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**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UM 1209

In the Matter of the Application of)
MidAmerican Energy Holdings Company)
and PacifiCorp for an Order Authorizing)
MidAmerican Energy Holdings Company)
to Exercise Substantial Influence Over the)
Policies and Actions of PacifiCorp.)

**JOINT TESTIMONY OF THE RENEWABLE NORTHWEST PROJECT AND THE
NATURAL RESOURCES DEFENSE COUNCIL**

**DIRECT TESTIMONY OF
RACHEL SHIMSHAK**

DIRECTOR, RENEWABLE NORTHWEST PROJECT

1 My name is Rachel Shimshak. My qualifications are listed in RNP Exhibit 1. I am offering
2 this testimony on behalf of the Renewable Northwest Project (“RNP”) and the Natural Resources
3 Defense Council (“NRDC”).

4 **I. Introduction**

5 MidAmerican Energy Holdings Company (“MEHC” or “Applicant”) seeks approval of the
6 Oregon Public Utility Commission (“Commission”) to acquire PacifiCorp. RNP and NRDC have
7 worked with PacifiCorp for over a decade on environmental and clean energy issues; continuation
8 of this relationship is of significant importance to our organizations. A change in ownership,
9 therefore, is something we review closely and consider seriously.

10 MEHC has included in its Application preliminary commitments on issues of importance to
11 us, including renewable resources, energy efficiency and acknowledgment of the environmental
12 significance of greenhouse gas emissions. In this testimony, we make suggestions for additional
13 commitments and assurances that we believe the Applicant must make in order for the Commission
14 to conclude that this Application meets the statutory standard of serving “the public utility’s
15 customers in the public interest.” ORS 757.511 (3).

16 We believe MEHC must make a stronger commitment to acquiring renewable resources, clarify the
17 connection between its planned transmission investments and renewable acquisitions, commit to
18 implementing a conditional-firm transmission product pilot program within one year, as well as
19 evaluate and report on flows on its transmission system, implement a stable rate Blue Sky product,
20 make a strong commitment to reducing greenhouse gas emissions, and agree to support national
21 policy that imposes mandatory limits on global warming pollution.

22 Our testimony is limited to the first issue identified in the ALJ’s November 1, ruling: Infrastructure
23 and Resource Investments, including renewable resources and the commitment to renewable
24 resources, transmission investments, energy efficiency and global climate leadership.

25 **II. Renewable Resources -- Commitment to Renewable Resources**

26 MEHC makes an initial commitment to acquiring renewable resources in its Application,

1 including “affirmation of PacifiCorp’s goal of 1400 MW of cost-effective renewable resources.”
2 Application at 18. This commitment has been slightly refined since the filing and the list of
3 commitments included with the Supplemental Testimony now provides:

4 “MEHC reaffirms PacifiCorp’s commitment to acquire 1400 MW of new cost-
5 effective renewable resources, representing approximately 7% of PacifiCorp’s
6 load. MEHC and PacifiCorp commit to work with developers and bidders to
7 bring at least 100 MW of cost-effective wind resources in service within one year
8 of the close of the transaction. MEHC and PacifiCorp expect that the
9 commitment to build the Walla-Walla and Path C transmission lines will facilitate
10 up to 400 MW of renewable resources with an expected in-service date of 2008-
11 2010. * * *. In addition, MEHC and PPW commit to work constructively with
12 states to implement renewable energy action plans so as to enable PacifiCorp to
13 achieve at least 1400 MW of cost-effective renewable energy resources by 2015.
14 Such renewable energy resources are not limited to wind energy resources.”
15 Exhibit PPL/309 at 8.

16 We appreciate this commitment and believe it is acknowledgement by MEHC of the
17 benefits renewable resources can provide to a portfolio of resources. And, while we are encouraged
18 by MEHC’s recent history with wind acquisition and MEHC’s experience with geothermal
19 resources, we think the renewables commitment must be more robust to represent a real benefit of
20 the transaction. Specifically, we think the Applicant should commit to acquire 10% of its energy
21 from new, nonhydro renewable resources within ten years, and 20% within twenty years.

22 **A Reminder About The 1,400**

23 First, a comment about the 1,400 MW target: this is not a new goal at PacifiCorp. Instead,
24 the 1,400 MW was identified as a cost-effective element of the Company’s 2003 IRP,
25 acknowledged by the Commission on August 25, 2003 in Order No. 03-508. At that time, it was
26 anticipated that the 1400 MWs acquisition would be achieved over ten years, by 2013. For a variety
of reasons, PacifiCorp’s progress towards this 2003 IRP target has been slow. The 1,400 MW
target was then incorporated into its 2004 IRP and the Company committed to continue to pursue
renewable acquisition until 2015. What the Applicant is affirming here is really a two-year-old
target that has already been delayed by two years. We think MEHC can do better.

1 **Progress Towards 1,400 MWs: Assumption That PacifiCorp Will Continue To**
2 **Make Progress**

3 To date, the only contract PacifiCorp has signed for renewables since its 2003 IRP is the
4 64.5 MW Wolverine Creek wind project in Idaho, which is expected to be operating next month.
5 We understand PacifiCorp is negotiating with several parties for 2006-2007 projects. At the
6 September 13 public meeting, Mark Tallman of PacifiCorp reported to the Commission: “We’re in
7 the final stages of negotiations on four of those projects. The four projects comprise roughly 350
8 MW of capability. And, in fact, we’ve completed, or believe we’ve completed negotiations with
9 one of those projects for a 42 MW geothermal resource in Utah and that project is now moving
10 through our governance process.”¹ We expect the Commission will get a further update on
11 PacifiCorp’s renewables acquisition at its upcoming December 6 public meeting.

12 Despite what in our opinion has been slow progress towards the IRP target, we assume that
13 PacifiCorp is going to do what it has told the Commission that it is going to do. Namely, acquire
14 1400 MWs of new renewables over the next ten years and follow through on its acknowledged
15 IRPs. So it is troubling that one of the messages PacifiCorp seems to be advancing in this docket is
16 that the renewables acquisition is in jeopardy absent purchase by MEHC. At the October 25
17 hearing, Judi Johansen stated:

18 “There has been a lot of discussion about the investment in wind and the
19 renewables commitment. I would just say that, yes, it’s true PacifiCorp has set
20 out an agenda for 1,400 MW of renewables, but I can tell you it makes it a lot
21 easier for us to achieve that objective by having an owner who is willing to put
22 capital into those projects as well. That’s simply not the case today for us. We
23 are limited to purchase power agreements only, and with MidAmerican willing to
24 put capital into the wind investments I think that gives us a lot more certainty
25 around meeting that particular environmental goal of ours.”²

26 Ms. Johansen later reiterated this point, in response to a question from Chairman Beyer. “Scottish
27 Power has never been willing to step up to the capital investment of owning its own wind

28 ¹ http://www.puc.state.or.us/agenda/audio/2005/091305/091305_pm08.mp3, as transcribed by David Wolf, RNP
29 Staff, on November 11, 2005.

1 generation which, I, you know, think makes it more difficult to achieve the 1400 MW goal.”³

2 Lack of access to sufficient capital may well make resource acquisition more difficult. We
3 note that it hasn’t seemed to affect any resource acquisition other than renewables. Since its 2003
4 IRP was issued, PacifiCorp acquired two new gas fired power plants totaling 1,059 MWs, in the
5 absence of an owner willing to invest capital. We will continue to assume that PacifiCorp meant
6 what it said in its acknowledged 2003 IRP and its likely soon-to-be-acknowledged 2004 IRP, that it
7 will continue to pursue 1400 MWs over the next ten years. We think PacifiCorp is currently
8 making progress towards that target. And we review MEHC’s Application based on that
9 assumption.

10 **Acquisition Commitment Needs Clarity**

11 MEHC has committed to acquiring 100 MWs of cost-effective wind power within a year of
12 the close of the transaction and 400 MWs of renewable resources to be facilitated by the Walla-
13 Walla and Path C transmission lines “with an expected in-service date of 2008-2010.” Exhibit
14 PPL/101 at 6. The first concern is whether those 400 MWs will still occur in the absence of the new
15 transmission construction. We discuss the transmission projects further below. But the projected
16 dates of this 400 MW commitment are also confusing. The transmission projects are estimated to
17 be completed in 2010-2011. Exhibit PPL/309 at 6. If the 400 MWs are tied to these two
18 transmission upgrades, it is not clear how the 400 MWs can be completed in 2008-2010, prior to the
19 completed transmission projects. Of course, our view is the earlier the better, to take advantage of
20 the existing federal Production Tax Credit (PTC) and the current opportunity in the region. We
21 hope that MEHC will make a stronger commitment to acquisition within a year of the transaction,
22 more than just 100 MWs of wind. At the very least, we ask the Applicant to clarify the estimated
23 dates of the subsequent commitment to allow us to assess its value as a benefit of the Application.

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26 ² http://www.puc.state.or.us/agenda/audio/2005/102505/um1209_issues14_jjohanson_pacifcorp.mp3, as transcribed
by David Wolf, RNP Staff on November 3, 2005.

³ Id.

1 **Own/Operate Option in Resource Solicitation**

2 MEHC offers as a commitment to “submit as part of any RFP’s – including renewable
3 energy RFPs -- a 100 MW or more utility ‘own/operate’ proposal for the particular resource. * * * it
4 can be expected that this commitment will enhance PacifiCorp’s ability to increase the proportion of
5 cost-effective renewable energy in its generation portfolio * * *.” Exhibit PPL/309 at 8. We are
6 supportive of efforts that enhance PacifiCorp’s ability to increase its renewables portfolio, and we
7 appreciate that utility ownership of resources can offer benefits to customers in terms of potentially
8 lower cost. However, we are concerned about a bias in favor of ownership of resources, which,
9 frankly, is what the statement in Commitment 40 sounds like to us. In our view, this is an issue that
10 will be addressed by UM 1182 where intervenors and staff spent months working on a proposal for
11 competitive bidding in Oregon. We anticipate that the Commission ruling in UM 1182 will specify
12 a bidding process for when a utility includes its own resources in a solicitation.

13 **Renewables As A Climate Solution**

14 We believe one of the biggest risks of this transaction is the lack of a plan by MEHC to
15 address climate change with real emissions reductions. PacifiCorp has been a regional leader in
16 recognizing the potential for future regulation of global warming. And this transaction means the
17 loss of an owner, Scottish Power, a company based in the UK, a country which is a signatory to the
18 Kyoto Protocol and is taking real steps to address climate change. We discuss the issue of climate
19 leadership further below.

20 One way to address this risk is a stronger commitment to renewable energy. Renewables
21 offer protection against future regulation of carbon dioxide emissions since they have no or very
22 few emissions. Again, we urge MEHC to increase its commitments to renewable energy by
23 agreeing to reach a target of 10% new, nonhydro renewables over ten years and 20% within twenty
24 years.

25 **MEHC Should Make a More Robust Commitment to Renewables.**

26 We believe a 10% new renewables target in ten years will provide real benefits to

1 PacifiCorp customers. RNP has advocated the benefits of renewable energy in the region for over
2 ten years, but those benefits -- a fixed price, resource diversity, help towards stabilizing rates, and no
3 harmful emissions -- seem particularly significant today. Energy prices, influenced by continued
4 high natural gas prices, have increased significantly over the past several years⁴ and “spot electricity
5 prices have recently reached levels higher than at any time other than during the Western energy
6 crisis.”⁵ The prices of renewable resources, particularly wind power, are highly cost competitive
7 with other new resources (even as wind prices have increased some over the past year) and can
8 result in actual customer savings. Puget Sound Energy recently settled a rate case that included the
9 150 MW Hopkins Ridge Wind Farm. Puget reported that the wind project “will provide its
10 customers with \$30 million in power-cost savings over the next twenty years.”⁶ Puget CEO
11 Stephen P. Reynolds was quoted about the settlement as saying, “No one likes the economic impact
12 on electric costs we’re seeing from extraordinary increases in oil and natural gas prices. But this
13 settlement removes some of the volatility, and with the addition of the wind farm, it will help all our
14 customer[s] minimize fuel-price variations over the wind project’s life.”⁷

15 In addition, wind power has a very short “lead time” between construction and operation. A
16 wind project can be built and operational within 6-7 months. From a resource planning
17 perspective, this reduces the risk of making acquisition decisions that result in over or under
18 building generation.

19 A 10% target is achievable and available in the region. By the end of 2005, there will be
20 just over 1,000 MWs of wind energy on-line in the Pacific Northwest. An additional 438 MW are
21 under construction currently and will be completed in 2006. Another 1,000 MWs are in the
22 permitting process. There are also over 1,400 MWs of projects with permits but not under
23 construction yet. The 5th Power Plan by the Northwest Power and Conservation Council calls for

24 ⁴ http://www.eia.doe.gov/cneaf/electricity/epm/table5_3.html. RNP Exhibit 2.

25 ⁵ Alan Mountjoy-Venning, “Electricity Spot Price Inflates as Gas and Oil Costs Presage Trouble,” *Clearing Up*,
October 3, 2005. RNP Exhibit 3.

26 ⁶ Steve Ernst, “Puget Sound Energy Signs Settlement in Electric Case; Files PGA,” *Clearing Up*, September 5,
2005, pg. 8. RNP Exhibit 4.

1 the development of almost 2,000 aMW (6,000 MW capacity) of wind power over the next twenty
2 years. RNP Exhibit 5. And, the Western Governors' Association's Clean Energy resolution calls
3 for 30,000 MWs of clean energy by 2015 in the 18 western states. RNP Exhibit 6. Further
4 direction from the Governors' is expected in the summer of 2006 as to how their resolution will be
5 met. Additional incentives are likely to be recommended by the Western Governors' to assist in
6 meeting the WGA goal, further helping MEHC and PacifiCorp reach a 10% and 20% renewables
7 target.

8 Finally, Oregon Governor Ted Kulongoski has established a renewable roadmap for Oregon
9 through his Renewable Energy Action Plan.⁸ The Governor hopes to make Oregon a leader in the
10 development of renewable energy to reduce reliance on fossil fuels, create jobs and protect
11 Oregon's clean air. The Plan calls for renewable generation to meet 10 percent of Oregon's total
12 load by 2015, increasing to or exceeding 25 percent of the load by 2025.⁹ As an Oregon utility,
13 PacifiCorp will be called upon to play its part in helping the state meet its goals. We believe MEHC
14 should commit to PacifiCorp meeting Oregon's 10% and 20% target on a system wide basis.

15 **Blue Sky: Commitment to Offer a Stable Rate**

16 Finally, we ask the Applicant to agree to implement a "stable rate" green power product as
17 part of its Blue Sky offering. This type of voluntary product gives customers the opportunity to
18 directly benefit from the fixed price nature of renewable resources. There has recently been a great
19 deal of attention to Xcel Energy's green power option because participating customers are now
20 paying less than the default rate.¹⁰ In Xcel's voluntary program, customers purchasing some or all
21 of their electricity from wind resources are exempt from the fuel cost adjustment charge. Currently,
22 the fuel cost adjustment is higher than the extra cost of wind power, bringing the benefit of the fixed
23 price nature of wind to participating customers. We also note that Portland General Electric has

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⁷ Id.

25 ⁸ Oregon Renewable Energy Action Plan, April 12, 2005.
<http://egov.oregon.gov/ENERGY/RENEW/docs/FinalREAP.pdf> RNP Exhibit 7.

26 ⁹ Id. at 6.

¹⁰ Nicholas Riccardi, *Windfall? No, but Savings Ahead*, The Los Angeles Times, October 15, 2005. RNP Exhibit 8.

1 worked over the past year to develop a stable price product for its customers, and we expect PGE to
2 file this rate with the PUC within the next few months.

3 **III. Transmission and Resource Investments**

4 **New Transmission Construction Commitments**

5 MEHC offers substantial transmission investments as new commitments of the transaction.
6 Exhibit PPL/101. These include the Path C Upgrade from southern Idaho to Northern Utah, the
7 Mona Oquirrh line, and the Walla-Walla-Yakima or Mid C linkage, establishing “a link between the
8 ‘Walla Walla bubble’ and the ‘Yakima bubble’ and/or reinforce the link between the ‘Walla Walla
9 bubble’ and the Mid-Columbia (at Vantage).” Exhibit PPL/101 at 1-2. The target completion date
10 for these projects is 2010-2011. Exhibit PPL/309 at 6. The Applicant states that each of these
11 projects could “facilitate the receipt of renewable resources.” Exhibit PPL/101 at 1.

12 RNP is intrigued by these new transmission projects for their potential over the long term
13 to enable PacifiCorp in integrate more renewable resources throughout its system. The Walla
14 Walla project is particularly appealing because creating one of these links should increase the
15 amount of wind energy the company can integrate in these areas and facilitate delivery, which
16 will benefit Oregon customers. However, it continues to be difficult to assign significant benefit
17 to these projects because they are an uncertain commitment. First, as would be expected, the
18 Applicant is still reviewing the viability of the projects. “No comprehensive cost-benefit analysis
19 related to these items has been completed at this point, and these estimates may be subject to
20 revision during the course of this proceeding.” Response to OPUC Data Request 8. RNP
21 Exhibit 9.
22

23 Second, the transmission commitments are limited by the caveat that further study of the
24 projects may result in a decision not to pursue them. The relevant footnote states “upon further
25 review a particular investment might not be cost-effective or optimal for customers. If that
26 should occur, MEHC pledges to propose an alternative to the Commission with a comparable

1 benefit.” Exhibit PPL/101 at 1. Mr. Gale’s Supplemental Testimony addressed this footnote by
2 offering two additional commitments. He states that

3 “PacifiCorp will provide public notice and an invitation to encourage
4 stakeholders to participate in the Integrated Resource Plan process to
5 consider these transmission investments. It would be in this forum that
6 PacifiCorp would describe the rationale for any change and a proposed
7 replacement. We would expect any proposed replacement to provide
8 similar benefits to the system. For example, if the Walla Walla investment
9 could not be pursued, PacifiCorp would seek a replacement that provided
10 similar opportunities to deliver against the 1400 MW renewable energy
11 goal.

12 Second, Commitment 50 establishes annual reports to the Commission
13 regarding implementation of the commitments. The report will provide a
14 description of the performance of each of the commitments that have
15 quantifiable results. If any of the commitments is not being met, the
16 report will provide proposed corrective measures and target dates for
17 completion of such measures.” PPL/308 Gale/6-7.

18 Commitment 49 provides no real clarity on what might be offered in the alternative, it just specifies
19 the venue for where the issue will be addressed. We already assume the IRP process is where
20 transmission planning would occur. In fact, two of the transmission projects – the Mona-Oquirrh
21 and the Path C upgrade -- have been analyzed through the IRP process.¹¹ And, further, existing
22 Oregon regulations enable us to participate in utility IRP processes; this commitment is therefore
23 nothing new, in our view.

24 Reports to the Commission regarding certain of the transaction commitments would be
25 helpful. We have deeply appreciated the Commission’s interest in quarterly updates from
26 PacifiCorp and PGE on their renewables acquisition and believe they have been a motivating factor
for the utilities. But, at least in the case of renewables, annual updates would provide little benefit.
The reality of renewable energy in the U.S. is a start and stop cycle due to the extension of the
federal Production Tax Credit. If MEHC and PacifiCorp were to only provide annual updates to the
Commission on the transmission and renewables commitments, we believe opportunities could well

¹¹ I note that the Path C upgrade is now included in PacifiCorp’s updated Action Plan in its 2004 IRP Update
PacifiCorp 2004 Integrated Resource Plan Update, p. 46.

1 be lost. For this commitment to be meaningful for renewables, we believe MEHC should agree to
2 continuation of the quarterly reports for renewables and the related transmission commitments.

3 Further, we are concerned about the timing of the potential Walla Walla upgrade. Unlike
4 the other two projects, the Walla Walla link is a new commitment not previously considered by
5 PacifiCorp. In response to a question about whether any cost-benefit analysis has been done on this
6 line, MEHC responded that “[a]s wind projects are identified as part of the RFP 2003B, the
7 Company will evaluate the benefits of the wind project and the Walla Walla –Yakima or Mid C
8 commitment for cost-effectiveness.” Response to OPUC Data Request 9e. RNP Exhibit 10. This
9 timing doesn’t compute. If the transmission line is considered as it relates to wind projects that
10 responded to the current 2003 RFP, it is not clear how the line could enable those projects to
11 actually go forward. A renewable project would be on-hold until the line could be completed by
12 2010 or the opportunity for cost effective projects could be lost because other utilities are ready to
13 move forward sooner. PacifiCorp and other utilities in the Northwest are aware of the general areas
14 where good renewable resources are located. If MEHC and PacifiCorp are committed to increasing
15 its ability to acquire wind in the Northwest, they should not have to wait for the results of an RFP to
16 know where transmission improvements are needed. While we think the Walla Walla line could
17 provide a real benefit, the information provided by the Applicant so far is unclear as to the certainty
18 of the project as well as to its ability to make projects available in a timely manner.

19 **Short Term Transmission Products: A Near Term Solution**

20 Our primary concern with the transmission commitments, however, is the inference that
21 PacifiCorp would be unable to achieve its IRP target of 1400 MWs of renewables without these
22 new projects. In comments to the Commission on October 25, Greg Abel stated:

23 “We’ve reaffirmed their commitment of 1,400 MWs of renewables and we
24 are very serious and I think it’s reflective in our commitment and the focus
25 we’ve brought immediately to the transmission system, in that if we are
26 going to deliver 1,400 MWs of renewables there are clearly transmission

1 projects that have to be, need to be brought to the forefront . . .”¹²
2 Further, “MEHC also notes that PacifiCorp’s commitment, and MEHC’s affirmation of
3 PacifiCorp’s commitment to acquire 1,400 MW of cost-effective renewable resources cannot be
4 achieved without significant investments in new transmission infrastructure.” MEHC Response to
5 CUB Data Request 6. RNP Exhibit 11. This first suggests that the Applicant’s commitment to
6 affirm PacifiCorp’s IRP target is actually contingent on the viability of new transmission projects.
7 But it also potentially ignores that there are interim measures that can be taken to free up more
8 transmission capacity on PacifiCorp’s system, before new construction is needed. The Applicant’s
9 renewables commitment extends to 2015; there may well be new transmission needed to achieve the
10 total amount. But acquiring renewables should not be delayed pending decisions on new
11 transmission construction.

12 As RNP stated in opening comments, transmission products like conditional firm and
13 redispatch can make the most efficient use of the existing transmission system, benefiting
14 PacifiCorp customers by providing more revenues from transmission services, and aiding the utility
15 in making more transmission capacity available to acquire new resources. New products can also
16 be implemented in a far shorter time frame than it takes to construct new lines and so can be critical
17 in allowing the company to bring on more wind power prior to the sunset of the Federal PTC,
18 currently set for the end of 2007.

19 Commendably, MEHC has committed to “support the Bonneville Power Administration in
20 its development of short-term products such as conditional firm and redispatch products.
21 PacifiCorp will also initiate a process to collaboratively design similar products at PacifiCorp.”
22 Exhibit PPL/309 at 7. They have also committed to “actively work with developers to identify
23 other transmission improvements that can facilitate the delivery of wind energy in PacifiCorp’s
24 service territory.” Id. at 8. We are asking MEHC to make these commitments more concrete by
25 agreeing to launch a Conditional Firm pilot program within one year of the close of the transaction.

26 _____
¹² http://www.puc.state.or.us/agenda/audio/2005/102505/um1209_issues15_gabel_midamerican.mp3, transcribed by

1 BPA has put the development of their Conditional Firm product on hold while computer system
2 upgrades are designed and implemented.¹³ We understand that BPA expects to be able to
3 implement its Conditional Firm product in 18-24 months. It is critical, in our view, that MEHC and
4 PacifiCorp not wait for BPA before beginning development at PacifiCorp.

5 There is evidence that demonstrates that new transmission products can make use of unused
6 transmission capacity available on existing lines. While contractually lines may be “sold out,”
7 historic usage data shows that these lines are at peak capacity only a small number of hours of the
8 year. A recent study was conducted of transmission usage across the constrained path TOT3 in the
9 intermountain West looking at the potential for wind projects to take advantage of the unused
10 capacity. The report states “[t]he results from the study also indicate that sufficient potential exists
11 for innovative transmission products that can help bring more wind to load centers and increase the
12 efficiency of the existing transmission network.”¹⁴ Figure 6 on page 11 of this report “indicates that
13 100 MW of ATC is available 97% of the time.” Since not all the power output from a wind project
14 flows over a single path in a control area, 100 MW of new “conditional firm” capacity on a
15 constrained path could enable even more than 100 MW of new wind generation. The authors point
16 to another study of path usage that showed similar results. “Analysis of transmission path loading
17 by the SSG-WI indicated that even though firm capacity may not be available on many paths, a
18 significant number of paths have available capacity for most of the year.”¹⁵ We have also included
19 as Exhibit 14, a graph of historic transmission usage across transmission paths in the Bonneville
20 Power Administration’s control area that has been considered to be at or near maximum capacity on
21 a contractual basis. The graph shows that the usage across these lines reaches peak capacity only a
22 small percentage of the hours in a year.

23

24 David Wolf, RNP Staff, on November 3, 2005.

¹³ [http://www.transmission.bpa.gov/business/Customer_Forum_and_Feedback/
Business_Practices_Technical_Forum/NewProducts.cfm](http://www.transmission.bpa.gov/business/Customer_Forum_and_Feedback/Business_Practices_Technical_Forum/NewProducts.cfm). RNP Exhibit 12.

25 ¹⁴ Milligan, M. and D.P. Berger, “A Preliminary Analysis and Case Study of Transmission Constraints and Wind
Energy in the West.” Conference Paper NREL/CP-500-38152, May 2005,
26 <http://www.nrel.gov/docs/fy05osti/38152.pdf>. RNP Exhibit 13.

¹⁵ Id. at 4.

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1 We also believe that PacifiCorp should evaluate flows on its major transmission paths, and
2 report on their utilization every other year. This type of study should help PacifiCorp prepare to
3 offer a conditional firm product and accurately analyze the available transfer capability (ATC) on
4 their system. BPA recently updated its ATC methodology and was able to identify a significant
5 amount of new ATC. Attached as RNP Exhibit 15 are the final ATC results from BPA. This
6 demonstrates the value in revisiting ATC analysis. BPA identified an additional 200-500 MWs of
7 capacity on several key flowgates for wind energy. Were PacifiCorp to review its ATC
8 methodology, additional transmission capacity could be available to help reach its renewables
9 target, in advance of new transmission construction.

10 **Regional Transmission Planning and Coordination**

11 MEHC has stated that PacifiCorp will continue to be able to take its own positions on
12 relevant policy and regulatory issues in individual states. See PPL/100 Abel/24. This is particularly
13 important to RNP in terms of maintaining PacifiCorp's support for Grid West and/or other regional
14 planning and coordination efforts in the Northwest. We are concerned by the cautious position
15 taken on RTOs by MidAmerican Energy Company. So we want to ensure that PacifiCorp will be
16 free to continue its strong support for Grid West in the Northwest. MEHC has stated that
17 PacifiCorp's position on regional transmission is not likely to change if this application is approved.
18 MEHC Response to CUB Data Request 18. RNP Exhibit 16. And PacifiCorp has stated that they
19 "strongly support the Grid West proposal * * *." PPW Response to CUB Data Request 18. RNP
20 Exhibit 16. Because the parties interested in pursuing the Grid West proposal changed recently, we
21 believe it is even more essential for PacifiCorp to stay the course and remain engaged in the
22 process.¹⁶

23 **IV. Energy Efficiency**

24 We generally appreciate MEHC's initial commitments to energy efficiency and its treatment
25 of the issue in the Application. Exhibit PPL/309 at 9-10. And we refer the Commission to Ralph
26

1 Cavanagh's opening comments on behalf of NRDC, and to his oral comments before the PUC on
2 October 25, for our views on energy efficiency and DSM.

3 **V. Global Climate Leadership**

4 The Applicant's plans for leadership on global climate issues will have an impact in
5 determining whether this application serves the public interest. The combined companies (MEC
6 and PacifiCorp) will have annual emissions of carbon dioxide exceeding seventy million tons per
7 year, placing it in the top five of emitters nationwide.¹⁷ The merged company by itself will account
8 for about one percent of all U.S carbon dioxide emissions.¹⁸ It will emerge as a potentially decisive
9 force on climate issues just as opinion in Congress and a growing number of states is shifting to
10 favor mandatory limits on carbon dioxide emissions.¹⁹

11 We believe that progress on controlling global warming pollution is possible in the near
12 future. The West Coast Governors' Global Warming Initiative has united California, Oregon and
13 Washington in acting "individually and regionally to reduce greenhouse gas emissions."²⁰
14 Governor Kulongoski has recently stated his determination to "put Oregon on the map as a national
15 leader in the efforts to combat global warming and reduce greenhouse gas emissions," and his
16 Advisory Group on Global Warming is bringing extensive and diverse expertise to bear on these
17 issues.²¹ And just last month, California's PUC and Energy Commission proposed strong
18 greenhouse gas performance standards governing any new long-term utility investments in baseload
19 power generation regardless of location. In the PUC's words:

20 The [California] PUC directs Staff and its General Counsel to investigate
21 adoption by the PUC of a greenhouse gas emissions performance standard for

22 ¹⁶ See, eg, Ted Sickinger, *Compromise on unified power grid is blocked*, The Oregonian, November 2, 2005. RNP
Exhibit 17.

23 ¹⁷ <http://www.nrdc.org/air/pollution/benchmarking/default.asp>, "Benchmarking Air Emissions of the 100 Largest
Electric Power Producers in the United States," April 2004. RNP Exhibit 18.

24 ¹⁸ Emissions of Greenhouse Gases in the United States 2003, December 2004, Energy Information Administration,
Report # DOE/EIA-0573 (2003). <http://www.eia.doe.gov/oiaf/1605/ggrpt/index.html>. RNP Exhibit 19.

25 ¹⁹ For example, 53 Senators voted in June 2005 in favor of a resolution supporting "a comprehensive and effective
national program of mandatory, market-based limits" on global warming pollution. S. Res. 866. RNP Exhibit 20.

26 ²⁰ See, for example, West Coast Governors Global Warming Initiative: Staff Recommendations to the Governors
(November 2004). RNP Exhibit 21.

²¹ See, for example, Office of the Governor, Press Release, Governor Announces New Steps to Curb Global
Warming in Oregon (April 13, 2005). RNP Exhibit 22.

1 IOU procurement that is no higher than the GHG emissions levels of a state-of-
2 the-art, combined-cycle natural gas turbine for all procurement contracts that
3 exceed three years in length and for all new IOU owned generation. In the case
of coal-fired generation, the capacity to capture and store carbon dioxide safely
and inexpensively is necessary to meeting the standard.²²

4 It is likely that the California Energy Commission will endorse the same policy on the day this
5 testimony is submitted, November 21.

6 PacifiCorp's corporate position on this issue is important. The Company is the Northwest's
7 largest single emitter of global warming pollution, and as such is crucial as both a role model and a
8 potential contributor to aggregate reductions or increases in this pollution. Moreover, under its
9 current leadership, PacifiCorp has emerged as an industry leader in identifying financial risks
10 associated with carbon dioxide emissions, as the Application acknowledges.

11 MidAmerican has noted its intentions to continue reducing the carbon intensity of its electric
12 generation, but that yields no guarantee either of reduced total emissions or support for responsible
13 policies designed to slow, stop and reduce the growth of global warming pollution. It is total
14 emissions of global warming pollution that matter in terms of changes in atmospheric
15 concentrations of these gases, not emissions per megawatt-hour or per dollar of output. The entire
16 US economy has reduced its carbon intensity steadily for more than three decades, even as total
17 emissions have grown substantially. MEHC should provide a plan for real reductions in CO2
18 emissions at PacifiCorp as a benefit of this transaction.

19 The Applicants should also indicate that they are prepared to support mandatory national
20 limits on global warming pollution. Pending the adoption of such limits, the Applicants' should
21 declare an end to long-term investments in coal combustion technologies designed in anticipation of
22 decades of free or cheap venting of huge global warming wastes to the atmosphere. Instead, the
23 Applicants should insist on technology that is capable of disposing of these wastes safely and
24 inexpensively, to the extent that their capacity expansion plans continue to rely on coal.

25 This technology is available at reasonable cost. I have already cited recent proposals in

26 _____
²² California Public Utilities Commission, Policy Statement on Greenhouse Gas Performance Standards (adopted

1 California for a statewide procurement policy based on the availability of such technology, which
2 includes but is not necessarily limited to integrated gasification combined cycle generation. Further,
3 the Northwest Power and Conservation Council as part of its Fifth Power Plan conducted analysis
4 that indicated that the use of IGCC “lowers the expected cost and risk compared to the use of
5 conventional coal-generation technology.” RNP Exhibit 5. And the Council has called on “the
6 Council, states, Bonneville, utilities and other interested organizations [to] investigate the feasibility
7 of developing the proposed coal-gasification, combined-cycle power plant . . . with advanced coal
8 gasification technology demonstration capability, including carbon separation and sequestration.”²³

9 **V. Conclusion**

10 RNP and NRDC appreciate MEHC’s initial commitments to energy efficiency, renewable
11 resources, transmission to facilitate delivery of renewables, and accounting for financial risks of
12 global warming emissions. Our testimony has detailed additional commitments and assurances we
13 believe are needed in order for the Commission to conclude that the merger would provide net
14 benefits to Oregon customers and is in the public interest. Specifically, we ask that MEHC:

15 1. Commit to meeting 10% of PacifiCorp’s load with new, nonhydro renewables
16 within the next 10 years and 20% within twenty years. Make a stronger commitment to acquire
17 renewables within the first year of the transaction or, at the very least, clarify when the 400 MWs
18 will be acquired.

19 2. Agree to develop a stable rate Blue Sky green power product.

20 3. Revise Commitment 50 so that MEHC and PacifiCorp provide quarterly reports to
21 the PUC about its renewables and transmission commitments.

22 4. Agree to launch a Conditional Firm pilot program within a year of the close of the
23 transaction. Agree to evaluate flows on PacifiCorp’s transmission system and report on their
24 utilization every other year.

25

October 6, 2005). RNP Exhibit 23.

26 ²³ Northwest Power and Conservation Council, The Fifth Northwest Electric Power and Conservation Plan, p. 56
(Action Gen-13). RNP Exhibit 24.

1 5. Maintain support for Grid West and, in the absence of Grid West, other regional
2 transmission planning and coordination efforts in the Northwest.

3 6. Provide a plan for ensuring real reductions in carbon dioxide emissions at PacifiCorp
4 and indicate support for mandatory national limits on global warming pollution.

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**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UM 1209

In the Matter of the Application of)
MidAmerican Energy Holdings Company)
and PacifiCorp for an Order Authorizing)
MidAmerican Energy Holdings Company)
to Exercise Substantial Influence Over the)
Policies and Actions of PacifiCorp.)

**EXHIBIT ACCOMPANYING JOINT TESTIMONY OF THE RENEWABLE
NORTHWEST PROJECT AND THE NATURAL RESOURCES DEFENSE COUNCIL**

WITNESS QUALIFICATION STATEMENT

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Rachel has been the Director of the Renewable Northwest Project (RNP) since its founding in 1994. RNP is a regional non-profit organization advocating for wind, solar and geothermal resources in the four Northwestern states. Its members are a unique combination of environmental and consumer organizations, as well as businesses and manufacturers who develop renewable energy projects. As Director, Rachel is responsible for managing all aspects of RNP, including policy development and strategic planning, managing staff, and press relations.

Rachel is recognized as a leading expert on renewable energy policy in the Pacific Northwest. Over the past decade, Rachel has participated in numerous regulatory proceedings in Oregon, Montana and Washington, including Oregon dockets UM 814, the acquisition of PGE by Enron, and UM 918, the acquisition of PacifiCorp by Scottish Power. She also regularly appears before state legislatures and the Bonneville Power Administration on issues related to renewable energy.

Rachel was one of fifteen individuals chosen by the four Northwest Governors to sit on the Comprehensive Review of the Northwest energy system in 1996. She was also recently chosen by the Governor of Oregon to represent the state on the Western Governor's Association (WGA) Clean and Diverse Energy Advisory Committee (CDEAC), to implement the WGA's Clean Energy Resolution.

Rachel is Secretary of the Board of Directors of the Bonneville Environmental Foundation and is a member of the Board of the Center for Energy Efficiency and Renewable Technologies. She has previously served as the Vice Chair of the Executive Board of the NW Energy Coalition and the Renewable Energy Policy Project.

Prior to RNP, Rachel was the Director of Policy at the Massachusetts Division of Energy Resources as well as the Legislative Director and the Energy/Utility Program Director for Massachusetts Public Interest Research Group. She has a Bachelor of Arts in Sociology/Economics from the University of Oregon.

CERTIFICATE OF SERVICE

I hereby certify that I served the foregoing **JOINT TESTIMONY OF THE RENEWABLE NORTHWEST PROJECT AND THE NATURAL RESOURCES DEFENSE COUNCIL** on the following persons on November 21, 2005, by e-mailing, hand-delivering, faxing, or mailing (as indicated below) to each a copy thereof, and if mailed, contained in a sealed envelope, with postage paid, addressed to said attorneys at the last known address of each shown below and deposited in the post office on said day at Portland, Oregon:

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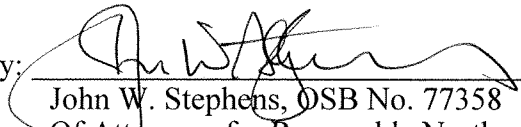
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DATED this 21st day of November, 2005.

ESLER STEPHENS & BUCKLEY

By:



John W. Stephens, OSB No. 77358
Of Attorneys for Renewable Northwest
Project

RNP Exhibit 2

Energy Information Administration
Average Retail Price of Electricity to Ultimate Customers: Total by End-Use
Data For: August 2005
Report Released: November 9, 2005
Next Release Date: Mid-December 2005

Table 5.3. Average Retail Price of Electricity to Ultimate Customers: Total by End-Use Sector, 1991 through August 2005
(Cents per Kilowatthour)

Period	Residential	Commercial ¹	Industrial ¹	Transportation ¹	Other	All Sectors
1991	8.04	7.53	4.83	NA	6.51	6.75
1992	8.21	7.66	4.83	NA	6.74	6.82
1993	8.32	7.74	4.85	NA	6.88	6.93
1994	8.38	7.73	4.77	NA	6.84	6.91
1995	8.4	7.69	4.66	NA	6.88	6.89
1996	8.36	7.64	4.6	NA	6.91	6.86
1997	8.43	7.59	4.53	NA	6.91	6.85
1998	8.26	7.41	4.48	NA	6.63	6.74
1999	8.16	7.26	4.43	NA	6.35	6.64
2000	8.24	7.43	4.64	NA	6.56	6.81
2001	8.62	7.93	5.04	NA	7.03	7.32
2002	8.46	7.86	4.88	NA	6.73	7.21
2003						
January	7.98	7.64	4.84	7.31	--	7.03
February	7.99	7.62	5	7.5	--	7.03
March	8.3	7.7	5.07	7.51	--	7.15
April	8.81	7.89	5.04	7.5	--	7.28
May	8.99	8	5.1	7.42	--	7.42
June	9.2	8.37	5.25	7.81	--	7.73
July	9.14	8.45	5.48	8.12	--	7.94
August	9.18	8.37	5.47	8.13	--	7.92
September	8.9	8.06	5.21	7.94	--	7.57
October	8.89	8.03	5.14	7.98	--	7.4
November	8.74	7.79	4.94	6.82	--	7.21
December	8.33	7.66	4.95	6.82	--	7.16
Total	8.7	7.98	5.13	7.58	--	7.42
2004						
January	8.24	7.71	4.88	6.13	--	7.18
February	8.32	7.83	4.91	6.29	--	7.21
March	8.62	7.93	4.91	6.29	--	7.27
April	8.93	7.9	4.96	6.29	--	7.29
May	9.08	8	5.03	6.22	--	7.41
June	9.25	8.46	5.28	6.55	--	7.85
July	9.34	8.6	5.46	6.81	--	8.05
August	9.47	8.67	5.49	6.81	--	8.11
September	9.37	8.53	5.27	6.66	--	7.92
October	9.1	8.25	5.11	6.69	--	7.57
November	8.96	8.03	4.96	6.51	--	7.37
December	8.58	7.81	5.01	6.51	--	7.32
Total	8.94	8.17	5.11	6.48	--	7.57
2005						
January	8.49	7.94	5.08	6.91	--	7.4
February	8.72	8.15	5.15	7.08	--	7.51
March	8.85	8.15	5.16	7.03	--	7.52
April	9.18	8.2	5.19	7.23	--	7.57
May	9.53	8.39	5.32	7.24	--	7.77
June	9.74	8.86	5.71	7.52	--	8.3
July	9.73	8.97	5.96	8.12	--	8.52
August	9.89	9.1	6.04	8.3	--	8.65
Total	9.3	8.51	5.47	7.42	--	7.95
Year to Date						
2003	8.7	8.03	5.16	7.67	--	7.46
2004	8.91	8.17	5.12	6.43	--	7.57
2005	9.3	8.51	5.47	7.42	--	7.95
Rolling 12 Months Ending in August						
2004	8.85	8.08	5.1	6.73	--	7.5
2005	9.21	8.4	5.34	7.16	--	7.82

[1] See Technical notes for additional information on the Commercial, Industrial and Transportation sectors.

NA = Not available.

Energy Information Administration

Average Retail Price of Electricity to Ultimate Customers: Total by End-Use Sector

Notes: See Glossary for definitions. Values for January 2004 through September 2004 are revised. Prices are calculated by dividing revenue by sales. Revenue may not correspond to sales for a particular month because of energy service provider billing and accounting procedures. That lack of correspondence could result in uncharacteristic increases or decreases in the monthly prices. Geographic coverage is the 50 States and the District of Columbia. Average Revenue values for 1996-2005 include energy service provider (power marketer) data. Values for 2004 and 2005 are preliminary estimates based on a cutoff model sample. Beginning in January 2004, the Form EIA-826 has eliminated reporting of data under the sector category "other" and has replaced it with the sector category "transportation". Data on revenues, megawatthours, and number of customers for electric energy supplied for transportation, such as electrified railroads, is reported in the transportation sector. The revised definition of the commercial and industrial sectors includes data previously reported in the "other" sector. Electricity used for public-street and highway lighting, interdepartmental and/or intra-company sales in commercial establishments, and sales to other authorities will now be reported in the commercial sector. Electricity sales for agriculture including irrigation will be reported in the industrial sector. See Technical Notes for a discussion of the sample design for the Form EIA-826. Values for 2003 and prior years are final. Utilities and energy service providers may classify commercial and industrial customers based on either NAICS codes or demands or usage falling within specified limits by rate schedule. Values for 1996 in the commercial and industrial sectors reflect an electric utility's reclassification for this information by Standard Industrial Classification. Changes from year to year in consumer counts, sales and revenues, particularly involving the commercial and industrial consumer sectors, may result from respondent implementation of changes in the definitions of consumers, and reclassifications. Retail sales and net generation may not correspond exactly for a particular month for a variety of reasons (i.e., sales data may include imported electricity). Totals may not equal sum of components because of independent rounding. Due to restructuring of the electric power industry, electric utilities are selling/transferring plants to the nonutility sector. This affects comparisons of current and historical data.

Sources: 2004 and 2005: Energy Information Administration, Form EIA-826, "Monthly Electric Sales and Revenue Report with State Distributions Report;" 1991-2003: Form EIA-861, "Annual Electric Power Industry Report."

RNP Exhibit 3

Northwest Numbers

110| Electricity Spot Price Inflates As Gas and Oil Costs Presage Trouble

Except for the spike leading up to the Iraq War in late winter 2003, spot electricity prices have recently reached levels higher than at any time other than during the Western energy crisis. That spike and this more extended period of high prices are directly linked to high natural gas prices, as the overall regional supply of electricity is adequate.

It has been two months since any Mid-Columbia peak-period power was available for less than 60 mills per kilowatt-hour. The highest prices have stayed above 70 mills all that time, and above 60 for three months, peaking at 99 mills in the week before Hurricane Rita made landfall on the Gulf Coast. Even highs for off-peak power have perched above 60 each week since the second week of August.

These swollen prices have occurred during a period with no significant extreme temperature events and few outages. This summer's high prices are attributed to a huge surge in natural gas prices, much of that due to the big storms.

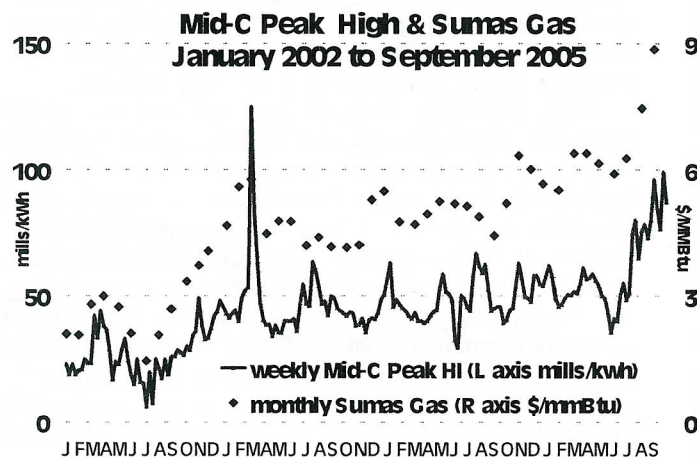
Gas prices are higher now by multiples, not just percentages, over comparison benchmarks. Nationally prices are roughly twice where they were a year ago, three times the average price so far this decade and seven times the average price during the 1990s, in nominal terms. Mid-Columbia power prices have a few things in the way historically to make similar comparisons, but peak-period prices are about double their level a year ago.

Even if the price effects of "KatRita" fade, the nation is not going to supply itself out of the gas-price squeeze anytime soon. I'm sure I was not the only one who was amazed to hear the word "conserve" in the president's post-Rita address. Little of the Administration's flagship energy policies call for conservation. Supply dominates. But even releases from the strategic petroleum reserve and easing of environmental and labor restrictions can do little to affect prices in the short term. Conservation, whether of oil, natural gas or electricity, can produce immediate effects on prices.

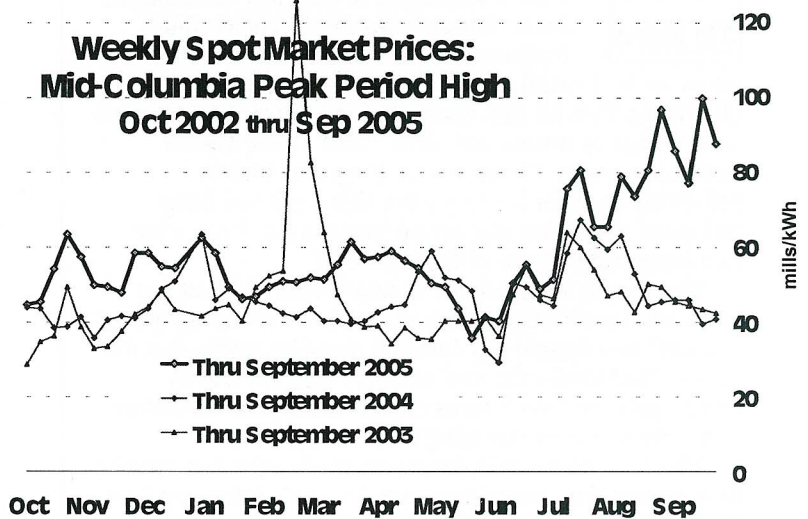
Energy Secretary Samuel Bodman is expected to announce a major plan to encourage energy conservation soon. Americans are estimated already to be consuming at least 100,000 barrels-equivalent per day less gasoline than could be expected from pre-hurricane and historical trends, some because they are relocated far from their destroyed vehicles, but most because of the shock of gasoline prices. Projections are for a colder winter in the East and record-high heating costs. Concern about the effects of high energy prices on continued economic growth are growing.

Given the reaction so far to gas prices, lower electricity spot prices may be a while getting here. NYMEX gas for November delivery has hit repeated records since Katrina struck. Some are worried that Rita's additional damage to energy infrastructure is worse than initially expected. Worried enough at press time to keep prices above \$14 per thousand cubic feet.

Should spot electricity prices in our region track extremely volatile natural gas prices so closely? The Northwest Power and Conservation Council sees enough electric power-supply surplus in the region to remove virtually any risk of curtailment through winter. Depending on how you slice the numbers,



there's at least a 2000 aMW surplus. That's about half the magnitude of the deficit that helped plummet the West into crisis five years ago. But regionally, September is almost always among the two months in which hydropower is at its lowest ebb. October is often the other low month. Natural gas generates essentially all marginal power this time of year. Expect high spot electricity prices to continue in weeks ahead and to increase dramatically if any major generation or transmission disruptions occur. I expect spot prices will be closer to the range we've seen over the past two years--between 40 and 60 mills--before the New Year, but not much before then [Alan Mountjoy-Venning].



RNP Exhibit 4

Courts & Commissions

[12] Puget Sound Energy Signs Settlement in Electric Case; Files PGA ■ from 161

This fall Puget Sound Energy's electric and natural gas customers may feel the effects of rising natural gas prices along with the utility's acquisition of a new wind farm that may someday help shield the utility from the volatility of the energy markets.

Last week the Bellevue, Wash.-based utility announced that it signed a proposed settlement to recoup the costs of acquiring the Hopkins Ridge Wind Farm, and asked the Washington Utilities and Transportation Commission for an 14.7 percent overall increase to its natural gas rates.

Puget said it had reached an accord with the staff of the WUTC, Industrial Customers of Northwest Utilities and the Public Counsel section of the Washington Attorney General's office that would increase electric rates by 3.65 percent on average and give the utility a revenue boost of about \$55.6 million annually.

The settlement, if approved by the commission, means the typical residential customer's bill would increase by 4.4 percent, or \$2.86 per month.

The 150-MW Hopkins Ridge Wind Farm is currently under construction in Columbia County, Wash. Puget announced in March that it expected to spend about \$180 million to buy the project from RES America Construction Inc. The utility also expects to spend about \$10 million to upgrade transmission lines in the area.

Puget says the Hopkins Ridge facility will provide its customers with \$30 million in power-cost savings over the next twenty years.

"No one likes the economic impact on electric costs we're seeing from extraordinary increases in oil and natural gas prices," Stephen P. Reynolds, chairman and CEO of Puget Sound Energy, said in a prepared statement. "But this settlement removes some of volatility, and with addition of the wind farm, it will help all our customer minimize fuel-price variations over the wind project's life."

Two days before announcing the Hopkins Ridge settlement, Puget filed for an adjustment to its purchase gas rates and asked for a Deferral Amortization to collect under-recovered gas costs. The combined effect of both filings would be a 13.9 percent increase to residential rates, and 14.7 percent overall increase.

Large volume industrial customers would take the hardest hit under the filings, with Schedule 87 customers seeing a total increase of 21.7 percent. Puget's commercial and industrial customers under Schedule 50 contracts would see a 19.3 percent increase.

Like all Northwest gas providers, Puget has been steadily raising its gas rates because of increased costs of a natural gas. Last fall the WUTC approved a 16 percent increase to PSE rates. The year before a 12 percent increase was approved.

Puget expects to see a 17.4 percent increase in gas costs due to "significant increases in forward market prices."

But that was before Hurricane Katrina wrecked the Gulf Coast, potentially taking about 10 percent of the United States natural gas and oil production off-line. It's too soon to tell what the long-term impact the storm may have on Northwest prices, but the utility said it is monitoring the affects of the storm on gas prices and does not plan to adjust its filing because of the hurricane.

Natural gas spot and futures prices increased sharply in the wake of Katrina, with the spot price at the Henry Hub increasing \$2.70 per MMBtu to \$12.70, according to the Energy Information Administration of the Department of Energy.

Western natural gas prices were running between \$9.50 and \$10.35/MMBtu during the first three days of the week.

As of Wednesday, Aug. 31, there were 482 platforms and 79 rigs still evacuated in the Gulf region, down from a high of 645 platforms and 90 rigs the day before, the EIA reported.

The U.S. Mineral Management Service reported that 83 percent of natural gas output in the Gulf region was still shut down as of Thursday, Sept. 1, resulting in a loss of 34.2 billion cubic feet of lost production since Friday, Aug. 26.

There were also reports that Katrina may have damaged key natural gas processing facilities on the Gulf Coast, which could delay a recovery of gas supplies. Even if platforms and pipelines are either unaffected or readily restored to service, the gas generally cannot flow to market without treatment.

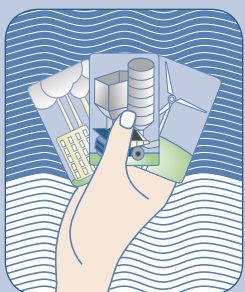
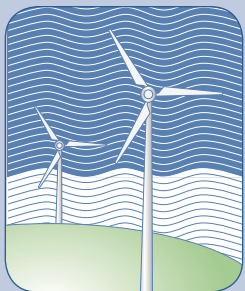
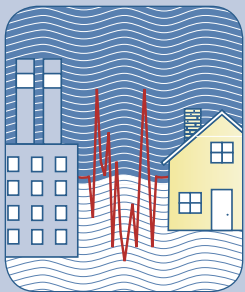
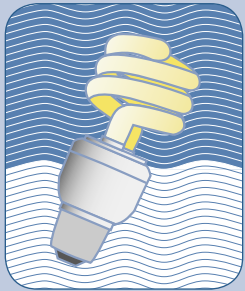
Four plants may have been affected that have a combined capacity of 5.5 Bcf per day, which is the equivalent of slightly more than 10 percent of total national production, the EIA reported on Aug. 31 [Steve Ernst].

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RNP Exhibit 5

The background of the page is a scenic landscape. At the top, a large, snow-capped mountain peak rises against a clear blue sky. Below the mountain is a dense forest of evergreen trees. In the foreground, a vast field of purple flowers, likely lupines, stretches across the bottom half of the image. A yellow line graph with multiple peaks is overlaid on the bottom right portion of the purple flower field.

The Fifth Northwest Electric Power and Conservation Plan



Recommendations

Conservation

The Council recommends that the region increase and sustain its efforts to secure cost-effective conservation immediately. The Council's analysis shows that improved energy efficiency costs less than construction of new generation and provides a hedge against market, fuel, and environmental risks. To achieve these benefits fully, however, stable and sustained investment in conservation is necessary. Although conservation may result in small rate increases in the short term, it can reduce both cost and risk in the long term. The targets are ambitious but achievable - 700 average megawatts between 2005 and 2009, and 2,500 average megawatts during the 20-year planning period.

Demand Response

The Council also recommends developing demand-response programs - agreements between utilities and customers to reduce demand for power during periods of high prices and limited supply. The Council recommends developing 500 megawatts of demand response between 2005 and 2009 and larger amounts thereafter. Demand response has proven helpful in stabilizing electricity prices and in preventing outages. The Council's analysis shows that although it will probably be used infrequently, demand response reduces both cost and risk compared to developing additional generation.

Wind

The plan incorporates more than 1,100 megawatts of wind generation capacity between 2005 and 2014 from state system-benefits-charge

programs and current utility integrated-resource plans. Beyond that, additional wind generation figures prominently in the next decade. However, the economics of this wind resource is affected by a number of assumptions: Continuation of production tax credits for several years; possible future controls on green house gas emissions; decreasing production costs; the ability to integrate intermittent wind into the existing power system at reasonable costs, and the availability of large areas for development with access to transmission at moderate costs. During the next five years, the power plan calls for gathering more experience and information about the performance and cost of wind resources within the regional power system. To be most useful, these projects should be sited in geographically diverse wind-resource areas. In addition, project developers and operators will need to be willing to share information about the projects. This can be done in ways that do not adversely affect their commercial interests.

Prepare for New Power Plants

This plan defines a schedule of options for development of generating resources. Options mean completed siting and permitting for the amounts and types of power generation identified in the plan. Optioning is a risk-management strategy. With siting and permitting completed, actual construction can be undertaken with a minimum of lead-time when conditions warrant. Conversely, if the projects prove not to be needed, the expended costs are relatively small.

The Council believes the region should secure options (sites and permits) to be able to begin constructing new wind-generating resources as early as 2010 with up to 5,000 megawatts

of capacity to be developed through the end of the 20-year planning period. The Council also analyzed both conventional coal-steam generation and coal-gasification power plants. Recent information indicates that coal-gasification generation has entered the early stage of commercial availability. The analysis indicates that use of coal-gasification power plants lowers the expected cost and risk compared to the use of conventional coal-generation technology and that these plants emit lower levels of pollutants, including carbon dioxide.

The plan calls for being prepared to begin construction, if needed, of coal-gasification generation by the beginning of 2012. However, the analysis is predicated on the further commercialization of coal-gasification technology. If commercialization fails to advance as forecast and other estimates underlying the plan do not change significantly, 400 megawatts of conventional coal-fired capacity could be needed by 2013. This would require preconstruction development to commence by mid-2007 so construction could begin as early as 2010. To provide for this contingency, the Council will issue an assessment of the progress of commercialization of coal-gasification combined-cycle technology and other estimates underlying the plan by 2007. The Council recognizes that individual utilities may find it necessary to acquire additional generation before the target dates in this plan. Commitment to coal-gasification technology for near-term acquisitions may be premature.

Later in the 20-year planning period, some additional gas-fired generation may be needed. Needed transmission upgrades should be identified so all of these resources can be built and brought

on line quickly when required. If major transmission upgrades are needed, pre-construction planning, siting, and permitting will have to begin well before actual construction of the power plants.

RNP Exhibit 6



WGA Policy Resolution 04-14

Clean and Diversified Energy Initiative for the West

June 22, 2004
Santa Fe, New Mexico

A. **BACKGROUND**

Vision Statement

- 1 Western North America is blessed with an abundance of natural energy resources that have been critical to accommodating substantial population growth and fueling a dynamic economy. Traditional resources such as oil, natural gas, coal and hydropower have been and will continue to play a significant role in meeting future energy needs. At the same time, resources such as energy efficiency, solar, wind, geothermal, biomass, clean coal technologies, and advanced natural gas technologies are relatively untapped but hugely promising. Together, the combination of these resources provides the foundation for a clean, diversified and secure energy future for the West. To ensure that newer, clean energy sources play an important role in meeting this goal, this resolution is specifically concerned with identifying ways to increase the contribution of renewable energy, energy efficiency, and clean energy technologies within the context of the overall energy needs of the West.
- 2 The region needs to develop its clean and diversified energy resources to:
 - a. Protect the Western economy from energy shortages and price spikes. Uncertainty of reliability and price has been harmful to businesses and consumers, and is disruptive to local and regional investment.
 - b. Augment our pursuit of a national energy policy that will result in a diverse energy portfolio, including conventional and alternative energy resource development, energy efficiency and conservation.
 - c. Accommodate the energy needs of a growing, mobile Western population;
 - d. Better position the Western energy system to respond to new environmental challenges, including potential limitations on emissions, and
 - e. Take advantage of the development of new technologies that will lower the cost of renewable energy and reduce the cost of controlling emissions from the West's vast fossil fuel resource base.
3. Concern about local and global impacts from conventional energy sources has in some cases slowed the development of energy sources.
4. Over the last decade, the Western states have taken initial steps to develop a clean and diversified energy system. For example:

- The Western Regional Air Partnership (WRAP) has evaluated ways in which states can incorporate renewable energy and energy efficiency measures in regional haze plans. As early as the mid-1990's, the Grand Canyon Visibility Transport Commission (GCVTC) recognized that renewable energy and energy efficiency could result in emissions reductions and provide economic benefits to the region. The GCVTC established goals of 10% renewable energy by 2005 and 20% by 2015. The WRAP has published state and tribal policy recommendations and "best practices" for achieving energy efficiency and renewable energy goals.

- Western Governors energy policy resolution, *Western States' Energy Policy Roadmap (03-19)*, urges:
 - New exploration and development of promising domestic oil, gas, coal, geothermal, solar, wind, or biomass resources where lands, air, water, fish, and wildlife and other environmental resources can be protected;
 - Extension of production tax credits for renewable energy generation;
 - Development of a Renewable Energy Certificates market and the creation of generation tracking system to provide data necessary to substantiate and support verification and tracking of renewable energy generation. The Western Governors' Association and the California Energy Commission are working with regional stakeholders to develop a Western-wide renewable tracking system.
 - Federal and state incentives that will encourage the development of clean energy resources of the West. However, there is no specific project or target for the development of Western clean energy resources.

- The Western Governors' Association published a report, *Energy Efficiency in the Border Region: A Market Approach* that demonstrates enormous potential energy savings from the implementation of energy efficiency measures in the U.S.-Mexico border region.

- The California Energy Commission's Renewable Energy Program began in 1998 to help increase total renewable electricity production statewide. The current program provides market-based incentives for new and existing utility-scale facilities powered by renewable energy. It offers consumer rebates for those installing new renewable energy systems. The program also helps educate the public regarding renewable energy.

- In April 2004, the Western Governors' Association sponsored the North American Energy Summit that included many recommendations from diverse stakeholders on options to secure a clean and diversified energy future.
 - Since the fall of 2003, the Western Governors' Association has provided support to the U.S. Department of Energy and four regional partnerships to advance the concepts and promote the infrastructure for carbon sequestration, thereby reducing CO2 emissions.
5. Every Western state has in place elements of clean, renewable energy and energy efficiency programs to augment the region's support for more diversified energy resources. For example, four Western states have elected to establish Renewable Portfolio Standards. Nearly every state has adopted tax and other incentives to promote renewable energy development. Every state has programs to promote energy efficiency. However, in concert with the Western Governor's energy policy resolution, "Western States' Energy Policy Roadmap," the following policy should be adopted to capitalize on the economic opportunities offered by the development of the immense clean, renewable energy resources of the region.
 6. Western Governors, and especially Governors from the Southwestern States, have long recognized the vast and largely untapped potential for solar powered generation in the region. The Governors have been actively engaged with the solar industry and other interested stakeholders in evaluating an initiative that could result in the construction of 1,000 MW of concentrating solar power generation in the region. WGA is pursuing a grant proposal with the Department of Energy that would allow WGA to establish a stakeholder working group to develop options for consideration by the Governors in furtherance of the 1,000 MW initiative.
 7. Given the vast reserves of coal across many of the western states, the region is well-suited to the development of new clean energy technologies to enhance the innovative use of domestic energy supplies both in the region and across the United States in ways that minimize emissions while boosting domestic energy security.

B. GOVERNORS' POLICY STATEMENT

1. To maintain the Western Governors' commitment to a viable economy and a clean and healthy environment in the West, we need to pursue a national energy policy that will result in a diverse energy portfolio that will include conventional and alternative energy resource development, energy efficiency and conservation. (From WGA Policy 03-19, "Western States' Energy Policy Roadmap")
2. Western Governors agree to collaborate in the exploration of opportunities to develop a clean, secure, and diversified energy system for the West and to

capitalize on the region's immense energy resources. Western Governors will examine the feasibility of and actions that would be needed to:

- achieve a goal to develop 30,000 MW of clean energy in the West by 2015 from resources such as energy efficiency, solar, wind, geothermal, biomass, clean coal technologies, and advanced natural gas technologies.
- increase the efficiency of energy use by 20% by 2020. While energy efficiency does not eliminate the need for new generation, it is critical that western states pursue an energy efficient system.
- meet the West's generation and transmission needs over the next 25 years. Deliverability of energy resources will be examined, including an assessment of promising new resources and technologies. The evaluation will also consider price, reliability, and environmental impacts. In addition, the project shall examine the obstacles to both intrastate and interstate transmission siting and construction in order to access clean energy resources.
- determine overall resource adequacy and deliverability in the West.

In achieving those goals, the Western Governors recognize that both traditional and non-traditional resources will play an important role in meeting the energy needs of the West. The project will also look at providing needed interstate market analysis, transmission efficiency and development, collaboration with both public and private electricity generators, the design of public buildings, model state legislation to encourage clean energy development, transportation system design, and the development of a hydrogen economy powered by clean energy sources. The project will stress incentive-based, non-mandatory approaches that will help states achieve their clean and diversified energy goals, and will consider federal programs that could assist in the development of clean and diversified energy in the West.

Western Governors agree to collaborate and offer their support for regional and sub-regional initiatives being undertaken among western states to:

- Improve the balance and overall adequacy of all energy resources in a manner which will strengthen economic growth, promote energy price stability, mitigate environmental impact, maximize reliability and abundance of diversified resource supplies; and
- Promote the integration of traditional and new energy resource technologies.

3. Western Governors also believe there is long term wind energy potential in the western plains and mountain states but that a more aggressive effort to develop this energy resource is needed. Western Governors believe that a comprehensive study of the development and transmission of the West's wind energy resources is necessary. This study should build on the numerous subregional plans underway, such as the Rocky Mountain Area Transmission Study, but should emphasize policies that can facilitate wind development throughout the region.

C. GOVERNORS' MANAGEMENT DIRECTIVE

1. In order to develop policy proposals for achieving these goals, the WGA will form a Clean and Diversified Energy Working Group. WGA staff, with the assistance of the Western Interstate Energy Board, is directed to provide support to the Clean and Diversified Energy Working Group, and continue its work with ongoing clean energy initiatives identified in this Resolution's background section, under A.4.
A steering committee comprised of representatives from governors' offices will be responsible for developing guidelines for the activities of the Working Group. The working group will be balanced and composed of representatives from regional stakeholders such as state, local and Native American leaders, environmental organizations, state and tribal air quality agencies, the private sector, the federal government, and representatives from Mexico and Canada. Western Governors will be responsible for naming Working Group members. The project will be led by the co-lead governors for energy.
2. By November 2004, the Western Governors' Association will develop a charter and budget for the working group, and secure funding for its operation.

RNP Exhibit 7

Oregon Renewable Energy Action Plan

“We can make Oregon the national leader in renewable energy and renewable product manufacturing. Development of renewable energy will lessen our reliance on fossil fuels, protect Oregon’s clean air and create jobs.”

Governor Kulongoski, 2003

1. Introduction

Promoting a diversity of renewable energy generating resources in Oregon is good energy policy for a state that has an electricity system heavily dependent on hydropower and increasingly dependent on fossil fuels. Because some renewable energy fuels are freely accessible and others are not subject to fossil fuel price swings, they help stabilize electric rates. They contribute to a healthy electric power infrastructure. Similarly, developing a biofuels industry in Oregon will help reduce our dependence on petroleum for transportation. As importantly, developing the state’s renewable energy resources, related manufacturing and research and development presents a huge economic opportunity, particularly in rural parts of the state where economic development can be most challenging. Investments stay in Oregon, creating jobs and growing a “second crop” for farmers, ranchers and forest landowners. Finally, renewable energy is an investment in the environment by displacing the use of fossil fuel generation and avoiding numerous pollutants and global warming gases.

“It is a fairly rare initiative that is good policy, good economic development, and good for the environment, but renewable energy development is that rare gem.”¹

Oregon has long been one of the nation’s leaders in encouraging renewable energy resources. For example, the state provides tax credits and low-interest loans for all types of renewable resource projects through the Oregon Department of Energy. The Energy Trust of Oregon uses public purpose charge funds from Portland General Electric (PGE) and Pacific Power customers to achieve a goal of renewable sources supplying 10 percent of the state’s electric power by 2012. Many utilities in the state offer consumers “green power” options to support development of renewable resources. PGE ranks second in the country in sales for green power options; PacifiCorp ranks fourth. More than one million Oregon households and businesses regularly receive information on the power sources, environmental impacts and costs of generation from renewable energy sources versus fossil fuels. The Bonneville Power Administration (BPA) and the consumer owned utilities offer renewable incentives through the Conservation and Renewable Discount program. The Oregon University System, with utility funding, has done solar and wind resource assessment for decades, with all data publicly available.

¹ Quote from comments on the first draft.

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Among the benefits of renewable energy for the state:

- A net increase of 1,250 new jobs with each \$100 million investment in renewable energy resources
- Additions to the rural tax base and opportunities for local economic development.
- Income diversification in rural areas, which helps preserve family farms and ranches.
- Using forest residues to produce energy can improve forest health, reduce wildfire risk and fire suppression costs, and reduce overall smoke emissions from forestland burning.
- Clean transportation fuels can come from Oregon farm and forest products, instead of from out-of-state sources.
- Generating energy from waste gas at dairies, landfills and sewage treatment plants can reduce environmental liabilities and provide another revenue source for businesses and communities.
- Renewable resources help insulate Oregonians from volatile fossil-fuel prices.
- Using renewable energy resources reduces air pollution, thereby reducing health care costs and limiting the impact of likely stricter federal emission standards in the future.
- A healthy environment helps attract and retain businesses and is also very important to the tourist industry.

Oregon is already making use of renewable technologies including hydro, wind, direct use of geothermal, biomass, and solar. But it can and must do better. By building on these achievements with the actions as outlined in this Renewable Energy Action Plan (the Plan), Oregon will continue to be a leader on renewable energy policy and will meet a large fraction of its energy needs with new renewables by the year 2025. The Plan also will play a central role in furthering the Governor's initiatives on sustainability and global warming. The Plan complements the state's energy efficiency programs.

2..Driving forces behind the Renewable Energy Action Plan

This process was initiated under Governor Kulongoski's leadership. He has recognized the importance of developing energy efficiency and renewable energy resources in furthering economic development. There is growing evidence that oil and natural gas supplies are becoming more constrained and expensive for the long-term. It is recognized that investments in efficiency and renewable resources have significant environmental and economic benefits. As utilities plan additional capacity, an opportunity exists for growth in renewable resources.

Oregon has a long history of legislative direction supporting energy efficiency and renewable resources development. Oregon Revised Statute 469.010, adopted three decades ago, states:

- 1) Continued growth in demand for nonrenewable energy forms poses a serious and immediate, as well as future, problem. It is essential that future generations not be left a legacy of vanished or depleted resources, resulting in massive environmental, social and financial impact.

2) It is the goal of Oregon to promote the efficient use of energy resources and to develop permanently sustainable energy resources. The need exists for comprehensive state leadership in energy production, distribution and utilization. It is, therefore, the policy of Oregon:

(a) That development and use of a diverse array of permanently sustainable energy resources be encouraged utilizing to the highest degree possible the private sector of our free enterprise system.

(b) That through state government example and other effective communications, energy conservation and elimination of wasteful and uneconomical uses of energy and materials be promoted. This conservation must include, but not be limited to, resource recovery and materials recycling.

(c) That the basic human needs of every citizen, present and future, shall be given priority in the allocation of energy resources, commensurate with perpetuation of a free and productive economy with special attention to the preservation and enhancement of environmental quality.

(d) That state government assist every citizen and industry in adjusting to a diminished availability of energy.

(e) That energy-efficient modes of transportation for people and goods shall be encouraged, while energy-inefficient modes of transportation shall be discouraged.

(f) That cost-effectiveness be considered in state agency decision-making relating to energy sources, facilities or conservation, and that cost-effectiveness be considered in all agency decision-making relating to energy facilities.

(g) That state government shall provide a source of impartial and objective information in order that this energy policy may be enhanced. [1975 c.606 §1; 1979 c.723 §1]

3. The Benefits of Renewable Energy Resources

Risk Mitigation

Fossil fuels pose significant risks when considering the availability and price.

Oregon is vulnerable to oil price spikes and shortages. Oregonians spent \$4.1 billion on oil products in 2000. The vast majority of this money left the state. If oil prices doubled it would have a severe impact on the state.

Natural gas prices have increased significantly in the last few years. Oregonians spent 50 percent more per British thermal unit (Btu) to heat their homes in 2002 than they did in 1998. Oregonians spent \$1.1 billion on natural gas in 2000, not including gas used in power plants. Natural gas provides 15 percent of Oregon's electric power, but this percentage is growing. As with oil, the vast majority of this money leaves the state. New supplies are proving to cost as much or more than current supplies.

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In 2002, Oregonians spent \$2.9 billion on electricity. Oregon's economy is still recovering from a widespread economic downturn that began in the 2000-2001 timeframe. As loads grow, there will be continued pressure on rates because new resources – including renewable resources – are more expensive than existing ones.

Readily available energy at an affordable price is essential for the manufacturing, agricultural, transportation, retail, and indeed all sectors of Oregon's economy. It is prudent that we diversify our investments and allocate a greater portion to renewable resources. By focusing our efforts on renewable energy markets, Oregon will better protect itself from the volatility of the wholesale electricity and natural gas markets. It is essential that we act now to lay the foundation for accelerated renewable energy development that will sustain Oregon's progress.

Developing renewable resources reduces major health risks through reduced air, land, and water pollution. Adverse effects of global warming on weather and climate can be mitigated by reduced CO₂ emissions.

Economic Development and Job Creation

Oregonians expect their basic needs to be met. They expect the State of Oregon to plan for and develop an environment that produces social and economic benefits that meet current and future needs, while preserving and restoring the health of the natural environment.

Investments in renewable energy result in a *net* increase in jobs. For every \$100 million in investments in renewable energy, about 1,250 full time equivalent jobs are created. Furthermore, the *net* increase in economic output (the value of the production by the industries involved), wages, business and other income total almost \$200 million. In addition, the increase in state and local taxes is about \$1 million.^{2,3}

Based on these data, initiatives as outlined in this document could lead to an investment of \$300 million or more by the end of 2006, which would result in about a 3,700 net job increase. This is a significant number of new family-wage jobs in the agricultural and forestry segments of our economy, as well as other businesses.

There are several additional advantages of new renewables electric generating facilities. Some of these advantages are the result of renewables' capital intensiveness. For example, the

² Based on Economic Impact Analysis of Energy Trust of Oregon Program Activities, Final Report, by ECONorthwest, Portland, April 2003. It is important to emphasize that these are *net* benefits because they were calculated relative to the case where ratepayers, following their normal spending patterns, spent an equivalent amount of money. If a comparison were made between investing in renewable energy projects within Oregon versus with making the same investment outside the state, then the benefits from the investments would be much greater. Accordingly, they are conservative estimates.

³ See also "Assessing the Economic Development of Wind Power", Northwest Economic Associates, February 2002. Prepared for the National Wind Coordinating Committee. This study includes specific data for Morrow and Umatilla counties and the Vancycle wind farm.

property tax benefits of wind energy development have a high net value to the community because the wind energy activity in turn consumes few government services.

Recent studies indicate that by making investments in public/private renewable energy partnerships and providing incentives for the renewable energy sector, the *net bill* to American consumers may be *lowered* because an increased use of renewable energy will stem the rise of natural gas prices⁴.

The development of renewable resources can often affect land use in a positive way. Biogas generation on dairy farms solves the problem of manure disposal and associated water pollution. Biomass recovery for forest health can improve air and water quality by reducing wildfires resulting from secondary forest biomass burdens. Wind projects are commonly done on farming and grazing land, and improvements are made to pre-existing roads which farmers and ranchers use for property maintenance and agricultural operations.

Environmental Benefits

Renewable energy systems have far less impact on the environment than those systems that rely on fossil fuels and nuclear power. Reducing the environmental impact of energy use helps preserve Oregon's natural resources and enhance Oregonians' quality of life.

In addition to the obvious environmental benefits, such as improved air and water quality, we can reduce the health risks associated with pollution, minimize the impact of future federal mandates on air and water quality standards, bolster tourism and recreation, and grow Oregon's economy.

Oregon's renewable energy policy allows no backsliding on important siting standards. All new large-scale energy facilities in Oregon, including those using renewable resources, must meet siting standards that protect the public health and safety, and the environmental protection policies of the state.

4. . Goals and Initiatives

The Plan's goal is to encourage and accelerate the sustainable production of energy from renewable sources, stimulate economic development, particularly in rural parts of the state, and improve the environmental future of the state. The Plan intends to demonstrate a variety of technologies for tapping renewable resources, and to help remove barriers to renewable resource development.

⁴ According to a recent study released today by the Union of Concerned Scientists, a national renewable energy portfolio standard (RPS) of 20 percent by 2020 would save families and businesses \$49 billion in lower electricity and gas bills. More than 355,000 jobs would be created if the United States obtained 20 percent of its electricity from wind, solar and other renewable energy sources

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This section articulates both long term and short-term goals, followed by potential legislative initiatives, coordination initiatives by the Governor's Office and an estimate of the fiscal impact for the next biennium. Section 4 lists the actions that will benefit renewable energy development across sectors, and section 5 lists sector-specific action items.

Long Term Goals: 2007 - 2025

Electricity Generation

1. New - post 1999 - renewable generation will meet 10 percent of Oregon's total load by 2015, which is roughly about 1 percent growth in renewable generation per year. This will increase to or exceed 25 percent of the load by 2025.⁵
2. Twenty five percent of state government's total electricity needs will be met by new renewable energy sources by 2010 and 100 percent by 2025.⁶

Transportation Fuels

1. All diesel fuel sold in Oregon will contain 5 percent biodiesel (B-5) by 2010, growing to 20 percent (B-20) by 2025. All biodiesel will meet applicable ASTM (American Society for Testing and Minerals) standards.
2. All standard gasoline sold in Oregon will contain 10 percent ethanol by 2010.
3. Five percent of all gasoline sold in Oregon will be an E-85 blend of ethanol and gasoline (85 percent ethanol, 15 percent gasoline) by the year 2015, growing to 15 percent by 2025.
4. One hundred percent of the diesel used by state government's fleet vehicles will be B-20 by 2010.
5. Ten percent of the gasoline used by state government's fleet vehicles will be E-85 by 2010. This percentage will grow to 25 percent by 2025.

Short Term Goals, to be achieved by the end of 2006

Electricity Generation

1. Three hundred megawatts of new wind energy resources will be developed⁷, of which 10 percent will be from community or locally owned wind energy projects.
2. Find *and implement effective* solutions⁸ to the transmission capacity bottleneck(s) between eastern and western Oregon to provide access from renewable and other resources in eastern Oregon to load centers.⁹

⁵ Currently, hydro meets about 44% of load, wind and geothermal 1%, biomass and municipal solid waste 3%. These are pre-1999 resources except for some wind. Sites of new renewables do not have to be within Oregon's borders.

⁶ This goal is dependent on funding. See discussion under Purchase of Renewable Resources by State Gov't.

⁷ PGE's 2002 Integrated Resource Plan alone targets approximately 200 MW of wind resources by the end of 2006.

⁸ Non-wire solutions can be implemented in a relatively short time frame.

⁹ Delivery of renewable resource energy from locations in eastern Oregon to the Willamette Valley will also require additional north-to-south transmission capacity on BPA's grid.

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3. All utilities in Oregon will offer customers a “stable-price” renewable energy product.¹⁰
4. Five hundred additional solar photovoltaic electric systems will be installed in the years 2005 and 2006 for a total of about one megawatt.
5. Five megawatts of new biogas generation facilities will be obtained from wastewater treatment, dairies and landfills.
6. Twenty-five megawatts of new biomass-fueled electric generation will be built or under construction, in addition to the aforementioned 5 megawatts of biogas facilities.
7. Twenty-five megawatts of new combined heat and power generation systems that are at least 10% better than the State standard for siting exemption will be built or under construction.
8. Two hundred 5-kilowatt fuel cells will be installed.¹¹
9. Twenty megawatts or more geothermal electric generation will be in the process of being developed.
10. One to four megawatts of new environmentally sustainable hydroelectric generation will be on line or in the process of being developed (primarily irrigation piping channels).
11. An assessment of the feasibility of a renewable portfolio standard (RPS) for the state will be completed.

Transportation Fuels

1. Diesel sold in Oregon will contain 2 percent biodiesel (on average). All biodiesel will meet applicable ASTM standards.
2. Fifteen million gallons of biodiesel will be produced annually from Oregon crops or products and waste oils collected in Oregon.
3. Gasoline sold in Oregon will contain 2 percent ethanol (on average).
4. One hundred million gallons of ethanol will be produced annually.

State Government

1. Ten percent of state government’s total electricity needs will be met by renewable energy sources (through green tag or “stable price” product purchases and/or direct development of renewable energy by state government).¹²
2. Twenty-five percent of the diesel used by state government’s fleet vehicles will be B-20.
3. Seventy-five percent of the gasoline used by state government’s fleet vehicles will be E-10.
4. A streamlined one-stop leasing process for state lands to develop renewable energy resources will be in effect.

¹⁰ Currently, only one Oregon utility offers such an option.

¹¹ Some fuel cells will use renewable fuels but others will use fossil fuels to reach this goal.

¹² See discussion under Purchase of Renewable Resources by State Government

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Demonstration Projects

To highlight the benefits of renewable electricity generation and fuels, the following projects will be completed:

1. Five public or private energy-efficient buildings that make use of passive solar design features.
2. One biodiesel plant using mustard, other agricultural products or “waste” products.
3. One ethanol plant.
4. Projects that generate electricity either singularly or through any combination of the sun, wind, geothermal sources, irrigation district micro-hydro, biomass burning, on-farm dairy waste digesters, municipal anaerobic digesters, waste heat recovery systems and renewably fueled fuel cells.
5. Five sites that directly use geothermal energy.
6. One industrial park or renewable energy cluster that integrates renewable energy and sustainability related products or services.

Anticipated Legislative Initiatives in 2005

1. Make changes in the Small Energy Loan Program to allow more renewable energy projects to be financed.
2. Repeal the provision in state law that creates a conflict for renewable energy projects between the state Business Energy Tax Credit (BETC) and the federal production tax credit.
3. Revise the Residential Energy Tax Credits (RETC) for solar electric systems and fuel cells to be applied over several years (up to \$6,000 per system).
4. Revise the Residential Energy Tax Credit (RETC) 316.116 Statute to explicitly state that resident individuals can receive multiple tax credits in the same year for alternative energy devices, alternative fuel vehicles or alternative fuel devices.
5. Extend the 50 percent property tax exemption for ethanol production facilities until the close of the 2016 fiscal year and expand this exemption to biodiesel facilities and to grain storage and oil crushing facilities that are constructed to store harvested oil-seed crops or to extract the oil from such crops, if at least 75 percent of the crushed oil feedstock is used in the production of biodiesel that meets applicable ASTM standards.
6. Introduce a production-based tax credit for biodiesel and ethanol produced in Oregon to make Oregon-produced biofuel competitive with biofuel imports from the Midwest states. The tax credit would be phased-in and be subject to production caps per year per production facility. Phase 2 of the production credit, beginning in 2010, would maintain the rate and the cap levels of the credit but would require that the biofuel eligible for the tax credit be produced from feedstock grown or produced in Oregon.
7. Introduce a ban on MTBE¹³ in the state.

¹³ MTBE - methyl tertiary-butyl ether. It is one of a group of chemicals commonly known as "oxygenates" because they raise the oxygen content of gasoline. Oxygen helps gasoline burn more completely, reducing harmful tailpipe emissions from motor vehicles. The US Environmental Protection Agency's Office of Water has concluded that available data are not adequate to estimate potential health risks of MTBE at low exposure levels

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8. Allow biomass facilities to qualify for net metering and allow the Oregon Public Utility Commission to adopt rules to increase the 25-kilowatt limit on a net metering facility for customers of Portland General Electric and Pacific Power.
9. Authorize state agencies to develop renewable energy projects on state property where renewable energy resources, such as remote wind sites or geothermal, may not otherwise be developed by private organizations.
10. Allow state agencies to enter into long-term power purchase contracts for new, in-state, renewable electricity generation. Make budget provisions allowing agencies to pay equivalent to a regional market standard price for carbon dioxide (CO₂) emission reductions.
11. Establish funds to:¹⁴
 - Collect wind characteristics data at ten sites throughout the state, and make those data publicly available, to help community and locally-owned wind farm developments as well as large scale wind farm development and wind energy integration with the grid.
 - Collect information on the geochemistry of wells and springs, and make those data publicly available, to assist the geothermal industry, state and federal agencies and research institutions in geothermal resource target evaluation in Oregon.
 - Supplement the utilities' sponsorship of the University of Oregon's solar resource assessment work.
 - Perform feasibility studies of renewable projects.

Key Coordination Initiatives to be taken by the Governor's Office

1. Support a Renewable Energy Working Group to be coordinated through the Governor's Office and the Oregon Department of Energy to guide the **implementation** of this Plan.¹⁵
2. Coordinate this Plan with Western Governors' global warming and renewable energy efforts.
3. Play an active role in recognition of programs, projects (including the Governor's designation of specific demonstration projects as Oregon Solutions projects) or policies that help promote this Plan's objectives.

in drinking water but that the data support the conclusion that MTBE is a potential human carcinogen at high doses. Eleven states including California and Washington have banned its use as a fuel additive.

¹⁴ Additional funding support will be sought from a number of sources, including USDOE and USDOA Farm Bill grants.

¹⁵ This working group could delegate many of the action items to several smaller resource specific working groups like the Wind Working Group, but other implementation actions and policy considerations will require this higher level integrated approach.

Purchases of Renewable Energy Resources by State Government

The amount of renewable energy resources that state government purchases will depend on the funding level, source and which of the following three mechanisms the state uses to achieve these goals: green tags (or Tradable Renewable Certificates), bundled stable-price power purchases or investments in renewable resource projects. Direct investments in generating projects at state facilities, rather than simply buying green tags or Tradable Renewable Certificates, offer the potential of long-term bill savings for the state, added benefits from distributed generation, and higher value in terms of demonstration and state leadership. A number of state government sites are over 1 average megawatt (aMW) and would therefore qualify for direct access. This allows the state to select the type of renewable product it desires, while also gaining experience with direct access through the investor-owned utilities.

It would cost about \$200,000 per year to buy green tags for 10 percent of state government's electricity needs as proposed for the 2005-2007 biennium.¹⁶ Payments would go toward renewable resource projects in Oregon. A "stable-price" renewable resource product is an alternative that has the added benefit of fixing power costs over several years. However, only one Oregon utility offers such an option today. The state may want to enter a contract with an alternative electricity supplier for a term sufficient to acquire such a product, if available. Estimates of the costs of this option are not available at this time. Investments in renewable resources at state facilities could include solar electric systems on government buildings and wind turbines at government sites with favorable wind resources. The projects could meet load at the site, displacing the need for purchased power, or be sized to sell excess power to a utility or third party.

The Energy Trust could contribute toward these investments to the extent they benefit the PGE and Pacific Power customers (including state agencies) that provide the Trust's renewable resource funds.¹⁷ Investments would be tied to increasing generating capacity from renewable resources in the state and demonstrating on-site generation.

5. General Renewable Resource Actions

The following actions will be taken to enhance and expand support for development of *all* renewable resources in Oregon. Actions supporting expansion of specific renewable resources follow.

¹⁶ Assuming a cost of 0.5 cents/kWh for green tags.

¹⁷ The Trust's contributions to state government renewable purchases would reduce the Trust investments in other renewable projects, however.

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Actions:

1. The Governor's Office will:
 - Coordinate the legislative initiatives as outlined in section 3 of this Plan.
 - Support a **Renewable Energy Working Group** to oversee reaching the long and short term goals, and prepare regular progress reports to the Governor's Office and stakeholders. This group will consist of private sector citizens, renewable industry representatives, agricultural representatives, a governor's office representative, key state agencies, private and consumer-owned utilities, and others. The Oregon Department of Energy (ODOE) will provide staff support for this working group, coordinate the implementation of the action items outlined in this Plan and assist in the preparation of progress reports to the Governor's Office.

2. The Renewable Energy Working Group will consider to:
 - Set priorities on actions where Oregon has an advantage or need greater than other states, define the role of major stakeholders, and estimate the budget impact and other funds needed.
 - Assist in reaching the long and short-term goals of this Plan and coordinate the implementation of the action items outlined in this Plan.¹⁸
 - Work with the Oregon's congressional delegation to support a national renewable portfolio standard, as well as support a federal cap on CO₂ emissions or caps on the CO₂ emissions per kWh of load-serving entities (emissions portfolio standards).
 - Work with the Oregon's congressional delegation to make sure that the federal Production Tax Credit and the Renewable Energy Production Incentive are maintained.
 - Assess the feasibility and effectiveness of production-based incentives for electricity generated by small to medium scale renewable resource facilities.¹⁹
 - Assess the feasibility of a state Renewable Portfolio Standard and compare it with production-based incentives as to its effectiveness to encourage renewable energy development.
 - Work with the state's consumer and privately owned utilities, the Northwest Power and Conservation Council and Bonneville Power Administration (BPA) to develop a process and protocols for expediting interconnection requests and developing more distributed generation.
 - Work with Oregon's congressional delegation, BPA and consumer owned utilities to expand BPA's Conservation and Renewables Discount Program.

¹⁸ This Renewable Energy Working group will refine this plan and further delineate the participants not just by departments but by functions as well (a Wind Working Group, Biomass Working Group, Solar Working Group, Geothermal, etc.).

¹⁹ Production based incentives have been very successful in the Midwest and Europe. For examples of community wind projects in the Midwest, see <http://www.windustry.com/community/default.htm#Projects>. For discussion of the European incentives sometimes called "feed laws" or "minimum renewable energy tariffs or rates", see http://www.energy.state.or.us/renew/Wind/WindPubs/feed_laws_Hvelplund.pdf.

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- Work with BPA and consumer owned utilities to promote PURPA's²⁰ Qualifying Facilities using renewable resources, while avoiding financial harm to the utilities such as a reduction in a utility's "net requirements" (loss of a portion of a utility's long term allocation).
- Support research and demonstration projects that modernize the electric system by combining advanced telecommunications, information and control methods with the electricity infrastructure for more efficient (economically and environmentally) "smart" grid operation.
- Explore whether transmission constraints for community owned renewable energy projects could be overcome if: (1) a new or upgraded, privately owned transmission project were to be slightly increased in size, and (2) that this increase would be reserved for such community owned projects in exchange for a reduction in property taxes equal to the incremental costs for the transmission owner.
- Identify growing Oregon renewable energy businesses and assist them with expansion planning and workforce development.
- Help improve coordination and provide tools to attract new renewable energy businesses to build facilities in Oregon.
- Focus efforts to solidify the strength of a Brand Oregon renewable energy market for our technology services and commodities.
- Help develop a framework for valuation of environmental and other externalities.

3. The Oregon Department of Energy (ODOE) will:

- Include in its Biennial Energy Plan a section that tracks the progress towards this Plan's goals.
- Provide staff support for the Renewable Energy Working Group.
- Continue to assist households, businesses, units of local government and others to invest in renewable energy resources through the state's energy tax credit and energy loan programs, in coordination with incentives offered by the Energy Trust and BPA.
- Continue to support the state Energy Facility Siting Council's need to review an increasing number of applications for renewable resource power plants.
- Manage the fund to finance feasibility studies of renewable projects, if such a fund is established.
- Provide information on model siting standards and technical assistance to local governments, together with input from other stakeholders throughout the state, to help them plan for siting renewable resource facilities.
- Work with the Oregon Department of Fish and Wildlife and the Department of Environmental Quality to acknowledge the clear environmental benefits of renewable energy (over fossil fuel alternatives) in siting renewable energy projects.

²⁰ PURPA: Public Utilities Regulatory Policies Act of 1978. Before PURPA, only utilities could own and operate electric generating plants. PURPA required utilities to buy power from independent companies that could produce power for less than what it would have cost for the utility to generate the power, called the "avoided cost".

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- Work with the Oregon Public Utility Commission and the Building Codes Division to identify and adopt uniform technical standards, procedures and agreements for interconnecting generators, where the Federal Energy Regulatory Commission does not have jurisdiction.
4. The Oregon Economic and Community Development Department will:
- Help develop a viable renewable energy industry “cluster” by working with key stakeholders in government, business, non-governmental organizations, higher education, and local communities.
 - Create financial incentives, support regulatory streamlining, provide technical assistance, and publicly recognize businesses and communities that implement energy conservation programs, purchase renewable energy, and adopt best practices.
 - Support research and education to further development of new technologies that leverage renewable energy sources.
 - Grow Oregon’s economy by obtaining funds for the development of and facilitating the transfer of new technologies from Oregon’s University System and Research and Development centers to private enterprise.
 - Encourage and support infrastructure projects that incorporate eco-friendly design and innovative technologies that use renewable energy resources and enhance livability.
5. The Department of Administrative Services will:
- Report on the state’s purchases of renewable energy resources on an annual basis.
6. The Oregon Public Utility Commission has investigations underway or may examine for the *investor-owned* utilities the following:
- Standards to streamline the interconnection of small generators.²¹
 - Increasing the size of qualifying facilities eligible for standard purchase rates, a standard power purchase agreement with an extended contract length, and a standard method for determining avoided costs.
 - How distributed renewable and combined heat and power resources can help meet energy, capacity, distribution and transmission system needs at the lowest cost.
 - Backup service for renewable resources and other distributed generators to ensure that costs and benefits are properly reflected in rates and terms.
 - Ways to remove utilities’ disincentives for accommodating independently owned renewable resources and combined heat and power resources.
 - Standard rates and terms for retail customers to use the distribution system to sell power to other customers and marketers.

²¹ Generally less than 20 MW.

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In addition, the Oregon Public Utility Commission will continue to work with its Portfolio Options Committee, the utilities and third-party providers to improve green power options for Oregonians and increase participation.

7. The Oregon Department of Agriculture will:
 - Assist, jointly with ODOE, in planning and conducting workshops and other educational activities to inform agricultural producers about renewable energy information, technologies, resources, and programs.
 - Assist, jointly with ODOE, agricultural producers in evaluating project feasibility and eligibility for federal energy grants, ODOE tax credits, and other resources for renewable energy projects. Assist growers in applying for these resources as appropriate to the project.
8. The Oregon Department of State Lands will:
 - In close cooperation with agencies such as Fish and Wildlife, Parks, Agriculture, Forestry, Land Conservation and Development, review administrative rules that guide the leasing of state-owned lands to determine whether a one-stop leasing process can be developed for the siting of renewable energy.
 - Consider the importance of renewable energy resources when revising its Asset Management Plan.
9. The Oregon Department of Consumer and Business Services' Building Codes Division will:
 - Provide education and training materials to local governments regarding renewable energy installations.
 - Update its code and standards to reflect the new technologies and developments in renewable energy installations.
10. The Oregon University System and Community Colleges will consider to:
 - Inventory all of the renewable resource and energy efficiency research, development and curricula.
 - Further develop higher education renewable resource research and development capabilities to help Oregon businesses gain a national and international leadership role in this market.
 - Establish and/or maintain educational standards that will produce future leaders in renewable resource systems integration and resource technologies.
 - Actively participate in renewable energy policy development and implementation.
11. The Oregon Solutions team will:
 - Designate renewable resource projects as priority demonstrations.
 - Provide developers with expedited access to state incentives and resources.
 - Facilitate streamlining through the Community Governance System.

6. Resource Specific Actions

Each resource segment, listed in alphabetical order below, briefly identifies the resource and technologies currently being used and lists the main perceived barriers. Actions are listed next.

Biofuels – Biodiesel and Biolubricants

Canola, rape seed, mustard, possibly soy and other crops, along with waste grease from the food service or processing industry, can be refined into oils that can be used as lubricants or converted to biodiesel fuel suitable for use in diesel engines. Many of these feedstocks can be grown in Oregon. Biodiesel can be blended in various ways, but generally comes in B-20 (20 percent biodiesel, 80 percent petroleum diesel) or B-100 (100 percent biodiesel) forms. Currently, suppliers are rapidly developing an Oregon customer base of public and commercial fleets.

The Oregon Department of Administrative Services began buying B-20 exclusively, which amounts to about 200,000 gallons per year. The total amount of B-20 used in 2003 in Oregon was about 700,000 gallons.

There is no market-pull mechanism in place with mandated goals to support a biodiesel production industry in Oregon. There is currently a lack of feedstock. A crushing plant is needed in Oregon to separate oils from crop feedstock. Consumer awareness is low for both biodiesel and biolubricants. Better incentives are needed to facilitate market penetration.

Probably the most important element of an Oregon Biodiesel Strategy - and the most complicated to implement - is the development of a local supply of inexpensive (e.g. mustard seed) feedstock. The key is identification of an oilseed that produces a high value meal product and a generous supply of low-value oil.

Actions:

1. The Renewable Energy Working Group will consider to:
 - Help form partnerships with growers, state agencies and interested investors for building a crushing plant to separate oils from crop feedstock.
 - Assist in the completion of a demonstration project where oil seed crops are grown as a healthy rotational crop, are crushed and refined on-site, and produce all of the farm's fuel.
 - Develop a program to support school districts that use B-20 biodiesel fuel in their entire school bus fleet. The program will include public information on the public health benefits of clean-burning, renewable biodiesel fuel.
 - Support work that focuses on the identification of an oilseed that produces a high value meal product and a generous supply of low-value oil.

2. The Oregon Department Agriculture will:
 - Work with Oregon State University to evaluate and disseminate information on production of bio-fuel crops for conversion to biodiesel and biolubricants.
 - Assist growers assess the feasibility of grower-owned processing facilities, and work with parties interested in biodiesel production on business plan evaluation, plant development and siting, and identifying potential funding sources (in coordination with the Oregon Economic and Community Development Department (OECDD), ODOE, and local communities).
 - Work with OECDD, ODOE and other appropriate entities to identify methods of branding and pump labeling for Oregon produced biodiesel to encourage consumer consumption of locally produced product.

3. The Oregon Department of Energy will:
 - Work with the BPA to evaluate the potential of using biodiesel in electric generators for rural/remote areas where transmission is a problem during peak hours.

4. The Department of Administrative Services will:
 - Manage its fleet fuel use so that it will meet the short and long-term goals for the use of biodiesel.

Biofuels - Ethanol

Ethanol is a renewable fuel currently distilled primarily from corn. In the future, ethanol will be produced from lignocellulosic feedstocks such as wood waste and agricultural residue, which are abundant in Oregon. Throughout North America, ethanol is used as a gasoline additive for a wide variety of purposes, including the reduction of exhaust pollutants that become precursors to ground level ozone. The ethanol content in gasoline can be as high as 15 percent without the need to modify standard engines. Slight modifications to a vehicle's fuel system have to be made to run on E-85 (85 percent ethanol). In Oregon, ethanol is the predominant oxygenate in the gasoline supply. In 2002, up to 60 million gallons of ethanol were used to oxygenate the 1.6 billion gallons of gasoline used by Oregonians. That ethanol, which accounts for up to 4 percent of Oregon's gasoline supply, was produced in the Midwest.

The summer nighttime temperatures in Oregon are not ideal for growing the high sugar corn or hard red wheat preferred by ethanol distillers. There are currently no distillers or refiners located in Oregon. Other Oregon biomass feedstocks such as barley or cellulosic wastes (grass straw or wheat stubble) can be used to make ethanol, but at higher cost.

There is no market-pull mechanism in place with mandated goals to increase the use of ethanol. Consumer awareness is low. Better incentives are needed to make ethanol plants using Oregon grown crops economically viable.

Oregon Renewable Energy Action Plan

Actions:

1. The Renewable Energy Working Group will consider to:
 - Support Oregon university system's research on alcohol fuels produced from cellulosic materials.
 - Continue and enhance efforts to work with the national Governor's Ethanol Coalition.
 - Support policies and actions to promote government and private purchases of hybrid vehicles fueled with E-85.
2. The Oregon Department of Energy will:
 - Continue and enhance efforts to work with the national Governor's Ethanol Coalition.
3. The Department of Agriculture will:
 - Assist growers and cooperatives, in coordination with Oregon State University research and extension programs and agricultural organizations, in the development of biofuel crops for ethanol production, including varietal development, growing and harvesting practices, development of business plans, facilities for processing, siting, market development and promotion.
4. The Department of Forestry will:
 - Assist, jointly with ODOE, the forest products industry to get federal funds for biomass-to-ethanol development through demonstration of cellulose-to-glucose conversion.
5. The Department of Administrative Services will:
 - Make sure that its fleet fuel use will meet the short and long-term goals for the use of ethanol.

Biogas

Biogas facilities produce electricity and heat or steam from waste gas (methane) from landfills, sewage treatment plants and manure. Currently, three landfills tap waste methane gas to generate four megawatts of electricity and provide industrial fuel. In addition, 29 wastewater treatment plants use methane to generate three megawatts of electricity and provide heat for sewage treatment. Electricity is beginning to be generated using manure from dairy cows. For farmers, biogas is mostly a byproduct and other benefits are often the main reason for these projects.

Only the largest cities can afford landfill and waste treatment facility biogas projects. Lack of funding for feasibility studies and lack of fact sheets for best design practices for methane recovery systems have been identified as barriers.

Actions:

1. The Oregon Department of Energy will:
 - Identify the major remaining landfill and waste treatment facility sources of biogas and provide up-to-date “best practices” information to the owners of promising sites.²²
 - Support efforts to reach the short-term goal of 5 MW of new biogas-fueled electricity production demonstration projects.

2. The Oregon Department of Agriculture will:
 - Assist livestock operations in assessing best design practices for methane recovery and related technologies.
 - Promote the development of methane production digesters - as economically feasible for producers - through industry association events, OSU Agricultural Extension Service and local economic development.
 - Support efforts to reach the short-term goal of 5 MW of biogas-fueled electricity production demonstration projects.

Biomass

Currently, there are biomass combustion boilers at more than fifty industrial sites in Oregon. These boilers supply heat and energy for industrial processes. The power generated at these facilities was about 108 megawatts in 2001.

New biomass energy markets may provide a way of disposing of otherwise problematic forest biomass residues from timber harvests, stand improvement activities, fuels treatments, and thinning in a cost-effective manner. Agricultural and urban biomass wastes (extracted from municipal solid wastes) can also be utilized as fuel for energy facilities.

The lack of certainty in biomass outputs and the high cost of gathering and transporting forest and other biomass to an energy conversion facility continue to be barriers to economic biomass energy development. However, investments in forest and other biomass conversion to energy will lead to multiple environmental, economic, and social benefits. These include:

- reduced wildfire risks to communities and wildfire suppression costs to taxpayers
- increased timber supplies
- improved forest health, water quality, wildlife habitat, and recreation areas
- reduced air pollution from wildfire and prescribed forest burning smoke
- extended landfill life with recovery of biomass
- reduced and avoided carbon dioxide emissions, and
- maintenance of family-wage jobs and a forest industry infrastructure in rural Oregon.

²² In cooperation with the U.S. EPA's Landfill Methane Outreach Program (LMOP). This is a voluntary assistance and partnership program that promotes the use of landfill gas as a renewable, green energy source.

These benefits are not properly accounted for in the energy market place.

Although electric power is the most widely used end product from biomass, integrated bio-refineries offer another opportunity. These refineries can produce liquid fuels, high-value chemicals and materials, and electric power within the same facility. With proper encouragement, integrated facilities could gasify rather than combust their feed stocks and use the synthetic gas to offset the use of natural gas for power production, while also converting that same synthetic gas to liquid fuels and/or chemicals. Such facilities could also benefit the fuel cell industry, because fuel cells are a viable consumer of these fuels.

Biomass facilities may need a production-based tax credit in addition to the fuel cost reduction incentives to be economically viable. Such combined incentives would be a reflection of the full realm of societal benefits as outlined above.

Actions:

1. The Renewable Energy Working Group will consider to:
 - Help determine whether financial support (such as a per ton transportation incentive) for forest treatment projects is needed to move biomass feedstock from the forest to renewable energy plant sites. Particular attention should be paid to 1) existing facilities for which utility contracts expire, and 2) how the cost of such projects can be spread out over a larger geographic area than the local utility's service territory.
 - Help the formation of partnerships between private companies and consumer owned utilities to develop energy systems for local communities.
 - Support efforts to develop integrated bio-refineries that produce liquid fuels, high-value chemicals and materials, and electric power within the same facility.
 - Encourage the development and utilization of small energy efficient biomass heating and electrical systems for heating and providing power to institutions, state offices, schools, etc., especially in rural Oregon.
 - Help identify and address barriers to securing stable, long-term biomass supplies from federal forestlands.
 - Promote greater public awareness of the primary and secondary benefits of biomass energy production.
 - Support efforts to develop Material Recovery Facilities (MRF) to remove the biomass from municipal solid waste and convert the biomass into fuel.
 - Investigate the feasibility and desirability of a biomass Emission Reduction Credit (ERC) initiative to encourage development of a private market for trading of Biomass ERCs.

2. The Oregon Department of Energy (ODOE) will:
 - Reach out, jointly with the Oregon Department of Forestry (ODF), to local governments and biomass energy developers and assist them in locating potential facility site locations.

3. The Oregon Department of Forestry will:
 - Expand its ongoing, statewide Forest Assessment Project to include a comprehensive assessment of forest biomass supply and demand relationships.
 - Identify federal, state, and private forestlands where proximity and non-timber biomass production potential provide long-term opportunities for biomass recovery for energy generation.
 - Cooperate with biomass energy developers in locating potential facility site locations on Board of Forestry forestlands and, consistent with other management plans for these lands, work to develop expedited leasing processes for such sites.
 - Assist in the development of long-term forest health restoration contracting mechanisms with the USDA Forest Service and USDI Bureau of Land Management to assure affordable and predictable access to forest biomass on federal forestlands in regions surrounding biomass generation sites.
 - Assess, in cooperation with federal agencies, the sustainable level of biomass generation necessary to maintain healthy forests.
 - Promote congressionally approved pilot projects in Oregon where local communities with mature, successful histories of collaboration are empowered to demonstrate their stewardship of federal forestlands.
 - Promote active fuels and vegetation management, along with aggressive fire suppression on public and private forestlands, as key tools to produce biomass for energy generation and to manage forest health.
 - Promote alternatives to prescribed burning through the administration of the Department of Forestry Smoke Management Plan.
 - Monitor, jointly with ODOE, available federal funds for biomass projects and provide this information to stakeholders. Where needed, they will provide assistance with the application process for federal funds.
 - Work with federal agencies to promote forest biomass energy opportunities through administration of the National Fire Plan, the Healthy Forests Restoration Act and the Tribal Forest Protection Act.
 - Facilitate the use of the federal Environmental Quality Incentive Program to provide matching funds for forest fuel reduction projects that will provide feedstock for biomass energy plants.
 - Investigate the benefits of reduced and avoided carbon dioxide emissions from forest fuel reduction projects in conjunction with biomass energy generation.

4. The Oregon Economic and Community Development Department will:
 - Develop, jointly with the ODF, a comprehensive forest sector economic development strategy for Oregon that will encourage continued investment in

forestlands by public and private landowners and that promotes biomass energy production along with timber and non-timber forest products.

- Work with biomass developers to identify siting opportunities especially on sites of retired or abandoned wood processing facilities in rural communities.

5. The Department of State Lands will:

- Cooperate with biomass energy developers in locating potential facility site locations on state lands where it can be accommodating taking into account the Department's Trust obligations and current lease commitments.

6. The Oregon University System and Community Colleges will consider to:

- Research and identify Oregon's potential for bio-refinery industry. Identify opportunities where bio-refineries can produce liquid fuels, high-value chemicals and materials, and electric power within the same facility.

Combined Heat and Power Systems

The combined heat and power (CHP or cogeneration) form of distributed generation is about twice as energy efficient, and produces fewer pollutants than producing heat and power separately.²³ These systems capture the waste heat produced during generation for industrial processes or for heating and cooling. Although CHP systems typically use fossil fuels, they can also use renewable energy resources, which include wood residues hogged fuel, spent pulping liquor, food processing/agriculture anaerobic digester gases and waste byproducts, wastewater gas and other manufacturing byproducts. Due to these benefits, three states²⁴ have legally recognized waste heat recovery, regardless of primary fuel source, as a renewable resource eligible to satisfy renewable portfolio standards.

CHP sited at strategic locations also has the ability to provide reliability and power quality benefits through reduced strain and congestion of the transmission system, as well as through voltage support at the 'end of the line' in a transmission or distribution system.

Recovering waste heat does not require any burning of additional fuels. Some of the benefits of this technology are:

- Minimal environmental impact, as they are located on existing industrial sites.
- Low operating and maintenance requirements.
- Base load generation.

²³ Traditional power plants waste up to two-thirds of the fuel's energy value before it reaches customers, most of it waste heat. However, new power plants are nearly 50% efficient.

²⁴ Nevada, North Dakota and South Dakota.

The current CHP resource in Oregon consists of 41 projects in Oregon with 818 megawatts of electric generation capacity.²⁵ Natural gas turbines comprise 15 of these CHP projects for 540 megawatts of capacity. The other 26 projects account for 278 megawatts and use renewable resource fuels such as wood residue (hogged fuel), spent pulping liquor²⁶ and wastewater gas. It is estimated that there is very cost-effective potential for upwards of 1,000 megawatts of new CHP resource in Oregon.

Actions:

1. The Renewable Energy Working Group will consider to:
 - Work with state agencies and others to give waste heat the same status as renewable energy in state legislation, rules and miscellaneous programs or projects that benefit renewable energy resources.

Fuel Cells

Fuel cell technology can play an important role in Oregon's renewable energy future. Fuel cell fuel reformers are able to combine water with renewable fuels including bio-methanol, biodiesel, biogas and ethanol to produce hydrogen. The renewable hydrogen can then be used in a fuel cell stack where it is converted to electricity, or the hydrogen can be used directly in commercial or industrial applications.

Oregon commercial and industrial sectors use approximately 30 million cubic feet of hydrogen per year. All hydrogen is imported since there are no commercial hydrogen generation plants in Oregon. If hydrogen used in Oregon were generated in Oregon using renewable resources, new jobs could be created.

In the short run, most fuel cells are expected to use non-renewable fuels. However, a goal of this Plan is to foster increasing use of renewable fuels as technologies become feasible.

Actions

1. The Renewable Energy Working Group will consider to:
 - Support Oregon companies in attracting funding from regionally targeted federal fuel cell and hydrogen generation programs including regional US Department of Energy and US Environmental Protection Agency (EPA) programs.
 - Encourage the Oregon University System to explore fuel cell technology and to establish a fuel cell technology center.

²⁵ Those systems range in size from 30 kilowatts at a commercial office to over 100 megawatts at a pulp and paper plant. In almost every case, the systems operate to generate electricity and thermal energy primarily for onsite use. Only a few of the largest facilities sell electricity on the market. Not all of them operate at all times.

²⁶ In chemical pulping the lignin in the wood is dissolved in a digester where the wood chips are cooked. The fibres are separated from the spent pulping liquor (so-called black liquor). The black liquor is first concentrated, and subsequently incinerated in so-called recovery boilers.

- Support a revision of the federal tax credit language for renewable fuels to include off-road and stationary uses instead of exclusively supporting transportation applications.
- Support and highlight one or more demonstration projects that generate electricity using Oregon-made fuels with energy technologies engineered and manufactured in Oregon.

2. The Oregon Department of Energy will:

- Modify its Web site and publications to identify more clearly how a fuel cell owner can apply for tax credits and to describe how the owner is using those tax credits.

Geothermal

Most areas of high heat flow are in the Cascades, central Oregon, southeast Oregon and parts of northeast Oregon. These are the locations where geothermal resources are most likely to be found. Geothermal resources include high-temperature (100 degrees C and above) for electricity generation, intermediate temperature (100 – 50 degrees C) for industrial, agricultural and municipal applications and low-temperature heat pump applications. The Oregon Department of Geology and Mineral Industries (DOGAMI) has geothermal resource maps available to the public showing both regional and site-specific information.

Currently, about 1,800 ground-source heat pumps provide space and water heating for Oregon homes. The City of Klamath Falls uses geothermal energy for a district heating system, which represents only a small portion of the direct geothermal use in the area. Geothermal sources elsewhere in Oregon supply heat for buildings, swimming pools, resorts and industrial uses. All of these applications fall into the “direct use” category.

Geothermal electric generation could provide important renewable *base load* generation. Furthermore, geothermal electricity production on federal lands requires that a resource production royalty be paid to the federal government. In Oregon, half of the royalty payment would be paid to the state, and the state is obligated to pass at least 50 percent onto the county where the electricity was produced.

Since 1975, geothermal exploration and development in Oregon has been facilitated by a successful collaboration between state and federal agencies (DOGAMI, Bureau of Land Management and the US Forest Service). Memoranda of Understanding have been useful tools and these agencies anticipate continuing this association in the future. Numerous projects - heat flow and exploratory drill holes throughout the state and the Newberry Project in central Oregon- have obtained useful results.

Geothermal experts at the state and federal level and in private industry continue to consider the area on the flanks of Newberry Volcano, outside the Newberry National Volcanic Monument, to be one of the best prospects for high-temperature geothermal electricity production in the Pacific Northwest. To date, limited exploration drilling has measured temperatures up to 315 degrees C (600 degrees F).

Oregon Renewable Energy Action Plan

The main barrier for development of geothermal electricity generation in Oregon is its above-market cost. Financial incentives similar to those for wind (about 1.5 to 2 cents per kWh) were not available for geothermal until the extension of the federal production tax credit took place in October 2004. When power sales contracts are anticipated or awarded, the geothermal industry will likely respond with building a 20 MW or larger demonstration plant. Furthermore, an important round of exploration and assessment in Oregon will likely be undertaken.

Actions to promote direct use:

1. The Oregon Department of Energy will:
 - Work with the GeoHeat Center in Klamath Falls and others to help establish training for heating, ventilation and air-conditioning (HVAC) contractors on the benefits of earth-coupled heat pumps and help develop a statewide promotion strategy.
 - Work with the GeoHeat Center and others to highlight demonstrations of homes, businesses and public buildings such as schools and correctional facilities using direct geothermal energy in the community.
2. The Oregon Department of Geology and Mineral Industries, in cooperation with the Departments of Energy, Forestry, and State Lands, will:
 - Work with the GeoHeat Center and others to provide copies of existing maps detailing the geothermal resource potential of Oregon and incorporate additional information into the data base as new information becomes available.
 - Periodically publish updated geothermal resource maps of Oregon as additional data availability and demand require.
3. The Oregon Department of Agriculture will:
 - Collaborate with ODOE and agricultural producers in identifying new and expanded uses for geothermal application in agricultural operations, and expand implementation through education, pilot projects, and existing incentive programs.

Actions to promote generation of electricity:

1. The Renewable Energy Working Group will consider to:
 - Work with the federal government and others to provide a forgivable loan or grant program for drilling exploratory holes.
 - Work with the Energy Trust, the utilities, BPA and others to expedite a Power Purchase Agreement with added incentives based on above-market costs for a 20 MW or larger demonstration project.

Oregon Renewable Energy Action Plan

- Review the royalty and tax implications of geothermal production facilities and explore funding means to help promote geothermal development.²⁷
 - Help develop a partnership plan between state and federal agencies for further development of projects on federal land or involving federal leases.
2. The Oregon Department of Geology and Mineral Industries will:
 - Sample and analyze waters from wells and springs throughout the state to develop a statewide data base useful to the geothermal industry, to state and federal agencies and research institutions as a valuable component in geothermal resource target evaluation in Oregon, provided funding can be obtained.²⁸
 3. The Oregon Department of Energy will:
 - Continue the collaboration with the Pacific Northwest Section of the Geothermal Resources Council regarding geothermal resources within Oregon.
 - Coordinate the Oregon Geothermal Working Group, which is part of USDOE's "Geo-Powering the West" program.
 4. The Oregon Department of State Lands will:
 - Review and, if necessary, revise its administrative rules governing the exploration for and leasing of geothermal resources to ensure that they are easily understood and usable by persons wanting to conduct these activities on lands administered by the agency.

Hydroelectric Generation

Currently, hydropower meets about 44 percent of Oregon's electricity demands. In comparison, "new" hydro would be a small player in any likely renewable-generation growth scenario. It focuses primarily on the potential to develop micro-hydro (or "seasonal" hydro) in association with numerous irrigation piping canals. Run-of-the-river technology could also make a contribution throughout many areas of rural Oregon. There are often minimal environmental consequences of adding hydroelectric facilities on existing dams and reservoirs, as the majority of the environmental implications are already in place at the time of original dam construction. Several projects, generally ranging from under 1 MW to 12 MW, are currently in the planning and permitting stages on reservoir facilities throughout the state. Oregon has significant experience designing, financing, installing and operating these optimized water use systems.

²⁷ Geothermal electricity production on federal land requires that a royalty be paid. In Oregon, half of the royalty payment would be paid to the state, and the state is obligated to pass at least 50% onto the county where the electricity was produced.

²⁸ This has been done in Nevada with positive results. Funding support will be sought from a number of sources, including the state and US DOE grants

Actions:

1. The Renewable Energy Working Group will consider to:
 - Work with state agencies and interested stakeholders to explore the feasibility of multi-purpose upstream small storage facilities for use in micro-hydro projects in the context of ORS 536.238's "environmentally and financially feasible storage."
 - Seek funding to defray costs of water rights permitting for micro-hydro projects.
 - Identify and support generation efficiency improvements, such as those performed by the utilities, as hydro facilities come up for Federal Energy Regulatory Commission re-licensing and State of Oregon reauthorization. Support maximum generation efficiency for new projects in Oregon, while safeguarding the environment.
 - Continue to support the state's policy of re-authorizing hydroelectric projects and the development of new hydroelectric facilities on existing dams and reservoirs that are found to be in the public interest if they balance the region's generation needs with the enhancement or maintenance of the natural resources of the state.
 - Assist irrigation and water service districts as they identify sites in Oregon where untapped micro-hydro could be developed using irrigation piping channels.
 - Help develop irrigation canal systems that use pipes to reduce evaporation and percolation losses, concentrate water pressure which reduces irrigation pumping energy use, and provides sites for hydroelectric generation.
 - Help complete an environmentally enhancing hydroelectric demonstration project case study that involves multi-agency analysis and collaboration.

2. The Oregon Water Resources Department (OWRD) will:
 - Work with state agencies and interested stakeholders to develop recommendations to streamline rules and application procedures for micro-hydro projects. This will include an examination of the very small micro-hydro systems for net metering and off-grid personal use.
 - Continue to develop and enhance the coordination of micro-hydro projects consistent with state policies.
 - Identify micro-hydro resources and make them available to the public on OWRD's Web site.
 - Prepare and disseminate a "Guide to Micro-Hydro Permitting in Oregon."

3. The Oregon Department of State Lands will:
 - Revise its administrative rules governing the authorization of hydroelectric projects on state-owned waterways. The goals of this review will be to develop administrative rules that are easily understood and usable by people who currently have, or want to place such facilities on state-owned waterways. At the same time, ensure that the Common School Fund receives an appropriate amount of revenue from the use of these lands in this manner.

Ocean Energy

Generation of electricity through conversion of ocean current, swell, wave action, tidal, or thermal gradients is being successfully demonstrated. Most promising applications are offshore use of the consistent rise and fall of swells along deep-water shorelines where there is significant year-round wave action. Wave power densities in Oregon are estimated to be capable of producing between 5 and 15 megawatts per mile of coastline.

The technology is available now to construct a sizeable wave farm. Economics are likely to be in the \$3,000/kW range for smaller than 10 MW offshore systems, falling to around \$1,000/kW for a 200 MW system. Power price is in the range of 10 cents/kWh for small systems, falling to a projected 3-5 cents /kWh for the larger systems. This lower number would be competitive with current base load generation.

Currently the United Kingdom has a vibrant program of wave, ocean, and marine/tidal technologies being supported through government support. The Electric Power Research Institute (EPRI) recently began studies to build six demonstration projects in six states, including Oregon and Washington. EPRI wants to build a 500 kW demonstration project off the Oregon coast within a 2-4 year time horizon.²⁹

Actions:

1. The Renewable Energy Working Group will consider to:
 - Encourage the ongoing ocean energy research at Oregon State University to include technology cost reduction, improvement in efficiency and reliability, identification of sites, interconnection with the utility grid, and study of the impacts of the technology on marine life and the shoreline.
 - Coordinate efforts to attract one of EPRI's 500 kW demonstration projects to the Oregon coast by 2006.

Solar

Solar energy is a large untapped natural resource. Solar energy is available throughout Oregon creating job opportunities in virtually every district. Oregon's solar resources are significant with two-thirds of Oregon receiving as much or more than Florida. Solar energy can provide space heating, hot water and electricity. Solar electricity will primarily be produced with photovoltaic cells for distributed systems. For central facilities in the 100 MW range, solar thermal electric facilities may be the preferred option. Designing buildings to make the most of sunlight for lighting also can reduce energy needs. South-facing windows with overhangs to prevent overheating in summer and heat storage materials add little to the cost of a new building. Solar water heating can supply about half of the hot water for a typical Oregon home. Currently, residents have installed more than 17,000 solar water heating systems in the last 20 years. There are more than 250 solar electric systems in the state.

²⁹ At the end of 4 years, the pilot project will have generated enough data to begin determining commercial feasibility.

Oregon Renewable Energy Action Plan

Actions

1. The Oregon Economic and Community Development Department, with assistance from ODOE, will:
 - Stimulate the development of an Oregon inverter-manufacturing sector.
 - Work to attract a photovoltaic manufacturer with existing financing and tax incentives.
2. The Oregon Department of Energy (ODOE) will:
 - Demonstrate high performance energy homes that use advanced design to reduce energy demand, passive solar for space heating, active solar water heating and photovoltaic systems to produce as much or more electric energy than the home uses on an annual basis.
 - Continue to make sure that solar water heating, solar electric systems, and passive design features are considered in all new public buildings. Including simple things like orientation and making the building roof suitable for photovoltaic panels will reduce costs of installation when panel prices decline enough and electrical prices climb (i.e. plan for the future).
3. The Oregon Department of Agriculture will:
 - Collaborate with ODOE and agricultural producers in identifying new and expanded uses for solar application in agricultural operations, and expand implementation through education, pilot projects, and existing incentive programs.

Wind

Large wind farms are currently operating in Oregon with a total capacity of 259 MW, the largest of which is Stateline with 120 MW. Several of these existing wind farms are planning expansions and new plants are in the planning phase as well. Utilities have incorporated wind energy in their resource plans. The feasibility of smaller wind farms (of up to about 10 MW) owned by local communities and landowners is being investigated at several locations. Net metering is available for systems of 25 kW and smaller.

Transmission capacity between eastern and western Oregon is the main to further large-scale development of wind. Currently, all wind farms need a production based tax credit (or similar financial incentive), but this may not be needed in the future given the price trend of natural gas and the efficiency of larger turbines. Smaller project economics are more challenging due to the higher cost of installing small numbers of utility-scale wind turbines. Transmission issues are often barriers for this kind of developments as well. The lack of long-term wind speed data from different parts of the region (other than the eastern Columbia River area) impairs the marketability and development of wind.³⁰

³⁰ Data are needed by utilities to lower their risk, by network operators to solve their integration problems, and by developers who will go where the good long term data sites are and who need long term data for financing. Regional energy costs can be lowered by the availability of an extensive database.

Oregon Renewable Energy Action Plan

Actions:

1. The Renewable Energy Working Group will consider to:
 - Work with BPA to use the federal hydropower system and BPA's new wind integration services to reduce the cost of energy to customers.
 - Help develop a project to collect wind characteristics data at ten sites throughout the state, and make them publicly available, to help community and locally owned wind farm developments as well as large-scale wind farm development and wind energy integration with the grid, if funds become available. Oregon State University would manage such a program.
 - Work with BPA and others to expand the anemometer loan program that is currently offered by the Energy Trust.

2. The Oregon Department of Energy will:
 - Continue to coordinate technical and financial assistance for community and farmer-owned wind farm demonstration projects.
 - Continue to coordinate the Oregon Wind Working Group, as part of the US Department of Energy's Wind Powering America Program with the primary focus to promote small-sized wind farms to agricultural communities.

3. The Oregon Department of Forestry will:
 - Cooperate with wind energy developers and community leaders in locating potential facility site locations on Board of Forestry forestlands and state lands.
 - Work to develop expedited leasing processes for such sites, consistent with other management plans for these lands.

4. The Oregon Department of State Lands will:
 - Continue to look for opportunities on state lands administered by the agency for the placement of wind farms. Additionally, the agency will cooperate with wind energy developers and community leaders in locating facility sites while meeting its Trust and current lease obligations.

5. The Oregon Military Department will:
 - Perform a feasibility study of installing wind turbines on or near its military properties throughout the state.

RNP Exhibit 8

Windfall? No, but Savings Ahead

By Nicholas Riccardi
The Los Angeles Times

Friday 15 October 2005

The soaring costs of coal- and gas-fired power plants will allow wind-energy customers to pocket other benefits of their investment.

Denver - Tom DeMoulin was not expecting a bargain when he began buying his electricity from wind farms in the late 1990s. In fact, the community college instructor paid an extra \$5 a month to his local utility to strike a blow against the coal- and gas-fired power plants that spew pollution across the Southwest.

But starting next month, DeMoulin's conscience-driven decision will save him money. Because of skyrocketing natural gas and coal prices, Colorado's 29,000 wind-energy customers for the first time will pay less than Xcel Energy's 1.3 million customers who use conventionally generated power.

After the savings was announced Wednesday, Xcel signed up as many customers for its Windsource program in one day as it normally does in two months. The surge in interest is the latest example of rising energy costs making wind power increasingly attractive to consumers.

In Edmond, Okla., wind-power users now pay less than other customers. The wind program in Austin, Texas, known as GreenChoice, will cost less than conventional power beginning in January. Makers of wind turbines report being sold out until 2008.

"It's a pretty momentous occasion for those of us in the renewable energy business," said Dan Lieberman of the Center for Resource Solutions in San Francisco, referring to the Colorado situation. "It's been the lean years, but now it's the fat years."

The price of natural gas had tripled in the last three years, even before hurricanes Katrina and Rita pushed prices even higher. The price of coal, the other fossil fuel used to generate electricity, has also shot up. Many energy experts see prices remaining high, and say the new savings to wind customers suggest a fundamental shift.

"Is it possibly a tipping point? Absolutely," said Ryan H. Wiser, a scientist at Lawrence Berkeley National Laboratory. "We have a circumstance where wind-power generation looks pretty competitive."

There are still many obstacles to wind power. Because wind farms need vast open space, they are often situated far from the areas that consume their power, with long-distance transmission driving up costs. In addition, they do not generate power continuously.

"We're not going to see 100% wind for two reasons," said Severin Borenstein, director of the UC Energy Institute in Berkeley. "There are limited areas where you can install wind economically. And the wind doesn't blow all the time."

Still, he said, the recent run-ups in natural gas prices are a big factor. "That has really changed the economics," Borenstein said.

Wiser said he had conducted a study of 12 major utilities showing that wind was increasingly being added to the generation mix.

The changes in Colorado and Austin, home to the two largest green power programs in the nation, are especially significant, analysts say.

The two utilities are among the few that pass savings from green power on to their customers. Most utilities charge customers who use environmentally friendly power the same base rate they charge those who use gas- or coal-fueled electricity, plus a premium, Lieberman said.

Wind power's cost-effectiveness varies by region. Xcel Energy's Minnesota wind program, for example, is still more expensive than its conventional program, because much of its electricity is generated by nuclear power, which has not seen price hikes comparable to those of natural gas and coal.

The Los Angeles Department of Water and Power allows residential customers to purchase a maximum of 20% of their power from environmentally friendly sources, which also include solar energy. Because the DWP's conventionally generated electricity relies on hydroelectric and nuclear sources, along with coal and gas, it remains less expensive than green power, spokeswoman Kim Hughes said.

The DWP gets 5% of its electricity from environmentally friendly sources and plans to boost that to 20% by 2010. Private California utilities must meet that goal by 2017, and Gov. Arnold Schwarzenegger is contemplating raising the percentage. Hughes said that was why green power would make more economic sense in the future.

RNP Exhibit 9

OPUC Data Request 8

PPL/100 and PPL/101. Provide a listing of each condition and commitment offered by MEHC in this exhibit and testimony by other applicant witnesses, and a corresponding 2006 present valued dollar estimate of benefit. The dollar estimate of benefit should be net of the costs customers would incur in rates. For example, if a transmission investment were made, the benefit estimate should be net of the revenue requirements effect in rates. For each condition and commitment describe the difference (or incremental benefit) customers would experience compared to continued ownership by Scottish Power.

Response to OPUC Data Request 8

A preliminary listing of the NPV of revenue requirements and benefits of the commitments made in the testimony of Greg Abel (Exhibit PPL/101) is provided in Attachment OPUC 8. These values are initial estimates only. No comprehensive cost-benefit analysis related to these items has been completed at this point, and these estimates may be subject to revision during the course of this proceeding. Substantial benefits exist that have not been currently quantified in this data response. A preliminary estimate of the NPV of the quantifiable net benefits of the commitments is \$200 million. This includes quantification of externality values associated with environmental benefits, in a manner consistent with PacifiCorp's 2004 IRP.

Benefits have not been estimated at this time for the continuation of previous commitments included in the testimony of Brent Gale (Exhibit PPL/301).

Financial impacts for other benefits not referenced in the above were not estimated because they tend to be more qualitative than quantitative in nature.

Quantified Net Benefits as of 8/18/05
(\$000)

Benefits	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total	NPV
Path C (net power cost reduction only)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 7,500	\$ 4,287
Reduced Cost of Debt	\$ 400	\$ 600	\$ 859	\$ 1,726	\$ 2,376	\$ 2,735	\$ 3,797	\$ 4,079	\$ 4,843	\$ 4,843	\$ 26,257	\$ 15,947
Corporate Overhead Reductions	\$ -	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 54,000	\$ 35,955
Emission Reductions from Coal-Fuel Generation (1)	\$ -	\$ 1,920	\$ 23,528	\$ 52,008	\$ 85,864	\$ 107,588	\$ 129,875	\$ 136,375	\$ 140,806	\$ 142,056	\$ 820,020	\$ 492,346
											\$ 548,535	
Revenue Requirements (2)											Total	NPV
Path C Upgrade	\$ -	\$ -	\$ -	\$ -	\$ (10,743)	\$ (10,359)	\$ (9,995)	\$ (9,649)	\$ (9,321)	\$ (9,010)	\$ (59,077)	\$ (35,312)
Emission Reductions from Coal-Fuel Generation	\$ (44)	\$ (500)	\$ (6,215)	\$ (36,059)	\$ (64,113)	\$ (68,488)	\$ (91,928)	\$ (88,591)	\$ (84,046)	\$ (80,131)	\$ (520,116)	\$ (313,220)
											\$ (348,532)	
											NPV of Net Benefits	\$ 200,002
											Discount Rate:	7.31%

Non-Quantified Benefits

Path C Upgrade (3)	In addition to the net power cost reduction, this project enhances reliability and facilitates delivery of power from a wind project in Idaho. There is a possibility that this project could result in deferring construction of a resource within the 2004 IRP Preferred Portfolio. The Path C investment is being evaluated as part of the IRP update to be filed in October 2005.
Mona-Oquirrh (3)	Not currently quantified, however, the project enhances reliability, facilitates acceptance of renewable resources and enhances system optimization.
Walla Walla - Yakima Transmission (3)	Not currently quantified - benefits will be quantified in future RFP processes. The line will help the Pacific Northwest region integrate wind resources into the power system and implement resource planning recommendations made by the Northwest Power and Conservation Council.
Other Transmission & Distribution Matters	Not currently quantified, but will improve system reliability
Future Generation Options	Not currently quantified - benefits will be quantified in future RFP processes
Renewable Energy (3)	Not currently quantified - benefits will be quantified in future RFP processes
Coal Technology	Not separately quantified - benefits included in emissions reductions from coal-fueled generation
Greenhouse Gas Emission Reductions (SF6)	Not currently quantified, but clearly offers long-term societal benefits
Energy Efficiency and DSM Management	Not readily quantifiable, but the benefits should include reduced fuel use, with related environmental and economic benefits, as well as direct customer benefits that may accrue from eliminating or postponing procurement of additional transmission/distribution and generation facilities
Customer Service Extension	Not readily quantifiable, but clearly offers benefits
Community Involvement and Economic Development	Not readily quantifiable, but clearly offers benefits
Corporate Presence	Not readily quantifiable, but clearly offers benefits
Regional Transmission	Based on estimates using a representative year, if MEHC's leadership results in transmission construction, it could provide regional benefits between \$60 million and \$990 million annually

- (1) These benefits and costs represent projects that are incremental to those previously committed to by PacifiCorp. The benefits resulting from reductions in emissions through the installation or upgrading of pollution control equipment have been calculated by assigning a market value per ton of emissions reduced. This value was derived from PacifiCorp's 2004 IRP. While there may not be a market for some of these emissions in the west at the current time, these emissions are traded in other parts of the country or are anticipated to be traded in the future. As such, the quantified benefits are an imperfect surrogate for the potential value and resulting benefit of the emission reductions if and when the markets for these emissions develop, and should not be considered as having been recognized for accounting purposes. Additional benefits are inherent in making emissions reductions. The benefits of cleaner air for customers and citizens are difficult to quantify and have not been fully included for purposes of calculating the benefits herein. Furthermore, the investment in emission controls allows the facilities to continue to supply cleaner, low cost electricity to PacifiCorp customers which, when combined with other sources of generation, such as wind and gas, provide a balanced generation portfolio and reduce adverse impacts to customers in the event that fuel, transportation, natural gas supply and other potentially uncontrollable forces increase the cost of a certain type of generation which, in turn, ensures a lower cost, stable source of energy for PacifiCorp's customers. These benefits, likewise, are difficult to quantify and have not been quantified for purposes of inclusion in the calculated benefits. Revenue requirements do not include the cost of purchased power for the reduction in output due to the addition of pollution control equipment
- (2) Revenue requirements include return on rate base, depreciation expenses, and O&M expense where available
- (3) Projects enhancing the viability of renewable generation clearly offer societal benefits in the form of portfolio diversification, reduced emissions and conservation of fossil fuel resources

Attachment OPUC 8

<u>Emission Reductions</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
SO2 Emission Reductions (tons)	-	-	7,626	26,406	35,951	40,490	47,763	50,311	50,594	49,732
NOX Emission Reductions (tons)	-	628	7,530	12,304	21,322	27,395	30,237	30,541	30,799	30,222
Mercury Emission Reductions (lbs)	-	18	90	172	231	288	444	447	452	433

<u>Emission Prices (1)</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
SO2 Price (\$/ton)	\$ 481	\$ 559	\$ 648	\$ 753	\$ 877	\$ 899	\$ 921	\$ 944	\$ 967	\$ 997
NOX Price (\$/ton)	\$ 1,907	\$ 1,955	\$ 2,004	\$ 2,054	\$ 2,105	\$ 2,158	\$ 2,210	\$ 2,265	\$ 2,321	\$ 2,393
Mercury Price (\$/lb)	\$ 37,084	\$ 38,011	\$ 38,962	\$ 39,936	\$ 40,934	\$ 41,958	\$ 42,965	\$ 44,039	\$ 45,140	\$ 46,539

<u>Value of Reductions</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>Total</u>
SO2 Total	\$ -	\$ -	\$ 4,942	\$ 19,884	\$ 31,529	\$ 36,401	\$ 43,989	\$ 47,493	\$ 48,924	\$ 49,583	\$ 282,745
NOX Total	\$ -	\$ 1,228	\$ 15,086	\$ 25,269	\$ 44,882	\$ 59,118	\$ 66,824	\$ 69,175	\$ 71,486	\$ 72,322	\$ 425,390
Mercury Total	\$ -	\$ 692	\$ 3,499	\$ 6,856	\$ 9,453	\$ 12,069	\$ 19,061	\$ 19,707	\$ 20,396	\$ 20,152	\$ 111,885
	\$ -	\$ 1,920	\$ 23,528	\$ 52,008	\$ 85,864	\$ 107,588	\$ 129,875	\$ 136,375	\$ 140,806	\$ 142,056	\$ 820,020

(1) PacifiCorp 2004 IRP, Appendix C pp. 35-38

RNP Exhibit 10

OPUC Data Request 9

PPL/200, Johansen/6 notes that PacifiCorp has replaced and maintained transmission facilities. Referring to the transmission investments listed on PPL/100, Abel/14, line 9-Abel/15, line26. For each transmission investment listed, provide a discussion answering the following questions:

- a. Has PacifiCorp identified the project as a needed improvement?
- b. Has PacifiCorp budgeted funds to undertake the improvement?
- c. Has the transmission improvements been identified or studied in the company's IRP?
- d. Has any state adopted an IRP that includes the transmission investment?
- e. Has the company undertaken a cost/benefit study regarding the transmission investment? If yes, please provide the study.

Response to OPUC Data Request 9

- a. See Response to OPUC 9.e.
- b. PacifiCorp has approved limited funds to complete corridor alternative selection and begin preliminary site and permitting feasibility analysis on the Mona-Oquirrh project. PacifiCorp has also approved funding to secure one substation site at Oquirrh to reduce the future risk of locating the substation in an area that has high economic growth of residential and commercial properties. The commitment to the project is less than \$6 million.

No funds have been committed for the other two projects specifically referenced in the testimony.

- c. Only the "Mona - Oquirrh" transmission investment was identified and studied in PacifiCorp's 2004 IRP. This investment was associated with the CY 2009 Utah Combined-Cycle Combustion Turbine (CCCT) proxy resource identified in the Preferred Portfolio.
- d. None of the commissions regulating PacifiCorp "adopt" the Company's IRPs. Washington has acknowledged the IRP with the Mona - Oquirrh transmission investment included in PacifiCorp's Preferred Portfolio. Utah has also acknowledged the IRP, but has declined to acknowledge the Action Plan. In lieu of Action Plan acknowledgement, the Utah Public Service Commission ordered that the IRP Action Plan be considered in the approval process for PacifiCorp's subsequent resource solicitations.

UM-1209/PacifiCorp
August 19, 2005
OPUC Data Request 9

- e. As was indicated in Response to OPUC 9.c, the Mona-Oquirrh transmission project was evaluated as part of the Company's 2004 IRP, and is a component of the Preferred Portfolio. The Company is planning on evaluating the benefit of the Path-C upgrade as part of its 2004 IRP Update filing that is scheduled to be filed informally with the Commissions in October. As wind projects are identified as part of RFP 2003B, the Company will evaluate the benefits of the wind project and the Walla Walla - Yakima or Mid-C commitment for cost-effectiveness.

RNP Exhibit 11

CUB Data Request 6 MEHC

In reference to the list of advantages bulleted on pages 18-19 of the Application:

- a. Why is consideration of reduced-emissions coal technologies an advantage of this acquisition if it would be a prudent act for any utility?
- b. Of the emissions-reduction investments (SO₂, NO_x, mercury, CO₂) listed, please identify those that would be required, currently or with a future effective date, by law or regulation in order to maintain the generation resources' current generating capacity. When specifying, please include the applicable laws and/or regulations.
- c. Please explain why the listed transmission initiatives are the appropriate transmission investments.
- d. Why is the offer to own/operate option in renewable RFP's a benefit for the customer? Is there any evidence from the current market environment that there will be any interest in such an arrangement from renewables developers?
- e. Has MEHC performed any analysis to identify the probable rate effects of the transmission and generation (including environmental technologies) investments listed as advantages in the Application? If so, please provide them.

MEHC's Response to CUB Data Request 6

- a. Energy needs are anticipated to continue to grow in the United States, with high growth areas having been identified in the areas of the country in which PacifiCorp maintains its operations. While MidAmerican believes it is prudent to maintain a diverse portfolio of generating assets, continued utilization of coal for low-cost, base load generating purposes is a key to energy independence. While other options for base load generation exist, those options, including nuclear and gas, present other difficulties, either from an environmental, economic or energy supply standpoint. Most forms of renewable generation must be backstopped due to their intermittent nature. MidAmerican recognizes these limitations and the need for low-cost, reliable base load generation and believes the commitment to examine these technologies will result in investments that serve to reduce the environmental impacts of the PacifiCorp generation mix while appropriately balancing and advancing renewable generation.
- c. MEHC believes that the listed transmission investments are appropriate because they provide net benefits to customers and the system and are consistent with MEHC's approach to balancing infrastructure investment and maintaining low reasonable rates (see response to CUB DR #7). MEHC also notes that PacifiCorp's commitment, and MEHC's affirmation of PacifiCorp's

RNP Exhibit 12



Transmission Business Line (TBL)

TBL Bulletin

Deferral of Development of Conditional Firm Transmission Product

Posted: November 2, 2005

Effective: November 2, 2005

Customer Conference Call: November 16, 2005 10:00 a.m. to 1100 a.m.

Bridge Number: 360.418.8001 Passcode: 1032#

TBL is deferring further development of a Conditional Firm product until it has the ability to curtail future hours and track all non-firm transmission schedules by flow gate in order to curtail them prior to Conditional Firm.

TBL will modify Section 4.2 of the Partial Long-Term Firm Service Business Practice as it relates to Seasonal Partial Service to make the product available for eight to eleven non-continuous months. This change will help those parties in the near-term that were relying on conditional firm.

Customers will be given 15 business days from the posted date of the Business Practice to submit their comments. TBL will also discuss the change to this Business Practice at the December 7, 2005 Business Practice Technical Forum.

Customers may voice their comments concerning the deferral of the development of the Conditional Firm Transmission product during the customer conference call being held on November 16, 2005.

RNP Exhibit 13

A Preliminary Analysis and Case Study of Transmission Constraints and Wind Energy in the West

Preprint

M. Milligan, Consultant
National Renewable Energy Laboratory

D.P. Berger
Peak Power Engineering, Inc.

*To be presented at WINDPOWER 2005
Denver, Colorado
May 15-18, 2005*

Conference Paper
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Abstract

The Rocky Mountain region has been identified as possessing some of the most attractive wind resources in the western United States. Wind developers typically need long-term transmission service to finance their projects; however, most of the capacity on several key paths is reserved by existing firm contracts. Because non-firm contracts are only offered for periods up to 1 year, obtaining financing for the wind project is generally not possible when firm capacity is unavailable. However, sufficient capacity may exist on the constrained paths for new wind projects that can risk curtailment for a small number of hours of the year. This paper presents the results of a study sponsored by the National Renewable Energy Laboratory (NREL), a work group participant in the Rocky Mountain Area Transmission Study (RMATS). Using recent historical power flow data, case studies were conducted on the constrained paths between Wyoming-Colorado (TOT3) and Montana-Northwest, coinciding with areas of exceptional wind resources. The potential curtailment frequency for hypothetical 100-MW and 500-MW wind plants was calculated using hourly wind data. Although the high-level approach of the study cannot specifically define amounts of generation that can be added to these paths, it does present a new approach to identifying the potential for improved utilization of existing transmission assets. The results from the study also indicate that sufficient potential exists for innovative transmission products that can help bring more wind to load centers and increase the efficiency of the existing transmission network.

Introduction

Recent studies of historical power flow data have helped to identify the degree of congestion of constrained paths in the West. These analyses show that periods of heavy congestion above 75% of a path's rating on many of the paths have historically been confined to less than half of the hours in the year [1]. In contrast to the historical loading, firm transmission service contracts reserve much of the capacity on the transmission lines that make up the paths.

The shortage of firm transmission capacity over constrained paths is a significant obstacle to wind developers. The use of non-firm capacity is also problematic in that it involves levels of financial risk that are difficult to quantify. Transmission infrastructure upgrades are necessary to increase capacity over constrained paths; however, the time frame for planning and construction of transmission improvements is considerably greater than the construction time frame for wind projects. The optimal use of the existing transmission system could allow wind producers to obtain transmission service in a time frame consistent with wind project development, and at a known level of risk that is acceptable for project financing. The key to this approach is the ability to quantify the risk of curtailment due to periods of peak flow.

The process and criteria for generator interconnection studies is mandated by the Federal Energy Regulatory Commission's (FERC) Large Generator Interconnection Procedures (LGIP), and by the merged North American Electric Reliability Council (NERC) and Western Electricity Coordinating Council (WECC) Planning

Standards [2], [3]. However, the recognition of wind power as a non-dispatchable resource warrants the investigation of additional study methodologies that take into account the nature of wind energy. This proof-of-concept study attempts to identify the potential for a new approach to wind power transmission service and availability.

Rocky Mountain Area Transmission Study

In September 2003, Wyoming Governor Freudenthal and then-governor Leavitt of Utah announced an initiative to analyze potential transmission additions in the western states. The states include Colorado, Idaho, Wyoming, Utah, and Montana. The study of this subset of the Western Interconnection was called the Rocky Mountain Area Transmission Study (RMATS), and it involved many regional stakeholders. The primary goal of the study was to help “break the log jam of inactivity” around transmission planning and investment in the west and identify potential transmission upgrades to strengthen the electricity supply in the region [4]. A number of future generation scenarios were developed to represent potential futures in 2008 and 2013. These scenarios were analyzed with the help of a region-wide power systems dispatch model that recognized the key constrained transmission paths and performed economic dispatch based on locational marginal prices at the various transmission nodes and across the system. As a result of the study, a number of specific transmission upgrades were identified [5]. In Phase 2 (currently underway), the study will move toward more detailed financial and cost allocation so that the transmission expansion can begin to move forward. However, there are many uncertainties that could significantly alter the momentum achieved in Phase 1.

A Regulatory and Operational Impacts Work Group (ROIWG) that was part of the RMATS effort proposed an analysis of some key transmission constraints to determine the usage of those paths. Because path flows vary significantly throughout the year, the intent was to quantify the extent that these key paths were constrained, similar to work that was previously done by the Seams Steering Group-Western Interconnection (SSG-WI) [1]. Because the RMATS scenarios included significant wind generation, there was also an interest in quantifying the impact that these key transmission bottlenecks would have on the deliverability of wind generation to loads.

Tariff Impacts on Wind

Under the FERC Order 888, several types of transmission service are defined. Network service is available for generation resources that serve load within the control area. Alternatively, if the generator provides energy for loads outside of the control area, point-to-point transmission service must be acquired from the transmission provider. This service is classified as either firm or non-firm [6]. Firm transmission service grants transmission rights to the purchaser for every hour of the year. Non-firm transmission can be purchased for distinct time frames that range from very short-term (hourly or daily) up to 1 year. However, non-firm service is not guaranteed, so service can be interrupted under specific curtailment procedures and priorities.

Under Order 888, non-firm service was not specified for periods longer than 1 year. Although the FERC intended Order 888 to provide a framework that individual transmission operators could expand on, this has not happened. So although Order 888 did not expressly forbid non-firm service for more than 1 year, transmission providers did not offer it.

These transmission tariffs make it difficult, if not impossible, for wind generators to obtain point-to-point transmission service for the life of the wind project. Because wind project financiers want assurance that energy can be delivered to loads, the lack of firm transmission in most parts of the west means that only non-firm transmission is available. This makes it difficult for wind generators to obtain financing. First, non-firm transmission is sold “as available” with no cap on the number of hours per year on potential curtailment. Second, because non-firm could not be obtained for more than 1 year, financiers are understandably reluctant to loan the necessary financial capital to wind projects with a project life of 20 years or more, if they have no apparent way to deliver energy to loads.

Analysis of transmission path loadings by the SSG-WI indicated that even though firm capacity may not be available on many paths, a significant number of paths have available capacity for most of the year. Because wind is an intermittent resource, the ROIWG decided to investigate whether sufficient physical transmission capability exists on several key paths in the west to accommodate wind generation. The goal of this work was twofold: (1) to determine how much likely curtailment a wind generator would experience over key constrained paths, and (2) if sufficient transmission capability exists to deliver wind to load centers, which tariff mechanism(s) would help provide a sufficient risk cap for lenders evaluating wind projects.

Analysis of Potential Benefit of New Transmission Tariffs

Our analysis represents a first-cut estimate of the transmission capability that could potentially become available to intermittent generators under alternative tariffs. The project goal was to analyze three key constrained paths in the west that were consistent with wind scenarios developed for RMATS. Wyoming wind resources are among the best in the United States. The RMATS wind scenarios were based, in part, on Wyoming wind energy delivered to the Colorado Front Range (including the Denver area), and west to Utah and the Northwest. Another key wind energy source is Montana, and wind energy was modeled to be delivered to the Northwest. To accomplish these large-scale exports of wind energy, three key transmission paths would be required. West of Naughton (WY) provides a path from southwest Wyoming to the west; TOT3 is the constrained path from Wyoming into the Colorado Front Range, and the path from Montana to the Northwest involves a series of individual transmission lines. Figure 1 shows the Montana-Northwest path; Figure 2 shows the West of Naughton path, and Figure 3 shows TOT3.

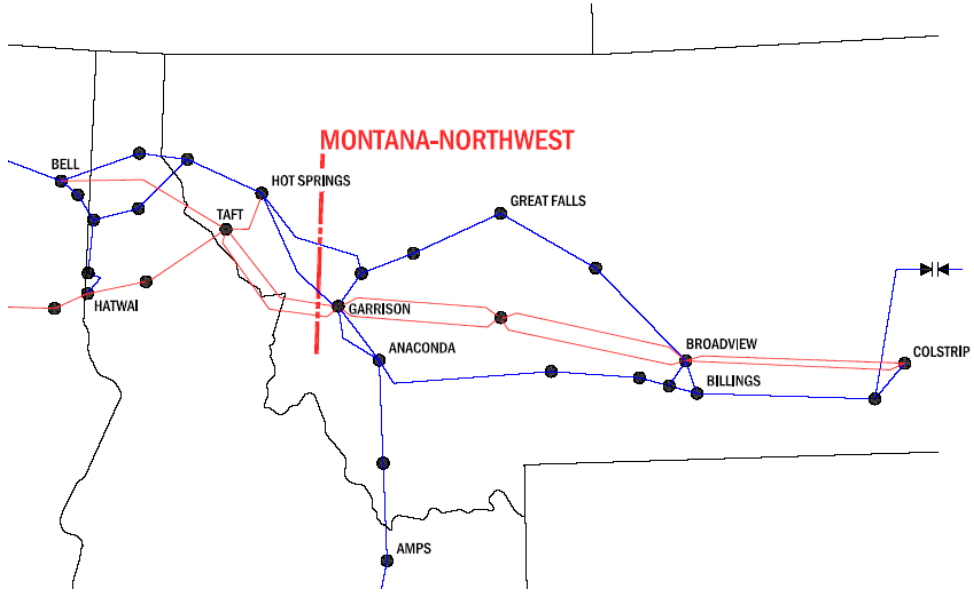


Figure 1 - Montana-Northwest Transmission Path

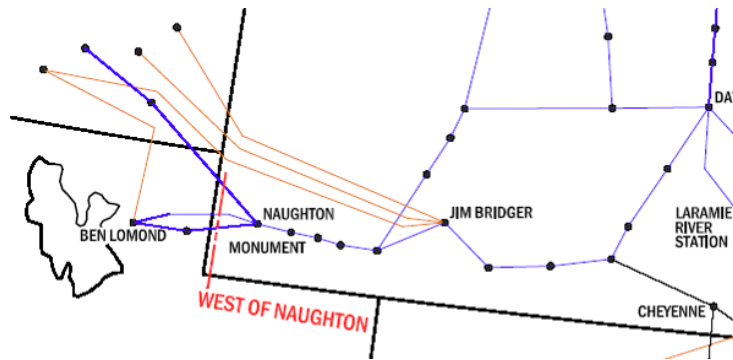


Figure 2 - West of Naughton Transmission Path¹

¹ Lower-voltage transmission and adjoining infrastructure are not shown in the figures.

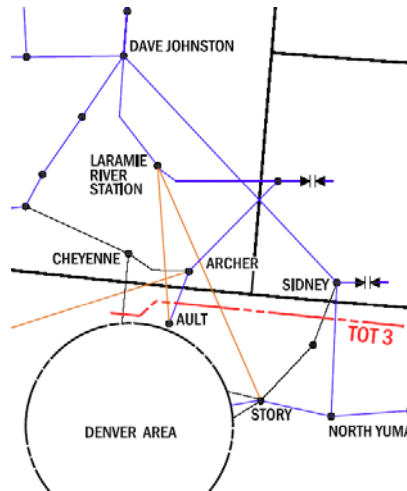


Figure 3 - TOT3 Transmission Path

Transmission Data

Transmission data were obtained for the 3-year period of 2001-2003 from two sources. TOT3 and Montana-Northwest data were obtained from the WECC. Data for West of Naughton came from PacifiCorp. The flow data consisted of hourly average values in megawatts for the path limit, the scheduled flow, and the actual flow.

The West of Naughton path has undergone significant upgrades in recent years. Path operation has been significantly impacted by the installation of a phase-shifting transformer to control power flow and by new generation to the east of the path. The path has also experienced the effect of load growth in the area. Because of these system changes, the available data cannot accurately represent West of Naughton capacity.

Complexity of the Montana-Northwest path, as well as data errors, minimized the potential for meaningful analysis of this path. The available data were not sufficiently detailed to address the serial nature of Montana-Northwest. Additionally, significant portions of the data were missing due to recording equipment malfunctions or failure to report the data to the WECC. Because of the data quality and other issues, we proceeded only with the TOT3 analysis.

Wind Data

For the analysis we used 3 years of wind data, matched with transmission-loading data from the same period. Platte River Power Authority² provided wind speed and production data. Because the RMATS study looks at future scenarios, we calculated hourly wind power output to simulate large wind power plants, 100 MW and 500 MW, using current wind turbine technology characteristics. In some cases, missing wind speed at the

² Thanks to Paul Warila for his invaluable assistance.

reference anemometer was re-calculated based on alternative anemometers at the same location but different heights. The recalculated data were then compared with power production data for the older wind turbine technology at the site to ensure reasonability.

The use of a modern 1.5-MW turbine at an assumed hub-height of 80 meters represents current technology. For the RMATS study period, additional advancements to turbine technology are anticipated. There is also a great deal of interest in taller towers, placing hub heights at 100 meters or perhaps even higher. These factors will increase wind turbine performance and energy delivery and will increase capacity factors. For this study, we estimated a capacity factor of 43%, based on the wind resource data and technology characteristics. Figure 4 shows the wind frequency distribution based on the 100-MW wind plant scenario. To calculate the 500-MW wind scenario, we simply scaled up by a factor of five.

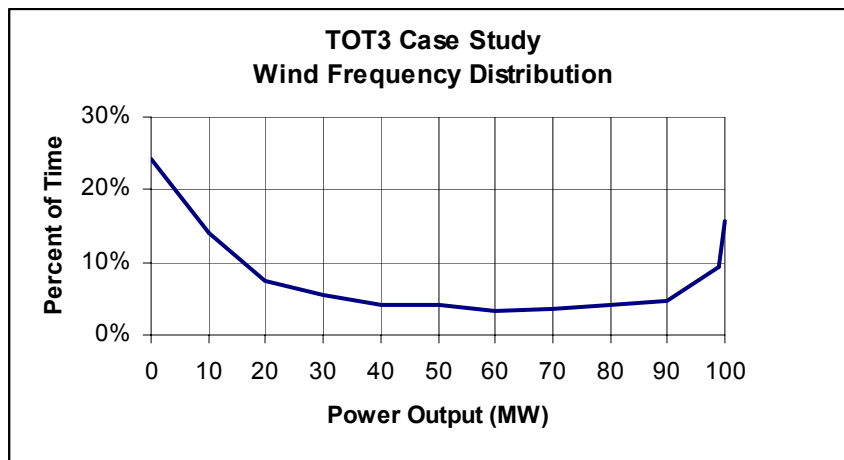


Figure 4 - Wind Frequency Distribution

The figure illustrates that the wind plant is idle (0 MW) 24% of the time. Full output in the range of 90 MW to 100 MW is achieved approximately 30% of the time combined. A traditional interconnection study for conventional generation assumes full output of the generator and worst-case transmission loading. Because wind power production is less than the nameplate capacity 46% of the time in this scenario, the transmission access requirements of wind power are less than for a conventional generator.

Capacity Calculations

The available capacity of TOT3 was calculated based on the flow data obtained from the WECC. To evaluate the path capacity, three indicators were used: the Operating Transfer Capability (OTC), the Unused Transfer Capability (UTC), and the Available Transfer Capability (ATC).

Operating Transfer Capability

The OTC is the transfer limit of the path. The published OTC value for each path in the west is determined seasonally according to WECC guidelines and is approved by the WECC OTC Policy Committee [7]. The flow data give the real-time OTC of a constrained path. The physical power flow on a path may not exceed the real-time OTC.

Unused Transfer Capability

The UTC was defined as the physically unused capacity of the path. It was calculated based on the hourly values of OTC and actual path flow with the equation:

$$UTC = OTC - (MW\ flow)$$

UTC is not a standard term used by the power industry. The term was defined for the purposes of the study to show the difference between physical capacity and the availability of non-firm contracts.

Available Transfer Capability

The ATC determines the amount of capacity that is available for posting on the Open Access Same-time Information System (OASIS). The ATC is determined according to WECC guidelines [8]. The ATC calculation consists of several additional variables that are not present in our UTC equation. Transmission providers are required by NERC/FERC to make their ATC calculation methodology available on their respective OASIS nodes.

The aggregate ATC was estimated for the purposes of the study based on the path flow data. It is important to note that ATC postings on the OASIS are for physical transmission line paths. The aggregate ATC calculated for the study cannot be fully realized at any one interconnection. Based on the level of detail of the data, an uncertainty factor was applied to the UTC to make a reasonable estimate of the ATC. The following equation was used to estimate the hourly ATC (hATC):

$$hATC = (uncertainty\ factor) (UTC)$$

where $(uncertainty\ factor) = 0.6$

The uncertainty factor of 0.6 was chosen based primarily on the experience of the path operator for the Western Area Colorado Missouri (WACM) area. The WACM operator is the Western Area Power Administration, Rocky Mountain Region. Approximately 60% of the hourly unused capacity can be reliably offered as ATC. Reasons for reducing the unused capacity include anticipated loop flow, uncertainty as to whether existing firm contract rights will be exercised within the next hour, reserve margins, and reliability margins.

Whether 0.6 was the appropriate value for the uncertainty factor elicited significant discussion within the ROIWG. Transmission operators withhold some transmission capacity to allow for unforeseen operating conditions. Because of the dynamic behavior of power system flows, all physically unused capacity would not be made available as ATC. It is therefore likely that a one-size-fits-all approach to calculating ATC will not work and that the results of our study should be interpreted accordingly.

Curtailment Analysis

Our analysis assumes that all of the power output from the wind plant is contracted to flow across the TOT3 cut plane. Although physical power flow may involve transmission lines that are not part of TOT3, we explicitly evaluated curtailment based on the available capacity of TOT3. Curtailment of the theoretical wind plants was calculated by comparing the wind power output data series with the TOT3 available capacity (ATC) data series. If the wind generation was greater than the ATC of the path for a given hour, we considered the amount of power exceeding the capacity to be curtailed. For example, if the available capacity of the path was 300 MW for a given hour, and the wind power output was 400 MW for that hour, then a curtailment of 100 MW was recorded for that hour. Curtailment was then quantified in terms of the total energy curtailed in megawatt-hours (MWh). Figure 5 illustrates the correlation of the data with several days of power profiles. The hourly ATC in the graph is the difference between the OTC and the recorded power flow across the path. Curtailment of the 500-MW wind plant occurred on July 5 due to the output exceeding the ATC at three separate times during the day.

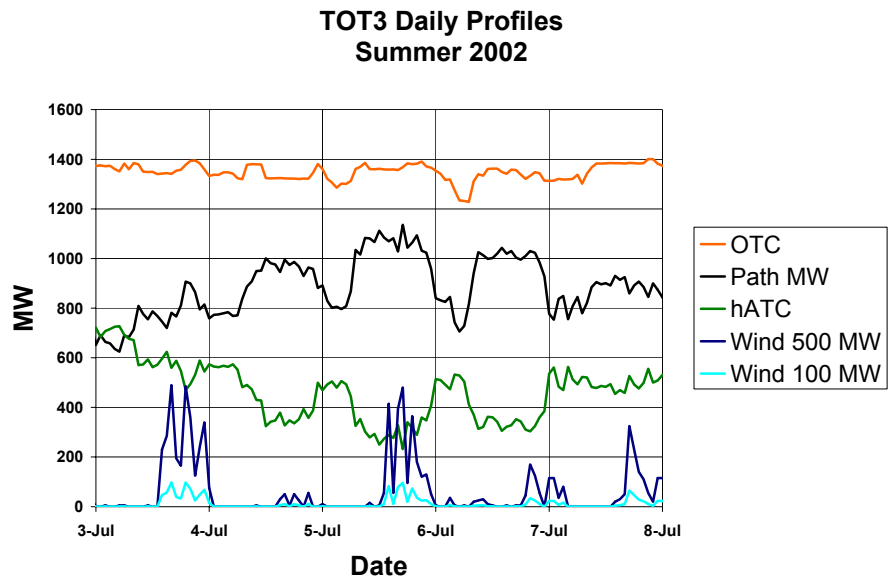


Figure 5 - Power Profiles

Cumulative frequency distribution was calculated to determine the characteristics of the path’s available capacity and the wind power output. The cumulative distribution plot in Figure 6 shows the percent of time that a minimum level of ATC was available. Heavy loading of TOT3 is evident in this figure. The published path rating as of June 2004 is

1605 MW north to south [9]. Figure 6 shows that there is rarely more than 500 MW of ATC on TOT3 over the course of a year. As can be seen in the figure, path ATC was greater than 500 MW only 4% of the time. This heavy loading was the predominant cause of curtailment. In contrast, approximately 250 MW of cumulative ATC was available 80% of the time for the three years studied.

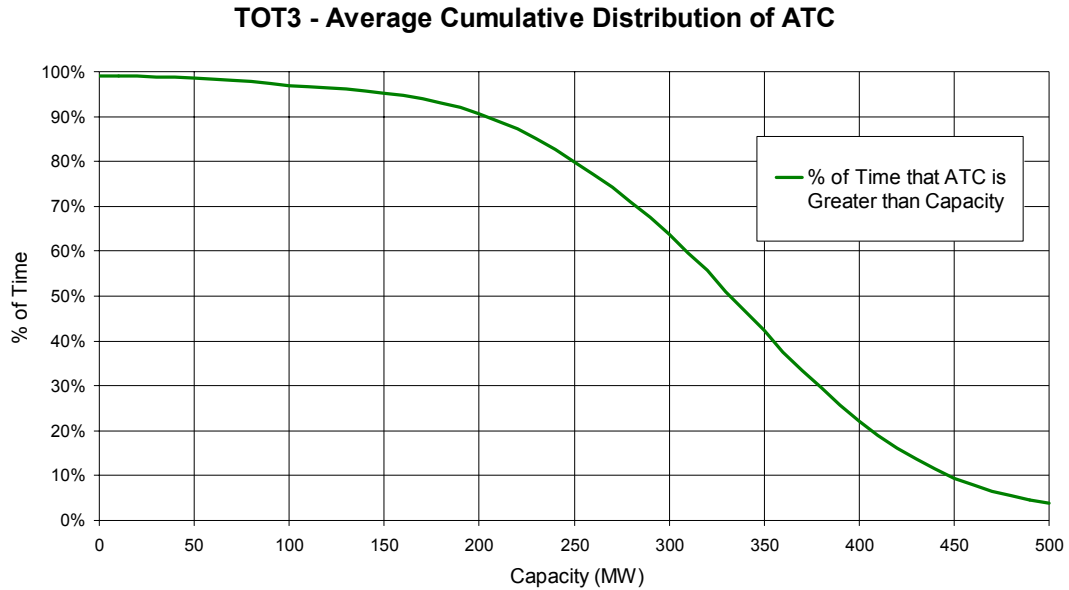


Figure 6

The curtailed energy was quantified in terms of percent of total output. Wind plants typically exhibit a capacity factor of approximately 30% of the combined turbine capacity. The significance of curtailment is put into perspective by normalizing it to the total output. Figure 7 presents the curtailment of the 100-MW and 500-MW wind plants. Two comparisons are made in this graph. The effect on curtailment of the UTC versus the ATC is displayed. Additionally, a constant-output benchmark case is shown in order to gauge the performance of the wind series. The generation of the constant-output plant was set at the same level as the wind plant. The constant-output generator is similar to a dispatchable resource such as a coal or gas plant; however, factors such as capacity factor or outages were not taken into account for the constant-output plant.

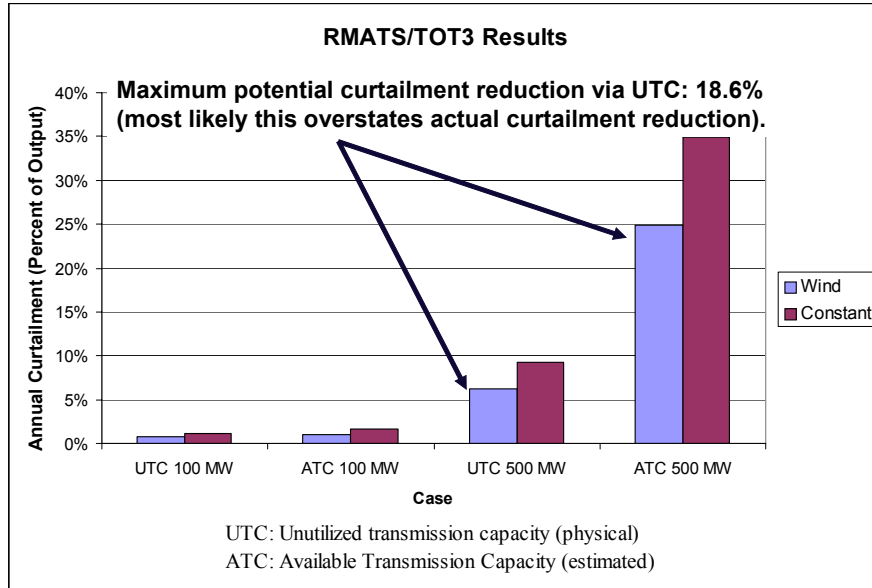


Figure 7

There was very little discernable difference for the 100-MW wind plant. This is due to the low level of curtailment frequency at or below 100 MW, as evidenced by the cumulative distribution of ATC. The previous plot of Figure 6 indicates that 100 MW of ATC is available 97% of the time.

Notable differences become evident for the 500-MW plant. Figure 7 illustrates the results. A 100-MW constant-output generator would be curtailed 1.2% of its annual energy output if all UTC could be utilized and would be curtailed 1.6% if only ATC could be utilized. A 100-MW wind plant would be curtailed 1.0% of its energy based on ATC and 0.8% if all UTC could be utilized. In both cases, the ability to obtain additional UTC beyond the posted ATC does not have a significant impact on either generator, and in all cases, curtailment risk is quite small.

The curtailment risk for both types of units changes significantly for 500 MW of generating capacity. A constant-output 500-MW generator would have energy curtailment of 9.2% annually based on UTC, and 34.9% based on ATC. For wind, the UTC curtailment would be 6.3%, and the ATC curtailment would be 24.9%. Clearly both types of generation would significantly benefit if additional transmission capability could be made available beyond what is posted as ATC.

Limitations of the Method, Data, and Approach

Preliminary results of our analysis were presented to the ROIWG in June 2004 at meetings in Denver, Colorado and Portland, Oregon. Representatives from several transmission owners attended the meetings to provide feedback to the path analysis and the conceptual tariff reforms. The work group discussions identified several issues that affect the accuracy and interpretation of the study. The study results indicate that ATC along constrained paths could be made available with the introduction of a conditional

firm or long-term non-firm tariff, although the resolution of the data was not sufficient to draw specific conclusions on the amount of ATC. There were several technical and operational concerns which we believe are key to putting the results in perspective.

The study evaluates transmission capacity of TOT3 using a high-level approach. This approach makes several approximations that have the effect of presenting some unused capacity that may not be available for marketing in practice. The curtailment estimates we calculated are lower bounds, and depend on physical operating characteristics and practices across the path, as well as contractual and institutional issues. The path flow data for TOT3 was obtained as an aggregate of the six transmission lines that define the path. It was therefore necessary to assume that the available capacity of a constrained path could also be aggregated, both contractually and physically. New generation wishing to utilize capacity of TOT3 must be injected at interconnection points north of the path, and flow through physical lines which are geographically diverse and have different electrical characteristics. Capacity along the contract path of choice may not be available even if other lines in the path have capacity. The six transmission lines that make up TOT3 are owned by four different entities. ATC of the path is allocated among these entities in proportion of the percent of ownership. The ATC allocated to each owner is then applied to the infrastructure owned by each entity as appropriate.

Another key assumption is that the addition of new generation will not affect the transfer capability of the constrained path. The dispatch levels of existing generation north and south of TOT3 can have an effect on the path's OTC. Additional generation resources utilizing TOT3 may negatively impact the operation of TOT3 and ultimately the ATC. Further analysis would be necessary to assess these impacts.

Work group participants in Denver also recognized that variables such as unscheduled power flow on TOT3 and seasonal weather patterns can vary significantly from one year to the next. The historical data represents a relatively short time frame that cannot encapsulate all of the factors affecting operational practice that might occur in the future.

Although a more detailed study would be required to accurately determine the additional transmission capacity that might be available under new tariff arrangements, that was beyond the scope of this study. What we can conclude from this effort is that, in spite of the limitations of this study, there appears to be sufficient unused capability to motivate transmission owners to pursue these options and to perform the more detailed studies that would be required to more rigorously quantify this unused capability.

Proposed Transmission Tariffs: BPA, WAPA

Motivated in part by the results of the TOT3 analysis, the ROIWG developed two rough prototype transmission tariffs. The first was based on discussion at the Portland meeting of the ROIWG with transmission providers in the Northwest, including PacifiCorp and Bonneville Power Authority (BPA). This tariff approach was called conditional firm. The main characteristic of the conditional firm tariff involved a cap on the number of hours that the generator would be curtailed. A number of details emerged that would need further study. A significant effort by the Renewable Northwest Project (RNP) and BPA

resulted in a workshop in Portland, March 16-17, cosponsored by BPA and the FERC. At the time of this writing BPA is undertaking internal discussions to help determine appropriate curtailment priority and other related issues. A new conditional firm tariff product from BPA may be forthcoming.

The second generic tariff was based on Western Area Power Administration's (WAPA) non-firm transmission tariff. The ROIWG analyzed the existing tariff to determine the extent of changes that might be required to specify a longer period for the tariff; up to ten years. WAPA is considering a long-term non-firm tariff, and such a tariff may be forthcoming. It is unclear whether wind developers and financiers would be able to utilize such a tariff, however, because there is no cap on curtailment over the 10-year period.

Further information can be found at www.ferc.gov/legal/ferc-regs/land-docs/11-04-wind-report.pdf [10].

Conclusions

Based on our results, there appears to be sufficient transmission capability on TOT3 to warrant the use of new innovative transmission tariffs. Although these new tariffs, if implemented, would benefit wind generators, they would also benefit other types of generation and would increase the utilization of the transmission grid. New tariffs would also increase revenues for transmission owners in proportion to the amount of additional capability. Although we were not able to analyze other paths, prior work by SSG-WI indicates that additional transmission may be available elsewhere in the west. Further analysis of those paths with sufficient data would provide further information.

Our work has highlighted a couple of issues. First, calculation of ATC is subject to uncertainties. When ATC is estimated for future years, these uncertainties increase. It is not possible, for example, to know the extent to which loop flow will have an impact on ATC. Other flow conditions, operating practice, load growth, and potential generation and transmission outages all can influence ATC and UTC. However, we believe that this method for evaluating potential UTC is useful, and provides enough information to move forward with new transmission tariffs that can help improve the utilization of the transmission system and help incorporate new renewable sources of energy into the western energy supply.

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REPORT DOCUMENTATION PAGEForm Approved
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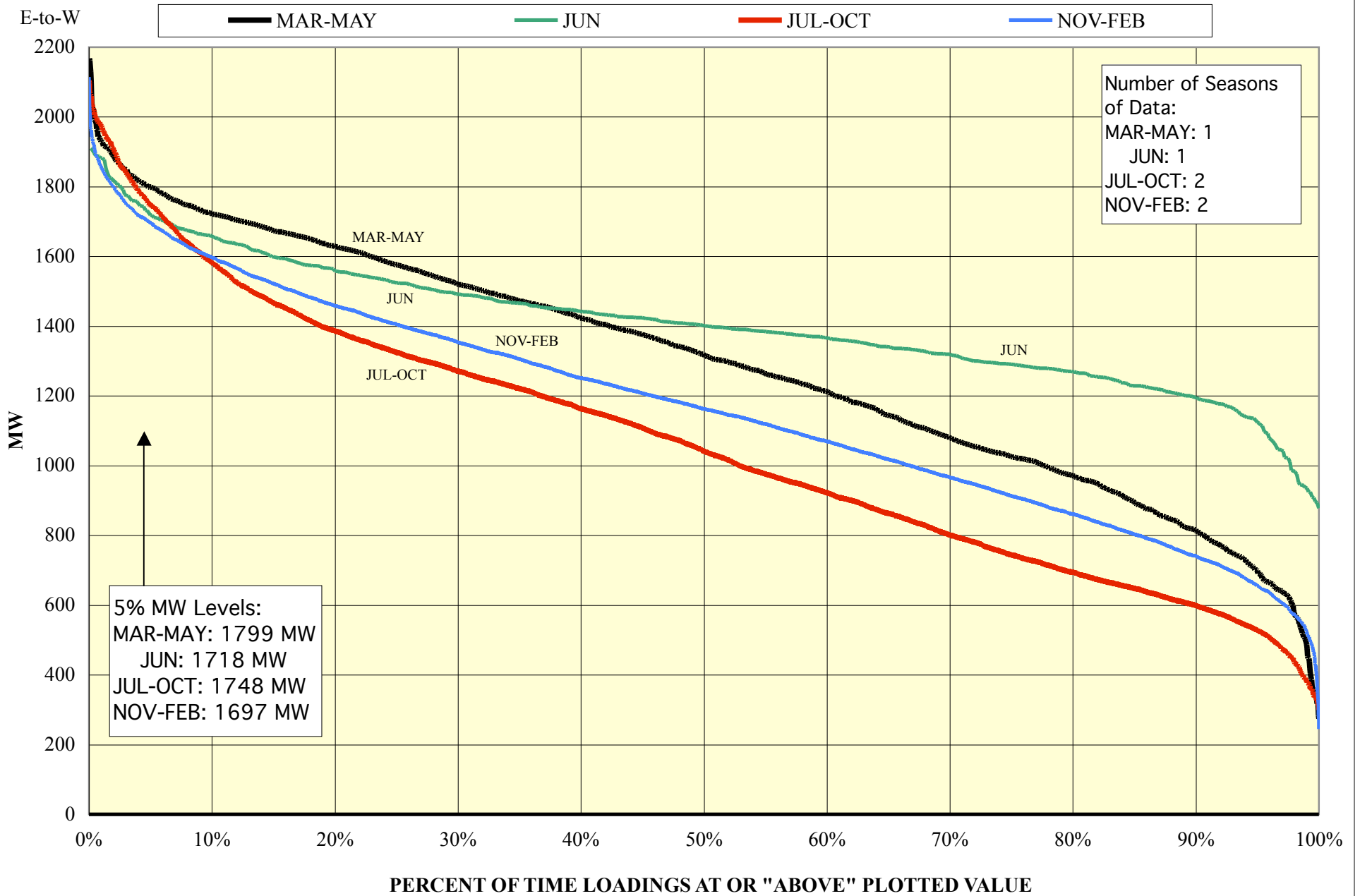
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14. ABSTRACT (Maximum 200 Words) Wind developers typically need long-term transmission service to finance their projects; however, most of the capacity on several key paths is reserved by existing firm contracts. Because non-firm contracts are only offered for periods up to 1 year, obtaining financing for the wind project is generally not possible when firm capacity is unavailable. However, sufficient capacity may exist on the constrained paths for new wind projects that can risk curtailment for a small number of hours of the year. This paper presents the results of a study sponsored by the National Renewable Energy Laboratory (NREL), a work group participant in the Rocky Mountain Area Transmission Study (RMATS). Using recent historical power flow data, case studies were conducted on the constrained paths between Wyoming-Colorado (TOT3) and Montana-Northwest, coinciding with areas of exceptional wind resources. The potential curtailment frequency for hypothetical 100-MW and 500-MW wind plants was calculated using hourly wind data. The results from the study indicate that sufficient potential exists for innovative transmission products that can help bring more wind to load centers and increase the efficiency of the existing transmission network.						
15. SUBJECT TERMS wind energy; wind turbine; loads; wind plant; transmission						
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RNP Exhibit 14

WEST-OF-McNARY CUTPLANE LOADINGS

Cumulative Frequency Distributions, By Season (JUL01 - FEB03)



Source: Hourly SCADA data via: _IPS WEST OF McNARY CALC 59503 MW

RNP Exhibit 15

Bonneville



Power Administration

FINAL ATC RESULTS

POSTED ON 6/22/2005

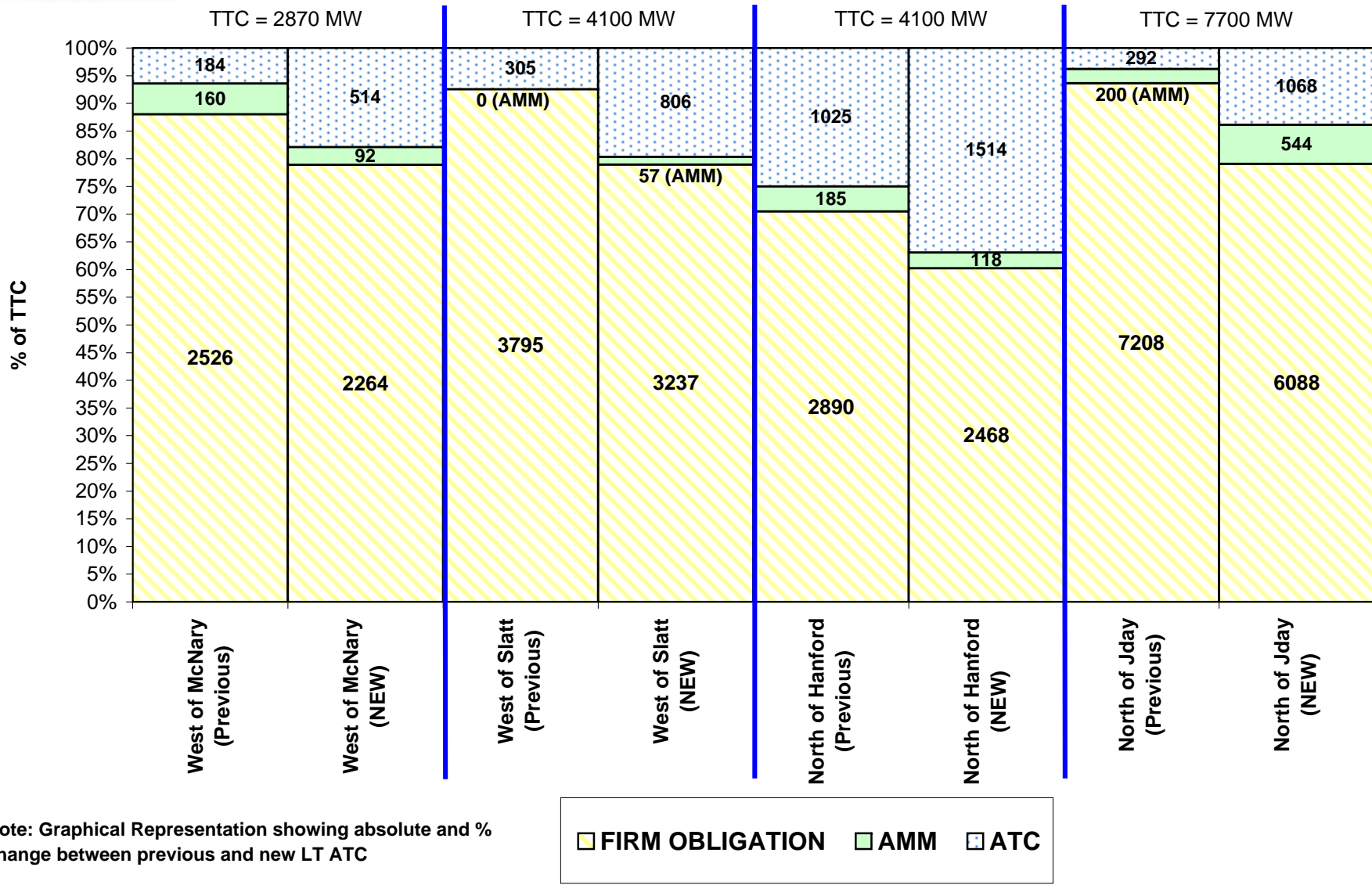
Posted ATC reflects adoption of proposed changes
in ATC methodology as approved per 6/08/05
letter from Vickie Van Zandt to Transmission
Customers And Interested Parties

NEW LONG-TERM ATC CHANGES (BY FLOWGATE) AS OF 6/22/2005:

West of McNary, West of Slatt, North of Hanford, North of John Day



COMPARISON BETWEEN PREVIOUSLY POSTED ATC AND NEWLY POSTED ATC



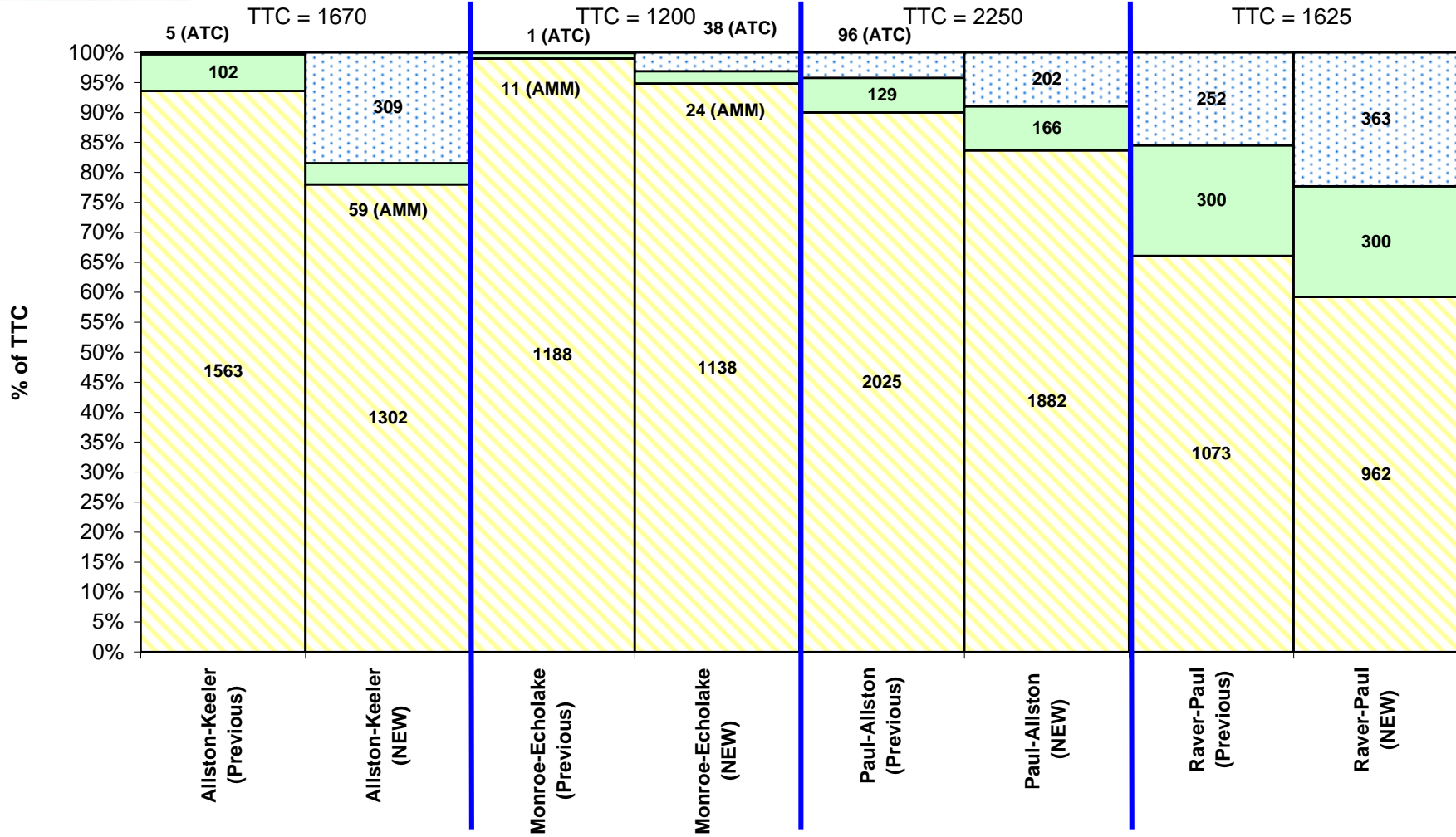
This information is provided by BPA's Transmission Business Line. TBL's OASIS is the official source for ATC and is updated continuously to reflect new contract actions as they occur.

NEW LONG-TERM ATC CHANGES (BY FLOWGATE) AS OF 6/22/2005:

Allston-Keeler, Monroe-Echo Lake, Paul-Allston, Raver-Paul



COMPARISON BETWEEN PREVIOUSLY POSTED ATC AND NEWLY POSTED ATC



Note: Graphical Representation showing absolute and % change between previous and new LT ATC



This information is provided by BPA's Transmission Business Line. TBL's OASIS is the official source for ATC and is updated continuously to reflect new contract actions as they occur.

RNP Exhibit 16

CUB Data Request 18 MEHC

At Gale/22, there is a discussion of MEC's determination that RTO membership has not been in the best interest of customers.

- a. What influence would MEC or MEHC have in formulating PacifiCorp's position on RTOs?
- b. What is PacifiCorp's current position on Grid West and TIG?
- c. Is PacifiCorp's position on regional transmission efforts likely to change if this application were to be approved? If that is uncertain now, when can we expect PacifiCorp will know its position?
- d. Does MEHC believe it is appropriate to have two of its utility subsidiaries taking differing positions on regional or national issues?

MEHC's Response to CUB Data Request 18

- a. Mr. Abel in his direct testimony on pages 23 and 24 addresses the guidance and coordination that will take place after the completion of the acquisition.
- c. No.
- d. As noted in Mr. Abel's direct testimony MEHC may offer guidance and coordination on regional or national issues. There could be situations in which the utilities take different positions based upon differences in circumstances applicable to the utilities. However, each issue will be evaluated on its own merits

Regarding part b, please see PPW's response to this request.

CUB Data Request 18 PPW

At Gale/22, there is a discussion of MEC's determination that RTO membership has not been in the best interest of customers.

- a. What influence would MEC or MEHC have in formulating PacifiCorp's position on RTOs?
- b. What is PacifiCorp's current position on Grid West and TIG?
- c. Is PacifiCorp's position on regional transmission efforts likely to change if this application were to be approved? If that is uncertain now, when can we expect PacifiCorp will know its position?
- d. Does MEHC believe it is appropriate to have two of its utility subsidiaries taking differing positions on regional or national issues?

PPW's Response to CUB Data Request 18

- b. PacifiCorp strongly supports the Grid West proposal and TIG is not a viable alternative for PacifiCorp. PacifiCorp does not plan on participating in the TIG efforts.

Regarding parts a, c and d, please see MEHC's response to this request.

RNP Exhibit 17



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Everything Oregon

The Oregonian

Compromise on unified power grid is blocked

Electricity The Grid West project appears dead when investor-owned utilities vote against a plan cobbled together by the BPA

Wednesday, November 02, 2005

TED SICKINGER
The Oregonian

The Bonneville Power Administration and a cast of utilities, independent power generators, Native American tribes, environmental groups, regulators and consumer groups spent millions of dollars over the past decade haggling over how best to improve the efficiency and reliability of the Northwest's power grid.

Tuesday, the participants all but admitted their effort to create an independent entity capable of managing a unified grid is dead. A group of investor-owned utilities that had supported the project, called Grid West, voted to reject a compromise proposal that BPA had cobbled together to appease critics, most notably publicly owned utilities in Washington.

Instead, the investor-owned utilities will go forward with a scaled down version of Grid West, absent BPA, which controls the largest chunk of transmission assets in the region.

"It's unfortunate," said Dave Kvamme, a PacifiCorp spokesman. "We have 10 years of history working toward a not-for-profit entity that would oversee the region's transmission lines independent of buyers and sellers of electricity."

Grid West is the most recent regional iteration of an effort by federal regulators to increase efficiency and reliability in the electricity industry by eliminating piecemeal management of the power grid. Proponents maintain that a grid managed by a single cooperative entity rather than a host of competing interests would eliminate many bottlenecks, rate disputes and scheduling conflicts that plague the system today.

Regionally, supporters of a unified grid hoped it would clear the way for overdue investments in new transmission equipment that would improve reliability, help make it easier to access renewable power projects in remote areas, and help the BPA sell into power-hungry markets to the south.

But the effort has been controversial from the start. The most vocal opponents have been the publicly owned utilities in Washington, many of which have long-term contracts to buy power from BPA at preferential rates. BPA owns 75 percent of the high voltage transmission grid in Oregon, Washington, Idaho and Montana, so its participation was a linchpin in the organization.

The public utilities, backed by Washington's congressional delegation, worried the plan would increase their costs, and were skeptical that a regionwide organization would deliver any new efficiencies.

They were loath to see control of BPA's transmission grid pass to a private entity, particularly one that would be regulated by the Federal Energy Regulatory Commission. They waged an intense campaign to get BPA to say no to Grid West, and created an alternative proposal to solve transmission problems without creating an entity regulated by the federal commission.

Grid West "would have been a profound change for the region . . . the loss of local and state political control of Bonneville's operation," said Marilyn Showalter, executive director of the Public Power Council, a Portland based organization that represents public utilities in the region.

Investor-owned utilities, meanwhile, have been pressured by the Federal Energy Regulatory Commission to form the regional organizations, in part because the federal agency wants to eliminate utilities' incentives

to use control of the grid to make life more difficult for competitors. With limited access to cut-rate BPA power, investor-owned utilities also have a greater appetite for electricity generated in remote areas -- by coal-fired plants and wind farms, among other things -- but don't want to deal with a complicated tariff structure to move the power to their customers.

BPA, the 800-pound gorilla of generation and transmission in the region, has come under enormous political pressure, and has tried to tack between the two camps. Earlier this year, it proposed a compromise plan that would have moved forward with some of the public utilities proposals, and taken incremental steps toward the implementation of Grid West.

The compromise satisfied neither camp.

On Monday, nine of eleven members of Washington's congressional delegation wrote to BPA Administrator Stephen Wright urging him to avoid going forward with the so called "convergence" approach.

A day later, a majority of the investor-owned utilities voted against Bonneville's compromise. Instead they decided to soldier on without BPA's participation and transmission assets.

PGE and PacifiCorp had both supported Grid West, as did the Oregon Public Utility Commission.

BPA said Tuesday its compromise proposal would have been the right way to go. In its absence, said spokesman Ed Mosey, "Nothing will change in terms of the operation of the system. We'll operate the way we always have."

Robert Kahn, executive director of the Northwest Independent Power Producers Coalition, said that's the problem. "Something needs to be done," he said. "The status quo is a mess."

Ted Sickinger: 503-221-8505, tedsickinger@news.oregonian.com

RNP Exhibit 18

Benchmarking Air Emissions of the 100 Largest Electric Power Producers in the United States - 2002

Owner	Ownership Type	Generation (MWhs)			Emissions in Tons					Emission Rates (lbs/MWh)							
		Total	Fossil Fuel	Coal	SO ₂	NO _x	CO ₂	Hg	All Sources			Fossil Fuel Plants			Coal Plants		
									SO ₂	NO _x	CO ₂	SO ₂	NO _x	CO ₂	SO ₂	NO _x	CO ₂
American Electric Power	Investor-owned corporation	237,358,587.30	216,509,121.60	195,719,795.20	1,170,047.40	467,147.80	217,322,000.80	6.4	9.9	3.9	1,831.20	10.8	4.3	2,007.50	12	4.5	2,084.60
Southern Company	Investor-owned corporation	173,409,227.40	140,022,983.20	127,085,574.00	862,369.40	269,513.50	144,421,396.50	3.5	9.9	3.1	1,665.70	12.3	3.8	2,062.80	13.8	4.2	2,177.30
Tennessee Valley Authority	Federal power authority	153,348,443.00	96,449,521.00	96,124,573.00	551,914.90	263,170.50	112,303,997.00	1.8	7.2	3.4	1,464.70	11.4	5.5	2,328.80	11.5	5.5	2,330.10
Xcel	Investor-owned corporation	110,665,194.70	95,021,867.20	75,686,732.80	343,296.50	171,112.30	99,813,295.10	1.2	6.2	3.1	1,803.90	7.2	3.6	2,100.80	8.9	4.2	2,327.50
Cinergy	Investor-owned corporation	60,981,478.70	60,661,651.70	58,887,311.20	512,635.30	132,826.60	61,671,366.80	1.1	16.8	4.4	2,022.60	16.9	4.4	2,033.30	17.4	4.5	2,090.30
Progress Energy	Investor-owned corporation	80,252,064.30	49,195,048.50	28,385,554.80	351,502.50	110,603.20	57,285,511.80	1.3	8.8	2.8	1,427.60	14.3	4.5	2,328.90	13.8	4.2	2,172.10
Ameren	Investor-owned corporation	64,066,503.70	54,480,297.70	52,817,686.80	247,457.40	64,581.20	56,244,536.50	1.2	7.7	2	1,755.80	9.1	2.4	2,064.80	9.4	2.4	2,100.90
Edison International	Investor-owned corporation	73,459,863.00	51,317,602.50	48,879,047.80	218,194.40	107,811.40	55,355,946.60	3	5.9	2.9	1,507.10	8.5	4.2	2,157.40	8.9	4.3	2,193.90
FirstEnergy	Investor-owned corporation	73,700,055.90	49,514,983.90	48,789,855.20	325,969.40	120,731.80	50,592,498.80	1.4	8.8	3.3	1,372.90	13.2	4.9	2,043.50	13.4	4.9	2,053.50
ScottishPower	Foreign-owned corporation (U.K.)	50,099,343.50	46,318,257.90	43,163,087.10	96,526.40	95,295.00	50,562,684.40	0.7	3.9	3.8	2,018.50	4.2	4.1	2,183.30	4.5	4.4	2,276.20
Dominion	Investor-owned corporation	86,022,620.60	45,910,434.00	40,267,188.50	224,982.90	118,466.50	50,483,942.10	1.2	5.2	2.8	1,173.70	9.8	5.2	2,199.20	9.4	5.7	2,288.10
Allegheny Energy	Investor-owned corporation	49,134,194.20	47,808,266.60	47,433,917.60	394,168.30	105,494.10	49,806,266.40	1.8	16	4.3	2,027.40	16.5	4.4	2,083.60	16.6	4.4	2,094.10
AES	Investor-owned corporation	48,407,227.50	48,381,461.50	40,484,442.00	208,877.30	77,166.00	49,303,665.70	0.8	8.6	3.2	2,037.00	8.6	3.2	2,038.10	10.3	3.8	2,194.80
Duke Energy	Investor-owned corporation	98,422,298.40	56,952,835.50	43,487,850.00	271,420.50	87,229.70	48,511,454.50	0.7	5.5	1.8	985.8	9.5	3.1	1,703.30	12.5	3.9	1,896.00
FPL Group	Investor-owned corporation	97,805,236.40	63,504,294.00	8,855,922.60	126,704.50	76,203.50	44,917,503.30	0.1	2.6	1.6	918.5	4	2.4	1,414.60	6.1	4	2,130.60
Entergy	Investor-owned corporation	115,259,402.10	51,028,309.00	13,424,235.90	47,916.70	77,533.80	41,238,268.20	0.3	0.8	1.3	715.6	1.9	3	1,616.30	6.4	3.6	2,352.80
DTE Energy	Investor-owned corporation	48,318,601.40	39,525,056.80	37,774,919.70	210,140.40	77,341.00	41,162,347.00	0.8	8.7	3.2	1,703.80	10.6	3.9	2,082.80	11	4	2,124.00
CenterPoint Energy	Investor-owned corporation	46,439,689.40	40,572,412.00	29,683,820.00	92,698.00	36,193.20	40,001,811.90	0.7	4	1.6	1,722.70	4.6	1.8	1,971.90	6.2	2	2,271.30
Reliant Resources	Investor-owned corporation	45,329,831.00	42,464,737.00	23,124,656.40	257,861.40	70,016.70	38,866,569.10	1.3	11.4	3.1	1,714.80	12.1	3.3	1,830.50	21.7	5.3	2,240.10
E.ON	Foreign-owned corporation (Germany)	34,630,691.00	34,350,644.00	33,880,994.80	165,517.30	60,004.50	36,729,077.10	0.6	9.6	3.5	2,121.20	9.6	3.5	2,138.50	9.8	3.5	2,164.50
Mirant	Investor-owned corporation	37,172,719.10	37,055,597.10	18,506,346.00	204,408.30	60,884.80	33,542,808.00	0.6	11	3.3	1,804.70	11	3.3	1,810.40	17.9	5	2,147.00
PPL	Investor-owned corporation	52,529,734.60	32,666,342.10	30,040,809.00	231,415.80	53,066.50	31,407,749.50	1.2	8.8	2	1,195.80	14.2	3.2	1,922.90	14.5	3.3	1,959.10
Westar Energy	Investor-owned corporation	28,339,990.50	24,090,390.60	22,877,462.20	89,907.60	57,995.10	29,636,384.40	0.6	6.3	4.1	2,091.50	7.5	4.8	2,460.40	7.4	4.8	2,505.40
Dynegy	Investor-owned corporation	27,700,891.90	27,575,624.90	24,128,274.60	91,309.10	42,711.10	28,966,477.30	0.4	6.6	3.1	2,091.40	6.6	3.1	2,100.90	7	3.4	2,180.90
Wisconsin Energy	Investor-owned corporation	28,234,390.10	19,798,014.50	18,801,525.90	89,846.30	44,769.00	24,034,676.30	0.7	6.4	3.2	1,702.50	9.1	4.5	2,428.00	9.6	4.7	2,477.70
OGE Energy	Investor-owned corporation	23,250,529.00	23,250,529.00	16,892,652.00	45,998.70	38,739.70	22,985,719.80	0.3	4	3.3	1,977.20	4	3.3	1,977.20	5.4	3.6	2,236.00
Alliant Energy	Investor-owned corporation	24,507,268.00	18,237,549.50	16,828,522.40	81,821.60	41,972.20	22,429,643.70	0.5	6.7	3.4	1,830.40	9	4.6	2,459.70	9.3	4.7	2,502.90
CMS Energy	Investor-owned corporation	26,282,659.00	20,066,373.60	19,289,033.30	95,939.70	34,271.80	22,421,300.40	0.5	7.3	2.6	1,706.20	9.6	3.4	2,234.70	9.9	3.5	2,310.00
MidAmerican Energy	Investor-owned corporation	21,419,462.20	20,946,940.40	18,814,110.50	65,612.60	42,716.90	22,022,817.60	0.5	6.1	4	2,056.30	6.3	4.1	2,102.70	7	4.4	2,238.00
PG&E	Investor-owned corporation	56,437,137.00	29,564,911.00	16,064,296.00	57,581.90	26,556.70	21,406,552.70	0.1	2	0.9	758.6	3.9	1.8	1,448.10	7.2	3	1,933.00
TXU	Investor-owned corporation	43,949,331.00	27,380,929.00	7,905,681.00	78,097.40	27,780.00	21,326,446.80	0.4	3.6	1.3	970.5	5.7	2	1,557.80	19.7	1.8	2,428.70
Calpine	Investor-owned corporation	42,219,239.70	36,190,689.70	0	136.6	7,634.80	19,968,960.80	0	0	0.4	946	0	0.4	1,103.50	0	0	0
Basin Electric Power Coop	Cooperative	16,082,130.40	16,082,130.40	16,065,954.90	65,921.20	33,496.30	19,787,808.70	0.4	8.2	4.2	2,460.80	8.2	4.2	2,460.80	8.2	4.2	2,463.20
South Carolina Public Services	State power authority	20,396,100.50	17,731,476.90	17,648,080.00	75,550.70	42,374.40	19,419,640.70	0.2	7.4	4.2	1,904.30	8.5	4.8	2,190.40	8.6	4.8	2,199.80
PSEG	Investor-owned corporation	49,482,571.00	21,716,336.00	12,290,615.90	77,514.20	35,123.70	18,433,300.30	0.3	3.1	1.4	745	7.1	3.2	1,697.60	11.9	5.1	2,214.00
Constellation Energy Group	Investor-owned corporation	13,080,649.90	18,643,108.30	15,208,052.60	124,787.80	34,941.60	18,256,138.30	0.6	5.8	1.6	847.5	13.4	3.7	1,958.50	16	4.3	2,094.10
TECO Energy	Investor-owned corporation	15,376,316.00	15,376,316.00	14,829,852.00	66,096.40	55,320.60	18,227,971.10	0.3	8.6	7.2	2,370.90	8.6	7.2	2,370.90	8.9	7.4	2,449.00
Great Plains Energy	Investor-owned corporation	18,845,024.70	14,595,424.80	14,209,186.40	42,988.20	32,602.10	17,395,988.50	0.2	4.6	3.5	1,846.20	5.9	4.5	2,383.80	6	4.6	2,446.30
SCANA	Investor-owned corporation	22,088,083.40	17,222,624.00	15,966,906.00	98,595.10	32,442.50	17,287,266.30	0.1	8.9	2.9	1,565.30	11.4	3.8	2,007.50	12.1	4	2,089.00
DPL	Investor-owned corporation	16,514,537.20	16,514,537.20	16,246,062.40	117,232.90	42,430.60	16,978,365.40	0.4	14.2	5.1	2,056.20	14.2	5.1	2,056.20	14.4	5.2	2,074.40
Salt River Project	Power district	21,839,798.40	16,231,592.10	13,788,660.90	27,864.00	33,337.70	16,807,866.40	0.2	2.6	3.1	1,539.20	3.4	4.1	2,071.00	4	4.5	2,258.70
NiSource	Investor-owned corporation	14,162,047.00	14,114,365.00	14,060,757.00	42,017.20	43,700.50	16,645,189.30	0.4	5.9	6.2	2,350.70	6	6.2	2,358.60	6	6.2	2,368.80
Associated Electric Coop	Cooperative	15,525,683.00	15,525,683.00	14,460,895.00	31,023.10	55,924.00	16,239,286.30	0.3	4	7.2	2,091.90	4	7.2	2,091.90	4.3	7.7	2,151.60
Intermountain Power Agency	Power district	13,485,597.00	13,485,597.00	13,479,234.00	3,648.40	30,255.90	14,983,662.10	0	0.5	4.5	2,222.20	0.5	4.5	2,222.20	0.5	4.5	2,223.20
Pinnacle West Capital	Investor-owned corporation	21,605,678.20	12,596,160.10	11,318,589.90	26,277.90	29,667.20	14,582,006.50	0.3	2.4	2.7	1,349.80	4.2	4.7	2,315.30	4.6	5.1	2,450.70
Big Rivers Electric	Cooperative	12,408,155.00	12,408,155.00	12,309,674.00	75,411.30	29,745.70	14,041,678.50	0.2	12.2	4.8	2,263.30	12.2	4.8	2,263.30	12.3	4.8	2,281.40
Exelon	Investor-owned corporation	140,490,546.00	13,275,399.00	7,668,406.00	48,995.20	19,330.00	13,791,558.90	0.3	0.7	0.3	196.3	7.4	2.9	2,077.70	10.9	3.5	2,310.10
WPS Resources	Investor-owned corporation	12,841,654.70	10,649,410.10	10,161,620.30	55,939.90	25,191.70	13,719,166.70	0.3	8.7	3.9	2,136.70	10.5	4.7	2,576.40	11	4.9	2,653.20
Nebraska Public Power District	Power district	17,602,357.00	11,105,877.00	10,974,863.00	37,784.20	30,099.20	13,423,902.40	0.2	4.3	3.4	1,525.20	6.8	5.4	2,417.40	6.9	5.5	2,430.80
San Antonio Public Service Board	Municipality	18,129,906.60	12,796,018.00	9,784,204.00	26,321.10	13,381.50	13,344,313.30	0.4	2.9	1.5	1,472.10	4.1	2.1	2,085.70	5.4	2.1	2,252.00
Great River Energy	Cooperative	11,235,573.00	11,069,937.00	11,053,806.50	42,108.40	16,216.50	13,272,150.00	0.3	7.5	2.9	2,362.50	7.6	2.9</				

Benchmarking Air Emissions of the 100 Largest Electric Power Producers in the United States - 2002

Owner	Ownership Type	Generation (MWhs)			Emissions in Tons					Emission Rates (lbs/MWh)								
		Total	Fossil Fuel	Coal	SO ₂	NOx	CO ₂	Hg	All Sources			Fossil Fuel Plants			Coal Plants			
									SO ₂	NOx	CO ₂	SO ₂	NOx	CO ₂	SO ₂	NOx	CO ₂	
Pepco Holdings	Investor-owned corporation	6,954,489.40	6,954,489.40	4,456,283.40	36,040.00	12,432.20	7,425,144.40	0.1	10.4	3.6	2,135.40	10.4	3.6	2,135.40	15.4	4.6	2,333.50	
International Power	Foreign-owned corporation (U.K.)	16,057,862.00	16,057,862.00	0	27.4	3,014.00	7,097,130.20	0	0	0.4	883.9	0	0.4	883.9	0	0	0	
Tenaska	Privately held corporation	14,498,640.00	14,498,640.00	0	183.5	2,599.80	6,565,802.70	0	0	0.4	905.7	0	0.4	905.7	0	0	0	
Alcoa	Investor-owned corporation	7,213,012.00	5,496,542.00	5,183,760.00	59,106.00	19,387.40	6,479,631.40	0	16.4	5.4	1,796.70	21.5	7.1	2,357.70	22.8	7.4	2,444.30	
Enron	Investor-owned corporation	8,960,976.60	6,744,846.60	4,938,180.50	12,152.90	12,298.00	6,443,320.90	0.1	2.7	2.7	1,438.10	3.6	3.6	1,910.60	4.9	4.6	2,247.70	
Exxon Mobil	Investor-owned corporation	8,123,321.00	7,914,031.00	365,791.00	293.1	4,670.90	6,030,327.70	0	0.1	1.2	1,484.70	0.1	1.2	1,524.00	0	0	0	
Puget Energy	Investor-owned corporation	7,128,803.40	5,782,332.40	4,616,531.60	5,602.50	12,439.90	6,012,729.30	0.1	1.6	3.5	1,686.90	1.9	4.3	2,079.70	2.4	4.7	2,338.20	
Austin City	Municipality	9,613,260.00	6,565,323.70	4,390,571.30	13,581.30	8,508.40	5,999,410.50	0.1	2.8	1.8	1,248.20	4.1	2.6	1,827.60	6.2	3.4	2,152.80	
Alabama Electric Coop	Cooperative	6,189,025.90	6,167,714.90	4,229,924.00	18,944.70	11,008.20	5,804,253.50	0.1	6.1	3.6	1,875.70	6.1	3.6	1,882.10	9	5.1	2,319.90	
Hawaiian Electric Industries	Investor-owned corporation	6,248,511.00	6,238,373.00	0	20,257.80	17,137.20	5,803,469.60	0	6.5	5.5	1,857.60	6.5	5.5	1,860.60	0	0	0	
Municipal Electric Authority	Municipality	11,193,166.70	4,834,230.70	4,830,964.30	24,152.30	7,241.80	5,139,968.40	0.1	4.3	1.3	918.4	10	3	2,126.50	10	3	2,127.90	
Cogentrix	Investor-owned corporation	6,329,729.00	6,329,729.00	2,679,937.00	8,349.90	10,048.50	5,006,767.40	0	2.6	3.2	1,582.00	2.6	3.2	1,582.00	3.8	5.7	2,251.20	
US Bureau of Reclamation	Federal power authority	43,802,830.10	4,333,209.80	4,328,563.90	973.7	8,643.20	4,971,358.40	0	0	0.4	227	0.4	4	2,294.50	0.4	4	2,297.00	
State St Bank Trust Co	Investor-owned corporation	8,480,547.00	8,480,547.00	0	118.7	4,476.20	3,936,325.90	0	0	1.1	928.3	0	1.1	928.3	0	0	0	
Dow Chemical	Investor-owned corporation	8,652,015.00	8,174,575.00	0	83.6	3,800.60	3,792,571.70	0	0	0.9	876.7	0	0.9	927.9	0	0	0	
Panda Energy	Investor-owned corporation	8,567,821.50	8,567,821.50	0	22.1	1,072.50	3,553,627.90	0	0	0.3	829.5	0	0.3	829.5	0	0	0	
Power Authority of New York	State power authority	23,527,590.00	4,220,434.00	0	1,039.80	2,175.00	2,846,802.20	0	0.1	0.2	242	0.5	1	1,349.10	0	0	0	
Sempra Energy	Investor-owned corporation	6,299,147.80	2,689,521.00	2,662,535.00	5,132.30	2,409.80	2,786,457.60	0	1.6	0.8	884.7	3.8	1.8	2,072.10	3.9	1.8	2,093.10	
El Paso Electric Co.	Investor-owned corporation	7,847,760.10	2,971,578.20	648,478.60	1,665.90	4,748.50	2,341,693.90	0	0.4	1.2	596.8	1.1	3.2	1,576.10	5.1	6.5	2,323.50	
Avista	Investor-owned corporation	6,210,594.80	1,939,656.80	1,442,560.20	1,792.50	3,868.70	1,912,762.30	0	0.6	1.2	616	1.8	4	1,972.30	2.4	4.7	2,337.80	
El Paso Corp.	Investor-owned corporation	6,120,323.00	6,120,323.00	0	54.6	303	1,409,892.30	0	0	0.1	460.7	0	0.1	460.7	0	0	0	
International Paper	Investor-owned corporation	6,999,776.00	3,610,539.00	1,110,902.00	4,349.20	5,615.80	1,210,169.00	0	1.2	1.6	345.8	2.4	3.1	670.4	2.5	5.9	2,453.20	
Seattle City	Municipality	6,879,169.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
North Carolina Municipal Power	Municipality	7,370,216.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUD No 1 of Chelan County	Power district	8,775,806.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUD No 2 of Grant County	Power district	8,845,468.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Energy Northwest	Investor-owned corporation	9,131,985.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
British Energy	Foreign-owned corporation (U.K.)	10,001,123.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
US Corps of Engineers	Federal power authority	71,418,782.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total		3,240,926,899.00	2,269,077,595.70	1,754,046,164.60	9,653,027.00	4,214,728.70	2,256,628,354.40	44.8	--	--	--	--	--	--	--	--	--	
Average		32,409,269.00	22,690,776.00	17,540,461.60	96,530.30	42,147.30	22,566,283.50	0.4	5	2.7	1,456.60	6.2	3.3	1,817.90	7.1	3.6	1,846.00	
Median		15,791,772.50	12,502,157.60	9,489,099.20	34,055.80	23,988.90	13,308,231.70	0.3	4.5	3	1,610.50	6	3.7	2,059.50	6.3	4.3	2,206.60	

Table 1: 2002 Emissions Data

RNP Exhibit 19

2. Carbon Dioxide Emissions

Overview

U.S. Anthropogenic Carbon Dioxide Emissions, 1990-2003		
	Carbon Dioxide	Carbon Equivalent
Estimated 2003 Emissions (Million Metric Tons)	5,870.2	1,601.0
Change Compared to 2002 (Million Metric Tons)	45.5	12.4
Change from 2002 (Percent)	0.8%	0.8%
Change Compared to 1990 (Million Metric Tons)	880.1	240.0
Change from 1990 (Percent)	17.6%	17.6%
Average Annual Increase, 1990-2003 (Percent)	1.3%	1.3%

Total emissions of carbon dioxide in the United States and its territories were 5,870.2 million metric tons in 2003, 45.5 million metric tons (0.8 percent) more than the 2002 total (Table 5). The increase in emissions from 2002 to 2003 can be attributed in large part to an increase in overall U.S. economic growth in 2003, and colder winter weather that increased the demand for heating fuels. The increase in emissions from 2002 to 2003 followed the same percentage increase of 0.8 percent, or 47.8 million metric tons, from 2001 to 2002 (Figure 1). Since 1990, total U.S. carbon dioxide emissions have increased by an average of about 1.3 percent per year.

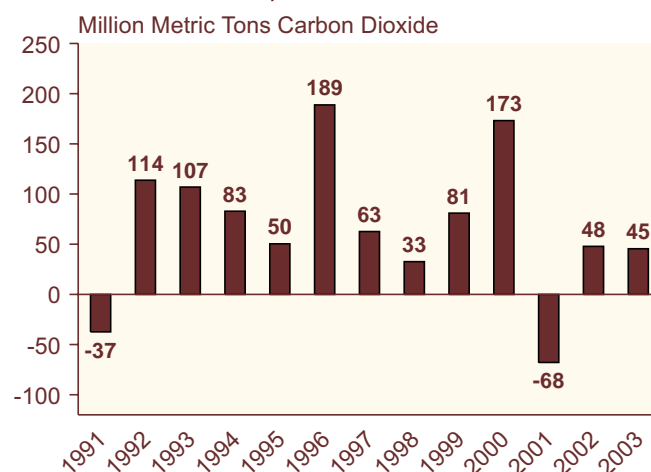
In the United States, most carbon dioxide (98 percent) is emitted as the result of the combustion of fossil fuels; consequently, carbon dioxide emissions and energy use are highly correlated. Historically, economic growth, the weather, the carbon and energy intensity of the economy, and movements in energy prices have caused year-to-year fluctuations in energy consumption and resulting carbon dioxide emissions. Annual economic growth in 2003 (3.0 percent) was higher than in 2002 (1.9 percent). In addition, there was a colder winter in 2003 than in 2002, with heating degree-days up 4 percent. The colder winter led to increased demand for heating fuels, such as natural gas and distillate fuel.

The increased demand for natural gas as a heating fuel can be seen in the residential and commercial sectors (Tables 7 and 8), where energy consumption is dominated by electricity use for air conditioning during the summer and fuel use for heating during the winter. In the residential sector (Table 7), emissions of carbon dioxide increased by 1.7 percent, from 1,193.9 million metric tons of carbon dioxide in 2002 to 1,214.8 million metric tons in 2003. In the commercial sector (Table 8), carbon dioxide emissions increased by 0.6 percent (from 1,019.8 million metric tons in 2002 to 1,025.7 million metric tons in 2003).

Industrial production rose by 0.2 percent in 2003, although industrial emissions of carbon dioxide fell by 0.3 percent, from 1,671.5 million metric tons in 2002 to 1,666.2 million metric tons in 2003 (Table 9). Trends in industrial emissions are driven in part by growth patterns in the six most energy-intensive manufacturing industries, which account for about two-thirds of total industrial emissions of carbon dioxide. In 2003, three of those manufacturing industries (primary metals, food, and chemicals) had declines in output compared with 2002 (2.3 percent, 3.6 percent, and 1.5 percent, respectively). Output from the three other energy-intensive industries increased: paper by 5.1 percent, nonmetallic minerals by 0.9 percent, and petroleum refining by 1.5 percent.

Estimates for 2003 indicate that carbon dioxide emissions in the transportation sector (Table 10) increased by

Figure 1. Annual Change in U.S. Carbon Dioxide Emissions, 1990-2003



Source: Estimates presented in this chapter.

RNP Exhibit 20

1 **SEC. 1612. SENSE OF THE SENATE ON CLIMATE CHANGE.**

2 (a) *FINDINGS.*—Congress finds that—

3 (1) *greenhouse gases accumulating in the atmos-*
4 *phere are causing average temperatures to rise at a*
5 *rate outside the range of natural variability and are*
6 *posing a substantial risk of rising sea-levels, altered*
7 *patterns of atmospheric and oceanic circulation, and*
8 *increased frequency and severity of floods and*
9 *droughts;*

10 (2) *there is a growing scientific consensus that*
11 *human activity is a substantial cause of greenhouse*
12 *gas accumulation in the atmosphere; and*

13 (3) *mandatory steps will be required to slow or*
14 *stop the growth of greenhouse gas emissions into the*
15 *atmosphere.*

16 (b) *SENSE OF THE SENATE.*—*It is the sense of the Sen-*
17 *ate that Congress should enact a comprehensive and effective*
18 *national program of mandatory, market-based limits and*
19 *incentives on emissions of greenhouse gases that slow, stop,*
20 *and reverse the growth of such emissions at a rate and in*
21 *a manner that—*

22 (1) *will not significantly harm the United States*
23 *economy; and*

- 1 (2) *will encourage comparable action by other*
- 2 *nations that are major trading partners and key con-*
- 3 *tributors to global emissions.*

Attest:

Secretary.

RNP Exhibit 21



West Coast Governors' Global Warming Initiative Staff Recommendations to the Governors¹

November, 2004

Executive Summary

Global warming will have serious adverse consequences on the economy, health and environment of the West Coast states. These impacts will grow significantly in coming years if we do nothing to reduce greenhouse gas pollution. Fortunately, addressing global warming carries substantial economic benefits. The West Coast region is rich in renewable energy resources and advanced energy-efficient technologies. We can capitalize on these strengths and invest in the clean energy resources of our region.

Recognizing these facts, the Governors of California, Oregon, and Washington launched the West Coast Governors' Global Warming Initiative in September 2003. They committed the states to acting "individually and regionally to reduce greenhouse gas emissions" through strategies that "provide long-term sustainability for the environment, protect public health, consider social equity, and expand public awareness." They directed their staffs to develop joint policy recommendations focused on, among other things, ways the West Coast states can:

- Use the states' combined purchasing power to obtain fuel-efficient vehicles and low-rolling resistance tires for motor pool fleets.
- Reduce emissions from diesel fuel in transportation through reductions in the use of diesel in ships and trucks.
- Remove barriers to and encourage the development of renewable electricity generation resources and technologies.
- Improve efficiency standards with the potential to reduce greenhouse gas emissions.
- Develop consistent and coordinated greenhouse gas emission inventories and reporting protocols and collaborate on scientific tools to measure the impact of climate change.

¹ This report was prepared by the Executive Committee of the West Coast Governors' Global Warming Initiative, comprised of Carol Jolly and Ron Shultz from Washington; David Van't Hof and Stephen Schneider from Oregon; and Bob Therkelsen and Anne Baker from California.

This initiative was well-received by the public and the media around the world. It is widely considered one of the top two or three state initiatives on climate change in the United States. (See Appendix A for selected press clippings.)

Workgroups with representatives from the three states were created to address each of the five areas. An additional sixth group on hydrogen was created later. Draft recommendations from the original five groups were made available for public review and comment in April 2004. The final list of recommendations includes, among other things:

1. Set new targets for improvement in performance in average annual state fleet greenhouse gas emissions.
2. Collaborate on the purchase of hybrid vehicles.
3. Establish a plan for the deployment of electrification technologies at truck stops in each state on the I-5 corridor, on the outskirts of major urban areas, and on other major interstate routes.
4. Set goals and implement strategies and incentives to increase retail energy sales from renewable resources by one percent or more annually in each state through 2015.
5. Adopt energy efficiency standards for eight to 14 products not regulated by the federal government, establishing a cost-effective efficiency threshold for all products sold on the West Coast.
6. Incorporate aggressive energy efficiency measures into updates of state building energy codes, with a goal of achieving at least 15 percent cumulative savings by 2015 in each state.
7. Organize a West Coast Governors' conference in 2005 to inform policy-makers and the public of climate change research concerning the West Coast states.

The Executive Committee recommends that the three Governors direct the staffs of their states to implement the recommendations in this report.

It also is clear that significant policies beyond the workgroup recommendations will be needed to meet the Governors' goal of reducing the states' greenhouse gas emissions below current levels. In addition to working together on the workgroup topic areas, each state has created its own stakeholder process to develop a more comprehensive list of recommendations for state-based climate protection strategies. These processes are in different stages in each state, and many significant new policies and measures are under consideration. Going forward, activities under this regional initiative should be coordinated with what emerges from those stakeholder groups.

The Governors should give careful consideration to four actions under consideration in one or more of the stakeholder processes that offer the most promise for achieving greenhouse gas emission reductions:

- Adopting comprehensive state and regional goals for greenhouse gas emissions reductions;
- Adopting standards to reduce greenhouse gas emissions from vehicles;
- Developing a regional market-based carbon allowance program; and,
- Expanding the markets for efficiency, renewable energy, and alternative fuels.

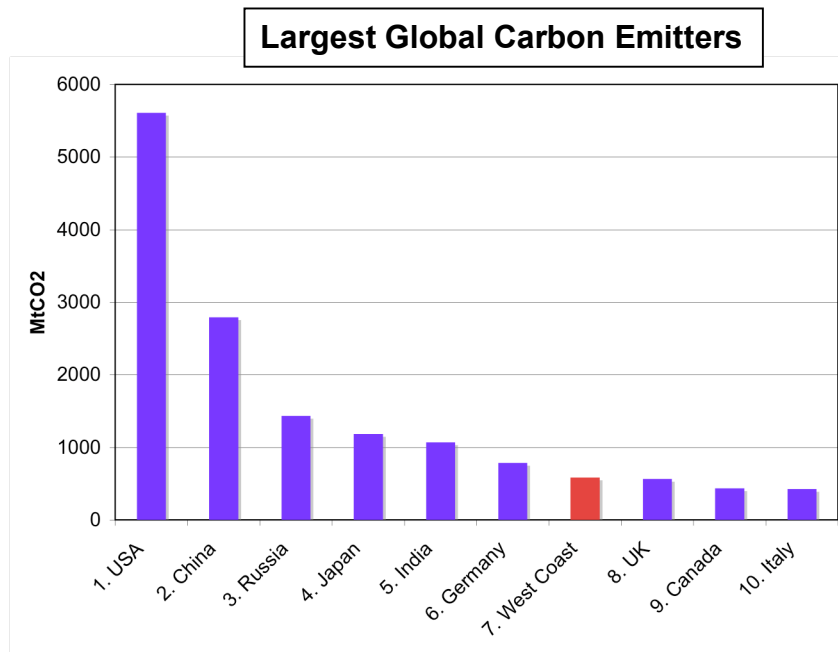
The Executive Committee recommends that the Governors continue the efforts of this West Coast Initiative over the coming year and direct the Initiative to focus its efforts on assessing the feasibility of regional greenhouse gas emission reduction strategies that arise out of the state stakeholder processes, with particular emphasis on those listed above.

We are confident that by working together, the West Coast States can take a global leadership position in reducing greenhouse gas emissions and combating global warming—while setting the stage for strong, long-term economic growth.

Background: The Problem and the Solution

The world's scientists are clear: Global warming is happening, and the world must act now to reduce greenhouse gas emissions. Global warming will have serious adverse consequences on the economy, health and environment of the West Coast states. While these consequences are not entirely predictable, the effects of global warming are already evident in the form of higher temperatures, reduced snow pack, insect infestation and increased fire danger in our forests, and rising sea levels on our ocean shores. These impacts will grow significantly in coming years if we do nothing to reduce greenhouse gas emissions.

Unfortunately, current state and federal policies will not lead to a reduction in current emission levels of the greenhouse gases associated with global warming. The Governors of the West Coast states have concluded that our states must act individually and regionally to reduce greenhouse gas emissions, and to establish precedents that will spur the development of climate polices in other states and at the federal level.



Sources: Carbon Dioxide Information Analysis Center and Tellus Institute, 2004.

The West Coast states cannot stop global warming alone. By acting together the states can have a profound impact, both substantively and politically. The states' combined carbon emissions, if compared against other countries in the world, rank 7th globally. A significant reduction in regional greenhouse gas emissions would have a measurable global impact. But more importantly, all jurisdictions, as a matter of public leadership, have the responsibility to take on the challenge of addressing global warming. We must do our part. By acting early and exhibiting state and regional leadership, the West Coast states can encourage others to follow.

The Benefits of Acting

Addressing global warming carries substantial economic benefits. The West Coast region is rich in renewable energy resources and advanced energy efficient technologies. We can capitalize on these strengths and invest in the clean energy sources of our region.

By promoting energy efficiency, renewable energy, and low-carbon technologies:

- **Our energy dollars stay invested at home instead of being exported overseas to oil and gas suppliers.**
- **In the face of record oil and natural gas prices, consumers and businesses will save billions of dollars in energy costs.** A set of representative low-carbon policies analyzed for the Initiative would save the region a cumulative total of almost \$40 billion net by 2020. (See Appendix B.)
- **The states can stimulate economic development in rural areas and the agricultural sector through development of clean energy solutions.**
- **The three states can create new jobs in the renewable energy and energy efficiency sectors.** Renewable energy and energy efficiency are more labor-intensive than fossil fuel plants. For example, a study by UC-Berkeley estimates that the California Renewable Portfolio Standard will create from 90,000 to 157,000 more new jobs by 2020 than would business-as-usual energy development.²
- **The three states can provide a hedge against the economic impact of price spikes for natural gas and oil.** Some projections show natural gas reaching prices of \$16/Mbtu this winter. Gas prices are sensitive to demand, so robust energy efficiency programs and renewable energy generation—by reducing the demand for gas—could trim this peak price significantly. A recent study shows that the three West Coast states could provide consumers with savings of \$14 billion over 4 years in lower natural gas bills and electricity system savings by adopting policies to expand investment in energy efficiency and renewable energy.³
- **Over the long term, the West Coast states will become global leaders in the development of renewable energy and energy efficient technologies.** This worldwide growth sector is poised to expand more than tenfold over the next twenty years, to more than \$180 billion a year. This will create investment opportunities, jobs in new renewable, efficiency and control technologies, and opportunities for export of innovative technologies and applications. The West Coast states are already leaders in this sector, and have a strong foundation to build on. (See Appendix C.)
- **Climate change prevention strategies will have numerous public health and environmental co-benefits.** Reducing fossil fuel combustion will also reduce the pollutants that cause smog, soot, haze, and toxic air pollution. Some of the

² Kammen, D., Kapadia, K., Fripp. M. 2004. *Putting Renewables to Work: How Many Jobs Can the Clean Energy Industry Generate?* RAEL Report, University of California, Berkeley.

³ American Council for an Energy Efficient Economy, “Natural Gas Price Effects Of Energy Efficiency And Renewable Energy Practices And Policies,” Report Number E032 December 2003.

strategies will also help ensure adequate water supplies, preserve farm and forest land uses, and reduce traffic congestion. When health care costs and other environmental damages are factored in, the cost savings from these strategies multiply.

The Costs and Impacts of Inaction

In addition to the direct economic benefits of investing in low-carbon energy sources, acting against global warming hedges against the risks posed by global warming itself. The economic costs of unchecked global warming are projected to be immense.

Sea level rise, coupled with more frequent and severe storm events, would threaten beaches, ports, low-lying towns and cities, and other coastal resources, causing severe disruption for people and ecosystems. The increased frequency and severity of storm surges may be more significant for low-lying areas than sea level rise alone. Increased storms and wave height could lead to saturated ground, increased erosion, and more slope failure in the coastal bluffs and hills.

A reduction in the mountain snow pack will exacerbate already tight water supplies, restrict agricultural production, and alter the pattern of power generation. For example, in California, the \$30 billion agriculture industry is one of the sectors most vulnerable to changes in climate and water supply.

With an increased proportion of winter precipitation falling as rain, winter flooding is more likely. Ski areas at lower elevations will likely disappear. Scenarios of future climate change in the Northwest from the University of Washington Climate Impacts Group show a snow pack decline by 2090 that could reach 72 percent below the base period of 1960 to 1990.⁴

Energy generation, salmon recovery, and infrastructure operations, including roads, bridges, and dams, are likely to be directly affected by climate change impacts, according to the Climate Impacts Group. Many of these changes may be felt within 20 years. (See Appendix D.)

Forest fires, smog, and extreme weather events, along with the attendant costs of fighting fires and protecting public health, will worsen. There have been high fluctuations in wet-dry climate cycles for the last 30 years in the Northwest. Climate change may increase the annual and decadal variability of precipitation. Climate variability, far more than fire suppression, has led to the sudden rise and severity of wildfires in recent years. In fact, climate variability is the primary determinant of fire occurrence, location, and timing.

The Institute for Natural Resources at Oregon State University hosted a symposium in June 2004 to solicit guidance from the Northwest's climate and resource scientists. The

⁴ Alan F. Hamlet, David Fluharty, Dennis Lettenmaier, Nate Mantua, Edward Miles, Philip Mote, and Lara Whitely Binder; "Effects of Climate Change on Water Resources in the Pacific Northwest: Impacts and Policy Implications;" University of Washington, Joint Institute for the Study of the Atmosphere and Ocean, July 2001.

Consensus Statement of the symposium is attached as Appendix E. The signatories of the statement describe the state of scientific knowledge regarding likely impacts of global warming to the Pacific Northwest region. The signatories agree that global warming is underway and that it is having global effects as well as impacts in the Pacific Northwest region.

The California Energy Commission has one of the nation's best research programs on the direct costs of global warming. A series of preliminary reports estimates that the cost of a limited set of impacts could rise to \$20 billion per year for California over the next century.⁵ Many experts feel that this number could be a severe underestimate. It is notoriously difficult to translate projected impacts of global warming into numeric dollar terms, given the range of uncertainty in how climate and weather will evolve, the difficulty of estimating costs that are stretched out into the future, and speculation about how the public and private sectors will respond.

A major new study on the projected impacts of climate change on California was published in August 2004 in the prestigious journal *Proceedings of the National Academy of Sciences* (see Appendix F). Authored by a team of nineteen scientists, including leading experts from California universities and research laboratories, the study provides striking new information on California's changing climate and projected impacts to human health, snow pack and water resources, agriculture and natural ecosystems. Among the conclusions are:

- By 2030, summer temperatures are projected to rise on the order of 2° to 3° Fahrenheit under the lower emissions scenario and 2° to 4.5°F under the higher emissions scenario.
- By 2100, summer temperatures rise 4° to 8°F under the lower emissions scenario and a dramatic 7.5° to 15°F under the higher emissions scenario.
- California's rapidly growing and increasingly urban population will be at greater risk for illness and death from more severe and prolonged high summer temperatures. At greatest risk are the poor, elderly and already ill.
- By the 2050s, expected heat-related deaths in Los Angeles, Riverside/San Bernardino, Sacramento, and San Francisco increase by about 60-180 percent over historic rates. By the 2090s, heat-related deaths increase by about 140-570 percent.
- Spring snow pack in the Sierra Nevada Mountains declines by about 25-40 percent before mid-century, a loss of 2.6-4 million acre-feet of water storage. By the end of the century, snow pack losses could reach 30-90 percent with serious consequences for summer water supply.
- Warmer winter storms and earlier snowmelt runoff increase stresses on California's systems of reservoirs.

⁵ This work is managed and funded under the California Energy Commission's Public Interest Energy Research program. See www.energy.ca.gov/pier/environmental/energy_global.html.

Summary of the First Year Activity of the West Coast Initiative

In September, 2003, the three Governors directed their staffs to:

“...work together during the next year to develop joint policy recommendations focused on activities that require regional cooperation and action and present them to the Governors no later than September 1, 2004. These measures should include recommendations on, among other things, ways the west coast states can:

- Use the states’ combined purchasing power to obtain fuel-efficient vehicles and low-rolling resistance tires for motor pool fleets. For example, the states are working on a uniform specification for the purchase of hybrid vehicles.
- Reduce emissions from diesel fuel in transportation through reductions in the use of diesel generators in ships at west coast ports, and in the use of diesel engines in trucks by creating a system of emission-free truck stops along the Interstate 5 corridor that stretches from Mexico to Canada.
- Remove barriers to and encourage the development of renewable electricity generation resources and technologies.
- Improve efficiency standards with the potential to reduce greenhouse gas emissions. Specifically, the states could work together to upgrade appliance efficiency standards and seek waivers of federal limitations where necessary.
- Develop consistent and coordinated greenhouse gas emission inventories, protocols for standard reporting, and accounting methods for greenhouse gas emissions; and collaborate on improved scientific tools to more precisely measure the impact of climate change.”

In addition, the Governors directed their Staffs to:

“develop their recommendations in consultation and cooperation with all interested stakeholders and the public. Staff in each state shall work with the business, environmental, and academic communities to develop recommendations as well as proposed goals by which we will measure our progress and effectiveness in reducing greenhouse gas emissions. In doing so, they should also seek to increase public understanding of global warming issues.”

Inter-State Activity

Workgroups with representatives from each of the three states were created for each of the five areas. State staff met over the course of the year via conference call and in person to discuss progress on these items. A sixth working group on hydrogen was created partway through the year. Draft workgroup papers on the original five topics were made available to the public and stakeholders in early April 2004, with a request for comments. The workgroups incorporated these comments into revised drafts that they submitted to the executive committee. The executive committee finalized the working groups’ reports and is forwarding them to the Governors via this report.

The final reports from each working group are contained in Appendix G. The policy recommendations are summarized in the next chapter of this report.

In addition to the work on the identified issues, the states requested an independent analysis of overall carbon reduction potential for the West Coast states through a range of representative policies and measures. This analysis is attached as Appendix B.

The workgroup collaborations and the three states' meetings provided venues for information-sharing and relationship-building between the three states' staff. These relationships will provide important foundations for future collaborative efforts among the states.

In-State Activity

In addition to participating in the West Coast Governors' Global Warming Initiative, each state has undertaken its own stakeholder process to create a global warming strategy. The regional work and the state stakeholder efforts are on parallel and complementary tracks.

- **Oregon** has created a Governors Advisory Group on Global Warming. This stakeholder group will submit a comprehensive set of policy recommendations to Governor Kulongoski by the end of the year. A draft set of recommendations will be circulated for public comment from mid-October to mid-November. Oregon will hold three public meetings on the draft recommendations.
- In **Washington**, the Puget Sound Clean Air Agency has convened a stakeholder group to develop a package of climate policy recommendations both for the Puget Sound region and for the state. These will be completed by the end of the year, with draft recommendations evaluated in the fall.
- In **California**, the California Environmental Protection Agency is considering a state greenhouse gas reduction target, and the Energy Commission has convened a stakeholder Climate Change Advisory Committee. This committee had its first meeting in July and will meet at least quarterly over the next year to consider California's global warming strategy.

Each state has already taken action to reduce greenhouse gas emissions. Since 1997, Oregon has required new energy facilities to offset a significant portion of their carbon dioxide emissions. During 2004, the Washington Legislature passed, and Governor Locke signed, a bill requiring new gas-fired power plants to offset a portion of their CO₂ emissions. Also during 2004, the California Air Resources Board approved draft rules for the world's first regulation of greenhouse gases from motor vehicles.

Interactions with Northeast States

Before the launch of the West Coast Governors' Initiative, the Northeast states put in place ambitious state and regional climate change programs. The New England Governors and Eastern Canadian Premiers have adopted regional goals of reducing

greenhouse gas pollution to 1990 levels by 2010, 10 percent below 1990 levels by 2020, and 75-85 percent below current levels in the long run. Several of the states have adopted these goals as their own, through administrative action or legislation. In addition, nine Northeast states, led by New York, are developing a cap-and-trade program for CO₂ from the power sector. This regional program would be the nation's first carbon cap-and-trade system. (For a more complete review of state activity on global warming, see Appendix H.)

State officials and experts from the Northeast participated in the West Coast states' meetings to allow for inter-regional learning and collaboration. The West Coast states have begun sending observers to the design meetings for the Northeast's carbon cap-and-trade program, the Regional Greenhouse Gas Initiative (RGGI), and will continue to do so as resources allow.

The Local, National, and International Profile of the Initiative

The West Coast Governors' Global Warming Initiative has received favorable public attention from many perspectives. Perhaps the best indication of the local interest is that 195 comments were received on the workgroup papers. The vast majority of public comments supported the Initiative and urged the three states to go further and be more ambitious. The nature of the comments mirrored local polls on climate change, which show the public to be strongly supportive of reducing greenhouse gas emissions.

At the national level, the Initiative has been cited favorably by policy leaders such as Senators McCain and Lieberman and has been referred to in numerous national press stories. The Initiative has even made a splash internationally. For example, it had a high profile at the launch of The Climate Group in London, and it has been covered in international press such as *The Economist* (see Appendix A). In recognition of U.S. states' efforts, the European Union has inserted a clause into their trading rules that will allow trading of carbon allowances between EU member countries and U.S. states with comparable programs, such as RGGI (if it is implemented).

Policy Recommendations

Brief descriptions of the workgroups' recommendations are summarized below. The full workgroup reports are attached as Appendix G. With few exceptions, the workgroup recommendations are being recommended here verbatim by the Initiative's Executive Committee. By design, these workgroup recommendations are focused on near-term actions, and the actions they recommend should be considered first steps toward addressing the threat of climate change. We will need to go further if we are to meet the objective of reducing global warming gases below current levels.

1. State Fleets: Working Group 1

Short Term (by October 2004).

1. Coordinate purchasing of low rolling resistance tires.
2. Provide GHG emission baseline data from operations of each state fleet.

Longer Term (between October 2004 and October 2005)

3. Set new targets for improvement in performance in average annual fleet GHG emissions.
4. Collaborate on the purchase of hybrid vehicles.
5. Develop common specification for low rolling resistance tires.
6. Develop a model “Green Fleet” Policy that identifies comprehensive best practices for fleets.
7. Determine best in class vehicle standards for each type of vehicle needed for light duty fleets (compacts, sedans, pickups, vans).
8. Develop specifications and bid selection criteria for best in-class vehicles for the various light duty and light trucks.
9. Identify key leverage points among the three states in fleet operations, and recommend actions particularly in alternative fuel implementation and market transformation.
10. Explore options to address limitations of the Energy Policy Act of 1992 in pursuing fleet purchase of hybrid vehicles.
11. Promote and collaborate with education and awareness efforts designed to communicate the benefits of cleaner, more efficient vehicles.

2a. Emission Reductions at Truck Stops: Working Group 2a

1. Broadly publicize the efforts that aid in the deployment of electrification technologies at truck stops.
2. Within six months, establish a plan for the deployment of electrification technologies at willing truck stops in each state on the I-5 corridor, the outskirts of major urban areas and on other major interstate routes.
3. Develop a more comprehensive program to reduce other forms of non-essential idling by heavy-duty vehicles.
4. Cooperate with the U.S. Environmental Protection Agency’s West Coast Diesel Emissions Reduction Collaborative to address truck emissions.

2b. Emission Reductions at Marine Ports: Working Group 2b

1. Continue the states’ coordination effort related to port electrification through participation in the Marine Vessels and Ports Sector Workgroup within the West Coast Diesel Emissions Reductions Collaborative, and provide periodic progress reports to the West Coast Governors’ Global Warming Initiative.
2. Work with stakeholders and interested parties to identify and implement actions that are available to reduce port-related emissions.

3. Renewable Resources: Working Group 3

Specific Near-Term Recommended Actions:

1. Establish goals and strategies for state and local government purchases of renewable energy.

2. Assist the states congressional delegations to extend the Federal Wind Production Tax Credit for no less than ten years and expand it to include biomass, biofuels, geothermal, solar, ocean energy, new hydro, and other renewable resources.
3. Encourage Public Utility Commissions and local suppliers to adopt Western Renewable Energy Generation Information System reporting requirements for renewable resources.
4. Improve renewable resource access on public lands.
5. Increase use of non-petroleum fuels to 20 percent of on-road fuel consumption by 2020 and 30 percent by 2030 based on identified strategies that are achievable and cost-effective.

Recommendations for Longer-Term or Broader-Focused Actions

1. Set goals and implement strategies and incentives to increase retail energy sales from renewable resources by one percent or more annually in each state through 2015.
2. Establish energy efficiency incentive standards in Washington comparable to Oregon and California.
3. Influence the Western Interconnection to place grid expansion investment priority where it supports development of renewable resources.
4. Encourage and assist the states' Congressional delegation to adopt a national renewable or emissions and efficiency portfolio standard.
5. Develop and promote net-zero or premium efficiency homes with integrated renewable resources.

4. Codes and Standards: Working Group 4

Specific Near-Term Recommendations

1. Continue to defend the states' authority to adopt energy efficiency standards for products not covered by the federal government, and oppose the federal government's attempts to add products to its list of federally regulated standards prematurely.
2. Direct agencies to secure investments from energy efficiency to support the continued development and implementation of building energy codes and appliance efficiency standards.
3. Adoption of energy efficiency standards for eight to 14 products, not regulated by the federal government, establishing a cost-effective efficiency threshold that all products sold on the West Coast must achieve.
4. Defend the rights of states to require manufacturers to certify the performance of federally covered products to the state.

Recommendations for Longer-Term Actions

1. Incorporate aggressive energy efficiency measures into updates of state building energy codes, with a goal of achieving at least 15 percent cumulative savings by 2015 in each state.

2. Intervene in and inspire the federal rulemaking process to capture all cost-effective upgrades to federal energy efficiency standards for all federally regulated products.

5. Inventories/Protocols/Scientific Research: Working Group 5

1. Organize a West Coast Governors' conference in 2005 to inform policy-makers and the public of climate change research concerning the West Coast states.
2. Further refine their accounting of emission reductions through materials use and recycling, considering the difference between accounting for in-state consumption and production.
3. Update greenhouse gas inventories every three years, or as necessary to track progress toward goals that may be adopted.

Recommendations: Next Steps

Significant new policies beyond those recommended by the workgroups would need to be put in place to achieve a reduction in greenhouse gas emissions. Indeed, in the face of strong economic growth, reducing emissions below current levels is a significant challenge. Nonetheless, this remains the appropriate goal for any serious climate effort. Given the promises of new technologies, we are optimistic that the twin goals of economic growth and environmental protection can be met.

We recommend that the three Governors endorse an ambitious agenda for the next phase of work under the West Coast Governors' Global Warming Initiative that, when combined with in-state actions, will put the region on track to turn around its greenhouse gas emissions curve and reduce greenhouse gas emissions below current levels.

Although we have not yet arrived at a set of specific policy actions to meet this goal, we can suggest areas of focus based on the preliminary work that has been done. Based on this analysis and on actions under discussion in the state-level climate change stakeholder processes, we recommend several measures for further consideration under the Initiative. Announcement of next steps for regional action should be coordinated with the products of the in-state processes.

- 1. The three Governors should direct the staffs of their states to implement the recommendations in this report.**
- 2. The West Coast states should consider adopting comprehensive state and regional goals for greenhouse gas emissions reductions.** Changes in the level of greenhouse gas emissions are the benchmark that illustrates how well a state or region is doing to address the challenge of global warming. Many countries have committed to binding reduction targets; a handful of states have committed to nonbinding targets; and, numerous cities and companies have adopted reduction targets. Some of these targets are described in Appendix I. The West Coast's targets should be visionary and reflect a global leadership position.

3. **The West Coast states should consider adopting common standards to reduce greenhouse gases from vehicles.** Transportation is the largest single source of greenhouse gas emissions in the region, and it will be an even greater proportion in the future. California's vehicle standards for greenhouse gases, once fully implemented, will reduce emissions of new cars and light trucks by up to 30 percent and save California consumers \$4.5 billion net by 2020, while bringing new automobile technology to the marketplace.
4. **The West Coast states should evaluate a regional market-based carbon allowance program.** A carbon cap-and-trade program is likely to be the eventual form of federal regulation of carbon, and moving early on a carbon allowance strategy would position our states' industries to be more competitive in a low-carbon world. Although the West Coast's electricity sector is cleaner than in most of the U.S., electric utilities are still our second-largest source of carbon pollution, in part because we import significant amounts of coal-generated power. To address this pollution, we need a market-based solution that is appropriate to the West Coast. It would be productive to explore the policy options and economics of a carbon allowance program at a regional level because a regional market for carbon reductions would be more efficient and effective than individual state markets.

As part of its exploration of a regional carbon allowance program, the West Coast states should become formal observers to the Regional Greenhouse Gas Initiative process in the Northeast. Our states could benefit greatly from tracking the progress of the Northeast states' exploration of the policy and economic issues that arise when designing a regional carbon market.

5. **The West Coast states should expand the markets for efficiency, renewable energy, and alternative fuels.** These areas present other significant opportunities to reduce pollution more deeply over time, and should be considered as options for inter-state collaboration in year two of the West Coast Governors Initiative. Some of these areas are cost-saving, especially efficiency; other areas may have some cost, but will result in economic benefits, such as renewables and alternative fuels.
 - a) **Consider collaboration on, and expansion of, energy efficiency programs and markets for electricity and gas.**
 - b) **Establish a working group to develop a coordinated approach to developing markets for alternative fuels, including biofuels and hydrogen.**
 - c) **Establish a working group to assess how markets for renewable energy can be expanded throughout the West Coast states, including enhancement of the transmission system to allow for continued renewable energy development.**

Conclusion

This list of recommendations sets out an ambitious agenda, but steps such as these will be necessary to counter the threat of global warming. The science is unequivocal that in order to avert the worst consequences of global warming—which become more threatening with each new phase of research—we must begin turning around our greenhouse gas emissions curve now. The West Coast states are in a good position to demonstrate leadership and to advocate actions by the federal government, other states, and the private sector to reduce greenhouse gas pollution.

The economic benefits of these low-carbon strategies are real. In the short run, energy efficiency strategies will save consumers billions on energy costs, fossil fuel prices will moderate with the reduction in demand, and the region will benefit from reduced energy price volatility.

Over the longer run, these strategies will ensure the West Coast’s continued technological leadership by promoting advanced energy efficiency and renewable technologies—technologies that will be the foundation of economic growth in the future.

The Governors have shown long-term vision by supporting the West Coast Governors’ Global Warming Initiative. By working together, the West Coast states can demonstrate that combating global warming and strong economic growth go hand-in-hand.

Appendices

- A. Selected press clippings
- B. “Turning the Corner on Global Warming Emissions,” Tellus Institute
- C. “Poised for Profit II” Executive Summary, The Athena Institute
- D. “Overview of Climate Change Impacts in the U.S. Pacific Northwest,” University of Washington, Climate Impacts Group
- E. “Scientific Consensus Statement on the Likely Impacts of Climate Change on the Pacific Northwest,” Institute for Natural Resources, Oregon State University
- F. “Emissions Pathways, Climate Change, and Impacts on California,” from the *Proceedings of the National Academy of Sciences*
- G. Working Group Reports
- H. Review of Actions by States: Senate Testimony by Kenneth Colburn
- I. Setting a Global Warming Pollution Reduction Target, The Energy Foundation
- J. Contact List for the West Coast Governors’ Global Warming Initiative

RNP Exhibit 22

Press Release

April 13, 2005

Governor Announces New Steps to Curb Global Warming in Oregon

(Salem, OR) – Today Governor Ted Kulongoski announced five new initiatives to curb global warming in Oregon as part of a regional strategy to reduce greenhouse gas emissions in the Northwest. The initiatives are based on the recommendations of The Governor's Advisory Group on Global Warming, which developed a report called the *Oregon Strategy for Greenhouse Gas Reduction*. The Governor also announced his continued commitment to work with his fellow governors in the broader West Coast Governors Global Warming Initiative.

"The threats of global warming are real and Oregon has an opportunity to be a leader on the front end by developing new technologies, investing in renewable energy, and practicing conservation – which will reduce greenhouse emissions in our state," Governor Kulongoski said. "I am impressed by the report delivered to me last month from my advisory group, and am pleased to announce five recommendations from that report that we will begin putting into action today. These five steps will put Oregon on the map as a national leader in the efforts to combat global warming and reduce greenhouse gas emissions."

The Governor's announcement included: 1) establishing new greenhouse gas reduction goals for the state; 2) appointing a task force to develop a plan for how Oregon can implement stricter emission standards for vehicles; 3) appointing a workgroup to develop a carbon dioxide reduction schedule for utilities and other large emitters of carbon dioxide; 4) directing the Oregon Department of Energy to create an energy-saving campaign to reduce state agency energy use by at least 20 percent by 2015 and energy use statewide by at least 20 percent by 2025; and 5) launching an aggressive campaign to increase renewable energy and bio fuel production and use in the state pursuant to strategies contained in the state's Renewable Energy Action Plan.

Governor Kulongoski created the Advisory Group on Global Warming in February 2004 and asked it to develop a statewide strategy to reduce greenhouse gas emissions that would complement the regional work of the West Coast Governors Global Warming Initiative. The Advisory Group included 28-leading members of the business, academic, and environmental communities and state agencies. The Co-Chairs of the group were Dr. Jane Lubchenco, Valley Professor of Marine Biology, Oregon State University, and Mr. Mark Dodson, Chief Executive Officer, Northwest Natural. The group met for the first time in February 2004 and delivered its final report to the Governor on March 24, 2005 after receiving input from approximately 400 Oregonians.

In addition to the announcement today, the Governor **sent a letter to Senate President Peter Courtney and House Speaker Karen Minnis** urging the adoption of several bills that would expand renewable energy options for Oregon residents, businesses and state government – which is an important part of the Governor's global warming strategy (see text of letter below).

"At a time when Oregon is facing record high fuel and energy prices it is essential that we aggressively conserve our energy use and diversify our energy supply over the coming years to benefit both our urban and rural economies, reduce our vulnerability to rising oil and natural gas prices, and do our part to curb global warming," the Governor said in his letter. "We have an opportunity to solidify Oregon's role as a leader on this issue, which reaches across party and regional lines by helping both our economy and our environment today and into the future."

The Governor will appoint the new task force and workgroup within the next two months and will continue to explore and implement other recommendations made by his advisory group. For the complete *Oregon Strategy for Greenhouse Gas Reduction*, go to:
<http://egov.oregon.gov/ENERGY/GBLWRM/Strategy.shtml>

The text of the letter follows:

April 12, 2005

The Honorable Peter Courtney

Senate President

900 Court Street NE S203

Salem OR 97301

The Honorable Karen Minnis

Speaker of the House of Representatives

900 Court Street NE Rm 269

Salem OR 97301

Dear President Courtney and Speaker Minnis:

As deadlines approach for moving legislation out of committees, I wanted to express my support for a number of renewable energy bills under consideration this session. It is essential that we aggressively diversify our energy supply over the coming years to benefit both our urban and rural economies, reduce our vulnerability to rising oil and natural gas prices, and do our part to curb global warming. I therefore urge you to work with your members to enact the legislation outlined below so that we can move forward together to help achieve those goals for Oregon.

Biofuels (*House Bills 3030-3034 and Senate Bill 736*): The House Bills promote the expansion of the ethanol and biodiesel markets in Oregon, which would result in new opportunities for construction, and jobs, through the building and operation of a number of planned ethanol and biodiesel facilities over the next several years. The Senate Bill complements the House Bills by accelerating the ability to site a biodiesel facility by exempting it from the Energy Facility Siting Council Process (ethanol facilities already are exempt). There are proposed biofuels facilities to be sited in both the eastern and western parts of the state.

Renewable Energy (*Senate Bills 84, 733, 735 and 834*): This package of legislation strengthens incentives and removes existing barriers to the development of renewable forms of electricity such as solar, wind, biomass, micro hydro and geothermal, which will result in an increase in renewable energy projects, particularly in rural communities. This Specifically, the bills: authorize the Public Utility Commission to increase the amount of energy that can be net metered (and adds biomass to the qualifying list); modify the residential energy tax credit program to allow multiple year credits for solar installation (while not increasing the maximum amount of credits available); improve the small energy loan program; and establish a fund to assist communities in completing feasibility studies for renewable energy projects.

State Energy Use (*SB 737; HB 3001; HB 3034; HB 3328*): The legislation in the House and Senate is consistent with our shared goal of increasing government efficiency and accountability. the bills authorize state agencies to develop renewable energy on state lands, require new public buildings to integrate cost effective solar design and technology (from daylighting to solar panels), require the Department of Energy to develop a plan to reduce energy use and increase onsite use of renewable energy technologies, and require state agencies to increase their use of biofuels in state vehicles. These bills will ensure that state government is leading by example to help save energy, diversify energy use, and stimulate economic development in the renewable energy and biofuels sectors.

Energy Savings (*HB 3363*): This bill requires higher efficiency commercial appliances in Oregon. The twelve appliances covered under the bill already are on the market and save significant amounts of both energy and water. It is just as important to use energy more efficiently as it is to increase our use of renewable energy – which this bill will help us accomplish.

We have an opportunity this session to solidify Oregon's role as a leader on the issues of renewable energy and biofuels production, which reaches across party and regional lines and will help grow our economy and protect our environment both today and into the future. We can and must move forward at this critical juncture. More jobs, reduced reliance on overseas fossil fuels,

and a better environment are all good reasons to support the bills outlined above.

I look forward to working with you in the coming weeks to see these initiatives move from legislation to law.

Sincerely,
THEODORE R. KULONGOSKI
Governor

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RNP Exhibit 23



California Public Utilities Commission

505 Van Ness Avenue, San Francisco, CA 94102

POLICY STATEMENT ON GREENHOUSE GAS PERFORMANCE STANDARDS October 6, 2005

WHEREAS, In June 2005 Governor Schwarzenegger announced his groundbreaking initiative to reduce California's greenhouse gas (GHG) emissions to 1990 levels by 2020; and

WHEREAS, The California Public Utilities Commission (PUC) is actively participating in the Governor's Climate Action Team and is implementing energy policies that are consistent with the GHG goals; and

WHEREAS, Over the past 12 months the State of California has taken significant strides towards implementing an environmentally and economically sound energy policy through Governor Schwarzenegger's GHG reduction targets and the adoption of the Energy Action Plan II (EAP II) by the PUC and the California Energy Commission (CEC). These policies recognize that principal reliance on energy efficiency, conservation measures and renewable resources is the path to a sustainable energy future that ensures adequate and reliable supply at stable prices; and

WHEREAS, The PUC will meet the Governor's GHG goals and implement the policies set forth in EAP II. The PUC has established new, aggressive standards for energy efficiency and is developing a plan to meet the Governor's goal of a 33 percent renewable portfolio standard by 2020; and

WHEREAS, To the extent efficiency, demand response, renewable resources, and distributed generation are unable to satisfy increasing energy and capacity needs, EAP II states that the State will rely on clean and efficient fossil-fired generation. A key action item in EAP II is to "encourage the development of cost-effective, highly-efficient, and environmentally-sound supply resources to provide reliability and consistency with the State's energy priorities."; and

WHEREAS, The PUC concluded in its December 2004 decision approving the IOUs' long-term procurement plans (Decision 04-12-048) that future regulation of GHG emissions is probable and directed the Investor Owned Utilities (IOUs) to employ an environmental adder in evaluating procurement bids. A GHG emissions standard will further serve to internalize "the significant and under-recognized cost of GHG emissions" recognized in the PUC's Decision, and to reduce California's exposure to costs associated with future regulation of these emissions; and

WHEREAS, The establishment of a policy such as a GHG emissions standard for all electric procurement is a logical and necessary step to meet EAP II and the Governor's GHG goals. In order to have any meaningful impact on climate change, the Governor's

GHG emissions reduction goals must be applied to the State's electricity consumption, not just the State's electricity production; and

WHEREAS, The CEC has requested the PUC's input on a proposed GHG policy for electricity generation contained in the 2005 draft *Integrated Energy Policy Report* (Draft IEPR) that, ". . . any GHG performance standard for utility procurement be set no lower than levels achieved by a new combined-cycle natural gas turbine."; and

WHEREAS, In a letter to the IEPR Committee, CEC Chairman Desmond stated, ". . . California should act to minimize potentially significant reliability and cost risks by avoiding more long-term investments (exceeding 3-5 years in duration) in baseload power plants with emissions per megawatt-hour of greenhouse gases and criteria air pollutants exceeding those of a combined cycle natural gas turbine."; and

WHEREAS, The State's energy agencies must act expeditiously and in concert to send the right investment signals to electricity markets throughout the West. Many of the resources that may generate electricity for consumption in the State are currently in the planning stage. For example, there are approximately 30 proposed coal fired plants across the West, some of which are planned in anticipation of meeting demand in California. The carbon dioxide emissions from just three 500 MW conventional coal-fired power plants would offset all of the emissions reductions from the IOUs' energy efficiency programs and would seriously compromise the State's ability to meet the Governor's GHG goals. As the largest electricity consumer in the region, California has an obligation to provide clear guidance on performance standards for utility procurement; and

WHEREAS, Publicly-owned utilities currently are not required to meet the state's energy efficiency, renewables and environmental standards.

NOW, THEREFORE, BE IT

RESOLVED, The PUC directs the Executive Director to forward this Policy Statement and a report on the deliberations of the PUC on this matter to the CEC;

RESOLVED, The PUC directs Staff and its General Counsel to investigate adoption by the PUC of a greenhouse gas emissions performance standard for IOU procurement that is no higher than the GHG emissions levels of a combined-cycle natural gas turbine for all procurement contracts that exceed three years in length and for all new IOU owned generation. In the case of coal-fired generation, the capacity to capture and store carbon dioxide safely and inexpensively is necessary to meeting the standard;

RESOLVED, The PUC directs Staff and its General Counsel to promote and advocate for policies at the state and federal levels that encourage the development of environmentally sound resources with an emphasis on reductions in GHG emissions;

RESOLVED, That the PUC authorizes Staff to investigate the integration of a GHG performance standard into the PUC's existing policies regarding GHG emissions including the environmental adder, the procurement incentives framework, as well as the work of the Governor's Climate Action Team and the CEC. A critical step in this process will be to collect specific fuel type information for IOU procurement at a level of detail that will allow the State to ensure that the performance standard is met;

RESOLVED, The PUC directs Staff, working with the CEC, to investigate offset policies that are designed to ensure that the Governor's GHG goals are achieved. In addition, the PUC directs Staff to consider whether an offset policy would eliminate the important benefit of mitigating financial risk to California consumers of future GHG regulation and also significantly dampen the market signal for investment in new and improved technologies for clean generation. Finally, any offset policy must include a reliable and enforceable system of tracking emissions reductions;

RESOLVED, In order to ensure consistency, the PUC calls on the publicly-owned utilities to reduce emissions that contribute to global warming by adopting energy efficiency and renewables goals that are comparable to the standards that the IOUs are required to meet under state law and regulation, as well as adopting an equivalent GHG performance standard.

RNP Exhibit 24

The background of the page is a scenic landscape. At the top, a large, snow-capped mountain peak rises against a clear blue sky. Below the mountain is a dense forest of evergreen trees. In the foreground, a vast field of purple flowers, likely lupines, stretches across the bottom half of the image. A yellow line graph with multiple peaks is overlaid on the bottom right portion of the purple flower field.

The Fifth Northwest Electric Power and Conservation Plan

In addition, deep ocean disposal and mineral trapping in the basalt formations that underlie much of eastern Washington and Oregon and southern Idaho have been proposed as possible candidates for carbon dioxide sequestration.

The coal-gasification power plant called for in Action GEN-7 provides the opportunity to further develop coal-gasification power generation technology and the technology of carbon separation and sequestration. The feasibility of augmenting the proposed coal-gasification power plant with technology demonstration features without compromising the underlying power generation mission of the plant should be investigated.

ACTION GEN-13

The Council, states, Bonneville, utilities, and other interested organizations should investigate the feasibility of developing the proposed coal-gasification, combined-cycle power plant of Action GEN-7 with advanced coal-gasification technology demonstration capability, including carbon separation and sequestration

The objectives of the project could include demonstration of the operation of the gasifier during an extended period on the full variety of regional coals and lignites, testing of gas turbine operation on high hydrogen fuels, testing and confirming bulk carbon sequestration in suitable regional geologic formations, and testing equipment and process improvements designed to improve the economics of gasification, carbon separation, transport and injection, co-product production, or other aspects of coal-gasification power plants. Demonstration activities should not compromise the basic power production mission of the plant. The availability of federal or other supplementary funding to help cover the cost of the additional investment associated with the demonstration role of the project, or to justify advancing the timing of Action GEN-7 development should be investigated.

Crown Point, in the Columbia River Gorge

