The Northwest Energy Efficiency Alliance: an Umbrella for Market Transformation in the Northwest

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ABSTRACT

The Northwest Energy Efficiency Alliance is a collaboration of public and private utilities, government, industry and public interest groups that was formed in October of 1996 to promote cost-effective energy efficiency in the Northwest through the approach called market transformation. The Alliance was funded voluntarily by participants with a budget of $65 million over 1997, 1998 and 1999 to develop and adopt market transformation projects to cause long lasting changes in markets for energy efficient products and services around the region.

This paper describes the Alliance, its unique mission, goals and criteria for market transformation. It also describes the projects adopted in 1997 and early 1998. The organization's mission and projects are put in the context of the changing electric utility environment and the need to continue to pursue the benefits of energy efficiency.

Twenty-six approved projects cover all sectors and include end use products (such as lighting, washing machines, motors, manufactured housing, and windows); codes and standards; services (such as building operator certification, duct system training, irrigation scheduling, motor testing, design awards, and a lighting design lab); and information products (such as web pages, clearinghouses, and case studies).

Goals and Objectives of the Northwest Energy Efficiency Alliance

The Northwest Energy Efficiency Alliance (Alliance) was formed as a non-profit entity in late 1996 to increase the market share of cost-effective, energy-efficient products and services in the Pacific Northwest through an approach known as "market transformation". Market transformation is defined as a strategic effort to induce lasting structural or behavioral changes in the market place that result in increased adoption and penetration of energy efficient technologies and practices. Transformed markets are those in which the energy efficient technology, service or practice either becomes the market norm or becomes competitive with conventional (less efficient) alternatives. Energy efficiency is targeted because it brings economic and environmental benefits to the Northwest.

Since markets cross state lines and utility service territory boundaries, so do the Alliance's market transformation efforts. By working together and pooling resources, the Alliance can focus on the most cost-effective manner to have an impact on sizeable markets. Greater area can be covered with uniform delivery. The Alliance was limited to the Pacific Northwest because the bioregion has been well defined hydrologically and economically. The power distribution system and related power planning has led to a long history of the four states working together on energy efficiency.

The strategic plan developed by the Alliance emphasizes three key facets of obtaining energy efficiency through market transformation. These, in turn, become key criteria for selecting projects.

1. The bottom line goal is cost-effective energy efficiency. Market transformation is a method to achieve that goal;

2. We seek "leverage" points in a market's structure to facilitate the acceptance of the energy efficient product or service; and
3. The intent is to cause lasting changes so energy efficiency becomes automatically incorporated into the marketplace either as the market norm or as competition with the traditional alternatives.

The strategic plan[1] also calls for developing a portfolio of projects that will ensure benefits are delivered to all customer classes regionwide. The portfolio must also reflect a mix of development and implementation activities so market transformation opportunities are being developed by the Alliance at the same time others are being implemented. There is a commitment to evaluating the Alliance's ventures and to using that information to improve current projects and future efforts in the arena of market transformation.

The Alliance as an Organization

The Alliance is a non-profit consortium of public and private utilities in the Northwest; Bonneville Power Administration (BPA) representatives of the governors from Idaho, Montana, Oregon and Washington; and public interest and efficiency industry representatives.

The Alliance has a total budget of $65.5 million to commit to projects adopted before mid-1999. Part of the $65.5 million will be spent on projects adopted before mid-1999 that continue to operate in 2000 and 2001. In order to adopt more projects beyond 1999 or to operate any current projects beyond 2001 further funding will be required. Funding comes from seven sources: the Bonneville Power Administration (on behalf of its public-power customers), and the six investor-owned utilities serving the region: Idaho Power, Montana Power, PacifiCorp, Portland General Electric, Puget Sound Energy and Washington Water Power.

Organizational Structure and Decision Making

The Alliance is governed by an 18-member board of directors responsible for selecting and approving funding for market transformation projects, reviewing and evaluating results, and providing guidance to staff governs the Alliance. The board is organized into three groups: 1) representatives from the six investor-owned utilities in the Northwest; 2) five public utility representatives, and the Bonneville Power Administration; and 3) six non-utility representatives: one from a regional environmental group, one from an association of energy efficiency businesses, and four representing each of the Northwest states.

Many decisions are made by consensus. However, when necessary, a vote is taken and a super-majority is required for an initiative to pass. In the case of the Alliance, a super-majority means that at least 60% are in favor and there are at least two votes from each of the three groups represented on the board (private utility, public utility, and non-utility parties).

The Alliance's executive director is charged with carrying out the board's directions and managing the Alliance's day-to-day activities. Staff of the Alliance has been hired from many of the organizations involved in delivering energy efficiency in the past, and in some cases, has been loaned by the parent organization to the Alliance for a period of time. This has allowed for the fastest possible start-up in delivering ventures into the field.

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[1] Available at Northwest Energy Efficiency Alliance Web Site (www.nwalliance.org) under the projects section

Staff is devoted to four main functions: project development; project implementation; market research/evaluation; and operations. A key decision in developing the organization was to strongly integrate these four functions so that market research and evaluation are used in real time in developing or adapting the projects. This has required a strong team environment with everyone committed to the goal of delivering the best, most effective market transformation projects possible.

Development and Selection of Projects

There are two primary paths by which projects are developed by the Alliance. First, the Alliance has issued general requests for proposals (RFPs) for anyone to submit an idea for funding. Usually these solicitations indicate areas of high interest from the Alliance based on our strategic plan, but proposals are received for any market. Proposals must be submitted in a particular format and then they are judged against the key criteria that define market transformation, i.e. they must be cost-effective, seek strategic leverage points in the market, and result in long-lasting change. Staff works with the board and proposers to better define promising proposals and then write recommendation memos to the board regarding all the proposals. The board makes the final decision on funding of any project.

A second general path to develop projects is through staff initiated efforts. Staff works with national organizations such as the Consortium for Energy Efficiency (CEE) and American Council for an Energy Efficient Economy (ACEEE) to ensure that good ideas for market transformation are fully considered. In addition, markets with a relatively high potential for cost-effective energy efficiency, but an unclear market transformation approach may be targeted for market research to develop a better idea of whether efficiency can be achieved in that market through market transformation.

Fit with Electric Industry Restructuring

The Northwest region could be considered the conservation capital of the United States. Over the last 15 years, the region's utilities have developed over 1200 aMW at a utility cost of less than 2.5 ¢/kWh.

However, as gas prices and avoided costs fell in the early to mid-1990s, effective conservation was harder to find. In addition, conservation investments were very capital intensive compared to combustion turbines or purchases of market power. More importantly, utilities became keenly aware that customers might soon have their choice of energy suppliers, and new entrants in the energy supply market probably would not invest in capital-intensive energy efficiency. As a result, investments in energy efficiency were dramatically reduced. For example, the Bonneville Power Administration, which supplies about half of the region's electricity demand, spent around $152 million on energy efficiency in 1993 but only $42 million in 1997.[2] However, at the same time, the concept of market transformation as a method for achieving energy efficiency was gaining hold. Its promise of being the most cost-effective way of achieving long-term efficiency – primarily because it targeted high leverage opportunities and lasting changes that were eventually not paid for by utilities – made it popular. In addition, because markets cross utility service territories, market transformation efforts had to be done jointly. Thus, the Alliance was formed to deliver energy efficiency through market transformation for a limited three to five year period, until other arrangements for funding

[2] Bonneville Power Administration. 1998. *The Red Book; Conservation Resource Energy Data.* Portland, OR.

could be made. Funding beyond the initial period will depend largely on the outcome of electric utility restructuring in the four states.

Current Alliance Projects

Since its inception, the Alliance has adopted 26 projects. Accounting for evaluations and administrative costs, a total of approximately $55 million of the $65.5 million budgeted has been allocated. About 53% are residential, 23% commercial, 12% industrial, 5% agricultural and 7% multi-sector infrastructure projects. Two-thirds of the funding has been allocated to private sector implementers and about one-third to public sector implementers. The Appendix describes all the projects adopted to date.

Investments by the Alliance tend to fall into three broad categories: 1) development and demonstration of potential for transformation; 2) implementation of projects that are judged to be decent risks; and 3) infrastructure, or support, of overall energy efficiency objectives.

The development and demonstration of potential projects sometimes takes the form of market research or business plan development before a project is adopted. Other times such research is required as the first phase of a particular project.

The implementation of projects can have various objectives. Sometimes the goal of a project is to "kick-start" a market for a product or service that is relatively unknown to consumers. One approach would be to launch a fledgling business that can ultimately make a profit and sustain itself in a market that had not existed before. An example of this would be our project to train and certify operators of commercial buildings. Building owners need to understand the value of having a building operating correctly, which can increase tenant satisfaction, and then would need knowledgeable and certified operators available to deliver that value. The Alliance effort is aimed at building such a market. The point of leverage is the creation of recognizable and accepted qualifications (i.e. certification) for building operators. The lasting effect comes from the self supporting fees for training and certification.

In the industrial sector, Alliance projects are typically designed around the following model. First, industries that are strongly competitive are identified. Intense competition means that each firm is closely watching the other, and any innovative changes that result in a competitive advantage will likely be adopted by multiple firms, if not all firms in the specific market. Second, technologies, practices or design changes are identified that result in energy efficiency as well as some competitive advantage – such as increased production or higher quality product. Third, these technologies, practices or designs are installed or implemented in the facilities of a cooperating industrial customer and the results are documented. Finally, if the project is successful, it is marketed to other firms to engage them in adopting the technology or practice. Examples of this approach include an Alliance project to grow silicon crystals more efficiently and another to improve drives and fans in refrigerated warehouse storage. In both cases the leverage comes from supporting the introduction of the application in one or a few firms and supporting the diffusion of the results. If it improves production or reduces cost then it becomes broadly adopted and has lasting effect by becoming the market norm.

In other projects the goal is to change the rules surrounding the operation of that particular market. For example, the key goal of the WashWise program for resource efficient clothes washers is ultimately to change the federal standards for washing machines. This can only be accomplished after demonstrating consumer acceptance and societal benefits.

The final category of investments falls into "infrastructure". These are typically projects to which kWh savings cannot be directly attributed, but which are needed to support the effective

dissemination of information about energy efficiency into a market. Examples of this include a lighting design lab and a comprehensive information service using telephone hot lines, web pages and technical inputs.

Conclusion

The Alliance was formed in response to anticipated reduction in utility funding for energy efficiency. A less costly approach to achieving energy efficiency was possible by focusing at the level of markets which typically cross utility and state boundaries. The Alliance is essentially an experiment in cooperation, collaboration, and adaptive management. We are trying new approaches to secure energy efficiency for the economy and the environment. In order to be successful, the Alliance will have to stay actively involved with projects in order to ensure that they accomplish their goals as markets change.

Appendix A

Through May1998, the Alliance board has approved funding for the following market transformation projects:

Residential

Energy Star Residential Fixtures (Compact Fluorescent Fixtures). This venture offers performance awards to manufacturers and/or wholesale distributors of energy-efficient lighting fixtures, as a means to address the key market obstacles of limited availability, high retail costs and spotty awareness. The program links selected retailers and wholesalers with manufacturers of energy-efficient fixtures; it also includes a consumer marketing and advertising campaign to spread the word about the benefits of this technology.

High-Efficiency Residential Window Products. Aimed at improving residential heating efficiency (initially in new single-family homes), this program intends to boost consumer demand and market share for windows, doors, skylights and other fenestration products that exceed applicable energy code standards. Activities include various promotional initiatives (such as advertising and product branding), sales training for manufacturers and technical assistance for builders.

LightWise (Compact Fluorescent Bulbs). Targeting the residential lighting market, LightWise strives to overcome market barriers to energy-efficient compact fluorescents by lowering retail costs, increasing availability and expanding consumer awareness and acceptance. The program offers a rebate to participating manufacturers of high-quality, energy-saving compact fluorescents, which typically use one-fourth the energy of incandescent bulbs and last 10 times as long.

Local Government Associations. The Alliance is working with local government organizations in the four Northwest states to promote market transformation and specific ventures among towns, cities and counties. Current tasks include recruiting water utilities for the WashWise program, marketing the Building Operator Certification program, communicating to local governments on market transformation and energy efficiency issues, and providing energy code support.

Public Housing. This venture seeks to demonstrate to public-housing authorities the benefits of life-cycle cost analysis and resource efficiency management services, and to put those into widespread practice to improve the efficiency of public-housing heating systems and appliances. Also planned is work with state and federal agencies to develop regional energy efficiency guidelines for public-housing projects.

Residential Space-Conditioning Air-Distribution Systems (Ducts). This program has two primary goals: 1) Establish retrofitting of leaky residential air-distribution (duct) systems as a viable and profitable business around the Northwest; 2) Create sustained demand for efficient duct systems in new homes. Current market barriers include lack of awareness by homeowners and contractors, along with inadequate identification and marketing of the benefits of properly functioning residential duct work.

Super Good Cents Manufactured Housing. Developing the market for manufactured homes built to Super Good Cents energy-efficient standards, and maintaining a regional support infrastructure, are the objectives of this venture that follows the Manufactured Housing Acquisition Program (MAP). This program includes regional television advertising, retailer sales training and marketing support, promotion of financing for manufactured-home buyers, and education to promote proper site preparation and installation of these energy-efficient residences.

WashWise (Resource-Efficient Clothes Washers). WashWise promotes resource-efficient clothes washers--and their substantial energy, water and detergent savings--through financial incentives to buyers and dealers of qualifying machines. A regionwide consumer education campaign is also part of this venture's strategy. WashWise aims to increase the current tiny market share of resource-efficient washers--also known as horizontal-axis or tumble-action washing machines--and ultimately to influence federal energy efficiency standards for clothes washers.

Commercial

Architecture + Energy: Building Excellence in the Northwest. Through an awards program as well as regional workshops and other educational efforts, this project helps inform the people who design commercial buildings about the value and benefits of energy-efficient architecture.

Billing Simulation for Small Commercial Facilities. This project is designed to increase the viability and adoption of energy efficiency retrofits and commissioning services in small commercial buildings, particularly those in rural areas east of the Cascades. The primary tool to accomplish this goal is a simplified engineering simulation of energy consumption in buildings.

Building Commissioning Market Assessment. The Alliance is assessing the regional market for building commissioning and developing a plan to intervene in the marketplace. This process will establish the foundation for any future Alliance efforts in commissioning, which is a practice to help building systems operate as designed. The ultimate goal is for commissioning to become a self-sustaining standard practice for commercial buildings.

Building Operator Certification. Building operators receive training in energy-efficient practices and technologies under these coordinated programs offered in Washington, Oregon and Idaho. Those who successfully complete a training series earn certification, and are expected to be able to reduce energy and resource consumption in the facilities they operate.

Commissioning Public Buildings in the Pacific Northwest. The integration of commissioning into Northwest state and local government buildings is the focus of this venture, which includes training and education initiatives, case studies, enhanced development of commissioning services, and communications to public-facility officials on the many benefits of commissioning building systems so they operate as designed. The purpose, within each state as well as regionally, is to curry government support for commissioning through policies as well as practice.

National Standards. This project funds participation by Oregon Office of Energy staff in three national forums that are instrumental in setting national energy efficiency standards: the U.S. Department of Energy committee on appliance efficiency standards, which is revising clothes washer and water-heater efficiency standards; the National Fenestration Rating Council technical steering committee; and the ASHRAE/IESNA 90.1 commercial building codes lighting subcommittee, which is drafting new lighting guidelines that states will be required to adopt.

New Construction Project. This three-year project seeks to improve energy-efficient building practices in homes and commercial structures around the region, and to develop self-sustaining energy efficiency support programs and organizations. One such organization is the New Construction Council.

Northwest Lighting On-Line. Targeting the commercial lighting market, this project offers Internet access to lighting design resources, primarily for lighting specifiers and contractors. It includes development of a Northwest lighting Web site, along with energy-efficient lighting design features and product search tools on existing Web sites.

Industrial

Evaporator Fan VFD Initiative. Transforming variable-speed drives into a standard technology for evaporator fans in Northwest refrigerated storage warehouses is the goal of this initiative. The basic approach is educating warehouse owners--along with vendors, contractors and system operators--on the benefits and performance of VFD technology in distribution centers, cold storages, dairy-milk coolers, food-processor blast cells and other types of refrigerated warehouse systems.

In-Service Motors Testing. This project will test and demonstrate specific ways to assess the efficiency of existing motors in Northwest industries, and document how motor testing can benefit industrial plants. The long-term goal of this project is to accelerate the replacement of inefficient motors.

Microelectronics Industry Efficiency Initiative. This venture aims to identify and pursue efficiency opportunities in the booming and energy-intensive Northwest microelectronics industry. Specifically, the Alliance will seek out an integrated design process in which to enhance energy efficiency for a semiconductor manufacturing facility, participate in important industry forums and assess potential efficiencies in the polysilicon manufacturing process.

Premium Efficiency Motors. The Alliance plans to institutionalize energy-efficient motor practices among customers that use high-horsepower motors and buy motors in large volumes. Although specific strategies are being determined through market research, this venture will focus on transforming internal customer policies for the purchase, upkeep and repair of motors. This builds on a current Alliance project that, in partnership with motor dealers, encourages the stocking and sale of premium efficiency motors for businesses and industries around the region.

Silicon Crystal Growing Facilities. This project seeks improved efficiencies in energy-intensive crystal growing furnaces where silicon ingots are produced for photovoltaic and semiconductor applications. The initial focus is on developing and implementing furnace efficiencies at Siemens

Solar Industries facilities where silicon ingots are produced for the photovoltaic industry; the eventual goal is to transfer the new technology to the much larger semiconductor industry.

Agricultural

Scientific Irrigation Scheduling. This venture provides information and assistance to expand the regional practice of scientific irrigation scheduling, which enables irrigators to supply the right amount of moisture to their crops at the right time. SIS saves considerable energy while cutting irrigation costs, conserving water, reducing the use of agricultural chemicals and potentially improving crop yields and quality.

Infrastructure/Support

Con.WEB. The Alliance financially supports publication of a monthly on-line newsletter covering energy efficiency and renewable energy around the Pacific Northwest.

Energy Ideas Clearinghouse. This project supports Energy Ideas Clearinghouse activities, which provides a range of information services--primarily designed for people who make energy-related decisions for businesses, industries and governments. The Clearinghouse will seek to break down information barriers for the use of energy-efficient products and services with an integrated, tiered system of Internet-based resources (including a product database and on-line technical solutions), targeted projects, personalized customer service and customized technical assistance.

Lighting Design Lab. The Seattle-based Lighting Design Lab is continuing to promote energy-efficient lighting around the Pacific Northwest. Under this Alliance venture, the Lab is targeting lighting specifiers for the retail, office, daylighting and residential sectors; working with colleges and trade schools to train students; partnering with trade allies, professional organizations, Alliance projects and Northwest utilities; expanding its regional approach through increased marketing, advertising and electronic media; and serving as the Alliance representative to the New York-based Lighting Research Center.

Lighting Research Center. The Alliance has agreed to join the Lighting Research Center's Partners Program, which gives the Alliance and its partners access to the New York-based center's expertise, information services, technical resources and research/development efforts, and enables networking with other LRC partners such as utilities, governments and corporations. The Alliance has also signed up for LRC's Product Information Program, which provides extensive reports on the performance of specific lighting products and designs.

Northwest Energy Education Institute. Energy efficiency training and education are conducted through the Northwest Energy Education Institute, based at Lane Community College in Eugene, Ore., but serving the entire region. The institute provides customized training for energy professionals as well as specific training in support of Alliance market transformation ventures. It also will offer an energy efficiency degree program available regionally, and will promote energy efficiency curricula in Northwest community colleges.