

PROJECT NOTES

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Project ID: 457-111116

Plant/Site Name: Cherokee Power Plant - combined cycle turbine facility

Date: 9/20/2011

Deliberative Process: No

Note entered into database by: DJ

Note: Subject: Cherokee Combined Cycle Plant Permitting/Modeling Meeting
Date: Tue, 20 Sep 2011 10:44:53 -0600
From: Magno, Gary J <Gary.Magno@XCELENERGY.COM>
To: Jung, Doris W. <Doris.Jung@dphe.state.co.us>, King, Kirsten L. <Kirsten.King@dphe.state.co.us>, Hea, Roland C. <Roland.Hea@dphe.state.co.us>

As you all know, Public Service Company of Colorado is in the process of collecting on-site meteorological and ambient air quality data at our Cherokee Station for the permitting of a new natural gas-fired 2x1 combined cycle plant at this site. As part of that project we will be retiring the existing coal-fired Units 1, 2, and 3 and will be netting out of PSD review for all PSD pollutants. We have hired CH2M Hill to complete preliminary modeling for this project and do the final modeling and permit application that we plan to submit to the Division in August 2012. The purpose of this email is to request a preliminary meeting with you and your staff to discuss the air quality permit application and associated modeling analysis for this project. Major things I'd like to discuss include the following:

- Modeling protocol
- Netting analysis to avoid PSD
- Use of on-site NO2 data in the modeling
- NO2 background
- Cumulative modeling analysis including the number and type of sources to be included
- Approach and emission assumptions for modeling the retirements of coal-fired units.
- Options for running AERMOD, with or without OLM
- Modeling start-up vs normal operation for short-term NO2 standard

The week of October 3rd is pretty open for us except for the morning of October 7th. Please let me know who all you think needs to attend this meeting from your side of the house and what day that week would work best. We should plan on about a two hour meeting to start these discussions. Thanks.

Gary Magno
Xcel Energy | Responsible By Nature
Environmental Principal
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Project ID: 457-111116

Plant/Site Name: Cherokee Power Plant - combined cycle turbine facility

Date: 10/14/2011

Deliberative Process: Yes

Note entered into database by: DJ

Note: Subject: Cherokee
Date: Fri, 14 Oct 2011 13:42:48 -0600
From: Joyce, Jackie E. <Jackie.Joyce@dphe.state.co.us>
To: Jung, Doris W. <Doris.Jung@dphe.state.co.us>

Chuck talked to me and I wanted to give you a few concerns should the higher ups decide that no modeling is required:

1. If comments were received on this permit regarding whether the project complied with the NAAQS, the permit engineer would be unable to adequately respond to such comments. The only thing I could point to is the recent policy memo – but that only addresses 1-hr NO₂ and SO₂, not the others. Under the modeling guidance if you are under the modeling threshold there are other provisions for modeling, one of which is that you model grandfathered sources that have never been modeled (Cherokee has never been modeled). We cannot say in any response to comments that we know the NAAQS will be met.
2. If we get comments related to environmental justice (the area in which Cherokee is located is an environmental justice area), past responses have pointed to the NAAQS analysis.
3. We haven't waived modeling requirements for sources that net out. We did let Comanche out of NAAQS modeling for NO_x and annual SO₂ – but we made them model for the short term SO₂ NAAQS – but then they had a pretty significant reduction in SO₂ (16,000 tpy) and while the NO_x reductions were less significant – there was only the annual standard. I assume we figured the annual NO_x standard wasn't an issue. I suspect we had Holcim model when they rebuilt their facility.
4. I know 1 and 2 are based on the possibility of getting comments – even though the replacement of the coal-fired boilers is considered an improvement, there may still be people that are unhappy with HB1365 (coal companies) and/or unhappy with Xcel in general. I think some environmental groups really want renewable – NG isn't really what they want. Plus WEG is involved in an ongoing lawsuit re Cherokee and their COMS, while this wouldn't be an issue with NG fired turbines, I think WEG is going to expect Xcel to follow the rules. So it's likely that we will get comments.

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Project ID: 457-111116

Plant/Site Name: Cherokee Power Plant - combined cycle turbine facility

Date: 10/19/2011

Deliberative Process: Yes

Note entered into database by: Chuck Machovec

Note: A printout with the following text was provided to Gordon Pierce on 10/19/2011.

Some of the reasons for requiring impact analyses, including projects with emissions reductions like Cherokee:

1. Pursuant to section 110(a)(2)(C) of the federal Clean Air Act, the State Implementation Plan (SIP) needs to regulate the "modification and construction of any stationary source within the areas covered by the plan as necessary to assure that national ambient air quality standards are achieved."
2. Similarly, 40 CFR 51.160 requires the State to have the authority to prohibit any construction or modification that would interfere with the attainment or maintenance of a national standard.
3. With regards to ambient air quality standards (AAQS), requirements for granting all construction permits (minor and major) subject to Colorado AQCC Regulation 3, Part B, Section III.D include (c) the proposed source or activity will not cause an exceedance of any National Ambient Air Quality Standards and (d) the source or activity will meet any applicable AAQS. There are no Colorado AQCC regulations that waive these requirements.
4. There may be Environmental Justice issues in areas impacted by this plant.
5. Dispersion modeling is necessary for effective design of a stack(s) and other impact-related aspects of a power plant.
6. While the turbine is at the same facility as existing coal units and the source may net out of PSD/NSR, it is at a different location at the site than the existing units and also will likely have different plume rise characteristics. This means that, to some degree, the turbine's plume will likely impact different geographical areas (receptors) than the retired units. There is a modeling process designed specifically to look at these types of situations (e.g., model retired sources; then model new sources, then quantify the "difference" in concentration; if it is below SILs, a NAAQS analysis is not triggered. If it is above the SIL, a NAAQS triggered at those receptors where the source has a significant impact.
7. The area where the source is located has some of the worst air quality (Commerce City) in Colorado. This raises the bar for facility design from an air pollution perspective.
8. The existing facility has never been modeled as part of a Cherokee permitting action to determine if it the existing facility complies with the current standards.
9. Actual atmospheric conditions may transport plumes from the turbine (vs existing coal units) in different directions due to the vertical wind gradients and local discontinuities expected at the location of the Cherokee facility. Thus, plume impacts from the expected, shorter gas-fired turbine stacks will likely be impacting additional/other locations than the plumes from the taller stacks.
10. Boiler #4 will also be operating with natural gas instead of coal, which will create a different set of stack/plume-rise conditions.
11. If the impacts from the modification are not estimated, there will be no way to know if the new turbine (and associated changes that constitute the modification) will comply with the NAAQS. This will create risks for PSCo/Xcel in addition those implied above. For example, if the newly configured facility is modeled as a nearby source in a permitting action for the Suncor Refinery or for one of the other numerous sources in the area and that analysis shows that the re-configured facility does not comply with standards, expensive retrofits could be required to mitigate NAAQS issues. In addition, if the newly configured facility contributes to or causes violations of the NAAQS at new locations, it might interfere with the ability

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of another new source or modification to obtain a permit.

12. Keep in mind that Division modeling staff began working with Xcel on this project early in 2011. Xcel has been collecting on-site meteorological data and NO₂ data to support their impact analysis. There are numerous emails in the project record between Xcel and the Division.

13. HB1365 didn't relieve the Division from the responsibility to ensure that the turbine project would comply with applicable standards in the near-field; however, since a refined analysis of near-field impacts may not have been feasible during the HB1365 process because it is unlikely detailed engineering plans were available and representative meteorological data did not exist for the Cherokee facility (but the data are being collected now by Xcel), it would have been difficult to draw definitive conclusions during the HB 1365 process. Thus, it makes sense that a refined near-field compliance analysis was deferred until the permit application process for the reasons cited above and because background air quality and nearby sources change with time (i.e., to obtain a permit, the Division must determine if the modification will comply with standards at commencement of operation).

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Project ID: 457-111116

Plant/Site Name: Cherokee Power Plant - combined cycle turbine facility

Date: 11/7/2011

Deliberative Process: Yes

Note entered into database by: DJ

Note: Subject: Canceled: Meeting with Xcel on Cherokee
Date: Mon, 07 Nov 2011 17:39:47 -0700
From: Machovec, Chuck M. <Chuck.Machovec@dphe.state.co.us>
To: Joyce, Jackie E. <Jackie.Joyce@dphe.state.co.us>
CC: Jung, Doris W. <Doris.Jung@dphe.state.co.us>

Jackie,

I received a meeting cancelation notice regarding the Xcel Cherokee meeting (below) from Kirsten. Gordon already told me that Doris and I did not need to attend the meeting because Division management has concluded that an impact analysis is not warranted for the modification at Cherokee.

I told Gordon that Doris and I believe an impact analysis is warranted and that this unit has been working with Xcel Energy for over a year laying the ground work for the analysis; thus, this management decision on a technical item is surprising and inconsistent with existing guidance, practices, and applicable rules.

Xcel has been very proactive in working with this unit and has voluntarily collected over 5 months of site-specific meteorological data and air quality data so far to support a robust impact analysis to ensure the modification complies with applicable standards.

Here is the original meeting agenda from Xcel from an email message from Gary Magno:

The purpose of this email is to request a preliminary meeting with you and your staff to discuss the air quality permit application and associated modeling analysis for this project. Major things I'd like to discuss include the following:

- Modeling protocol
- Netting analysis to avoid PSD
- Use of on-site NO2 data in the modeling
- NO2 background
- Cumulative modeling analysis including the number and type of sources to be included
- Approach and emission assumptions for modeling the retirements of coal-fired units.
- Options for running AERMOD, with or without OLM
- Modeling start-up vs normal operation for short-term NO2 standard

Assuming you attend the meeting, if model selection and/or application comes up, please suggest that another meeting be scheduled with Doris Jung (Division's staff authority and work lead for permit modeling), Nancy Chick (permit monitoring expert), and me to discuss the Regulation No. 3 impact analysis requirements for this permitting action.

Regards,

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Chuck Machovec, Supervisor
APCD/Technical Services Program
Modeling, Meteorology, and Emission Inventory Unit

-----Original Appointment-----

From: King, Kirsten L.

Sent: Monday, November 07, 2011 5:09 PM

To: Jung, Doris W.; Machovec, Chuck M.; Chick, Nancy D.

Subject: Canceled: Meeting with Xcel on Cherokee

When: Tuesday, November 08, 2011 9:00 AM-11:00 AM (GMT-07:00) Mountain Time (US & Canada).

Where: Board - Max Occupancy 24

Importance: High

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Project ID: 457-111116

Plant/Site Name: Cherokee Power Plant - combined cycle turbine facility

Date: 12/16/2011

Deliberative Process: Yes

Note entered into database by: DJ

Note: Subject: Xcel Cherokee Repowering Project
Date: Fri, 16 Dec 2011 14:54:00 -0700
From: Jung, Doris W.
To: Pierce, Gordon <Gordon.Pierce@dphe.state.co.us>
CC: Machovec, Chuck M. <Chuck.Machovec@dphe.state.co.us>

Gordon,

The table of emissions for the Xcel Cherokee Units 1-3 Repowering Project you received at the Nov 8th meeting is incomplete and contains errors. For example, the emissions are provided only for turbines but this type of facility includes other equipment/emission units. Additionally, the table incorrectly reports "Net Change in Emissions" using emissions that are not creditable (e.g., a 5336 tpy NOx emissions reduction is used to determine net emissions for the table but Regulation No. 3 sets the maximum emissions reduction that can be used for netting at 500 tpy NOx).

Due to the differences in location, plume characteristics (height, temperature, velocity, downwash effect, in-stack NO2/NOx ratio) and variation of winds with height, the impacts (magnitude, gradient, location) from the individual plumes and from combined plumes (there are a number of other emission sources in Commerce City) are expected to be different between the current Cherokee configuration and the future reconfigured Cherokee facility.

Thus, based on the technical issues above as well as those cited by Chuck in previous communication with you, the "Total Repowering PTEs" (turbines only) were considered along with other factors, such as existing poor air quality and a modification at grandfathered source that has never been modeled before, to determine whether modeling is warranted for confirming that the proposed source or activity will not cause an exceedance of any National Ambient Air Quality Standards and the source or activity will meet any applicable AAQS before the permit is granted (Colorado AQCC Regulation 3, Part B, Section III.D© and (d))

Per your request, here are the modeling/impact analyses warranted for the Cherokee Repowering Project:

At 232.98 tpy of NOx emissions reported for Total Repowering PTE, modeling for all NO2 NAAQS is warranted.

At 226.15 tpy of CO emissions reported for Total Repowering PTE, modeling for all CO NAAQS is warranted.

At 104.16 tpy of PM10 emissions reported for Total Repowering PTE, modeling for the PM10 NAAQS is warranted.

At 48.47 tpy of PM2.5 emissions reported for Total Repowering PTE, modeling for all PM2.5 NAAQS is warranted.

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At 7.92 tpy of SO₂ emissions reported for Total Repowering PTE, modeling for all SO₂ NAAQS and CAAQS is warranted.

At 23.14 tpy of VOC emissions and 232.98 tpy of NO_x emissions, ozone modeling is not warranted. Some ozone modeling was performed for HB 10-1365.

Doris

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Project ID: 457-111116

Plant/Site Name: Cherokee Power Plant - combined cycle turbine facility

Date: 1/26/2012

Deliberative Process: Yes

Note entered into database by: DJ

Note: Subject: Cherokee update

Date: Thu, 26 Jan 2012 11:51:42 -0700

From: Machovec, Chuck M. <Chuck.Machovec@dphe.state.co.us>

To: Jung, Doris W. <Doris.Jung@dphe.state.co.us>

-internal deliberative process-

Gordon told me that Will had a side-discussion with Gary Magno at the CACI meeting about the need for modeling the Cherokee modification.

He said that Gary thanked will for the decision to not require modeling.

He said that Gary told Will that Xcel wants a letter from the Division indicating that modeling is not required.

Apparently there are some more discussions needed (I think on Xcel's end?) prior to a Division letter, so I if I understood correctly... the Division will not send a letter until it Xcel is sure it wants one (?)

I told Gordon that a letter would be an excellent way to get this decision into the record and it would help avoid misunderstandings in the future.

I told Gordon I want a copy of the letter after it goes out; he reiterated that it may be awhile.