

PGE seeks to eliminate coal at Boardman

Plan would close plant 20 years early or switch to alternate fuel



Portland General Electric

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Overview

Ever since it went online in 1980, the Boardman Generating Plant and the 110 employees who operate it have provided Portland General Electric customers with a reliable, low-cost source of electricity. Located east of the Cascades in Oregon's Morrow County, Boardman is the workhorse of PGE's generation resources, providing about 15 percent of the electricity our customers use. The 585-megawatt coal-fired plant is also one of our lowest-cost resources, generating electricity at one-third to one-half the price we would pay on the wholesale market — which helps us keep customer prices affordable.

As PGE looks to meet the rapid growth in demand for electricity in Oregon, it's clear that Boardman can continue to provide strong value for our customers. Yet new environmental rules call for installing expensive pollution controls to regulate haze-causing emissions. In the Integrated Resource Plan we filed with the Oregon Public Utility Commission in November — our plan which describes the best mix of resources available to generate the electricity our customers need — we considered the costs and benefits of the two viable options available under current Oregon environmental regulation:

1. Close Boardman in 2014. This is an expensive and risky option for our customers. It threatens reliability, in part because replacement generation could not be built in time. It also would force PGE to purchase replacement power on the market, which can be very expensive.
2. Invest \$520 million to \$560 million in extensive pollution controls on the Boardman Plant, which would allow us to operate the plant through 2040. Our analysis concluded that even with these increased costs, this option is better for our customers, when we balance risk and cost, as compared to closing the plant in 2014.

But new analysis indicates that an alternative plan — closing Boardman in 2020 or switching to an alternate fuel — would provide the optimum benefits for our region. It would result in significant cost savings to customers and major environmental improvements, while allowing for a smooth transition to an alternate resource. With so many potential benefits to our customers, PGE is working with stakeholders and regulators to determine whether we can make this option a reality.

PGE on April 2 submitted a proposal to the Oregon Department of Environmental Quality, asking for rule revisions that would allow us to meet environmental rules related to haze-causing emissions by closing the Boardman plant in 2020. We also filed an addendum to our Integrated Resource Plan, requesting acknowledgement of a 2020 closure date contingent on DEQ approval of revised rules.

The 2020 plan saves customers about \$600 million over the next decade, compared to a 2014 shutdown. Three factors make the 2014 option more expensive: The cost of accelerating capital investment in a replacement resource; the higher cost of replacement electricity; and the cost of depreciating the remaining investment in Boardman at such an accelerated pace.

Under the 2020 plan, PGE would install pollution controls in 2011 that would cut mercury emissions by 90 percent and haze-causing emissions of nitrogen oxides by

What would be the cost savings to customers under the 2020 alternate plan?

What are the environmental benefits of the 2020 plan?

about 50 percent. In addition, PGE would switch to a lower-sulfur coal that would reduce allowed sulfur dioxide emissions 50 percent by 2014. The total level of haze-causing emissions produced would be less than if we implemented additional environmental controls and operated the plant through 2040, the plan already approved by the Environmental Quality Commission. In addition, the 2020 plan ends carbon emissions from the plant 20 years earlier than scheduled.

That's important, because carbon emissions have been linked to greenhouse gas and global climate change, and currently no technology has been developed that effectively addresses carbon emissions from most thermal generating plants, conventional automobiles or the many other sources of carbon related to human activity.

Are there other benefits to the 2020 plan?

Yes. PGE would be able to maintain a reliable source of electricity while working to establish replacement resources. In addition, future technology may make alternative fuels more viable and cost effective. By keeping Boardman operating through 2020, we may be able to take advantage of technological advances and continue operating the plant using non-coal, low-emission alternative fuels.

We also care deeply about the impact of our decisions on our employees and the economic vitality of the Boardman-area community. A decade of additional time allows us to work with Boardman community leaders and our employees to pursue replacement jobs by building new generating resources.

What will be needed to make the 2020 alternative possible?

PGE is currently seeking OPUC approval of a proposal to operate Boardman through 2020, contingent on 1) obtaining approval from the Oregon Department of Environmental Quality for a new plan for reducing regional haze; 2) resolution of existing legal challenges over past and current operating standards at the plant; and 3) resolution of issues concerning pending federal air regulations. PGE is reaching out to key stakeholders for help in resolving these contingencies.

Would a 2014 shutdown be a better option?

A 2014 shutdown is more costly and risky for customers and could severely hamper our system reliability. A 2014 closure would result in additional costs of about \$600 million being passed on to customers during the next 11 years. Additionally, it takes many years to develop plans and receive proper approvals to build new generation resources. It is unlikely that we would be able to have another plant built and operating that quickly, which means PGE customers would be exposed to the wholesale electricity market to fill the gap. That could spell higher prices for customers. Such a rapid closure would also impact the economic vitality of the Boardman community and our employees who work at the Boardman Plant.

Does the 2020 plan include additional pollution controls on the Boardman Plant?

Yes. PGE plans to install pollution controls in 2011 that would cut mercury emissions by 90 percent and haze-causing nitrogen oxides (NO_x) emissions by about 50 percent. These controls cost about \$40.5 million. In addition, PGE would switch to a lower-sulfur coal that would reduce allowed sulfur dioxide emissions 50 percent by 2014.

If the alternative plan is approved, PGE would not install scrubbers to reduce sulfur dioxide (SO₂) emissions or a selective catalytic reduction (SCR) system to further reduce NO_x emissions, but those emissions would be eliminated entirely with the plant shutdown in 2020. The cost of installing these controls would be about \$470 million.

If 2020 isn't viable, what course will PGE pursue for its Boardman Plant?

Because the plant would be shut down 20 years earlier than planned, haze-causing emissions from Boardman would be less than if we installed all the proposed new controls and operated the plant through 2040.

While this alternative plan is our preferred option, if we are not able to resolve outstanding issues, we will continue to seek approval for installation of emissions controls and continued operation of the plant through 2040 — the next best option available to our customers under the current rules.

What type of generating resource will be used to replace Boardman?

Our Boardman Plant is a baseload plant. That means it cost-effectively generates electricity 24 hours a day, with minimal interruptions for annual maintenance or repairs. Currently, the only viable replacement for a baseload plant like Boardman is likely to be a high-efficiency natural gas plant, similar to our Port Westward and Coyote Springs plants. The strategy for how best to replace Boardman will be taken up in a subsequent resource plan once a closure date is approved.

Why not replace Boardman with renewable resources like wind or solar power?

PGE's resource plan already calls for adding another 122 average megawatts of new renewables to PGE's diverse mix of resources by 2015, helping to ensure the utility meets the state's renewable power requirements on or ahead of schedule. An additional 122 average megawatts would produce about the same amount of power as another wind farm the size of our Biglow Canyon Wind Farm. But as valuable as renewable power projects like this are to PGE's diverse resource mix, they cannot take the place of a baseload plant like Boardman because they are "intermittent" resources. That means they cannot be depended on to generate electricity without interruption, because the sun doesn't always shine and the wind doesn't always blow.

How does Boardman compare to other coal plants?

PGE has operated Boardman since it went online in 1980, under regulation by the Oregon Department of Environmental Quality (DEQ) and in strict compliance with state and federal law. The plant consistently performs more cleanly than its operating permit requires, with air emissions that are generally lower than its permit would allow. It's also important to put Boardman into national context:

- While electricity generation accounts for 40 percent of carbon emissions nationwide, here in Oregon, the Boardman Plant contributes only about 7 percent of the state's carbon dioxide emissions (43.5 MMT per year).
- As a nation, we generate 6,000 million metric tons of CO₂ annually, with transportation and electricity generation accounting for more than two-thirds of that. Oregon ranks among the 10 states with the lowest carbon emissions.
- While Boardman is Oregon's only coal plant, it represents one of 1,325 coal fired generating units nationwide.
- About 50 percent of the electricity generated in the U.S. is from coal-fired plants.

Aren't other utilities shutting coal plants now?

Yes, but those plants generally are older than Boardman, and /or do not serve as baseload resources for those utilities. In fact, some utilities are building new coal plants.

Why weren't more stringent environmental controls required at Boardman previously?

Development of the Boardman Plant was already underway in 1974 when Congress passed new regulations under the Clean Air Act. In response to an inquiry by PGE, the Environmental Protection Agency ruled that the plant was not subject to the new regulations. Nonetheless, under an agreement with the Oregon DEQ, PGE agreed to fully comply with the provisions of the new 1974 EPA regulations, including an

What is PGE's overall environmental record?

agreement to use low-sulfur coal to fuel the plant, and meeting air quality emission standards applicable under the 1974 regulations. A number of subsequent regulations have been imposed on new generating plants, which have not applied to plants like Boardman because they were built prior to the regulations.

PGE has a strong record as an environmental leader. As we work to secure Oregon's energy future, PGE is committed to finding sustainable and affordable options to fill the gap and meet our customers' electricity needs.

- **Policy leadership:** We supported the development of a Renewable Energy Standard adopted by the Oregon Legislature in 2007, which mandates that Oregon's largest utilities acquire 25 percent of their electricity from new renewable energy sources. We were also among the first utilities in the nation to call for national legislation to reduce greenhouse gases.
- **Energy efficiency:** Our resource plan relies on energy efficiency to meet nearly half of our customers' growing demand for electricity through 2020. PGE works closely with the Energy Trust of Oregon to help all our customers — business and residential — save money and help the environment by using less electricity.
- **Rapid development of renewable resources:** PGE is working hard to meet the state's Renewable Energy Standard, including investing more than \$1 billion in our Biglow Canyon Wind Farm. Our new IRP seeks to add an additional 122 average megawatts of renewable power by 2015 and 168 more average megawatts by 2020. We also are helping lead efforts in Oregon to establish a market for solar power. Last year, PGE ranked eighth in the nation — and fourth in the West — for total solar power generation, according to the Solar Electric Power Association.
- **Renewable power sales:** PGE is the No. 1 utility in the nation in the number of customers who enroll in the utility's voluntary renewable power programs, according to the U.S. Department of Energy's National Renewable Energy Laboratory. PGE customers purchased more than 741 million kilowatt hours of renewable energy in 2009.
- **Fish protection:** PGE's 2007 removal of its Bull Run Hydro Project restored fish runs to the upper regions of the Sandy River for the first time since 1912. We recently completed construction of the state-of-the-art fish passage system at our Pelton Round Butte hydro project on the Deschutes River. These are just two of the rivers where our hydro facilities are located.
- **Promoting a green economy:** PGE has been a leader in attracting green industries to the area and in promoting Oregon as the ideal testing ground for electric vehicles.

In summary, while the 2020 plan faces several obstacles, we believe it is worth pursuing because it offers the greatest benefit for our customers. It allows us to eliminate coal at the plant by 2020 at a cost savings of about \$600 million over the next decade, compared to closing the plant in 2014. It results in fewer haze-causing emissions and eliminates all coal-based carbon generation in Oregon two decades earlier than the 2040 plan. It allows PGE a decade to plan and build replacement generation resources, ensuring that the reliability of our electric system isn't compromised. This timeline also allows us to work with Boardman community leaders and our Boardman employees to identify replacement jobs.

We look forward to working with stakeholders to make this plan a reality.