THE ALLIANCE TO SAVE ENERGY
Star of Energy Efficiency Awards
"Innovative" Star of Energy Efficiency Award

Engaging Customers with an Innovative Peak Time Rebate Program – BGE's Smart Energy Rewards®

Baltimore Gas and Electric (BGE) has aggressively pursued energy efficiency and demand response benefits for its customers and has developed a suite of programs to help customers save energy, money and the enviornment. BGE's Smart Energy Rewards® program is an innovative demand response program enabled by smart meters designed to encourage residential customers to use less electricity during summer peak periods. BGE Smart Energy Rewards is a peak time rebate program, and BGE's default tariff, which introduces all customers with a smart meter to a new way to participate in demand response. Customers automatically earn bill credits for voluntarily reducing their electricity usage from 1 pm to 7 pm on designated peak periods, called Energy Savings Days. Customers are notified the evening before an event and, for every kilowatt-hour saved compared to their typical usage on similar weather days, customers earn a bill credit of $1.25. Energy Savings Days are called by BGE based on market conditions when electric demand and the corresponding market prices rise significantly.

BGE Smart Energy Rewards is one of the first and largest peak time rebate program deployments in the country, reaching approximately 315,000 customers in summer 2013, nearly 800,000 by summer 2014 and all 1.1 million residential customers by 2015. Adding to the innovation of the program design was BGE's existing demand response program, PeakRewards℠, which uses direct load control devices to manage demand. The programs were integrated to provide customers with a choice on how they participate in demand response in a way that best meets their needs. Customers with an existing PeakRewards device are guaranteed to receive at least their monthly PeakRewards credit. PeakRewards customers earn the greater of the BGE Smart Energy Rewards credit or the PeakRewards credit for each summer month.

A key to the successful launch was the extensive customer education prior to the launch of BGE Smart Energy Rewards. A three phase campaign was created to ensure customers had the information necessary to understand the program and its benefits. Utilizing a wide variety of tactics and methods, ranging from print to digital to television, BGE was able to effectively reach a broad customer base. In addition to the varied tactics, BGE was able to tailor communications to customer segments and emphasize the most important benefits of the BGE Smart Energy Rewards program. The extensive pre-season education and marketing campaign, combined with the innovative program design, pro-active customer communication and feedback led to high customer satisfaction and awareness. 85% of customers reported being aware of specific event days, and 75% of customers surveyed expressed high satisfaction with the program.

As a result of the multi-phase education campaign and the immediate feedback of personalized results via self-selected communications channels, the results from the first summer were impressive. Among smart-meter-equipped customers, 93% earned a rebate on the first event. An impressive 82% of those participating earned credits on their summer energy bills –customers earned an average of $9 on each designated Energy Savings Day. In addition to their summer bill credits, customers got the satisfaction of knowing that they are helping to reduce the need for additional power generation plants, keeping down the overall cost of electricity and easing the burden on Maryland's electricity delivery system.

IntelliCommand™ – JLL's "Smarter" Building System

One of the most important trends in building management today is using technology to continually monitor and adjust building systems to optimize performance. As building equipment is continually going out of calibration, "energy drift" results in an average energy loss of 17 percent over two years, according to David Wolins, CEO of Scientific Conservation.

The traditional solution has been retro-commissioning. In this case, outside engineers come into a building to "re-tune" it to maximize performance. A study performed by the U.S. Department of Energy in 2004 involving 224 buildings representing more than 30 million square feet found that this type of commissioning for existing buildings resulted in average energy savings of 15 percent and a payback period of roughly eight months. That equates to a savings of about 18 cents per square foot.

Unfortunately, the day the retro-commissioning is completed, the building starts going back out of calibration and these savings begin to evaporate.

Our solution is *IntelliCommand™,* a "smarter building" system with the potential to reduce energy consumption by 10% to 20% - with a minimal up-front investment and modest monthly fee.

With *IntelliCommand™* smart building technology, data is sent through the Cloud to an analytic system that applies advanced intelligence and algorithms to determine the correct adjustments to achieve optimal building performance. The more advanced systems actually translate the entire process into specific instructions for the building staff, such as "adjust this damper," "change this coil" or "correct this setpoint."

In addition, the system is monitored by experts around the clock in Command Centers throughout the world, who can communicate with building teams to assure the correct solutions are applied to achieve the greatest energy efficiency.

One of the biggest advantages of being able to constantly monitor the equipment throughout a building is discovering equipment failures before they occur. *IntelliCommand™* picks up on very slight alterations in equipment operations, allowing building engineering teams to take the necessary actions preemptively. While this is extremely efficient for any building, it's critical for data centers and trading floors where shutdowns could have catastrophic financial consequences.

IntelliCommand™ gives property managers x-ray vision into all of their systems as well as a massive computer that ensures they all run correctly. It may sound a little like science fiction, but it is here today.

2014 Star of Energy Efficiency Innovative Award – LG Electronics USA
LG's EcoHybrid™ Heat Pump Dryer Technology

Clothes Dryers as "Energy Hogs"

Residential clothes dryers are known in some U.S. circles as "energy hogs"– costing U.S. consumers about $9 billion per year to operate, consuming as much electricity as does the entire state of Massachusetts (60 billion kWh per year), and responsible for 40 million metric tons of carbon dioxide emissions each year.[1] Dryer products have not seen the same level of efficiency gains as other common household goods, such as washing machines or light bulbs, which has left the space without an ENERGY STAR® specification (until 2015) and very few utility incentive programs, despite the fact that these appliances are found in about 85 percent of households in the U.S.[1]

Conventional vented clothes dryers, ubiquitous in the United States, waste a lot of energy. Available in Europe, but not yet in the United States, dryers using Heat Pump technology reduce energy waste significantly by recycling wasted heat energy. Heat pump technology has proven substantial energy savings in Europe, using about half the electricity as North American conventional dryers to dry the same amount of laundry.[1]

LG Introducing Cutting-Edge Dryer Technology to the U.S.

Dedicated to enriching consumers' lives through innovation, LG Electronics has been leading the way in bringing advanced technologies to the United States, particularly through greener, more efficient appliances. In 2014, LG will be first in the U.S. market to offer energy-efficient Heat Pump drying technology, the centerpiece of the new LG EcoHybrid Dryer. The Heat Pump system helps to reduce energy waste by recycling heat generated during the drying process. Meanwhile, the moisture inside the dryer is utilized by the Auto Clean System to clean the evaporator. Filter Checkers and the Pocket Filter capture dirt particles separated from clothing to further increase drying efficiency.

Technical and Potential Impact of LG's EcoHybrid Heat Pump Dryer:

The total energy saving potential for LG's Heat Pump Dryer in EcoHybrid™ mode, which operates the heat pump and conventional drying mechanism simultaneously, while slightly lowering the operating temperature, is huge – up to 50 percent of the total energy currently being used by dryers that meet the current U.S Department of Energy standard.

Utilizing heat pump technology, the LG EcoHybrid Dryer will be appropriate for replacing electric dryers, which account for about 77 percent of the installed base in the United States.[2] According to a report by Lawrence Berkeley National lab, this amounts to around 67 million households with a machine suitable for replacement with LG's EcoHybrid dryer system.

Third-party test data shows that LG's EcoHybrid Heat Pump Dryer units deliver **energy savings up to 50 percent** over conventional electric dryers. LG estimates the total technical potential in EcoHybrid mode is a reduction of about **23.1 billion kWh per year**. This figure was calculated by discounting the overall residential dryer energy use (60 billion kWh per year[1]) by the percentage of installed dryers that are electric (77 percent[2]) and then applying the energy savings percentage to that figure. LG believes this dryer technology could eventually capture anywhere from 25-50 percent of that market, resulting in between **5.8 and 11.6 billion kWh of energy savings per year**.

Energy Efficiency without Compromising Cool Features

Despite its unparalleled energy efficiency, the LG EcoHybrid Dryer is not a stripped-down model. In fact, it has all the bells and whistles of other high-end LG dryers, including:

- **TrueSteam™ Technology –** Unlike some competitors that spray water mist into the dryer and call it "steam," LG's TrueSteam™ technology generates real gusts of steam to get rid of wrinkles and odors, substantially and practically eliminating the need for ironing in many cases; and
- **Smart Diagnosis™ –** This allows users to interface with the dryer and the LG Customer Care Center to troubleshoot issues, sometimes eliminating a service visit or assuring that the servicer has the right parts when service may be needed.

Overcoming Market Barriers and Timeline for Introduction to the U.S.

LG has been working toward introducing its heat pump dryer technology to the U.S. market for more than three years. The company took a leadership role in working with the Environmental Protection Agency (EPA) and the Super-Efficient Dryer Initiative to promote the ENERGY STAR Emerging Tech Award for advancements in dryer technology and collaborated with the EPA and DOE on developing test procedures and metrics that effectively differentiate dryers based on their energy use profiles.

One barrier for heat-pump dryers in the U.S. is the longer drying time, perhaps as much as two hours in some cases. LG's hybrid approach solves this issue by shortening drying time (to under 70 minutes) while still maximizing energy savings. Still, a potential barrier for rapid adoption of the LG EcoHybrid Dryer is its initial high price, expected to sell for around $1,600. (A comparable high-end conventional LG electric dryer sells for around $1,200.) LG is hopeful that pilot rebate programs with certain utilities will help jumpstart the market for this revolutionary new energy-efficient dryer product for American consumers. *Recognition by the Alliance to Save Energy would go a long way in driving initial market penetration.* LG's heat pump dryer will be launched in 2014, initially in selected test markets, followed by broader availability this summer. LG plans to work closely with the EPA and utilities to promote the new dryer and help educate consumers on the energy efficiency benefits of this groundbreaking product that will deliver huge energy savings.

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[1]Dave Denkenberger, Chris Calwell, Nathan Beck, Brendan Trimboli, Debbie Driscoll, Christopher Wold, Ecova, and CLASP, "Analysis of Potential Energy Savings from Heat Pump Clothes Dryers in North America,"(March 2013) http://www.clasponline.org/~/media/Files/SLDocuments/2013/2013_Analysis-of-Potential-Energy-Savings-from-Heat-Pump-Clothes-Dryers-in-North-America.pdf

[2] Steve Meyers, Victor H Franco, Alex B. Lekov, Lisa Thompson, and Andy Sturges, "Do Heat Pump Dryers Make Sense for the U.S. Market?" *Lawrence Berkeley National Laboratory* (August 2010) http://eetd.lbl.gov/sites/all/files/do_heat_pump_clothes_dryers_make_sense_for_the_us_market.pdf

Alliance to Save Energy Stars of Energy Efficiency Awards

Innovative Star of Energy Efficiency: Mitsubishi Electric Hyper-Heating INVERTER (H2i™) Technology

For over thirty years Mitsubishi Electric Cooling & Heating has been the leader in advanced HVAC technologies. Mitsubishi's INVERTER compressor technology represented a quantum leap beyond the traditional "on-off cycle" HVAC system by automatically adjusting the speed of the compressor and linear expansion valve to maintain optimum comfort. Mitsubishi's Hyper-Heating INVERTER (H2i™) Technology takes Mitsubishi's already powerful, variable speed INVERTER compressor to a new level of heat pump performance. H2i systems are precisely engineered to maintain an impressive 100°F discharge air temperature at temperatures as low as 40°F and 75% at -13°F. The Flash Injection Technology, exclusive to Mitsubishi, adds specialized circuits to the outdoor unit to allow the system to produce extraordinary heat pump heat. The efficiency of Mitsubishi's H2i Technology has demonstrated impressive savings, qualifying for the ENERGY STAR *Most Efficient* designation in consecutive years.

Mitsubishi's H2i systems produce unparalleled results under extreme climate conditions. When compared to electric resistance heat with a coefficient of performance (COP) of just 1.0, even at a frigid 5°F, Mitsubishi's H2i systems boast COPs in the range of 1.4 to 1.9. The impact and efficiency of ductless heat pumps (DHPs) created the possibility for DHPs to replace electric heat in most markets. Mitsubishi's H2i systems realize greater comfort and greater savings under the worst of conditions. The *Northwest Ductless Heat Pump Initiative*, which now claims approximately 20,000 heat pumps installed, recognized the replacement opportunity and concluded that there was an increased demand for DHPs, and that "consumer satisfaction with DHPs – their performance, effectiveness, and operating costs – is very high."[1] Mitsubishi's H2i systems significantly outperform standard DHPs in heating and cooling.

The Maryland-National Capital Building Industry Association and Home Builders Care Foundation recently recognized Mitsubishi's H2i technology and its partnership with Community Connections, the largest not-for-profit special needs agency in Washington, DC. The retrofit saw a 45-49% increase in total savings over a 13-month period. The two apartment zones using H2i technology had a decrease of 5,536 kWh/year, a cost saving of over $750 combined. Retrofitting the apartment building also saved over 18 kWh per cooling degree day compared to an identical building without the H2i technology. Mitsubishi systems in Connecticut and Massachusetts have reduced energy bills in excess of 50% where homeowners previously had electric resistance or oil heat. The potential savings for heating are estimated at 35-40%, and the cooling-only side is comparable. Mitsubishi H2i systems all boast SEER ratings of over 20 SEER – a full 7 points or 54% above the federal minimum.

Department of Energy studies show that approximately 40% of all U.S. energy consumption comes from residential and commercial buildings, with nearly 50% of building energy consumption coming from HVAC systems. Smart HVAC technologies, and especially the Mitsubishi H2i systems, mean lower energy costs, healthier living and increased occupant comfort.

Mitsubishi Electric. Live Better.

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[1] Northwest Energy Efficiency Alliance (NEEA) Report #E11-22: "Northwest Ductless Heat Pump Initiative 2010", P. 36. October 27, 2011.

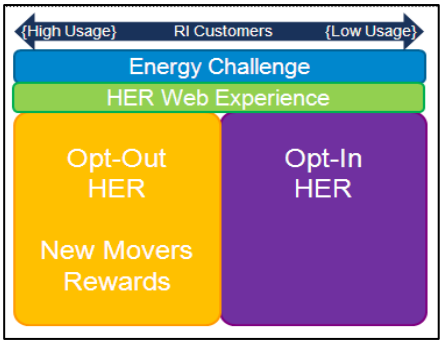
National Grid – Rhode Island: 2014 "Innovative" Star of Energy Efficiency Award

Rhode Island's Statewide Community-Focused Behavior Program

Vision

National Grid in Rhode Island is pushing the boundaries of traditional behavioral energy efficiency programs by designing and delivering an innovative offering that reaches all residential electric and gas customers in Rhode Island (430,000 electric customers and 235,000 gas customers). Through various customer engagement strategies, National Grid seeks to boost awareness and demonstrate the value of energy conservation, efficiency, and productivity to all customers – generating considerable societal benefits.

Summary



National Grid, in working with Opower, is utilizing the Home Energy Reports (HER) to drive behavioral change in all Rhode Island households. Typically, HER programs only serve half of a utility's customer base, but through a new program design, National Grid is offering digital engagement to every customer. All Rhode Islanders have the ability to benchmark their energy usage against the prior year, as well as against neighboring homes of similar size and heating type. Furthermore, the program is utilizing new and innovative strategies for deepening customer communication, program participation, and subsequent energy savings. Such strategies, now replicable for other utility partners of Opower, include: opt-in and opt-out treatment groups, a specialized treatment for new movers, a rewards pilot, and an overarching grassroots call-to-action community initiative. The chart to the right illustrates the program design in market since April 2013.

Community Initiative

In transforming the way National Grid historically has delivered energy efficiency programs to its customers, a community initiative entitled the Rhode Island Energy Challenge: Find Your Four! was established with a simple goal: to drive awareness for energy conservation, efficiency, and productivity by creating a call-to-action for all residents to find four ways to save in their home. By encouraging Rhode Islanders to pledge to be more efficient, National Grid, in working with a non-profit called SmartPower, created community-based challenges in order to spark friendly competition in towns, cities, employers, churches, and non-profits. Local energy champions were identified to help advocate for the Challenge, and National Grid provides bi-weekly seasonal energy tips for participants, utilizing the Home Energy Reports and other efficiency programs as direction in helping customers to "Find Your Four". In 2013, over 500,000 customer communications were created, four towns hosted the community-based challenges, and three partners reached the goal of signing up 5 percent of residents/employees for the Challenge. Over 1,200 Rhode Islanders officially took the pledge in 2013, spanning across the entire state.

Future Impact

This innovative behavior program generated significant, independently evaluated, benefits for customers in only nine months of 2013 –10,000 MWh in electric savings, over 135,000 Therms in gas savings, and over $1,600,000 in customer bill savings. Furthermore, the program represents 33 percent and 54 percent of National Grid's 2014 electric and gas goals, respectively – projected to save 32,000 MWh, 550,000 Therms, and $5,300,000 in customer bill savings. By prioritizing a statewide engagement strategy, National Grid in Rhode Island is committed to both delivering "energy efficiency for everyone" and to building a strong grassroots network of Rhode Islanders that by word-of-mouth can demonstrate the real benefits of energy efficiency and productivity to other family members, co-workers, fellow church-goers, and friends. In living out its brand of "Here With You, Here For You", National Grid believes its community-centric strategy will achieve the following: enable customers with the knowledge and tools to make smart energy decisions; serve as the catalyst for the growth of the utility-customer relationship in Rhode Island; and build good rapport for National Grid as it continues to help transform Rhode Island's communities through sustainability, economic growth, and energy productivity.

Nomination for "Innovative" Star - National Renewable Energy Laboratory
World's Most Energy Efficient Data Center

Summary: The U.S. Department of Energy's National Renewable Energy Laboratory (NREL), located in Golden, CO, recently completed a new 182,000-square-foot LEED Platinum research facility. This facility includes an innovative, ultra-efficient data center, which features a chiller-less design, direct warm-water liquid cooling, waste heat capture/re-use, and an annualized average Power Usage Effectiveness (PUE) rating of 1.06 or better. PUE is an industry metric for data center efficiency, and lower scores are better. Ideal scores are close to 1.0, and industry surveys estimate the average to be close to 2.0, meaning half the power going to the data center goes to things other than the computers. These features combine to make it the world's most energy-efficient data center that demonstrates integrated technologies that save energy and water, reduce CO_2 emissions, and capture/re-use waste heat.

Design Features, Efficiency & Sustainability Measures: Several key design features have led to the data center's extreme efficiency. First, the data center uses liquid cooling supplied directly to the servers because water is three orders of magnitude more efficient than air for heat exchange. Also, starting with 75°F water for cooling the computers allows use of highly energy-efficient evaporative cooling towers, eliminating the need for mechanical chillers, saving both energy (operating) and capital expenses.

Secondly, the hot water returned from the computer systems is 95°F or warmer. This "waste" heat generated by the computers is then captured and used as the primary heat source for facility offices and laboratories, rather than separately cooling the data center and heating the building. Direct liquid cooling thus dramatically decreases the energy needed to cool the computer systems and provides opportunities for heat re-use. Conventional thinking would not allow an approach combining water and electronics. By using a holistic "chips to bricks" approach, we achieved incredible energy and cost savings.

Energy and Cost Savings: Compared to a typical data center operating with a PUE of 1.9, the NREL data center saves 840KW of electricity per 1 MW of IT equipment (7,358,000 KW hours annually), saving approximately $800K per year per MW of IT load in utility costs. Additionally, by capturing and using waste heat for office and laboratory space, NREL is able to offset another $200K per year in heating costs, for a total annual savings of $1M. Lastly, the warm-water liquid cooling approach eliminates the need for expensive, energy-demanding mechanical chillers, saving approximately $4.5M in up front capital expenses. Thus, NREL's showcase data center cost less to build and the significant energy savings make it much less expensive to operate than a typical data center.

Conclusion: NREL fully understands that demonstrating a "green" facility is not in and of itself sufficient. Our motivation is to change the industry's approach to power and cooling, leading by example. While many data center operators have considered the advantages of liquid cooling, data centers are risk-averse enterprises and having an organization go first, to have a place to visit and see it first hand, to demonstrate the immense energy/cost reductions can catalyze change, value, and revolutionize an entire industry. The 2007 EPA report to Congress asserts that the energy used by the nation's servers and data centers consumed about 61 billion kilowatt-hours in 2006 alone, and it is widely believed to have since doubled to over 120 billion KWhs. Adopting even some of the best practices demonstrated at NREL could save tens of billions of KWhs of electricity and hundreds of millions of dollars in the U.S. alone. We are sharing our approach through conference presentations as well as hosting visitors. The international Supercomputing Conference was held in Denver this past November. During just that one week alone, NREL hosted over 377 IT professionals representing 36 different countries and 142 different organizations, touring the new NREL facility, to see first hand this showcase data center.

The fundamentals and approaches demonstrated at NREL are widely applicable and represent a new best-in-class standard. There was significant risk in developing this new data center as liquid cooled systems were not available in 2006, when the planning began. However, NREL's leadership in warm-water liquid-cooled data centers coupled with waste heat reuse will pave the way for data centers around the world to continue to meet increased demand for data, services, and computational capability at a much higher efficiency than has been achieved to date, significantly reducing energy demand and saving money.

Energy Savings Judging Criteria Summary

NCS Technologies, Inc.
A small business based in Gainesville, VA

Product: Stratus MCS computing system, launched in 2013

The Stratus MCS computing system recently won the prestigious Intel Corporation "Client Solution Innovation Award".

Summary: NCS Technologies, Inc. (www.ncst.com) is a domestic computing systems manufacturer, based in Gainesville, VA, that supplies government and commercial enterprise markets. The Stratus MCS computing system is a compact desktop system for workers who must use separate computers because of security policies (a common occurrence in situations which require secure computing). Typically, workers will have three computers on their desk. *NCS Technologies created the Stratus MCS system so that the Stratus MCS consisting of 3 PC modules would use about the same power as just 1 typical PC – a dramatic energy savings.* No system like this has ever been brought to market before. Our first sales are to agencies of the U.S. government.

Energy Savings Test Results: One Stratus MCS system consisting of 3 PC modules uses 29.37 watts at idle. A comparable NCS single PC uses 26.68 watts at idle. *Some mass market PCs use up to 90 watts (.09 kWh) at idle.* Thus our 3-PC system uses the power of 1 standard PC. In typical usage (MCS system vs 3 standard PCs), we deliver 63% energy savings! This is accomplished through many energy-savings innovations engineered into the system, including: a common power supply, improved airflow and thermal design, more efficient cabling and an energy savings function which puts 2 PC modules asleep while the third module is actively being used.

The Stratus MCS will be used in many scenarios in government and enterprise computing, because of available of space savings, security and energy savings. The PC market consists of about 320 million PCs shipped in 2013. About 85 million were desktop PCs. About 34 million were purchased in government, education and enterprise markets. Approximately 10 million PCs are our addressable market per year.

For every 3 standard PCs replaced with one Stratus MCS system (which has 3 PC modules), we estimate 50.67 watts of energy would be saved (0.050 kWh), or 67%. That is, 3.333 million Stratus MCS systems (could replace 10 million standard PCs) could realize this savings, saving 168,883,110 watts per year. Savings could be 3x more if comparing to older generation PCs in use.

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Alliance to Save Energy – Star of Energy Efficiency Awards
Nomination for Innovative Star:
Northeast Energy Efficiency Partnerships
DesignLights Consortium Project

We respectfully submit Northeast Energy Efficiency Partnerships (NEEP) for the Innovative Star of Energy Efficiency Award, for its DesignLights Consortium® (DLC) Solid State Lighting (SSL) Qualified Products List (QPL).

NEEP is a regional non-profit organization whose mission is to serve the Northeast and Mid-Atlantic states to accelerate energy efficiency in the building sector through public policy, program strategies and education. Our vision is that the region will fully embrace energy efficiency as a cornerstone of sustainable energy policy to help achieve a cleaner environment and a more reliable and affordable energy system.

The DLC QPL is an essential tool for commercial sector energy efficiency programs throughout North America. It is a unique resource that fills the void of helping managers of electric utility, state and regional programs to distinguish quality Solid State Lighting (SSL) luminaires from the rest. In the five years since LED lighting has been available for general illumination we have seen growing excitement for this emerging technology among customers and of course luminaire manufacturers. The utility programs promote this technology for energy savings but even more importantly aim to protect their customers from poor quality and poor performing systems could poison a hugely important market.

NEEP launched the DLC Qualified Products List in 2009 when program managers in the NEEP region became flooded with customers requesting rebates for LED lighting projects. They realized that they needed to share resources to assess products once all together rather than multiple times individually. And, one single list would send a strong signal to market players that the utilities were serious about quality and performance. Soon utility program managers from across the continent saw the QPL's value and asked to be part of the consortium, to have authorized access to the QPL. It is now seen as a robust, searchable, and sortable database of qualified products that have met rigorous testing and technical requirements.

While it was a difficult undertaking, starting a program from scratch to benefit a fairly unknown technology, against pressure to rush LEDs to market, NEEP and the DLC stepped in to fill a void, with a much needed resource. The program holds to a strict standard of quality and professionalism, which draws energy efficiency programs toward the QPL. As the QPL continues to evolve and be adjusted to the every-changing lighting market, NEEP and the DLC are often sought after as expert resources in commercial LED lighting solutions.

Today, the ever-growing DLC QPL database (www.designlights.org) is home to over 38,450 products in 37 product application categories, from over 600 manufacturers. The QPL is used by DLC's 68 member utility programs covering 28 U.S. States and two Canadian provinces. The cost for the DLC project, including managing the list, developing new technical requirements and other support resources amounts to $3 million per year.

The potential savings affected by the QPL is huge. DLC member programs grant over $800 million per year in incentive dollars leading to customer savings averaging 83.5 tWh per year resulting in over $12.5 billion cost savings per year. To date, listing on the DLC QPL is recognized as an essential element in LED lighting equipment. NEEP and the DLC members take great pride in managing the QPL and providing a platform of quality and performance in this exciting emerging technology.

2014 Alliance to Save Energy
Star of Energy Efficiency Awards
Innovative Star of Energy Efficiency Nomination

NOMINEE: ORION ENERGY SYSTEMS INC.

Time and again, Orion has proven to develop an award-winning fixture design that delivers the most amount of light output for the least amount of energy input. The new LED Door Retrofit (LDR) for troffers is providing even better results.

Throughout the world, offices, retail stores and institutions are illuminated by troffer fixtures. The fixture has historically been linear fluorescent in design. The LDR is an energy efficient LED retrofit that is completely assembled within the frame and reuses the original housing of the existing troffer. The revolutionary design of Orion's LDR retrofit for troffers has completely simplified retrofitting existing fluorescent troffers to long lasting, energy efficient LED troffers. Designed for installation with no disruption to ceiling tiles, no need to remove existing fixtures and limited interruption to the workplace, the LDR installs quickly and requires virtually no tools for installation, servicing or adjusting proper fit.

The innovative LDR system assists facilities in meeting sustainable energy and cost savings goals by significantly reducing the amount of energy consumed and improving the quality of light output. The LDR can reduce a company's energy consumption by up to 70%, and compared to fluorescent technology the LDR system decreases costs associated with maintenance. The LDR provides a volumetric, even-distribution of light with quality color rendering and is available in multiple color temperatures to accommodate end-user needs. To achieve optimal energy savings, the fixture, available in a variety of lenses, wattages and sizes, can also be fitted with dimming and occupancy sensors.

The challenge for Orion engineers was to create an energy saving lighting unit that minimized waste, simplified maintenance and installed easily while improving the quality of light. The challenge was met and they delivered! This unit has quickly exceeded industry expectations and is poised to become the standard industry practice. This product can be ordered as a retrofit product to replace an existing troffer or as an LED troffer for new construction. Recommended applications include offices, financial institutions, hospitals, schools and retail environments.

According to the Department of Energy, 50% of all commercial fluorescent lighting troffers are recessed troffers in operation more than 10 hours a day on average and collectively consuming more than 87 terra-watt hours of electricity annually. Considering the superior luminous efficacy of the Orion LED door retrofit for troffers (LDR), and that there are an estimated 957 million troffers currently in the United States lighting market, the potential economic and environmental impact of the LDR is remarkable.

This solid state technology offers advantages over other lighting technologies such as 187,000 hour rated lifetime in temperature controlled environments, low maintenance with no bulbs to change, vibration resistant with no delicate filaments, and full dimming capable where frequent switching does not shorten performance life.

Proudly manufactured in Manitowoc, Wisconsin USA, the LDR is patent pending.

About the Set-Top Box Energy Conservation Agreement (STB ECA):

In December 2013, the U.S. Energy Department (DOE), the Natural Resources Defense Council (NRDC), the American Council for an Energy-Efficient Economy (ACEEE), the Appliance Standards Awareness Project (ASAP), the Consumer Electronics Association (CEA)® and the National Cable & Telecommunications Association (NCTA) announced voluntary energy efficiency standards for pay-TV set-top boxes that will result in significant energy savings for more than 90 million U.S. homes covering more than 90% of the pay-TV industry. These new standards – developed through a voluntary agreement between the pay-TV industry, the consumer electronics industry and energy efficiency advocates – will improve set-top box efficiency by 10 to 45 percent (depending on box type) by 2017. They are expected to save more than $1 billion on consumer energy bills annually, ultimately saving enough electricity each year (an estimated 8 TWhrs/yr) to power 700,000 homes and avoid more than five million metric tons of carbon dioxide emissions each year, with potential for an additional 8 TWhrs/yr when compared to a 'business-as-usual' projection.

A set-top box is a device combining hardware components with software programming to receive television and related services from cable, satellite, broadband or local networks. The voluntary agreement provides a framework for the Energy Department, pay-TV industry and energy efficiency advocates to work together to deliver dramatic energy efficiency gains that keep pace with technological innovation, faster and more flexible than regulatory approaches. The agreement assures energy efficiency without retarding competition, first mover advantage, or innovation without permission .

The agreement, which runs through 2017, covers all types of set-top boxes from pay-TV providers, including cable, satellite and telephone companies. The agreement also requires the pay-TV industry to publicly report model-specific set-top box energy use, provides for field verification testing, and requires an annual audit of service providers by an independent auditor to ensure boxes are performing at the efficiency levels specified in the agreement. The Energy Department also retains its authority to test set-top boxes under the ENERGY STAR® verification program.

Industry signatories include pay-TV providers (listed according to number of customers) Comcast, DIRECTV, DISH Network, Time Warner Cable, AT&T, Verizon, Cox Communications, Charter Communications, Cablevision Systems Corp., Bright House Networks and CenturyLink; and manufacturers ARRIS (including Motorola), Cisco, EchoStar Technologies and Pace. Energy efficiency advocates Natural Resources Defense Council (NRDC), the American Council for an Energy-Efficient Economy (ACEEE), and the Appliance Standards Awareness Project (ASAP) are also signatories to the agreement. The voluntary agreement is available at http://www.ncta.com/energyagreement.

Accolades for STB ECA:

"These energy efficiency standards reflect a collaborative approach among the Energy Department, the pay-TV industry and energy efficiency groups – building on more than three decades of common-sense efficiency standards that are saving American families and businesses hundreds of billions of dollars," said Energy Secretary Ernest Moniz. "The set-top box efficiency standards will save families money by saving energy, while delivering high quality appliances for consumers that keep pace with technological innovation."

Senator Dianne Feinstein (D-Calif.) said: "In 2011, I urged the CEOs of every major television service provider to work together to introduce more energy efficient set-top boxes. At the time, set-top boxes were costing Americans $3 billion in electricity charges each year—with $2 billion wasted when televisions were not being used. Today's voluntary announcement demonstrates the television industry took this matter seriously, and I commend industry and efficiency advocates for agreeing to make 90% of all set-top boxes as efficient as today's most energy efficient boxes by 2017."

"This historic agreement promises to put $1 billion back in the pockets of U.S. consumers every year because the new set-top boxes will use less energy," according to Noah Horowitz, Senior Scientist at the NRDC. "We appreciate the industry's renewed commitment toward making the devices that bring pay TV into 90 million-plus U.S. homes more efficient and look forward to working together to reduce their future energy use."

Agreement Signatories' Accomplishment:

The signatories to the Set-top Box Energy Conservation Agreement were initially brought together in response to a call to action from the DOE in early 2012. At the end of 2012, pay-TV service providers & STB manufacturers came together under the leadership of CEA and NCTA to announce commitments effective beginning in 2013 for set-top box efficiency as well as for field verification of STB performance and posting for consumers of power consumption information. This laid the foundation for discussions through 2013 with energy efficiency advocates which resulted in the additional efficiency commitments for 2017 that are predicted to not only deliver significant annual residential electricity savings, but to deliver greater financial and energy savings by 2017 than could have been realized with federal standards. Noting that it encourages the development of market-based solutions such as this agreement, the DOE on December 31 withdrew its proposed rule to determine STBs as a covered product subject to regulation.

With the Center for Sustainable Landscapes (CSL), Phipps transforms the conventions of energy efficiency in the green building movement by pursuing a goal that has never been achieved before. In generating its own energy while treating and reusing all water captured on site, the 24,350-square-foot research, education and administration facility, which opened in 2013, is designed to exceed four of the highest green construction standards: The Living Building Challenge™, for which Net Zero Energy Building Certification was achieved in February 2014, with Full Certification in pursuit; Four-Stars Sustainable Sites Initiative™ (SITES™) certification for landscapes, awarded in November 2013; LEED® Platinum, awarded in August 2013; and WELL Certification™, a new protocol measuring human wellness in the built environment. In its first operational year, the CSL achieved an EUI of 20.125 kBTU/sf/yr, with a net EUI of -0.792 kBTU/sf/yr, a 70.7% reduction vs. median EUI for a building of its type per EPA'S Target Finder (68.7 kBtu/sf/yr median EUI vs. 20.125 kBtu/sf/yr CSL EUI).

As part of the guest experience at Phipps – a public garden attraction visited by over 300,000 people annually – the CSL is uniquely positioned to maximize public exposure to energy efficient technology and strategies. A visit to the CSL affords an up-close look at PV arrays, a vertical axis wind turbine, geothermal wells, a rooftop energy recovery unit, a green roof, desiccant dehumidification, a digital building management system interface, solar-powered water distillation, phase-change materials, mechanical windows, rainwater harvesting, a lagoon, constructed wetlands, rain gardens and permeable paving — all within a single site. The CSL is the latest phase of a multi-year high-efficiency building project at Phipps, where it stands alongside the first LEED®-certified visitor center in a public garden; a 36,000 square-foot LEED Platinum EBOM production greenhouse with an open-roof system and computer-controlled temperature, light and humidity; and a 12,000-square-foot Tropical Forest Conservatory which was the most energy-efficient in the world when it opened in late 2006.

During facilitated integrated design charrettes, the CSL project team worked to design a building that connects occupants to nature and maximizes efficiency. Studies showed photovoltaics would be more effective than wind in generating energy and that geothermal energy could meet the building's imperative to operate with less than 30% of the energy of a typical office building. The CSL's was designed with a long, narrow floor plan to provide maximum southern exposure for daylighting and solar gain. The orientation maximizes ventilation via southerly spring and summer winds while minimizing exposure to westerly winter winds. Sun-tracking studies informed the design and placement of solar shades, allowing full winter sun to penetrate the building while minimizing summer solar gain. Interior light shelves provide daylighting throughout the year, extending natural light into the 40-foot maximum-width office space. The atrium is unconditioned; extensive use of concrete and phase change material provides thermal mass that, when managed via automatic shade cloths, window walls and roof top vents, creates comfortable conditions. Deciduous trees and vines covering exterior concrete walls aesthetically integrate building and landscape while improving energy performance of the building envelope. LED task lights provide additional light if necessary. Lighting power density is reduced to 0.57 W/sf without adjustment for controls. Daylight autonomy in most of the project space is approximately 80%; total projected energy savings to 90.1-2004 baseline is 77%. Having a net-zero building powered by onsite renewable energy sources eliminates use of fossil fuels and the greenhouse gasses associated with carbon-intensive energy production and distribution; adaptability during peak demand and outage periods is also enhanced.

As increasing numbers of people discover the CSL and its potential for replication, they will be encouraged to mount similar projects at their home, business and community levels. Through talks, presentations, tours and education programs, Phipps highlights the various components of the building's energy-efficiency strategy and explains how they could operate in home and community settings. With the CSL now fully operational, Phipps is conducting original research around the project in collaboration with Carnegie Mellon University and University of Pittsburgh on the subjects of sustainable building performance and the psychological health benefits of exposure to nature. To ensure the discoveries made at the CSL are available to others worldwide, *Building in Bloom*, a paperback case study of the design and construction phases – the first of its kind for a Living Building – was published in 2013, and a videography crew documented the design charrettes for educational use.

Now in its 120th year, Phipps Conservatory and Botanical Gardens has grown from a horticultural showcase into an internationally-recognized sustainable leader through the introduction of revolutionary buildings and practices to its campus. Today, efficiency and sustainable values make Phipps a model for the world. The café features local and organic foods, and utilizes produce grown in onsite display gardens; food and material waste is composted, and bottled water and soda have been eliminated from its offerings. The horticulture team promotes local, non-invasive species, utilizes drip irrigation, composts plant material, and practices integrated pest management. 100% of campus electricity is produced on-site with solar panels and wind turbines or offset by offsite renewable resources. Purchasing preference is given to sustainably produced, recycled and FSC-certified products. The gift shop promotes sustainable, fair trade goods. The Homegrown project, launched in 2013, installs home vegetable gardens in underserved neighborhoods. Botany In Action, a research fellowship for emerging plant scientists, has supported 40 PhD students. Let's Move Pittsburgh, a local collaborative to curb childhood obesity, launched in 2010. A sustainable horticulture certificate program teaches gardeners to create their own green landscapes. Studio Phipps, a consultation group, has designed sustainable landscapes and maintenance specifications for three area businesses. Through university partnerships, Phipps is conducting original research in the fields of high-performance buildings and the psychological health benefits of exposure to nature.

Features/Benefits

There are NO moving parts, NOT magnets, NOT a catalyst, Nothing to wear out/replace, NO maintenance ever, NO regeneration, will clean existing carbon scale buildups, can be switched from old equipment to replacement equipment. 1 yr absolute minimum performance guarantee of savings (6%), 10 year product warranty, material is 304L stainless steel (life of 80 yrs) and has never failed to produce results when done by its instructions. Made in the USA. You don't get the FAA, Purdue Univ. Aeronautical School & Oracle Air Motive R & D, to review, test and install in 4 aircrafts, if it did not work) !

Our Too Good to be True..... Case Studies:

*** Philippine Truck Installation / July 2012: After the device installed the smoke was less - am shocked... wow ! In just few seconds.. there is already result.. very nice.. you can see the black smoke turned to blue.. the mileage improve in 1 day time, every morning can see changes.. color of the smoke became cleaner and cleaner... in 3 days' time". (7.4% fuel savings in 2 weeks' time - Full 30 day analyses / test revealed 16.9% Fuel Savings with 78.9% reduction in Emissions/Pollution). Jan 15, 2013 (YH messenger):** I have good news for you.. Mrs Calolo the owner of the truck we installed our device was very happy.. few days ago she asked driver why he was not asking money from her to buy fuel? the driver said.. boss.. we have enough fuel we don't need to buy yet. Mrs. Calolo smiled and said this is very amazing device it save more than before.

*** NYC area - Carting / Refuse Firm - (Diesel) (2005)** ***"31% increase in mileage over a 30 day period."*** **(over the road transfer truck), city savings at 11%.**

"The units on Truck 20 & 25 were installed in early July/2005... (of a fleet of 25 trucks, 5 units have been installed - refuse/garbage trucks / stop, go, idling & stop, go idling, etc). The units on the other trucks were installed in late Nov/2005. The most accurate to measure is #20 since it was one of the first and does not seem to swing that much. If you average Jan to Jun/2005 you get 2.33 MPG... From Jul/2005 to Jan/2006 you average 2.62 MPG. That truck would have used 5,990 gallons at the old mileage, instead it used 5,331 gallons (reduction of 659 gallons) a savings about 11%."

*** Ed - Wayne Whse. (businessman + retired police official)**

Truck - 4x4 - Silverado, 93,000 miles
38 gallons tank capacity installed - June/2008
Trip NJ to Florida + side trip to N.Carolina with fully loaded 4x8 ft trailer and truck on return trip (owner was so impressed with results that he purchased 8 additional units - Home and Vehicles). 20% Fuel Savings & PayBack in 4 mths.
Oct/2012 update (4 yrs after install): now getting 28% in fuel savings.