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BEFORE THE
ENERGY FACILITY SITING COUNCIL
OF THE STATE OF OREGON

In the Matter of Compliance with) Supplemental Order Clarifying Ongoing
Conditions of the Site Certificate) Requirements under Conditions at
for the Klamath Cogeneration) Section IV.B of the Site Certificate
Project related to Carbon Dioxide
Emissions

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Summary

9 The Energy Facility Siting Council (“Council”) approves the clarifications set forth
10 below, regarding ongoing obligations of Klamath Energy LLC (KE) under the Site Certificate
11 conditions related to carbon dioxide offsets to be provided by the Klamath Cogeneration Project
12 (KCP). Specifically, the Council concurs with proposed clarifications regarding the
13 requirements for reconciliation every five years by providing supplemental carbon dioxide offset
14 payments to the Oregon Climate Trust in case of any shortfall in sale of useful thermal energy to
15 the Collins Wood Products facility. The Council further makes the requested finding that
16 contingency funds for the shortfall in performance of carbon dioxide offset projects provided in
17 condition IV.B.6 of the site certificate can be withdrawn in full at any time after KE determines
18 that the mitigation projections are not likely to be met and provided to the Oregon Climate Trust.
19 The Council further finds that KE has met all ongoing obligations under conditions IV.B.8, 9 and
20 10 of the site certificate regarding monitoring and reporting of carbon dioxide offset projects by
21 reporting that those projects are no longer effective, so that further monitoring and reporting
22 under those conditions is no longer required.
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A. Background

27 On July 2, 2008 the Oregon Department of Energy (“ODOE” or “Department”) received
28 a letter from IBERDROLA RENEWABLES, Inc. (the “IBR letter”), requesting clarification
29 regarding the one-time payment option for the Carbon Dioxide shortfall for operating years 6
30 through 30 and general clarification regarding the Council’s anticipated supplemental order.¹
31 IBR is the parent company of KE, which holds the site certificate for the KCP.
32

33 The KCP is a nominal 500 megawatt (MW) natural gas-fired electric cogeneration plant.
34 The site is located approximately 4.5 miles south and west of the city of Klamath Falls, on land
35 adjacent to the Collins Wood Products facility. In addition to its electric generation, the facility
36 provides cogenerated process steam to the wood products facility.

¹ IBR July 2, 2008 letter from Mike Roberts to Adam Bless, “Clarifications Regarding the One-Time Payment Option for the Carbon Dioxide (CO2) Shortfall for Operating Years 6 through 30 and General Clarifications Regarding the Oregon Energy Facility Siting Council’s Anticipated Supplemental Order.” A copy is attached hereto and incorporated herein as Attachment A.

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2 The KCP site certificate was issued before the Council adopted rules for carbon dioxide
3 emissions at OAR 345 Division 24. In 1997, the Council held a contested case to determine
4 which of three competing generation projects would be exempted from the Council's Need for
5 Facility Standard, which applied to electric generating plants at the time.² The KCP was
6 awarded the exemption, based on a diverse portfolio of carbon dioxide offset projects.
7 Therefore, the Council's current carbon dioxide rules at OAR Chapter 345, Division 24 do not
8 apply to the KCP site certificate. However, the site certificate contains extensive conditions at
9 Section IV.B, specifying carbon dioxide offset requirements that are consistent with the findings
10 that the Council made in its Order in the 1997 contested case.

11
12 The sale of process steam to the Collins facility is considered a carbon dioxide offset
13 because it displaces steam that Collins would otherwise produce in stand-alone boilers.
14 Condition IV.B.1 of the site certificate states that the KCP will supply an annual average of
15 200,000 pounds per hour of steam to Collins, at a specific temperature and pressure.

16
17 On June 30, 2007, KE reported that it had supplied an average of only about 70,000
18 pounds per hour to Collins over its first five years of operation.³ In an Order on September 21,
19 2007 (a copy of which is attached hereto and incorporated herein as Attachment B), the Council
20 found that Collins was unlikely to accept steam at a greater rate during the KCP's remaining life,
21 and approved a plan to make up the shortfall in steam sales over the lifetime of the plant. The
22 plan was based on the assumption that steam sales over years 6 through 30 would average the
23 same hourly rate that was achieved in years 1 through 5.⁴ The Council approved a one-time
24 payment of approximately \$2.4 million to the Oregon Climate Trust, as a replacement for the
25 offsets lost by the shortfall in steam sales.⁵

26
27 As noted above, the steam sales to Collins were but one part of a diverse portfolio of
28 carbon dioxide offset projects called for in the KCP site certificate. Other projects included solar
29 energy promotion in Southeast Asia, promotion of geothermal heating in Klamath Falls, capture
30 of methane gas for beneficial use, and funds to the Oregon Forest Resources Trust for
31 reforestation. Condition IV.B.8 of the site certificate requires KE to make available up to
32 \$50,000 per year for monitoring and reporting on the performance of these offset projects.
33 Condition IV.B.10 requires KE to annually report the performance of these projects to the
34 Council and provide a more comprehensive assessment every five years. Condition IV.B.6
35 creates a \$300,000 contingency fund (in 1996 dollars) to be used if the above offset projects
36 (other than the steam to Collins) fail to reach certain performance goals.

² The Need for Facility Standard no longer applies to generating plants, under ORS 469.501.

³ The July 2, 2008 IBR letter correctly clarifies that the precise average of steam supply to Collins over the first five years of operation was 67,105 pounds per hour.

⁴ Consistent with condition IV.B.1, the Council allowed KE to take credit for thermal efficiency improvements at KCP as a means of reducing the shortfall in steam sales to Collins.

⁵ Because the site certificate pre-dates the current CO₂ mitigation rules at OAR Chapter 345, Division 24, the Council had latitude to adopt an offset replacement plan that was not identical to current rules. However, the plan approved in the September 21, 2007 Order was consistent in principle with those rules.

1
2 KE commenced operation on July 1, 2001 and submitted its five year report in July 2006.
3 KE reported at the end of its first five year period that none of the above offset projects had
4 achieved any significant success, and there were virtually no expectations of greater success in
5 the future.
6

7 Therefore, in its July 2, 2008 letter, IBR requests clarification regarding ongoing
8 requirements under conditions IV.B.1, IV.B.6, IV.B.8, IV.B.9, IV.B.10 and IV.B.11. The IBR
9 letter is not a request for amendment because no change in any condition is requested. Rather,
10 IBR requests certain stipulations at a finer level of detail than is provided by the conditions.
11

12 **B. IBR Request for Clarification**

13 14 **B.1 Five Year Reconciliation (“true up”) for Steam Sales to Collins**

15
16 Condition IV.B.1 of the site certificate requires KE to report every five years on its
17 hourly rate of steam sale to Collins, averaged over the five year period, for life of the facility. If
18 steam sales fall short of the 200,000 pound per hour rate that was the basis for the site certificate,
19 then condition IV.B.1 requires KE to provide other offsets sufficient to make up the shortfall for
20 that 5 year period. This is referred to as the “true up”. In its September 21, 2007 Order, the
21 Council adjusted the baseline rate of steam sales to Collins to match actual steam sales during
22 the first five years. This was stated as 70,000 pounds per hour in the September 21, 2007 Order
23 but is clarified in IBR’s July 2, 2008 letter to be more precisely 67,105 pounds per hour.
24

25 IBR’s July 2, 2008 addresses the requirements under condition IV.B.1 and the Council’s
26 September 21, 2007 Order if hourly steam sales in future five year periods fall short of 67,105
27 pounds per hour. Specifically, IBR requests the following clarifications:
28

- 29 1) The focus of each 5-year verification will be KE’s average annual steam sales. Any CO2
30 shortfall for the 5 year period will be calculated based on the energy delivered to Collins
31 and the associated fuel that is displaced. The method used to calculate any CO2
32 shortfall will be the same as was used in Table A in the email sent on November 12, 2007
33 from PPM to Adam Bless (hereinafter 11/12/07 memo) (a copy of which is attached
34 hereto and incorporated herein as Attachment C).⁶
35
- 36 2) Any future improvement projects that are implemented by KE can be used to reduce
37 future shortfalls in CO2 offsets. Shortfall reductions due to future improvement projects
38 will be calculated using the same approach as was used in Table B of PPM’s 11/12/07
39 memo to Adam Bless.
40
- 41 3) KE steam sales and future improvement projects are the only parameters that will change
42 for purposes of the 5 year calculations. Reductions to the CO2 shortfall for years 6

⁶ In its Order, the Council authorized PPM and ODOE to calculate the precise payment requirement before sending the funds to the Climate Trust. The 11/12/07 memo from PPM contains those final calculations. PPM was the parent company of KE before PPM was purchased by IBR.

1 through 30 that are based on KE's original 10 improvement projects and reduced levels
2 of nitrogen oxides (NOx) and particulates (PM10) emissions will remain fixed. These
3 reductions were calculated in Tables B and C of PPM's 11/12/07 memo to Adam Bless.
4

5 4) The average steam sales amount to Collins during years 1 through 5, which was used as
6 the basis to calculate the gross CO2 shortfall for years 6 through 30, was the energy
7 equivalent of 67,105 pounds per hour at a pressure of 375 psig and 455 degrees F. This
8 average steam sales level of 67,105 pounds per hour at 375 psig and 455 degrees F will
9 be the break-even rate for future 5 year verifications.

10
11 5) If average steam sales during the 5 year period under review exceed the break even rate
12 of 67,105 pounds per hour, then no shortfall will exist and no additional CO2 payments
13 will be required for that 5 year interval. While KE will not receive any refunds at any
14 time of funds already paid to meet its CO2 obligations, KE can carry forward steam sales
15 and future plant heat rate improvement projects. Should steam sales in a 5 year period
16 exceed the break even rate, each ton of associated CO2 offsets can be used as a credit
17 against steam sale shortfalls in a future 5 year period. Any reductions in CO2 shortfall
18 from future KE improvement projects will be calculated as pro-rated credits in the 5 year
19 period in which these projects were implemented (based on the date within the 5 year
20 period that the improvement project became operational), and as full credits in any future
21 5 year periods that are subsequent to the one in which the improvements were
22 implemented. Improvement project credits not applied in a given 5 year cycle can be
23 carried forward to subsequent 5 year periods.⁷
24

25 6) If average steam sales to Collins during a 5 year period are less than the break even rate
26 and there is a net shortfall in CO2 offsets for this 5 year period after applying:

- 27
28 a) the effect of any improvement projects implemented in previous 5 year periods,
29 b) any carry forward credits from steam sales above the break even rate in previous 5
30 year periods,
31 c) any carry forward credits from improvement projects implemented in a previous 5 year
32 period but not required to offset CO2 shortfalls in those periods, and
33 d) pro-rated reductions in CO2 shortfall from improvement projects implemented during
34 the 5 year period under review;

35
36 then KE will owe a payment for the 5 year period under review, based on the net CO2
37 shortfall in tons for that period.
38

39 7) If a payment is due for a given 5 year period, the applicable payment rate in dollars per
40 ton of CO2 will be the one in effect as of the ending date of the 5 year period under
41 review. That rate is the one stated in EFSC rules at OAR Chapter 345, Division 24 under
42 "Means of Compliance". While the "means of compliance" rate may be increased from
43 time to time as authorized in statute, the EFSC CO2 standard (stated in allowed lb. of

⁷ Attachment 2 of IBR's July 2, 2008 letter shows an example of the calculation.

1 CO2 per kwh) applicable to the KCP will not change but will remain the same throughout
2 the life of the KCP.

- 3
4 8) At any time, KE will have the option to buy down additional CO2 offset requirement in
5 any amount relative to the 67,105 pph steam supply break even rate and at the then-
6 current dollars per ton rate, so long as the original CO2 offset requirement, in tons and
7 based on the original 200,000 pph steam supply, is satisfied.
8

9 **B.2 Portfolio Contingency Account**

10
11 In addition to the steam sales to Collins, the KCP site certificate also required a portfolio
12 of other carbon dioxide reduction programs, as described above and described in greater detail at
13 section IV.B of the site certificate. There is no true up for these "other" programs. However,
14 KE is required to monitor their performance. If they fail to perform as expected, condition
15 IV.B.6 of the site certificate establishes a \$300,000 (in 1996 dollars) contingency fund, to be
16 used towards additional carbon dioxide offsets if necessary.
17

18 In its July 2 letter, IBR acknowledges that none of these "other" offset programs
19 performed as expected, and there is no chance of their improving. IBR proposes to make the
20 entire fund available to the Oregon Climate Trust right away (i.e., within 30 days of issuance of
21 this Order by the Council). IBR requests that, in consideration for early delivery of the
22 contingency account, site certificate condition IV.B.6 be viewed as fully satisfied or at a
23 minimum moot, any potential enforcement of this condition be waived, and KE be held harmless
24 with respect to the requirements of condition IV.B.6 The Council concurs.
25

26 **B.3 Portfolio Monitoring**

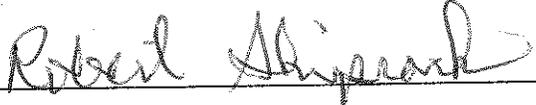
27
28 Conditions IV.B.8, 9, 10 and 11 of the site certificate require KE to make available
29 \$50,000 annually for the monitoring and verification programs for the offset portfolio, provide
30 an annual report to EFSC on the performance of the portfolio, and consult with EFSC on an
31 ongoing basis regarding portfolio performance.
32

33 As noted, the portfolio performance has been only a small fraction of original projections,
34 and this level of performance is not expected to improve. Also as noted, there is no "true up"
35 condition for these items in the portfolio. KE can meet its obligations by delivering the
36 contingency fund described above in section B.2 of this Order. Therefore, continued monitoring
37 and reporting serve no purpose and provide no useful information. Therefore, IBR requests, and
38 the Department recommends, that conditions IV.B.8, 9, 10 and 11 be considered fully satisfied
39 and moot, any potential future enforcement of these conditions be waived, and KE be held
40 harmless with respect to the requirements of these conditions. The requirement to report steam
41 sales to Collins remains as described in section B.1 of this Order, but the findings set forth in this
42 section B.3 of this Order apply to offset programs other than steam sales to Collins. The Council
43 concurs.

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C. **ORDER**

Based on the above facts and discussion, the Energy Facility Siting Council concurs with the request for clarification made by IBR in its July 2, 2008 letter to the Department, and orders that the descriptions in section B of this order be considered accurate clarifications of conditions IV.B.1, 6, 8, 9 10 and 11 of the site certificate.


Robert Shiprack
Chair, Energy Facility Siting Council

Notice of the Right to Appeal

You have the right to appeal this Order pursuant to ORS 183.480 et seq. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.480 et seq. If you do not file a petition for judicial review within the 60-day time period, you lose your right to appeal.



IBERDROLA RENEWABLES

02 of July, 2008

Adam Bless
Oregon Department of Energy
625 Marion St., NE
Salem, Oregon 97301-3742

Subject: Klamath Cogeneration Project (KCP) – Clarifications Regarding the One-Time Payment Option for the Carbon Dioxide (CO₂) Shortfall for Operating Years 6 through 30 and General Clarifications Regarding the Oregon Energy Facility Siting Council's (EFSC's) Anticipated Supplemental Order

Dear Mr. Bless,

On behalf of IBERDROLA RENEWABLES, Inc. (IBR), which was formerly known as PPM Energy, Inc., I want to thank you for your November 29, 2007 letter, in which the Oregon Department of Energy (ODE) confirmed the one-time payment of \$2,437,923.75 as a means of complying with the KCP's Site Certificate Condition IV.B.1 for operating years 6 through 30. IBR is committed to making this payment in connection with the upcoming Supplemental Order process.

It is our understanding that EFSC will likely issue a Supplemental Order setting out the requirements for addressing any CO₂ emissions offset shortfalls for KCP operating years 6 through 30 and that your letter of November 29, 2007 will serve as a basis for the Supplemental Order. Therefore, we are providing this letter, which is meant to clarify issues associated with addressing potential future CO₂ offset shortfall accounting as well as some other, more general, issues. It is our intention that the contents of this letter and its attachments will, along with the contents of your November 29, 2007 letter, be referenced in and appended to EFSC's anticipated Supplemental Order.

Based on your recent discussions with Jan Prewitt with the Oregon Department of Justice and David Filippi with Stoel Rives LLP, we understand that this matter will be placed on EFSC's July 25, 2008 meeting agenda. We support EFSC's consideration of this matter at its upcoming meeting, and we will plan to have a representative in attendance. Once EFSC issues a Supplemental Order and puts to rest the various matters contained in this letter, we will then proceed with the submittal of an application to amend the Site Certificate to address issues related to water rights and retirement costs, per our prior discussions.

IBERDROLA RENEWABLES, Inc.
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Attachment A - 1 of 9



A. CO2 Offset Shortfall Clarifications.

As you noted in the 3rd to last paragraph of your November 29, 2007 letter, actual steam sales to the Collins facility will need to be verified at five year intervals with the next 5-year period ending on June 30, 2011. If these average annual steam sales are less than the level used to calculate the one-time payment referenced above and a net CO2 shortfall results, additional CO2 offsets payments will be required.

IBR agrees with the contents of your November 29 letter and is providing the following information, which clarifies our understanding of the periodic (5-year) verification process, in order to avoid any future confusion:

- The focus of each 5-year verification will be the KCP's average annual steam sales. Any CO2 shortfall for the 5-year period will be calculated, based on the energy delivered to Collins and the associated fuel that is displaced. The method used to calculate any CO2 shortfall will be the same as was used in Table A of PPM's November 12, 2007 e-mail to you.
- Any future improvement projects, which are implemented by the KCP, can be used to reduce any future shortfalls in CO2 offsets. Shortfall reductions due to future improvement projects will be calculated using the same approach as was used in Table B of PPM's November 12, 2007 e-mail to you.
- KCP steam sales and future improvement projects are the only parameters that will change for the purposes of the 5-year verifications. Reductions to the CO2 shortfall for years 6 through 30 that are based on the KCP's original 10 improvement projects and reduced levels of nitrogen oxide (NOx) and fine particulate matter (PM10) emissions will remain fixed. These reductions were calculated in Tables B and C, respectively, of PPM's November 12, 2007 e-mail to you.
- The annual average steam sales amount to Collins during operating years 1 through 5, which was used as a basis to calculate the gross CO2 shortfall for years 6 through 30, was approximately 67,105 pounds per hour (pph), not 70,000 pph. This 67,105 pph figure is based on actual steam data for the period 7/1/01 through 6/30/06. (Refer to Attachment 1.) This annual average steam sales level of 67,105 pph will be the break-even point used for the 5-year verifications.

If annual average steam sales to Collins during the 5-year period under review are equal to or greater than 67,105 pph, then no CO2 shortfall will exist and no additional CO2 offset payment will be required for that 5-year interval. While KCP will not receive any refunds at any time of funds already paid to meet its CO2 offset obligations, carry-forward steam sales and /or (future) improvement project credits will be allowed for each 5-year verification period. Should steam sales in a 5-year interval be greater than 67,105 pph, each ton of associated surplus CO2 offsets will be used as a credit against any future CO2 shortfalls. Any reductions in CO2 shortfall that result from future KCP improvement projects will be calculated as pro-rated credits in the 5-year period in which these projects were implemented (i.e., based on the start date of the project within the 5-year cycle) and as full credits against any future CO2 shortfalls in all 5-year periods that are subsequent to the one in which the improvements were implemented. In addition improvement project credits not applied in a given 5-year period will be carried forward. (Refer to Attachment 2 for an example.)



- If annual average steam sales to Collins during the 5-year period under review are less than 67,105 pph and there is a net CO2 shortfall for this 5-year period after applying: a) the effect of reductions (in the 5-year period under review) from improvement projects implemented in previous 5-year periods, b) any carry-forward credits from steam sales above 67,105 pph in any previous 5-year periods, c) any carry-forward credits from improvement projects implemented in any previous 5-year periods, but not required to offset CO2 shortfall in those previous 5-year periods, and d) pro-rated reductions from improvement projects implemented in the 5-year period under review, then KCP will owe a payment for the 5-year period under review, based on the net CO2 shortfall in tons for that period.
- If a payment is due for a given 5-year period, the applicable payment rate in dollars per ton of CO2 will be the one in effect as of the ending date of the 5-year period under review. (Refer to Attachment 2 for an example.) Applicable Oregon statutes and EFSC regulations provide for a bi-annual increase of up to 50% in the dollars per ton payment rate, which is also known as the "means of compliance." While the "means of compliance" can change throughout KCP's operating years 6 through 30, the EFSC standard used to determine the amount of CO2 requiring offsetting for the KCP (e.g., based on the most efficient combined cycle combustion turbine configuration) will not change, but will remain the same throughout the entire operating life of the KCP.

At any time during its remaining life, the KCP will have the option to buy down additional CO2 offset requirement in any amounts (relative to the 67,105 pph steam supply threshold and at the then-current dollars per ton cost), so long as the original CO2 offset requirement (in tons and based on the 200,000 pph steam supply) is satisfied.

B. Portfolio Contingency Account.

Condition IV.B.6 of the Third Amended Site Certificate requires that a contingency account in the amount of \$300,000 (1996 dollars) be maintained by KCP and that this account be drawn upon at the end of operating years 10, 20 and 30, if portfolio performance, as measured at each 10-year interval, is less than 90% of that originally anticipated. The performance of the offset portfolio through 2007 has been considerably less than expected, i.e., on the order of 10% of original estimates, and there are no reasons to believe that this performance will improve substantially between now and the end of the tenth operating year.

Because it is virtually certain that all of the funds held in the contingency account will be drawn upon at the end of operating year 10, we propose that these funds be delivered to the Climate Trust now (e.g., within 30 days of issuance of the Supplemental Order), rather than held in escrow for another 3 to 4 years. This approach will allow the Climate Trust to implement additional greenhouse gas mitigation immediately instead of beginning in the next decade and obviate the need for measurement of 10-year interval portfolio performance. Therefore, we request that the Supplemental Order provide clarification that, in consideration for early delivery of the contingency account, Site Certificate Condition IV.B.6 will be viewed as fully satisfied or at a minimum moot, any potential enforcement of this condition will be deemed waived, and the KCP will be held harmless with respect to the requirements of this condition.

C. Portfolio Monitoring.

There is one additional issue, which we believe can and should be addressed in the Supplemental Order. This issue relates to the requirements of Conditions IV.B.8, 9 and 11 of



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the Third Amended Site Certificate. These conditions require that the KCP: make available up to \$50,000 annually for monitoring and verification programs for the offset portfolio; provide an annual report to EFSC on the performance of the offset portfolio; and consult with EFSC on an ongoing basis regarding portfolio emphasis and performance. Although these conditions are located within the CO2 Emissions Standard section of the Site Certificate, they are in reality reporting conditions, rather than CO2 performance conditions.

As noted above, the performance of the offset portfolio, which has been documented through 2007 in annual reports, has been a small fraction of original projections. This level of performance is expected to remain approximately the same, i.e., not improve significantly, in the future. The performance of the portfolio projects is not under the control of KCP. Other than the CO2 emissions shortfall issue related to Collins steam supply, which is being addressed separately, the KCP has already met all of its financial obligations related to the offset portfolio. Continued annual reporting and consultation regarding the performance of these projects will neither improve their performance nor provide any useful additional information.

In sum, we believe that future compliance with the requirements of Site Certificate Conditions IV.B.8, 9 and 11 will serve no useful purpose. For this reason, and because we are proposing early delivery of the contingency account to the Climate Trust as described above, and because formally amending Conditions IV.B.8, 9 and 11 could necessitate a complete revision of the complex and complicated CO2 emissions standard section of the Site Certificate, we request instead that the Supplemental Order provide clarification that, in consideration for early delivery of the contingency account, Site Certificate Conditions IV.B.8, 9 and 11 will be viewed as fully satisfied or at a minimum moot, any potential enforcement of these conditions will be deemed waived, and the KCP will be held harmless with respect to the requirements of these conditions.

We appreciate your review and consideration of these clarifications, which are being provided to ensure a mutual understanding by ODE and IBR regarding the periodic 5-year evaluation processes that begin in mid-2011 as well as the other more general issues, and we look forward to confirming them with you. As we have discussed, we believe there are advantages to both IBR and ODE in having the matters addressed in this letter confirmed and documented in a Supplemental Order issued by the Council. In the meantime, please contact me, if you have any questions or I can be of further assistance. We will look forward to the Council's consideration of these issues at its July 25, 2008 meeting.

Yours Sincerely,

Mike Roberts
Director, Thermal Asset Management

cc: J. Prewitt, Oregon Department of Justice
D. Filippi, Stoel Rives LLP
T. Hibbeler

enclosures



ATTACHMENT 1
 To the July 02, 2008 Letter
 From Iberdrola Renewables to ODE

KCP Annual Average Steam Sales
 For the Period
 July 1, 2001 through June 30, 2006

Year	Average Hourly Steam Flow (lbs/hr) ¹
2001 ²	23,844
2002	67,064
2003	71,159
2004	71,214
2005	70,836
2006 ³	31,407
5-Year Average	67,105

Notes:

1. Average hourly steam flows for 2002 through 2005 are taken directly from the annual KCP reports for fuel displaced and CO2 offsets.
2. The average hourly steam flow shown for 2001 is for the period 7/1/01 through 12/31/01. Because no annual report regarding fuel displaced and CO2 offsets was available for 2001, the average steam flow for the last six months of 2001 was calculated.

The following data for steam energy (assumed as gross not net) delivered to Collins was available:

July (3 days)	41,643 therms (based on 31/3 x 4,030 for 3 days July data)
August	44,827 therms
September	39,799 therms
October	46,785 therms
November	25,268 therms
December	58,593 therms
Total	256,915 therms



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Dividing the total of 256,915 therms above by 4,416 (the number of total hours in the period 7/1/01 through 12/31/01): $256,915/44,416 = 58.178$ MMBtu/hr

No steam enthalpy data was available for 2001. However, based on data for 2002 & 2003, the average enthalpy of the steam delivered to Collins was approximately 1,220 Btu/lb.

Dividing the average hourly energy delivered by the average enthalpy gives the approximate average steam flow: $(58.178 \text{ MMBtu/hr})/(1,220 \text{ Btu/lb}) = 47,687$ lbs/hr.

This amount was divided by 2 to provide the 2001 time-weighted average steam flow shown as 23,844 lbs/hr in the table above.

3. The average hourly steam flow shown for 2006, which is for the period 1/1/06 through 6/30/06, is 50% of the 62,813 lbs/hr value in the 2006 annual KCP report for fuel displaced and CO2 offsets.



ATTACHMENT 2
To the July 2, 2008 Letter
From Iberdrola Renewables to ODE

Sample Tracking Table for 5-Yr True-up Calculations

In the example table below:

For 7/1/06 through 6/30/11 – KCP delivers less than an annual average of 67,105 pounds per hour (pph) of steam to Collins and this reduced steam flow results in a CO₂ shortfall of 5,000 tons for the 5-year period. KCP also implements improvement projects, which reduce this period's CO₂ shortfall by 500 tons on a pro-rated basis. (For all improvement projects in this and all other 5-year periods below, the implementation dates are assumed to occur exactly half way through the 5-year period.) Therefore, KCP makes a payment based on the 4,500 ton shortfall at a rate (in dollars per ton of CO₂) in effect as of the ending date of the 5-year period under review.

For 7/1/11 through 6/30/16 – KCP delivers more than an annual average of 67,105 pounds per hour (pph) of steam to Collins and this surplus steam flow results in a CO₂ credit of 2,500 tons for the 5-year period. During this 5-year period KCP also implements improvement projects, which reduce this period's CO₂ shortfall by 750 tons on a pro-rated basis. The full effect of the improvement projects implemented in the previous 5-year period further reduces the potential CO₂ shortfall by 1,000 tons. However, no additional steam sales or improvement project carry forward credits are available from the previous 5-year period. There is a net surplus of 4,250 tons of CO₂ for this 5-year period. No payment is required and the surpluses (2,500 tons from surplus steam sales & 1,750 tons from improvement project reductions) are carried forward in to the next 5-year period.

For 7/1/16 through 6/30/21 – KCP delivers less than an annual average of 67,105 pounds per hour (pph) of steam to Collins and this reduced steam flow results in a CO₂ shortfall of 6,000 tons for the 5-year period. During this 5-year period KCP also implements improvement projects, which reduce this period's CO₂ shortfall by 600 tons on a pro-rated basis. The full effect of the improvement projects implemented in the previous 5-year periods further reduces the potential CO₂



shortfall by $1,000 + 1,500 = 2,500$ tons. There are additional (previously unapplied) steam sales and improvement project carry forward credits, 2,500 tons & 1,750 tons, respectively, available from the previous 5-year periods. The overall result is a net surplus of 1,350 tons of CO₂ for this 5-year period. No payment is required and the surplus (0 tons from surplus steam sales & 1,350 tons from improvement project reductions) is carried forward into the next 5-year period.

For 7/1/21, through 6/30/26 – KCP delivers less than an annual average of 67,105 pounds per hour (pph) of steam to Collins and this reduced steam flow results in a CO₂ shortfall of 8,000 tons for the 5-year period. During this 5-year period KCP does not implement any improvement projects. Hence, there is no reduction to this period's CO₂ shortfall on a pro-rated basis. The full effect of the improvement projects implemented in the previous 5-year periods further reduces the potential CO₂ shortfall by $1,000 + 1,500 + 1,200 = 3,700$ tons. The additional (previously unapplied) improvement project carry forward credit of 1,350 tons is available from the previous 5-year periods. The overall result is a net shortfall of 2,950 tons of CO₂ for this 5-year period. Therefore, KCP makes a payment based on the 2,950 ton shortfall at a rate (in dollars per ton of CO₂) in effect as of the ending date of the 5-year period under review.

For 7/1/26 through 6/30/31 – KCP delivers less than an annual average of 67,105 pounds per hour (pph) of steam to Collins and this reduced steam flow results in a CO₂ shortfall of 7,000 tons for the 5-year period. During this 5-year period KCP also implements improvement projects, which reduce this period's CO₂ shortfall by 200 tons on a pro-rated basis. The full effect of the improvement projects implemented in the previous 5-year periods further reduces the potential CO₂ shortfall by $1,000 + 1,500 + 1,200 + 0 = 3,700$ tons. There are no additional (previously unapplied) steam sales or improvement project carry forward credits available from the previous 5-year periods. The overall result is a net shortfall of 3,100 tons of CO₂ for this 5-year period. Therefore, KCP makes a payment based on the 3,100 ton shortfall at a rate (in dollars per ton of CO₂) in effect as of the ending date of the 5-year period under review.



Sample Tracking Table					
KCP CO2 Offset True-up for the 5-Year Periods Ending June 30, 2031					
	For the 5-Yr Period Ending June 30 of (All Values in tons of CO2)				
	2011	2016	2021	2026	2031
Current 5-Yr Period Steam Sales Surplus (Deficit) ¹	(5000)	2500	(6000)	(8000)	(7000)
Pro-rated CO2 Reductions from Improvement Projects Implemented in the Current 5-Yr Period ²	500	750	600	0	200
Current 5-Yr Period CO2 Reductions from Improvement Projects Implemented in the 5-Yr Period Ending in Mid-2011	NA	1000	1000	1000	1000
Current 5-Yr Period CO2 Reductions from Improvement Projects Implemented in the 5-Yr Period Ending in Mid-2016	NA	NA	1500	1500	1500
Current 5-Yr Period CO2 Reductions from Improvement Projects Implemented in the 5-Yr Period Ending in Mid-2021	NA	NA	NA	1200	1200
Current 5-Yr Period CO2 Reductions from Improvement Projects Implemented in the 5-Yr Period Ending in Mid-2026	NA	NA	NA	NA	0
Surplus Steam Sales Credits Carried Forward from Previous 5-Yr Periods	NA	0	2500	0	0
Surplus Improvement Project Credits Carried Forward from Previous 5-Yr Periods	NA	0	1750	1350	0
Total Surplus (Shortfall) for the 5-Yr Period	(4500)	4250	1350	(2950)	(3100)

Notes:

1. Based on the method used in Table A of PPM's November 12, 2007 e-mail to ODE.
2. Based on the method used in Table B of PPM's November 12, 2007 e-mail to ODE.

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BEFORE THE
ENERGY FACILITY SITING COUNCIL
OF THE STATE OF OREGON

In the Matter of Compliance with) ORDER on PROGRAM to OFFSET
Condition IV.B.1 of the Klamath) EMISSIONS of CARBON DIOXIDE,
Cogeneration Project Site) NITROGEN OXIDES and PM-10
Certificate

6
7

Summary

8 The Energy Facility Siting Council ("Council") approves the program to offset CO₂
9 proposed by PPM Inc. (PPM) in its August 31, 2007 letter from Michael Roberts of PPM to
10 Adam Bless of the Oregon Department of Energy, as required by condition IV.B.1 of the
11 Klamath Cogeneration Project (KCP) site certificate, subject to certain conditions. The Council
12 finds that the KCP complies with the terms of condition IV.B.1.

13
14

Background

15 Condition IV.B.1 of the KCP site certificate states:

16
17 "KCP's off-site industrial use shall be at least the steam energy equivalent of 200,000
18 pounds of steam per hour at 375 psig and 455° F on a five year basis, measured in discrete,
19 successive five-year periods. "Use" of the steam means that the steam is used to displace another
20 source of carbon dioxide emissions from fossil fuels that would have otherwise occurred or
21 continued to occur. At the end of each five year period following commercial operation, KCP
22 shall determine and report to the Council the hourly average steam volume, pressure and
23 temperature delivered to off-site industrial use for the applicable five year period. Should the
24 hourly average steam used by KCP's off-site industrial use be less than the steam energy
25 equivalent of 200,000 pounds per hour at 375 psig and 455 F, KCP shall develop, present to the
26 Council for approval, and implement a plan to make available and sell to another steam use the
27 steam energy equivalent not used by KCP's existing off-site industrial use at the same or similar
28 cost incentive as provided to KCP's existing off-site industrial use. If within twelve months after
29 Council approval, KCP has not contracted to make available and sell to another steam user the
30 steam energy equivalent not used by KCP's existing off-site industrial use, then KCP shall
31 develop, present to the Council for approval, and implement a program to offset an amount of
32 CO₂, NO_x or PM-10, or any combination thereof, equivalent to the monetized incremental
33 emissions resulting from the existing off-site industrial use of less than the steam energy
34 equivalent of an average of 200,000 pounds of steam per hour at 375 psig and 455°F. In any
35 event, KCP shall offset an amount equivalent to the monetized incremental emissions resulting
36 from the existing off-site industrial use of less than the steam energy equivalent of an average of
37 200,000 pounds of steam per hour at 375 psig and 455°F, measured on a five year basis, for 30
38 years. Calculations of monetized emissions shall use the same methodology and monetary
39 values of emissions employed in the 500 megawatt exemption Final Order."
40

1 In its Annual Report to the Council for 2007, KCP disclosed that steam sales to the
2 industrial steam host have averaged a rate of approximately 70,000 pounds per hour. Therefore,
3 the above condition requires KCP to develop and present to the Council for approval, a plan to
4 offset emissions of CO2, NOx or PM-10, sufficient to make up the shortfall. The plan must
5 cover the expected plant life of 30 years, and is subject to Council approval.
6

7 In a letter dated August 31, 2007 from Michael Roberts (PPM) to Adam Bless (Oregon
8 Department of Energy), PPM, acting as facility manager on behalf of the City of Klamath Falls,
9 offered the plan required by the above condition. The letter is attached to this Order.
10

11 The Council finds that the proposal in PPM's August 31, 2007 letter is consistent with the terms
12 of condition IV.B.1. Certain detailed calculations remain, such as:

- 13
- 14 a. Verification of PPM's shortfall calculation. ODOE, acting as Council staff, has performed a
15 preliminary review and recommends that PPM used a reasonable methodology. However, a
16 more detailed review is necessary to ensure that the final numbers are correct.
17
 - 18 b. PPM has taken credit for emissions in DEQ pollutants. ODOE must ask DEQ to verify that
19 the emissions reported in PPM's letter are consistent with its reports to DEQ, and that those
20 reductions in DEQ pollutants are above and beyond the emissions described in the Final
21 Order on the 1997 500 MW exemption contested case.
22
 - 23 c. ODOE and PPM must work out final details of the payments to the Climate Trust.
24

25 The Council approves PPM's proposal in its August 31, 2007 letter, subject to resolution of
26 items (a), (b) and (c) above, as determined by the Department of Energy.
27

28
29 Issued September 21, 2007
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33

34 David Ripma
35 Chair
36 Energy Facility Siting Council
37
38

39 Attachment: Letter from Michael Roberts, PPM to Adam Bless, ODOE, August 31, 2007

From: Thor Hibbeler [<mailto:thorhibbeler@sbcglobal.net>]
Sent: Monday, November 12, 2007 2:37 PM
To: 'Adam Bless'
Cc: 'Willard, Bruce'; 'Roberts, Michael'
Subject: KCP CO2 Shortfall - Yrs 6 through 30

Adam,

Thanks for meeting with Bruce and me last Friday (11/9/07) to develop a consensus regarding the KCP's net CO2 shortfall (due to lower than anticipated steam sales to Collins) for operating years 6 through 30.

Using Tables A, B & C, which were e-mailed to you on Nov. 7, as a basis we agreed to leave Table A (gross CO2 shortfall) & Table C (additional NOx & PM10 reductions due to operation below DEQ permit limits) unchanged and copies of these two tables are attached.

Based on a review of Table B (reductions in CO2 due to KCP improvement projects) and its backup documentation, we agreed to revise this table as follows:

* The adjustment factor for Project # 6 (synthetic air filters) has been changed from 100 to 85.2%. This change reflects anticipated actual annual hours of CT operation of 7,460 rather than 8,740 due to 1,300 hours of annual aux. boiler operation in lieu of CT operation.

* The annual MWh/yr savings for Project # 8 (OTC logic) has been changed from 12,264 to 10,444. This reduction, which is 12,264 times 85.2%, adjusts for anticipated actual operation of the CTs. The adjustment factor for this project remains at 80% to account for the anticipated average load level of the CTs.

* The adjustment factor for Project # 9 (air extraction) has been changes from 100 to 85.2%.

A copy of this revised Table B is attached. The effect of these changes is to decrease the Table B reduction from 15,068 tons/yr to 11,773 tons/yr.

A few editorial changes have been made to this table as well. Note # 3 has been revised to better describe the adjustment factor and, while the adjustment factor for Project # 5 remains the same, it is presented as rounded off to the nearest tenth of a percent (14.8%) rather than to the nearest whole percent (15%).

Based on the results on our meeting last Friday, the KCP's net CO2 shortfall for operating years 6 through 30 is calculated as:

- * Gross annual CO2 shortfall (Table A) = 98,251 tons of CO2;
- * Annual reductions to the shortfall due to KCP improvement projects (Table B) = 11,773 tons/yr of CO2;
- * Annual reductions to the shortfall due to reduced NOx & PM10 emissions = 9,693 tons/yr of CO2 equivalent; and
- * Net annual CO2 shortfall = $98,251 - (11,773 + 9,693) = 76,785$ tons/yr of CO2.

The cumulative net CO2 shortfall for operating years 6 through 30 is $76,785 \text{ tons/yr} \times 25 \text{ yrs} = 1,919,625 \text{ tons}$.

Based on an offset cost of \$1.27/ton CO2, the total cost of a one-time upfront payment to resolve the KCP's CO2 shortfall for years 6 through 30 is $1,919,625 \text{ tons} \times \$1.27/\text{ton} = \$2,437,923.75$.

Please review the attached tables and confirm your agreement with these results. Your confirmation will allow PPM to proceed with its financial closing for the KCP ownership transfer, using the \$2.438MM figure. Once KCP ownership has been transferred (and provided PPM chooses to maintain the KCP as a base load facility), a check for this amount can be issued and the CO2 shortfall issue for years 6 through 30 will be permanently resolved.

Thanks for all of your help with this issue and please call me, if you have any questions.

TH

TABLE A												
KCP CO2 OFFSET SHORTFALL DUE TO LOWER THAN ANTICIPATED STEAM SALES TO COLLINS - OPERATING YEARS 6 - 30												
Based on Operating Years 1 - 5												
Displaced Fuel CO2 Emissions Rate (lbs/MMBTU) = 122.379												
	Gross Energy Delivered to Collins (MMBtus)	Fuel Displaced (MMBtus)	Emissions Offsets Generated (tons)			CO2	CH4 (as CO2)	N2O (as CO2)	Totals	Req per EFSC (tons)	CO2 Offset	CO2 Offset Shortfall (tons)
2001	256,915.00	293,953.00	17,986.84	59.62	81.81	18,128.27	74,406.60	56,278.33				
2002	715,519.60	818,311.30	50,076.80	165.97	227.75	50,470.52	148,813.20	98,342.68				
2003	761,703.90	871,376.70	53,324.10	176.74	242.52	53,743.35	148,813.20	95,069.85				
2004	759,519.13	868,604.78	53,154.50	176.17	241.75	53,572.42	148,813.20	95,240.78				
2005	751,325.10	859,606.70	52,603.90	174.35	239.24	53,017.49	148,813.20	95,795.71				
2006	338,046.40	387,129.40	23,690.50	78.52	107.74	23,876.76	74,406.60	50,529.84				
Totals	3,583,029.13	4,098,981.88	250,836.64	831.37	1,140.82	252,808.82	744,066.00	491,257.18				
				Annual Gross CO2 Shortfall (tons) =								98,251
Notes:												
1. Displaced fuel emissions factor is from pp. 38 & 43 of the 500 MW Exemption Order and based on 87.8% gas firing, 12.2% oil firing and carbon factors of 31.9 lbs/MMBtu for gas & 44 lbs/MMBtu for oil. All of which result in a weighted C emissions factor of 33.376 lbs/MMBtu and a weighted CO2 emissions factor of 122.379 lbs/MMBtu. While CO2 emissions offsets data is provided directly from KCP annual reports for 2002 through 2006, the displaced fuel emissions factor is needed to calculate CO2 emissions offsets for the last half of 2001.												
2. Data for 2001 is for the last half of the year. July 2001 data is extrapolated based on the last three days of July. Data for the first half of 2006 is 50% of the 2006 total. Collins' fuel displacement, thermal energy delivery and CO2 offset data are available beginning in 2002. For 2001 fuel displacement et al are based on gross steam energy delivered to Collins.												
3. CH4 emissions factors of 0.008 kg/MMBtu & 100-yr global warming potential of 23 are from the KCP 2007 Annual Report to EFSC.												
4. N2O emissions factors of 0.000853 kg/MMBtu & 100-yr global warming potential of 296 are from the KCP 2007 Annual Report to EFSC.												

TABLE B - CO2 REDUCTIONS TO SHORTFALL VIA KCP EFFICIENCY IMPROVEMENT PROJECTS - OPERATING YEARS 6 - 30

Based on 100% Capacity Factor		CO2 Emissions Factor - Note 1 (lbs/MMBTU) =		KCP Heat Rate - Note 2 (BTUs/kWh) =		Improvement Project Annual Adjustment Factor (%) (Note 3)		Adj. Annual Savings of Improvement Project (MMWh/yr)		Improvement Project Initiation Date		Years of Operation During 25-Yr Period		MWhts Saved During 25-Yr Period (MMWh)		CO2 Emissions Saved During 25-Yr Period (tons)		
Project Description	Annual Improvement Project Savings (MMWh/yr)	Improvement Project Annual Adjustment Factor (%) (Note 3)	Annual Improvement Project Savings (MMWh/yr)	Improvement Project Initiation Date	Years of Operation During 25-Yr Period	MWhts Saved During 25-Yr Period (MMWh)	CO2 Emissions Saved During 25-Yr Period (tons)											
1 - Wastewater Pump 100 hp VFD	481	100	481	6/1/2005	25.00	12025	5018											
2 - Process Desuperheater 75 hp VFD	290	100	290	6/1/2005	25.00	7250	3025											
3 - HRSG Fdwtr Pump 2,300 hp VFD	7869	100	7869	7/1/2006	25.00	196725	82090											
4 - Condensate Pump 600 hp VFD	2084	100	2084	6/8/2007	24.06	50141	20923											
5 - HP STG New Desuperheater	18396	14.8	2730	5/1/2007	24.17	65984	27534											
6 - New Synthetic CTG Air Filters	4561	85.2	3884	5/1/2005	25.00	97104	40520											
7 - Flasket Drain Coolers	84	100	84	5/1/2005	25.00	2100	876											
8 - Improved OTC Logic Control	10444	80	8355	12/1/2004	25.00	208880	87162											
9 - Air Extraction Project	980	85.2	835	11/1/2004	25.00	20864	8706											
10 - PCR Re-route (Note 4)							18473											
Totals	45189		26612			661074	294326											
Annual Reduction in CO2 Emissions (tons) =										11773								
<p>Notes:</p> <p>1. The CO2 emissions factor is from p. 38 of the 500 MW Exemption Order.</p> <p>2. The Heat Rate is based on the information reported to EFSC per the 100 Hour Heat Rate Test and represents the original Heat Rate of 6,795 BTUs/kWh, as adjusted for 3% degradation and 1.97% instrument uncertainty.</p> <p>3. The adjustment factors shown assume base load operation for the KCP at 7,460 hours per year (to reflect 1,300 hours per year of aux. boiler operation when the CTs are not in operation) and/or an average CT load level of 80%. In some instances a factor of 100% is used to reflect actual anticipated energy savings.</p> <p>4. The PCR re-route project improves the Heat Rate of the Aux. Boiler directly, rather than the other improvement projects, which reduce electrical parasitic load. Therefore, there is no MWh savings per se. Instead, the reduction in CO2 emissions is based on 9.8% of the total (post-project) CO2 emissions for the 25-yr period assumed as 5.8 tons CO2/hr (@ 100 MMBtu/hr fuel in) for 1,300 hpy, as 9.8% represents the improvement in aux. boiler efficiency.</p>																		

TABLE C												
KCP - Estimated Additional NOx & PM10 Reductions to CO2 Shortfall - Operating Years 6 - 30												
Based on 100% Capacity Factor & KCP Performance for Years 1 - 5												
A. Historical Basis (1st Five years of KCP Operation)												
	Annual Capacity Factor	NOx PSEL (tons)	NOx Emissions (tons)	Adjusted PSEL (tons)	NOx Emissions (tons)	Additional NOx Reduction (tons)	PM10 PSEL (tons)	Adjusted PSEL (tons)	NOx Emissions (tons)	Additional NOx Reduction (tons)	Actual NOx Emissions (tons)	Additional NOx Reduction (tons)
2001	0.753	135.5	94.92	102.03	131.6	7.11	30	22.59	23.66	NA	23.66	NA
2002	0.522	271	141.46	141.46	129.3	9.86	60	31.32	32.8	NA	32.8	NA
2003	0.583	271	157.99	157.99	116.5	28.69	60	34.98	32.7	2.28	32.7	2.28
2004	0.522	271	141.46	141.46	118.5	24.96	60	31.32	14.4	16.92	14.4	16.92
2005	0.499	271	135.23	135.23	118.5	16.73	60	29.94	13.8	16.14	13.8	16.14
2006	0.341	135.5	46.21	46.21	46.65	NA	30	10.23	5.2	5.03	5.2	5.03
Totals						87.36						40.37
B. Historical Basis with Additional NOx & PM10 Reductions Adjusted for 100% Capacity Factor												
	Annual Capacity Factor	NOx PSEL (tons)	NOx Emissions (tons)	Adjusted PSEL (tons)	NOx Emissions (tons)	Additional NOx Reduction (tons)	PM10 PSEL (tons)	Adjusted PSEL (tons)	NOx Emissions (tons)	Additional NOx Reduction (tons)	Actual NOx Emissions (tons)	Additional NOx Reduction (tons)
2001	0.753	135.5	94.92	102.03	131.6	9.44	30	22.59	23.66	NA	23.66	NA
2002	0.522	271	141.46	141.46	129.3	18.89	60	31.32	32.8	NA	32.8	NA
2003	0.583	271	157.99	157.99	116.5	49.22	60	34.98	32.7	3.91	32.7	3.91
2004	0.522	271	141.46	141.46	118.5	47.82	60	31.32	14.4	32.41	14.4	32.41
2005	0.499	271	135.23	135.23	118.5	33.53	60	29.94	13.8	32.34	13.8	32.34
2006	0.341	135.5	46.21	46.21	46.65	NA	30	10.23	5.2	14.75	5.2	14.75
5-Yr Totals (tons)						158.90						83.42
Average Annual Projected Reductions (tons)						NOx = 31.78					PM10 = 16.68	
Combined Annual NOx & PM10 Projected Reductions (tons) =												48.46
Equivalent Annual CO2 Reduction (tons) Based on a 200:1 Ratio =												9693
Notes:												
1. Annual emissions are from the KCP's report for 2007 except that 2004 NOx was revised from 113.4 to 116.5 tons per the DEQ.												
2. The Plant Site Emissions Limits (PSELs) for 2001 & 2006 have been adjusted to 50% of the annual PSELs.												
3. Emissions for 2001 were not available, so the 2002 emissions were ratioed by 753/522 and divided by 2 to estimate reasonably high 2001 emissions (for the 1st half of 2001).												
4. Emissions for 2006 are shown as 50% of actual to reflect operations for 1/1 through 6/30/06.												

