

VIA E-MAIL

February 24, 2022

Kendal Stegmann
Director, Air Quality Division
Oklahoma Department of Environmental Quality
707 N. Robinson
P.O. Box 1677
Oklahoma City, OK 73101-1677

RE: Reply to DEQ's January 31, 2022 request for additional clarifications regarding WFEC's August 24, 2020 Regional Haze 4-four analysis for Hugo Electric Generating Plant Unit 1

Dear Ms. Stegmann:

Western Farmers Electric Cooperative (WFEC) understands the DEQ's letter as requesting additional clarifications on three items, summarized as follows: (1) capital recovery interest rate used in the control cost calculations, (2) cost estimates for wet flue gas desulfurization (WFGD) and dry flue gas desulfurization (DFGD), and (3) anticipated sulfur dioxide (SO₂) removal efficiencies for WFGD and DFGD. Each of these items is addressed below.

1. DEQ's letter provides, "[t]he federal reviewers stated that use of a 7% interest rate in the cost analysis is not appropriate." WFEC understands this to be a fundamental shift in EPA policy. A typical 7% interest rate has been relied upon commonly for control technology analyses for a long time, including during the Regional Haze first planning period when the bank prime rate was the same as it is now (3.25%), i.e., from December 2008 to December 2015. WFEC understands that it is also used by the Office of Management and Budget (OMB) to estimate the cost of environmental regulations.

DEQ's letter goes on to suggest that the bank prime rate should be used as a default, absent a company-specific interest rate. This is incongruous with EPA's Control Cost Manual (CCM), which mentions the bank prime rate as *one of several indicators* of the cost of borrowing. Nevertheless, even if the suggested 3.25% interest rate (resulting in a capital recovery factor of 0.0527) were applied to the capital costs presented by WFEC in its August 24, 2020 report, the overall conclusion – that no control options are reasonable – remains unchanged. Using the 3.25% interest rate, the total annual cost for DFGD would be \$19,082,790/yr, the total annual cost for WFGD would be \$20,800,241/yr, and the cost effectiveness values would be \$6,830/ton and \$7,091/ton, respectively.

2. DEQ's letter states, "EPA's Control Costs Manual recommends not to escalate costs over more than 5 years." This misstates EPA's CCM. The CCM includes only a single "rule-of-thumb" parenthetical statement on page 1-

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26 (Section 1.3.2.2 *Hood Sizing Procedure*) following a statement about labor cost data from 1977 (25 years earlier than the CCM publication date): “(The rule-of-thumb time limit for escalating costs is five years.)” This rule-of-thumb is not substantiated anywhere else in the 752-page CCM. WFEC views this out-of-context, rule-of-thumb statement as no repudiation of its four-factor analysis escalations from 2009 to 2019. Moreover, WFEC has compared its estimated control costs to several recent control cost estimates for other coal-fired utility boilers in Louisiana and Arkansas (see table below), and it has determined that WFEC’s estimates are conservatively low, even after scaling¹ the costs based on the power output ratings (in megawatts [MW]). For these reasons, no changes are proposed to WFEC’s August 24, 2020 control cost estimates.

Table 1. Comparison of Four-Factor Analysis Cost Information

Coal-Fired Utility Boiler	Estimated Total Capital Cost for DFGD (\$MM)	Estimated Operations & Maintenance Cost for DFGD (\$MM/yr)	Estimated Total Capital Cost for WFGD (\$MM)	Estimated Operations & Maintenance Cost for WFGD (\$MM/yr)
WFEC - Hugo Unit 1 (446 MW)	137.6	11.8	122.7	7.8
Cleco - Big Cajun II Unit 3 (575 MW) ²	263.7	25.3	335.5	26.2
Entergy - Roy S. Nelson Unit 6 (556 MW) ³	430.8	17.3	473.8	14.0
Entergy - Independence Steam Electric Station Unit 1 (839 MW) ⁴	377.7	9.4	401.8	36.6
Entergy - Independence Steam Electric Station Unit 2 (839 MW) ⁵	377.7	9.4	401.8	36.6

3. DEQ’s letter asks for a more detailed assessment of the Hugo facility to justify the removal efficiencies used for DFGD and WFGD. First, WFEC did not present removal efficiencies in the four-factor analysis. Rather, WFEC presented emission rates, in pounds per million British thermal units (lb/MMBtu) because this is the metric by which DFGD and WFGD are typically measured. Moreover, the emission rates used by WFEC, 0.06 lb/MMBtu for DFGD and 0.04 lb/MMBtu for WFGD, are equal to both the emission rates adopted by EPA in the previous Oklahoma Regional Haze SIP/FIP (as documented in WFEC’s August 24, 2020 report) and the referenced CCM (see footnote 2 of DEQ’s letter). Additionally, these emission rates are equal to the emission rates used in the coal-fired utility boiler control analyses listed in the table above. If additional information regarding the Hugo facility is needed, then WFEC respectfully requests a detailed list of the requested information.

¹ Example scaling using the six-tenths rule (based on the WFGD total capital cost for Roy S. Nelson Unit 6): $\$473.8\text{MM} * (446 \text{ MW} / 556 \text{ MW})^{0.6} = \415.1MM , which is more than three times the cost value presented for Hugo Unit 1.

² Cleco Corporate Holdings LLC, Response to March 18, 2020 Information Collection Request to Louisiana Generating, LLC-Big Cajun II Power Plant Regarding Regional Haze Four-Factor Analysis (July 30, 2020) (<https://edms.deq.louisiana.gov/app/doc/view?doc=12280837>).

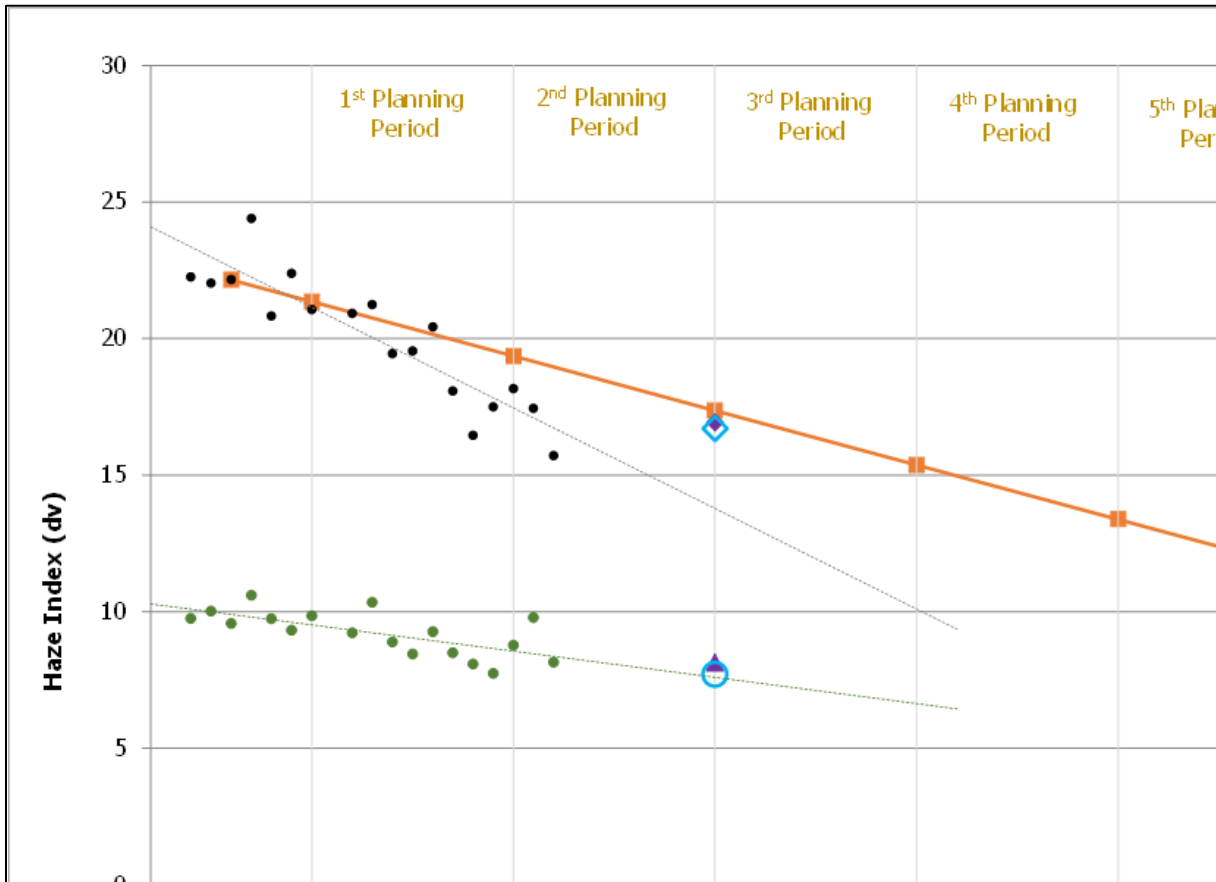
³ Entergy Services, LLC, Entergy Louisiana, LLC. Roy S. Nelson Electric Generating Plant Regional Haze - Four-Factor Analysis Information Collection Request Response (July 30, 2020). (<https://edms.deq.louisiana.gov/app/doc/view?doc=12280842>)

⁴ Entergy Services LLC, Response to January 8, 2020 Regional Haze Four-Factor Analysis Information Collection Request (April 7, 2020) (https://www.adeq.state.ar.us/air/planning/sip/pdfs/regional-haze/entergy_icr_response_report.pdf).

⁵ Id.

In addition to the three issues addressed above, WFEC would like to note that Oklahoma’s single Class I area, Wichita Mountains, has experienced significant and steady improvement in visibility conditions since the baseline period of the regional haze program. Observations of visibility conditions in the Wichita Mountains are plotted on the following figure along with linear extrapolations of the data, EPA’s proposed glidepath, and the modeled predictions for 2028 (from both EPA and the Texas Commission on Environmental Quality, TCEQ), which show that visibility conditions are expected to continue to be ahead of schedule at the end of this second planning period. Based on this information, it would be unreasonable to require any emissions reductions, at any cost, during this planning period.

Figure 1. Wichita Mountains Visibility Conditions – Observation Data and Modeled Predictions – Compared to the Glidepath



Thank you for the opportunity to provide this information. WFEC looks forward to working with the DEQ in its revisions to the regional haze SIP. Please contact me at (405) 585-7250 if you have any questions or need any additional information.

Sincerely

John P. McCreight

John McCreight, EHS Supervisor
Western Farmers Electric Cooperative

cc: Jeremy Jewell, Trinity Consultants