because it assumes emissions distributed around the year of maximum oxidation rate, so that emissions are very limited in the first years. The υ-PRF has a small fraction of emissions over 300 years (two times the mean lifetime), where it has a clear inflection point, after which the CO_2 atmospheric fraction asymptotically tend to be zero as the other curves. The ε-PRF is characterized by the largest rate of emissions in the first years, so that this emission of CO_2 partially offset the CO_2 sequestered by growing trees occurring in the first 100 years. This is the reason for the smaller values of this function while negative.

Figure 4 shows the cumulative or integrated radiative forcing (AGWP), of the three wood uses for the different probability distributions. The AGWP of a pulse of anthropogenic CO_2 released at $t = 0$ is shown for comparison. While the AGWP from a pulse emission of anthropogenic CO_2 gradually increases over time because of the nonzero asymptotic value of the decay (see Eqn 1), all the AGWPs of biogenic CO_2 tend toward a similar constant value within a specific timeframe. As for the previous cases, the influence of the type of probability distribution used is small for the case of wood as fuel (Fig. 4a) and as nonstructural panel (Fig. 4b), while it is more relevant for longer biomass storage periods (Fig. 4c). In the latter case, AGWPs are largely negative, meaning that a total cooling effect occurs.

Changes caused in surface temperature are shown in Fig. 5, only limited to the case in which the oxidation rate of the wooden products is modeled with the chi-square distribution. Again, the effect caused by a pulse emission of anthropogenic CO_2 at year zero is shown as a benchmark. Figure 5a shows the instantaneous surface temperature change, whereas Fig. 5b shows the cumulative effect. Results are in line with the other outcomes, highlighting the large long-term benefit for the climate of CO_2 emissions from biomass rather than fossil and the relatively long storage periods needed to have a total cooling effect when boreal forest biomass is used.

Normalized metrics

Rather than showing climate impacts as a function of time, LCA studies traditionally report the final outcomes using normalized metrics like the GWP. Results for the three most common THs of 20, 100, and 500 years are shown in Table 1. The use of the GWP_{bio} index is identical to the other GWP equivalency factors: it is a characterization factor to be multiplied by the total CO_2 emissions from biomass oxidation (or total CO_2 sequestered in biomass) to get their relative contribution to GW in terms of kg CO_2-eq. The values are always smaller than one. Values close to one mean that the release of a unit of biogenic CO_2 has the same climate impact (in terms of cumulative emissions for the GWP_{bio} and surface temperature change potential for GTP) of a single unit pulse emission of anthropogenic CO_2 at year 0. When the index is smaller than zero, there is a net cooling effect.

Results show the importance of the probability distributions used to model emissions and the TH considered. When wood is used as fuel, the results for the delta function represent the climate impact of CO_2 from direct combustion for bioenergy, which is not zero because of the time discrepancy between emissions and removals. The use of other distributions leads to smaller values, meaning that the more distributed the intensity of emission over time, the lower the climate impact is. In general, the chi-square distribution shows the lowest values. For long THs, the influence of the emission function is reduced. The delta function and the chi-square distribution show similar figures, except for the case of wood used as fuel. The uniform and exponential distribution have the highest values for TH = 20 for long storage periods, because they simulate emissions from the beginning. Of particular interest are the results when wood is used as housing construction material. For TH = 20 and 100, the delta function is the only function that does not have any emissions (which occur at $t = 150$), only sequestration of CO_2 from regrowth during the first 100 years. This points out an important aspect: the value of GWP_{bio} with TH = 100 is −0.57, and not −1.00, as it would be expected, since up to 100 years there is only the sequestration of CO_2 in growing trees and no emissions from carbon oxidation. This means that the climate impact of CO_2 fluxes cannot be estimated by simply summing up the flows to and from the atmosphere to get either a positive or a negative net balance (as traditionally done in LCA), but the time profile of emissions is of capital importance in presence of a TH. A physical interpretation of this aspect is also possible: the removal of CO_2 from the air changes the concentration gradient between the atmosphere and the other carbon sinks, the oceans, and the

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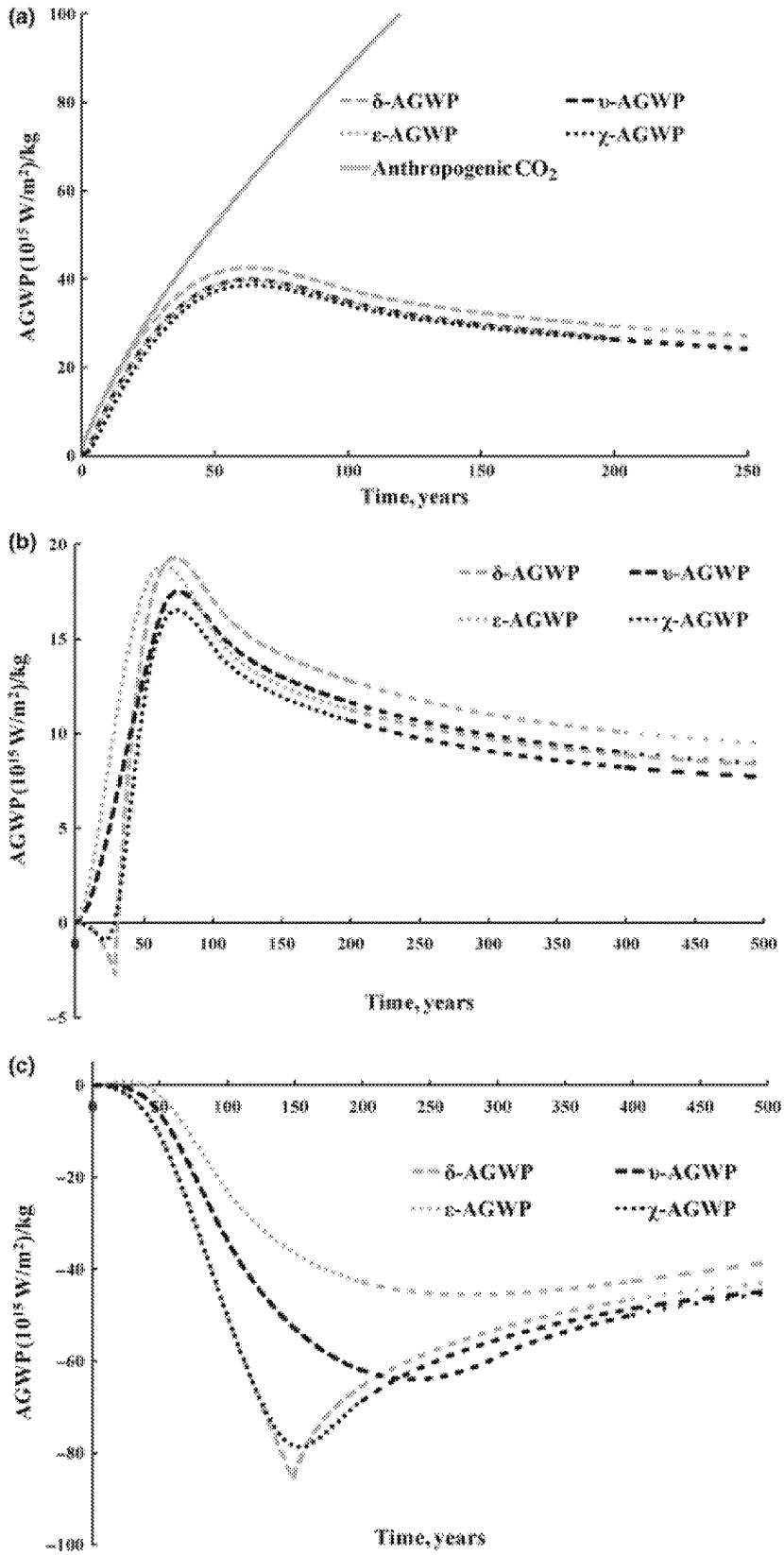

Fig. 4 Cumulative radiative forcing (or absolute global warming potential, AGWP) when wood is used as (a) fuel (τ = 2), (b) non-structural panel (τ = 30), and (c) housing material (τ = 150) according to different emission functions.

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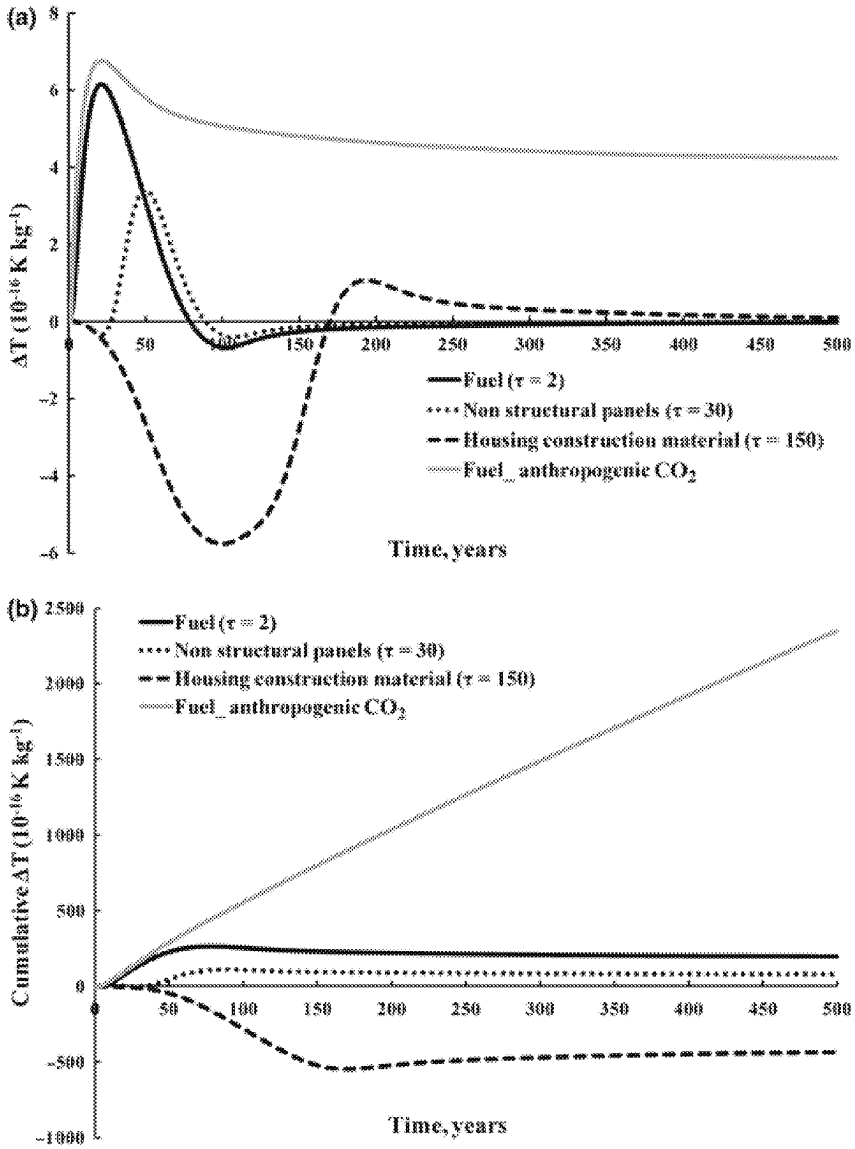

Fig. 5 Instantaneous (a) and cumulative (b) surface temperature change caused by CO_2 emissions from different wood uses (fuel, nonstructural panels, and housing construction material), using the chi-square distribution to model the oxidation rate. Results for emissions of anthropogenic CO_2 from combustion of fossils are shown for comparison.

terrestrial biosphere, and thereby reduces their subsequent inherent rate of CO_2 removal from the atmosphere. Some CO_2 is hence released from the other sinks, especially the oceans, to the atmosphere, so to compensate for the change in the concentration gradient and tend to a new equilibrium. This effect has been already observed in other papers as well (Kirschbaum, 2003, 2006).

The values of GTPs differ slightly from those of GWP_{bio}, since they give more weight to the RF that comes later in the time period. In particular, it appears that the use of the GWP index for short-term mitigation targets significantly overestimate the effective climate impact in terms of surface temperature change of biogenic CO_2 emissions, while it is the opposite for longer TH.

Table 2 shows some characterization factors (GWP_{bio} with TH = 100) for selected combinations of biomass species, represented by the different rotation periods (r = 1 year for annual crops and r = 100 years for boreal forest), and wood uses, represented by the expected lifetimes, when a chi-square distribution is used to model the CO_2 oxidation rate. These values include the CO_2 sequestration from biomass regrowth, simply modeled using a Gaussian distribution centered on the year corresponding to half the rotation period. For short

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Table 1 GWP_{bio} and GTP for three wood uses using different probability distributions as emission functions

	GWP_{bio}			GTP		
	TH = 20	TH = 100	TH = 500	TH = 20	TH = 100	TH = 500
Wood as fuel						
Delta function	0.96	0.43	0.07	0.97	0.49	0.09
Continuous distribution	0.87	0.41	0.07	0.84	0.46	0.08
Exponential distribution	0.87	0.40	0.07	0.84	0.46	0.08
Chi-square distribution	0.79	0.39	0.07	0.71	0.45	0.08
Wood as nonstructural panels						
Delta function	−0.04*	0.19	0.03	−0.03*	0.21	0.04
Continuous distribution	0.14*	0.18	0.03	0.11*	0.20	0.04
Exponential distribution	0.25*	0.18	0.03	0.20*	0.21	0.04
Chi-square distribution	−0.04*	0.17	0.03	−0.03*	0.19	0.03
Wood as housing construction material						
Delta function	−0.04*	−0.57a	−0.15	−0.03*	−0.51a	−0.18
Continuous distribution	−0.01*	−0.34a	−0.16	0.00*	−0.29a	−0.18
Exponential distribution	0.03*	−0.26a	−0.14	0.03*	−0.23a	−0.15
Chi-square distribution	−0.04*	−0.58a	−0.16	−0.03*	−0.51a	−0.19

*TH shorter than τ.
GWP, global warming potential; GTP, global temperature change potential; TH, time horizon.

Table 2 Characterization factors (GWP_{bio} with TH = 100) for selected biomass rotation periods and expected lifetimes of biomass products in the anthroposphere or biosphere

	Expected lifetime τ (years)									
Rotation period (years)	2	4	6	10	15	20	30	50	70	100
1	−0.02	−0.04	−0.06	−0.09	−0.13	−0.17	−0.25	−0.43	−0.63	−0.93
4	−0.01	−0.03	−0.05	−0.08	−0.12	−0.16	−0.24	−0.42	−0.61	0.91
8	0.00	−0.01	−0.03	−0.06	−0.10	−0.14	−0.22	−0.40	−0.60	−0.90
12	0.02	0.00	−0.01	−0.05	−0.09	−0.13	−0.21	−0.38	−0.58	−0.88
16	0.03	0.02	0.00	−0.03	−0.07	−0.11	−0.19	−0.37	−0.56	−0.87
20	0.05	0.03	0.02	−0.01	−0.05	−0.09	−0.18	−0.35	−0.55	−0.85
40	0.13	0.12	0.10	0.07	0.03	−0.01	−0.09	−0.27	−0.47	−0.77
60	0.22	0.20	0.19	0.16	0.12	0.08	−0.01	−0.18	−0.38	−0.68
80	0.31	0.29	0.28	0.25	0.21	0.17	0.08	−0.09	−0.29	−0.59
100	0.39	0.38	0.36	0.33	0.29	0.25	0.17	−0.01	−0.20	−0.50

The oxidation rate of biomass products is modeled with a chi-square distribution, the sequestration through vegetation growth with a Gaussian distribution.
GWP, global warming potential; TH, time horizon.

biomass rotation periods, values are negative (revealing a total cooling effect), whereas when the length of the rotation increases, longer expected lifetimes of the products are needed to have characterization factors lower than zero.

Discussion

Implications

The explicit modeling of CO_2 fluxes with probability distributions and their integration within the global carbon cycle represents a flexible and consistent methodology to assess the climate impact of the various biomass and bioenergy systems (including direct combustion, wood storage, afforestation, and others). This type of dynamic analysis, adaptable to different metrics, meets the target of policy makers for studies where impacts from emissions should be assessed within specific time boundaries.

In this article, we have provided examples where wood is used for direct production of energy, as nonstructural panels or as housing construction material. For each of them, probability distributions are used to

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model the CO_2 oxidation rate of the products. When biomass is directly used as fuel, the δ function is appropriate for modeling CO_2 emissions as a single pulse, because the other functions lead to similar results (except when TH = 20). When energy production is not the primary use of the biomass, and its average lifetime in the anthroposphere increases, modeling emissions as occurring as a single pulse might not be appropriate anymore, especially for short THs, and probability distributions should be used to better represent the oxidation rate of the product. The choice of the probability distribution should be consistent with empirical observations and logically correct. For instance, if a wood product is going to be burnt after a certain number of years, the use of a delta function is still correct because it is the best representation of emissions from stationary combustion. However, this condition is not common and quite impractical. Once biomass is harvested, it is sold to the market and the producers usually do not have precise information about the end of life of the product. So rather than a delta function, it is often better to model emissions from biomass oxidation with time-distributed functions, so to better take into account the probability of product oxidation for each year. The use of a uniform distribution is a first attempt toward this direction, but it has the risk to be an excessive oversimplification. In fact, it is conceptually based on the amortization of emissions over a specified, sometimes arbitrary, timeframe, rounding the effect of CO_2 on the ΔRF. The use of an exponential distribution, as promoted by the IPCC guidelines, implies that the product has the largest oxidation rate in the first years after its production. In general, the longer the expected lifetime of the product, the less likely the oxidation rate follows an exponential trend. The chi-square distribution represents an appropriate function to be used for this purpose, because it considers that a particular product will most likely be oxidized near its mean lifetime. Given the limited availability of reliable data on the oxidation rates of HWP besides mean lifetimes, the use of a chi-square distribution rather than a gamma distribution is introduced to simplify the modeling in LCA applications. If more specific data on decay rates will be publicly available in the future, the utilization of a gamma distribution becomes preferable, because of its larger flexibility.

Furthermore, the probability distributions can be parameterized in a way to account for the different pathways a biomass product can have in the anthroposphere prior to being oxidized, such as recycling or oxidation under anaerobic conditions in landfills. Concerning the modeling of CO_2 removal from the atmosphere by growing biomass after harvest, a single negative pulse is appropriate for annual crops, but becomes inadequate for biomass with a longer rotation period. In these cases, more specific biomass growth functions should be considered.

Limitations

Although the methodology to model the change in CO_2 atmospheric concentration and RF caused by time-distributed fluxes is solid and robust, uncertainty and, potentially, inaccuracy are brought on by the choice of the metric to measure the impact on the climate. The choice of the metric is a debated issue (Fuglestvedt *et al.*, 2003, 2010; IPCC, 2009; Shine *et al.*, 2005). The interpretation of results in Tables 1 and 2 should follow the considerations that they are based on fixed timeframes, from zero to TH, independently of when emissions occur. When emissions are distributed over time, especially if they are near or beyond the TH, these normalized metrics have serious shortcomings, despite their large use in the LCA community. Regarding the cases analyzed in this work, this particularly applies for temporal wood storage in products, where emissions can overlap with the TH considered. As already noticed by other authors (Melillo *et al.*, 2009; Peters *et al.*, 2011; Schwietzke *et al.*, 2011), in these cases absolute metrics are preferable, because they portray the instantaneous (Fig. 3) or integrated (Fig. 4) climate impact as a function of time. In the case of carbon storage, when looking at instantaneous impacts, analysts and policy makers are challenged by the proper evaluation of the short-term cooling effect against a possible warming effect in the later years, whereas integrated impacts provide clearer indications on the dynamics of the total climate effects (Fig. 4c clearly shows that the total contribution is a cooling effect). The presence of a TH simultaneously requires an accurate modeling of the CO_2 fluxes occurring before and a consideration of the potential impacts occurring afterwards. Because the impacts after the TH are entirely disregarded and not measured, caution should be paid to those activities that simply move the warming impact beyond the TH.

As an example of this issue, Fig. 5 shows the change caused in the surface temperature of CO_2 emissions from the oxidation of the three investigated wood products when the chi-square distribution is used to model the oxidation rate. This figure clearly shows that the effect on surface temperature lasts for more than 150 years for wood use as fuel and nonstructural panels, and ca. 500 years for wood as housing construction material. The selection of a shorter TH would lead to partial results: for example, if a TH of 100 years is chosen, for $\tau = 2$ years only the initial warming effect is measured while the long-lasting cooling effect is missed, whereas for $\tau = 150$ years only a part of the cooling

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effect is covered and the following long-lasting warming contribution is completely ignored (it is the opposite for integrated impact, Fig. 5b, where a substantial cooling occurs after 100 years).

Net CO_2 fluxes from biomass systems have varying dynamics and several metrics can be used to assess the impacts on climate, bearing different and sometimes contrasting information. These issues should gather increasing attention from LCA practitioners. As insightfully noticed by Peters *et al.* (2011), 'a debate should be open in the LCA community on the impact category GW', aiming at revisiting the emission metrics considered and the treatment of time in complex biomass and bioenergy systems.

Finally, the results presented in Tables 1 and 2 should not be over-interpreted. The objective here is to compare different options at a methodological level, and before deriving general conclusions about the suitability of one wood option over the other, there are life cycle-based considerations and specific local parameters to be considered. Aspects that can potentially overturn the results are efficiency in biomass conversion processes, number of rotations, selection of proper time and spatial boundaries, LUCs, and other life cycle implications (such as material and energy inputs for cultivation, harvesting, processing, and transport).

Final remarks

In presence of time boundaries, the climate impact of biomass or bioenergy systems cannot be estimated through a net balance of the CO_2 fluxes to and from the atmosphere, but it is to be computed using their temporal profiles and integrating the biomass system within the global carbon cycle. This article elaborated a flexible methodology, based on specific probability distributions, which is not restricted to CO_2 emissions from biomass but can be adapted to other stressors and energy sources. Among the investigated functions, the chi-square distribution emerges as a promising option that can be adapted to describe the oxidation rates of all the selected product classes, requiring only one parameter (e.g., the mean lifetime) for its definition. The choice of the metric with its TH is crucial for the climate assessment of the system, and caution should be made when interpreting results in cases where large perturbations occur close to the end of the time window. For biomass systems characterized by time-distributed emissions, absolute metrics showing the variation of the climate impact over time are preferable over more traditional normalized metrics, such as GWP. Results vary depending on the TH, the probability distribution used to simulate emissions, and the type of biomass. In general, the analysis showed that relatively long storage periods are needed to get a total cooling effect when boreal forest biomass is used. If wooden products are produced from biomass having a shorter rotation period, this storage period decreases. Thanks to its flexibility and consistency, this methodology is highly suitable to be routinely applied in LCA case studies. As an extended application, this approach warrants further research investigation for a possible consideration in the accounting of emissions from HWP and in processing data by emission inventory experts within the Kyoto protocol and its successor.

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Message

From: Ohrel, Sara [Ohrel.Sara@epa.gov]
Sent: 9/6/2019 4:35:19 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: FW: Biogenic CO2 info?

FYI

From: Ohrel, Sara
Sent: Friday, September 06, 2019 10:19 AM
To: Greenglass, Nora <Greenglass.Nora@epa.gov>
Subject: RE: Biogenic CO2 info?

Sure thing!

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Greenglass, Nora <Greenglass.Nora@epa.gov>
Sent: Friday, September 06, 2019 10:19 AM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: Biogenic CO2 info?

Hi Sara,
Would you mind sending over the information re: biogenic CO2 we had discussed?
Thanks!
Nora

Nora Greenglass
Office of General Counsel | Air & Radiation Law Office
U.S. Environmental Protection Agency
202-564-3095 (office)
202-603-6299 (cell)

Message

From: Keller, Peter [keller.peter@epa.gov]
Sent: 7/9/2019 7:15:14 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: RE: Biomass Bullet Points

Thanks!

Peter

From: Baker, Sarah
Sent: Tuesday, July 09, 2019 2:07 PM
To: Keller, Peter <keller.peter@epa.gov>
Subject: Biomass Bullet Points

Are these sufficient? If you need more info, just let me know. I did have Cheryl look them over.

- FY2017 and FY2019 Consolidated Appropriations Act outlines how EPA and other agencies are to establish consistent policies regarding the use of forest biomass for energy production including policies that reflect the carbon-neutrality of forest bioenergy.
- In April 2018, EPA issued a policy statement stating that EPA's policy in forthcoming regulatory actions will be to treat biogenic CO2 emissions resulting from the combustion of biomass from managed forests at stationary sources for energy production as carbon neutral.
- **Ex. 5 Deliberative Process (DP)**

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 2/11/2020 3:48:25 PM
To: Petesch, Theresa (Tess) [petesch.theresa@epa.gov]
Subject: EIA
Attachments: Forest_Biomass_Economic_Analysis_OAPcomm_tp020620.docx

Here is the most current version of the EIA. Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 2/6/2020 3:43:47 PM
To: Petesch, Theresa (Tess) [petesch.theresa@epa.gov]
Subject: RE: Afternoon's Call
Attachments: Forest_Biomass_Economic_Analysis_consolidated comments.docx

Tess-

Ex. 5 Deliberative Process (DP)

Sarah

From: Petesch, Theresa (Tess) <petesch.theresa@epa.gov>
Sent: Wednesday, February 05, 2020 5:19 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Afternoon's Call

Ex. 5 Deliberative Process (DP)

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Wednesday, February 5, 2020 12:15 PM
To: Petesch, Theresa (Tess) <petesch.theresa@epa.gov>
Subject: RE: Afternoon's Call

Ex. 5 Deliberative Process (DP)

From: Petesch, Theresa (Tess) <petesch.theresa@epa.gov>
Sent: Wednesday, February 05, 2020 12:12 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Afternoon's Call

Hi Sarah,

Ex. 5 Deliberative Process (DP)

Tess

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Wednesday, February 5, 2020 12:05 PM
To: Petesch, Theresa (Tess) <petesch.theresa@epa.gov>
Subject: Afternoon's Call

Tess-

Ex. 5 Deliberative Process (DP)

I hope this helps. I'll see you at 2!

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 1/16/2020 7:47:27 PM
To: Petesch, Theresa (Tess) [petesch.theresa@epa.gov]; Sorrels, Larry [Sorrels.Larry@epa.gov]
Subject: RE: OP Staff-Level FAR Comments on the Proposed Biogenic CO2 Emissions Rule

Ex. 5 Deliberative Process (DP)

From: Petesch, Theresa (Tess) <petesch.theresa@epa.gov>
Sent: Thursday, January 16, 2020 2:12 PM
To: Sorrels, Larry <Sorrels.Larry@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: OP Staff-Level FAR Comments on the Proposed Biogenic CO2 Emissions Rule

Ex. 5 Deliberative Process (DP)

From: Sorrels, Larry <Sorrels.Larry@epa.gov>
Sent: Thursday, January 16, 2020 12:57 PM
To: Baker, Sarah <baker.sarah@epa.gov>; Petesch, Theresa (Tess) <petesch.theresa@epa.gov>
Subject: RE: OP Staff-Level FAR Comments on the Proposed Biogenic CO2 Emissions Rule

Hello Sarah:

Ex. 5 Deliberative Process (DP)

Larry Sorrels
US EPA/OAQPS/HEID/AEG
Economist
919-541-5041
919-541-0839 (fax)
C439-02
Room C441H

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, January 16, 2020 11:04 AM
To: Petesch, Theresa (Tess) <petesch.theresa@epa.gov>; Sorrels, Larry <Sorrels.Larry@epa.gov>
Subject: FW: OP Staff-Level FAR Comments on the Proposed Biogenic CO2 Emissions Rule

Tess and Larry-

Ex. 5 Deliberative Process (DP)

Sarah

From: Elman, Barry <Elman.Barry@epa.gov>
Sent: Wednesday, January 15, 2020 5:51 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Svendsgaard, Dave <Svendsgaard.Dave@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Krallman, John <krallman.john@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>; Steller, John <Steller.John@epa.gov>; Sorrels, Larry <Sorrels.Larry@epa.gov>; Petesch, Theresa (Tess) <petesch.theresa@epa.gov>; Moran, Robin <moran.robin@epa.gov>; Toups, Brad <Toups.Brad@epa.gov>; Johnson, Terry <Johnson.Terry@epa.gov>; Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>; Cortelyou-Lee, Jan <Cortelyou-Lee.Jan@epa.gov>; Schrock, Bill <Schrock.Bill@epa.gov>
Subject: OP Staff-Level FAR Comments on the Proposed Biogenic CO2 Emissions Rule

OP Staff-Level FAR Comments on the Proposed Biogenic CO2 Emissions Rule
January 15, 2020

Sarah,

Ex. 5 Deliberative Process (DP)

3.

4.

Ex. 5 Deliberative Process (DP)

5.

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Ex. 5 Deliberative Process (DP)

Barry

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 10/30/2019 7:29:03 PM
To: Elman, Barry [Elman.Barry@epa.gov]
Subject: FW: PSD Biomass Proposal (919-541-4557)
Attachments: PSD Biomass Proposal (919-541-4557).ics

Barry-

In the event you want to attend, AF&PA, AWC, and NAFO will be coming in to DC on Friday to present the attached documents.

Appointment

From: Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]
To: Baker, Sarah [baker.sarah@epa.gov]; Kornylak, Vera S. [Kornylak.Vera@epa.gov]; Ohrel, Sara [Ohrel.Sara@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; RTP-OAQPS-919-541-4557-OID/Phone-Line/RTP-OAQPS-BLDG-C [RTP-OAQPS-919-541-4557-OID@epa.gov]
CC: Steller, John [Steller.John@epa.gov]; Irving, Bill [Irving.Bill@epa.gov]; Fawcett, Allen [Fawcett.Allen@epa.gov]; Sorrels, Larry [Sorrels.Larry@epa.gov]; Doster, Brian [Doster.Brian@epa.gov]; Petesch, Theresa (Tess) [petesch.theresa@epa.gov]

Subject: PSD Biomass Proposal Ex. 6 Personal Privacy (PP)
Attachments: 2019 Carbon Accounting Science Fundamentals with signatures.pdf; Policy Option Considerations 10-19.pdf
Location: DC room 4349 East / RTP-OAQPS-C501A/RTP-OAQPS-BLDG-C

Start: 11/1/2019 2:00:00 PM
End: 11/1/2019 3:00:00 PM
Show Time As: Busy

Recurrence: (none)

Agenda:

- Introductions
- Review of SAB work
- Biomass residuals and biowastes
- Next steps

To make the meeting as productive as possible, attached is a paper titled, "Policy Option Considerations". Please share it with others expected to attend the meeting or involved with the rulemaking. We hope that attendees can read it in advance so we can spend our limited time discussing key aspects of the paper and answering your questions. Knowing that you are developing a proposed rule and understanding your procedures, we would expect this material to be placed in the rulemaking docket.

In addition, also attached is a recent statement from members of the National Association of University Forest Resources Programs, which reiterates key points in their prior letter to Administrator McCarthy on November 6, 2014 on the science fundamentals of forest biomass carbon accounting.

Participants from AF&PA, AWC, and NAFO (in DC):

1. Alan Kroeger
2. Jennifer Jenkins
3. Russ Frye
4. Paul Noe
5. Jan Poling
6. Stan Lancey
7. Jerry Schwartz
8. Jeff Holmstead
9. Chip Murray
10. Sam Boxerman
11. Tim Hunt

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 11/6/2019 4:48:18 PM
To: Posey, Rachel [Posey.Rachel@epa.gov]
Subject: RE: Biomass energy information
Attachments: Ex. 5 Deliberative Process (DP)

Rachel-

Thanks again for taking a look at this. Attached is the spreadsheet from ECHO which has all the major facilities that emit CO2, Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP) I've also linked the websites from which the data comes so if you want to take a look you can. Once you are finished cross-checking the facilities Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP)

GHG Reporting Data
https://www.epa.gov/ghgreporting/ghg-reporting-program-data-sets
ECHO Website
https://echo.epa.gov/facilities/facility-search

Thanks!
Sarah

From: Posey, Rachel <Posey.Rachel@epa.gov>
Sent: Thursday, October 24, 2019 3:48 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biomass energy information

Ex. 5 Deliberative Process (DP)

From: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Sent: Thursday, October 24, 2019 3:41 PM
To: Posey, Rachel <Posey.Rachel@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biomass energy information

Ex. 5 Deliberative Process (DP)

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Posey, Rachel <Posey.Rachel@epa.gov>
Sent: Thursday, October 24, 2019 3:28 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Biomass energy information

Sarah and Cheryl,

I think this is the right information, it was linked to in the Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Data: https://www.eia.gov/electricity/data/eia923/

Renewable energy report: https://www.eia.gov/state/seds/sep_use/notes/use_renew.pdf

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 9/23/2019 7:22:25 PM
To: Ohrel, Sara [Ohrel.Sara@epa.gov]
Subject: RE: mtg?
Attachments: Ex. 5 Deliberative Process (DP)

From: Ohrel, Sara <Ohrel.Sara@epa.gov>
Sent: Monday, September 23, 2019 3:11 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: mtg?

FYI

Ex. 5 Deliberative Process (DP)

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, September 23, 2019 3:00 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: mtg?

Sure, I was hopeful that with the extra time it would allow us all to touch base tomorrow morning but forgot that you are out on Tuesdays and Nora is out all morning as well.

From: Ohrel, Sara <Ohrel.Sara@epa.gov>
Sent: Monday, September 23, 2019 2:57 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: mtg?

Ok great, thank you.

Ex. 5 Deliberative Process (DP)

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, September 23, 2019 2:01 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: mtg?

Ex. 5 Deliberative Process (DP)

From: Ohrel, Sara <Ohrel.Sara@epa.gov>
Sent: Monday, September 23, 2019 1:53 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: mtg?

Hi - Ex. 5 Deliberative Process (DP)

Sara Bushey Ohrel
Climate Change Division
U.S. Environmental Protection Agency
(202) 343-9712
ohrel.sara@epa.gov

***deliberative

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 8/8/2019 8:23:55 PM
To: Ohrel, Sara [Ohrel.Sara@epa.gov]
Subject: RE: Rule Outline
Attachments: Biomass Rule 8-5-19.docx

Ex. 5 Deliberative Process (DP)

I'm writing. Thanks!
Sarah

From: Ohrel, Sara <Ohrel.Sara@epa.gov>
Sent: Thursday, August 08, 2019 1:51 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Rule Outline

Thanks so much for sharing this. For what it is worth, I think it looks like a good start

---

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, August 08, 2019 12:13 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: Rule Outline

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 8/8/2019 4:12:47 PM
To: Ohrel, Sara [Ohrel.Sara@epa.gov]
Subject: Rule Outline
Attachments: Rule Outline.docx

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 10/23/2019 5:54:51 PM
To: Petesch, Theresa (Tess) [petesch.theresa@epa.gov]
Subject: RE: Biogenic CO2 Update

I'm sorry I didn't respond yesterday! Yes, I will go update the invite.

From: Petesch, Theresa (Tess) <petesch.theresa@epa.gov>
Sent: Tuesday, October 22, 2019 3:56 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biogenic CO2 Update

Hey Sarah, is it possible to move the meeting on Thursday to 11:30am and invite Darryl to join? Ex. 6 Personal Privacy (PP)
Ex. 6 Personal Privacy (PP)

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Tuesday, October 22, 2019 11:50 AM
To: Petesch, Theresa (Tess) <petesch.theresa@epa.gov>; Sorrels, Larry <Sorrels.Larry@epa.gov>
Subject: RE: Biogenic CO2 Update

Ex. 6 Personal Privacy (PP) I'll give you a call if anything changes with that. It looks like one of the small conference rooms is open if you want to meet there instead of my cubicle. That way if Cheryl wants to attend too there will be room. I can send out a meeting invite.

From: Petesch, Theresa (Tess) <petesch.theresa@epa.gov>
Sent: Tuesday, October 22, 2019 11:44 AM
To: Baker, Sarah <baker.sarah@epa.gov>; Sorrels, Larry <Sorrels.Larry@epa.gov>
Subject: RE: Biogenic CO2 Update

Hi Sarah,

Could we meet on Thursday at 11am to discuss further? We can come up to your cube again—remind me which one it is? Thank you,

Tess

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, October 21, 2019 1:08 PM
To: Petesch, Theresa (Tess) <petesch.theresa@epa.gov>; Sorrels, Larry <Sorrels.Larry@epa.gov>
Subject: Biogenic CO2 Update
Importance: High

Hi Tess and Larry. I wanted to provide you with the latest update for biomass. Last week Anne Idsal met with the Administrator to obtain Ex. 5 Deliberative Process (DP) The outcome of that meeting is that we have

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP) If you'd like to meet to discuss or if you want me to set up something with the technical folks from OAP to answer any questions just let me know. Thanks!
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 4/14/2020 2:34:05 PM
To: Ohrel, Sara [Ohrel.Sara@epa.gov]
Subject: RE: this am

Thanks! I'm actually on the phone with them now. I'll touch base when we are done.

From: Ohrel, Sara <Ohrel.Sara@epa.gov>
Sent: Tuesday, April 14, 2020 10:30 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: this am

Hi, I just tried to call but in short: yes, the yellow text is answering Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Tuesday, April 14, 2020 9:06 AM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: this am

Thanks! I sent a cleaned up version to Cheryl and Vera and Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

She just wanted to know what the highlighted section was referring to, Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP) I'm getting through those now but I attached them too. I'll include them in the working version. Thanks and feel free to give me a call if it's easier.
Sarah

From: Ohrel, Sara <Ohrel.Sara@epa.gov>
Sent: Tuesday, April 14, 2020 7:22 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: this am

Hi Sarah,
I just made a couple minor edits to the shared version of the document. Hope they help. Also, if you want to chat today before the briefing, like about any of the technical elements, I am happy to chat.

And I hope today is a better day!
Sara

Sara Bushey Ohrel
Climate Change Division
U.S. Environmental Protection Agency
(202) 343-9712
ohrel.sara@epa.gov

***deliberative

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 4/14/2020 2:20:54 PM
To: Sasser, Erika [Sasser.Erika@epa.gov]; Weatherhead, Darryl [Weatherhead.Darryl@epa.gov]; Petesch, Theresa (Tess) [petesch.theresa@epa.gov]; Sorrels, Larry [Sorrels.Larry@epa.gov]; Cortelyou-Lee, Jan [Cortelyou-Lee.Jan@epa.gov]
Subject: Biogenic CO2 Briefing
Attachments: Anne Idsal 4-20-20 Briefing on Biomass Comments.docx

All-

Attached is the briefing document that we intend to use for this afternoon's call with Peter. Please let me know if you have any questions. Thanks!
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Ashley, Jackie [Ashley.Jackie@epa.gov]
Sent: 12/19/2019 3:30:32 PM
To: Cortelyou-Lee, Jan [Cortelyou-Lee.Jan@epa.gov]
CC: Gantt, Brett [Gantt.Brett@epa.gov]; Baker, Sarah [baker.sarah@epa.gov]
Subject: Congressional and biogenic CO2

Ex. 5 Deliberative Process (DP)

<!--[endif]-->
Jan –
FYI – here's a quick list of the congressional exchanges in 2019 on biogenic CO2. It is a continuation of the info I gave Sarah back in September by email (below). I put it in a word doc and updated it to include the Nov/Dec letter from 18 senators. It may be helpful as the rule move towards proposal.

Jackie Ashley - US EPA - Office of Air Quality Planning and Standards - 919-541-7664 – ashley.jackie@epa.gov

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, September 16, 2019 9:40 AM
To: Ashley, Jackie <Ashley.Jackie@epa.gov>
Cc: Mocka, Corey <mocka.corey@epa.gov>
Subject: RE: Biogenic CO2 Administrator Comments

Thank you! This is extremely helpful.

From: Ashley, Jackie <Ashley.Jackie@epa.gov>
Sent: Friday, September 13, 2019 12:54 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Mocka, Corey <mocka.corey@epa.gov>
Subject: RE: Biogenic CO2 Administrator Comments

Sarah –
Here's what I found. The first one may be most relevant to your pager – a recent (April 2019) on-the-record exchange between the Administrator and Rep. Mike Simpson at an Appropriations hearing.

April 2, 2019 – **Hearing exchange** -- House Appropriations Subcommittee on Interior and Environment Hearing on Fiscal 2020 Budget Request for the EPA. Administrator Wheeler testified.

- Rep. Mike Simpson (ID) and Administrator Wheeler had a brief exchange during the hearing
  - *SIMPSON: First question, a serious question. Well, they're all serious. In the past several final appropriations bill there has been a language that directed the EPA to consult with Forest Service and DOE, to provide clarity on rule that defines biomass as carbon neutral. This is important as trees are key in carbon sequestration. Almost a year ago, the EPA issues a policy statement that seemed to align with the language. Can you update this subcommittee*

on further steps the EPA has taken to follow the language included in the appropriations bills?

- *WHEELER: We are working on that. We hope to have a proposal out this summer. It's a little more difficult than what we originally anticipated. Its taking some time. But we are moving forward with that. And we intend to have something out this summer.*

- Ex. 5 Deliberative Process (DP)

April-May 2019 – **Technical assistance** request from staff for Sen. Collins (ME)

- Sen. Collins staff asked OCIR for any additional information we could provide about the "biomass neutrality rule"
- OAR provided the following (via OCIR)
  - In November 2018, EPA, USDA, and DOE sent a letter to the Senate and House Committees on Appropriations describing the agencies' work to ensure consistent federal policy on forest biomass energy and promote clear policies that encourage the treatment of forest biomass as a carbon-neutral renewable energy solution.

    EPA is examining several opportunities to further address the treatment of biogenic CO2 emissions from biomass. To that end, the Agency assembled an internal workgroup in May 2018, and the group has identified a number of regulatory and non-regulatory options the Agency may pursue in 2019 and 2020. For example, the Agency may seek opportunities, in related rulemakings or site-specific determinations, to build upon the April 2018 policy statement. The Agency is also still evaluating recent, related advice from its Science Advisory Board on related science-policy issues. EPA is also evaluating the potential to pursue revisions to its 2011 Guidance for Determining Best Available Control Technology for Reducing CO2 Emissions from Bioenergy Production as well as rulemaking to revise relevant Prevention of Significant Deterioration or New Source Review regulations to address, clarify, or remove biogenic CO2 from combustion of biomass from certain requirements. We expect the Agency to propose related changes this year.

June 2019 – **Technical assistance** request from staff for Sen. Fischer (NE)

- Sen Fischer's staff asked about the Treatment of Biogenic CO2 Emissions Under the Clean Air Act Permitting Programs action, and whether EPA is on track for an October 2019 NPRM per the Reg Agenda. Also, is there any external stakeholder work underway (such as public outreach)?
- OAR provided the following (via OCIR)
  - EPA continues to make progress on developing a potential regulatory proposal for the treatment of biogenic CO2 emissions under Clean Air Act permitting programs. EPA has advised external stakeholders that we are engaged in this process.

July-August 2019 – **Technical assistance** request from Sen. Collins (ME)

- Sen. Collins staff asked if there were updates.
- OAR confirmed there was no new information to share.

Jackie Ashley - US EPA - Office of Air Quality Planning and Standards - 919-541-7664 – ashley.jackie@epa.gov

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From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, September 12, 2019 4:13 PM
To: Ashley, Jackie <Ashley.Jackie@epa.gov>
Subject: RE: Biogenic CO2 Administrator Comments

The briefing for Anne is next Wednesday. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

please feel free to let me know. Thanks!
Sarah

From: Ashley, Jackie <Ashley.Jackie@epa.gov>
Sent: Thursday, September 12, 2019 2:30 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biogenic CO2 Administrator Comments

Hi Sarah –
What's your deadline? It will take me a little time to see where/if Administrator Wheeler made this kind of commitment.

Ex. 5 Deliberative Process (DP)

Jackie Ashley - US EPA - Office of Air Quality Planning and Standards - 919-541-7664 – ashley.jackie@epa.gov

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From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, September 12, 2019 1:40 PM
To: Ashley, Jackie <Ashley.Jackie@epa.gov>
Subject: Biogenic CO2 Administrator Comments

Hi Jackie-
I'm trying to put together a briefing paper for Anne Idsal Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

provide would be greatly appreciated. Thanks!
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Toups, Brad [Toups.Brad@epa.gov]
Sent: 11/22/2019 2:08:51 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: RE: Biogenic CO2 Rulemaking Waiver Forms

Hi Sarah,
I do not think there will be concerns over this matter. However, one question: who signs the forms?
Brad

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, November 21, 2019 1:23 PM
To: Toups, Brad <Toups.Brad@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Robinson, Jeffrey <Robinson.Jeffrey@epa.gov>
Subject: FW: Biogenic CO2 Rulemaking Waiver Forms
Importance: High

Hi Brad-
I wanted to check in and make sure that there are no issues with Region 6 Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)
and the next steps, feel free to give me a call or let me know. Thanks!
Sarah

From: Baker, Sarah
Sent: Thursday, November 14, 2019 12:43 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>; Toups, Brad <Toups.Brad@epa.gov>
Cc: Elman, Barry <Elman.Barry@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: FW: Biogenic CO2 Rulemaking Waiver Forms
Importance: High

We have a quick check in scheduled with Anne Idsal for Monday. I wanted to touch base to make sure there are no issues with your respective offices obtaining the v Ex. 5 Deliberative Process (DP) **please let me know** so that I can bring them to Anne's attention. Also, as a reminder and since we are getting close to these dates I am including the proposed timeline for the rule so everyone is prepared. As always, please let me know if you have any questions or concerns.
Thank you.
Respectfully,
Sarah

Potential Rulemaking Timeline (Estimated) for Rule 1			
Milestone		Ex. 5 Deliberative Process (DP)	**biomass RM**
Ex. 5 Deliberative Process (DP)		Ex. 5 Deliberative Process (DP)	

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

From: Baker, Sarah
Sent: Thursday, November 07, 2019 2:43 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>; Toups, Brad <Toups.Brad@epa.gov>
Cc: Elman, Barry <Elman.Barry@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Biogenic CO2 Rulemaking Waiver Forms
Importance: High

All-

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

have any questions or concerns. Thanks.
Respectfully,
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Ohrel, Sara [Ohrel.Sara@epa.gov]
Sent: 11/21/2019 6:04:00 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: RE: Biogenic CO2 Rulemaking Waiver Forms
Attachments: Ex. 5 Deliberative Process (DP)

Hi Sarah,
Here are my signed forms. Please let me know if you need anything else from me.
Thanks,
Sara

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, November 07, 2019 2:43 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>; Toups, Brad <Toups.Brad@epa.gov>
Cc: Elman, Barry <Elman.Barry@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Biogenic CO2 Rulemaking Waiver Forms
Importance: High

All-
As we discussed during our last workgroup call on October 30th, Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP). Feel free to let me know if you have any questions or concerns. Thanks.
Respectfully,
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Shepherd, Lorinda [Shepherd.Lorinda@epa.gov]
Sent: 11/20/2019 8:05:55 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: RE: Biogenic CO2 Rulemaking Waiver Forms
Attachments: Ex. 5 Deliberative Process (DP)

Flag: Follow up

Hi, Sarah.

My waiver forms are attached. Please let me know if anything else is needed.

Regards,
Lori Shepherd
U.S. EPA Region 4
Air Permitting Section
(404)562-8435

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, November 14, 2019 12:43 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>; Toups, Brad <Toups.Brad@epa.gov>
Cc: Elman, Barry <Elman.Barry@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: FW: Biogenic CO2 Rulemaking Waiver Forms
Importance: High

We have a quick check in scheduled with Anne Idsal for Monday. I wanted to touch base to make sure there are no issues with your respective offices obtaining the Ex. 5 Deliberative Process (DP) **please let me know** so that I can bring them to Anne's attention. Also, as a reminder and since we are getting close to these dates I am including the proposed timeline for the rule so everyone is prepared. As always, please let me know if you have any questions or concerns.
Thank you.
Respectfully,
Sarah

Potential Rulemaking Timeline (Estimated) for Rule 1			
Milestone		Ex. 5 Deliberative Process (DP)	**biomass RM**
Ex. 5 Deliberative Process (DP)		Ex. 5 Deliberative Process (DP)	

From: Baker, Sarah
Sent: Thursday, November 07, 2019 2:43 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>; Toups, Brad <Toups.Brad@epa.gov>
Cc: Elman, Barry <Elman.Barry@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Biogenic CO2 Rulemaking Waiver Forms
Importance: High

All-

As we discussed during our last workgroup call on October 30th, Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

have any questions or concerns. Thanks.
Respectfully,
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Toups, Brad [Toups.Brad@epa.gov]
Sent: 7/10/2019 3:36:05 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: RE: Biogenic CO2 Rulemaking Workgroup

Hi Sarah,
Yes, I will still be on it.
Brad Toups
EPA Region 6

From: Baker, Sarah
Sent: Wednesday, July 10, 2019 10:33 AM
To: Cole, Jefferson <Cole.Jefferson@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>; Steller, John <Steller.John@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Elman, Barry <Elman.Barry@epa.gov>; Bird, Patrick <Bird.Patrick@epa.gov>; Moskal, John <Moskal.John@epa.gov>; Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>; Johnson, Terry <Johnson.Terry@epa.gov>; Toups, Brad <Toups.Brad@epa.gov>; McFadden, Kelly <McFadden.Kelly@epa.gov>; Ceron, Heather <Ceron.Heather@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Biogenic CO2 Rulemaking Workgroup
Importance: High

Hello Everyone-
Ex. 5 Deliberative Process (DP) We are picking this project back up with the larger workgroup and I wanted to verify that this listing is still accurate including

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

Please do not hesitate to contact me with any questions. Thank you and I look forward to working with everyone!

Respectfully,
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 6/5/2019 11:48:21 AM
To: Moran, Robin [moran.robin@epa.gov]
Subject: RE: AP&PA Documents

Good morning Robin! Thank you for looking over those documents. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Also, we are still waiting to hear about our briefing for Bill (we have one scheduled for the 11th Ex. 5 Deliberative Process (DP) but I've been told they are aiming for the 24th. Thanks!
Sarah

From: Moran, Robin
Sent: Tuesday, June 04, 2019 11:59 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: AP&PA Documents

Hi Sarah, I just had a chance today to read through some of this, very helpful, thanks again for sharing.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thanks so much for keeping me in loop!

Robin

Robin Moran
Senior Policy Advisor
U.S. EPA, Office of Transportation and Air Quality
2000 Traverwood Dr.
Ann Arbor, MI 48105
(734) 214-4781 (phone)

From: Baker, Sarah
Sent: Thursday, May 30, 2019 3:36 PM
To: Moran, Robin <moran.robin@epa.gov>
Subject: AP&PA Documents

Robin-
I think I mentioned that there is no one document that seems to succinctly present the industry arguments but here are some that outline their thinking. I'll keep you in the loop once the briefing is scheduled. Thanks!
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 6/10/2019 1:16:28 PM
To: Moran, Robin [moran.robin@epa.gov]
Subject: RE: Biomass Briefing

Hi Robin. I'm free all day today to discuss or I can talk tomorrow afternoon, which ever works better for you.

From: Moran, Robin
Sent: Monday, June 10, 2019 8:27 AM
To: Baker, Sarah <baker.sarah@epa.gov>; Lie, Sharyn <Lie.Sharyn@epa.gov>
Subject: RE: Biomass Briefing

Thanks Sarah, can we touch base on this today or tomorrow (Tuesday)? I'm on leave again this week Wed-Fri. Just let me know what times might work best for you, and I can give you.

Best,
Robin

Robin Moran
Senior Policy Advisor
U.S. EPA, Office of Transportation and Air Quality
2000 Traverwood Dr.
Ann Arbor, MI 48105
(734) 214-4781 (phone)

From: Baker, Sarah
Sent: Thursday, June 06, 2019 7:08 AM
To: Lie, Sharyn <Lie.Sharyn@epa.gov>; Moran, Robin <moran.robin@epa.gov>
Subject: RE: Biomass Briefing

I can brief you guys early next week on our discussion and will include you on the next call which should be sometime next week. Our briefing with Bill just got scheduled for the afternoon of 6/24. Thanks!
Sarah

From: Lie, Sharyn
Sent: Wednesday, June 05, 2019 12:41 PM
To: Moran, Robin <moran.robin@epa.gov>
Cc: Baker, Sarah <baker.sarah@epa.gov>
Subject: Re: Biomass Briefing

Hi Sarah/Robin,

Unfortunately, I have a meeting Thursday at that time that I can't move so I won't be able to cover for OTAQ.

Cheers,
Sharyn

On Jun 5, 2019, at 12:35 PM, Moran, Robin <moran.robin@epa.gov> wrote:

Hi Sarah,

I'm sorry but I won't be able to join your staff discussion on Biogenics to prep for the next AA briefing, as I'm on leave till Monday.

Ex. 5 Deliberative Process (DP)

Sarah, please correct me if I've got any of this wrong – and if Sharyn can't join you, then I'll plan to catch up with you next week.

Thanks,
Robin

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S-919-541-4248-AQAD/Phone-Line/RTP-OAQPS-BLDG-C

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tatively accepted

ah
: Steller, John; Ohrel, Sara; Greenglass, Nora; Krallman, John; Vetter, Cheryl; Svendsgaard, Dave; Moran, Robin

To discuss the next steps for the rule making briefing.

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 6/20/2019 5:55:27 PM
To: Moran, Robin [moran.robin@epa.gov]
Subject: RE: Biomass Briefing Discussion
Attachments: Final Wehrum June Briefing Document.docx

Hi Robin. I've attached the final briefing document. Just let me know if you want to discuss or need additional information on anything. Thanks!
Sarah

From: Moran, Robin
Sent: Tuesday, June 18, 2019 11:23 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biomass Briefing Discussion

Thanks Sarah! I'm open from 3-4 if anytime in there works for a quick catch up.

From: Baker, Sarah
Sent: Tuesday, June 18, 2019 11:21 AM
To: Moran, Robin <moran.robin@epa.gov>
Subject: RE: Biomass Briefing Discussion

Hi Robin! I'm in a conference right now but was hoping to give you a call today during break to get you up to speed. I've attached a copy of the briefing paper Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP) I'll try giving you call early this afternoon.
Thanks!
Sarah

From: Moran, Robin
Sent: Tuesday, June 18, 2019 11:05 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: FW: Biomass Briefing Discussion

Hi Sarah, Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP)

Thanks!
Robin

Robin Moran
Senior Policy Advisor
U.S. EPA, Office of Transportation and Air Quality
2000 Traverwood Dr.
Ann Arbor, MI 48105
(734) 214-4781 (phone)

From: Greenglass, Nora
Sent: Wednesday, June 12, 2019 7:04 AM

To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Svendsgaard, Dave <Svendsgaard.Dave@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>; Moran, Robin <moran.robin@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>; Steller, John <Steller.John@epa.gov>; Krallman, John <krallman.john@epa.gov>
Subject: Biomass Briefing Discussion

Ex. 5 Deliberative Process (DP)

Biomass Briefing Discussion
Scheduled: Wednesday, Jun 12, 2019 from 09:00 to 10:00
Location: RTP-OAQPS Ex. 6 Personal Privacy (PP) AQAD/Phone-Line/RTP-OAQPS-BLDG-C
Invitees: Vetter, Cheryl, Svendsgaard, Dave, Doster, Brian, Ohrel, Sara, Moran, Robin, Baker, Sarah, Steller, John, Krallman, John

Sent from my iPhone

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 11/18/2019 2:49:26 PM
To: Mitchell, Ken [Mitchell.Ken@epa.gov]
Subject: RE: Biogenic CO2 Rulemaking Waiver Forms

I just spoke with our regulatory coordinator and the forms can be signed by the workgroup member, however, since Ex. 5 Deliberative Process (DP) Please let me know if you have any additional questions. Thanks.
Respectfully,
Sarah

From: Mitchell, Ken <Mitchell.Ken@epa.gov>
Sent: Monday, November 18, 2019 9:19 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: FW: Biogenic CO2 Rulemaking Waiver Forms

Sarah....my staff may have already contacted you about this. Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP) but we need to know. Thanks. (I've been out of the office for 3 weeks and just seeing this, so sorry for the last minute ask).

Kenneth L. Mitchell, Ph.D. | Acting Director |
Air and Radiation Division
U.S. Environmental Protection Agency | 61 Forsyth Street, SW | Atlanta, GA 30303
Voice: 404-562-9065 | Fax: 404-562-9066 | Email: mitchell.ken@epa.gov

NOTICE: This communication may contain privileged or other confidential information. If you are not the intended recipient, or believe that you have received this communication in error, please do not print, copy, retransmit, disseminate, or otherwise use the information. Also, please indicate to the sender that you have received this communication in error, and delete the copy you received.

From: Worley, Gregg <Worley.Gregg@epa.gov>
Sent: Monday, November 18, 2019 7:26 AM
To: Fortin, Kelly <Fortin.Kelly@epa.gov>; Mitchell, Ken <Mitchell.Ken@epa.gov>
Cc: Benjamin, Lynorae <benjamin.lynorae@epa.gov>
Subject: RE: Biogenic CO2 Rulemaking Waiver Forms

Ex. 5 Deliberative Process (DP)

From: Fortin, Kelly <Fortin.Kelly@epa.gov>
Sent: Friday, November 15, 2019 5:45 PM
To: Mitchell, Ken <Mitchell.Ken@epa.gov>; Worley, Gregg <Worley.Gregg@epa.gov>
Cc: Benjamin, Lynorae <benjamin.lynorae@epa.gov>
Subject: FW: Biogenic CO2 Rulemaking Waiver Forms
Importance: High

Please see message below regarding Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP)

Kelly

From: Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>
Sent: Friday, November 15, 2019 11:00 AM
To: Fortin, Kelly <Fortin.Kelly@epa.gov>
Subject: FW: Biogenic CO2 Rulemaking Waiver Forms
Importance: High

Lori Shepherd
U.S. EPA Region 4
Air Permitting Section
(404)562-8435

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, November 14, 2019 12:43 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>; Toups, Brad <Toups.Brad@epa.gov>
Cc: Elman, Barry <Elman.Barry@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: FW: Biogenic CO2 Rulemaking Waiver Forms
Importance: High

We have a quick check in scheduled with Anne Idsal for Monday. I wanted to touch base to make sure there are no issues with your respective offices obtaining the Ex. 5 Deliberative Process (DP), **please let me know** so that I can bring them to Anne's attention. Also, as a reminder and since we are getting close to these dates I am including the proposed timeline for the rule so everyone is prepared. As always, please let me know if you have any questions or concerns.
Thank you.
Respectfully,
Sarah

Potential Rulemaking Timeline (Estimated) for Rule 1			
Milestone		Ex. 5 Deliberative Process (DP)	**biomass RM**
Ex. 5 Deliberative Process (DP)			Ex. 5 Deliberative Process (DP)

From: Baker, Sarah
Sent: Thursday, November 07, 2019 2:43 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>; Toups, Brad <Toups.Brad@epa.gov>
Cc: Elman, Barry <Elman.Barry@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Biogenic CO2 Rulemaking Waiver Forms
Importance: High

All-
As we discussed during our last workgroup call on October 30th, Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP) Feel free to let me know if you have any questions or concerns. Thanks.
Respectfully,
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 11/5/2019 8:38:29 PM
To: Mangino, Joseph [Mangino.Joseph@epa.gov]
Subject: RE: Biogenic CO2 Sources

Thanks Joe! I don't think we've taken a look at the RBLC so that is another avenue that we may try. Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)

From: Mangino, Joseph <Mangino.Joseph@epa.gov>
Sent: Tuesday, November 05, 2019 1:18 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biogenic CO2 Sources

Hey Sarah,

It sounds to me like your on the right track. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

-Joe

Joe Mangino
U.S. Environmental Protection Agency
OAQPS / Air Quality Assessment Division
Emission Inventory and Analysis Group
Research Triangle Park, NC
919-541-9778 (phone)

Note: Positions or views expressed here do not represent official EPA policy. Interagency deliberative and confidential.

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Tuesday, November 05, 2019 10:48 AM
To: Mangino, Joseph <Mangino.Joseph@epa.gov>
Subject: RE: Biogenic CO2 Sources

Hi Joe-

Ex. 5 Deliberative Process (DP)

information that you can think of then that's okay too. Thanks!
Sarah

From: Mangino, Joseph <Mangino.Joseph@epa.gov>
Sent: Monday, November 04, 2019 7:50 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biogenic CO2 Sources

Hi Sarah, Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

-Joe

Joe Mangino
U.S. Environmental Protection Agency
OAQPS / Air Quality Assessment Division
Emission Inventory and Analysis Group
Research Triangle Park, NC
919-541-9778 (phone)

Note: Positions or views expressed here do not represent official EPA policy. Interagency deliberative and confidential.

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Friday, November 01, 2019 2:19 PM
To: Mangino, Joseph <Mangino.Joseph@epa.gov>
Subject: Biogenic CO2 Sources

Hi Joe-
I'm currently the project lead for the Biogenic CO2 rulemaking that we are undertaking and I was hoping that you might be able to help out with some of the data

Ex. 5 Deliberati Ex. 5 Deliberative Process (DP) Any help you could provide would be greatly appreciated. Thanks!
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 11/1/2019 2:17:09 PM
To: Long, Pam [Long.Pam@epa.gov]
Subject: FW: Meeting Request for Anne Idsal Subject: Treatment of Biogenic CO2 emissions at stationary sources
Attachments: Idsal Meeting Request 10-30-2019.docx

Here is the meeting request that Lana forwarded.

From: Massey, Lana <massey.lana@epa.gov>
Sent: Wednesday, October 30, 2019 3:37 PM
To: McKinney, Voronina <mckinney.voronina@epa.gov>; Smith, Darcie <Smith.Darcie@epa.gov>
Cc: Baker, Sarah <baker.sarah@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Subject: Meeting Request for Anne Idsal Subject: Treatment of Biogenic CO2 emissions at stationary sources

Nina/Darcie,

See attached meeting request for Anne Idsal. Subject: Treatment of Biogenic CO2 emissions at stationary sources. Let me know if there are further questions.

Thanks, Lana

Lana Massey
Air Quality Policy Division
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
(919) 541-5366

Message

From: Long, Pam [Long.Pam@epa.gov]
Sent: 8/19/2019 2:58:20 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: RE: ADP Milestone Waiver Forms

The reg. agenda will show Dec. 2019 for the NPRM. This was the date that Mike K. and Clint wanted to show the public.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, August 19, 2019 10:00 AM
To: Long, Pam <Long.Pam@epa.gov>
Subject: RE: ADP Milestone Waiver Forms

Thanks! I'll let Sara know. I have another question about timing.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Long, Pam <Long.Pam@epa.gov>
Sent: Monday, August 19, 2019 9:57 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: ADP Milestone Waiver Forms

See below.

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, August 19, 2019 9:28 AM
To: Long, Pam <Long.Pam@epa.gov>
Subject: RE: ADP Milestone Waiver Forms

Pam-

We had a workgroup call for the Biogenic CO2 rulemaking and have some changes for the workgroup members. Can you make the following changes?

1. Change the workgroup chair from Jessica to myself. Done
2. Update Sara Ohrel in OAR to a primary member. I cannot change Sara to primary since we are the lead office. Since we are OAR, we are considered the primary and will not give me the option to name Sara as primary only secondary.
3. Remove the following members: Done
    a. Jefferson Cole – OAR
    b. John Moskal – R01
    c. Patrick Bird – R01

d. Heather Ceron – R04

Those should be all the changes for now. Thank you!
Sarah

From: Long, Pam <Long.Pam@epa.gov>
Sent: Wednesday, July 10, 2019 10:53 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Subject: ADP Milestone Waiver Forms

Ex. 5 Deliberative Process (DP)

Always cc me when send the first form out so I know what is happening.

Hope this helps!

Message

From: Ward, Hillary [Ward.Hillary@epa.gov]
Sent: 7/16/2019 3:25:12 PM
To: Massey, Lana [massey.lana@epa.gov]; McKinney, Voronina [mckinney.voronina@epa.gov]
CC: Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]; Baker, Sarah [baker.sarah@epa.gov]
Subject: RE: Materials for the Biogenic CO2 Briefing July 18

Received. Thanks.

Hillary Ward
USEPA, Office of Air Quality Planning and Standards
(919)541-3154

From: Massey, Lana
Sent: Tuesday, July 16, 2019 11:25 AM
To: Ward, Hillary <Ward.Hillary@epa.gov>; McKinney, Voronina <mckinney.voronina@epa.gov>
Cc: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Subject: Materials for the Biogenic CO2 Briefing July 18

Hillary.
Please see attached meeting materials for the Biogenic CO2 briefing scheduled for July 18.

Thank you, Lana

Lana Massey
Air Quality Policy Division
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
(919) 541-5366

Message

From: Massey, Lana [massey.lana@epa.gov]
Sent: 7/16/2019 3:24:34 PM
To: Ward, Hillary [Ward.Hillary@epa.gov]; McKinney, Voronina [mckinney.voronina@epa.gov]
CC: Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]; Baker, Sarah [baker.sarah@epa.gov]
Subject: Materials for the Biogenic CO2 Briefing July 18
Attachments: Idsal Biogenic CO2 Briefing 7-18-19.docx

Hillary.
Please see attached meeting materials for the Biogenic CO2 briefing scheduled for July 18.

Thank you, Lana

Lana Massey
Air Quality Policy Division
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
(919) 541-5366

Message

From: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Sent: 7/9/2019 6:02:52 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: RE: Biomass Bullet Points

This looks fine Ex. 5 Deliberative Process (DP) I think.

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Baker, Sarah
Sent: Tuesday, July 09, 2019 11:45 AM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Biomass Bullet Points
Importance: High

Cheryl-

Ex. 5 Deliberative Process (DP) NSR updates overview for Anne Idsal Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

- Ex. 5 Deliberative Process (DP)
- In April 2018, EPA issued a policy statement stating that EPA's policy in forthcoming regulatory actions will be to treat biogenic CO2 emissions resulting from the combustion of biomass from managed forests at stationary sources for energy production as carbon neutral.
- Ex. 5 Deliberative Process (DP)

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 6/18/2019 3:21:13 PM
To: Moran, Robin [moran.robin@epa.gov]
Subject: RE: Biomass Briefing Discussion
Attachments: Wehrum June Briefing Document v3.docx

Hi Robin! I'm in a conference right now but was hoping to give you a call today during break to get you up to speed. I've

Ex. 5 Deliberative Process (DP)

Thanks!
Sarah

From: Moran, Robin
Sent: Tuesday, June 18, 2019 11:05 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: FW: Biomass Briefing Discussion

Hi Sarah, I'm back in office and was going to get up to speed on the Biomass briefing….can you send me the Sharepoint link to the latest version?

Thanks!
Robin

Robin Moran
Senior Policy Advisor
U.S. EPA, Office of Transportation and Air Quality
2000 Traverwood Dr.
Ann Arbor, MI 48105
(734) 214-4781 (phone)

From: Greenglass, Nora
Sent: Wednesday, June 12, 2019 7:04 AM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Svendsgaard, Dave <Svendsgaard.Dave@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>; Moran, Robin <moran.robin@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>; Steller, John <Steller.John@epa.gov>; Krallman, John <krallman.john@epa.gov>
Subject: Biomass Briefing Discussion

Ex. 5 Deliberative Process (DP)

Biomass Briefing Discussion
Scheduled: Wednesday, Jun 12, 2019 from 09:00 to 10:00
Location: RTP-OAQPS-919-541-4154-AQAD/Phone-Line/RTP-OAQPS-BLDG-C
Invitees: Vetter, Cheryl, Svendsgaard, Dave, Doster, Brian, Ohrel, Sara, Moran, Robin, Baker, Sarah, Steller, John, Krallman, John

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 2/3/2020 1:15:51 PM
To: Long, Pam [Long.Pam@epa.gov]
CC: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: Ex. 5 Deliberative Process (DP) SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Attachments: Ex. 5 Deliberative Process (DP)

Pam-
I apologize as I didn't realize that you weren't copied on the email that I sent back to Amber which I have attached.
Ex. 5 Deliberative Process (DP) Thanks.
Sarah

From: Long, Pam <Long.Pam@epa.gov>
Sent: Monday, February 03, 2020 8:11 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Santiago, Juan <Santiago.Juan@epa.gov>
Subject: Ex. 5 Deliberative Process (DP) SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

See email from Stephanie. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Iglesias, Amber <Iglesias.Amber@epa.gov>
Sent: Wednesday, January 29, 2020 11:56 AM
To: Long, Pam <Long.Pam@epa.gov>
Cc: Chang, Alice <Chang.Alice@epa.gov>; Culligan, Kevin <Culligan.Kevin@epa.gov>; Noonan, Jenny <Noonan.Jenny@epa.gov>
Subject: FW: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

Pam,

Please see the note below from Stephanie. Can you please answer her questions? Thanks!

From: Brown, Stephanie N. <Brown.StephanieN@epa.gov>
Sent: Wednesday, January 29, 2020 11:47 AM
To: Chang, Alice <Chang.Alice@epa.gov>; Iglesias, Amber <Iglesias.Amber@epa.gov>
Subject: FW: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

Amber/Alice,

Ex. 5 Deliberative Process (DP)

Please ensure to follow all template language accordingly.

Thanks,
Stephanie

From: Mcquilkin, Wendy <Mcquilkin.Wendy@epa.gov>
Sent: Tuesday, January 28, 2020 4:54 PM
To: Brown, Stephanie N. <Brown.StephanieN@epa.gov>
Cc: OAQPSREGPROCESSING <OAQPSREGPROCESSING@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Dominguez, Alexander <dominguez.alexander@epa.gov>
Subject: FW: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

Ex. 5 Deliberative Process (DP)

Contact:	OAQPS: Jenny Noonan: 919-541-0193
Mgmt. Level Reviewer:	Kevin Culligan: 202-564-0611
OAPPS Contact:	

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 2/4/2020 8:59:27 PM
To: Long, Pam [Long.Pam@epa.gov]
CC: Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Kornylak, Vera S. [Kornylak.Vera@epa.gov]
Subject: RE: Biogenic CO2
Attachments: REDLINE OGC EDITS - EO12866_Biogenic CO2_Proposal_2060-AU03_20200117 .docx; EO12866_Biogenic CO2_Proposal_2060-AU03_20200117 .docx

Importance: High

Pam –

Ex. 5 AC/DP

Sarah

From: Long, Pam <Long.Pam@epa.gov>
Sent: Tuesday, February 04, 2020 8:30 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: RE: Biogenic CO2

Ex. 5 Deliberative Process (DP)

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, February 03, 2020 4:19 PM
To: Long, Pam <Long.Pam@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Biogenic CO2

Pam-

Ex. 5 Deliberative Process (DP)

Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 11/21/2019 12:19:25 PM
To: Krallman, John [krallman.john@epa.gov]
Subject: Biomass Rule

Importance: High

Hi John-

Ex. 5 Deliberative Process (DP)

Please feel free to add to either of these documents. Also, if there is anything else that you need to make this process easier, just let me know. Thanks!
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 1/14/2020 5:44:15 PM
To: Kornylak, Vera S. [Kornylak.Vera@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Svendsgaard, Dave [Svendsgaard.Dave@epa.gov]; Doster, Brian [Doster.Brian@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Krallman, John [krallman.john@epa.gov]; Ohrel, Sara [Ohrel.Sara@epa.gov]; Steller, John [Steller.John@epa.gov]; Sorrels, Larry [Sorrels.Larry@epa.gov]; Petesch, Theresa (Tess) [petesch.theresa@epa.gov]; Moran, Robin [moran.robin@epa.gov]; Toups, Brad [Toups.Brad@epa.gov]; Johnson, Terry [Johnson.Terry@epa.gov]; Shepherd, Lorinda [Shepherd.Lorinda@epa.gov]; Elman, Barry [Elman.Barry@epa.gov]; Cortelyou-Lee, Jan [Cortelyou-Lee.Jan@epa.gov]; Schrock, Bill [Schrock.Bill@epa.gov]
Subject: Baker, Sarah shared "1-14-20 Proposed Biogenic CO2 Rulemaking " with you.

All-

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP) Please add any additional comments or edits that you have to this version and please let me know if you have any questions. Thanks.
Sarah

This link only works for the direct recipients of this message.

1-14-20 Proposed Biogenic CO2 Rulemaking

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Microsoft Corporation, One Microsoft Way, Redmond, WA 98052

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 3/1/2019 5:39:17 PM
To: Kornylak, Vera S. [Kornylak.Vera@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]
CC: Spangler, Matthew [Spangler.Matthew@epa.gov]
Subject: RE: Biogenic CO2 Draft Administrator Document
Attachments: Draft Biomas Adminr Update 3 1 19.docx

Ex. 5 Deliberative Process (DP)

Sarah

From: Kornylak, Vera S.
Sent: Friday, March 01, 2019 11:14 AM
To: Baker, Sarah <baker.sarah@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Cc: Spangler, Matthew <Spangler.Matthew@epa.gov>
Subject: RE: Biogenic CO2 Draft Administrator Document

Ex. 5 Deliberative Process (DP)

Vera

Vera Kornylak || Senior Policy Advisor
Air Quality Policy Division || OAQPS
919-541-4067 || kornylak.vera@epa.gov

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From: Baker, Sarah
Sent: Wednesday, February 27, 2019 10:06 AM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Cc: Spangler, Matthew <Spangler.Matthew@epa.gov>
Subject: Biogenic CO2 Draft Administrator Document

Attached is a draft briefing paper to help start our discussion of what information we want to convey to the Administrator. **Ex. 5 Deliberative Process (DP)**

Ex. 5 Deliberative Process (DP)

Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group

U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 7/12/2019 12:07:05 PM
To: Kornylak, Vera S. [Kornylak.Vera@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: RE: Biogenic meeting request for 7/24
Attachments: Idsal Meeting Request.docx

Vera-
Here is a meeting request for your review. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thanks.
Sarah

From: Kornylak, Vera S.
Sent: Friday, July 12, 2019 7:56 AM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Subject: Biogenic meeting request for 7/24

Ex. 5 Deliberative Process (DP) please send a meeting request for Anne Idsal for the following:

- Biogenic CO2 – similar to the 6/24 meeting (Treatment of Biogenic CO2 emissions at stationary sources). The Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thanks,
Vera

Vera Kornylak || Acting Associate Director
Air Quality Policy Division || OAQPS
919-541-4067 || kornylak.vera@epa.gov

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Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 7/12/2019 3:38:48 PM
To: Kornylak, Vera S. [Kornylak.Vera@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]
CC: Mathias, Scott [Mathias.Scott@epa.gov]
Subject: RE: Update on Anne briefing

Vera-
Here is a paragraph which I believe reflects the latest direction that we have been given.

Ex. 5 Deliberative Process (DP)

From: Kornylak, Vera S.
Sent: Friday, July 12, 2019 11:34 AM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Cc: Mathias, Scott <Mathias.Scott@epa.gov>
Subject: RE: Update on Anne briefing

Ex. 5 Deliberative Process (DP)

Thanks,
Vera

PS. Hope all went well yesterday

Vera Kornylak || Acting Associate Director
Air Quality Policy Division || OAQPS
919-541-4067 || kornylak.vera@epa.gov

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From: Vetter, Cheryl
Sent: Friday, July 12, 2019 11:32 AM
To: Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Cc: Mathias, Scott <Mathias.Scott@epa.gov>
Subject: RE: Update on Anne briefing

Hey Vera,

Ex. 5 Deliberative Process (DP)

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Kornylak, Vera S.
Sent: Friday, July 12, 2019 9:10 AM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Subject: Update on Anne briefing

Hi, Ex. 5 Deliberative Process (DP) Anne wants a briefing Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Vera

Vera Kornylak || Acting Associate Director
Air Quality Policy Division || OAQPS
919-541-4067 || kornylak.vera@epa.gov

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Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 7/12/2019 5:24:54 PM
To: Kornylak, Vera S. [Kornylak.Vera@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: RE: Update on Anne briefing

That looks good to me. Regarding the docket, does that mean you are okay with the form I sent you yesterday and I should send that off to Pam to get started? Thanks!
Sarah

From: Kornylak, Vera S.
Sent: Friday, July 12, 2019 11:54 AM
To: Baker, Sarah <baker.sarah@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: RE: Update on Anne briefing

Hi Sarah and Cheryl, Ex. 5 Deliberative Process (DP) briefing for Anne and what else Ex. 5 Deliberative Process (DP)

Vera

Vera Kornylak || Acting Associate Director
Air Quality Policy Division || OAQPS
919-541-4067 || kornylak.vera@epa.gov

This message, including attachments, contains information that may be deliberative and confidential, and may be protected by attorney work-product, attorney-client or other applicable privileges. Further, this message, including attachments, may be exempt from disclosure by the U.S. EPA under applicable law. This message, including attachments, is intended to be conveyed only to the named recipient(s). If you received this message in error, or if you are not the intended recipient, please notify the sender listed above and delete the message from your system immediately. The unauthorized use, dissemination, distribution or reproduction of this message, including attachments, by unintended recipients is prohibited and may be unlawful.

From: Baker, Sarah
Sent: Friday, July 12, 2019 11:39 AM
To: Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Cc: Mathias, Scott <Mathias.Scott@epa.gov>
Subject: RE: Update on Anne briefing

Vera-
Here is a paragraph which I believe reflects the latest direction that we have been given.

Ex. 5 Deliberative Process (DP)

From: Kornylak, Vera S.
Sent: Friday, July 12, 2019 11:34 AM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Cc: Mathias, Scott <Mathias.Scott@epa.gov>
Subject: RE: Update on Anne briefing

Ex. 5 Deliberative Process (DP)

Thanks,
Vera

PS. Hope all went well yesterday

Vera Kornylak || Acting Associate Director
Air Quality Policy Division || OAQPS
919-541-4067 || kornylak.vera@epa.gov

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From: Vetter, Cheryl
Sent: Friday, July 12, 2019 11:32 AM
To: Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Cc: Mathias, Scott <Mathias.Scott@epa.gov>
Subject: RE: Update on Anne briefing

Hey Vera,

Ex. 5 Deliberative Process (DP)

Cheryl Vetter
U.S. Environmental Protection Agency
OAQPS/AQPD/OPG (C504-03)
Research Triangle Park, NC 27711
Phone (919) 541-4391 Fax (919) 541-5509
Note: Positions or views expressed here do not represent official EPA policy.

From: Kornylak, Vera S.
Sent: Friday, July 12, 2019 9:10 AM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>
Subject: Update on Anne briefing

Hi, Ex. 5 Deliberative Process (DP) Anne wants a briefing Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Vera

Vera Kornylak || Acting Associate Director
Air Quality Policy Division || OAQPS
919-541-4067 || kornylak.vera@epa.gov

This message, including attachments, contains information that may be deliberative and confidential, and may be protected by attorney work-product, attorney-client or other applicable privileges. Further, this message, including attachments, may be exempt from disclosure by the U.S. EPA under applicable law. This message, including attachments, is intended to be conveyed only to the named recipient(s). If you received this message in error, or if you are not the intended recipient, please notify the sender listed above and delete the message from your system immediately. The unauthorized use, dissemination, distribution or reproduction of this message, including attachments, by unintended recipients is prohibited and may be unlawful.

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 12/13/2019 3:43:17 AM
To: Kornylak, Vera S. [Kornylak.Vera@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: Baker, Sarah shared "Draft Biogenic CO2 Rulemaking 12-13-19" with you.

Vera-
Here is a clean version of the rule for your review. **Ex. 5 Deliberative Process (DP)**

Ex. 5 Deliberative Process (DP)

Thanks!
Sarah

This link only works for the direct recipients of this message.

Draft Biogenic CO2 Rulemaking 12-13-19

Open

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Microsoft Corporation, One Microsoft Way, Redmond, WA 98052

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 12/19/2019 6:47:40 PM
To: Kornylak, Vera S. [Kornylak.Vera@epa.gov]
CC: Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: Biogenic CO2 Coalition Response
Attachments: Response to Biogenic CO2 Coalition letter dated 12-13-19.docx

Vera-
Attached is the controlled correspondence for the Biogenic CO2 Coalition that we discussed. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Sarah

From: Baker, Sarah
Sent: Tuesday, December 17, 2019 2:24 PM
To: Vetter, Cheryl <Vetter.Cheryl@epa.gov>
Subject: Revised Biogenic CO2 Coalition Response

Here is the response with Scott's contact information.

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Appointment

From: Baker, Sarah [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=Baker, Sarah]
Sent: 10/30/2019 5:19:14 PM
To: Kornylak, Vera S. [Kornylak.Vera@epa.gov]

Subject: FW: Biogenic CO2 Source Discussion
Location: RTP-OAQPS-Ex. 6 Personal Privacy (PP) -AQAD/Phone-Line/RTP-OAQPS-BLDG-C

Start: 11/1/2019 6:30:00 PM
End: 11/1/2019 7:30:00 PM
Show Time As: Tentative

Vera-
I didn't know if you would like to sit in on this discussion. We can discuss more once you are back in the office but Barry would like Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP) Ex. 5 Deliberative Process (DP)
Thanks.
Sarah

-----Original Appointment-----
From: Baker, Sarah
Sent: Wednesday, October 30, 2019 9:15 AM
To: Baker, Sarah; Elman, Barry; Ohrel, Sara; Steller, John; Greenglass, Nora; Wheeler, Carrie
Cc: Doster, Brian; Krallman, John
Subject: Biogenic CO2 Source Discussion
When: Friday, November 01, 2019 2:30 PM-3:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: RTP-OAQPS-Ex. 6 Personal Privacy (PP) -AQAD/Phone-Line/RTP-OAQPS-BLDG-C

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 9/16/2019 5:09:26 PM
To: Koerber, Mike [Koerber.Mike@epa.gov]
CC: Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Mathias, Scott [Mathias.Scott@epa.gov]; Kornylak, Vera S. [Kornylak.Vera@epa.gov]; Culligan, Kevin [Culligan.Kevin@epa.gov]; Smith, Darcie [Smith.Darcie@epa.gov]; Long, Pam [Long.Pam@epa.gov]; Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]; Massey, Lana [massey.lana@epa.gov]
Subject: RE: Biomass Briefing Document for 9-18-19 Briefing
Attachments: Idsal Briefing 9-18-19 .docx

Mike-
Attached is the final draft ready for Peter's review. Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)

Sarah

From: Koerber, Mike <Koerber.Mike@epa.gov>
Sent: Monday, September 16, 2019 11:35 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Mathias, Scott <Mathias.Scott@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Culligan, Kevin <Culligan.Kevin@epa.gov>; Smith, Darcie <Smith.Darcie@epa.gov>
Subject: RE: Biomass Briefing Document for 9-18-19 Briefing

Here are the edits. Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)

Once you have an updated version, please resend, so we can run it by Peter. Thanks.

Mike

From: Koerber, Mike
Sent: Monday, September 16, 2019 11:06 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Mathias, Scott <Mathias.Scott@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Culligan, Kevin <Culligan.Kevin@epa.gov>
Subject: RE: Biomass Briefing Document for 9-18-19 Briefing

Thanks, Sarah. Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)

Mike

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, September 16, 2019 9:39 AM
To: Koerber, Mike <Koerber.Mike@epa.gov>
Cc: Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Mathias, Scott <Mathias.Scott@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Culligan, Kevin <Culligan.Kevin@epa.gov>
Subject: Biomass Briefing Document for 9-18-19 Briefing

Mike-
Attached is the briefing document for Wednesday's biomass briefing reflecting the direction we discussed last week. Please let me know if you'd like any edits to be made. Thank you.

Respectfully,
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 11/15/2019 4:20:57 PM
To: Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]; Santiago, Juan [Santiago.Juan@epa.gov]
CC: Long, Pam [Long.Pam@epa.gov]; Kornylak, Vera S. [Kornylak.Vera@epa.gov]
Subject: RE: Materials for the Idsal Biogenic meeting on Monday 11/18

Ex. 5 Deliberative Process (DP)

a bit. If it's too late to include any just let me know and I will inform them. Thanks!
Sarah

From: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Sent: Friday, November 15, 2019 11:16 AM
To: Baker, Sarah <baker.sarah@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Santiago, Juan <Santiago.Juan@epa.gov>
Cc: Long, Pam <Long.Pam@epa.gov>
Subject: FW: Materials for the Idsal Biogenic meeting on Monday 11/18
Importance: High

Can someone answer this question. 4th floor is asking for a reply. Thanks.

Thank you,

Yvonne W. Johnson
Special Assistant to the Director
Air Quality Policy Division
Office of Air Quality Planning & Standards
U.S. Environmental Protection Agency
919-541-3921
johnson.yvonnew@epa.gov

From: Smith, Darcie <Smith.Darcie@epa.gov>
Sent: Thursday, November 14, 2019 4:48 PM
To: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>; Koerber, Mike <Koerber.Mike@epa.gov>
Cc: Santiago, Juan <Santiago.Juan@epa.gov>; Long, Pam <Long.Pam@epa.gov>
Subject: RE: Materials for the Idsal Biogenic meeting on Monday 11/18

Ex. 5 Deliberative Process (DP)

Darcie Smith
U.S. EPA, OAQPS
919.541.2076

smith.darcie@epa.gov

From: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Sent: Thursday, November 14, 2019 3:13 PM
To: Koerber, Mike <Koerber.Mike@epa.gov>; Smith, Darcie <Smith.Darcie@epa.gov>
Cc: Santiago, Juan <Santiago.Juan@epa.gov>; Long, Pam <Long.Pam@epa.gov>
Subject: Materials for the Idsal Biogenic meeting on Monday 11/18

Attached are materials for the Anne Idsal meeting scheduled for Monday titled **Treatment of biogenic CO2 emissions at stationary sources**. Please let me know if you have any questions.

Thank you,

Yvonne W. Johnson
Special Assistant to the Director
Air Quality Policy Division
Office of Air Quality Planning & Standards
U.S. Environmental Protection Agency
919-541-3921
johnson.yvonnew@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 11/15/2019 5:05:57 PM
To: Johnson, Yvonne W [Johnson.Yvonnew@epa.gov]; Koerber, Mike [Koerber.Mike@epa.gov]
CC: Smith, Darcie [Smith.Darcie@epa.gov]; Long, Pam [Long.Pam@epa.gov]; Kornylak, Vera S. [Kornylak.Vera@epa.gov]
Subject: RE: Response to Materials for the Idsal Biogenic meeting on Monday 11/18
Attachments: Final Idsal Briefing 11-18-19 (OAP Edits).docx

Importance: High

I've attached a copy of the briefing paper Ex. 5 Deliberative Process (DP) document. Thank you.
Sarah

From: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Sent: Friday, November 15, 2019 11:24 AM
To: Koerber, Mike <Koerber.Mike@epa.gov>
Cc: Smith, Darcie <Smith.Darcie@epa.gov>; Long, Pam <Long.Pam@epa.gov>; Baker, Sarah <baker.sarah@epa.gov>; Kornylak, Vera S. <Kornylak.Vera@epa.gov>
Subject: Response to Materials for the Idsal Biogenic meeting on Monday 11/18

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP) Thanks!
Sarah

Thank you,

Yvonne W. Johnson
Special Assistant to the Director
Air Quality Policy Division
Office of Air Quality Planning & Standards
U.S. Environmental Protection Agency
919-541-3921
johnson.yvonnew@epa.gov

From: Smith, Darcie <Smith.Darcie@epa.gov>
Sent: Thursday, November 14, 2019 4:48 PM
To: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>; Koerber, Mike <Koerber.Mike@epa.gov>
Cc: Santiago, Juan <Santiago.Juan@epa.gov>; Long, Pam <Long.Pam@epa.gov>
Subject: RE: Materials for the Idsal Biogenic meeting on Monday 11/18

Ex. 5 Deliberative Process (DP)

Darcie Smith

U.S. EPA, OAQPS
919.541.2076
smith.darcie@epa.gov

From: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>
Sent: Thursday, November 14, 2019 3:13 PM
To: Koerber, Mike <Koerber.Mike@epa.gov>; Smith, Darcie <Smith.Darcie@epa.gov>
Cc: Santiago, Juan <Santiago.Juan@epa.gov>; Long, Pam <Long.Pam@epa.gov>
Subject: Materials for the Idsal Biogenic meeting on Monday 11/18

Attached are materials for the Anne Idsal meeting scheduled for Monday titled **Treatment of biogenic CO2 emissions at stationary sources**. Please let me know if you have any questions.

Thank you,

Yvonne W. Johnson
Special Assistant to the Director
Air Quality Policy Division
Office of Air Quality Planning & Standards
U.S. Environmental Protection Agency
919-541-3921
johnson.yvonnew@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 1/29/2020 8:18:36 PM
To: Iglesias, Amber [Iglesias.Amber@epa.gov]
CC: Culligan, Kevin [Culligan.Kevin@epa.gov]; Noonan, Jenny [Noonan.Jenny@epa.gov]; Chang, Alice [Chang.Alice@epa.gov]; Vetter, Cheryl [Vetter.Cheryl@epa.gov]
Subject: RE: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Attachments: Ex. 5 Deliberative Process (DP)

Amber-
Thank you for sending this along. Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)
further. Thanks!
Sarah

From: Iglesias, Amber <Iglesias.Amber@epa.gov>
Sent: Wednesday, January 29, 2020 12:52 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Culligan, Kevin <Culligan.Kevin@epa.gov>; Noonan, Jenny <Noonan.Jenny@epa.gov>; Chang, Alice <Chang.Alice@epa.gov>
Subject: FW: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

Ex. 5 Deliberative Process (DP)

From: Iglesias, Amber
Sent: Wednesday, January 29, 2020 11:56 AM
To: Pam Long (Long.Pam@epa.gov) <Long.Pam@epa.gov>
Cc: Chang, Alice <Chang.Alice@epa.gov>; Culligan, Kevin <Culligan.Kevin@epa.gov>; Noonan, Jenny <Noonan.Jenny@epa.gov>
Subject: FW: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

Pam,

Please see the note below from Stephanie. Can you please answer her questions? Thanks!

From: Brown, Stephanie N. <Brown.StephanieN@epa.gov>
Sent: Wednesday, January 29, 2020 11:47 AM
To: Chang, Alice <Chang.Alice@epa.gov>; Iglesias, Amber <Iglesias.Amber@epa.gov>
Subject: FW: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

Amber/Alice,

Ex. 5 Deliberative Process (DP)

Please ensure to follow all template language accordingly.

Thanks,
Stephanie

From: Mcquilkin, Wendy <Mcquilkin.Wendy@epa.gov>
Sent: Tuesday, January 28, 2020 4:54 PM
To: Brown, Stephanie N. <Brown.StephanieN@epa.gov>
Cc: OAQPSREGPROCESSING <OAQPSREGPROCESSING@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Dominguez, Alexander <dominguez.alexander@epa.gov>
Subject: FW: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

Ex. 5 Deliberative Process (DP)

Contact:	OAQPS: Jenny Noonan: 919-541-0193
Mgmt. Level Reviewer:	Kevin Culligan: 202-564-0611
OAPPS Contact:	

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 1/30/2020 6:47:40 PM
To: Iglesias, Amber [Iglesias.Amber@epa.gov]
Subject: RE: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)

Hi Amber-

Ex. 5 Deliberative Process (DP)

any more questions, please just let me know. Thanks!
Sarah

From: Iglesias, Amber <Iglesias.Amber@epa.gov>
Sent: Wednesday, January 29, 2020 12:52 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Culligan, Kevin <Culligan.Kevin@epa.gov>; Noonan, Jenny <Noonan.Jenny@epa.gov>; Chang, Alice <Chang.Alice@epa.gov>
Subject: FW: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

Ex. 5 Deliberative Process (DP)

From: Iglesias, Amber
Sent: Wednesday, January 29, 2020 11:56 AM
To: Pam Long (Long.Pam@epa.gov) <Long.Pam@epa.gov>
Cc: Chang, Alice <Chang.Alice@epa.gov>; Culligan, Kevin <Culligan.Kevin@epa.gov>; Noonan, Jenny <Noonan.Jenny@epa.gov>
Subject: FW: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

Pam,

Please see the note below from Stephanie. Can you please answer her questions? Thanks!

From: Brown, Stephanie N. <Brown.StephanieN@epa.gov>
Sent: Wednesday, January 29, 2020 11:47 AM
To: Chang, Alice <Chang.Alice@epa.gov>; Iglesias, Amber <Iglesias.Amber@epa.gov>
Subject: FW: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

Amber/Alice,

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Please ensure to follow all template language accordingly.

Thanks,
Stephanie

From: Mcquilkin, Wendy <Mcquilkin.Wendy@epa.gov>
Sent: Tuesday, January 28, 2020 4:54 PM
To: Brown, Stephanie N. <Brown.StephanieN@epa.gov>
Cc: OAQPSREGPROCESSING <OAQPSREGPROCESSING@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Dominguez, Alexander <dominguez.alexander@epa.gov>
Subject: FW: SAN# 6715 - Proposed Rule: Treatment of Biogenic CO2 Emissions under the Clean Air Act Permitting Programs (Biomass OMB Submittal)
Importance: High

Ex. 5 Deliberative Process (DP)

Contact:	OAQPS: Jenny Noonan: 919-541-0193
Mgmt. Level Reviewer:	Kevin Culligan: 202-564-0611
OAPPS Contact:	

Message

From: Spangler, Matthew [Spangler.Matthew@epa.gov]
Sent: 1/30/2019 8:14:54 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: biomass statement

https://www.eenews.net/assets/2019/01/29/document_pm_02.pdf#page=126

Senator Shelby:
159. The Consolidated Appropriations Act of 2018 included language directing the Secretaries of Energy and Agriculture and the Administrator of the Environmental Protection Agency to establish clear and simple policies that reflect the carbon-neutrality of forest bioenergy and recognize biomass as a renewable energy source provided the use of forest biomass does not cause the conversion of forests to non-forest use. I appreciate the EPA issuing guidance in April 2018 stating that future EPA regulatory actions for energy production from stationary sources will recognize biomass from managed forests as carbon neutral. I also appreciate the tri-agency statement in October 2018 affirming these principles.

Mr. Wheeler, would please provide an update on the EPA's progress towards implementing a regulation on carbon neutrality of biomass?
EPA staff have made an in-depth assessment of the various options available for moving forward, including the potential for issuing guidance under the Prevention of Significant Deterioration (PSD) permitting program that would, on a site-specific basis where appropriate, recognize the use of biomass feedstocks as Best Available Control Technology (BACT). Longer-term, EPA is assessing the value of undertaking a rulemaking in this area. If undertaken, EPA estimates that a proposed rule could be developed by the end of this year.

Matt Spangler
U.S. EPA/ OAQPS/ AQPD/ OPG
(919) 541-0327 | spangler.matthew@epa.gov

Message

From: Ohrel, Sara [Ohrel.Sara@epa.gov]
Sent: 3/4/2019 8:34:16 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: FW: Biogenic CO2 Emitting Sources - Permit Data Information
Attachments: ghgp_data_2016_8_5_17 w btoups edits Rev 2.xlsx

From: Montanez, Jessica
Sent: Wednesday, October 24, 2018 11:03 AM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: Biogenic CO2 Emitting Sources - Permit Data Information

I think the latest file is this one…It is in the regional data rqst folder

---

From: Ohrel, Sara
Sent: Wednesday, October 24, 2018 11:01 AM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: RE: Biogenic CO2 Emitting Sources - Permit Data Information

Thanks again Jessica.
As for the correct file, is it the one titled "ghgp_data_2016_8_5_17 w btoups edits"?

From: Montanez, Jessica
Sent: Tuesday, October 23, 2018 4:06 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: Biogenic CO2 Emitting Sources - Permit Data Information

I can be free in a few minutes. I need to send a couple of emails before then. Does that work?

From: Ohrel, Sara
Sent: Tuesday, October 23, 2018 4:04 PM
To: Montanez, Jessica <Montanez.Jessica@epa.gov>
Subject: RE: Biogenic CO2 Emitting Sources - Permit Data Information

Or are you free now?

From: Montanez, Jessica
Sent: Tuesday, October 23, 2018 3:59 PM
To: Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: Biogenic CO2 Emitting Sources - Permit Data Information

Hi Sara,

Ex. 5 Deliberative Process (DP)

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 9/17/2019 2:39:57 PM
To: Greenglass, Nora [Greenglass.Nora@epa.gov]
Subject: RE: Biomass Briefing Draft
Attachments: Idsal Briefing 9-18-19 .docx

Ex. 5 Deliberative Process (DP)

From: Greenglass, Nora <Greenglass.Nora@epa.gov>
Sent: Tuesday, September 17, 2019 10:27 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biomass Briefing Draft

Ex. 5 Deliberative Process (DP)

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, September 16, 2019 1:20 PM
To: Greenglass, Nora <Greenglass.Nora@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: Biomass Briefing Draft

Sorry that I spoiled the surprise ☺

From: Greenglass, Nora <Greenglass.Nora@epa.gov>
Sent: Monday, September 16, 2019 1:19 PM
To: Baker, Sarah <baker.sarah@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: Biomass Briefing Draft

Huh. That's news to me Ex. 5 Deliberative Process (DP) Thanks!

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, September 16, 2019 12:11 PM
To: Greenglass, Nora <Greenglass.Nora@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: Biomass Briefing Draft

Ex. 5 Deliberative Process (DP)

From: Greenglass, Nora <Greenglass.Nora@epa.gov>
Sent: Monday, September 16, 2019 12:04 PM
To: Baker, Sarah <baker.sarah@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: Biomass Briefing Draft

Ex. 5 AC/DP

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, September 16, 2019 9:13 AM
To: Greenglass, Nora <Greenglass.Nora@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: Biomass Briefing Draft

Ex. 5 Deliberative Process (DP)

Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 9/17/2019 3:12:09 PM
To: Greenglass, Nora [Greenglass.Nora@epa.gov]
Subject: RE: Biomass Briefing Draft

Ex. 5 Deliberative Process (DP)

From: Greenglass, Nora <Greenglass.Nora@epa.gov>
Sent: Tuesday, September 17, 2019 11:09 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biomass Briefing Draft

Ex. 5 Deliberative Process (DP)

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Tuesday, September 17, 2019 10:40 AM
To: Greenglass, Nora <Greenglass.Nora@epa.gov>
Subject: RE: Biomass Briefing Draft

Ex. 5 Deliberative Process (DP)

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Subject: RE: Biomass Briefing Draft

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Subject: RE: Biomass Briefing Draft

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Sent: Monday, September 16, 2019 12:11 PM
To: Greenglass, Nora <Greenglass.Nora@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: Biomass Briefing Draft

Ex. 5 Deliberative Process (DP)

From: Greenglass, Nora <Greenglass.Nora@epa.gov>
Sent: Monday, September 16, 2019 12:04 PM
To: Baker, Sarah <baker.sarah@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: RE: Biomass Briefing Draft

Ex. 5 AC/DP

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Monday, September 16, 2019 9:13 AM
To: Greenglass, Nora <Greenglass.Nora@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>
Subject: Biomass Briefing Draft

Ex. 5 Deliberative Process (DP)

Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 2/4/2020 8:28:33 PM
To: Greenglass, Nora [Greenglass.Nora@epa.gov]
Subject: RE: Ex. 5 Deliberative Process (DP)

Thanks! Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)

From: Greenglass, Nora <Greenglass.Nora@epa.gov>
Sent: Tuesday, February 04, 2020 3:02 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: Fwd: Ex. 5 Deliberative Process (DP)

FYI

Sent from my iPhone

Begin forwarded message:

> **From:** "Harlow, David" <harlow.david@epa.gov>
> **Date:** February 4, 2020 at 12:57:04 MST
> **To:** "Doster, Brian" <Doster.Brian@epa.gov>
> **Cc:** "Leopold, Matt (OGC)" <Leopold.Matt@epa.gov>, "Fotouhi, David" <Fotouhi.David@epa.gov>, "Dominguez, Alexander" <dominguez.alexander@epa.gov>, "Srinivasan, Gautam" <Srinivasan.Gautam@epa.gov>, "Greenglass, Nora" <Greenglass.Nora@epa.gov>, "Krallman, John" <krallman.john@epa.gov>
> **Subject: RE:** Ex. 5 Deliberative Process (DP)

Brian,

Ex. 5 AC/DP

David S. Harlow
Senior Counsel
Office of Air and Radiation, USEPA
WJC-N Room 5409K

1200 Pennsylvania Avenue NW
Washington, DC 20460
202-564-1233
Harlow.David@epa.gov

From: Doster, Brian <Doster.Brian@epa.gov>
Sent: Tuesday, February 4, 2020 2:43 PM
To: Harlow, David <harlow.david@epa.gov>
Cc: Leopold, Matt (OGC) <Leopold.Matt@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>; Dominguez, Alexander <dominguez.alexander@epa.gov>; Srinivasan, Gautam <Srinivasan.Gautam@epa.gov>; Greenglass, Nora <Greenglass.Nora@epa.gov>; Krallman, John <krallman.john@epa.gov>
Subject: RE: Ex. 5 Deliberative Process (DP)

David,

We spoke with Matt this afternoon about this language for the Biogenic CO2 PSD rule. Ex. 5 AC/DP

Ex. 5 AC/DP

So in total, the ARLO proposes the following Ex. 5 AC/DP

Ex. 5 AC/DP

Ex. 5 AC/DP

Brian

Brian L. Doster
Assistant General Counsel for NSR, Radiation, and Emergency Response
Air and Radiation Law Office
Office of General Counsel
(202) 564-1932

From: Harlow, David <harlow.david@epa.gov>
Sent: Monday, February 03, 2020 9:41 AM
To: Greenglass, Nora <Greenglass.Nora@epa.gov>
Cc: Leopold, Matt (OGC) <Leopold.Matt@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>; Dominguez, Alexander <dominguez.alexander@epa.gov>; Srinivasan, Gautam <Srinivasan.Gautam@epa.gov>; Doster, Brian <Doster.Brian@epa.gov>
Subject: Re: Ex. 5 Deliberative Process (DP)

Nora,

Ex. 5 AC/DP

Sent from my iPhone

On Feb 3, 2020, at 9:38 AM, Greenglass, Nora <Greenglass.Nora@epa.gov> wrote:

Ex. 5 AC/DP

Sent from my iPhone

Sent from my iPhone

On Feb 3, 2020, at 05:42, Harlow, David <harlow.david@epa.gov> wrote:

Ex. 5 AC/DP

Ex. 5 AC/DP

David S. Harlow
Senior Counsel
Immediate Office of the Acting Assistant Administrator
Office of Air and Radiation, USEPA
WJC-N Room 5409K
1200 Pennsylvania Avenue NW
Washington, DC 20460
202-564-1233
Harlow.David@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 12/10/2019 4:26:02 PM
To: Cortelyou-Lee, Jan [Cortelyou-Lee.Jan@epa.gov]
Subject: Biomass Briefing Paper
Attachments: Idsal Briefing 7-18-19.docx

Jan-
I've attached the briefing document that we used for a background briefing for Anne Idsal Ex. 5 Deliberative Process (DP)
Ex. 5 Deliberative Process (DP)
may be helpful. Thanks!
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 1/13/2020 6:01:53 PM
To: 'Barry Elman' [barry.elman@verizon.net]
Subject: RE: Today' Breifing paper
Attachments: Revised Proposed Biogenic CO2 Rule Briefing 1-8-20.docx

Hi Barry –
Attached is the paper…

From: Barry Elman <barry.elman@verizon.net>
Sent: Monday, January 13, 2020 1:00 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Elman, Barry <Elman.Barry@epa.gov>
Subject: Today' Breifing paper

Hi Sarah,

Could you send me a copy of today's briefing paper for Anne Ex. 5 Deliberative Process (DP)
Brittany Ex. 5 Deliberative Process (DP)

Thanks,

Barry

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 9/16/2019 1:39:59 PM
To: Ashley, Jackie [Ashley.Jackie@epa.gov]
CC: Mocka, Corey [mocka.corey@epa.gov]
Subject: RE: Biogenic CO2 Administrator Comments

Thank you! This is extremely helpful.

From: Ashley, Jackie <Ashley.Jackie@epa.gov>
Sent: Friday, September 13, 2019 12:54 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Cc: Mocka, Corey <mocka.corey@epa.gov>
Subject: RE: Biogenic CO2 Administrator Comments

Sarah –
Here's what I found. Ex. 5 Deliberative Process (DP) recent (April 2019) on-the-record exchange between the Administrator and Rep. Mike Simpson at an Appropriations hearing.

April 2, 2019 – **Hearing exchange** -- House Appropriations Subcommittee on Interior and Environment Hearing on Fiscal 2020 Budget Request for the EPA. Administrator Wheeler testified.

- Rep. Mike Simpson (ID) and Administrator Wheeler had a brief exchange during the hearing
  - *SIMPSON: First question, a serious question. Well, they're all serious. In the past several final appropriations bill there has been a language that directed the EPA to consult with Forest Service and DOE, to provide clarity on rule that defines biomass as carbon neutral. This is important as trees are key in carbon sequestration. Almost a year ago, the EPA issues a policy statement that seemed to align with the language. Can you update this subcommittee on further steps the EPA has taken to follow the language included in the appropriations bills?*
  - *WHEELER: We are working on that. We hope to have a proposal out this summer. It's a little more difficult than what we originally anticipated. Its taking some time. But we are moving forward with that. And we intend to have something out this summer.*
- Ex. 5 Deliberative Process (DP)

April-May 2019 – **Technical assistance** request from staff for Sen. Collins (ME)

- Sen. Collins staff asked OCIR for any additional information we could provide about the "biomass neutrality rule"
- OAR provided the following (via OCIR)
  - In November 2018, EPA, USDA, and DOE sent a letter to the Senate and House Committees on Appropriations describing the agencies' work to ensure consistent federal policy on forest biomass energy and promote clear policies that encourage the treatment of forest biomass as a carbon-neutral renewable energy solution.

    EPA is examining several opportunities to further address the treatment of biogenic CO2 emissions from biomass. To that end, the Agency assembled an internal workgroup in May 2018, and the group has identified a number of regulatory and non-regulatory options the Agency may pursue in 2019 and 2020. For example, the Agency may seek opportunities, in related rulemakings or site-specific determinations, to build upon the April 2018 policy statement. The Agency is also still evaluating recent, related advice

from its Science Advisory Board on related science-policy issues. EPA is also evaluating the potential to pursue revisions to its 2011 Guidance for Determining Best Available Control Technology for Reducing CO2 Emissions from Bioenergy Production as well as rulemaking to revise relevant Prevention of Significant Deterioration or New Source Review regulations to address, clarify, or remove biogenic CO2 from combustion of biomass from certain requirements. We expect the Agency to propose related changes this year.

June 2019 – **Technical assistance** request from staff for Sen. Fischer (NE)

- Sen Fischer's staff asked about the Treatment of Biogenic CO2 Emissions Under the Clean Air Act Permitting Programs action, and whether EPA is on track for an October 2019 NPRM per the Reg Agenda. Also, is there any external stakeholder work underway (such as public outreach)?
- OAR provided the following (via OCIR)
    - EPA continues to make progress on developing a potential regulatory proposal for the treatment of biogenic CO2 emissions under Clean Air Act permitting programs. EPA has advised external stakeholders that we are engaged in this process.

July-August 2019 – **Technical assistance** request from Sen. Collins (ME)

- Sen. Collins staff asked if there were updates.
- OAR confirmed there was no new information to share.

Jackie Ashley - US EPA - Office of Air Quality Planning and Standards - 919-541-7664 – ashley.jackie@epa.gov

---

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, September 12, 2019 4:13 PM
To: Ashley, Jackie <Ashley.Jackie@epa.gov>
Subject: RE: Biogenic CO2 Administrator Comments

The briefing for Anne is next Wednesday. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

please feel free to let me know. Thanks!
Sarah

From: Ashley, Jackie <Ashley.Jackie@epa.gov>
Sent: Thursday, September 12, 2019 2:30 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Biogenic CO2 Administrator Comments

Hi Sarah –
What's your deadline? It will take me a little time to see where/if Administrator Wheeler made this kind of commitment.

Ex. 5 Deliberative Process (DP)

Jackie Ashley - US EPA - Office of Air Quality Planning and Standards - 919-541-7664 – ashley.jackie@epa.gov

---

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Thursday, September 12, 2019 1:40 PM
To: Ashley, Jackie <Ashley.Jackie@epa.gov>
Subject: Biogenic CO2 Administrator Comments

Hi Jackie-
I'm trying to put together a briefing paper for Anne Idsal Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

provide would be greatly appreciated. Thanks!
Sarah

Sarah Baker
Environmental Protection Specialist
Air Quality Policy Division, Operating Permits Group
U.S. EPA, Office of Air Quality Planning and Standards
(919) 541-4846 / baker.sarah@epa.gov

Message

From: Petesch, Theresa (Tess) [petesch.theresa@epa.gov]
Sent: 4/23/2020 1:55:29 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: Biomass EIA
Attachments: Forest_Biomass_EIA_InterAgency4-23.docx

Hi Sarah,

Ex. 5 Deliberative Process (DP)

Tess

Tess Petesch, Economist
U.S. Environmental Protection Agency
Office of Air and Radiation, OAQPS/HEID
Air Economics Group
C445-E, 109 TW Alexander Dr, RTP, NC 27711
(919) 541-0824
petesch.theresa@epa.gov

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 4/14/2020 1:05:45 PM
To: Ohrel, Sara [Ohrel.Sara@epa.gov]
Subject: RE: this am
Attachments: Anne Idsal 4-20-20 Briefing on Biomass Comments + Vera.docx

Thanks! I sent a cleaned up version to Cheryl and Vera and Cheryl had a question about the statement:

- Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Vera had some edits as well but I don't think they were too significant. I'm getting through those now but I attached them too. I'll include them in the working version. Thanks and feel free to give me a call if it's easier.
Sarah

From: Ohrel, Sara <Ohrel.Sara@epa.gov>
Sent: Tuesday, April 14, 2020 7:22 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: this am

Hi Sarah,
I just made a couple minor edits to the shared version of the document. Hope they help. Also, if you want to chat today before the briefing, like about any of the technical elements, I am happy to chat.

And I hope today is a better day!
Sara

Sara Bushey Ohrel
Climate Change Division
U.S. Environmental Protection Agency
(202) 343-9712
ohrel.sara@epa.gov

***deliberative

Message

From: Baker, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BAKER, SARAH]
Sent: 4/16/2020 3:43:11 PM
To: Elman, Barry [Elman.Barry@epa.gov]
Subject: RE: Status of interagency review of biogenic CO2 proposal

Hi Barry-

Ex. 5 Deliberative Process (DP)

Sarah

From: Elman, Barry <Elman.Barry@epa.gov>
Sent: Thursday, April 16, 2020 11:40 AM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: RE: Status of interagency review of biogenic CO2 proposal

Hi Sarah,

Do you have a draft of the briefing paper that you can share?

Thanks,

Barry

From: Baker, Sarah <baker.sarah@epa.gov>
Sent: Wednesday, April 15, 2020 7:00 AM
To: Elman, Barry <Elman.Barry@epa.gov>
Subject: RE: Status of interagency review of biogenic CO2 proposal

Ex. 5 Deliberative Process (DP)

Sarah

From: Elman, Barry <Elman.Barry@epa.gov>
Sent: Tuesday, April 14, 2020 5:09 PM
To: Baker, Sarah <baker.sarah@epa.gov>
Subject: Status of interagency review of biogenic CO2 proposal

Hi Sarah,

I'm preparing Ex. 5 Deliberative Process (DP) on the status of the interagency review process for the biogenic CO2 proposal. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thanks,

Barry

Message

From: Ohrel, Sara [Ohrel.Sara@epa.gov]
Sent: 10/22/2019 2:20:46 PM
To: Irving, Bill [Irving.Bill@epa.gov]; Fawcett, Allen [Fawcett.Allen@epa.gov]; Greenglass, Nora [Greenglass.Nora@epa.gov]; Baker, Sarah [baker.sarah@epa.gov]
Subject: FW: Biogenic PSD 11/1 meeting
Attachments: Policy Option Considerations 10-19.pdf; 2019 Carbon Accounting Science Fundamentals with signatures.pdf

FYI

From: Hunt, Tim <Tim_Hunt@afandpa.org>
Sent: Monday, October 21, 2019 5:59 PM
To: Kornylak, Vera S. <Kornylak.Vera@epa.gov>; Ohrel, Sara <Ohrel.Sara@epa.gov>; Steller, John <Steller.John@epa.gov>
Cc: Johnson, Yvonne W <Johnson.Yvonnew@epa.gov>; Noe, Paul <Paul_Noe@afandpa.org>; Chip Murray <cmurray@nafoalliance.org>
Subject: Biogenic PSD 11/1 meeting

Vera, Sara, and John,

Thank you and Yvonne again for pulling together OAQPS and Climate Programs staff to meet with us on November 1 at 10 AM at EPA's offices in DC.

To make the meeting as productive as possible, we are providing that attached paper titled, "Policy Option Considerations". Please share it with others expected to attend the meeting or involved with the rulemaking. We hope that attendees can read it in advance so we can spend our limited time discussing key aspects of the paper and answering your questions. Knowing that you are developing a proposed rule and understanding your procedures, we would expect this material to be placed in the rulemaking docket.

In addition, we are attaching a recent statement from members of the National Association of University Forest Resources Programs, which reiterates key points in their prior letter to Administrator McCarthy on November 6, 2014 on the science fundamentals of forest biomass carbon accounting.

Finally, as for an agenda for the meeting, after introductions it would be focused on the points presented in the paper concerning how forest planting and growth will offset bioenergy demands given forest economics. If helpful, we could break the discussion into each of the four major sections of the paper:

- Introductions
- Review of SAB work
- Biomass residuals and biowastes
- Next steps

I will provide you a list of attendees from AF&PA, AWC, NAFO and Enviva closer to the meeting to help with security clearance into the building. Let me know which room we will be gathering in.

Thank you,

Timothy Hunt
Senior Director, Air Quality Programs
AMERICAN FOREST & PAPER ASSOCIATION
AMERICAN WOOD COUNCIL
1101 K Street, NW, Suite 700, Washington, DC 20005
Office: 202-463-2588
Email: thunt@awc.org or Tim_Hunt@afandpa.org

Message

From: RTP-C-504-M@epa.gov [RTP-C-504-M@epa.gov]
Sent: 12/12/2019 7:10:42 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Attachments: image2019-12-12-141042.pdf

From AFPA
12/12/2019

Policy Option Considerations
(October 2019)

Science Advisory Board (SAB) responses to EPA's requests for the SAB's views on a biogenic assessment factor (BAF) in connection with EPA's 2011 and 2014 biogenic carbon accounting frameworks should not derail EPA from adopting a de minimis rule that recognizes that forest-derived biogenic CO_2 emissions are carbon neutral, given that forest carbon stocks are stable or increasing. Moreover, separate and independent from questions related to forest carbon stocks, biomass residuals and biowastes are carbon neutral. Accordingly, EPA should use its substantial discretion under the Clean Air Act to exclude from the PSD permitting program biogenic CO_2 emissions from the use of biomass as a fuel or feedstock.

In exercising that discretion, EPA is not required to rely on SAB's advice on a BAF for EPA's 2011/2014 accounting framework in order to take a different policy approach when applying PSD to CO_2 emissions resulting from biomass as a fuel or feedstock. SAB was not charged with making regulatory recommendations or interpreting the Clean Air Act – that is EPA's role. EPA may therefore exercise its judgment and set aside the advice of the SAB on the BAF approach, including by articulating why it has chosen an alternative approach for bioenergy. Indeed, since asking for SAB's advice, EPA has been charged by the Congress to develop a new policy, which EPA has said it will do.

There is ample evidence already before EPA on which to base an alternative approach, supported by numerous studies and by empirical results, founded *not* on the proposition that forest-derived bioenergy is *a priori* carbon neutral, but on the principle that it is carbon neutral because its use is not causing, and is not anticipated to cause, a decrease in forest carbon stocks. The fact is U.S. forest carbon stocks are and have been stable or rising for some time. And EPA will be able to confirm that its exemption of biogenic CO_2 from PSD BACT requirements is not adversely impacting the forests that we have in the United States by monitoring forest carbon stocks using the U.S. Forest Service's Forest Inventory and Analysis (FIA) database.

EPA regulation should not discourage use of forest biomass, but rather should remove barriers to its use by treating the biogenic CO_2 emissions that result as carbon neutral. Accordingly, EPA should treat forest-derived biogenic CO_2 emissions as carbon neutral, as forest carbon stocks are stable or increasing. If FIA data were ever to suggest that U.S. forest carbon stocks are no longer stable or increasing, EPA would need to determine whether using forest biomass as an energy source is causing or contributing to the conversion of forests to non-forest use. If so, EPA could then revisit the regulatory treatment of CO_2 emitted from the use of biomass as fuel.

In any case, there are sound reasons to reject any suggestion by the SAB that EPA should engage in complex, impractical and highly uncertain modeling to try to predict the future anticipated forest growth without bioenergy in order to address "additionality." Instead, EPA should rely on existing studies to conclude that wood demand in fact contributes to maintaining and increasing carbon stocks in the U.S. The EPA can easily monitor U.S. forest carbon stocks going forward to ensure that exempting biogenic CO_2 emissions from PSD permitting does not result in reduced forest carbon stocks by reviewing the available FIA data. Moreover, SAB's insistence

ED_004741_00190793-00001

on complex and uncertain modeling is contradicted by expert views, including the widely accepted approach taken by the Intergovernmental Panel on Climate Change (IPCC) and the advice of experts from the SAB's Biogenic Carbon Emissions Panel (Panel), the U.S. Department of Agriculture (USDA), the U.S. Forest Service (USFS) and other organizations. Ultimately, the SAB's "additionality" concerns would be addressed, without relying on complex, uncertain modeling, by this carbon-stocks approach.

Under longstanding presidential orders and practice, executive agencies such as EPA have been directed not to regulate unless they demonstrate a "compelling public need," such as "the material failure of private markets."[1] Strong evidence in EPA's docket shows that U.S. forest fiber markets are robust and that landowners engage in anticipatory planting in response to expected future increases in fiber demand for all uses, including bioenergy. Accordingly, unless monitoring U.S. forest carbon stocks indicates that this market response has been significantly disrupted by the use of forest-derived bioenergy, such that forest carbon stocks are no longer stable or rising, biogenic CO_2 emissions from using forest biomass for fuel or feedstock should be treated as carbon neutral.

I. EPA may adopt its own policy determination and is not limited by statements made by SAB in fashioning that policy

A. EPA is not legally required to incorporate any recommendations made through a voluntary peer review of the SAB or one of its subcommittees.

1. Both of EPA's charges to the SAB for review of the 2011/2014 accounting framework specified that the Agency was not asking SAB "for regulatory recommendations or legal interpretation of the Clean Air Act statutes related to stationary sources."[2]

2. The SAB also is not charged with setting EPA policy. SAB's charter states the Board's mission is to "provide independent advice and peer review to EPA's Administrator on the scientific and technical aspects of environmental issues … [and] [t]he SAB will review scientific issues, provide independent scientific and technical advice on EPA's major programs, and perform special assignments as requested by Agency officials."[3]

3. EPA's *Peer Review Handbook* states that the "[e]xcept where provided otherwise by law, peer review is not a formal part of, or

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[1] *See* Executive Order 12866, Sec. 1.

[2] SAB Review of EPA's Accounting Framework for Biogenic CO_2 Emissions from Stationary Sources (Sept. 2011) at A-2 (Sept. 28, 2012), *available* *at*https://yosemite.epa.gov/sab/sabproduct.nsf/57B7A4F1987D7F7385257A87007977F6/$File/EPA-SAB-12-011-unsigned.pdf.

[3] SAB Charter, *available at* https://yosemite.epa.gov/sab/sabproduct.nsf/Web/2017SABcharter/$File/SABCharterSept2017.pdf.

ED_004741_00190793-00002

substitute for, notice-and-comment rulemaking or adjudicative procedures. The EPA's decision to conduct peer review in any particular case is wholly within the Agency's discretion. Similarly, nothing in the Peer Review Policy creates a legal requirement that EPA respond to peer review comments. To the extent that EPA decisions rely on scientific and technical work products that have been subjected to peer review, however, the remarks of peer reviewers should be included in the record for those decisions."[4]

B. SAB has not provided definitive guidance that must be considered in evaluating whether to adopt a policy direction based on a carbon stocks approach.

1. SAB's 2019 report did not provide definitive conclusions. SAB lamented that EPA had not provided SAB a specific policy context for the Board to evaluate an assessment factor for an accounting approach, which the SAB said presented a significant limitation to the Board's work.

a) "The 2014 Framework lacks specificity and is written in a way that is too generic, with too many possibilities that would require assessment of different underlying science. Rather than offering a lengthy menu of calculation options, the EPA Framework needs to define its scenarios and justify those choices. This would enable the SAB to evaluate the science underpinning those decisions and justifications."[5]

2. Further, the 2019 advice was the product of significant internal SAB disagreement. The Board did not follow the advice and rewrote the report of its own expert Biogenic Carbon Emissions Panel. That is a highly unusual if not unprecedented step by the Board that should give pause to reliance on any aspect of the Board's 2019 response.

a) For example, against the advice of some experts, including Panel members, representatives from the USDA, USFS and others, the SAB rejected the widely-accepted approach of the IPCC that is consistent with the carbon stocks principles – and did so with practically no analysis.

3. Moreover, the charge given to the SAB in 2015 focused on an

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[4] EPA, Science and Technology Policy Council, *Peer Review Handbook* (rev. 2015), *available at* https://www.epa.gov/sites/production/files/2016-03/documents/epa_peer_review_handbook_4th_edition.pdf.

[5] SAB Review of Framework for Assessing Biogenic CO_2 Emissions from Stationary Sources (2014) at 4 (Mar. 5, 2019), *available at* https://yosemite.epa.gov/sab/sabproduct.nsf/B86C81BACFAF9735852583B4005B3318/$File/EPA-SAB-19-002+.pdf.

ED_004741_00190793-00003

evaluation of a "future anticipated baseline" modeling approach. 2015 Charge to SAB at A-3. It asked SAB for "Technical approaches, merits and challenges with applying a future anticipated baseline" and the "Scales of biomass use when applying future anticipated baseline approach." 2015 Charge to SAB at A-6, A-7. If EPA now chooses not to follow that complex modeling / accounting approach, it need not address the technical response SAB provided.

4. SAB itself recognized EPA decisions regarding whether to exclude biogenic emissions from a regulatory framework is beyond the scope of SAB's charges and expertise. Among other questions, EPA's 2011 charge asked: "Does the SAB support the conclusion that the categorical approaches (inclusion and exclusion) [to biogenic emissions] are inappropriate ... based on the characteristics of the carbon cycle?" SAB answered that "[a] decision about a categorical inclusion or exclusion will likely involve many considerations that fall outside the SAB's scientific purview, such as legality, feasibility, and possible, political will. The SAB cannot speak to the legal or full implementation difficulties that could accompany any policy on biogenic carbon emissions ...."[6]

C. EPA is also operating under a different legal framework than it was when it developed the 2011 and 2014 framework documents.

1. Since 2017 all congressional appropriations acts have required EPA to "establish clear and simple policies for the use of forest biomass as an energy solution, including policies that ... reflect the carbon-neutrality of forest bioenergy and recognize biomass as a renewable energy source, provided the use of forest biomass for energy production does not cause conversion of forests to non-forest use."[7]

2. In an effort to comply with the law, EPA has issued its own internal policy on the carbon neutrality of biogenic emissions in April 2018, in which the previous Administrator stated that it is the current policy of the Agency "in forthcoming regulatory actions ... to treat biogenic CO_2 emissions resulting from the combustion of biomass from managed forests at stationary sources for energy production

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[6] SAB Review of EPA's Accounting Framework for Biogenic CO_2 Emissions from Stationary Sources at 3 (Sept. 2011).

[7] *See* Pub. L. 115-31 § 428(2)(A) (2017); Pub. L. 115-141 § 431(2)(A) (2018); Pub. L. 166-6 § 428(2)(A) (2019). These provisions are law, to which EPA is subject. *See, e.g., Robertson v. Seattle Audubon Soc'y*, 503 U.S. 429, 437-40 (1992). As EPA's Administrator has acknowledged, the direction provided by the Congress informs EPA's actions on bioenergy, including consideration of the SAB advice.

ED_004741_00190793-00004

as carbon neutral."[8] Administrator Wheeler reaffirmed that policy in the November 2018 joint letter submitted to the Congress by EPA, USDA and the Department of Energy.[9]

3. EPA in fact reiterated its obligation to these recent legislative and internal directives when the Agency responded to SAB's March 2019 peer review report on the 2014 draft Framework for Assessing Biogenic CO_2 Emissions from Stationary Sources:

"As EPA reviews the SAB's final recommendations, we will consider them in light of the FY2018 Consolidation Appropriations Act, the agency's April 2018 statement regarding the treatment of biogenic carbon dioxide emissions from the use of biomass from managed forests, as well as the November 2018 interagency letter to Congress from the EPA, the U.S. Department of Agriculture and the U.S. Department of Energy, which describes the agencies' work to ensure consistent federal policy on biomass energy."[10]

II. EPA should exclude biogenic CO_2 emissions from PSD permitting as carbon neutral based on the principle that unless use of biomass were to cause a decrease in terrestrial carbon stocks, biogenic CO_2 emissions do not contribute to GHG concentrations in the atmosphere when viewed over the appropriate time period and broad landscape scale.

A. To implement the statutory directions provided by the Congress and policy advanced by the Administrator, EPA should adopt a different approach that focuses on the fact that U.S. forest carbon stocks are stable or increasing for the foreseeable future and that demand for biomass as a fuel or feedstock encourages maintenance and expansion of forest carbon stocks. EPA then can use U.S. Forest Service data to monitor forest carbon stocks in order to provide the necessary assurance that this approach is sound.

1. If the data suggest that U.S. forest carbon stocks are not stable or increasing over broad temporal and spatial scales, that would trigger further review to assess whether using forest biomass as a renewable energy source is itself the cause of the conversion of

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[8] EPA, "EPA's Treatment of Biogenic Carbon Dioxide (CO_2) Emissions from Stationary Sources that Use Forest Biomass for Energy Production" (Apr. 23, 2018), https://www.epa.gov/air-and-radiation/epas-treatment-biogenic-carbon-dioxide-emissions-stationary-sources-use-forest.

[9] Letter from Andrew R. Wheeler, Administrator, EPA, Sonny Perdue, Secretary, USDA, and Rick Perry, Secretary, DOE to The Honorable Sen. Richard C. Shelby, The Honorable Sen. Patrick J. Leahy, The Honorable Rep. Rodney P. Frelinghuysen, and The Honorable Rep. Nita M. Lowey (Nov. 1, 2018).

[10] Letter from Andrew R. Wheeler, Administrator, EPA, to Dr. Michael Honeycutt, Chair, SAB 7 (Apr. 19, 2019), https://yosemite.epa.gov/sab/sabproduct.nsf/B86C81BACFAF9735852583B4005B3318/$File/EPA-SAB-19-002_Response.pdf.

ED_004741_00190793-00005

forests to non-forest use, as opposed to other causes, such as development. The Forest Service's analysis to date suggests that urban and exurban land development, rather than the incremental use of forest biomass for energy, is expected to be the most likely cause of future forest conversion.

2. It is also essential to recognize that there is widespread consensus that manufacturing residuals and biowastes are inherently carbon neutral and in some cases result in net GHG reductions since their alternative fates are incineration without energy recovery or disposal in industrial landfills or lagoons which generates methane, a GHG that is 25 times more potent than CO_2. (See Section IV below.)

B. This would be an alternative approach to the complex accounting frameworks that EPA had advanced previously – and thus distinct from the analysis EPA had asked the SAB to undertake.

1. As Panel member Roger Sedjo wrote in his dissent to the SAB's 2012 review of EPA's 2011 draft Framework, the carbon stocks approach is an "alternative approach[] for accounting for biogenic carbon."[11] It is consistent with the approach advocated by the IPCC "that would focus on the changes in aggregate land use and forests to determine whether, for example, aggregate forest stocks are expanding or contracting."

2. As William Hohenstein, Director, Climate Change Program Office for the U.S. Department of Agriculture explained the "USDA prefers the IPCC accounting framework, which addresses biogenic feedstocks within the land sector....The IPCC approach would represent ***a categorical exclusion under the Clean Air Act*** (CAA) insofar as it excludes biogenic emissions from the energy sector; ***the IPCC approach is not equivalent to an a priori assumption that these feedstocks are produced in a carbon neutral manner*** or an assertion that land use activities contributing feedstocks to the energy sector can be managed without consideration of atmospheric outcomes."[12]

3. Any concern over secondary or life-cycle emissions from production of forest biomass is misplaced. When forest biomass is harvested along with other products, these emissions would likely have taken

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[11] Dissent of SAB Panel Member, Roger Sedjo, *cited in* Appendix E of the SAB's September 2012 Review of EPA's Accounting Framework for Biogenic CO_2 Emissions from Stationary Sources (Sept. 2011) (Sept. 28, 2012).

[12] See Letter from William Hohenstein, Director, Climate Change Program Office, USDA, to Dr. Holly Stallworth, EPA Science Advisory Board (May 25, 2012).

ED_004741_00190793-00006

place anyway. Furthermore, there are GHG emissions associated with extraction/production and transportation of alternative fuels as well, and those emissions are not considered in PSD permitting for a fuel-burning project.[13] There are also few, if any, other GHG emissions associated with using manufacturing residuals or biowastes for fuel, because that biomass would have been harvested and transported regardless of its subsequent use as fuel.

C. There is ample data and support in the scientific literature for a carbon stocks approach. This extensive literature provides the foundation on which EPA may base a policy that exempts biogenic CO_2 emissions from PSD permitting, without getting mired in the details of a BAF analysis as part of a complex accounting framework.

1. In the U.S., forests are sustainably managed, with a 2016 net growth/removals ratio of 1.92.[14]

2. There is compelling evidence that U.S. forests will remain a net carbon sink for decades to come.[15]

3. Indeed, USDA research has concluded that the U.S. will have stable or rising forest carbon stocks well into the future.[16]

4. Under the USDA's reference case scenario, forest carbon sequestration will remain positive through 2060, although the rate of sequestration is likely to slow due mainly to forest aging.[17]

5. "Increased demand for wood can trigger investments that increase forest area and forest productivity and reduce carbon impacts associated with increased harvesting."[18]

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[13] See, e.g., 40 C.F.R. § 51.166(b)(4) (potential to emit does not include secondary emissions). (Although "secondary emissions are excluded from the potential emissions estimates used for applicability determinations," they are addressed in the air quality analyses if a PSD permit is required, but only if they are "specific, well-defined, quantifiable, and impact the same general area as the stationary source or modification undergoing review," [which is not the case for emissions associated with harvesting or extracting/producing fuels and transporting them to the site being permitted]. EPA, NSR Workshop Manual, Draft at A. 18 (Oct. 1990).

[14] U.S. Forest Service, Forest Resources of the United States (2017), Table 36.

[15] U.S. Department of Agriculture, "USDA Integrated Projections for Agriculture and Forest Sector Land Use, Land-Use Change, and GHG Emissions and Removals: 2015 to 2060" (Jan. 19, 2016), Reference Case Scenario, p. 16.

[16] Ibid.

[17] Ibid.

[18] Reid A. Miner, Robert C. Abt, Jim L. Bowyer, Marilyn A. Buford, Robert W. Malmsheimer, Jay O'Laughlin, Elaine E. Oneil, Roger A. Sedjo, and Kenneth E. Skog, "Forest Carbon Accounting

D. EPA can easily monitor U.S. forest carbon stocks going forward to ensure that the policy choice does not cause reduced forest carbon stocks.

1. Most importantly, EPA can use the U.S. Forest Service FIA database to monitor forest carbon stocks. That database, and the regular analysis of that data that is done by the Forest Service as required by federal law, provides a comprehensive, unbiased and readily available tool for EPA to use to evaluate forest carbon stocks.

2. In the future, if EPA observes a decline of U.S. forest carbon stocks, it can evaluate that information and intervene as may be appropriate. *See supra* II.A.1.

3. In contrast, as the SAB acknowledged, in its 2012 report, when asked by EPA whether the 2011 accounting framework was "simple to implement and understand?" the SAB responded: "[i]t is neither … it is not intuitive to understand because it involves tracking emissions from the stationary source backwards to the land that provides the feedstock rather than tracking the disposition of carbon from the feedstock and land forwards to combustion and products. The *Framework* also appears to be difficult to implement, and possibly unworkable, especially due to the many kinds of data required to make calculations for individual facilities."[19]

E. Further, a broad spatial scale is appropriate – and more representative of the overall carbon cycle.

1. The SAB on this point agrees. In its evaluation of the EPA's 2014 draft accounting framework, the SAB correctly states that "a landscape approach is more appropriate than a stand-level approach. A landscape approach expands the boundaries of analysis to include all effects and recognizes that there is uptake as well as loss of carbon associated with the production of feedstocks concurrently occurring across the landscape. It is the overall balance of losses and gains that determines carbon stock effects."[20]

Considerations in U.S. Bioenergy Policy," 112(6) *Journal of Forestry* 591 at 591 (Nov. 2014) (emphasis added).

[19] SAB Review of EPA's Accounting Framework for Biogenic CO_2 Emissions from Stationary Sources (September 2011) at 33 (Sept. 28, 2012), *available at* https://yosemite.epa.gov/sab/sabproduct.nsf/57B7A4F1987D7F7385257A87007977F6/$File/EPA-SAB-12-011-unsigned.pdf.

[20] SAB review of Framework for Assessing Biogenic CO_2 Emissions from Stationary Sources (2014) at 3 (Mar. 5, 2019), *available at*

ED_004741_00190793-00008

F. While evaluating forest carbon stocks to determine the contribution of wood demand to these stocks, a longer temporal scale is a sound and appropriate approach supported by expert analyses. [21]

1. The longer temporal scale fits with the way in which forests are managed and addressed in the marketplace.

   Forests are generally managed on a 25 to 100-year growth cycle (rotation) which reflects the species, the region and the local market.[22] Forests are also grown in anticipation of future markets. These principles are all well documented.[23] The material that constitutes "biomass" is both a byproduct and an end product,[24] depending on these factors as well as competition from materials such as mill residuals. Generally, the biomass fuel market represents the lowest value for material, so as a harvest is graded for sale, the higher value logs are separated and the lower value material, such as tops, limbs, and unmarketable logs, is sold to the local biomass fuel market, if it exists, or left or burned on site. Whole logs will generally be sold as biomass only where the available market is so constricted that this is the last resort.

2. Unlike the full Board, the SAB's expert Panel recommended a longer time scale that would allow for all policy related perturbations to be resolved. As Biogenic Carbon Emissions Panel Chair Madhu Khannna, and panel members Robert Abt, Dan Schrag, and Ken Skog stated:

   "The Panel's recommendation . . . is that the BAF calculation time horizon should be ***policy independent and based on science*** to

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https://yosemite.epa.gov/sab/sabproduct.nsf/B86C81BACFAF9735852583B4005B3318/$File/EPA-SAB-19-002+.pdf.

[21] For background on the importance of evaluating over a long timescale and broad spatial scale, *see, e.g.*, NAFO, Comments on "Emission Guidelines for Greenhouse Gas Emissions From Existing Electric Utility Generating Units; Revisions to Emission Guideline Implementing Regulations; Revisions to New Source Review Program," Proposed Rule, 83 Fed. Reg. 44,746 (Aug. 31, 2018) at 4-8, EPA-HQ-OAR-2017-0355.

[22] J.P. Siry *et al.* eds., Forest Plans of North America (2015).

[23] Karen L. Abt *et al.*, Effect of policies on pellet production and forests in the U.S. South: A technical document supporting the Forest Service update of the 2010 RPA Assessment. Gen. Tech. Rep. SRS-202 (2014), Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station (2014); J.S. Baker *et al.*, "Potential Complementarity Between Forest Carbon Sequestration Incentives and Biomass Energy Expansion," 126 Energy Policy 391 (2019); A. Daigneault *et al.*, Economic Approach to Assess the Forest Carbon Implications of Biomass Energy, 46 Environ. Sci. Technol., 5664–5671 (2012); Weiwei Wang *et al.*, Carbon savings with transatlantic trade in pellets: accounting for market-driven effects, 10 Environ. Research Letters 114019 (2015).

[24] Marcia Patton-Mallory ed., Woody biomass utilization strategy. Forest Service, U.S. Department of Agriculture at 17 (2008).

ED_004741_00190793-00009

account for the expected effects on terrestrial carbon stocks (negative and positive) of using a biogenic feedstock. * * * * ***Using a 100-year period for comparing global warming potential for all greenhouse gases instead of a shorter policy horizon is the standard international convention adopted by EPA and the Intergovernmental Panel on Climate Change (IPCC). Using a policy-based horizon for BAFs would be a significant departure from the national and international convention for comparing different greenhouse gases.***" [25]

3. The time period over which emissions are assessed is critical for accurate forest carbon accounting due to the long growth cycle of trees and the long-term atmospheric impacts of emissions

III. This proposed forest carbon stocks approach would address concerns about "additionality" raised in the SAB's reports. Regardless, SAB's proposal for an anticipated future baseline to address "additionality" is impractical.

Some SAB members suggested EPA should only treat the use of whole trees for energy as carbon neutral if it could be shown that the incremental future increase in demand for bioenergy resulted in equal or greater growth in forest carbon stocks. However, the expressed concern about "additionality" can be addressed fully by the carbon stocks approach, as supported by a range of expert opinions, including:

- Dissent of SAB Panel Member, Roger Sedjo, in 2011. *See* Appendix E of the SAB's September 2012 review of EPA's Accounting Framework for Biogenic CO_2 Emissions from Stationary Sources (September 2011).
- Views of William Hohenstein of the USFS. *See* Letter from William Hohenstein, Director, Climate Change Program Office, USDA, to Dr. Holly Stallworth, EPA Science Advisory Board (May 25, 2012).
- Studies conducted by U.S. Forest Service economist Karen Abt et al., including "Effect of Bioenergy Demands and Supply Response on Markets, Carbon, and Land Use."[26]
- Study by economists, including EPA experts. *See* J.S. Baker, C.M. Wade, B.L. Sohngen, S. Ohrel, A.A. Fawcett, "Potential Complementarity Between Forest Carbon Sequestration Incentives and Biomass Energy Expansion," 126 *Energy Policy* 391 (2019).

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[25] *See* Letter to Mr. Thomas Carpenter, Designated Federal Officer, EPA Science Advisory Board, from Madhu Khanna *et al.* (Sept. 24, 2018).

[26] Karen L Abt *et al.*, "Effect of Bioenergy Demands and Supply Response on Markets, Carbon, and Land Use," 58(5) *Forest Science* 536 (2012).

ED_004741_00190793-00010

- Other research, e.g., Reid A. Miner, Robert C. Abt, Jim L. Bowyer, Marilyn A. Buford, Robert W. Malmsheimer, Jay O'Laughlin, Elaine E. Oneil, Roger A. Sedjo, and Kenneth E. Skog, "Forest Carbon Accounting Considerations in U.S. Bioenergy Policy," 112(6) *Journal of Forestry* 591 (Nov. 2014) (emphasis added).

A. The carbon stocks approach addresses SAB's concerns about "additionality" without having to rely on the complex, impractical, and uncertain anticipated future baseline modeling proposed by SAB.

1. There is no need to separately consider "additionality" when forest carbon stocks are stable or increasing

a) There is a robust existing market – and experts have found the market will help sustain carbon stocks, because the anticipated demand for wood will contribute to maintaining or growing those stocks. The SAB recognized these facts, but then failed to consider them in its overall analysis.

(1) As Dr. Sedjo outlined in his dissent in 2011: "Indeed, while investment decisions must be driven by the anticipation of the existence and size of future markets, these considerations are acknowledged for wood biomass in parts of the Advisory [SAB report] and then ***disregarded in the application of the approach for regulatory purposes***. Thus, the actual approach suggested is essentially static, ***missing the essential dynamic nature of the supply process***."[27] Dr. Sedjo concluded that "***biogenic greenhouse gas emission are best not considered in determining thresholds*** or perhaps considered only … [if] the forest and land use conditions … [are] such that they do not meet minimal IPCC conditions."[28]

b) This notion of "anticipatory planting" is essential to understanding the carbon stocks approach. The commercial forest market is managed in a way that anticipates future demand. Hence, using biomass as a commercial fuel source does not create an economic market or carbon forest cycle failure necessitating a regulatory response.

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[27] SAB Review of EPA's Accounting Framework for Biogenic CO_2 Emissions from Stationary Sources (Sept. 2011) (Sept. 28, 2012), Appendix E (Dissenting Opinion from Dr. Roger Sedjo), https://yosemite.epa.gov/sab/sabproduct.nsf/57B7A4F1987D7F7385257A87007977F6/$File/EPA-SAB-12-011-unsigned.pdf. (emphasis added).

[28] *Id.* at E-5 (emphasis added).

ED_004741_00190793-00011

(1) Dr. Sedjo also addressed the importance of "anticipatory planting" – and the fact that the previous EPA accounting framework had not considered that effect – in a presentation at an October 25, 2011 meeting of the SAB's Biogenic Carbon Emissions Panel.

> "While the EPA Accounting Frame Work captures carbon releases due to biomass energy, it does not account for forest management and forest expanding investments that expand forest carbon in response to anticipated demand increases for biomass for energy."[29] This finding "is consistent with the IPCC treatment, which treats net carbon emissions from the wood energy as zero. Any net carbon changes are monitored via changes in forest stocks."[30] He concluded that "the commercial forest stock will increase if a larger wood biomass demand is anticipated."[31]
>
> "These results are system wide and occur not only for an individual forest but also for an **interconnect[ed] forest system** where the various managers react to common market forces."[32]

(2) USFS experts agree. In a study entitled, "Effect of Bioenergy Demands and Supply Response of Markets, Carbon, and Land Use," U.S. Forest Service economist Karen Abt and her co-authors demonstrate that "[h]igher product prices [due to new bioenergy-related wood demand] are linked to land use through the planting response function such that ***an increase in prices will lead to an increase in new pine plantations***. Thus, in scenarios in which prices increase, there is more timberland area than occurs under the baseline scenario without bioenergy demand. ***This, in turn, leads to a higher level of carbon sequestration in the standing forest than occurs under the baseline***."[33]

> Likewise, a Journal of Forestry article, "Forest Carbon Accounting Considerations in U.S. Bioenergy Policy,"

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[29] Roger A Sedjo, "Evaluation of Methodological Issues in the EPA 'Accounting Framework for Biogenic Carbon Dioxide Emissions' Study" (Oct. 25, 2011) (*See* Conclusions) (emphasis added).

[30] *Id.* (emphasis added).

[31] *Id.* (emphasis added).

[32] *Id.* (emphasis in original).

[33] Karen L. Abt *et al.* "Effect of Bioenergy Demands and Supply Response on Markets, Carbon, and Land Use," 58(5) *Forest Science* 536 (2012) (emphasis added).

ED_004741_00190793-00012

which included U.S. Forest Service co-authors, notes that "***Increased demand for wood can trigger investments that increase forest area and forest productivity and reduce carbon impacts associated with increased harvesting.***"[34]

(3) Studies co-authored by EPA's own staff would also appear to concur. A study that was co-authored by EPA economists Sara Ohrel and Allen Fawcett concluded that, "Bioenergy demand growth increases forest sector investment and economic rents in the near-term to ensure adequate long-term feedstock supply."[35]

c) The SAB's concern with carbon debts incorrectly focuses on the harvest, as opposed to the overall carbon cycle that begins upon planting.

(1) As Dr. Roger Sedjo explained, forest carbon accounting protocols are highly dependent on temporal assumptions. "If the accounting focuses on a stand and the accounting period begins with the harvest, a debt will be establishment for the forest stand. However, if the accounting begins with the forest establishment, e.g., at tree planting, then the initial post planting growth is building up a stock of carbon that will be released at harvest. **Thus, *any future debt from that stand will have been offset in advance of the harvest and no intertemporal net carbon debt is incurred.***"[36]

(2) The carbon stocks approach avoids the need for complex carbon debt models, even at the landscape scale, by using data that reflects the actual operation of the carbon cycle across the national landscape.

B. Regardless, the SAB's reference to "anticipated baselines" is impractical for present regulatory purposes and unduly complex.

1. Anticipated baselines are extremely complex to model and lack

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[34] Reid A. Miner, Robert C. Abt, Jim L. Bowyer, Marilyn A. Buford, Robert W. Malmsheimer, Jay O'Laughlin, Elaine E. Oneil, Roger A. Sedjo, and Kenneth E. Skog, "Forest Carbon Accounting Considerations in U.S. Bioenergy Policy," 112(6) *Journal of Forestry* at 591 (Nov. 2014) (emphasis added).

[35] J.S. Baker *et al.*, "Potential Complementarity Between Forest Carbon Sequestration Incentives and Biomass Energy Expansion," 126 *Energy Policy* 391 (2019) (emphasis added).

[36] SAB Review of EPA's Accounting Framework for Biogenic CO_2 Emissions from Stationary Sources (Sept. 2011) (Sept. 28, 2012), Appendix E (Dissenting Opinion from Dr. Roger Sedjo) at E-3 (emphasis added).

ED_004741_00190793-00013

practicability, accuracy and predictability compared with a simpler reference point baseline approach.

2. This is confirmed by a 2014 study by Buchholz et al., entitled, "Uncertainty in Projecting GHG Emissions from Bioenergy."[37] It found that: "never in 30 years of timber trend assessments have the near-term anticipated future projections of surplus roundwood been as accurate as the constant reference would have been." The study concludes that "given the challenges in predicting the future status of forest resources, . . .constant reference baselines might be more appropriate for monitoring and regulatory frameworks."

IV. Separate from the questions related to forest carbon stocks, biomass residuals and biowastes are carbon neutral.

A. Regardless of the state of forest carbon stocks, residuals and biowastes are carbon neutral, and in some cases even can produce a large GHG reduction benefit from being used for energy. As EPA has noted, the use of residuals and biowastes for energy reduces "anyway emissions" -- because it avoids GHG emissions from the alternative fate of disposal. Disposal can produce methane, which is a climate-forcing agent 25 times more potent than CO_2.

B. In its review of the 2011 Draft Framework, the SAB recommended that an alternative fate approach be used to assess the potential emissions profile of residuals and waste-derived feedstocks if not used for bioenergy, including methane emissions.

C. The 2014 draft of EPA's Framework included various alternative fate analyses, including several scenarios relating to black liquor in Appendix N.[38] EPA's assessment found that the combustion of black liquor to generate energy could be beyond carbon neutral.[39]

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[37] Thomas Buchholz *et al.*, "Uncertainty in Projecting GHG Emissions from Bioenergy," *Nature Climate Change* (Nov. 26, 2014) (emphasis added), *available at* http://www.nature.com/articles/nclimate2418.

[38] EPA, Draft Framework for Assessing Biogenic CO_2 Emissions From Stationary Sources, Appendix D: Assessing Biogenic CO_2 Emissions from Waste-Derived Feedstocks, at pp. D-29-31 (2014), *available at*https://yosemite.epa.gov/sab/sabproduct.nsf/0/3235DAC747C16FE985257DA90053F252/$File/Framework-for-Assessing-Biogenic-CO2-Emissions+(Nov+2014).pdf.

[39] *Id.*

ED_004741_00190793-00014

D. Other research, particularly a study by the National Council for Air and Stream Improvement (NCASI) shows substantial greenhouse gas reduction benefits from using manufacturing residuals for biomass energy in the forest products industry. The NCASI study, "Greenhouse Gas and Fossil Fuel Reduction Benefits of Using Biomass Manufacturing Residuals for Energy Production in Forest Products Facilities" (rev. Aug. 2014), examined the life cycle greenhouse gas and fossil fuel reduction benefits of using biomass residuals for energy production in the U.S. forest products industry. Wood processing activities at pulp, paper and wood products mills produce a large volume of biomass residuals integral and incidental to the manufacturing process, and those forest products manufacturing residuals are the primary source of energy to run the mills. On average, about two-thirds of the energy powering forest products mills is derived from biomass. The NCASI study finds:

1. There are substantial greenhouse gas reduction benefits in using biomass manufacturing residuals for energy in the forest products industry. Accounting for fossil fuel displacement and avoided emissions associated with disposal, the use of biomass residuals each year avoids the emission of approximately 181 million metric tons of CO_2e. (This has been estimated to be equivalent to removing approximately 35 million cars from the road.)

2. The benefits of using biomass residuals for energy have been rapidly realized:

   a) The greenhouse gas reduction benefits are realized in 1.2 years or less.

   b) Even if the benefits of displacing fossil fuels are ignored, the use of manufacturing residuals for energy produces lower cumulative greenhouse gases emissions in 0 to 19.5 years, depending on the type of residual, with a weighted average break-even time of 7.6 years.

   c) When considering its ongoing production and use of biomass energy over many years, the U.S. forest products industry is producing net greenhouse gas benefits by using biomass as its major energy source.

   d) If the U.S. forest products industry did not use biomass residuals and relied solely on fossil fuels for energy, the ultimate direct releases of greenhouse gases approximately would quadruple.

V. Conclusion

A. EPA has substantial discretion to use its de minimis authority to adopt a policy that excludes from PSD permitting biogenic CO_2 emitted when biomass is used as a fuel or feedstock, given that carbon stocks are stable or increasing. EPA is not required to incorporate any recommendations made by SAB or one of its subcommittees.

B. EPA can monitor U.S. forest carbon stocks using FIA data. If the data were ever to suggest that U.S. forest carbon stocks are no longer stable or increasing, EPA would need to determine whether using forest biomass as an energy source is causing or contributing to the conversion of forests to non-forest use. If so, EPA could then revisit the regulatory treatment of CO_2 emitted from the use of biomass as fuel.

C. EPA is now operating under clear direction from the Congress and a very different policy framework vis-à-vis biogenic emissions than when it drafted its proposed accounting framework in 2011 and 2014. Also, when EPA asked SAB to review its BAF in the context of the draft accounting framework reports, EPA limited the request to the scientific and technical advice; SAB cannot provide legal or policy guidance.

D. SAB reviewed EPA's 2014 draft approach without a specific policy framework. But, EPA's regulatory work on PSD provides a very specific policy framework, further distinguishing the technical review SAB provided from the regulatory work EPA is now undertaking.

E. There is ample evidence to justify treating forest-derived biomass as carbon neutral given that U.S. forest carbon stocks are stable or increasing and in light of the expert views outlined above regarding the appropriateness of the carbon stocks approach, the expected investment response from the robust U.S. market, the soundness of considering broad temporal and spatial scales, and the impracticality of complex modeling approaches for regulatory purposes. Indeed, for regulatory purposes, the monitoring of forest carbon stocks using FIA data is clearly more practical, accurate and predictable than complex modeling.

F. Basing the future of an important part of the U.S. bio-economy on highly impractical and uncertain modeling, such as the construction of a future anticipated baseline, would create enormous regulatory uncertainty and likely would generate false predictions and be counterproductive.

G. In the U.S., there is no market failure that justifies regulating forest-derived biogenic CO_2 emissions from stationary sources under the Clean Air Act.

H. Regardless of the state of forest carbon stocks, there is no regulatory benefit to regulating biomass residuals and biowastes since their alternative fates (e.g., landfilling or incineration without energy recovery) can produce as much or more GHG emissions than combustion for energy.

I. Not only would the regulation of biogenic CO_2 in the PSD program have de minimis regulatory benefit, but regulation would impose unwarranted regulatory uncertainty, costs and negative reputational impacts that would act as a drag on the development of the U.S. bio-economy.

J. The treatment of forest-derived fuels and feedstocks used at stationary sources as carbon neutral is consistent with the twin purposes of the Clean Air Act to promote public health and welfare and the productive capacity of the nation.[40]

---

[40] Clean Air Act, Section 101(b), 42 U.S.C. § 7401(b).

ED_004741_00190793-00017

Message

From: Elman, Barry [Elman.Barry@epa.gov]
Sent: 1/7/2020 6:58:11 PM
To: Baker, Sarah [baker.sarah@epa.gov]
Subject: FW: Analytic Blueprint Waiver Form
Attachments: image2020-01-07-141001.pdf

Flag: Follow up

Sarah,

Attached is my signed v **Ex. 5 Deliberative Process (DP)**

Barry

Message

From: Yassa, Sami [syassa@nrdc.org]
Sent: 6/21/2018 8:49:09 PM
To: Pruitt, Scott [pruitt.scott@epa.gov]
Subject: EPA Statement of Agency Policy on Forest Biomass
Attachments: Opposition Letter to EPA Policy on Biomass 6.20.18.pdf

To whom it may concern,

Please see attached for a letter regarding Administrator Pruitt's April 23, 2018 Statement of Agency Policy on forest biomass.

Thank you,

SAMI YASSA
Senior Scientist
Climate & Clean Energy Program

NATURAL RESOURCES DEFENSE COUNCIL
OFFICE: 207.703.2428
syassa@nrdc.org
NRDC.ORG

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ActionAid USA * Battle Creek Alliance * Carolina Wetlands Association * Center for Biological Diversity
Clean Air Carolina * Clean Air Task Force * Clean Water Action * Climate Law & Policy Project
Dogwood Alliance * Earth Ethics * Earthjustice * Ebbetts Pass Forest Watch
Endangered Species Coalition * Friends of the Earth – US
Greater Birmingham Alliance to Stop Pollution (G.A.S.P.) * Geos Institute * Greenpeace USA
Jail and Prison Rehabilitation Information (JAPRI) * Lakeland Citizens for Clean Air, Inc.
League of Conservation Voters * Mighty Earth * Natural Resources Defense Council * Oregon Wild
Our Children's Earth Foundation * Partnership for Policy Integrity * Physicians for Social Responsibility
Pivot Point, A Nonprofit Corporation * Rachel Carson Council * Save EPA * Sierra Club
Southern Environmental Law Center * Washington Forest Law Center

June 20, 2018

The Honorable Scott Pruitt
Administrator U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Dear Administrator Pruitt,

On behalf of our millions of members, supporters, and activists, we write to express our strong opposition to the Environmental Protection Agency's Statement of Agency Policy, dated April 23, 2018, which establishes the agency's intent to treat all forest biomass burned in stationary sources as "carbon neutral." Such a categorical declaration is scientifically indefensible and improperly comes in advance of any notice, rulemaking or opportunity for public comment. Instead, it appears to be primarily based on economic and political considerations to ensure favorable treatment for the forest products and biomass industries and, as such, is yet another troubling example of Administrator Pruitt's record of short-circuiting EPA's science-based policymaking to advance the interests of extractive industries.

Biomass is not categorically carbon neutral. This conclusion has been reached and endorsed by numerous scientific societies and by many hundreds of scientists around the world, including the EPA's own scientific advisors.[i]

Citing the work of EPA's Scientific Advisory Board, the Statement of Agency Policy itself acknowledges the scientific arguments against universal biomass carbon neutrality, stating that, "**it is not scientifically valid to assume that all biogenic feedstocks are carbon neutral**, but rather that the net biogenic carbon profile related to the use of biomass feedstocks depends upon factors related to feedstock characteristics, production and consumption, and alternative uses." [emphasis added]. In rebuffing this established science, the Policy Statement argues that the Scientific Advisory Board's findings are not "workable" or "applied," but these are no grounds for rejecting the underlying science.

While the agency asserts that its Policy Statement "is not a scientific determination" and "does not represent a final agency action," it nevertheless announces both its substantive conclusion and regulatory intent: "EPA's policy in forthcoming regulatory actions will be to treat biogenic CO2 emissions resulting from the combustion of biomass from managed forests at stationary sources for energy production as carbon neutral." EPA cannot use this announcement to justify future actions. The courts agree, stating "When [an] agency applies the policy in a particular situation, it must be prepared to support the policy just as if the policy statement had never been issued. An agency cannot escape its responsibility to present evidence and reasoning supporting its substantive rules by announcing binding precedent in the form of a general statement of policy." Id. (quoting Pac. Gas & Electric Co. v. Fed. Power Comm'n, 506 F.2d 33 (D.C. Cir. 1974)).

The United States must reduce emissions of greenhouse gases now, not increase emissions for decades as biomass electricity does. EPA must rescind this categorical and preemptive policy determination and follow the science on biomass.

Sincerely,

ActionAid USA
Battle Creek Alliance
Carolina Wetlands Association
Center for Biological Diversity
Clean Air Carolina
Clean Air Task Force
Clean Water Action
Climate Law & Policy Project
Dogwood Alliance
Earth Ethics
Earthjustice
Ebbetts Pass Forest Watch
Endangered Species Coalition
Friends of the Earth – US
Greater Birmingham Alliance to Stop Pollution (G.A.S.P.)
Geos Institute
Greenpeace USA
Jail and Prison Rehabilitation Information (JAPRI)
Lakeland Citizens for Clean Air, Inc.
League of Conservation Voters
Mighty Earth
Natural Resources Defense Council
Oregon Wild
Our Children's Earth Foundation
Partnership for Policy Integrity
Physicians for Social Responsibility
Pivot Point, A Nonprofit Corporation
Rachel Carson Council
Save EPA
Sierra Club
Southern Environmental Law Center
Washington Forest Law Center

---

[i] Environmental Protection Agency, Office of the Administrator, Science Advisory Board, SAB Review of EPA's Accounting Framework for Biogenic CO2 Emissions from Stationary Sources, September 2012, http://yosemite.epa.gov/sab/sabproduct.nsf/0/57B7A4F1987D7F7385257A87007977F6/$File/EPA-SAB-12-011-unsigned.pdf

Beddington, J. et al., Letter from 659 scientists to the EU Parliament regarding forest biomass, January 9, 2018.

Sterman, J. D. et al., "Does Replacing Coal with Wood Lower CO2 Emissions? Dynamic Lifecycle Analysis of

Wood Bioenergy," Environmental Research Letters, January 2018, www.iopscience.iop.org/article/10.1088/1748-9326/aaa512/meta.

Ter-Mikaelian, M. et al., The Burning Question: Does Forest bioenergy Reduce Carbon Emissions? A Review of Common Misconceptions About Forest Accounting. Journal of Forestry, 113(1): 57-68.

Message

From: Rachel Fritts [Ex. 6 Personal Privacy (PP)]@gmail.com]
Sent: 4/11/2018 1:50:58 PM
To: Pruitt, Scott [Pruitt.Scott@epa.gov]
Subject: Seeking comment on biomass energy policy

Dear Mr. Pruitt,

I am a freelance reporter currently writing an article about biomass energy policy. Could you please clarify your current position on biomass energy to be quoted in the piece?

In stating your position, please confirm whether you believe biomass from forests to be carbon-neutral, and, if so, what energy policies that take this carbon-neutrality into account might look like.

Please respond by Monday, April 16.

Kind regards,
Rachel

--
Rachel Fritts
Freelance Journalist
Tel: [Ex. 6 Personal Privacy (PP)]
Email: [Ex. 6 Personal Privacy (PP)]@gmail.com

Message

From: Rao, Raj [Rao.Raj@epa.gov]
Sent: 2/12/2019 2:30:47 PM
To: Santiago, Juan [Santiago.Juan@epa.gov]
Subject: RE: Latest Project Tracker
Attachments: NSRG Project Tracker.docx

With attachment this time

From: Rao, Raj
Sent: Monday, February 11, 2019 5:38 PM
To: Santiago, Juan <Santiago.Juan@epa.gov>
Subject: Latest Project Tracker

Juan, attached is a project tracker that is 80 % done for tomorrow's coordination meeting

Message

From: Rao, Raj [Rao.Raj@epa.gov]
Sent: 3/5/2018 6:19:53 PM
To: Santiago, Juan [Santiago.Juan@epa.gov]
Subject: Revised Tracker and Anna's slide deck
Attachments: Current NSR Project Tracker 030518.docx; **Ex. 5 Deliberative Process (DP)**

Raj Rao, P.E.
Group Leader, New Source Review Group,
Air Quality Policy Division,
Office of Air Quality Planning and Standards (MD-C504-03)
US Environmental Protection Agency
109 TW Alexander Drive
Research Triangle Park, NC 27709
919-541-5344
919-541-5509 - Fax

Note: Positions or views expressed here do not represent official EPA policy. Interagency Deliberative and Confidential

Message

From: Rao, Raj [Rao.Raj@epa.gov]
Sent: 8/20/2018 5:20:04 PM
To: Santiago, Juan [Santiago.Juan@epa.gov]
Subject: NSR Project Tracker
Attachments: NSRG Project Tracker 082018.docx

Attached

Raj Rao, P.E.
Group Leader, New Source Review Group,
Air Quality Policy Division,
Office of Air Quality Planning and Standards (MD-C504-03)
US Environmental Protection Agency
109 TW Alexander Drive
Research Triangle Park, NC 27709
919-541-5344
919-541-5509 - Fax

Note: Positions or views expressed here do not represent official EPA policy. Interagency Deliberative and Confidential

Message

From: Santiago, Juan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C98E3FFE9DD745768928B3F93C24FB36-JSANTIAG]
Sent: 8/28/2019 11:35:27 AM
To: Rao, Raj [Rao.Raj@epa.gov]
Subject: RE: NSR Improvements overview Update
Attachments: NSR Improvements Overview Update 8-26-19 + JS.docx

Raj, thanks for the updated file. **Ex. 5 Deliberative Process (DP)**
Please send me a revised version when is ready.

Thanks!
Juan

From: Rao, Raj <Rao.Raj@epa.gov>
Sent: Monday, August 26, 2019 4:50 PM
To: Santiago, Juan <Santiago.Juan@epa.gov>
Subject: NSR Improvements overview Update

Juan, attached is the updated list of projects for David H.

Raj Rao, P.E.
Group Leader, New Source Review Group,
Air Quality Policy Division,
Office of Air Quality Planning and Standards (MD-C504-03)
US Environmental Protection Agency
919-541-5344

Note: Positions or views expressed here do not represent official EPA policy. Interagency Deliberative and Confidential

Message

From: Santiago, Juan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C98E3FFE9DD745768928B3F93C24FB36-JSANTIAG]
Sent: 6/10/2019 1:16:24 PM
To: Rao, Raj [Rao.Raj@epa.gov]
Subject: RE: Please send me your latest NSR Projects tracker that we updated after our planning meeting last Monday. I did not note down all the dates we changed. Thanks
Attachments: NSRG Project Tracker 060319 with notes.docx

From: Rao, Raj
Sent: Monday, June 10, 2019 9:09 AM
To: Santiago, Juan <Santiago.Juan@epa.gov>
Subject: Please send me your latest NSR Projects tracker that we updated after our planning meeting last Monday. I did not note down all the dates we changed. Thanks

From: Nickerson, William

To: Tsirigotis, Peter <Tsirigotis.Peter@epa.gov>

Cc: Baker, Sarah <Baker.Sarah@epa.gov>; Vetter, Cheryl <Vetter.Cheryl@epa.gov>; Farrar, Wanda <farrar.wanda@epa.gov>; Corrales, Mark <Corrales.Mark@epa.gov>; Manibusan, Mary <manibusan.mary@epa.gov>; Elman, Barry <Elman.Barry@epa.gov>; Brown, StephanieN <Brown.StephanieN@epa.gov>

Subject: Concur with Comment – Proposed Rulemaking: Treatment of Forest Biogenic CO2 Emissions Under Clean Air Act Permitting (SAN 6715; Tier 1)

Peter,

Thank you for the opportunity to review the Final Agency Review materials for the proposed rule titled Treatment of Forest Biogenic CO2 Emissions Under Clean Air Act Permitting. Based on consultation with the Office's Associate Administrator, the Office of Policy concurs with comment.

Our comments are as follows:

(1) We request an opportunity to review the economic impacts section of the preamble, the EIA, and the Technical Support Document prior to their submittal to OMB (these were not available to the workgroup at FAR).

(2)

(3)

(4)

(5)

Ex. 5 Deliberative Process (DP)

We appreciate your efforts to follow the Action Development Process and we have no objection to the action proceeding through the remaining rulemaking steps. If you have any questions or concerns, please feel free to contact me or have your staff contact Barry Elman on 202-566-2958. Thank you.

Bill

William (Bill) Nickerson
Associate Office Director
Office of Regulatory Policy and Management
Office of Policy
Phone: (202) 566-0326

Appointment

From: Elman, Barry [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=518D154868CF44E794A63A3474F7201B-ELMAN, BARRY]
Sent: 10/16/2019 9:09:49 PM
To: Elman, Barry [Elman.Barry@epa.gov]; Ohrel, Sara [Ohrel.Sara@epa.gov]

Subject: Biogenic CO2 rulemaking
Location: Sara's office (WJC-S 4232X)

Start: 10/18/2019 4:30:00 PM
End: 10/18/2019 5:30:00 PM
Show Time As: Busy

Message

Sent: 4/16/2020 2:16:06 PM
To: Corrales, Mark (Corrales.Mark@epa.gov) [Corrales.Mark@epa.gov]
Subject: RE: Tomorrow's meeting with Brittany on biogenic CO2

Sorry, I meant to say tomorrow's 4:00 meeting.

From: Elman, Barry
Sent: Thursday, April 16, 2020 9:57 AM
To: Corrales, Mark (Corrales.Mark@epa.gov) <Corrales.Mark@epa.gov>
Subject: Tomorrow's meeting with Brittany on biogenic CO2

Mark,

I see that a meeting has been set up with Brittany tomorrow at 4:30 to discuss the biogenic CO2 rule in advance of Monday's meeting with Anne Idsal and Matt Leopold. Since NCEE is also following the rule for Brittany (and Peter Nagelhout is now on the workgroup), Al and Peter should be added to the invite to tomorrow's meeting. Do you want to ask Carla to do that, or would you like me to?

Barry

Message

From: Elman, Barry [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=518D154868CF44E794A63A3474F7201B-ELMAN, BARRY]
Sent: 3/26/2020 3:07:16 PM
To: Nagelhout, Peter [Nagelhout.Peter@epa.gov]; DavidA Evans (Evans.DavidA@epa.gov) [Evans.DavidA@epa.gov]
Subject: Draft Summary of Interagency Comments on Biogenic CO2
Attachments: Document8.docx

Peter and Dave,

This summary is still a work in progress

Message

From: Corrales, Mark [Corrales.Mark@epa.gov]
Sent: 4/16/2020 8:58:50 PM
To: Elman, Barry [Elman.Barry@epa.gov]
CC: Nickerson, William [Nickerson.William@epa.gov]
Subject: Re: Biogenic text and materials?

Thanks Barry

> On Apr 16, 2020, at 4:18 PM, Elman, Barry <Elman.Barry@epa.gov> wrote:
>
> Mark,
>
> Attached is the briefing paper for Monday's AA-level meeting that was just circulated to the workgroup. I'm also attaching my suggested revisions to section IV. E. of the preamble, which is the section that ties together the legal and technical aspects of the rationale for the rulemaking. My substantive comments begin on page 4 of the 12 page attachment and should be fairly self-explanatory.
>
> Barry
>
> -----Original Message-----
> From: Corrales, Mark <Corrales.Mark@epa.gov>
> Sent: Thursday, April 16, 2020 12:49 PM
> To: Elman, Barry <Elman.Barry@epa.gov>
> Cc: Nickerson, William <Nickerson.William@epa.gov>
> Subject: Biogenic text and materials?
>
> BB today said she'd like to see the language you proposed on biogenic, after I told her you'd contributed some text for the preamble.
>
> Also, she said she'd find helpful any materials in advance of the upcoming meeting.
>
>
> <Final Idsal Biomass Comment Briefing_4-20-20.docx>
> <Barry's suggested revisions to section IV.E -- 30 MAR 2020 FINAL.docx>

Message

From: Nagelhout, Peter [Nagelhout.Peter@epa.gov]
Sent: 4/8/2020 3:35:13 PM
To: Elman, Barry [Elman.Barry@epa.gov]; Evans, DavidA [Evans.DavidA@epa.gov]; Marten, Alex [Marten.Alex@epa.gov]
Subject: former NCEE'er coauthored study that may be relevant to biogenic CO2 rule
Attachments: adam d forest bioenergy.pdf

Fyi this, co-authored by Adam Daigneault. I just saw the write-up in Inside EPA, and haven't had time to review carefully. I'm not sure it's directly applicable to the managed forest biogenic CO2 rule, as it notes the importance of incentivizing carbon sequestration. Still thought it might be of interest, particularly since Adam's the corresponding author.

BIOENERGY

Forests: Carbon sequestration, biomass energy, or both?

Alice Favero[1], Adam Daigneault[2]*, Brent Sohngen[3]

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There is a continuing debate over the role that woody bioenergy plays in climate mitigation. This paper clarifies this controversy and illustrates the impacts of woody biomass demand on forest harvests, prices, timber management investments and intensity, forest area, and the resulting carbon balance under different climate mitigation policies. Increased bioenergy demand increases forest carbon stocks thanks to afforestation activities and more intensive management relative to a no-bioenergy case. Some natural forests, however, are converted to more intensive management, with potential biodiversity losses. Incentivizing both wood-based bioenergy and forest sequestration could increase carbon sequestration and conserve natural forests simultaneously. We conclude that the expanded use of wood for bioenergy will result in net carbon benefits, but an efficient policy also needs to regulate forest carbon sequestration.

INTRODUCTION

A long literature establishes that forests are an efficient carbon sink through actions such as afforestation, forest management, and reduced deforestation (*1–5*). In recent years, forest-based actions have gained additional policy relevance as many countries have included forest sequestration activities in their nationally determined contributions toward reducing net carbon emissions as part of the Paris Agreement (*6*, *7*). At the same time, there have been increasing efforts in the United States and Europe to use wood as a source of biomass energy, under the assumption that wood-based energy is "carbon neutral" (*8*, *9*). Last, most pathways that aim to restrict global average temperature to 1.5°C by 2100 rely on large-scale deployment of afforestation actions and biomass used in power plants with carbon capture and storage (BECCS) (*10*).

The role that forests should play in mitigating climate change is still widely debated. Some researchers have argued that forest-based biomass energy is not carbon neutral (*11–13*) and, thus, that forest-based bioenergy should not be allowed to offset other energy sources under renewable energy standards. These assessments have suggested that when forest biomass energy is generated, it creates a carbon emission to the atmosphere that may, or may not, be taken back up by trees that grow in the future. Even if regrowth does occur, it occurs slowly over time, increasing global climate damages during the period when the released carbon is in the atmosphere. Given these concerns, some have argued that society should focus on enhancing carbon sinks rather than encouraging biomass energy (*11*, *13–15*). Assessing whether forest biomass energy is carbon neutral is complex and sensitive to assumptions about the spatial and temporal scale of the analysis, feedstocks used, and supply chain emissions. Buchholz *et al.*'s (*16*) meta-analysis found that the payback period (i.e., the time required by the forest to recover through sequestration the carbon dioxide from biomass combusted for energy) ranged from zero to more than 1000 years. Birdsey *et al.* (*17*) conclude that increasing bioenergy production and pellet exports often increases net emissions of greenhouse gases (GHGs) for decades or longer, depending on source of feedstock and its alternate fate, time horizon of analysis, energy emissions associated with the supply chain and fuel substitution, and impacts on carbon cycling of forest ecosystems. The studies examined in these two reviews, however, ignore economic analysis that accounts for the interactions between demand and supply and forest management (*18–23*). These interactions include assessment of the opportunity costs of intensified harvesting and management, as well as expansion of intensive timber harvesting activities into extensive (e.g., unmanaged) regions.

This paper examines key issues related to the consequences of bioenergy policies on forests and carbon emissions, namely, management response, the efficiency of the policy, and the impacts of increasing biomass demand on forest ecosystem services. To analyze these issues, we use a dynamic global forest model that accounts for the biological and economic responses to various policy incentives on forest management and carbon fluxes in all regions of the world (*22*, *23*). Such integrated assessment modeling of the forest sector provides important insights into the temporal and spatial scale of forest management efforts that must be undertaken to increase wood flow in the face of large, new biomass energy demands, as well as their interactions with carbon policies. The analysis clarifies how various policy incentives for biomass energy and carbon sequestration influence the net exchange of carbon between the atmosphere and forested ecosystems. Last, a sensitivity analysis tests the results under different assumptions on land constraints and economic parameters.

RESULTS

The debate behind woody biomass for energy

Three critical issues have arisen in the literature related to the use of woody biomass for energy. First, the impact of biomass energy policies on carbon depends on the supply response, which include investments in new forests, increased management of existing forests, harvests of inaccessible and unmanaged forests in the extensive margin, conversion of those forests to more intensive uses, and substitution across product uses. Studies that assume there is little to no management response, or consider only use of the extensive margin, predict that bioenergy demand will increase carbon emissions (*16*, *17*). Studies that allow efficient investments in forestry management find that bioenergy policies lead to a net increase in forest sequestration (*18–22*). A key determinant rests on the response of land use and management

[1]Georgia Institute of Technology, Atlanta, GA, USA. [2]University of Maine, Orono, ME, USA. [3]Ohio State University, Columbus, OH, USA.
*Corresponding author. Email: adam.daigneault@maine.edu

Downloaded from http://advances.sciencemag.org/ on April 8, 2020

ED_004741_00213229-00001

to the price changes induced by bioenergy policy. If models include management responses, higher prices invariably encourage more management and forest area, and thus, biomass energy policies reduce net emissions over time. Alternatively, if forest land area and forest management do not change or decline with biomass energy policies, and there is additional harvesting of unmanaged stocks, then the policies typically result in net emissions. It is, thus, important to isolate the role of management on forest carbon stocks.

Second, studies suggesting that biomass energy should be taxed have ignored the literature showing the efficient economic treatment of carbon fluxes between the atmosphere and forests in the broader carbon cycle (*4*). From the perspective of the atmosphere, a ton of CO_2 in forests is a ton not in the atmosphere, suggesting that the social cost of carbon can be used to value carbon exchanges, or fluxes, between the atmosphere and ecosystems (*24*). Two equally efficient schemes have been proposed in the literature to credit carbon fluxes between the atmosphere and forests: a carbon rental approach (*4*) and a carbon tax and subsidy approach (*25*). Under both approaches, the efficient climate policy counts emissions when forests are used for energy or wood products as an increase in atmospheric carbon, but they also count sequestration that occurs when forests grow. Bioenergy emissions can be taxed like other GHGs under an efficient approach to credit carbon fluxes, but only if the benefits of storing carbon in forested ecosystem are also recognized and subsidized (*25*). That is, a policy that taxes forest-based bioenergy without recognizing that forests also sequester carbon through growth [the Schlesinger proposition (*26*)] is inefficient and will lead to too little carbon in forests and too much carbon in the atmosphere.

Third, there are concerns that ecosystem services and biodiversity provided by primary forests could be affected if harvests are diverted from traditional wood products to bioenergy (*13*, *14*) or the level and quality of standing biomass on managed forests are diminished due to higher levels of residue removals (*27*), shorter rotations (*28*, *29*), or more land moved from no/low management to more intensive management. Concerns with ecosystem services, however, tend to focus on the effects of biomass harvests at individual sites (*13*, *14*). While more intensive harvesting will be a consequence of any biomass energy policy that increases the demand for wood, intensification will not occur at a few selected sites, but across forests, especially under widespread biomass energy or carbon neutrality mandates. To gauge the full impacts of policies, models must be able to analyze the full spatial and temporal consequences on the global forest ecosystem.

In numbers: pro and cons of woody biomass demand

We use the dynamic global timber model (GTM) to assess how bioenergy demand affects the forestry sector, forestland, and carbon sequestration (*4*, *30*). GTM compares timber harvesting and management in more than 200 managed and natural forest ecosystems across 16 world regions (fig. S1) under different bioenergy demand scenarios to a no-bioenergy demand scenario (*22*). The model used the Shared Socioeconomic Pathway (SSP) 2 marker scenario projections of gross domestic product (GDP) and population (*31*–*33*) to simulate forest product demand, while bioenergy demand projections [following the assumptions presented in Lauri *et al.* (*34*) that 9% to 12% of total bioenergy demand is sourced by dedicated forest plantation; bioenergy is converted from gigajoules (GJ) to cubic meters (m^3) of forest biomass using constant conversion factors of 7.2 GJ/m^3] and carbon price paths under the same SSP2 scenario for each Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathway (RCP) are used to simulate the future demand for woody biomass and the value of CO_2 (fig. S2).

In general, bioenergy consumption is expected to increase with the stringency of the RCP target. For reference, under RCP 1.9—the scenario most consistent with a 1.5°C target—about 30% of the total energy supply through 2100 is estimated to be sourced from bioenergy with carbon capture and storage (BECCS) (*33*). Because bioenergy demand is expected to come from a variety of sources, we assume about one-third of the supply is provided by forests, which is consistent with other global analyses (*34*). The model assumes a homogenous form of woody biomass energy demand without distinguishing types of woody biomass production. From the perspective of our model, this means that each type of wood that could be used as an input into biomass energy production is paid the same price.

Increasing demand for woody biomass will have noticeable impacts on the global forest sector compared with a no-policy baseline case (tables S2 to S4). Timber prices could more than triple if woody biomass consumption reaches 4.3 billion m^3/year by the end of this century, as in the RCP 1.9 scenario (Fig. 1A). The model does account for the substitution between wood products and biomass, and the increasing demand for woody bioenergy negatively affects the industrial timber market. That is, there is a decline of between 30 and 80% in the production of industrial timber over the century projected across the RCPs, with the largest reduction under RCP 1.9.

Higher timber prices incentivize afforestation across the globe (Fig. 1B). However, higher timber prices also encourage harvesting of natural forest areas (forest types are defined as follows: "plantation" = intensively managed plantations; "managed" = extensively managed, often naturally regenerating forests; "natural" = inaccessible, unmanaged natural forests) (Fig. 1C), which are replanted as a mix of low-managed forests and intensive plantations (Fig. 1D). Total global forest carbon sequestration is projected to increase only when the demand for woody biomass is large enough to encourage consumption greater than 1.1 billion m^3/year by 2100, i.e., an RCP of less than 4.5 (Fig. 1E). When biomass demand is lower than this level, it does not generate high enough timber prices to generate enough investments in forests or plantations to offset carbon losses that occur when forests are harvested. The carbon losses occur primarily in regions dominated by large areas of remaining inaccessible forests, namely, Latin America, Southeast Asia, Canada, and Russia. Older forests have substantial carbon stocks that are not compensated. Eventually, if biomass energy demand is strong enough, investments in forests will outweigh losses, and carbon turns positive. The expenditure on forest management, as measured by dollars per hectare invested in replanting, also matters, as it increases with more stringent climate policy (Fig. 1F).

The model accounts for carbon stored in four different pools. The increase in carbon stocks is primarily driven by improvements in aboveground carbon, while more forestland marginally increases soil carbon due to afforestation relative to the baseline scenario. Carbon stored in harvested wood products is projected to decline under all policy scenarios because the increasing demand for woody biomass reduces the quantity of noncombusted wood products (fig. S4).

Expanding woody biomass energy could result in a 286 (RCP 6.0) to 1931 (RCP 1.9) m^3/year increase in total timber harvesting compared with the baseline scenario. Increases in harvests are not equally distributed across the globe though (Fig. 2), with the largest harvest increases expected in places where industrial wood harvesting is already an important part of the landscape and regional economy. For instance,

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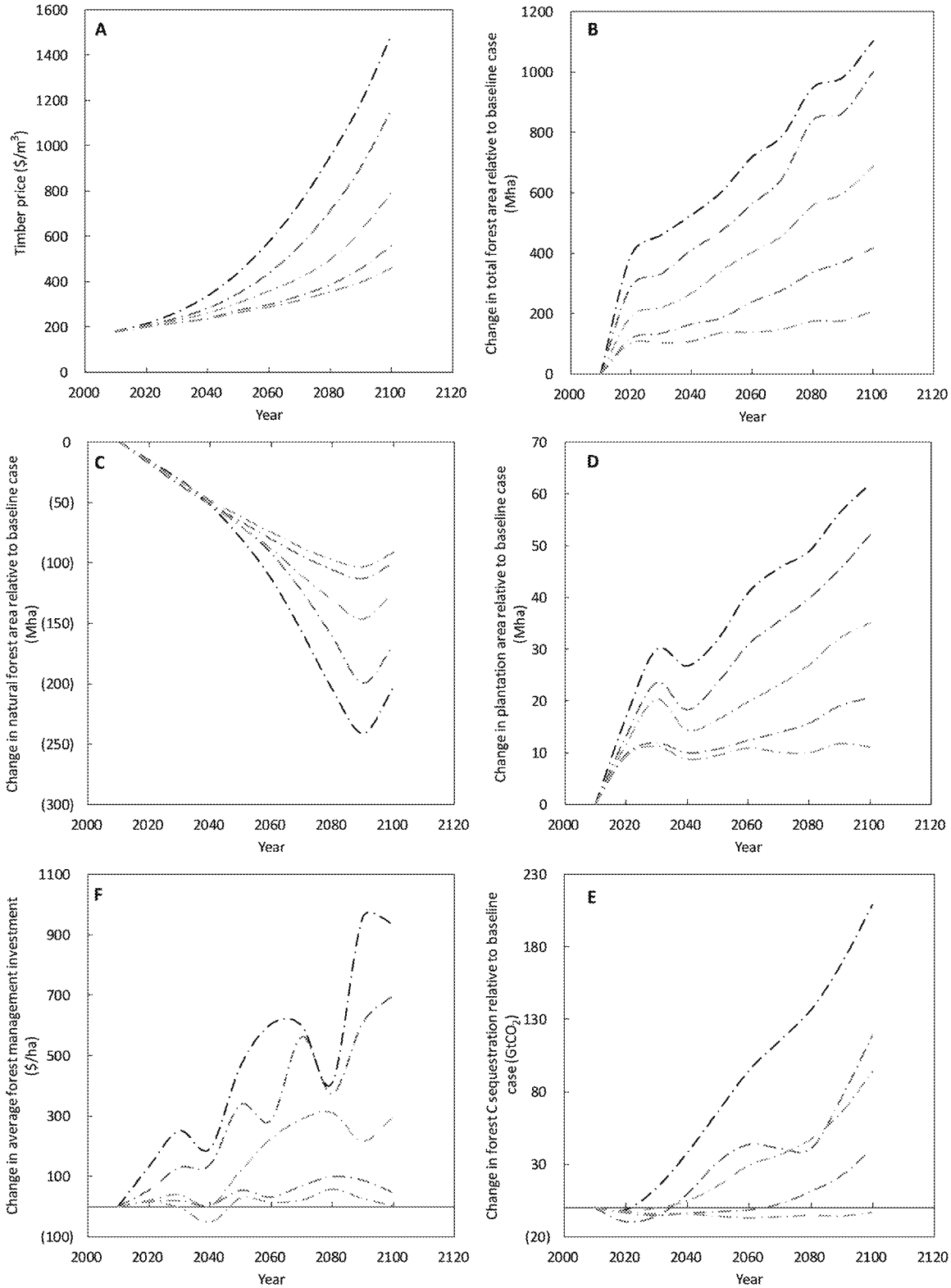

Fig. 1. Global impacts for increased wood-based bioenergy demand, 2010–2100. (**A**) Timber prices, (**B**) total forest area, (**C**) natural unmanaged forest area, (**D**) plantation forest area, (**E**) total forest carbon stock (includes all the four carbon pools presented in fig S3), and (**F**) management investment relative to the baseline (no bioenergy demand). Black, RCP 1.9; red, RCP 2.6; green, RCP 3.4; blue, RCP 4.5; orange, RCP 6.0.

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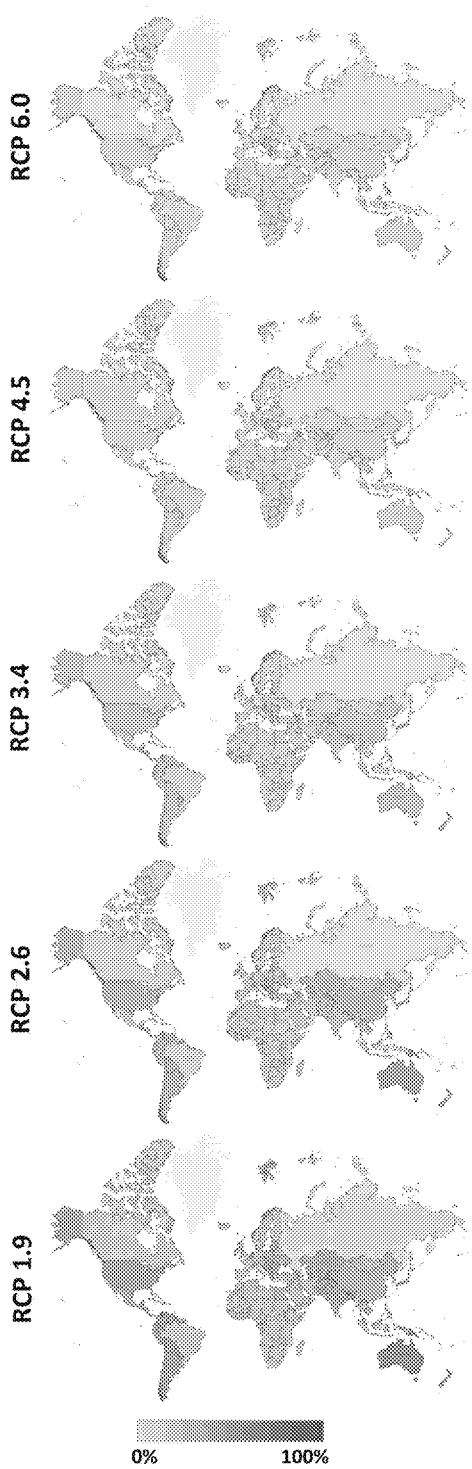

Fig. 2. Mean change in total regional harvests relative to the baseline, 2010–2100.

in the RCP 3.4 case, U.S. harvests increase by an average of 27% over a 100-year period, while harvests in Southeast Asia and Russia only increase by 6 and 2%, respectively.

The increased demand for woody biomass encourages changes in forest management along several margins that are typically ignored in traditional life cycle analyses. First, the area of intensively managed plantations increases by up to 61 million hectares (Mha), or 60%, over the baseline (Fig. 1C). These plantations have rotation ages ranging from 10 to 30 years and, thus, can be used to ramp up timber and biomass supply relatively quickly. We calculate that for every 1% increase in timber price, the area of plantations increases by 0.32% globally.

Second, forests that currently have limited management become more intensively managed via increased investment in harvesting and replanting, thinning, fertilizing, and other actions. Every 100 million m^3 of additional woody biomass energy supply could create 5.6 Mha of more intensively managed forests. Higher prices provide a market signal to landowners, who will take steps to increase their forest stocks via expanding the area in managed forests and/or improving management activities (*18*, *35*). Expenditures on forest management could increase by an average of $230 per hectare on managed forests due to the increase in woody biomass demand, nearly 70% greater than the mean baseline expenditure estimate (Fig. 1F). Some of the land that we project that will become intensively managed is currently ecologically sensitive and/or high in biodiversity. Assuming that there are no other forest carbon sequestration incentives or forest conservation policies in effect, we estimate that if woody biomass demand rises to 4 billion m^3/year, as under RCP 1.9, about 15% of global natural forest area, or 250 Mha, could be converted to a more intensive management regime (fig. S5). These results confirm that "standard" bioenergy policy targeting woody biomass generally has a negative impact on the world's natural unmanaged or inaccessible forests. However, these natural forests will not be converted to agriculture, as economic incentives offset losses through planting forests managed at different degrees of intensity and avoided deforestation of managed forests (fig. S5).

Third, other land will be converted to forests and, thus, increase the absolute area of forests globally. The largest demand scenario (RCP 1.9) estimates a potential increase in forest area by 1.1 billion ha, 30% more than the current forest cover by 2100 (Fig. 1B). This is within the bounds of the recent paper by Bastin *et al.* (*36*), who identify an area of 1.6 billion ha of additional land that could support forests, of which 0.9 billion ha are located outside valuable cropland and urban regions. For this study, we used the 1.6 billion ha as an upper bound for our simulations, and in the sensitivity analysis, we tested the results under the more stringent 0.9 billion limit. The 1.1 billion ha estimate is large but not an outlier (fig. S6). Our results are confirmed by integrated assessment models (IAMs) with land modules and crop prices, which suggest that global forest area could increase by up to 1.0 billion and that about 5.4 billion ha could be covered by forests under the RCP 1.9 stabilization scenario with approximately 1.9 billion ha new forestland (*31*, *33*).

While we do not explicitly model crop production or prices, our model incorporates land rental functions that require paying higher prices to rent land as more land is used for forests. The increases in rents that we project are consistent with other studies in the literature. Under the RCP 1.9 scenario, our global average land rents between now and 2100 are estimated to be four times higher than the baseline rents. Popp *et al.* (*37*) similarly shows that agricultural land for food and feed production declines as more land is used for bioenergy and carbon sequestration. They do not present estimates of land rents, but they do show that crop prices could be between two to six times higher than the baseline under a high mitigation scenario.

An efficient approach to carbon management

This section illustrates the difference between an efficient carbon management approach, which incentivizes both sequestration and

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avoidance of emissions, and an inefficient approach that only uses a carbon tax to incentivize the avoidance of emissions from woody biomass production. An efficient approach to manage carbon exchanges between the atmosphere and the biosphere can be accomplished by using either a carbon rental (*4*) or a carbon tax and subsidy approach (*25*). Both of these efficient approaches recognize that emissions from biomass energy are like all other GHG emissions and that forest growth removes carbon from the atmosphere. On the other hand, a tax on emissions from bioenergy demand (penalty scenario) without an offsetting subsidy for carbon accumulation is an inefficient approach because it creates relatively less demand for forest products, depresses timber prices (Fig. 3A) and forest area (Fig. 3, B to D),

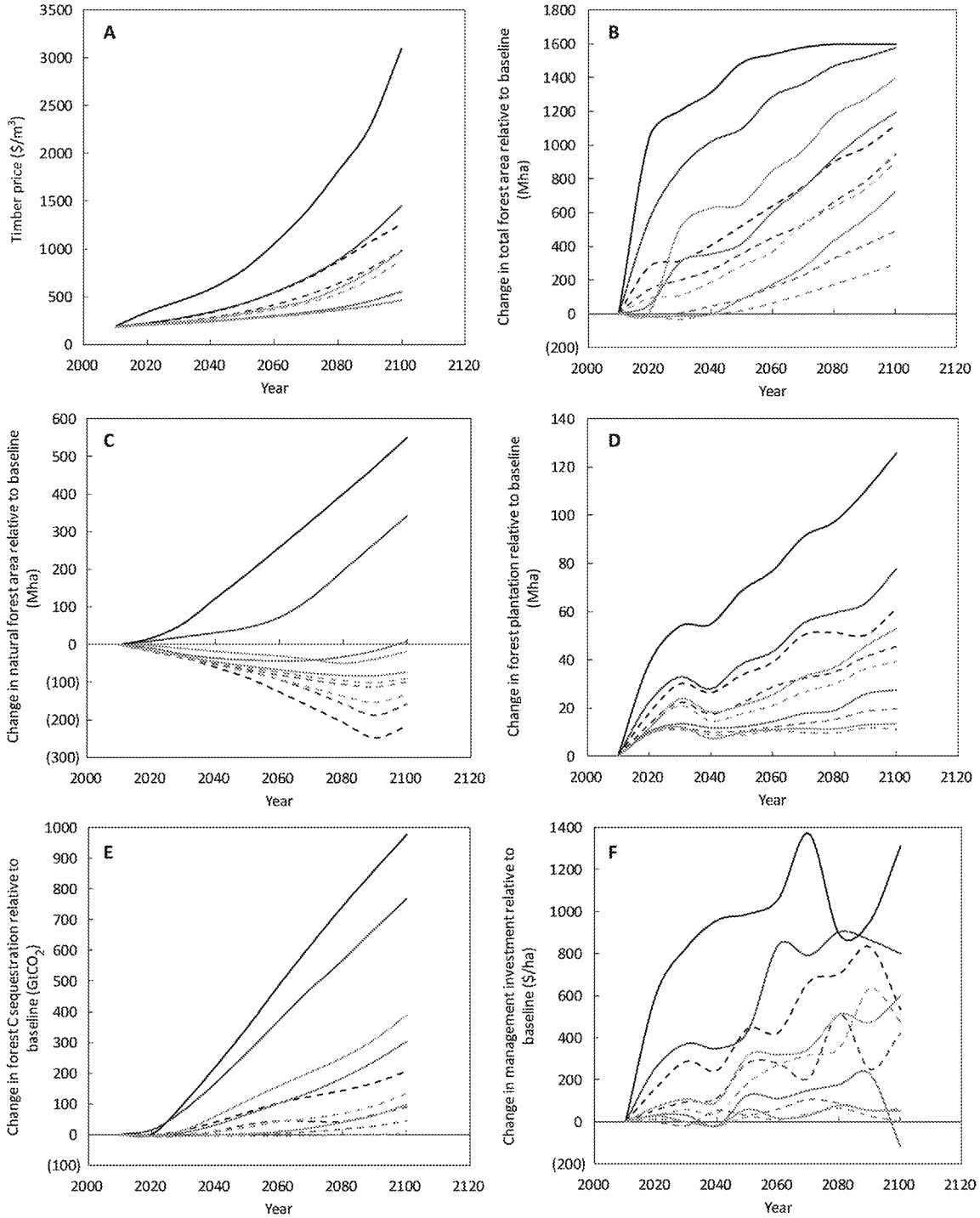

Fig. 3. Global impacts for alternative wood-based bioenergy policies, 2010–2100. (**A**) Timber price and changes in (**B**) total forest area, (**C**) natural forest area, (**D**) forest plantation area, (**E**) total forest carbon stock, and (**F**) management investment relative to the baseline (no bioenergy demand). Dashed, carbon penalty; solid, forest carbon rental; black, RCP 1.9; red, RCP 2.6; green, RCP 3.4; blue, RCP 4.5; orange, RCP 6.0.

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lowers investment in forest management (Fig. 3F), and, thus, leads to lower forest carbon stocks (Fig. 3E) compared with the efficient approach (carbon rental scenario). That is, under any given demand for woody biomass, an approach that only penalizes emissions will deliver less carbon sequestration than the efficient rental approach. Moreover, timber prices are higher under the rental scenario because there are additional benefits associated with holding carbon in forests, thereby potentially reducing the annual timber supply.

Critically, the penalty approach, as suggested by Searchinger *et al.* (*13*), could cause a large reduction in the area of natural inaccessible forests of up to 200 Mha under the strong biomass energy demand of RCP 1.9 or 2.6 (Figs. 3C and 4). Without valuing standing stocks of forests through a subsidy for forest carbon sequestration, higher timber prices (Fig. 3A) provide a substantial incentive to convert natural forests to other forest types (Fig. 3B). The tax cannot avoid this outcome. The largest declines in natural forest areas under a penalty approach will occur under biomass demand higher than 1.5 billion m^3/year, mainly in the tropics, followed by the temperate zone (Fig. 4). In contrast, a carbon rental approach encourages protection of standing natural forests by valuing the standing stock, such as old growth harvests in boreal regions and unmanaged forests in the tropics. In particular, a combination of the high carbon prices and bioenergy demands (RCPs 2.6 and 1.9) will avoid future deforestation of tropical natural forests relative to the baseline. That is, opportunity costs of land are relatively low in the tropics, so there is a reduction in forestland conversion to cropland. Second, the carbon gains in the tropics are relatively fast and large, such that the rental values encourage substantial carbon sequestration comparing to temperate and boreal forests.

Each of the policy approaches leads to more forestland globally over the next century, but estimates vary at the regional level (Fig. 5). In the cases where there is a penalty imposed on harvesting biomass, even with the relatively low carbon prices of RCPs 6.0 and 4.5, there could be 10 to 25% less forest cover in parts of the tropics by 2100 compared with the forest carbon rent policy. The forest carbon rental payment approach is expected to increase forest cover across the globe, with the more stringent mitigation scenarios leading to increases of 50% or more in many parts of the world.

A forest carbon rental approach has sometimes been considered an infeasible climate change mitigation policy option because of the complexities with measuring and verifying changes in carbon stocks and possible governance issues in developing countries (*35*, *38*). However, placing a tax on woody bioenergy could exacerbate one of the issues the policy is intended to prevent, namely, the loss of natural forests and associated ecosystem services. Despite this, we find that increasing the demand for wood-based bioenergy, regardless of the policy approach, will increase the total forest carbon in nearly all scenarios (Fig. 3E). Under the penalty scenario, average stocks could increase by 34 gigatonnes carbon dioxide eqiuvalent ($GtCO_2e$) or about 1% compared with the baseline. This is equivalent to 0.4 $GtCO_2e$/year or 1.1% of 2018 global CO_2 emissions (*39*). Including payments for forest carbon sequestration has additional benefits. Forest area could expand by 500 Mha or more, and total carbon stocks could increase by an average of 2.3 $GtCO_2e$/year, offsetting 7.1% of current annual emissions (Fig. 3E). In nearly all scenarios, a majority of this net increase in carbon stocks is due to increases in aboveground carbon, while the substitution of some timber to bioenergy has a somewhat negative effect (fig. S7).

Growing wood-based bioenergy demand will positively affect forest management investment regardless of the policy approach, averaging about 80% above baseline investment. Demand for wood products in general will stimulate investment as landowners are expected to accrue a higher return. However, a forest carbon rental and increased biomass demand policy could double investment compared with the biomass penalty approach (Fig. 3F). Management decisions affect the amount of carbon stored in forests in different ways. First, GTM controls rotation ages, which influences carbon stocks on sites, with higher rotation ages leading to greater timber supply and more carbon, and vice versa. Second, under high bioenergy demand and/or carbon prices, the model projects more replanting, which, compared with natural regeneration, will increase average carbon on a site over a rotation. Third, GTM shifts species types over time in response to prices and land rental values. Fourth, the model shifts species from no management to modest management (harvesting with natural regeneration or harvesting with replanting in some cases, depending on value). In nearly all cases, this conversion of older forests to younger forests leads to more timber output but less carbon. Last, GTM includes management intensity on replanted land. This type of management intensity, which could include genetic selection, fertilizing, density controls, and other approaches, increases both carbon stocks and the value of timber. This type of management intensity is monitored in the model by the expenditure per hectare of forestland, with higher expenditures leading to more timber and more carbon.

Sensitivity test

We tested the effects of bioenergy demand on forestland and carbon sequestration and the efficiency of the rental approach relative to the penalty approach under a scenario in which forestland additions are limited to 0.9 billion ha, following Bastin *et al.* (*36*). Even under this constrained scenario, our findings are confirmed: Bioenergy demand will increase total forestland and forest carbon sequestration compared with a no-bioenergy (baseline) scenario (Fig. 6, A and C), and the carbon rental policy provides an efficient approach to regulate the increasing demand for bioenergy by protecting natural forestland while providing woody biomass for energy at the same time (Fig. 6B). Although forest area does not expand as much with the tighter constraint, it is around 50% lower; forest carbon storage declines by only 20 to 30%. Carbon declines proportionally less than forest area because forests are managed more intensively to increase timber production, and this in turn enhances carbon storage. Any time there is a conversion in natural forest areas from inaccessible to accessible and lightly managed forests, there is lower total carbon stored over time. Thus, the efficient carbon rental climate policy leads to more carbon by protecting more natural forests from conversion.

Additional sensitivity analysis that adjusts key model parameters such as the land supply elasticity, management response to forest investment, and the cost of accessing and clearing natural forests to half and double their original values indicates that our general findings still hold (fig. S8). That is, higher biomass demand will increase the value of timberland, incentivize additional investment in forest management and afforestation, and result in greater forest carbon stocks over time, even if our model includes more pessimistic (i.e., less responsive) parameter values. However, the relative impact that each parameter has on the estimates varies. For example, a low land supply elasticity results in about half the afforestation rate of the high land supply elasticity case, simulating the potential effect if landowners are more resistant to converting their agricultural lands to forests. As a result, forest carbon stocks would still increase over

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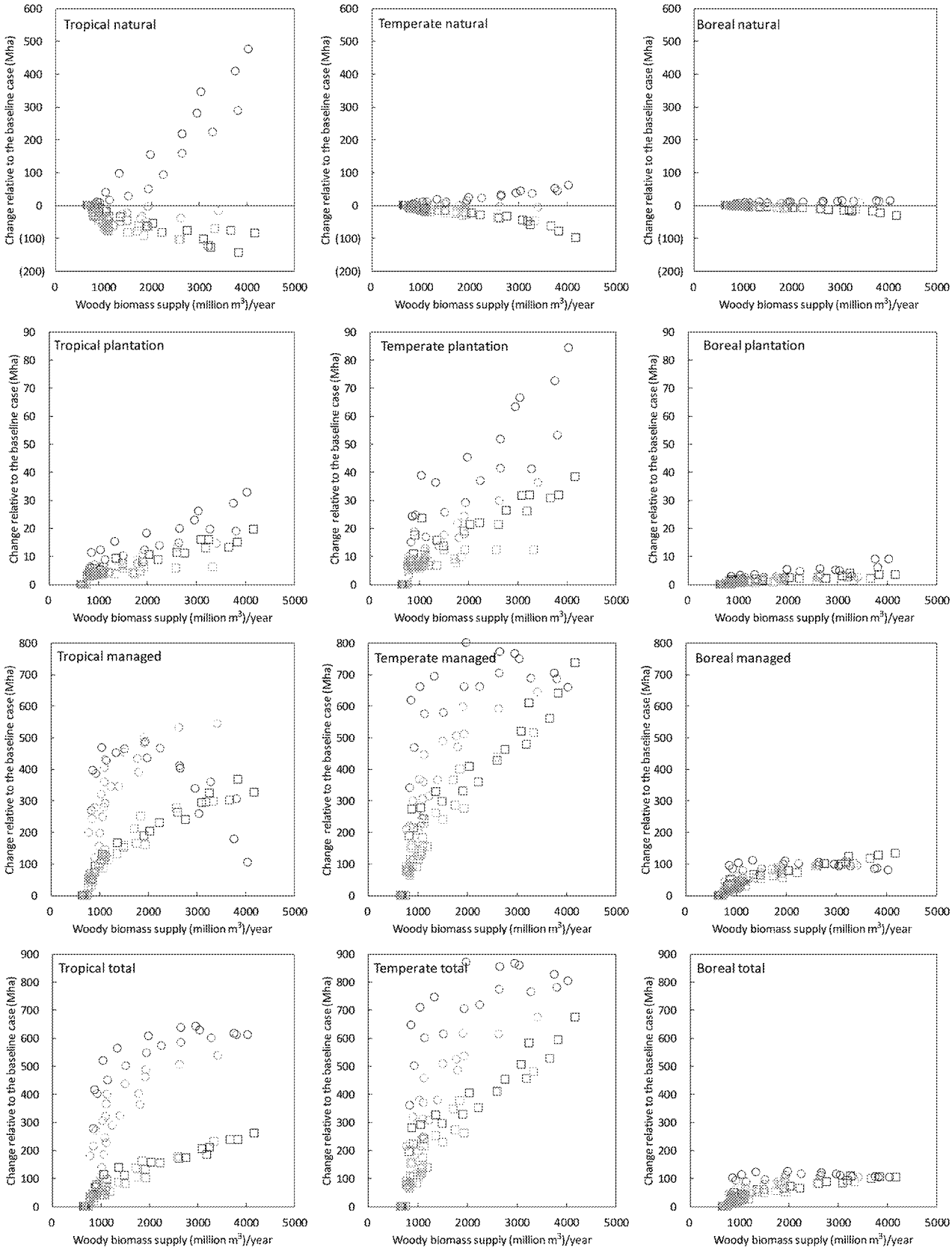

Fig. 4. Changes in global forest area by major ecosystem relative to baseline case under alternative wood-based bioenergy policies. Square, carbon penalty; circle, forest carbon rental; black, RCP 1.9; red, RCP 2.6; green, RCP 3.4; blue, RCP 4.5; orange, RCP 6.0.

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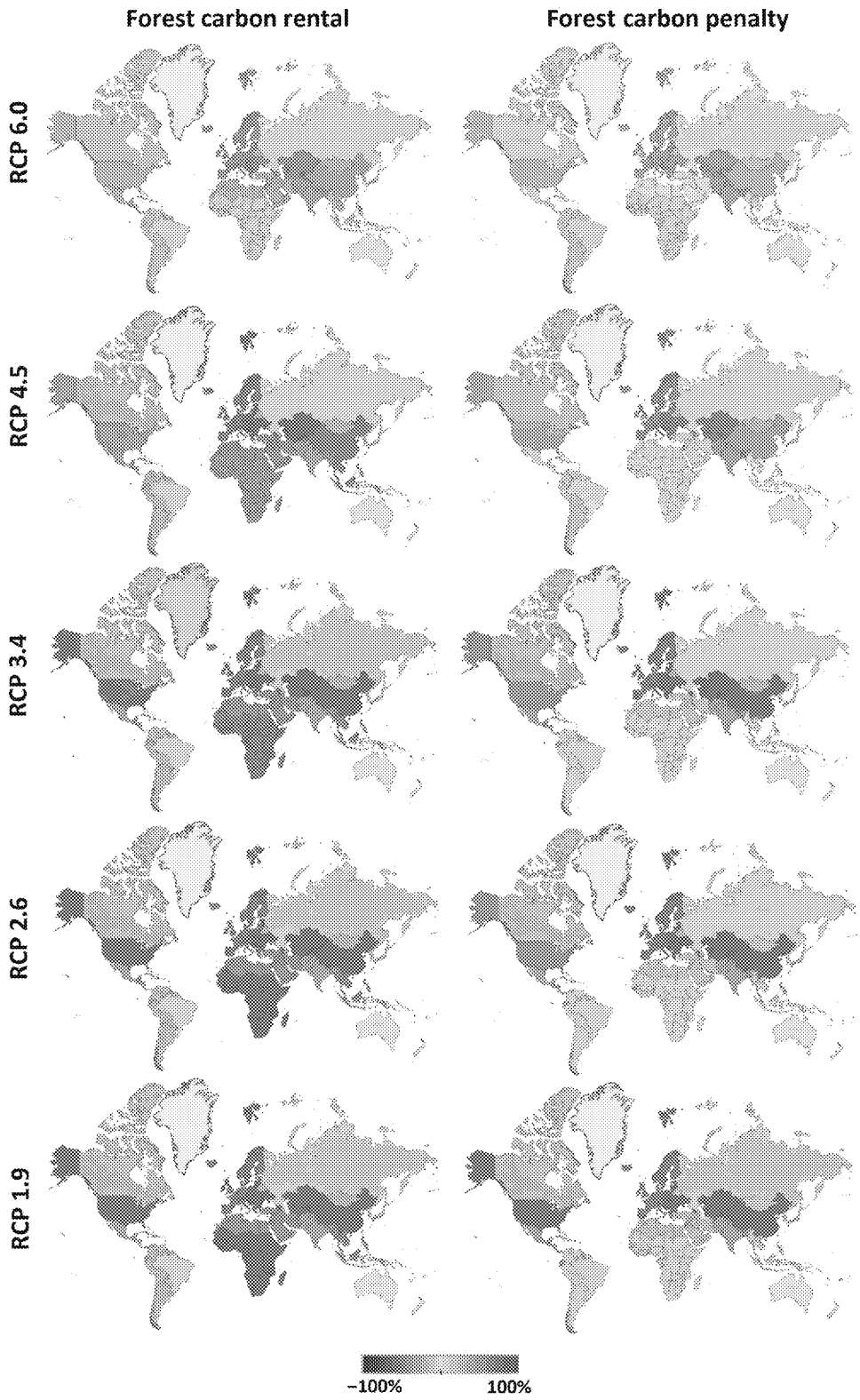

Fig. 5. Regional changes in forest area relative to 2010 for forest carbon rental and carbon penalty scenarios.

the next century, but at a rate that is about 40% less than most of the other sensitivity cases. Furthermore, our sensitivity analysis indicated that estimates were most sensitive to the forest carbon rental scenarios, especially in the cases with high carbon prices that incentivize more competition between carbon, bioenergy, and timber production.

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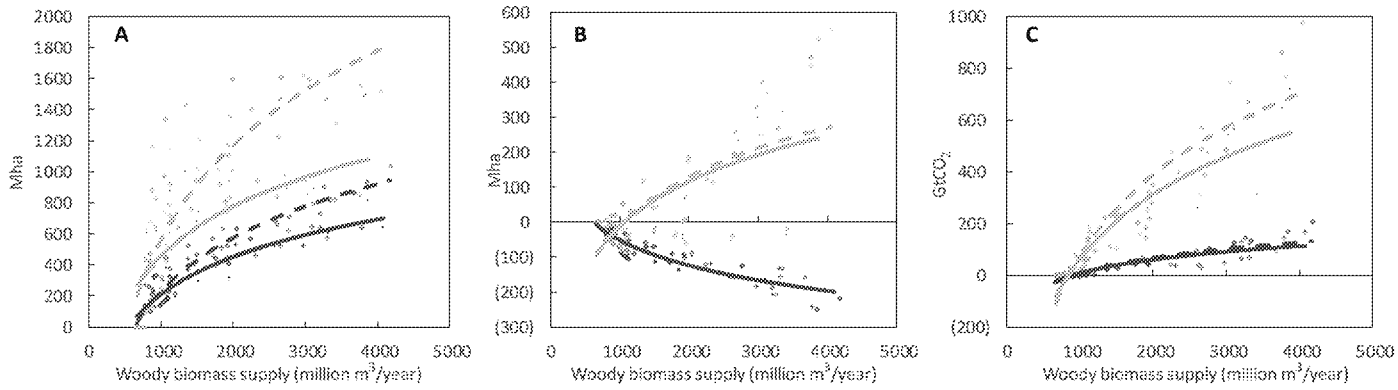

Fig. 6. Estimated impacts for alternative land constraint scenarios under all RCPs. (**A**) Total forest area; (**B**) natural forestland and (**C**) forest carbon sequestration versus woody biomass production relative to the baseline (no bioenergy demand) for alternative land constrained scenarios and policy scenarios under all the RCPs. Diamond, 1.6 billion ha additional forestland limit; plus, 0.9 billion ha additional forestland limit; gray, carbon penalty; pink, forest carbon rental. Trend lines: dashed, 1.6 billion ha; solid, 0.9 billion ha additional forestland limit.

DISCUSSION

Projections using IAMs show that bioenergy demand is very likely to dominate under the 1.5° to 2°C target scenarios (*10*). Our study provides a comprehensive outlook of how this bioenergy future will affect forest harvests, prices, timber management investments, the area of forest, and forest carbon balance when market interactions and management responses are considered. Dynamic market and management responses are usually ignored in many environmental studies that provide only a partial view of the ongoing debate about benefits and risks of increasing global bioenergy demand (*12–17*, *36*).

The results show that lower levels of bioenergy demand, consistent with RCPs 4.5 and 6.0, can lead to net carbon emissions if the higher prices encourage more harvesting of natural forests but not enough of an increase in investments in forest regeneration. For RCPs more stringent than 4.5, bioenergy demand is sufficiently high that it encourages strong enough investments in forest management to offset the negative effects of harvesting inaccessible and natural forests. Thus, for these higher levels of bioenergy demand, there are net positive effects on the global carbon balance, although there are notable impacts on natural forests. Across all ranges of bioenergy demand, efficient forest carbon sequestration policies can be deployed to ensure that forests are carbon neutral and that forest carbon stocks are maintained. Further, these efficient policies can significantly reduce the loss of inaccessible and natural forests. In contrast, inefficient policy proposals, such as taxing carbon emissions from biofuels without also accounting for the gains that accrue to forest growth, cause potentially large losses of natural and inaccessible forests and lead to carbon emissions in some circumstances.

There are two important reasons why stocks are enhanced in the face of strongly growing demand. First, when demand grows, prices rise and landowners with growing forests will typically hold trees to take advantage of the rising prices, as there is a higher opportunity cost of felling them prematurely. If the demand for biomass energy turns out to be short-lived, lasting only a couple years, then landowners would be encouraged to harvest trees earlier than otherwise, which would reduce carbon stocks and lead to net emissions. However, biomass energy projections associated with long-run phenomenon like climate change suggest that the demand for wood-based biomass energy will grow over time.

Second, rising prices incentivize foresters to increase regeneration and management expenditures. These include replanting, fertilizing, managing for competition, and other practices aimed at increasing the value of and size of the growing stock. Expansion of biomass energy production would increase management over a wide swath of forests around the world, but most intensification would occur in places that are already intensively managed. For context, the stock of forests has increased steadily in the southern United States and has stabilized in the Pacific Northwest since 1950, despite old growth harvesting that continued up to the 1990s (*40*).

These findings advance the policy discussion by capturing several dynamics of how landowners respond to incentives, namely, that economic incentives promote more forest management. This outcome is different than that of Schlesinger *et al.* (*26*) and others, who do acknowledge regrowth of forests but argue that emissions in the near term are particularly harmful because they cause damages during the entire time it takes for forests to regrow. This stance ignores the benefits of the past accumulation of carbon embodied in current forest stocks, which is an important component of the global carbon budget. The argument can also be extended to the future: Is it fair to hold landowners accountable for today's emissions without considering the benefits of their future regrowth, especially given that the future carbon storage is more valuable than even today's emission?

In addition to increasing the stock of forests, higher prices make forests more resilient to land use change. The real price of forest products has increased since the 1940s, while the real price of crops has fallen. As a result, the area of land in forests in the many parts of the United States and Europe has increased over the same time frame due to afforestation and the abandonment of low-productivity agricultural land (*41*, *42*). Rising prices, however, can encourage landowners with unmanaged, or natural forests, to liquidate their stock sooner than otherwise. If a policy that accounts for forest sequestration, such as the carbon rental policy, is not implemented, bioenergy demand could harm natural forests and the ecosystem and the biodiversity services that they provide. Further, as long as policies are implemented efficiently, large areas of natural forests would remain intact.

This study provides an improved understanding of the benefits and risks of increasing global bioenergy demand on forest area and forest carbon mitigation potential under alternative policy scenarios. However, there are at least two other factors that could be integrated

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in future research to provide a more complete analysis of these issues in a dynamic framework: first, estimating the effects of climate change on forest growth, merchantable yields, dieback, and biome shifts on regional biomass supply; and second, analyzing how emerging technological and/or social transformation processes may affect the projected demand for woody biomass, especially over a long time horizon. Taking this more complex and integrated approach might not change our overall findings but rather provide more insight into additional risks that could be considered when designing efficient bioenergy and forest carbon sequestration policies.

MATERIALS AND METHODS

The forestry model used in this analysis is the GTM, which was initially developed to study dynamic forest markets and policies (*4*, *30*). GTM combines the spatially detailed data on forests with an economic model that weighs optimal forest management alternatives. This version of the model does not include climate change impacts, but the land classes in the model can be linked to vegetation types represented in ecosystem models such as BIOME/LPX-Bern (*43*, *44*) or MC2 (*45*, *46*). The baseline scenario used in this study is consistent with current climatic conditions. Moreover, GTM incorporates overall constraints on land areas derived from the ecological models, such that only land that is capable of naturally supporting forests can be converted to forestland (*44*). For this specific study, we included more restricted limitations on regional land that can be converted to forest following the estimates presented in Bastin *et al.* (*36*) of 1.6 billion ha and 0.9 billion ha.

GTM was recently used in a validation exercise to provide a historical assessment of global and regional timber harvesting, timber management, and carbon stocks from 1900 to 2010 in Mendelsohn and Sohngen (*47*). Thus, our first simulation period (a decade) overlaps with the historical decade. Furthermore, Sohngen *et al.* (*48*) conducted a Monte Carlo analysis with the model to assess how uncertainty in the land supply elasticity and forest biomass (yield) parameters would affect timber supply and carbon outcomes. The historical validation illustrates that the model can reproduce forestry management, land areas, timber prices, and timber stocks. The Monte Carlo illustrates that the model is most sensitive to the yield function parameters in terms of the carbon outcomes and timber supply outcomes. Land supply elasticity is uncertain, but given that the elasticity parameter is likely not to vary systematically, uncertainty in the land supply elasticity does not have strong effects on carbon or timber supply.

GTM contains 200 forest types i in 16 regions. Figure S1 shows the regional disaggregation. Forest resources are differentiated by ecological productivity and by management and cost characteristics. To account for differences in ecological productivity, different land classes in different regions have different yield functions for timber, derived from the underlying inventory data. Moreover, forests are broken into different types of management classes. The first type is moderately valued forests; these are forests managed in rotations and located primarily in temperate regions. The second type is natural inaccessible forests, located in regions that are costly to access. To be conservative, inaccessible forests are assumed to be in equilibrium, such that they are neither accumulating nor releasing carbon. Inaccessible forests are unmanaged and located in places that are costly to access for timber market reasons. Over time, some of them in our model become accessible due to economic reasons, e.g., timber prices rise, making additional hectares economically efficient to harvest. If they become accessible, they are harvested, and when regrown, they are subject to applicable forest growth functions. The third type is low-value forests located in temperate and boreal areas that are lightly managed, if they are managed at all. The fourth category includes low-value timberland in inaccessible and semi-accessible regions of the tropical zones. The fifth type includes the high-valued timber plantation that is managed intensively; these forests can principally be found in subtropical regions of the United States, South America, southern Africa, the Iberian Peninsula, Indonesia, and Oceania.

GTM is an economic model of forests that maximizes the net present value of consumers' and producers' surplus in the forestry sector. By maximizing the net present value, the model optimizes the age of harvesting timber a and the intensity of regenerating and managing forests m_t^i. It is an optimal control problem, given the aggregate demand function, starting stock, costs, and growth functions of forest stocks.

GTM relies on forward-looking behavior and solves all time periods at the same time; this means that when land owners make decisions today about forest management, they do so by considering the implications of their actions today on forests in the future with complete information. The result is a forecast of what a competitive market would also do with forestland.

Mathematically, this optimization problem is written as

$$\max \sum_0^\infty \rho^t \left\{ \begin{array}{c} \int_0^{Q_t^{\text{tot}}} \left\{ D(Q_t^{\text{ind}}, Z_{t,\text{RCP}}) + D(Q_{t,\text{RCP}}^{\text{wbio}}) - C(Q_t^{\text{tot}}) \right\} \mathrm{d}Q_t^{\text{tot}} - \\ \sum_i C_G^i(m_t^i, G_t^i) - \sum_i C_N^i(m_t^i, N_t^i) - \sum_i R_t^i(\sum_a X_{a,t}^i) + \mathrm{CC}_{t,\text{RCP,policy}} \end{array} \right\} \quad (1)$$

In Eq. 1, ρ^t is a discount factor, $D(Q_t^{\text{ind}}, Z_{t,\text{RCP}})$ is a global demand function for industrial wood products Q_t^{ind} and average global consumption per capita $Z_{t,\text{RCP}}$ from the International Institute of Applied Systems Analysis (IIASA) SSP database (*33*). In particular, we use the SSP2 IAM marker scenario from MESSAGE GLOBIOM under each of the five IPCC RCPs [according to the IIASA SSP database (*33*), the global consumption per capita under the SSP2 IAM marker scenario does not change across RCPs].

Industrial timber demand follows the general functional form $Q_t^{\text{ind}} = A_t (Z_{t,\text{RCP}})^\theta P_t^\omega$, where A_t is a constant, θ is the income elasticity, P_t is the timber price, and ω is the price elasticity. The global demand function is for industrial round wood, which is itself an input into products like lumber, paper, plywood, and other manufactured wood products.

Wood demand for bioenergy production $Q_{t,\text{RCP}}^{\text{wbio}}$ is estimated by adjusting the total bioenergy consumption in the IIASA SSP database $Q_{t,\text{RCP}}^{\text{bio}}$ with the proportion of global biomass energy produced from wood by following similar assumption as in Lauri *et al.* (*34*). Figure S2 (A and B) shows total bioenergy consumption and total woody biomass supply under each RCP for the SSP2.

We assume there is an international market for timber that leads to a global market clearing price. As the price of wood for bioenergy rises to compete with industrial timber, both timber and bioenergy will be traded internationally (*49*). Competition for supply will equilibrate their prices.

Equation 2 shows that the total quantity of wood depends on the area of land harvested in the timber types in i for each age a and time $t(H_{a,t}^i)$ and the yield function $(V_{a,t}^i)$, which is itself a function of ecological forest productivity θ_t^i and management intensity $m_{a,t}^i$.

$$Q_t^{\text{tot}} = \sum_i \left(\sum_a H_{a,t}^i V_{a,t}^i(\theta_t^i, m_{a,t}^i) \right) \quad (2)$$

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The functional form for the yield function is

$$V^i_{a,t}(\mathrm{m}^i_{a,t}) = h * \left[\exp\left(\delta^i - \frac{\pi^i}{a}\right)\right] \quad (3)$$

Per equation $h = \varphi^i (1 + \mathrm{m}^i_{a,t})^{\tau^i}$, h is the stocking density, which can be adjusted depending on the intensity of management, $m^i_{a=1,t}$. We restrict stocking elasticity, τ, to be positive and less than 1. The τ^i affects the elasticity of management inputs in forestry to account for technology change. Initial stocking is denoted by φ^i. Increase in $m^i_{a=1,t}$ will increase h, e.g., $dh/dZ > 0$, but the increase diminishes as $m^i_{a=1,t}$ rises, e.g., $d^2h/dZ^2 < 0$. The model chooses management intensity by optimally choosing $m^i_{a=1,t}$. Increases in management intensity will increase yield and shift the entire yield function upward. Forests are assumed to grow according to $V^i_{a,t}(Z^i_{a=1,t})$, where δ and π are species-dependent growth parameters (fig. S3 shows a representative yield function assuming $h = 1.32$, $\delta = 5.2$, and $\pi = 30$). $C(Q^{\mathrm{tot}}_t)$ is the cost function for harvesting and transporting logs to the center (mills or power plants) from each of timber type.

The stock of land in each forest type adjusts over time according to

$$X^i_{a,t} = X^i_{a-1,t-1} - H^i_{a-1,t-1} + G^i_{a=0,t-1} + N^i_{a=0,t-1} \quad (4)$$

The initial stocks of land X^i_t are given, and all choice variables are constrained to be greater than or equal to zero, and the area of timber harvested $H^i_{a,t}$ does not exceed the total timber area. G^i_t is the area of timber regenerated land planted, and N^i_t is the new forest planted. $C^i_G(\cdot)$ is the cost function for planting land in temperate and previously inaccessible forests, while $C^i_N(\cdot)$ is the cost function for planting forests in subtropical plantation regions.

GTM takes into account the competition of forestland with crops and livestock using a rental supply function for land (*2*). In Eq. 1, $R^i_t(\cdot)$ is the rental cost function for the opportunity costs of holding timberland $X^i_{a,t}$. For example, if timber prices rise relative to agricultural land prices, the model predicts that timber owners will rent suitable farmland for at least a rotation. Similarly, if timber prices fall relatively to agricultural land prices, suitable forest land will be converted back to farmland upon harvest. In addition, the model accounts for the aggregate global effects of moving land between forests and agriculture by shifting all of the land supply functions for individual forest types as a function of the aggregate global area of forestland. As more land globally moves from agriculture to forests, all rental functions shift inward, making it more costly to convert any land from agriculture to forestry. This captures the effect that having less land in agriculture would have on land prices. We have assumed that the elasticity of land supply is 0.25, such that a 0.25% reduction in the global area of agricultural land would cause all land rents to rise by 1%. Note also that the rental supply function is restricted to agricultural land that is naturally suitable for forests. It presumes that the least productive crop and pasture land will be converted first and that rental rates increase as more land is converted and sendogenous.

The model is also developed to account for the global forest carbon stocks and flows following a method first presented by Sohngen and Sedjo (*50*) and updated by Daigneault *et al.* (*18*). Carbon is tracked in four pools: aboveground carbon, soil carbon, forest product carbon, and slash.

Aboveground carbon $C^i_{a,t}$ accounts for the carbon in all components of the living tree, including roots, as well as carbon in the forest understory and the forest floor, but does not include dead organic matter in slash, which is contained in a separate pool. For this analysis, we assume that carbon is proportional to total biomass, such that carbon in any forest of any age class is given as

$$C^i_{a,t} = \sigma^i V^i_{a,t}(m^i_{t0}) \quad (5)$$

where σ^i is a species-dependent coefficient that converts biomass to carbon. Given this, the total forest carbon pool TFCP^i_t for each timber type is calculated as

$$\mathrm{TFCP}^i_t = \sum_a C^i_{a,t} X^i_{a,t} \quad (6)$$

Carbon in harvested forest products HC^i_t is estimated by tracking forest products over time as follows

$$\mathrm{HC}^i_t = (1 - \tau_t)\, \kappa^i \sum_a (\beta^i V^i_{a,t} H^i_{a,t}) \quad (7)$$

where κ^i is the proportion of harvested timber volume that is carbon stored permanently, and it is estimated to be 0.30 (*51*), β^i is a parameter that converts forest products into carbon (regional and forest type based), while τ_t is the portion of wood used in the energy sector, and it is endogenously selected by the model; that is, HC^i_t accounts only for carbon stored in wood products, not woody biomass used for energy production. Carbon stored in woody biomass used for bioenergy production is calculated as follows

$$\mathrm{BIOC}^i_t = \tau_t \sum_a \beta^i (V^i_{a,t} H^i_{a,t}) \quad (8)$$

Soil carbon SOLC^i_t is measured as the stock of carbon in forest soils of type i in time t. The value of $\overline{K}$, the steady-state level of carbon in forest soils, is unique to each region and timber type. The parameter μ^i is the growth rate for soil carbon. In this analysis, we capture the marginal change in carbon value associated with management or land use changes. When land use change occurs, we track net carbon gains or losses over time as follows

$$\mathrm{SOLC}^i_{t+1} = \mathrm{SOLC}^i_t + \mathrm{SOLC}^i_t(\mu^i)\left[\frac{(\overline{K} - \mathrm{SOLC}^i_t)}{\mathrm{SOLC}^i_t}\right] \quad (9)$$

Last, we measure slash carbon AS^i_t as the carbon leftover on site after a timber harvest

$$\mathrm{AS}^i_t = \sum_a (\omega^i_a V^i_{a,t} H^i_{a,t} - \kappa^i V^i_{a,t} H^i_{a,t}) \quad (10)$$

Over time, the stock of slash SP^i_t builds up through annual additions and decomposes as follows

$$\mathrm{SP}^i_{t+1} = \mathrm{AS}^i_t + (1 - \vartheta^i \mathrm{SP}^i_t) \quad (11)$$

Decomposition rates ϑ^i differ, depending on whether the forest lies in the tropics, temperate, or boreal zone.

Last, in Eq. 1, the term $CC_{t,\mathrm{RCP,policy}}$ represents the carbon payments/penalties for forest owners according to the policy implemented. For this study, GTM has been enhanced to capture public policy efforts that either penalize bioenergy demand or value climate mitigation benefits of forests sequestration. GTM assumes that the incentives in the timber product, woody biomass, and carbon sequestration system can be implemented efficiently. That is, GTM portrays an ideal

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world in which the carbon price and/or subsidy is implemented simultaneously everywhere, and there are no trade barriers or other limitations in the use of woody biomass for energy or governance issues. This is an ideal framework: Carbon obviously has not been traded globally, and there are widespread reservations about trading it in the atmosphere as well as in forests. There are measurement, monitoring, and verification problems, as well as concerns about leakage and permanence.

Starting with the scenarios simulated in Favero *et al.* (*22*), this study explores four possible policy scenarios:

1) Reference scenario: No bioenergy demand and carbon price are implemented;

2) Bioenergy scenario: Exogenous bioenergy demands from SSP2 across RCPs $Q^{\text{wbio}}_{t,\text{RCP}}$ are included;

3) Forest carbon rental scenario: Exogenous bioenergy demands from SSP2 across RCPs are included, and forest owners are compensated by annual rent for providing annual carbon sequestration according to the carbon prices from the IIASA SSP database;

4) Carbon penalty scenario: Bioenergy demands from SSP2 across RCPs are included, and carbon emissions upon harvests for energy are taxed.

The policy scenarios are described in Eq. 1 with the term $CC_{t,\text{RCP,policy}}$. Moreover, in the reference and bioenergy scenarios, the term $CC_{t,\text{RCP,policy}}$ is assumed to be equal to zero since no policy efforts are implemented to value or penalize bioenergy demand.

On the other hand, in the forest carbon rental scenario, forest owners receive carbon payments for the carbon permanently stored in wood products and are compensated by annual rent for providing annual carbon sequestration according to the carbon prices $P^c_{t,\text{RCP}}$ from the IIASA SSP database (fig. S2C) as follows

$$CC_{t,\text{RCP,carbon_rental}} = P^c_{t,\text{RCP}}\left[\sum_i \text{HC}^i_t + (\text{SOLC}^i_{t+1} - \text{SOLC}^i_t)\right] + R^c_{t,\text{RCP}} \sum_i \text{TFCP}^i_t \quad (12)$$

The first part of Eq. 11 is the carbon transferred to long-lived wood products ($\text{HC}_t{}^i$) from each forest i valued at the carbon price $P^c_{t,\text{RCP}}$. The change in soil carbon (SOLC^i_t) when land switches between forests and agriculture is also valued at the carbon price (*13*, *15*). The second term is the annual rent, $R^c_{t,\text{RCP}}$, whereby the total carbon stocks in forests TFCP^i_t are rented during the time period that the carbon is stored following Sohngen and Mendelsohn (*4*). The rental value for carbon is

$$R^c_{t,\text{RCP}} = P^c_{t,\text{RCP}} - P^c_{t+1,\text{RCP}}/(1+r)^t \quad (13)$$

where r is the interest rate. This equation accounts for potential price increases in carbon that occur as carbon accumulates in the atmosphere.

Last, in the carbon penalty scenario, forest owners pay a penalty for the carbon released when timber is harvested to supply bioenergy demand.

$$CC_{t,\text{RCP,penalty}} = -P^c_{t,\text{RCP}} \sum_i \text{BIOC}^i_t \quad (14)$$

Table S1 provides the list of parameter values used to parameterize equations for the simulations presented in this study. More details on the version of GTM used in this analysis are available in (*18*) and (*22*).

SUPPLEMENTARY MATERIALS

Supplementary material for this article is available at http://advances.sciencemag.org/cgi/content/full/6/13/eaay6792/DC1

Supplementary Materials and Methods

Model estimates

Fig. S1. GTM—Regional Aggregation.

Fig. S2. Global assumptions for alternative RCP scenarios.

Fig. S3. Yield for representative species in the GTM.

Fig. S4. Estimated changes in global forest carbon stock pools in $GtCO_2$ relative to the baseline scenario under each RCP.

Fig. S5. Changes in global forest area by major ecosystem versus woody biomass supply under the bioenergy demand scenario relative to the baseline scenario.

Fig. S6. IAMs' estimates of forest areas and crop areas (2010–2100) under the RCP 1.9 and RCP 2.6 from the IIASA SSP database.

Fig. S7. Estimated changes in global forest carbon stock pools in $GtCO_2$ relative to the baseline scenario under each RCP and the two policy approaches.

Fig. S8. Key parameter sensitivity impacts relative to 2010 for RCP 2.6 Forest Carbon Rental scenario.

Table S1. GTM parameter values.

Table S2. Baseline key GTM estimates, 2010–2100.

Table S3. Baseline global forest area (Mha) by major ecosystem, 2010–2100.

Table S4. Baseline global total forest carbon stocks by major ecosystem, 2010–2100.

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Alice Favero, Adam Daigneault and Brent Sohngen

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Message

From: Curry, Bridgid [Curry.Bridgid@epa.gov]
Sent: 9/26/2019 3:22:37 PM
To: Elman, Barry [Elman.Barry@epa.gov]
CC: Corrales, Mark [Corrales.Mark@epa.gov]
Subject: RE: Background Info for Brittany on the Biogenic CO2 Rulemaking

Thanks, Barry. I am just looking at it now.

From: Elman, Barry <Elman.Barry@epa.gov>
Sent: Thursday, September 26, 2019 11:20 AM
To: Curry, Bridgid <Curry.Bridgid@epa.gov>
Cc: Corrales, Mark <Corrales.Mark@epa.gov>
Subject: RE: Background Info for Brittany on the Biogenic CO2 Rulemaking

If you haven't already sent it forward, please use this version which includes a few minor edits.

Barry

From: Elman, Barry
Sent: Thursday, September 26, 2019 7:04 AM
To: Curry, Bridgid <Curry.Bridgid@epa.gov>
Cc: Corrales, Mark (Corrales.Mark@epa.gov) <Corrales.Mark@epa.gov>
Subject: Background Info for Brittany on the Biogenic CO2 Rulemaking

Brigid and Mark,

Attached is the background paper for Brittany on the Biogenic CO2 rulemaking. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Barry

Message

From: Nickerson, William [Nickerson.William@epa.gov]
Sent: 3/26/2020 7:56:16 PM
To: Elman, Barry [Elman.Barry@epa.gov]
Subject: Re: we have now been asked to have the biogenic info up to Brittany by 3pm today

thanks for this Barry

From: Elman, Barry <Elman.Barry@epa.gov>
Sent: Thursday, March 26, 2020 3:01 PM
To: Nickerson, William <Nickerson.William@epa.gov>; Corrales, Mark <Corrales.Mark@epa.gov>
Subject: RE: we have now been asked to have the biogenic info up to Brittany by 3pm today

Attached is the summary of interagency comments on the proposed biogenic CO2 rule, which incorporates edits from NCEE, including comments from Al and three of his staff.

From: Nickerson, William <Nickerson.William@epa.gov>
Sent: Thursday, March 26, 2020 9:33 AM
To: Elman, Barry <Elman.Barry@epa.gov>; Corrales, Mark <Corrales.Mark@epa.gov>
Subject: we have now been asked to have the biogenic info up to Brittany by 3pm today

Message

From: Nagelhout, Peter [Nagelhout.Peter@epa.gov]
Sent: 3/26/2020 6:50:40 PM
To: Marten, Alex [Marten.Alex@epa.gov]; Elman, Barry [Elman.Barry@epa.gov]; Evans, DavidA [Evans.DavidA@epa.gov]
CC: McGartland, Al [McGartland.Al@epa.gov]
Subject: RE: Biogenic comments summary plus prn plus bse.docx
Attachments: Biogenic comments summary plus prn plus bse 245.docx

Some suggested changes, all in red text (I think)

From: Marten, Alex <Marten.Alex@epa.gov>
Sent: Thursday, March 26, 2020 2:48 PM
To: Elman, Barry <Elman.Barry@epa.gov>; Nagelhout, Peter <Nagelhout.Peter@epa.gov>; Evans, DavidA <Evans.DavidA@epa.gov>
Cc: McGartland, Al <McGartland.Al@epa.gov>
Subject: RE: Biogenic comments summary plus prn plus bse.docx

One small suggestion in the attached fwiw.

--
Alex Marten
phone: (202) 566-2301
email: marten.alex@epa.gov

From: Elman, Barry <Elman.Barry@epa.gov>
Sent: Thursday, March 26, 2020 2:38 PM
To: Nagelhout, Peter <Nagelhout.Peter@epa.gov>; Evans, DavidA <Evans.DavidA@epa.gov>
Cc: McGartland, Al <McGartland.Al@epa.gov>; Marten, Alex <Marten.Alex@epa.gov>
Subject: Biogenic comments summary plus prn plus bse.docx

FYI – I just made minor formatting changes in the attached version to get this to one page. No substantive changes were made.

Message

From: Lamson, Amy [Lamson.Amy@epa.gov]
Sent: 4/22/2019 10:00:23 PM
To: OP-ORPM-PRAD [OPORPMPRAD@epa.gov]
Subject: Letter to SAB
Attachments: EPA-SAB-18-002_Response.pdf

FYI. On Friday, EPA released a letter to the SAB responding to requests on several actions in the 2017 Reg Agendas, the Science Transparency rule, the RTR case study, and biogenic CO2 emissions.

Amy Lamson
Policy and Regulatory Analysis Division, Office of Policy
U.S. EPA
202-564-3949

Message

From: Nagelhout, Peter [Nagelhout.Peter@epa.gov]
Sent: 3/25/2020 7:54:31 PM
To: Elman, Barry [Elman.Barry@epa.gov]
CC: Evans, DavidA [Evans.DavidA@epa.gov]
Subject: RE: IO request for summary of interagency biogenic CO2 comments

Great—thanks, Barry.
Peter

From: Elman, Barry <Elman.Barry@epa.gov>
Sent: Wednesday, March 25, 2020 2:33 PM
To: Nagelhout, Peter <Nagelhout.Peter@epa.gov>
Cc: Evans, DavidA <Evans.DavidA@epa.gov>
Subject: RE: IO request for summary of interagency biogenic CO2 comments

Yes. I'll share a draft in the morning.

From: Nagelhout, Peter <Nagelhout.Peter@epa.gov>
Sent: Wednesday, March 25, 2020 2:04 PM
To: Elman, Barry <Elman.Barry@epa.gov>
Cc: Evans, DavidA <Evans.DavidA@epa.gov>
Subject: IO request for summary of interagency biogenic CO2 comments

Hello Barry—we were wondering if you had been tasked with drafting a summary of interagency comments on the biogenic CO2 rulemaking document? If so, could we pitch in?
Thanks
Peter

Message

From: Corrales, Mark [Corrales.Mark@epa.gov]
Sent: 1/13/2020 7:08:01 PM
To: Nickerson, William [Nickerson.William@epa.gov]; Elman, Barry [Elman.Barry@epa.gov]
Subject: FAR memo and possible comments
Attachments: Biogenic FAR Email - Concur with Comment DRAFT 1-13-2020.docx; summary of key staff comments on biogenic co2 1-13-2020.docx

Importance: High

This is my quick version of the email we could send Robin by 3 as requested.