



# **Market Transformation and the Northwest Energy Efficiency Alliance**

## **A Brief History**

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## The Northwest and Energy Efficiency: A 35-year Relationship

Energy efficiency has held a special role in the Northwest energy markets for more than 35 years. That role grew out of a real need for new energy resources as the region developed and consumed power from the last of the large, inexpensive hydropower projects that still dominate the region's power supply. In the late 1970s, the Northwest stood at the crossroads faced with two very different choices for supplying future electric needs. One option was the industry standard of building large conventional (at that time nuclear) power generation plants. The other new option was rooted in the increasingly recognized viewpoint that a saved kilowatt-hour is as valuable as a newly generated kWh.

After comparing the costs of the two options, it was clear that if there was a way to acquire energy efficiency the same way that a conventional generating plant could be constructed, then energy efficiency could be a real contender as the least-cost energy resource. Initially, the region's power brokers decided to pursue a strategy based on conventional wisdom, and embarked on an ambitious program to build 20 nuclear power plants in 20 years. As the real costs of constructing the first five plants began to impact electricity rates for Northwest consumers, energy efficiency became the option of choice, and it was codified into law by the Northwest Power and Conservation Act of 1980. Thus began the era of efficiency as a resource.

## A New Approach to Energy Efficiency Acquisition

During the early 1980s the region struggled to understand what it would mean to pursue energy efficiency as a resource. In its first power plan, the Northwest Power and Conservation Council (The Council) drafted an action plan that had more than 100 separate activities that were needed to understand, verify and implement energy efficiency in a large scale across the region. A key component of this action plan was a call to implement Model Conservation Standards (MCS) for newly constructed residential and commercial buildings. The MCS was intended for state and local building codes and required that all homes and commercial buildings incorporate all cost-effective energy efficiency measures at the time of construction. However, the Council recognized that the region would need to overcome a number of barriers to make this happen. The Council's action plan included the following: activities to collect data on the actual performance and cost of homes built to the MCS; demonstration projects to help builders understand what it took to build a home this new way; a program to help builders market these new efficient homes to the consumer; and lastly, a program to help local jurisdictions adopt and enforce new codes incorporating the MCS.

As the first attempt at a comprehensive strategy to change the market, the MCS would have been ambitious for a small geographic area, let alone for a four-state region. Even so, by the mid- 1980s, market share of MCS homes had risen by 40 to 50%. In 1989, Washington adopted the MCS statewide. In 1993, Oregon followed suit and adopted an MCS equivalent code statewide. Idaho and Montana followed shortly thereafter. The region's MCS experience demonstrated that it was not only possible, but desirable, to acquire efficiency through this process. In 1992, Tom Eckman from the

Council and Fred Gordon of Pacific Energy Associates characterized this process as market transformation. A new approach to acquiring energy efficiency was officially born.

Once the phrase had been coined, it was applied to other collaborative efforts. For example, in the late 1980s it became clear that it was technologically possible to improve refrigerator energy efficiency significantly beyond what mainstream manufacturers were offering. Since these appliances were regulated by federal standards, there was potential to get U.S. refrigerators to a higher efficiency standard, but only if manufacturers deployed better technologies. To break the logjam, utilities around the country collaborated to pool incentives to, and influence manufacturers to voluntarily drive a higher industry standard. Through a winner-take-all contest, this golden carrot would be awarded to the first manufacturer to produce a refrigerator using 30% less energy than the federal standard. Eventually one of the top five manufacturers stepped forward to claim the prize, and ended up selling thousands of new efficient refrigerators, while the others scrambled to compete. By 1990, with manufacturers voluntarily competing for efficiency, it became possible for the new federal standard for energy efficiency to be set at a level that would require all refrigerators to be as efficient as the golden carrot winner.

Along with the MCS, the “golden carrot” refrigerator program became one of the best real world examples of successful “market transformation.”

## Deregulation and the Birth of NEEA: The Grand Experiment

Despite the success, by the mid-1990s a new word threatened to obliterate the promise of energy efficiency: deregulation of the electric utility businesses. Generating “assets” were to be sold to the highest bidder and purchased back at market rates; utilities were to be simply “transport” for market-priced power from wholesale generator to end consumer. Anything that couldn’t be counted as a physical or contractual resource that could be sold on the market was a potential liability “stranded” by deregulation with no hope of cost recovery. Unfortunately, almost all energy efficiency program efforts fell into this category of “stranded assets”.

Nationally, in the rush to protect themselves and their shareholders, many utilities decided to end all energy efficiency programs. Instead, they were planning to rely on the market as the delivery mechanism for energy efficiency. In the Northwest, the Council convened a group of regional organizations involved in the Northwest’s energy efficiency efforts. The Council made the case that, while individual utilities might decide to stop their energy efficiency programs, the Northwest region as a whole had seen too much value from coordinated efforts to let these activities become stranded as well. The Council argued for the formation of a new organization dedicated to pursuing the highest value activities to continue to secure energy efficiency for the region. The organization would focus its attention on market transformation efforts like the MCS and golden carrot efforts.

To be successful, the proposed effort would have to overcome several obstacles. Utility regulators would have to agree that funds for the effort would be allowable utility expenses and would not become stranded assets. Second, the effort would need to operate in markets that crossed state and utility service territory boundaries, requiring uniform participation and equitable funding from all of the utilities in the four-state area. With more than half the region served by self-governing utilities, the effort would have to be voluntarily funded by all the region’s utilities. Third, the work needed to be regularly evaluated. Fourth, the organization’s success should not be judged based on a single project. Lastly, the effort would need to prove that market transformation could be replicated and result in sustained, measurable market change.

After many months of deliberations, the Northwest Energy Efficiency Alliance (NEEA) was officially incorporated as a non-profit corporation in 1996, with funding from all of the investor owned utilities in the region and the Bonneville Power Administration representing publicly owned utilities. To ensure the necessary collaboration would take place, NEEA's first Board of Directors represented all of the primary stakeholders including regulators from the four states, public and privately-owned utilities, energy efficiency businesses, and government representatives for the four states. With an initial 3-year budget of \$65 million, the newly formed organization was faced with the daunting task of proving in less than three years that this concept could work.

NEEA started with a number of initiatives that were already underway, primarily in the residential sector. These included compact fluorescent lamps and horizontal-axis residential clothes washers. NEEA also inherited a fledgling effort to train commercial building operators to increase efficiency of the buildings they managed. By early 1997, NEEA had only a handful of employees but a portfolio of projects worth well over \$11 million.

NEEA issued solicitations for proposals to apply to new and existing markets. This resulted in many new projects, such as the BacGen wastewater treatment project. In 1997, NEEA began developing the first of what would become a series of comprehensive market strategy documents; in this case focused on strategy for energy codes in the region.

By the end of 1999, NEEA had a number of successes under its belt, including the clothes washer effort, which increased market share from a few percentage points to more than 12% in only a few years. NEEA was also able to bring real-world market data to the Federal Standards process, contributing to a U.S. Department of Energy (DOE) decision that would require all washing machines to meet NEEA's efficiency standards by 2007. This was further proof that market transformation could be deployed in a deliberate strategy to markets beyond new construction, and that a regionally coordinated effort could impact national markets. The funders agreed to continue for another five years beginning in 2000, with a total five-year commitment of \$100 million.

## 2000-2004: Market Transformation and the Energy Crisis of 2001

After the new funding cycle began in 2000, NEEA faced its first real test. A perfect storm of unseasonably warm weather combined with low reserve capacity triggered a series of dramatic power outages in northern California that caused blackouts all over the state. This caused energy prices to spike in the recently deregulated wholesale power markets on the west coast, rippling upwards into the Northwest. These price spikes had dramatic effects on consumers in the region as utilities passed along the increased costs of purchased power. Suddenly, utilities that had left the energy efficiency program arena in the 1990s needed solutions to help customers deal with rate shocks.

One possible solution to the energy crisis was the Compact Fluorescent Lamp (CFL). Relatively cheap on a per unit basis (then \$7 to \$10 per bulb) it was something utilities could provide to all customers as an example of energy efficiency as a proactive response to the crisis. NEEA worked to ensure that ENERGY STAR lighting products were available and recognizable in retail locations throughout the region. Bonneville Power Administration suggested to the regional utilities that they work with NEEA to set up a program that would draw consumers to retail channels. That way, when the crisis was over, consumers would know where to get more bulbs if they wanted them and the utilities wouldn't be stuck as the sole source for CFLs going forward. The utilities agreed, and NEEA set up a program that provided a point-of-sale rebate for CFLs. In many cases, manufacturers and retailers also pitched in with promotional prices that brought the price of the CFL to only a few dollars or less.

The response was overwhelming. In 2001, during the peak of the energy crisis, Northwest consumers purchased more than 6.5 million bulbs, or more than six times the amount purchased one year earlier. Equally notable, for every bulb purchased with a rebate, consumers purchased another bulb without a rebate.

This single data point turned into a trend in 2002 when, despite the departure of incentives, consumers continued to buy more than 3.5 million bulbs. The CFL bulb performance during the power crisis and afterward was a highly visible symbol of the power of a market-based, or voluntary, effort. Less visible was the carefully constructed relationships and market changes over the 1997-2000 period that laid the groundwork for the sales increase in 2001. The fact that bulb sales continued to rise significantly every year after 2002 proved the benefit of driving consumers to market channels.

NEEA also began to focus on the commercial sector. In 2001, NEEA adopted its first comprehensive market strategy for an entire sector, with a ten-year vision for commercial sector market transformation. It defined a set of integrated market interventions built around a set of core target markets, each with its own market barriers and opportunities. All of this activity would take place under a unifying marketing umbrella that would provide visibility and promote efficiency across the sector. NEEA branded this effort BetterBricks.

In 2002, NEEA launched a comprehensive evaluation of its previous five years. In 2003, the Five-Year Retrospective Committee reported that NEEA had changed several markets in the Northwest, resulting in nearly 100 average megawatts (aMW) of additional energy savings for the region.

In 2003, following the successful launch of the commercial sector strategic initiative, NEEA began developing a comprehensive residential sector strategic plan, launched under a marketing umbrella built on the ENERGY STAR label. It included components aimed at consumer products, new construction and services markets.

In 2004, under the new residential sector strategy, NEEA launched the ENERGY STAR Homes Northwest Program, the first large-scale new construction marketing program since the 1980s. That same year funders renewed their commitment to energy efficiency for another five years with a \$100 million budget, with a proposal forecasting that the region could save another 100 aMW.

## 2005-2009: Changing the Region's Business Practices

In 2005, NEEA launched its comprehensive industrial sector strategy later known as the Industrial Efficiency Alliance (IEA). NEEA now had long-term strategic plans for all three sectors, each with long-term market transformation goals and implementation strategies, tactics and budgets. These plans became the core of a revised 2005-2009 business plan that provided a high-level accountability framework for NEEA. This framework set organizational level goals and objectives as well as annual budgets, operations plans, projected energy savings, and market change indicators. NEEA could now be held accountable at the organization level, not just at the individual project level. This framework was formally adopted in 2006 with the updated 2005 – 2009 Strategic Business Plan.

One of NEEA's main strategy improvements at this time was a more holistic approach to energy efficiency, referred to as changing business practices. NEEA had learned that most businesses and industries were not adopting significant energy efficiency opportunities despite attractive economic returns. After conducting research with market actors, the problem was clear.

Both the IEA and BetterBricks efforts began developing tools to help industry and business think strategically about energy efficiency in the same way that they would any other critical business component. The IEA began to develop Continuous Energy Improvement (CEI) as the industrial sector while the BetterBricks effort moved forward with Strategic Energy Management Planning (SEMP), both of which were developed out of business change models within their respective sectors.

These innovative new efforts required significant product development work. While there was plenty of material on how to manage energy, little addressed how to do so within the context of business operations.

Providence Health Care was one of the first companies to sign up under the BetterBricks Hospitals/Healthcare target market initiative. It owns and operates the largest system of hospitals and health-care facilities in the Northwest. NEEA presented a business case for efficiency specifically in terms of return on patient revenue compared to other opportunities. Soon after, Providence established an Office of Energy Management. It funded an internal rotating pool of capital to finance efficiency projects to be paid back through savings that would then finance other new efforts. It began benchmarking facility energy performance across its system and tracking results from specific efficiency initiatives.

In the industrial sector, the IEA targeted the food processing and pulp and paper sectors. NEEA leveraged a strong relationship with the Northwest Food Processors Association (NWFPA) as a mechanism to influence Northwest food industry executives. The NWFPA invited NEEA to participate in its executive forums, providing access to the C-level executives at the region's major food processors. By 2006, almost 10% of large food processing companies were committed to Continuous Energy Improvement and working to implement business practice changes to increase energy efficiency. By the end of 2007, approximately 25% were committed to the strategy.

Meanwhile, NEEA's ENERGY STAR efforts were making rapid progress against its residential strategic plan goals. In 2004, NEEA targeted a high market share for clothes washers with efficiency 30% better than ENERGY STAR. NEEA worked to get the Consortium for Energy Efficiency (CEE) to adopt this as its new standard for utility programs and helped organize Northwest utility programs to incent this new level. By the end of 2005, roughly 25% of all washers met the new efficiency target. Three years later in 2008, EPA would adopt the same standard for ENERGY STAR.

Meanwhile, the residential lighting market took off. While the Northwest had always been one of the top selling regions of the country for CFLs, in 2005 sales increased to 6.8 million, exceeding the amount sold during the 2001 energy crisis. In 2006, sales almost doubled to just shy of 11 million bulbs. In 2007, sales reached over 17 million. Today, nearly one in five bulbs sold in the region is an ENERGY STAR qualified CFL.

The ENERGY STAR Homes Northwest Program, despite a dramatic downturn in the new construction market, marched steadily forward, posting just under 5% market share at the end of 2007. Interestingly, the market share does not tell the whole story of success for the ENERGY STAR Homes Northwest effort. In Oregon, a new energy code proposal based significantly on ENERGY STAR Homes Northwest requirements was passed in 2007 making the state's 25% share of total Northwest new housing effectively ENERGY STAR Homes Northwest compliant. The ENERGY STAR Homes Northwest program success led directly to inclusion of these new provisions in Oregon's energy code and a 15% improvement in efficiency of all new homes in Oregon beginning in the summer of 2008.

## 2010-2014: Diving Deeper in Business Change and Filling the Energy Efficiency Pipeline

For the 2010-2014 business cycle, NEEA's Strategic and Business Plans focused on six goals: increase market adoption of energy-efficient technologies, practices and services; help Northwest utilities and other energy efficiency organizations achieve their energy efficiency goals; build regional market knowledge and capabilities through education and training; increase regional market availability of emerging technologies; support the region's efforts to promote energy efficiency; and facilitate regional energy efficiency planning and implementation. It was through these plans that NEEA first formally establishes its Emerging Technology business unit to support its Filling the Pipeline goal.

In the residential sector, NEEA achieved a number of successes. In 2010, NEEA, regional utilities and manufacturers partnered to develop the first heat pump water heater to work effectively in any Northwest climate. NEEA and utilities then began to promote heat pump water heater products and supported their adoption in retail and contractor networks throughout the region. After continued partnership with manufacturers, retailers and suppliers, NEEA and regional utilities have influenced the sale of over 5,000 heat pump water heaters, which have the potential to achieve 500 aMW of energy savings for the region by 2029.

In 2012, realizing that retailers, manufacturers and consumers were not prioritizing energy-efficient TVs, NEEA teamed up with utilities across the West Coast to launch the Energy Forward campaign to influence retailers and manufacturers to prioritize TV energy efficiency in buying and stocking practices. NEEA's retail partners now represent 84% of the regional TV market, and 2013 data verified continued Northwest market momentum towards 95 percent penetration of the ENERGY STAR 5.3 TV standard.

In 2013, NEEA laid the foundation for the next phase of efficient homes through the Next Step Homes pilot. The Northwest region serves as the test market to raise the bar for efficient home building that will influence residential codes in the future.

NEEA also saw significant achievements in the commercial and industrial sectors. In 2011, NEEA launched the 25inTENSity Challenge to help energy-intensive businesses prioritize energy management, and commit their organizations to reduce energy intensity by 25 percent in 10 years. Twenty-five percent of Northwest hospitals have signed on since.

In 2012, NEEA collaborated with partners to introduce a regional commercial lighting marketing strategy that will help build a path for more comprehensive industry savings, and represents a 550 aMW potential in the Northwest.

At the same time, the market share of 80 PLUS certified commercial desktop computers reached an estimated 70% of PCs sold in the U.S., up from 0% in 2005, thanks to NEEA's 80 PLUS Program to encourage computer manufacturers to install highly efficient power supplies.

NEEA also completed first-of-their-kind stock assessments to provide the Northwest with valuable data to help inform regional and local power planning. In 2011, NEEA completed metering of Northwest homes for the Residential Building Stock Assessment, representing the first study in 25 years to assess detailed home energy-use in the Northwest. And in 2014, NEEA completed the Industrial Facility Site Assessment (IFSA), the first study of its kind on industrial building energy-use characteristics.

## 2015-2019: A Changing World, A Changing Region

To develop its 2015-19 Strategic and Business Plans, NEEA and its Board of Directors sought input and feedback from stakeholders throughout the region via direct outreach and public events. NEEA confirmed that current economic conditions, including low and uneven near-term load growth for utilities and reduced natural gas prices, have created challenges for energy efficiency investment. There are also other challenging trends in the energy efficiency industry that impact market transformation. The low-hanging fruit is disappearing, which means that the remaining potential is generally in smaller, more complex and inter-related programs. As the complexity of new efficiency opportunities increases and savings from individual programs shrink, collaboration in the region is increasingly important.

NEEA responded to these trends by adjusting its approach to improve momentum in achieving regional goals for energy efficiency. It adopted a Strategic Market framework with strategic partnerships and infrastructure to support the coordinated implementation of both regional and local utility programs. This enhanced framework focuses on four markets: consumer products, residential new construction, commercial new construction, and commercial lighting. These efforts rely on regional platforms that will decrease the cost to transform markets and improve the time to market for key energy efficiency initiatives.

For the first time, NEEA began to explore natural gas market transformation. A collaborative of Northwest utilities and efficiency organizations is working together to advance the development and market adoption of energy-efficient natural gas products, practices and services, resulting in more consumer choice and an increase in the efficiency of natural gas use in the Northwest.

NEEA streamlined its focus to two Strategic Goals: 1) Fill the energy efficiency pipeline with new products, services, practices and approaches; and 2) Create market conditions that will accelerate and sustain the market adoption of emerging energy efficiency products, services and practices.

NEEA also set up mechanisms to enhance stakeholder coordination on activities, and provide more flexibility for funders who have grown and expanded their own capacities. NEEA will collaborate with funder organizations to identify and execute all necessary market transformation activities, while providing flexibility for funders to conduct some of those activities themselves. This flexible approach will minimize confusion among local trade allies and customers and will more fully leverage existing relationships between utilities and their customers.

### Summary: Two Decades of Market Transformation

Over the course of its short history, NEEA demonstrated that the concept of market transformation not only works, but can be successfully replicated in many different markets and situations. NEEA has managed to survive through a range of external conditions, including deregulation of generation, an energy crisis, and a high demand for its services beyond its current resources. With another round of funding beginning in 2020, today NEEA stands at the brink of significant opportunity to continue to help the region meet its current and future energy needs.