



Draft Federal Land Manager Comments and Ecology Responses to Draft Regional Haze State Implementation Plan Revision

Air Quality Program

Washington State Department of Ecology
Olympia, Washington

January 2021

Federal Land Manager Comments for Chemical Pulp and Paper Mills and Ecology's Responses

#	Federal Land Manager Comment	Ecology Response
1	<p>Following is my initial feedback on the four-factor analyses conducted on the pulp & paper mills in WA. The overarching issues are the costs of potential controls and the visibility improvements that could result from cost-effective emission reductions. While I appreciate that Ecology has adjusted the costs presented by All4 (the consultant for the Washington Pulp & Paper Mills) to correct for All4's incorrect interest rate, All4's application of a 1.5 retrofit factor without adequate justification leads me to believe that even the adjusted costs may be overestimated and the cost-effective emission reductions underestimated. Also, All4 has not provided the data inputs to the SNCR and SCR workbooks it used to generate its cost estimates--without those inputs, I cannot properly evaluate its cost estimates.</p>	<p>Thank you for your feedback. These comments are addressed as they are raised individually below.</p>

#	Federal Land Manager Comment	Ecology Response
2	<p>Regarding the potential visibility improvements, it appears that Ecology is relying upon its 2016 RACT analysis and associated visibility modeling to conclude that the visibility improvements that could result from cost-effective emission reductions are not significant. However, as noted above, if the amount of emission reductions is underestimated due to overestimated costs, then the resulting visibility improvements would also be underestimated. And, although we believe we have seen the 2016 RACT analysis, or, at least, part of it, Ecology should provide this analysis in its entirety because it is such a critical component of Ecology's current analysis.</p>	<p>Specific comments about cost are addressed as they are raised below. The 2016 Washington Regional Haze Reasonably Available Control Technology Analysis for Pulp and Paper Mills (2016 RACT Analysis) was provided to Don Shepherd on 10/27/2020 in its entirety.</p>

#	Federal Land Manager Comment	Ecology Response
3	<p>(Note: Under the Reasonable Progress provisions of the Clean Air Act, visibility improvement is not a fifth-factor "off-ramp" for emission controls. EPA guidance has placed certain constraints on its use and we need to be sure we understand how Ecology is applying this "fifth-factor.").</p>	<p>Washington has a Reasonably Available Control Technology (RACT) provision that can be applied to attainment areas (unlike some other states and EPA, which generally apply RACT exclusively to non-attainment areas). The five factors of Washington's RACT rule are listed on page 4 of the 2016 RACT Analysis. Two of the factors (impact of source on air quality, and impact of additional controls on air quality) are described in Chapter 5 of the 2016 RACT Analysis. Two other factors (available controls; and cost) have an entire chapter devoted to each factor. Chapters 3 and 4 of the 2016 RACT Analysis describe in depth a fifth factor in the Washington RACT process (emission reductions to be achieved by additional controls).</p> <p>According to Washington State University, which prepared Appendix C of the 2016 RACT Analysis, "Results from this modeling study show that RACT implementation in the pulp and paper industry does little to improve visibility in Class I areas." They found that "the 8th highest deciview change was less than 0.05 dv at all of the IMPROVE sites." This is a valid off-ramp for using the Washington RACT provisions to address regional haze.</p> <p>In terms of 4-factor analyses, the pulp mill information presented to Ecology fully satisfies the current EPA requirements for regional haze 4-factor analysis as specified in the August 20, 2019 EPA Guidance on Regional Haze State Implementation Plans for the Second Implementation Period (2019 EPA Guidance). Based on the current 2019 EPA Guidance, and confirmed on November 3, 2020 in consultation with EPA, Ecology is in full compliance with the regional haze rule by deciding to not pursue controls for pulp mills at this time.</p> <p>In terms of Reasonable Progress provisions of the Clean Air Act, Washington is successfully navigating regional progress goals and will continue to do so as we will also re-evaluate these sources during the next implementation period.</p>

#	Federal Land Manager Comment	Ecology Response
4	<p>I am very pleased to read that the mills have mostly eliminated use of #6 fuel oil (some have eliminated all fuel oil firing) and that some mills have installed additional emission controls during the last planning period. However, according to the All4 report, "Most of the recovery furnaces in this analysis fire either natural gas or No. 2 fuel oil as auxiliary fuel, with two recovery furnaces firing No. 6 fuel oil." Which two furnaces are still firing #6 oil? All4 goes on to say, "The cost of switching to low-sulfur No. 2 fuel oil for the remaining two recovery furnaces is approximately \$12,000/ton SO2 removed based on fuel prices from the U.S. Energy Information Administration and using a 10% capacity factor." Please provide supporting documentation and calculations.</p> <p>I agree that adding NOx and PM emission controls to the recovery furnaces and lime kilns is probably not practical. The best NOx control strategy we have seen for recovery furnaces is quaternary combustion controls (which would be very difficult to retrofit).</p>	<p>The two recovery furnaces that use No. 6 fuel oil are Nippon RB#10 and WestRock (WR) Tacoma RF#4. [Note: the terms recovery boiler (RB) and recovery furnace (RF) are used interchangeably by the chemical pulp mills.]</p> <p>At the Nippon RB#10 unit, supplementary No. 6 fuel oil is used very rarely; primarily during startup, shutdown, and malfunction events. In 2018, it only used #6 fuel oil about 4% of the year.</p> <p>At WR Tacoma RF#4 unit, they only use supplemental oil during startups, shutdowns, and to help stabilize combustion of black liquor. The mill provided the following information to clarify:</p> <p>"We expounded on the use and purpose of a Kraft Mill's Recovery Boiler/Furnace and the fuels it burns to provide additional information/ understanding for the FLMs. The primary purpose of the recovery boiler is to recover inorganic cooking chemicals from the pulping process so they can be reused. The spent pulp cooking chemicals are called black liquor, and black liquor is the primary fuel for the recovery boiler. When fired in the recovery boiler, the organic portion of the black liquor burns and the resulting heat is used to make steam (which is used in the pulping and papermaking processes) and the inorganic portion is recovered in the form of smelt (which is dissolved to regenerate the pulp cooking chemicals and used to make pulp). Oil is a purchased fuel and is used only as a supplemental fuel. The mill typically burns oil during RB4 startups, shutdowns, and to help stabilize combustion of black liquor. The boiler is limited in the amount of oil it can burn to a 10 percent annual capacity factor (40 CFR 60.44b(c) and Condition A.4 of the AOP). This usage is tracked to ensure that compliance with the capacity factor is met."</p>

#	Federal Land Manager Comment	Ecology Response
5	<p>All4 has proposed a retrofit factor of 1.5 for several of the emission units for which it conducted a cost analysis. Not only is it highly unlikely that all of these emission units would experience the maximum degree of difficulty recommended by the EPA Control Cost Manual (CCM), these broad assertions are unsubstantiated and undocumented. Instead, we recommend that consultants and states itemize costs or show how they derived their retrofit factors as discussed in <u>Estimating Costs of Air Pollution Control</u>, by William M. Vatauvuk, Lewis Publishers, 1990, pp. 60-62.</p>	<p>Cost factors. The chemical pulp mills in Washington are among the oldest major industrial facilities in the Pacific Northwest (GP Camas dates back to 1885). Applying a 1.5 retrofit factor is reasonable.</p>
6	<p>All4 states: "Based on a review of recent information on the effectiveness of applying SNCR to industrial boilers, including recent WestRock experience at multiple locations, our analyses assumed SNCR would achieve 35% control on a solid fuel-fired boiler and 45% control efficiency on a gas-fired boiler." According to the CCM, the effectiveness of SNCR is typically a function of the NOx emission rate--the higher the NOx rate, the more efficient SNCR is likely to be. All4 should provide those NOx emission rates and document and justify its assumptions about SNCR efficiency.</p>	<p>Control efficiencies. The mills used the cost manual estimates except where they have actual information from their emission units. Efficiency rates are what the mills have actually experienced. Emission rates are provided in annual emission inventories, which the FLMs already have access to.</p>

#	Federal Land Manager Comment	Ecology Response
7	<p>All4 states that, "The costs of installing and operating an SNCR on mill boilers was estimated using U.S. EPA's "Air Pollution Control Cost Estimation Spreadsheet for Selective Non-Catalytic Reduction (SNCR)" (June 2019)." However, All4 has not provided the inputs to that process, making it impossible for us to evaluate its accuracy.</p> <p>All4 states that, "The costs of installing and operating an SCR on mill boilers were estimated using U.S. EPA's "Air Pollution Control Cost Estimation Spreadsheet for Selective Catalytic Reduction (SCR)" (June 2019)." However, All4 has not provided the data inputs to that process, making it impossible for us to evaluate its accuracy.</p> <p>In its section 3.3.3 "Energy and Non-Air Related Impacts," All4 has raised additional impacts cost issues that should have already been included in the cost analyses. All4 also raises issue of safety and environmental impacts associated with SCR that are common to all SCR installations and can be addressed by proper safety, operation, and maintenance measures.</p> <p>All4 included sales taxes in its analyses.</p> <p>All4 used a 4.8% interest rate in many of its analyses. The CCM recommends use of the current prime = 3.25%.</p>	<p>Ecology agrees that All4 interest rates were out of date. Ecology adjusted the interest rates from All4 to 3.25%. Our work is shown in the spreadsheet called "all controls" sent to Don Shepherd on 10/9/2020. This spreadsheet contains the data inputs used to arrive at the All4 cost estimates.</p>

#	Federal Land Manager Comment	Ecology Response
8	Do any of the mills generate a waste caustic solution that could be used to scrub SO ₂ ?	According to the Ecology's Industrial Section: "Kraft pulp mills generates process-related caustic solutions which are an inherent part of the pulp making process. These caustic solutions are white liquor and weak wash (a dilute solution of white liquor). Weak wash is already commonly used at smelt dissolver tanks as a scrubbing solution. Smelt dissolver tanks are not significant sources of SO ₂ emissions. The recovery furnaces at the pulp mills do not have scrubbers installed as emission control devices, instead relying on precipitators."
9	All4 included used a 7% interest rate with a 10-year life in its analyses of adding Low-NOx Burners. The CCM recommends use of the current prime = 3.25%.	Ecology agrees that All4 interest rates were out of date and that a 10-year life for low-NOx burners was inappropriate. Ecology adjusted the interest rates from All4 to 3.25% and the 10-year life value to 20 years. Our work is shown in the spreadsheet called "all controls" sent to Don Shepherd on 10/9/2020. This spreadsheet contains the data inputs used to arrive at the All4 cost estimates.
10	I have attached an annotated excerpt from Ecology's four-factor analyses for the Pulp & Paper industry that contains our feedback on that document. Please provide the Ecology 2016 RACT analysis for pulp/paper mills	The 2016 RACT Analysis (in its entirety) was provided to Don Shepherd on 10/27/2020.
11	"Was this a BACT determination?" (RE: WR Tacoma PB #6 low NOx burner).	It was not a direct BACT determination. The facility installed them on their own. However, the fact that they installed them on their own for reasons other than non-attainment (or similar reasons such as MACT considerations), makes it a relevant cost incurred for BACT considerations.

#	Federal Land Manager Comment	Ecology Response
12	<p>“What is the basis for this assumption?” (RE: RACT cost of 50% of BACT cost)</p>	<p>When not being applied to address non-attainment area concerns, RACT in Washington is understood by at least three agencies (NWCAA, PSCAA, and Ecology) to be a C-grade level control or emission limit. There is a precedent threshold in a previous Washington RACT determination from p. 77 of 107 of the combined (Ecology/ NWCAA/ PSCAA) Washington Oil Refinery RACT – TSD FINAL – 11/25/2013: “The proposed RACT defines a reasonably efficient refinery... comparable to or above the 50% percentile of similar-sized US refineries...”</p> <p>Ecology used its discretion to also apply a similar type of 50% factor to BACT costs to arrive at a RACT cost. In a December 5, 2019 conversation between Ecology and EPA, EPA agreed that this was a reasonable approach.</p>
13	<p>“Please show your math. Please update” (RE: proposed RACT costs)</p>	<p>Our work is shown in the spreadsheet called “all controls” sent to Don Shepherd on 10/9/2020. This spreadsheet contains the data inputs used to arrive at the All4 cost estimates, as well as the costs Ecology arrived at. Ecology’s listed cost threshold values are reasonable and defensible and it is therefore unnecessary to update them.</p>
14	<p>Nippon Boiler #7 @ \$6441/ton and WestRock Tacoma Boiler #6 @ \$6302/ton are not significantly higher and could result in an additional 97 tons/yr. NO_x removed.</p>	<p>A low NO_x burner at WestRock Tacoma is already installed. This was the unit from which Ecology used their actual costs for this analysis. Adding a Low-NO_x burner to Nippon boiler #7 would reduce NO_x by 28 tpy not 97 tpy. The reasoning behind the suggestion to raise the cost threshold is not supported. If removing more regional haze pollutants were the only criteria, there would be no upper limit for a cost threshold. Whereas Ecology’s cost threshold value of \$6,300/ton value (rounded down from \$6,302/ton) for low NO_x burners is reasonable and defensible.</p>

#	Federal Land Manager Comment	Ecology Response
15	SCR on WestRock Tacoma HFBoiler #7 @ \$6508/ton and SNCR on WestRock Longview HFBoiler 20 @ \$6245/ton are not significantly higher and could result in an additional 646 tons/yr. NO _x removed.	An SNCR at WestRock Longview is already installed. This was the unit from which Ecology used their actual costs for this analysis. Adding an SCR WR Tacoma HF Boiler #7 could potentially reduce NO _x by 457 tpy not 646 tpy. The reasoning behind the suggestion to raise the cost threshold is not supported. If removing more regional haze pollutants were the only criteria, there would be no upper limit for a cost threshold. Whereas Ecology's cost threshold value of \$6,250/ton value (rounded up from \$6,245/ton) for SNCR/SCR is reasonable and defensible.
16	An additional 743 tons of NO _x could be removed by slightly raising your cost-effectiveness thresholds (or reducing the costs).	If Ecology raised the NO _x cost threshold, the additional amount of NO _x removed would potentially be 485 tpy not 743 tpy. The reasoning behind the suggestion to raise the cost threshold is not supported. If removing more regional haze pollutants were the only criteria, there would be no upper limit for a cost threshold. Whereas Ecology's cost threshold value of \$6,250/ton value (rounded up from \$6,245/ton) for SNCR/SCR and the \$6,300/ton value (rounded down from \$6,302/ton) for low NO _x burners are reasonable and defensible.
17	Please provide this analysis. (RE: 2016 Ecology RACT analysis).	The 2016 RACT Analysis (in its entirety) was provided to Don Shepherd on 10/27/2020.

#	Federal Land Manager Comment	Ecology Response
18	<p>This is irrelevant. The potential for an adverse impact determination only occurs when new emissions from a major source or major modification rise to the level that the FLM has no other recourse. Instead of these rare instances, the facilities under review here are already in existence and have much greater emissions. Due to such congoing emissions, the Dol made a determination in 1985 that all Class I areas it administered were experiencing impaired visibility—that determination has not been changes and is supported by current visibility monitoring data. For example, our monitoring data indicates that visibility in Mount Rainer, North Cascades, and Olympic national parks is “fair” and unchanging.</p>	<p>Pointing out that the FLMs have not issued an adverse impact to the chemical pulp mills in Washington is relevant. In consultation with the FLMs, Ecology wishes to focus its resources on areas that the FLMs consider the greatest concern to regional haze. Because the FLMs issued a recent adverse impact determination to the Washington refinery sector, Ecology is focusing its resources on refineries during this round of regional haze. Ecology acknowledges that an adverse impact determination is not required to address regional haze. However, due to the recent adverse impact determination issued for the refinery sector, as well as recent Washington State University modeling showing that controls on chemical pulp mills “does little to improve visibility in Class I areas” (see response to comment No. 3 above), Ecology is focusing its resources on refineries more than chemical pulp mills during this current regional haze implementation period. Even so, Ecology has included other industries besides refineries in its Q/D analysis and required them to submit 4-factor analysis just like the refineries. All of them have done so in accordance with the 2019 EPA Guidance.</p>
19	<p>Please describe emission reductions that have occurred or will occur during this planning period.</p>	<p>As noted in Ecology’s analysis, the GP Camas facility is no longer operating as a chemical pulp mill. In addition, there are now enforceable conditions that would prevent GP Camas from operating as a chemical pulp mill during this planning period. If GP Camas pursues operation as a chemical pulp mill in the future, they will need to go through new source review.</p>

#	Federal Land Manager Comment	Ecology Response
20	<p>If the cost-effective controls evaluated in the Initial Review were implemented, emission reductions and visibility improvements would be even greater.</p>	<p>It is very unlikely that emission reductions would be greater. The controls considered in the 2016 RACT Analysis were primarily wet heat recovery as was used at the GP Camas mills. Unless the other mills needed wet heat recovery, it would be very difficult to force them to modify their facilities for this reason. In the 2016 RACT Analysis, Washington State University modeling shows that even if the highest standard of SO2 control (the GP Camas SO2 limit is as stringent as anywhere in the world), were applied to the other mills in the state, it would do “little to improve visibility in Class I areas.”</p>
21	<p>As Ecology noted above, perceptibility is not an acceptable criterion. Please provide the information on which Ecology made its “demonstration.” Ecology should also consider the cumulative impacts and benefits on all of the Class I areas evaluated.</p>	<p>Ecology did not state that “perceptibility is not an acceptable criterion.” But rather, Ecology quotes the 2019 EPA Guidance directly, and therefore more accurately as follows: “a measure may be necessary for reasonable progress even if that measure in isolation does not result in perceptible visibility improvement.”</p> <p>The actual quote clearly states that “a measure may be necessary for reasonable progress.” It does not state that a measure is necessary in all circumstances for reasonable progress. Based on the circumstances in Washington as described in Chapter 11 of Ecology’s analysis, Ecology appropriately considered this information from the 2019 EPA Guidance for 4 factor analyses. The information presented in Chapter 11 (including but not limited reference to the 2016 RACT Analysis), supports Ecology’s conclusions. The 2016 RACT Analysis (in its entirety) was provided to Don Shepherd on 10/27/2020. Ecology’s analyses of all of its Class I areas shows that Washington is meeting and addressing the 2064 glide path goals appropriately.</p>

#	Federal Land Manager Comment	Ecology Response
22	That cost-effectiveness value would be \$6,350 in 2019\$ based upon the CEPCI.	<p>As WestRock Tacoma noted in its response to Ecology’s follow-up requests regarding cost for the low NOx burners, they were already using “actual capital costs in 2019 dollars.” Therefore, the suggested cost conversion is not necessary.</p> <p>It would also not make any difference because Ecology’s adjusted threshold of \$6,300/ton for low NOx burners (after accounting for 20 years useful life and a 3.25% interest rate, as described in comment 9), is almost identical to what is being suggested in the comment.</p> <p>It would not pull in any additional units for consideration. A low NOx burner at WestRock Tacoma is already installed (see response to comment No. 14).</p>
23	That cost-effectiveness value would be \$6,520 in 2019\$ based upon the CEPCI.	<p>As WestRock Longview noted in its response to Ecology’s follow-up requests regarding cost for the SNCR, they were already using “actual capital costs in 2019 dollar’s.” Therefore, the suggested cost conversion is not necessary.</p>
24	We are aware of cost-effectiveness thresholds of \$4400 - \$7600/ton among the WRAP states.	<p>Ecology’s cost thresholds for chemical pulp mills (~\$6300 - \$7,800) are mostly within this range, except for Ecology’s particulate matter threshold, which is slightly above this range (\$7,800). Each state is able to determine their own cost threshold independently. The costs incurred by one industry for a control technology may vary from the costs incurred by another industry. Cost incurred for control technologies could also vary from state to state. Ecology’s cost threshold values are well reasoned and defensible.</p>
25	Perceptibility is not an acceptable criterion. Please provide the information on which Ecology based this conclusion. Please provide the information on which Ecology based its conclusion.	<p>See Ecology’s responses to Comment No. 3 and Comment No. 21 above.</p>

Federal Land Manager Comments for Petroleum Refineries and Ecology's Responses

#	Federal Land Manager Comment	Ecology Response
1	<p>First, some general feedback on the "Refineries" section of your draft chapter 11 (see attachment):</p> <ul style="list-style-type: none"> • I really like the comparison of emissions/bbl among the US refineries--I had not seen that sort of thing before and it will be helpful to us as we look at other refineries across the nation. • While we bureaucrats understand acronyms like "AO" and "FFA", it would probably be a good idea to define them for the public. • It was not until I had reviewed multiple refinery reports that I began to realize how Ecology selected emission units within a refinery for review. I found your approach to evaluate "each fluid catalytic cracking unit (FCCU), boiler greater than 40 MMBtu/hr., and heater greater than 40 MMBtu/hr." makes sense in dealing with facilities with so many emission units and I recommend that you state that explicitly in your draft SIP. I also appreciate that you are willing to add the calciners at BP-Cherry Point. • I recommend that you explain why Ecology is only evaluating NOX emissions and not SO2. • Although I know of no regulatory basis for exempting emission units modified after 2005, I am K with the results of applying that filter. 	<ul style="list-style-type: none"> • First bullet – no response required • Second bullet – Ecology will review the document to ensure that the initial use of an acronym is spelled out. • Third bullet – Ecology will make will add in the refinery sections introduction language that states what equipment is being evaluated. • Fourth bullet – an explanation on what equipment was selected for further evaluation will be added • Fifth bullet – this will be part of the explanation on the fourth bullet <p>It is Ecology's intention to start a RACT process for the refineries. The RACT process requires rule making and will not be completed before the draft Regional Haze State Implementation Plan is submitted to EPA. The rule making itself will be open to the public and it is encouraged for all stake holders (which include the FLMs) to participate.</p>

#	Federal Land Manager Comment	Ecology Response
	<p>It is my understanding that you intend to address RP for the refinery sector via a RACT action--is that correct? What is your timeline for that--can you complete that action in time to allow us to review it and for Ecology to include it in your SIP submittal?</p>	
2	<p>I agree that BP has overestimated costs of NOx controls and commend Ecology for using the Control Cost Manual (CCM) to conduct its independent analysis. I offer these observations in support of your approach. (Please see the attachment for more specifics.):</p> <ul style="list-style-type: none"> • The "Jacobs" report upon which BP based its analysis is too old (per the CCM). The method BP used to escalate costs from the Jacobs report were not adequately explained. • BP appears to have included costs of lost production without explaining how they relate to conducting modifications during turnarounds. • BP has overestimated Capital Recovery Costs and reagent costs. <p>NPS's comments:</p> <ul style="list-style-type: none"> • The adverse impact determination was dated December 15, 2016 and was never withdrawn.(Ecology will change) • The NPS identify various flaws in BPs cost analysis 	<p>The observation supports Ecology's planned approach. For this reason no responses are required.</p>
3	<p>I agree that Phillips 66 (P66) has overestimated costs of NOx controls and commend Ecology for using the Control Cost Manual (CCM) to conduct its independent analysis. I offer these</p>	<p>The observation supports Ecology's planned approach. For this reason no responses are required.</p>

#	Federal Land Manager Comment	Ecology Response
	<p>observations in support of your approach. (Please see the attachment for more specifics.)</p> <ul style="list-style-type: none"> • The report upon which Phillips 66 based its analysis is too old (per the CCM). • P66 has overestimated Capital Recovery Costs. <p>NPS's comments:</p> <ul style="list-style-type: none"> • The NPS identify various flaws in Phillip 66's cost analysis 	
4	<p>I agree that Marathon has overestimated costs of NOx controls and commend Ecology for using the Control Cost Manual (CCM) to conduct its independent analysis. I offer these observations in support of your approach. (Please see the attachment for more specifics.)</p> <ul style="list-style-type: none"> • Marathon has overestimated Capital Recovery Costs and reagent costs. <p>NPS's comments:</p> <ul style="list-style-type: none"> • The NPS identify various flaws in Tesoro's cost analysis 	<p>The observation supports Ecology's planned approach. For this reason no responses are required.</p>
5	<p>I agree that Shell has overestimated costs of NOx controls and commend Ecology for using the Control Cost Manual (CCM) to conduct its independent analysis. I offer these observations in support of your approach. (Please see the attachment for more specifics.)</p> <ul style="list-style-type: none"> • Shell's cost analyses are unsupported. • Shell has overestimated Capital Recovery Costs. 	<p>The observation supports Ecology's planned approach. For this reason, no responses are required for the first section. Open bullets responses are given below.</p> <ul style="list-style-type: none"> • 2019 emission inventory with Shell and Ecology's reviews highlighted in yellow • Ecology plans to perform an engineering study on the three turbines and may set lower limit based on RACT • Ecology: FLM's comments will be included in appendix.

#	Federal Land Manager Comment	Ecology Response
	<p>I have attached a workbook that includes data from the 2019 emission inventory provided by NWCAA.</p> <p>Don's comments:</p> <ul style="list-style-type: none"> • Need copies of support data from Shell • Retrofit Factor justification needed • Should use current interest rate of 3.25% • Need federally enforceable limit on equipment life (Erie City Boiler) • Noted FCCU SO2 of 142 tpy 	
6	<p>Finally, we have a question regarding Chapter 10 of the draft SIP. On page 5, the SIP refers to "state oil and gas emissions control programs". Can you explain what this is referring to?</p>	<p>This is actually 40 CFR 60, subpart OOOO requirements. This does contain transportation requirements for movement of natural gas. Also some information is provided by the Western Regional Air Partnership and it may be more relevant to other western states.</p> <p>It is Ecology's intent to clarify this point and correct any inconsistencies.</p>

Federal Land Manager Comments for Cement Industry and Ecology's Responses

#	Federal Land Manager Comment	Ecology Response
1	<p>In Chapter 11, page 16, the discussion on potential NO_x controls at Ash Grove says:</p> <p>Selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR) emission control systems are two potentially viable methods of reducing NO_x emissions. The exit stack temperature at the facility is typically around 350°F. This stack temperature is less than the typical SCR operation temperature and requires additional heating to 650°F. The temperature is significantly lower than optimal SNCR temperatures and requires heating, which generates more NO_x.</p> <p>We note that SNCR would not be located at the exit stack, so the temperature at that point would not preclude SNCR. Typically on a cement kiln the reagent would be injected into the kiln, not downstream at the exit stack.</p>	<p>Ecology acknowledges this comment and is working with the facility to gather additional information. The original analysis was for a SCR system and not for a SCR and SNCR system. Resolution of this issue will be added to the proposed Regional Haze State Implementation Plan when opened for formal public comment.</p>
2	<p>On page 17, the discussion says: “The facility is located on a confined property with very little available area to install new equipment. The facility would need to move and relocate existing facilities in a vertical fashion to free up space. Another option would be to reduce the space allowed for stockpiles, but this would result in potential operational impacts and increased vessel traffic to deliver materials more frequently.”</p> <p>We have not previously encountered a cement plant that did not have sufficient space for an SNCR system. The primary components of an SNCR system are reagent tanks and an injection system. The analysis should include an evaluation from</p>	<p>Ecology acknowledges this comment and is working with the facility to gather additional information. The original analysis was for a SCR system and not for a SCR and SNCR system. Resolution of this issue will be added to the proposed Regional Haze State Implementation Plan when opened for formal public comment.</p>

#	Federal Land Manager Comment	Ecology Response
	an SNCR vendor to determine whether installation of a system is physically feasible.	

DRAFT

Federal Land Manager Comments for the Glass Industry and Ecology's Responses

#	Federal Land Manager Comment	Ecology Response
1	<p>I also have a question regarding the Cardinal FG Company glass facility. Chapter 11 of the draft SIP indicates that the company has submitted an application to modify the facility's permit and will install an SCR system. According to the SIP, NOX at the SCR inlet will be 437.5 lbs./hr. and 49.1 lb./hr. at the SCR outlet, for an emissions reduction of 88%. According to the permit technical support document, Tech Support Doc 20-3409TSD.pdf page 8, the SCR will have a "minimum" efficiency of 80%, and the emissions rate will be 1.63 lb./ton glass and 101.1 lb./hr. (24-hour average). Maybe I am misunderstanding this, but it seems like there is some inconsistency here. Can you clarify what the NOx removal efficiency will be with SCR? Also, we are aware of a glass facility in New Jersey that was required to install an SCR system and achieve an emissions rate of 1.2 lb./ton of glass with a 90% control efficiency. I have attached a copy of the settlement announcement for your reference.</p>	<p>The facility has requested the permit modification numbers in order to keep the facility below PSD permit levels. This will allow for the recension of the current PSD permit. This permit modification was on a voluntary basis, so the permittee established the technical requirements.</p> <p>The facility will operate the SCR system in the manner required by the newly modified permit and the manufacturer's operating requirements.</p> <p>It is expected that the efficiency of the system will be greater than 80%, but the permitted levels will be at 80%.</p> <p>Ecology does acknowledge that higher efficiency can be achieved. With the facility doing this change on a voluntary basis, Ecology is accepting this change in regards to regional haze emission reductions.</p>