

XVIII. REPORT ON APRIL 2003 TWO-YEAR ACTION PLAN

This chapter provides an overview of PSE's efforts in relation to its previous "Action Plan" items. The statements in bold are from the Least Cost Plan filed in 2003.

I. August 2003 Update

- **Modify Northwest Power Planning Council models and run with PSE data assumptions.**
- **Provide a detailed measure-by-measure summary of results.**
- **Assess the practicality of pursuing specific cost-effective measures based on the analysis.**
- **Incorporate the above results into a revised integrated analysis of supply and demand-side resource alternatives.**
- **Update PSE resource strategy accordingly.**

PSE provided a follow-up to its April 2003 Least Cost Plan with an August 2003 Update. Using its Conservation Screening Model, PSE integrated conservation opportunities into its supply-side model. PSE also modeled an accelerated lighting program and found the approach viable. After the modeling results were considered, PSE issued a Request for Proposal (RFP) for conservation programs, and established a two-year program for 2006-2007. PSE has followed the development of the Northwest Power and Conservation Council (NPCC) models but has neither run nor adopted them.

II. Conservation and Efficiency

- **Achieve average annual target of 15 aMW and 2.1 million therms of conservation savings per year through 2006.**

During 2004, energy efficiency services programs under the electric Rider and gas Tracker achieved first-year savings of 138,288 MWh (15.79 aMW) at a cost of \$20,869,462, and 3,189,819 therms at a cost of \$3,781,810. Savings in 2005 are expected to reach levels such that PSE will achieve 100 percent of the two-year (2004-2005) savings goals on or under budget. New two-year goals will be established for 2006–2007 based on previous program experience and the recommendations of the Company's 2005 Least Cost Plan, and after consultation with the Conservation Resources Advisory Group.

- **Achieve an additional 2.5 aMW electricity savings from residential and farm customers, supported by Conservation & Renewable Discount credits to electricity supply-side purchases from BPA.**

Under the Bonneville Power Administration's (BPA's) Conservation and Renewables Discount (C&RD) program in 2004, PSE saved 34,927 MWh (3.99 aMW) in first-year savings at a cost of \$4,126,802 (does not include cost of renewables). PSE will continue to take full advantage of the C&RD credit as long as BPA makes it, or a similar mechanism, available to investor-owned utilities in the future.

- **Assess the impact of conservation programs on peak load and losses.**

Over the past two years, PSE has actively participated in BPA's Roundtable Discussion on Non-Wires Solutions to Transmission Issues. A PSE vice president participates on the official Roundtable board, and has sent various experts on transmission and energy efficiency to various Roundtable meetings. As part of the 2004 Roundtable process, PSE conducted an assessment of peak load reductions resulting from energy efficiency measures completed within its service area on the Olympic Peninsula (Kitsap and Jefferson Counties). This assessment estimated total peak load reduction potential by 2008, when BPA anticipates a need to add transmission capacity.

The 2005 Least Cost Plan also estimates the potential peak load reduction from energy efficiency resources over the 2006–2025 planning period. The results are presented in Chapter VII.

- **Promote information, education and training efforts for energy efficiency products, services and practices, in order to support customer decision-making in selecting, purchasing, maintaining and efficiently using equipment.**

PSE continues to support customer information, education and training in a variety of ways. Major efforts include the following:

- 1) Dedicated specialists on the energy advisor hotline
- 2) Brochures and other informational materials sent to customers
- 3) Energy audits, efficiency "calculator" tools, energy efficiency information, and other links available on PSE's website

- 4) Free electronic energy efficiency newsletters, which showcase case studies, provide information on energy efficient products and technologies, and inform customers of program offerings

Noteworthy is PSE's new program allowing customers to download a year's worth of billing data directly into the energy analysis tool. This tool shows customers how and where they use energy, and directs them to opportunities for saving. Brochures are being refined and updated with objective information on energy efficiency opportunities. PSE also participates in a wide variety of home-show, trade-show and community events and activities to promote efficiency education throughout the year. Training is targeted at vendors, retailers, contractors and trade-allies, who are leveraged as an "extension" of the company's staff to promote energy efficiency with customers. The Company offers technical training opportunities throughout the year for commercial and industrial customers, and actively encourages customers to participate in Resource Conservation Manager, Boiler-Tune-up, Building Operator Certification training and other technical classes offered in conjunction with the Northwest Energy Efficiency Alliance (NEEA) and/or other Puget Sound area utilities.

- **Support local energy efficiency market infrastructure in the communities PSE serves, in addition to continuing support for activities at the regional level through the Northwest Energy Efficiency Alliance.**

PSE actively works to promote NEEA and other market transformation efforts at local and regional levels. With NEEA, the most notable efforts are the residential lighting, appliances, and Energy Star new construction programs, as well as commercial Leadership in Energy and Environmental Design (LEED) and "Better Bricks" new construction offerings, wastewater, magna-drive, builder operator training, and industrial/specific technologies. PSE supports NEEA's activities by sponsoring an active PSE representative on the board of directors, providing operational and program delivery feedback for program design, and cooperatively promoting and marketing NEEA services in the local area.

PSE also works closely with local organizations engaged in market transformation activities, including the Northwest Energy Efficiency Council, the Electric League, LEED, and Master Builder organizations throughout the service territory, which are developing models for "Built Green" home development in parallel with Energy Star Northwest Homes. In its work with

the Western Washington chapter of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), PSE staff provide comments and feedback on development and adoption of energy codes.

III. Demand Response Management

- **Conduct a fuel-conversion pilot to investigate the cost-effectiveness of residential space and water heating conversions from electric resistance units to high-efficiency natural gas, in order to defer the need for electric distribution system capacity upgrades.**

A fuel conversion pilot is underway. Seventy homes now have natural gas equipment installed. At the end of the current (2004-2005) heating season, PSE will complete an evaluation to determine the energy-savings impacts, review costs in comparison with distribution alternatives, and assess overall program performance. A final report outlining pilot findings will be available by the summer of 2005.

- **Investigate the use of natural gas for multi-family units.**

PSE is conducting studies to determine the feasibility of installing natural gas in multi-family units. These studies involve a series of interviews to more clearly define the building types, market actors, and decision-making with regard to fuel choice in multi-family buildings. This research will provide a better understanding of the multi-family market, including the economics of and barriers to natural gas use in these facilities, enabling the Company to determine the design of any pilot installations. These feasibility studies and a decision to move forward with a pilot program will be complete by mid-2005.

- **Provide an assessment of the current status and potential future of the role of price responsiveness efforts as a demand-side resource option. This work will build upon the efforts of the existing Time-of-Use Collaborative once the group has completed its assessment of the Company's Time-of-Use program per the commitment in the prior General Rate Case. The August 2003 Least Cost Plan update will include the results of this assessment.**

On July 1, 2003, PSE submitted a final report and recommendations on its time-of-use (TOU) pricing program to the Washington Utilities and Transportation Commission (WUTC), on behalf of the Time-of-Use Collaborative. The Collaborative recommended that time-

responsive pricing options be examined in the context of the Company's least cost planning process, rather than as a separate formal process or timeline.

As part of its compliance with the April 30, 2003 Least Cost Plan Action Plan, PSE retained Charles River Associates to perform an assessment of demand-response technical potential, including price-based strategies. The results of this assessment were included in the Company's August 2003 Least Cost Plan Update. The results of that study were also presented to the Least Cost Planning Advisory Group (LCPAG) on July 27, 2004. The study identified at least 200 MW of cost-effective demand response potential.

As part of this Least Cost Plan, PSE retained Quantec, LLC to perform a study of technical and achievable peak demand reduction potential, and the associated costs of a variety of demand-response products including time-of-use and critical peak pricing strategies. This assessment found that achievable market potential was significantly less than technical potential for all demand-response strategies. The demand response strategy with the largest achievable potential was critical peak pricing, at 155 MW of peak demand reduction.

PSE has also actively participated in the BPA's Roundtable Discussion on Non-Wires Solutions to Transmission Issues. As part of this process, PSE submitted four responses to BPA's RFP for pilot programs for non-wires solutions. Two of PSE's proposals were demand-response programs targeting small retail electric customers in Kitsap and Jefferson Counties, including one proposal to pilot extreme-day peak pricing. At this time BPA has not selected any of PSE's proposals for implementation.

- **Participate in the regional Conservation Voltage Reduction pilot program as a demonstration utility, to examine the cost-effectiveness of energy savings benefits for the customer and the utility, as well as other impacts.**

PSE has signed a Memorandum of Agreement with NEEA to be a demonstration utility for the regional Conservation Voltage Reduction (CVR) pilot program. The program seeks energy savings through small reductions to voltage levels on circuits targeted for distribution system upgrades in the near future. A PSE substation and substation feeders have been selected for the pilot. The original program timeline was delayed several months because an Underwriters Laboratories (UL) listing needed to be procured for the CVR equipment. That listing has been obtained, but the newly designed units are not expected to be

available until mid-year 2005. Closer to the equipment delivery date, PSE will recruit customer participants. If the pilot continues as planned, field monitoring will take place for one year beginning early summer 2005, with analysis and results expected early in 2007.

IV. Renewable Resources

- **Continue to study the issues associated with integrating wind resources into PSE's distribution system. In particular, identify and evaluate lower-cost alternatives to the use of new simple-cycle gas turbines to back up intermittent wind generation.**

PSE, working with Golden Energy, developed a robust analysis of the integration costs of wind energy. Using Mid-C hydro resources as the backup energy source, the study found that the total cost for the initial wind farm investments was in the range of \$1.74/MWh to \$5.40/MWh. Refer to Appendix D for the wind integration Phase II report.

- **Explore the feasibility of other renewable resources such as biomass, solar and geothermal energy.**

PSE has funded biomass and solar energy projects through its customer-supported green tag program. These projects are discussed in the "Existing Resources" section. PSE supports the Center for Distributed Generation and Thermal Distribution at the Washington State University Energy Program with its efforts to accomplish geothermal energy development in the Northwest.

V. Peaking Resources

- **Look for lower-cost alternatives to simple-cycle gas turbines, including peaking power supply contracts, and peak-oriented demand response programs.**

In planning for peak energy needs, PSE does not plan to purchase more simple-cycle gas turbine (SCGT) peakers. PSE uses a mix of fixed- and index-priced contracts, call options, and spot market. This mix is a lower-cost alternative to acquiring SCGTs.

- **Actively participate in regional processes focusing on electric resource adequacy.**

PSE supports regional discussion on resource adequacy standards and notes that the issue was brought up in the Fifth Pacific Northwest Electric Power and Conservation Plan. Utilities need to work regionally, and the region needs to work with interconnected areas within the Washington Electricity Coordinating Council (WECC) to develop standards and identify the load-resource capacity balance.

VI. Supply-Side Resource Acquisition

- **Continue to monitor market opportunities for acquisition of generation assets or power contracts.**

In 2003, the expectation was that resource opportunities would come from the supply developed by non-utilities. However, today many opportunities arise because of the demand for new resources from PSE. PSE will continue to consider both sources, unsolicited supply offers and responses to RFPs, in order to procure the least-cost mix of resources for its customers.

- **Issue RFP for supply from large-scale, commercially feasible renewable resources.**

PSE initially issued an RFP for wind projects. However, at the direction of the WUTC, the wind RFP was rolled into the All-Source RFP. As a result of that RFP process, PSE signed letters of intent with two wind farms totaling 388 megawatts of capacity.

VII. Energy Supply – Gas

- **Perform detailed analysis of expected long-term supply basin pricing differentials to assist in determination of preferred pipeline alternatives.**

PSE continues to utilize a gas price forecast that is specific to the various supply basins accessible to PSE. The price forecast relies on a North American fundamentals model that considers regional demand growth, drilling economics, environmental restrictions and pipeline infrastructure developments to predict pricing differentials. Individual basin prices are used in the Sendout model. Vector Gas facilitates a Monte Carlo simulation of different pricing patterns and relationships to guide the selection of optimal pipeline resources.

- **Develop further refinement of the Propane Air options and cost estimates.**

PSE has recognized the growing cost efficiencies in smaller-scale liquefied natural gas (LNG) and satellite LNG peaking facilities based on its experience with the Gig Harbor facility. An additional benefit is that LNG can be blended into the flowing gas stream without the potential for flame "lift-off" as with propane-air. Therefore, PSE has focused on LNG-based peaking rather than propane-based peaking.

- **Analyze specific new pipeline projects.**

PSE continues to monitor all pipeline development proposals and has included several in the current Least Cost Plan analysis.

- **Explore additional storage options.**

PSE has reviewed the costs and availability of storage services provided by two third-parties in the region. One of the projects was removed from the Least Cost Plan analysis because it provided services similar to Jackson Prairie but at a much higher cost, and because it required incremental pipeline capacity.

- **Evaluate the cost and benefits of upstream pipeline capacity.**

PSE has included an analysis and a recommendation for resource acquisition related to upstream capacity in the current Least Cost Plan.

- **Perform feasibility study on expandability of Jackson Prairie storage capacity and deliverability (beyond the current project).**

PSE and the other Jackson Prairie owners are in the process of analyzing and costing a proposed deliverability expansion to supplement the ongoing capacity expansion. When resources allow, PSE will continue to research the potential for incremental development and the related costs (and risks).

- **Examine feasibility of gas reserve ownership as an alternative or supplement to fixed price hedges.**

PSE has discussed the availability and pricing of dedicated gas reserves with several gas suppliers. In the current tight market conditions, none has indicated a willingness to consider a sale of reserves at anything other than forward market price. Development or purchase of dedicated reserves would present significant additional volume risk to PSE and its customers, which is not likely to be offset by the risk mitigation provided by the known price. PSE will continue to discuss and analyze options as opportunities arise.

VIII. Energy Demand Forecasting

- **Develop more detailed load shape and duration data to facilitate greater optimization of resources and potential for further gas/electric synergies.**

Chapter VI details the methodology and results of the forecasting. New load forecast highlights include changes in estimating the 8760 load shape and in allowing long-term growth rates to vary by month.

- **Analyze results of electric to gas conversion pilot program to determine impacts on gas and electric load, and implication for regulatory policy.**

As mentioned in section III (above), a single-family fuel conversion pilot is underway. Seventy homes now have natural gas equipment installed. At the end of the current (2004-2005) heating season, PSE will complete an evaluation to determine the energy-savings impacts, review costs in comparison to distribution alternatives, and assess overall program performance. A final report of pilot findings will be available by late summer 2005. PSE is also conducting studies to determine the feasibility of installing natural gas in multi-family units. This research will provide a better understanding of the multi-family market, including the economics of and barriers to natural gas use in these facilities, enabling the Company to determine the design of any pilot installations. These feasibility studies and a decision to move forward with a pilot installation program will be complete by mid-2005. Load and policy implications can be assessed upon completion of these pilots and market research.

IX. Distribution Facilities Planning

- **Participate with other Edison Electric Institute utilities in the Federal Energy Regulatory Commission (FERC) Notice of Proposed Rulemaking (NOPR) process for distributed generation. The FERC NOPR for distributed generation will be issued in the spring of 2003.**

PSE followed the progression of this issuance.

- **Seek opportunities to deploy distributed generation for least-cost capacity deferral.**

Distributed resources continue to emerge, although slower than previously expected because the economics remain unattractive. However, PSE continues to evaluate the implementation of distributed resources as an alternative to projects.

- **Continue the collaboration with the DOE/NREL/GE Universal Interconnect project.**

From 2000-2004, PSE participated in the Universal Interconnect Detail Design project with The Department of Energy (DOE), National Renewable Energy Laboratory (NREL), and General Electric (GE). The final report on this project was issued in December 2004, and emphasized that standard compliance is key to entry into the distributed generation market. It also addressed microgrid application issues, and summarized the detailed study and development of new GE anti-islanding controls.

- **Track distributed generation technologies and applications that can impact and improve the gas and electric distribution planning process.**

PSE continues to educate itself regarding these technologies through its technology review process wherein applications of new technologies are evaluated for implementation by PSE.

X. Integrated Resource Modeling

- **Continue ongoing process of evaluating new gas and electricity resource alternatives and development of integrated resource strategies to meet customer needs.**

PSE has initiated a large gas hedging strategy that will study gas supplies for both the gas and electric needs to identify strategies that balance price and risk.

- **Continue development of databases to support modeling and better assess the impacts of alternative gas price scenarios, resource costs, and load forecasts on PSE's resource portfolio.**

PSE used knowledge and experience gained from the RFP process to better inform the modeling this year. Improvements were made in valuing wind integration costs, determining new resource costs, identifying the transmission problem, and creating realistic portfolios.

- **Continue working with software developers of resource planning models to better address PSE's resource planning issues, resource alternatives and policy options.**

PSE's conservation screening model was developed based on its portfolio screening model. For the RFP and subsequent resource evaluation process, as well as for this Least Cost Plan, PSE made numerous improvements to the models.