

August 9, 2010



To: Interested Parties

From: Cesia Kearns, Coal Free Oregon

Re: Upcoming Decisions for the Future of Portland General Electric's Boardman Coal-fired Power Plant

The ongoing debate about how soon Oregon can be free of its dirty and dangerous addiction to coal-fired power is entering another chapter. The following memo was prepared to brief stakeholders and interested parties of progress made in the effort to stimulate the clean-energy economy in Oregon by phasing out the use of outdated coal-fired power.

Background

PGE's Boardman coal-fired power plant is the single largest stationary source of pollution in the state of Oregon. The plant was originally scheduled to operate until at least 2040, but because the plant is so dirty, both federal and state environmental regulators are requiring the company to install pollution controls that will limit toxic emissions from the plant. The longer PGE plans to operate the plant, the more expensive the pollution controls required, inducing PGE to invest increasing capital in the outdated plant.

Faced with these investments, PGE has been trying to find a way to avoid installing the necessary controls at Boardman, including exploring earlier phase-out dates for the plant. The company has been pursuing a transition date of 2020 for the Boardman plant with a very limited approach to controlling air pollution until that closure date, even though the plant has already been operating for more than 30 years without modern pollution controls. Last month, the Oregon Department of Environmental Quality (DEQ) rejected PGE's 2020 proposal, indicating that this plan would not meet federal standards. Soon after, the DEQ proposed three options for PGE to pursue a reasonable transition date for the Boardman plant while still satisfying air quality rules (please see attachment A to this memo for a detailed look at the options offered by DEQ).

The earliest transition date offered by the DEQ (the 2015/2016 option) is the least-cost option for investing in pollution controls. Though PGE's 2020 proposal was rejected by the DEQ, PGE continues to request approval of virtually the same plan. **PGE's current 2020 proposal is largely a misguided repackaging of a previous proposal that was deemed unacceptable by the DEQ for meeting air quality standards¹.** Worse, PGE is threatening to return to the company's earlier plan of burning coal at the plant until at least 2040 if the company's 2020 demands are not met.

Next Steps

On Tuesday, August 10th, PGE will file a revised Integrated Resource Plan (IRP) with the Public Utility Commission (PUC), which identifies the utilities' future energy resource mix. This revised IRP will primarily concern changes in plans for the future of operations at Boardman and is expected to include PGE's current 2020 proposal.

¹ The only addition to the "new" 2020 proposal from PGE is an offer to "look at" installing a sorbent injection system to control sulfur dioxide. The catch is that, under PGE's proposal, if the sorbent injection system causes a 10 ton or higher per year increase in fine particulate matter emissions, they will not go forward with the addition because it would trigger new requirements for controlling fine particulate.

The PUC must determine whether or not to acknowledge investments in pollution controls at the Boardman plant through PGE's IRP. The PUC Commissioners will host a technical workshop to ask questions of the company and compare information on the proposed DEQ options for pollution controls at Boardman on August 23rd. Under the current schedule, the PUC will make their final determination on PGE's IRP at their regular meeting on November 9th.

The DEQ must also respond to PGE's "repackaged 2020 proposal" and will be taking public comment on the proposed options for transition and pollution controls for the final rules starting September 1st. The DEQ will likely hold a public hearing on this matter as well. The DEQ is expected to finalize the option for air pollution control at Boardman in early December. Participation in the DEQ public input process will be important for providing DEQ public backing for a stronger transition date and pollution control option.

Significant Obstacles Ahead

Even if PGE were to somehow obtain approval of an environmentally lax 2020 transition plan from the DEQ and EPA, they still face multiple regulatory hurdles that could trigger additional investments before 2020 including:

- Federal Maximum Available Control Technology (MACT) air quality standards to control additional air toxics such as hydrochloric acid and mercury, which could be enacted as early as 2014.
- Regulation of coal combustion waste (fly ash) by the EPA, which could require more stringent containment and disposal technology systems.
- Carbon emissions regulation through EPA, Congress or the Oregon Legislature.

None of these hurdles are addressed in PGE's 2020 plan.

Conclusion

PGE has a history of avoiding compliance with environmental laws and regulations, and their most recent proposal to the DEQ embodies the same pattern of unwillingness to take improvements in air quality seriously. Rather than take responsibility for a history of operations without modern pollution controls, PGE is trying to strong-arm regulatory bodies and other stakeholders into letting them off the hook once again by threatening to return to their universally unpopular plan to burn coal at Boardman through at least 2040. **Now that the DEQ has provided clear expectations and choice for PGE, it's time the company pursues health and environmental improvements through an early transition from coal and makes more aggressive investments in energy efficiency and renewable energy.**

The DEQ 2015 option is less expensive than the other options (as seen in attachment B) while providing significant air quality improvements— something Oregonians have been waiting more than thirty years to achieve. Combined with the regulatory hurdles PGE faces before 2020, the significant cost of pollution controls for later transition dates, and the health, environmental, and additional economic benefits of moving off coal at Boardman, supporting the DEQ option for transition off of the Boardman coal plant in 2015 is the most prudent choice. Please see attachment A for a more detailed comparison of the benefits of the DEQ 2015 option.

Attachments:

- A – Expert Analysis of PGE's Options
- B – DEQ Factsheet on PGE's Options



Retiring PGE's Boardman Plant in 2015 is a Realistic and Economic Option

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The Oregon Department of Environmental Quality (“DEQ”) has created three draft options for the BART controls for PGE’s Boardman Plant.

Option 1: Closure at the end of 2020 – Would require adding a low NOx burner system in 2011 and SO₂ scrubbers and Selective Non-Catalytic Reduction (“SNCR”) controls in 2014. The DEQ estimates that this Option 1 would require a total capital investment of \$320.6 million.

Option 2: Closure at the end of 2018 – Would require adding a low NOx burner system in 2011 and SNCR controls and a Dry Sorbent Injection (“SDI”) system in 2014. The DEQ estimates that this Option 2 would require a total capital investment of \$102.6 million.

Option 3: Closure in 2015 or 2016 – Would require adding a low NOx burner system in 2011. The DEQ estimates that this Option 3 would require a total capital investment of \$35.7 million.¹

Thus, Options 1 and 2, retirement of the Boardman coal plant at the end of 2018 or the end of 2020, would require significant investments in 2014 (that is, \$285 million for Option 1 and \$67 million for Option 2) that would have to be recovered from PGE’s ratepayers in relatively short periods of time.² Under DEQ Option 3, ratepayers would have to pay for only the initial \$35.7 million investment in 2011 for a low NOx burner system.

Data provided by PGE as part of the Company’s 2009 Integrated Resource Plan (“IRP”) filing with the Oregon PUC showed that retiring the Boardman plant at the end of 2015 would have essentially the same net present value cost for ratepayers as retiring the plant at the end of 2018.³ The same data showed that both of these scenarios, that is, retirement at the end of 2015 or 2018, would be less expensive for ratepayers than operating the plant through the end of 2020.

However, PGE’s IRP modeling did not reflect the full costs of either DEQ Option 1 (closure at the end of 2020) or DEQ Option 2 (closure at the end of 2018). Instead, PGE assumed in its IRP modeling that it would only have to install a low NOx burner system in 2011 in order to be able to operate Boardman through the end of 2018 or 2020.⁴ Thus, PGE did not include the additional \$285 million investment that it would have to make in 2014 to operate through the end of 2020 under DEQ Option 1 or the additional \$67 million investment that the Company would have to make in order to operate through the end of 2018 under DEQ Option 2. If these investments were included:

¹ *Details on DEQ Draft Options for Early Retirement of the PGE Boardman Plant.* Available at <http://www.deq.state.or.us/aq/haze/shutdown.htm>.

² Under currently Oregon law, these investments would have to be recovered from ratepayers by the end of 2018 (four years) under DEQ Option 2 and by the end of 2020 (six years) under DEQ Option 3.

³ See PGE’s First Supplemental Response to PEAC Data Request No. 073 in Oregon PUC Docket No. LC 48.

⁴ *PGE 2009 Integrated Resource Plan Addendum*, April 9, 2010, at page 87.

- The overall net present value cost for ratepayers of retiring Boardman in 2015 or 2016 (DEQ Option 3) would be slightly lower than the cost of retiring Boardman at the end of 2018 (DEQ Option 2).
- The overall net present value cost for ratepayers of retiring Boardman in 2015 or 2016 (DEQ Option 3) or at the end of 2018 (DEQ Option 2) would be substantially lower than the cost of operating Boardman through the end of 2020 (DEQ Option 1).
- The overall net present value costs of all of the early closure scenarios (DEQ Options 1, 2 and 3) would be substantially lower than the cost of continuing to operate the plant through the end of 2040.

Moreover, these results may understate the cost advantages of retiring Boardman in 2015 or 2016, as compared to the later retirement dates. In fact, DEQ Option 3 is the only option that would minimize, or avoid entirely, the costs of (a) complying with federal Maximum Available Control Technology (“MACT”) requirements for harmful air pollutants and (b) satisfying federal air emission laws that are currently at issue in Boardman-related litigation.

For example, looming in the background of all three of the DEQ’s BART compliance options is EPA’s requirement that major sources of pollution need to implement MACT for harmful toxic air pollutants as soon as November 2014. For the Boardman coal plant, the MACT rules will likely include controls for mercury, and toxic acid gases, such as hydrochloric acid and hydrogen fluoride. While all three of the DEQ’s BART options include requirements to reduce mercury in 2012, the plant will still need to make additional investments to comply with MACT for other toxic air pollutants. Operating Boardman until 2018 (DEQ Option 2) or 2020 (DEQ Option 1) would expose PGE to the risk of having to make significant new investments in pollution controls to bring the Boardman plant into compliance with MACT standards for the toxic air pollutants it currently releases. DEQ Option 3, closure of Boardman in 2015 or 2016, would be the most likely to allow PGE to avoid significant and costly new pollution control upgrades.

DEQ Option 3 also is the option that will likely harmonize well with any remedy ordered for PGE’s past and on-going violations of the Clean Air Act at Boardman. If the Plaintiffs in the *Sierra Club v. Portland General Electric* litigation are successful, PGE will be required to comply with stringent emissions standards under the New Source Performance Standards (requiring 90% control of sulfur dioxide), and/or the New Source Review Program (requiring the “Best Available Control Technology” for sulfur dioxide and nitrogen oxides).

Compliance with these programs was required at least a decade ago, according to papers that the Plaintiffs filed with the court. Although the court may give the company some time to comply if Plaintiffs are successful, it is not reasonable to expect that the court would grant a compliance extension for an additional 8-10 years. Thus, PGE may have to install controls equal to or more costly than the original BART controls, far sooner than required by any of the DEQ options.

The cost advantages of retiring Boardman in 2015 or 2016, as compared to retirement at the end of 2018 or 2020, also may be understated because PGE assumed in its IRP analyses that it would immediately replace the Boardman plant with an equivalent natural gas-fired unit. However, the Company did not evaluate whether such an immediate replacement of Boardman by a gas-fired unit would be a least-cost replacement. Consequently, PGE never examined whether the replacement of Boardman by a combination of a mid- to long-term power purchase agreements (“PPA”), increased energy efficiency, additional renewable resources and, perhaps, some new gas-fired capacity might yield a lower cost alternative. As a result, PGE may be overlooking alternatives to Boardman that are better from economic, environmental and reliability points of view than building a new natural gas-fired central station power plant in 2015 or 2016.

In fact, there appears to be substantial amount of existing gas-fired generating capacity and energy available in Oregon and the Northwest to allow for a mid- to long-term PPA (4 to 5 years or longer). Such a PPA could, if necessary, replace the power that would be generated by Boardman for at least the medium term while longer term options such as additional energy efficiency and renewable resources are developed and, if necessary, a new combined cycle unit is built. For example, in its Opening Comments in Oregon Public Utilities Commission Docket LC 48, the Northwest and Intermountain Power Producers Coalition noted that “In 2010, a conservative estimate found on the order of 3,000 MW [of merchant-owned generating capacity] current exists in the region and is available to meet capacity shortfalls from the closure of the Boardman plant.”⁵

Information from the Northwest Power and Conservation Council (“NWPPCC”) similarly reveals that there is substantial amount of under-utilized natural gas-fired combined cycle capacity in the region.⁶

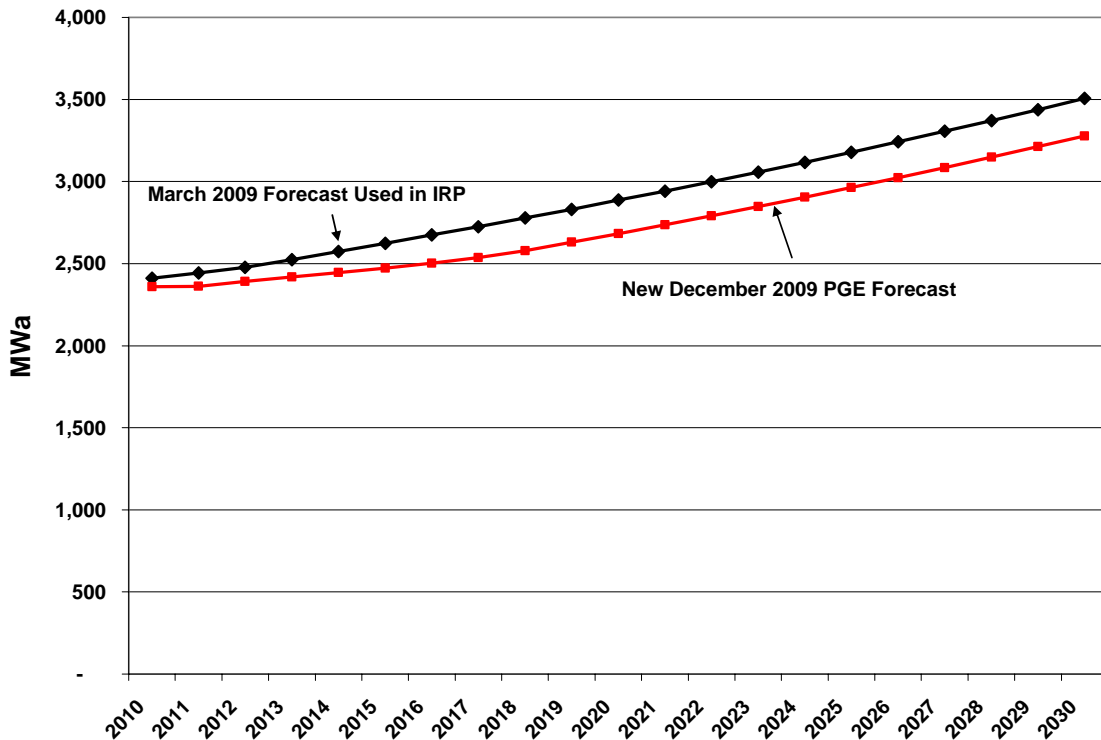
Name	Technology	Primary Fuel	Installed Capacity (MW)	Initial Service Year	State	2007 Capacity Factor	2008 Capacity Factor
Beaver 1 - 7	CC	NG	586.2	1974	OR	7.10%	2.83%
Big Hanaford CC1A-1E	CC	NG	322.0	2002	WA	12.55%	11.07%
Chehalis Generating Facility	CC	NG	593.3	2003	WA	36.32%	40.96%
Coyote Springs 1	CCCG	NG	266.4	1995	OR	61.64%	64.61%
Coyote Springs 2	CC	NG	287.0	2003	OR	64.53%	67.47%
Encogen 1-4	CCCG	NG	176.4	1993	WA	11.73%	6.32%
Frederickson Power 1	CC	NG	318.3	2002	WA	32.27%	39.27%
Goldendale CC 1A & 1B	CC	NG	280.3	2004	WA	28.29%	55.04%
Grays Harbor Energy Facility (Satsop)	CC	NG	650.0	2008	WA	0.00%	14.37%
Hemiston Generating Project CC2A & 2B	CCCG	NG	234.5	1996	OR	55.47%	59.19%
Hemiston Power Project	CCCG	NG	689.4	2002	OR	50.97%	61.60%
Klamath Cogeneration Project	CCCG	NG	501.5	2001	OR	55.41%	69.10%
Lancaster (Hathdrum Generating Station)	CC	NG	270.0	2001	ID	53.93%	57.90%
March Point 1 - 4	CCCG	NG	167.0	1991	WA	69.32%	69.91%
Mint Farm	CC	NG	319.0	2008	WA	0.00%	25.71%
Port Westward CC1A & 1B	CC	NG	399.0	2007	OR	49.27%	81.08%
River Road Generating Plant	CC	NG	248.0	1997	WA	70.04%	74.40%
Sumas Cogeneration Station	CCCG	NG	125.5	1993	WA	20.64%	19.67%
Tenaska Washington Partners Cogeneration	CCCG	NG	253.4	1994	WA	32.52%	27.53%

⁵ *Opening Comments of the Northwest and Intermountain Power Producers Coalition*, February 2, 2010, at pages 17 and 18.

⁶ Northwest Power and Conservation Council File *Existing Projects 030210.xls*.

At the same time, it appears that PGE has overstated its need for the capacity and energy from the Boardman plant through its use of unreasonably high load forecasts and by understating the potential for energy efficiency. For example, in its recent IRP analyses PGE has used a reference case energy load forecast growth rate of 1.9 percent per year between 2010 and 2030.⁷ This projected future energy growth is substantially higher than the 0.4 percent per year energy growth that PGE actually experienced from 1999 through 2008.⁸ The projected energy growth that PGE used in its IRP analyses also was significantly higher than the 0.34 percent per year to 1.24 percent increase per year that the Northwest Power and Conservation Council’s recently issued Sixth Plan projects for the State of Oregon for 2010 to 2030, depending on the assumed levels of energy efficiency.⁹

In fact, PGE adopted new, and lower, peak load and energy requirements forecasts in December 2009. These new forecasts reduced the Company’s projected energy requirements between 2014 and 2020 by 5 percent (2014) to 7 percent (2020) and its projected peak loads by 128 MW (2014) to 220 MW (2020). Unfortunately, PGE has not revised its IRP analyses to reflect these lower forecasts.



If these lower forecasts were taken into account, the Company might not need to replace all of the energy and capacity currently provided by Boardman before 2020, even if it retired the plant in 2015 or 2016. PGE already has proposed to build a 415 MW

⁷ PGE 2009 Integrated Resource Plan Addendum, April 9, 2010, at page 48.

⁸ See the 2008 Oregon Utility Statistics, published by the Oregon Public Utility Commission.

⁹ See <http://www.nwcouncil.org/energy/powerplan/6/default.htm>.

combined cycle plant at the Boardman site and has committed to other non-Boardman resource actions (that is, acquiring additional energy efficiency, meeting the 15 percent renewable portfolio standard by 2015, acquiring demand response, distributed generation, and combined heat and power resources, and, where possible, renewing expiring hydro contracts). Given these planned additions, the Company's new, and lower, energy requirements and peak load forecasts, and the under-utilized gas-fired combined cycle capacity available in the state of Oregon and the Northwest region, it is not unreasonable to anticipate that if Boardman were retired near the end of 2015, PGE could enter into a four to five year power purchase agreement to replace the plant's capacity and energy. There would be no need to rush into building a second new natural gas-fired plant just to replace Boardman.

Draft DEQ Proposal for Early Shutdown of PGE Boardman Plant

Background

Last year the Environmental Quality Commission) adopted rules for the PGE Boardman coal-fired power plant, as part of a regional haze plan to improve visibility and reduce air pollution in Oregon's Class I wilderness areas and national parks, as well as the Columbia River Gorge National Scenic Area. At an estimated cost of \$460 - \$500 million, the controls required for the Boardman plant would reduce nitrogen oxide (NO_x) emissions by 46 percent in 2011, sulfur dioxide (SO₂) emissions by 80 percent in 2014, and further reductions of NO_x emissions to 84 percent in 2017.

On April 2, 2010, PGE submitted a petition to the EQC to revise the 2009 rules for the Boardman plant, based on a proposal to close the plant by December 2020. PGE based its plan on using low-sulfur coal in lieu of installing pollution controls required in 2014 and 2017

On June 17, the EQC voted to deny PGE's petition, and directed DEQ to begin rulemaking that would examine a wider range of pollution control options than proposed by PGE in the April 2 petition.

DEQ's Draft Proposal

DEQ developed three emission reduction options for public review and comment. All options are based on an early shutdown of the plant, and would meet best available control technology (commonly known as "BART") required by the Clean Air Act.

DEQ is committed to remaining open to different ideas or concepts for the early closure of the PGE Boardman facility. DEQ could modify the draft proposal based on information provided by an advisory committee and the public before making a formal rule proposal in September.

Option 1 - 2020 Shutdown: This option would require low-NO_x burners in 2011 and the SO₂ scrubber required in 2014. Given an early shutdown in 2020, additional NO_x controls would no longer be cost-effective. This option would achieve the same reduction in NO_x by 2011 and SO₂ by 2014, none of the additional NO_x reduction in 2017, but eliminate all emissions after 2020. The cost of this option is approximately \$320 million or \$180 million less than the 2009 controls.

Option 2 - 2018 Shutdown: This option includes the low-NO_x burners, replaces the second set of controls (SO₂ scrubbers) in 2014 with less costly controls (dry sorbent injection), and does not require the third set of NO_x controls in 2017, for the same reasons as Option 1. To meet federal BART requirements, and to be equivalent to Option 1 in terms of emission reductions and cost effectiveness, if PGE selected this option, it would require plant closure by December 2018. This option would achieve the same reduction in NO_x by 2011, but only half of the reduction in SO₂ by 2014, none of the additional NO_x reduction in 2017, but eliminate all emissions after 2018. The cost of this option is approximately \$103 million, or \$394 million less than 2009 controls.

Option 3 - 2015/2016 Shutdown: This option would require installation of the low NO_x burner in 2011, but no further pollution control equipment. Unlike the two above options, this approach is based on the federal requirement to install BART controls within five years of the approval a state regional haze plan. Oregon's 2009 Regional Haze Plan is expected to be approved by the EPA in late 2010 or early 2011. If PGE chooses not to install any SO₂ BART controls, federal rules would require the Boardman plant to shut down in five years, or by late 2015 or early 2016. This option would achieve the same reduction in NO_x by 2011, and then eliminate all emissions after 2015/2016. The cost of this option is approximately \$35 million, or \$465 million less than 2009 controls.

All three options would still require the PGE Boardman plant to meet the 2012 deadline for installing controls to meet DEQ's mercury rules.

Who would be affected?

PGE and other owners of the PGE Boardman plant, and persons who live and recreate in areas impacted by the coal-fired power plant, as well as PGE rate payers.

How to comment

DEQ is seeking input from the public on these options, and comments can be emailed to DEQoptionsPGE@deq.state.or.us.



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The Public Comment Process

A fiscal advisory committee will discuss the costs and economic impacts of these options at a public meeting at DEQ Headquarters in Portland in August 2010. DEQ could modify the draft proposal based on information provided by this committee and the public before developing a formal rule proposal. DEQ anticipates holding public hearings in September, and forwarding a final rule recommendation to the EQC in December 2010.

For more information

Additional information on DEQ's proposal, the upcoming advisory committee meeting, and other related information on this upcoming rulemaking, including how to sign up for e-mail notices for the public comment process, can be found at DEQ's website at www.deq.state.or.us/aq/pgeboardman. Or call Brian Finneran, senior air quality planner at 503-229-6278, or William Knight, Communications & Outreach, at 503-229-5680.

Options for early closure of PGE Boardman

YEAR	2011	2012	2013	2014	2015-2016***	2017	2018	2019	2020	COST
CURRENT RULES	Reduce NO _x 46 percent			Reduce SO ₂ 80 percent		Reduce NO _x 38 percent*			Continue Operation	\$497.6 Million
Option 1	Reduce NO _x 46 percent			Reduce SO ₂ 80 percent Reduce NO _x 9 percent**					COAL PLANT CLOSURES	\$320.6 Million
Option 2	Reduce NO _x 46 percent			Reduce SO ₂ 40 percent Reduce NO _x 9 percent**			COAL PLANT CLOSURES			\$102.6 Million
Option 3	Reduce NO _x 46 percent				COAL PLANT CLOSURES***					\$35.7 Million

*These reductions are a percentage of current NO_x emissions so add to the initial 46 percent to get the total reduction in pollution.

**9 percent reduction based on adding selective non-catalytic reduction system (SNCR). Not reflected in description of options above.

Adds \$14.7 million. Not cost-effective in Option 3 under 2015/16 shutdown

***Closure date could be set in either 2015 or 2016 depending on when Oregon's Regional Haze Plan is approved by EPA.