CHAPTER VIII. CONSERVATION IMPLEMENTATION ISSUES

Chapter VIII examines implementation issues associated with acquiring new conservation resources, including the unique uncertainties of conservation resources, some implementation issues that are not captured in the Least Cost Plan modeling process, and a relevant cost-effectiveness standard for conservation. In addition, this chapter discusses the considerations for an accelerated-conservation scenario.

Conservation/Energy Efficiency

Unique Uncertainties for Conservation Resources

The amount of conservation potential identified for the August 2003 Least Cost Plan Update relies on best available information today – about prices, efficiency, consumer behavior and preferences, etc. – and projects that information 20 years into the future. Like other resources, energy efficiency depends heavily on energy-load forecasts and projected growth rates, with all of the associated uncertainty.

Analogous to supply-side resources, assessments of conservation potential are limited by what is currently known to be available in the marketplace in terms of cost-effective technologies for improving energy efficiency. Somewhat unique to energy-efficiency resources, however, is the utility's dependence on large numbers of very small purchases, each tied to the individual consumer's day-to-day purchasing and behavioral decisions. The utility attempts to influence these decisions through its program designs and delivery. Consumers weigh the utility offerings with other influences beyond the utility's sphere, and ultimately each consumer makes his or her own decision about "how much" and "when" to purchase energy-efficiency resources. The utility is not the ultimate purchaser.

The amounts of energy-efficiency resources purchased are not as precisely metered as supply-side resources. Engineering calculations and robust statistical models are used to ultimately estimate and evaluate the size of energy-efficiency resources acquired; no meter is available to precisely measure kilowatt-hours or therms saved through energy-efficiency measures in the same way power-plant output or pipeline through-put can be quantified. This is not to suggest that supply-side resources are more reliable over the life of the resource, but simply that the output of supply-side resources is more readily quantifiable "after the fact." Nevertheless, the preponderance of evidence from utility energy-efficiency program evaluations over the past 20-plus years in the Pacific Northwest demonstrates that there is a sizable amount of energy efficiency that can cost-effectively contribute to PSE's resource portfolio.

Implementation Considerations that Extend Beyond Resource Portfolio Modeling

Determining the amount of conservation potential is data-intensive and relies on knowledge of how different types of customers (e.g., residential single-family vs. large commercial office) use energy for various end-uses (lighting, heating, etc.), and knowledge of the various technology and operational opportunities available to improve the end-use efficiencies. A determination of conservation potential also depends on estimates of the numbers of consumers who will – or will not – undertake varying energy-efficiency measures for various economic, lifestyle, or other reasons. Conservation-potential results are a best estimate based on broad, general assumptions regarding the types of decisions that, ultimately, consumers individually make based on their own values.

Many more specific details are required to implement successful energy-efficiency programs. Implementation depends on trained staff with skills in customer service, sales, engineering, database use, marketing, and management. A number of program-support services need to be in place, including tracking systems for customer site-specific information, data collection, monitoring/reporting performance metrics, and evaluation of cost-effectiveness. New measures or expanded programs are continually developed, and as they are, tracking and accounting capabilities need to grow accordingly.

Program implementers responsible for making efficiency recommendations are concerned with product specifications, ensuring availability of eligible products and qualified installers, monitoring activity levels and performance, quality control, and other distribution issues. Participating contractors must be recruited, trained, and selected in accordance with eligibility criteria. Marketing and promotion strategies must be budgeted, developed, tested and delivered. To these ends, care and attention must be given to taking advantage of synergies available as a result of routine customer communications in the utility's bill statement, or that cut across different measures and sectors, or that lend themselves to cooperation with other interested parties (e.g., water utilities). It should not be surprising to find, several years down the road, that the identified conservation-potential assessments do not track particularly well with the actual delivered program acquisitions. The conservation-potential assessment and resource-modeling scenarios, therefore, provide good, general, overall guidance, but they cannot predict the specific quantities, timing, programs, or even necessarily all measures to be undertaken. These goals or targets rely on more detailed program-planning considerations and marketplace realities.

Conservation Cost-effectiveness

In the past, the amounts of energy efficiency identified in PSE's least-cost plans were developed by assessing how much conservation could be acquired at costs less than the cost of the next available supply-side resource. For this Least Cost Plan Update, rather than comparing energy efficiency against a one-dimensional, supply-based estimate of avoided costs, PSE's analytical techniques now provide the ability to evaluate a variety of candidate resource portfolios, including portfolios that have varying levels of conservation. The portfolios are then evaluated using the portfolio-screening model and the results are used to identify the least-cost resource strategy. (For additional detail on the analytical approach for this Least Cost Plan Update, see Chapters II, IV, and VII). For Least Cost Plan purposes, energy efficiency now becomes part of the overall long-term, integrated resource strategy – including both conservation resources and supply resources – to meet customer needs, keep rates low, and protect customers against market price risks.

In the Pacific Northwest, energy efficiency (or "demand-side" resources) is defined as cost-effective when the total cost of acquiring energy efficiency can favorably be compared to a least-cost, supply-side resource. The cost-effectiveness (i.e., benefits exceed costs) for energy efficiency is based on the Total Resource Cost test. Total costs, which include the utility's costs and any other costs paid by the customer or others (e.g., water rebates from a water utility) must be less than the value of the total benefits. "Total benefits" include energy-savings benefits together with the value of all other benefits (e.g., reduced water use). This definition of energy-efficiency benefits, while commendable in its efforts to represent the total value to society, presents some difficulties when viewing conservation as a utility resource.

Unlike supply-side resources, many if not most energy-efficiency measures have additional, so-called "non-energy benefits" that go beyond the value of energy savings. The result is that some energy-efficiency measures may be not be cost-effective when energy savings alone are valued, but do become cost-effective when the value of *all* benefits are included. Modeling attempts to account for non-energy benefits, but is not always successful in doing so. Experience from implementing programs can often help better define these additional benefits and their value to customers. Furthermore, regarding the *costs* of resources, certain supply-side resources may have characteristics that yield non-quantified societal "costs," such as certain air emissions. Since passage of the Northwest Power Act of 1980, energy-efficiency resources in the region have typically been assigned a "10 percent" credit to offset their cost relative to the potential environmental "costs" attributed to supply-side resources.

The cost-effectiveness test for various energy-efficiency measures becomes an "after the fact" comparison of the cost and savings of measures or bundles of measures installed on a site-specific basis. Actual implementation design, delivery, and market conditions will cause energy-efficiency costs to vary from those assumed for purposes of calculating the conservation potential. A measure's detailed costs (including installation), the administrative costs of marketing, promotion, program management and evaluation, and the customer-acceptance rates are some of the major variables that invariably will differ, measure by measure or program by program, from the broad assumptions able to be captured in the supply curve analyses. Similarly, energy-savings estimates can vary due to the particulars of the installation, end-user operation, changes to operating hours and/or other engineering assumptions. Cost-effective energy-efficiency resource acquisition, no less so than for other resources, is subject to constant management, monitoring, fine-tuning, and mid-course corrections.

Accelerated Scenario for Electric Conservation Resources

For the August 2003 LCP Update, PSE examined two conservation-acquisition scenarios: a "Constant Rate of Acquisition Case" and an "Accelerated Lighting case." (For further details on these scenarios, refer to the discussion in Chapter VII.) Acceleration is achieved by assuming that additional energy efficiency can be acquired in the next few years by increasing the saturation of retrofit efficiency measures in existing homes and businesses. The results of the modeling suggest that accelerated energy-efficiency acquisition in the early years – rising to 22.02 aMW per year by 2007 and then declining to 5.32 aMW per year by 2016 vs. a steady 13.84 aMW-per-year annual acquisition for the constant-rate case – is, potentially, a lower-cost resource strategy (see Exhibit VII-8). As discussed above, these scenarios provide general guidance but are not precise recommendations. Nor are they able to detail actual delivery of programs to acquire energy efficiency.

While the difference the two scenarios is significant in terms of short-term energy-efficiency program activity, the difference is fairly minor in terms of the magnitude of the resource need PSE will experience in the next several years. The process of determining an optimal level of energy-efficiency acquisition for the short term should consider advantages of steady, consistent levels of annual energy-efficiency acquisition versus a mode that would have the utility ramp-up market-place activity for a few years, and ramp-down in later periods. There are additional costs to ramping up in terms of acquiring the necessary resources, training personnel, implementing promotional activities, etc., to deliver higher levels of efficiency savings in a shorter time frame. The analysis results demonstrate the effect of these accelerated ramp-up costs: The total amount of conservation acquired over the 20-year planning horizon is slightly less – because it is more expensive – under the accelerated-lighting case. Ramping up also depends on sufficient lead times to ensure the proper infrastructure development (product availability, skilled contractor set, etc).