



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

## **A Brief History**

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**March 23, 2008**

### **The Northwest and Energy Efficiency: A 30-year Relationship**

Energy efficiency has held a special place in the Northwest energy markets for more than 30 years. That place was created out of a very 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. On the one hand was the industry standard option of building large conventional (at that time nuclear) power generation plants. On the other hand, a new option was being slowly but surely recognized; a saved kilowatt-hour is just as valuable as a newly generated kWh.

When the costs of the two options were directly compared, it became 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" choice. Initially, the region's power brokers decided to pursue a strategy based on the 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 hit the electric rates of Northwest consumers, the energy efficiency option became the option of choice, and it was codified into law by the Northwest Power and Conservation Act of 1980. The era of efficiency as a resource had begun.

### **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 over 100 separate activities that were needed to understand, verify and implement energy efficiency in a large scale in 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 to be adopted into state and local building codes and require that all homes and commercial buildings incorporate all cost-effective energy efficiency at the time of construction. However, the Council recognized that a number of barriers would

need to be overcome to make this happen. The Council's action plan included the following: activities designed to collect field data on the actual performance and cost of homes built to the MCS; demonstration projects with training to help builders understand and experience what it took to build a home this new way; a marketing program with financial incentives to help builders market these new efficient homes to the consumer; and lastly, a program designed to help local jurisdictions adopt and enforce new codes that incorporate the MCS.

As the first attempt at a comprehensive strategy to change the entire market, the MCS would have been ambitious for even a small geographic area, let alone for a four-state region. Even so, by the mid-1980s, market share of MCS homes had risen to the 40~50% range. 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 MCS experience in the region 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 authored a paper describing this process as "market transformation." A new way to think about 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 energy efficiency in refrigerators significantly beyond what the mainstream manufacturers were offering. Since these appliances were regulated by federal standards, there was the potential to get all refrigerators in the US to a higher standard of efficiency but only if the manufacturers deployed better technologies. To break the logjam, utilities around the country collaborated to create a pool of incentives large enough to attract the attention of the top manufacturers. The idea was to allow the manufacturers to voluntarily drive a higher standard for the industry. This "golden carrot" would be awarded in a winner-take-all contest for the first manufacturer to sell a refrigerator that used 30% less energy than the federal standard. Eventually one of the top five manufacturers stepped forward and successfully claimed the prize. This manufacturer ended up selling thousands of new efficient refrigerators while the other manufacturers 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 soon require all refrigerators to be as efficient as the "golden carrot".

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 all the success, by the mid 1990s a new word threatened to obliterate all of the promise of energy efficiency: deregulation. Deregulation of the electric utility business turned the formerly staid and stable world of generators and wires upside down. Generating “assets” were to be sold off 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 and were planning to rely on the market as the delivery mechanism for energy efficiency. In the Northwest, as utilities considered what to do, the Council brought together a group of regional organizations that had played key roles in the development and operation of 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 (like the “MCS” and the “golden carrot”) to let these kinds of 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 continuing to secure the benefits the region had experienced through market transformation efforts like the MCS and Golden Carrot efforts.

To be successful, the proposed effort would have to overcome several obstacles. The utility regulators would have to agree that funds for the effort would be allowable expenses and would not become “stranded assets” should deregulation continue. 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 utilities that were self-governing, that meant that the effort would have to be voluntarily funded by all the utilities in the region. Third, the work needed to be evaluated on a regular basis. Fourth, NEEA’s success should not be judged on the basis of a single project. Lastly, the effort would need to prove that the concept of market transformation could be replicated and result in sustained, measurable market change.

After many months of deliberations, the Northwest Energy Efficiency Alliance was officially incorporated as a non-profit corporation in the fall of 1996 with funding from all of the investor owned utilities in the region and the Bonneville Power Administration representing publicly owned utilities. In order to ensure the

necessary collaboration would take place, the first Board represented all of the primary stakeholders including regulators from the four states, public and privately owned utilities, energy efficiency businesses, and representatives for the four state governments. With an initial budget of \$65 million and 3-years, the newly formed organization was faced with the daunting task of proving in less than three years that this concept could actually work.

Given the short timeline needed to prove the concept, NEEA started with a number of initiatives that were already underway, primarily in the residential sector. These included an effort targeted at a new technology in lighting called compact fluorescent lamps and an effort to introduce and promote horizontal-axis clothes washers into the residential laundry market. 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.

To move forward quickly and show that the concept of market transformation could be applied to new markets as well as existing markets, NEEA issued solicitations for proposals in 1997 and 1998. The solicitation elicited a voluminous response that ultimately resulted in a number of new innovative 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 already had a number of successes under its belt, including the clothes washer effort. This effort increased market share from a few percent to more than 12% in only a few years, and had been able to bring real-world market data to the Federal Standards process, which contributed to a decision by DOE that would require all washing machines to meet NEEA's efficiency standards by 2007. This and other successes were 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.

### **Market Transformation and the Energy Crisis of 2001**

Shortly after the new funding cycle began in 2000, NEEA faced the first real test of its ability to deliver results in a market where regulation was not a possible outcome. In the spring of 2000, a "perfect storm" of unseasonably warm weather combined with low reserve capacity triggered a series of dramatic power outages in northern California. Over the course of that summer things got worse and the shortages caused blackouts all over the state. The blackouts, in turn, caused

energy prices to spike in the recently de-regulated wholesale power markets on the west coast that rippled 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. Some electric rates virtually doubled overnight while other utilities issued short-term bonds to try to finance the impacts over a longer time period. Suddenly, utilities that had left the energy-efficiency program arena in the 1990s desperately needed answers to help their customers deal with the rate shocks rolling up from California.

One obvious possible solution to the energy crisis was the Compact Fluorescent Lamps (CFL). Relatively cheap on a per unit basis (then \$7 to \$10 per bulb) it represented something that utilities could provide to all customers as an example of energy efficiency as a proactive response to the crisis. In California, utilities lined up to buy large quantities and virtually give them away to consumers. However, in the Northwest NEEA had realized that a large give-away might destroy the carefully built network of manufacturers, distributors, and retailers. So instead, NEEA worked to ensure that ENERGY STAR lighting products were available and recognizable in retail locations throughout the region. NEEA's largest funder, the Bonneville Power Administration, stepped up and 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 northwest 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 that of one year earlier. It was a staggering figure. Compared to the bulbs reported in California's lighting programs for the same year, on a population weighted basis, the sale of CFLs in the Northwest was three times higher than the sale of CFLs throughout the entire state of California. 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. What was virtually invisible was the carefully constructed relationships and market changes over the 1997-2000 period that laid the groundwork for the huge increase in sales in 2001. The fact that bulb sales continued to rise significantly every year after 2002 proved the benefit of driving consumers to the natural market channels.

While the residential sector was getting most of the attention, NEEA began to focus on the commercial sector as an area of significant opportunity that had not received as much focus as the residential sector. In 2001, NEEA adopted its first comprehensive market strategy for an entire sector. This strategy laid out a ten-year vision for market transformation in the commercial sector. It defined a set of integrated market interventions built around a set of core “target markets”, each with its own specific market barriers and opportunities. It also included a set of foundational activities that would support each of the target market activities. All of this activity would take place under a unifying marketing “umbrella” that would provide visibility and promote efficiency across the entire sector. NEEA branded this effort ‘BetterBricks.’

In 2002 shortly after the end of the energy crisis, NEEA launched its first comprehensive evaluation of the previous five years of operation. The “Five-Year Retrospective” looked at a number of dimensions of NEEA’s projects and operational processes through the eyes of a third-party contractor that was managed by an external steering committee. In 2003, the Retrospective Committee reported that NEEA had changed several markets in the Northwest resulting in nearly 100 aMW of additional energy savings for the region.

In 2003, following the successful launch of the commercial sector strategic initiative NEEA began developing a similar comprehensive strategic plan for the residential sector. This time the strategy was 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 NEEA went back to the funders asking for a renewed commitment of funding for another five years and \$100 million and a proposal that forecasted another 100 aMW could be saved.

### **Continuing to Evolve: Changing Business Practices**

In 2005, at the start of the third cycle of funding, NEEA launched its comprehensive strategy for the industrial sector that later became known as the Industrial Efficiency Alliance (IEA). With the adoption of the IEA, NEEA now had long-term strategic plans for all three sectors, each with long-term market transformation goals and objectives as well as implementation strategies, tactics and budgets. These sector 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, projected energy savings, and market change indicators. Since the

NEEA founding committee had intended all along that NEEA's success should not be judged on the basis of a single project. Now that intention could be operationalized year by year and for the entire five-year funding cycle. 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.

On the program operations front, other changes were occurring as well. While the residential sector had been in the spotlight for most of the previous funding cycles, now the focus was beginning to shift towards the commercial and industrial sectors.

As more work was done, the strategies originally deployed began to improve. One of the main strategy improvements was a more holistic approach to energy efficiency which NEEA calls "changing business practices". NEEA had learned what economic theory had already predicted, that most businesses and industry were not adopting significant energy efficiency opportunities despite very attractive economic returns. This was still true even after the energy crisis although the interest level in efficiency was certainly higher than before. Why? After conducting research with market actors in both sectors the problem began to become clear.

Both the IEA and the BetterBricks efforts began developing tools to help industry and business begin thinking 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 framework for industry 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 – which continue to show NEEA as an innovator both at the product/process level as well as the strategic level -- 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 energy efficiency within 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 healthcare 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, which reported directly to their Chief Financial Officer. 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 changes along with 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 reach out to the executive level of northwest food industry. The NWFPA invited NEEA to participate in its executive forums, providing access to the “C-level” executives of all of the major food processors in the Northwest. 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, NEEA anticipates that approximately 25% will be committed to the strategy.

While the IEA and BetterBricks efforts were working on changing the fundamentals of business practices, the NEEA ENERGY STAR efforts were making rapid progress towards the goals set in the residential strategic plan. In 2004 NEEA targeted a high market share for clothes washers with efficiency 30% better than ENERGY STAR. NEEA worked to get CEE to adopt this as their 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 finally 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. 2007 sales were expected to reach over 17 million.

The ENERGY STAR Homes Northwest Program, despite a dramatic downturn in the new construction market, marched steadily forward, posting just less than 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.

## **A changing world**

As critical as these successes were, NEEA's work is not done. Demand for energy efficiency has increased due, perhaps in part, to rising fuel prices and broad concerns and agreement around global warming. Electric utilities looking for new resources began to face both increased costs for new supply side resources and constraints in both the transmission and distribution systems. In response, local utility programs dramatically increased their energy efficiency goals and budgets. Taken in whole, these market changes began to increase demand for many of the products and services being addressed by NEEA initiatives.

At the same time, NEEA's fixed budgets of roughly \$20 million per year had essentially not changed since the first five-year funding agreement in 2000. While providing needed stability for implementing long-term market interventions, NEEA's fixed budget began to be a limitation in light of increased demand for NEEA services. This began to raise questions about NEEA's role in a world that had increased its investment in energy efficiency to nearly \$300 million per year.

To address these questions, NEEA's Board of Directors made some major organizational changes starting in late 2006 and continuing through 2007. The Board consolidated to a smaller structure of 14 members and created a strategic planning committee to help define NEEA's vision for the future. In 2008, the Strategic Planning Committee began a significant regional input process to help NEEA answer these crucial questions.

## **Summary: A Decade of Market Transformation**

Over the course of its short history, NEEA demonstrated that the concept of market transformation can not only work but can be successfully replicated in many different markets and situations. During the same period NEEA has managed to survive through a range of external conditions, including de-regulation, an energy crisis, and a high demand for its services beyond its current resources. . With a new governance structure and an opportunity for another round of funding beginning in 2010, today NEEA stands at the brink of significant opportunity to expand its services to meet the current needs of the region.