From:	Kerynn Fisher
To:	Edwards, Alice L S (DEC); Heil, Cynthia L (DEC); Huff, Deanna M (DEC); Dec Air Comment
Cc:	Julie Queen; Frances Isgrigg; Russ Steiger
Subject:	UAF comments - Fairbanks PM2.5 - Draft SIP
Date:	Friday, July 26, 2019 1:20:29 PM
Attachments:	2019-07-26 UAF response to draft SIP.docx.pdf

Please see attached for UAF's comments on the Fairbanks PM 2.5 draft state implementation plan.

For additional information, please contact Frances Isgrigg or Russ Steiger, both copied on this message.

Thanks,
Kerynn

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July 26, 2019

Alice Edwards, Director
Division of Air Quality
Alaska Department of Environmental Conservation
PO Box 111800
Juneau, AK 99811

Transmitted digitally by email to: alice.edwards@alaska.gov
cc: cindy.heil@alaska.gov; deanna.huff@alaska.gov

RE: Fairbanks Serious $PM_{2.5}$ Nonattainment Area – Draft State Implementation Plan
University of Alaska Comments – Vol II: III.D.7.7- Control Strategies
Section 7.7.8.6 Fairbanks Campus Power Plant
Public Notice Draft issued May 10, 2019

Dear Ms. Edwards,

The University of Alaska Fairbanks (UAF) is providing comments to the above-referenced draft State Implementation Plan (SIP) to address the serious non-attainment area for particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 microns ($PM_{2.5}$). UAF is primarily commenting on Vol II: III.D.7.7- Control Strategies with respect to emissions of sulfur dioxide SO_2 and $PM_{2.5}$. The comments are provided in italic font following each relative draft SIP statement.

Page 39: Last sentence headed with FINDING:

*Please delete **UAF** and replace with **AE** or **Aurora Energy.***

Page 74: Second bullet, last paragraph:

$PM_{2.5}$ emissions from EU 113 shall not exceed 0.006 lb/MM BTU over a three-hour averaging period.

UAF proposes maintaining the emission limit as set in the air quality permit (0.03 lb /MMBTU).

The B&W (boiler manufacturer) contract guarantee is 0.012 lb/MMBTU. The $PM_{2.5}$ emission limitation in UAF Air Quality permit AQ0316MSS06 Revision 2 condition 41.1a is 0.03 lb/MMBTU, required to meet federally enforceable 40 CFR 63 subpart JJJJJJ requirements. The permit requires UAF to demonstrate compliance by meeting condition 10.1 – operate and maintain the baghouse according to manufacturer's guidelines, and condition 10.2 – install, calibrate, maintain, and operate a triboelectric bag leak detector. UAF will comply with each of these conditions.

ADEC notes in the footnote for this BACT finding that the 0.006 lb/MMBTU emission rate over a three hour averaging period was determined from the "average soot blown run from the worst coal-fired boiler tested at Fort Wainwright during the most recent source test on April 19 through

22, 24, and 25, 2017." It is not reasonable to require UAF to meet the more stringent emission rate based on a source test conducted on a non-UAF operated coal fired boiler with completely different coal combustion technology than the dual-fired continuous fluidized bed boiler EU ID 113. The actual achievable emission limit can be estimated when source testing for total particulate matter (filterable only) is conducted on the boiler during the commissioning process.

Page 75 Section7.7.8.6.2 PM2.5 Controls for Fairbanks Campus Power Plant, Mid-Sized Diesel-Fired Boilers:

$PM_{2.5}$ emission limits have been proposed in the SIP for EU IDs 3 and 4. $PM_{2.5}$ **emissions from EUs 3 and 4 shall not exceed 0.012 lb/MM BTU averaged over a 3-hour period while firing diesel fuel and 0.075 lb/MMBTU while firing natural gas at EU 4.**

UAF proposes that the emissions from EU's 3 and 4 shall not exceed 0.02 lb/MMBtu.

UAF's Air Quality permit AQ0316TVP02 Rev 1 does not currently specify EU emission limits for $PM_{2.5}$ for EU IDs 3 and 4. UAF proposes reporting $PM_{2.5}$ emissions in operating reports calculated by using Indeck's 3/17/2016 emission factors published specifically for Zurn boilers EU 3 and 4. The calculation for EUs 3 and 4 firing diesel provides a $PM_{2.5}$ *result of 0.016 lbs/MMBTU.*

Page 79 Section 7.7.8.6.3 SO_2 Controls for Fairbanks Campus Power Plant, Dual Fired Boiler:

DEC determined the numerical SO_2 BACT emission limit for the dual fuel-fired boilers at UAF to be 0.10 lb/MM BTU averaged over a 3-hour period with installation of a DSI.

UAF proposes keeping emission limitation as set in the air quality permit (0.2 lb SO_2/MM BTU on a 30-day rolling average) and placing information at the end of this section stating that DEC finds a retrofit of Pollution control equipment is economically infeasible.

The sulfur emission limit in the UAF Air Quality permit AQ0316MSS06 Revision 2 conditions 13.1 and 28.2 is 0.2 lb SO_2/MM BTU on a 30-day rolling average. B&W has provided a contract guarantee emission rate not to exceed 0.19 lb/MMBTU. UAF cannot be expected to meet the lower limit as determined in the draft SIP while the manufacturer of the boiler contractually guarantees emissions to not exceed a limit almost double the limit proposed in the draft SIP without control equipment.

ADEC also argues the lower limit is justified based on source test data from other coal-fired boilers in Alaska without noting that there are no other boilers in Alaska with the combustion technology of the dual-fired boiler EU ID 113. It is imprudent to assume that differing coal combustion technologies have equal or similar emission rates and characteristics. The CEMS that will measure SO_2 emissions for this new dual-fired boiler will be tested and verified through the RATA (relative accuracy testing) process and then will be used to verify actual achievable emission control.

***Paragraph3, Sentence 2**: Please reword this sentence as follows: DEC selected this BACT limit after evaluating existing emission limits in the RBLC database for coal-fired boilers, taking into account previous source test data from coal-fired boilers in Alaska and actual emissions data from other sources employing similar types of controls, using manufacturer data provided in the UAF BACT Analysis January 2017 by Babcock & Wilcox, and in-line with EPA's pollution control fact sheets while keeping in mind that BACT limits must be achievable at all times.*

Page 80, Section 7.7.8.6.3, Mid-Sized Boiler, SO_2 emissions, first bullet:

SO_2 Emissions from EUs 3 and 4 shall be controlled by only combusting ULSD when firing diesel fuel.

UAF proposes operating EUs 3 and 4 with a change in firing fuel from #2 diesel to #1 diesel.

The UAF power plant relies on the two mid-sized boilers EUs 3 and 4 to produce dependable and consistent heat and power for the campus and each will be utilized even when the large dual-fired boiler EU 113 becomes fully operational. This utilization will be to provide heat and power to the campus during periods that EU 113 is shut down for routine maintenance and necessary repairs.

A switch from the current fuel #2 diesel to ULSD would cost UAF an additional $0.30 per gallon with an effective reduction in SO_2 emissions of $16.8/ton SO_2[1]. Switching from #2 to #1 diesel would cost UAF an additional $0.07 per gallon with an effective reduction of $6.00/ton SO_2. Number 1 and #2 diesel are refined locally in North Pole while ULSD must be shipped from South Central Alaska, necessitating potentially unreliable transport through the Alaska Range with the possibility of transportation delays due to natural events such as earthquakes, wildfires, and inclement weather.

The University of Alaska (UA) is now facing a fiscal year 2020 budget cut of $134 million, or 41 percent of the state's funding of $327 million, reducing the university's general fund support to $193 million. UAF simply cannot afford any additional costs across the board and certainly not for the more expensive and less reliably sourced ULSD to combust in mid-sized boilers EUs 3 and 4.

In the second bullet item, please replace NOx with SOx.

Page 86, DEC BACT DETERMINATION for UAF's Fairbanks Power Plant:

By June 9, 2021, UAF shall limit the sulfur content of coal to 0.2% S by weight.

UAF requests to remove the coal sulfur content limit and continue to provide ADEC with per shipment reports of coal sulfur content in the Facility Operating Reports as is the current practice

ADEC has proposed in the draft SIP that BACT for coal burning facilities in the nonattainment area is a coal-sulfur limit of 0.2% sulfur by weight. Usibelli Coal Mine (UCM) is the only source of commercial coal available to the coal-fired facilities within the Fairbanks North Star Borough fine particulate nonattainment area. Coal shipped from outside the State of Alaska would be cost prohibitive and the transport unreliable.

The mine has limited ability to affect the sulfur content in the coal. There is no coal washing or segregating capability at UCM that could ensure a consistent coal-sulfur concentration. The current practice for providing low-sulfur coal to customers is by identifying sulfur content of the resource through drilling and sampling efforts. UAF is not provided the sulfur content of each shipment until the first week of the month after it was combusted.

[1] Calculated using AP-42 Table 1.3-1, 5/10 emission factor of 142*S and ADEC's data on Page 21 of the SIP - #2 Diesel is 2566 ppm S and #1 Diesel is 896 ppm S. ULSD is 15 ppm S. Per gallon costs provided by ADEC on the same page of the draft SIP.

Within the millions of tons of coal resources available, there is a significant amount of coal with higher sulfur content than 0.2% (Aurora Energy); in fact, any limit proposed for coal sulfur content is effectively cutting off access to tens of millions of tons of coal resources. It is infeasible for UAF to be limited to a maximum concentration of sulfur in the coal it combusts. UAF does not mine the coal nor has the capability to control the sulfur content of the coal it receives. Anticipating this, UAF designed the new boiler with control of sulfur emissions through limestone injection in the combustion chamber to react with the varying levels of sulfur in the incoming coal and a state of the art baghouse.

ADEC's standard permit condition for coal fired boilers requires the permittee to report sulfur content of each shipment of fuel with the semiannual Facility Operating Report (FOR). UCM currently provides a semi-annual report to all customers that includes sulfur content of each shipment of coal along with the weighted average coal-sulfur content for the six-month period coinciding with the FOR reporting period. UAF will continue to report the sulfur content of each shipment of coal in the Facility Operating Report as required in air quality permit AQ0316TVP02 Rev 1.

If you have any questions, please contact Russ Steiger at 907-474-5812 or rhsteiger@alaska.edu or Frances Isgrigg at 907-474-5487 or fisgrigg@alaska.edu.

Sincerely,

Julie Queen
Interim Vice Chancellor for Administrative Services
University of Alaska Fairbanks