Newman, Alan R.

From: Marie Piper [cascade@pugetsound.net]
Sent: Monday, July 01, 2002 7:30 PM
To: Newman, Alan R.
Cc: Katy Chaney; Mike Sotak
Subject: Revised Modeling Impacts

Alan,

Attached are three files for your use in completing the draft Fact Sheet and permit. I received your e-mail with the latest versions and will review them as soon as possible.

Meanwhile, I'll re-emphasize the need for the letter from GE with Duke Energy. I know you need this quickly. I'll also review the regional haze analyses again to see if we can find a solution to the 9+% day in Olympic National Park as you've requested.

Thank you for all of your time and assistance with this project!

Chat again soon,

Marie

Marie E. Piper
Cascade Environmental Management
316 SE Pioneer Way #294
Oak Harbor, WA 98277
360.279.9005
360.679.0973 Fax
cascade@pugetsound.net

Potential to Emit

Phase I and Phase II

Pollutant	Emission Rate per Power Generation Unit stack		Emission Rate per Auxiliary Boiler stack	Emission Rate per Diesel Generator stack	Annual PTE (TPY) Four PGUs Including 130 Startup/Shutdown Cycles per Year per PGU	Annual PTE (TPY) Two Auxiliary Boilers	Annual PTE (TPY) Two Diesel Generators	Annual PTE TPY (Four PGUs Including 130 Startup/Shutdown Cycles per Year per PGU, two Cooling Towers, two Auxiliary Boilers, and two Diesel Generators)
	With Duct Firing Natural Gas ppm (gr/dscf for PM)	With Duct Firing Natural Gas lb/hr (lb/day for PM)	lb/hr (lb/day for PM)	lb/hr (lb/day for PM)				
NOx	2.5	21.7	1.03	6.6	580.2	2.6	5.1	586
NH3	5	16.1	0	0	282.1	0.0	0.0	282
CO	2	10.6	1.07	3.85	873.7	2.7	6.3	878
SO2	0.28	3.25	0.073	0.27	22.8	0.1	0.1	57
VOCs	2.78	8.4	0.47	0.44	193.2	1.2	0.7	195
PM Filterable Back-up	0.0037	33.2	7.03	5.28	425.7	0.7	0.3	436

Notes:

1. Cooling Tower PM Emissions (TPY each):
   4.51
2. Hours for Each PGU:
   8760
   Hours with Duct Firing:
   8760
3. Hours for Each Auxiliary Boiler:
   2500
4. Hours for Each Diesel Generator
   500
5. Startup/Shutdown Emissions for each pair of PGUs based on 130 cycles per year for each PGU:
   NOx 100
   CO 344
   VOCs 23
6. Number of PGUs with Duct Firing: 4
7. Number of Pairs of PGUs: 2
8. Number of Auxiliary Boilers: 2
9. Number of Cooling Towers: 2
10. Number of Diesel Generators: 2
11. Emission rates based on 0.5 gr S/100 scf natural gas and 30% sulfate conversion for annual PTE.

Potential to Emit

Phase I and Phase II

Pollutant	Emission Rate per Power Generation Unit stack		Emission Rate per Auxiliary Boiler stack	Emission Rate per Diesel Generator stack	Annual PTE (TPY) Four PGUs including 130 Startup/Shutdown Cycles per Year per PGU	Annual PTE (TPY) Two Auxiliary Boilers	Annual PTE (TPY) Two Diesel Generators	Annual PTE TPY (Four PGUs including 130 Startup/Shutdown Cycles per Year per PGU, two Cooling Towers, two Auxiliary Boilers, and two Diesel Generators)
	With Duct Firing Natural Gas ppm (gr/dscf for PM)	With Duct Firing Natural Gas lb/hr (lb/day for PM)	lb/hr (lb/day for PM)	lb/hr (lb/day for PM)				
NOx	2.5	21.7	1.03	10.19	580.2	2.6	5.1	588
NH3	5	16.1	0	0	282.1	0.0	0.0	282
CO	2	10.8	1.07	12.55	873.7	2.7	6.3	883
SO2	0.275	3.25	0.073	0.27	56.9	0.2	0.1	57
VOCs	2.78	8.4	0.47	1.48	193.2	1.2	0.7	195
PM (Front and Back Half)	0.0093	81.4	7.03	14.16	448.5	0.7	0.3	450

Notes:

1. Cooling Tower PM Emissions (TPY each):
   4.47
2. Hours for Each PGU:
   8760
   Hours with Duct Firing:
   8760
3. Hours for Each Auxiliary Boiler:
   2500
4. Hours for Each Diesel Generator
   500
5. Startup/Shutdown Emissions for each pair of PGUs based on 130 cycles per year for each PGU:
   NOx 100
   CO 344
   VOCs 23
6. Number of PGUs with Duct Firing: 4
7. Number of Pairs of PGUs: 2
8. Number of Auxiliary Boilers: 2
9. Number of Cooling Towers: 2
10. Number of Diesel Generators: 2
11. Annual emission rates based on 0.5 gr S/100 scf natural gas and 30% sulfate conversion.

Prepared by Marie E. Piper 7/2/02

Modeled Emission Rates for Various Levels of Sulfur Content in Natural Gas

Pollutant	Emission Rate per Power Generation Unit stack With Duct Firing Natural Gas lb/hr	Emission Rate per Auxiliary Boiler stack lb/hr	Emission Rate per Diesel Generator stack lb/hr
NOx	21.7	1.03	6.6
NH3	16.1	0	0
CO	10.6	1.07	3.85
SO2 @ 0.5 gr S/100 scf	3.25	0.073	0.269
SO2 @ 1.3 gr S/100 scf	8.45	0.189	0.269
SO2 @ 3.0 gr S/100 scf	19.50	0.435	0.269
VOCs	8.4	0.47	0.44
PM @ 0.5 gr S/100 scf (front and back half)	25.6	0.293	0.22
PM @ 1.8 gr S/100 scf (front and back half)	28.9	0.293	0.22
PM @ 3.0 gr S/100 scf (front and back half)	35.8	0.293	0.22

Notes:

1. Annual and 24-hour emissions modeled at 0.5 gr S/100 scf natural gas combusted.
2. 1-hour and 3-hour emissions modeled at 1.3 gr S/100 scf natural gas combusted.
3. For May 15th - July 15th, 1-hour, 3-hour, and 24-hour emissions modeled at 3.0 gr S/100 scf natural gas combusted.
4. Diesel generator emissions revised to Tier II Emission Standards.