



# Strategies



## Monthly Member Newsletter

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### Letter from the AESP Chair

## The cost of doing the right thing

by John Hargrove

I manage a solar rebate program for my utility company, NV Energy in Nevada. So I have learned a thing or two about solar over the last ten years while I've been doing this work. And one of the things I have learned is that making your own electricity in your home is expensive.

How expensive? Well, even if I do all of the installation work myself (and I'm not including the inevitable trips to The Home Depot and our local emergency room) and I buy all the equipment and materials online or through a discount supplier, I will still be into this project to the tune of about \$28,000 to offset the bulk of my annual energy bill. To help me with that cost, there is a 30 percent federal tax credit and a rebate from my excellent power company (you know the one with that awesome program manager!), so that brings my end cost down to around \$12,500.



**John Hargrove**  
NV Energy

Now our annual electric bill is about \$1,500. Given my profession, we have obviously done a fair amount of energy efficiency work to the house but if you have paid attention to this column before, you know that a couple of years ago I added a BIG garage in the backyard. We also have two refrigerator/freezers since we have two teenage boys. That connection should be as obvious as my devotion to Costco. So the bottom line is that we are not the most energy efficient people in the world, but we're not the worst either.

Remember that I said we have two teenage boys. Well, they will both be off to college in the next three years. And it won't be too long after that that my wife Charlene and I will be moving out of our house in the city and back up to the mountains from where we came. So that means I only have about four more years of living in our current house. And at a minimum, it will take us about eight to nine years for a solar installation to pay for itself.

So we wonder, should we do it? We want solar for a variety of reasons other than just the money side. We believe it is good to use less energy, especially energy generated by fossil fuels. I like the idea of generating my electricity on-site and I really like the technology, so it would be fun to own a system that I could play with, monitor and maintain. Bottom line, it would be the right thing to do. But that term, bottom line, usually refers to economic calculations. And like it or not, this is one.

So, will we make the decision to buy the system? Maybe. Will we continue to take the path of least resistance and just pay that power bill for another four years? Maybe. We have to decide if the benefits of having solar outweigh the costs. And if not, are we willing

## SEPTEMBER 2013

### Upcoming Events

#### Chapter Events

*Wisconsin Chapter*  
Sept. 24 — [Happy Hour](#)

*Southeast Chapter*  
Sept. 25 — [Discussion on TRMs](#)

*Northwest Chapter*  
October 1 — Chapter Meeting

*Washington State Chapter*  
October 1 — Chapter Meeting

*Wisconsin Chapter*  
Oct. 10 — [From Behavior Change Research to Program Design](#)

*Rocky Mountain Chapter*  
October 29 — switch ~ 3

#### Brown Bags

*September 12*  
[Residential LEDs: Challenges and Trends](#)

*September 19*  
[Financing Emerges as a Tool for Utility Programs](#)

*September 26*  
[U.S. DOE's Home Energy Score: Understanding the Energy Performance of Homes in Your Community](#)

*October 10*  
[Categorizing Behavior Change and Lessons Learned from the Business Sector](#)

*October 17*  
[Residential Behavioral Programs and an Overview of Evaluation Results](#)

to do it anyway? All I can say right now is, maybe.

Putting solar on our current home isn't nearly a simple decision as putting it on our next home, where Charlene and I plan to stay for a long time.

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## Industry News

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"Support Growing for Energy Efficiency Programs"  
"Permanent Load Shifting and the Future of Energy Storage"  
"SMUD Dynamic Pricing Positive on Supply and Demand Side"  
"EPRI Research Details How to Evaluate Consumer Energy Use"  
"Stanford Expert Says Internet's Backbone Can Readily Be Made More Sustainable"  
"Efficient Data Centers Increasingly Crucial for Telecom Companies"

## Featured Articles

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### The importance of SEER vs. EER in utility air conditioning programs Program connects energy management firms with car dealers

## AESP News

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### New faces to match new voices!

## News Releases and Announcements

## Industry News

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*The following executive summaries of current news items were written for Strategies after being compiled from various news sources.*

### Support Growing for Energy Efficiency Programs *Electric Light & Power (07/13)*

A new report by the Institute for Electric Efficiency (IEE) suggests that regulatory support for energy efficiency programs continues to expand via regulatory frameworks. The electric power industry can provide integrated programs that improve the deployment of demand response resources, help customers supervise their energy use, and serve as a point of contact for supporting customer energy needs. "Supportive regulatory frameworks are the key to expanding the electric power industry's already large commitment to electric efficiency even further," says Lisa Wood, IEE executive director. Spending and budgets for electric utility company energy efficiency programs continue to grow largely due to evolving state policies that allow utilities to pursue efficiency as a sustainable business. Utility company energy efficiency budgets in 2012 totaled \$6.9 billion, a 27 percent increase above 2010 levels. By 2025, IEE predicts that energy efficiency budgets will surpass \$14 billion. The report also finds that all states with ratepayer funded energy efficiency programs have direct cost recovery of program expenditures. Since its last update in July 2012, IEE observes that 31 states have some type of fixed cost recovery mechanism to ensure utility fixed costs correspond with investments in energy efficiency programs, up from 27 states in 2012. Regarding performance incentives, 28 states currently have them in place, up from 23 states in 2012.

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### Permanent Load Shifting and the Future of Energy Storage *Intelligent Utility (07/13) Davis, Kathleen*

The author, a former chair of the U.S. Green Building Council, says that energy storage is a vital aspect of creating reliable and efficient electrical grids by using other grid assets more effectively. In particular, building-scale energy storage shifts a portion of a building's energy demand from on-peak times to off-peak times. Meanwhile, grid scale storage

October 24  
[Improving the Usage of Market Intelligence in Energy Efficiency Program Design](#)

If you would like to organize a Brown Bag, please contact Kisha Gresham at [kisha@aesp.org](mailto:kisha@aesp.org).

## AESP Training Courses

[Overview of EM&V for Behavior-based and Smart Grid Programs](#)  
Sept. 30, Seattle

If you would like to schedule an onsite training please contact Suzanne Jones at (480) 704-5900 or [suzanne@aesp.org](mailto:suzanne@aesp.org). For more information about the AESP Institute, [click here](#).

## Conferences

December 4, 2013  
Online Conference

September 30-October 2, 2013  
[Fall Conference](#)  
Seattle

January 27-30, 2014  
[24th National Conference](#)  
San Diego

May 12-14, 2014  
Spring Conference  
Baltimore

August 4-6, 2014  
Summer Conference  
San Francisco

## WELCOME & THANK YOU to our New and Renewing Members!

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### New Members

Amanda Wollin, WECC  
Anne Lenzen, Alliant Energy  
Ben Wallace, Cooper Power Systems  
Beth Senkbeil, Georgia Power  
Bonnie Donnelly, Alliant Energy  
Brad Simcox, GE Lighting  
Brian Fitzpatrick, Ugi Utilities, Inc  
Bryce Dvorak, Michaels Energy  
Chris Williams, DNV KEMA  
Dan Scrima, Cooper Power Systems  
Dave Steidtmann, Aclara  
Deanna Gilliland, AEP-Ohio  
Diana Echeverria, Idaho Power Co  
Doris Abravanel, Snohomish County PUD  
Doug Dickson, Snohomish County PUD  
Emily Kemper, PECI  
Erin Carroll, VEIC  
Garrett Harris, Portland General Electric  
Jake Oelke, WPPI Energy  
Jamie Ables, Conservation Services Group  
Jeanine Penticoff, Alliant Energy  
Jillian Bowin, Georgia Power  
Jim Staley, National Resource

harnesses energy from renewable sources and stores it until it is needed. To promote both of those strategies, Senator Ron Wyden introduced the Storage Technology for Renewable and Green Energy Act of 2013, and California regulators are proposing targets for an energy storage system. California's plan is the result of the California Assembly Bill 2514 from 2010. The California Public Utilities Commission (CPUC) has also announced a resolution to implement a standardized permanent load shifting (PLS) program that will apply to California utilities. PLS is when energy usage is moved from one period of time to another on a regular basis. PLS is often accomplished through energy storage technology. Both PLS programs and energy storage are seen as viable methods to increase energy reliability in California. In fact, research estimates that revenue from energy storage systems for commercial buildings will top \$7.5 billion by 2022. California is also set to begin a \$32 million PLS incentive program for customers that participate.

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### **SMUD Dynamic Pricing Positive on Supply and Demand Side**

*FierceEnergy (07/16/13) Lundin, Barbara Vergetis*

The final phase of the Sacramento Utility District (SMUD) Smart Pricing Options (SPO) pilot program shows that it has helped the utility reduce load. The California utility developed the SPO using a \$127.5 million U.S. Department of Energy ARRA SGIG grant. The pilot enables customers to work with SMUD to lower peak demand, stabilize rates, and cut their electric bills, and two-way digital interaction allows retail prices to be set closer to the cost of energy delivery based on such factors as time of use. With special time-based rates, customers pay more during summer peak periods and less during non-peak times. SMUD recruited 8,800 customers for the pilot, more than the expected level of 7,800, and load reductions for each of the pricing plans ranged from 6 percent to 26 percent during peak hours. The experimental pricing will last through September.

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### **EPRI Research Details How to Evaluate Consumer Energy Use**

*FierceEnergy (07/18/13) Lundin, Barbara Vergetis*

The Electric Power Research Institute (EPRI) and the Lawrence Berkeley National Laboratory (LBNL) have published a report offering guidelines and protocols for evaluating consumer behavior pilots and experiments. The report provides assistance in evaluating pilots and field trials that involve inducements to influence consumer decisions about when and how to use electricity. The report is part of an effort to advance the industry's ability to assess and evaluate how consumers use and value electricity under new services made possible by smart grid investments. The report provides a schematic representation of experiment designs to clarify how pilot design decisions determine what data to collect, how the results are analyzed, and how the results should be reported. Advances in behavioral sciences analytical methods make possible drawing conclusions that have extensive applicability, even when the pilot design is not a randomized control design. Researchers hope the results will accelerate the widespread adoption of new electric service that better connect consumers with the operation of the electric grid.

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### **Stanford Expert Says Internet's Backbone Can Readily Be Made More Sustainable**

*Stanford Report (CA) (07/20/13) Golden, Mark*

The U.S. Department of Energy recently announced that it wants to establish minimum energy efficiency standards for all computers and servers sold in the United States, after a new Stanford University study found that large server farms can cut electricity use and greenhouse gas emissions by 88 percent with off-the-shelf equipment and proven energy management practices. The carbon emissions generated by large data centers are related to the computing efficiency of IT equipment, the amount of electricity the data center's building uses for things other than computing, and how much of the center's electricity comes from renewable or low-carbon sources. "Of these three, improving the efficiency of the IT devices is overwhelmingly the most important," says Stanford professor Jonathan Koomey. He says data centers can avoid wasting electricity by using faster computers that pay for themselves fairly quickly, and by using flash memory on the motherboard instead of hard disks. "Once you fix the institutional problems, then the company can move quickly, because the needed equipment is off-the-shelf and the energy management practices are well understood," Koomey notes. Of the potential 88-

#### Management

Joe Mattoon, PECE  
John Sheffield, DNV KEMA  
Julie Blackwell, Alliant Energy  
Justin McCurnin, Honeywell  
Kari Gehrke, Alliant Energy  
Ken Sufka, Sufka & Associates  
Kim King, Alliant Energy  
Kristina Skierka, Katalyix  
Kyle Haddock, eic|Comfort Home  
Mak Tarnoff, Aclara  
Mana Haeri, PECE  
Mark Eisenschenk, ARCA  
Mary Hall, PECO  
Michael Pannullo, Georgia Power  
Mike Bukhin, Aclara  
Nathan Morey, Salt River Project  
Nick Dalsin, Honeywell  
Pat Iamele, HeatSmart Campaign  
Phil Davis, Schneider Electric  
Robert Schuster, FortisBC  
Robin Scempf, Alliant Energy  
Ryan Kroll, Michaels Energy  
Scott Landrum, Staples Energy  
Stephanie Yang, DNV KEMA  
Steve Cowart, Cooper Power Systems  
Suzy Oversvee, Snohomish County PUD  
Tammy Impagliazzo, Toshiba  
Thomas Crooks, MCR Performance Solutions  
Tyner Kincade, Honeywell

#### **New Group Members**

Alliant Energy  
Illume Advising

#### **Renewing Group Members**

AM Conservation  
ClimateMaster  
Cross Country  
EnerPath  
Georgia Power  
Michaels Energy  
PG&E  
Puget Sound Energy  
SCE&G  
Schneider Electric  
TRC Energy Services

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AESP is a member-based association dedicated to improving the delivery and implementation of energy efficiency, energy management and distributed renewable resources. AESP provides professional development programs, a network of energy practitioners, and promotes the transfer of knowledge and experience.

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percent reduction in greenhouse gas emissions, IT device efficiency accounts for about 80 percent, and facility energy management for about 8 percent.

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### Efficient Data Centers Increasingly Crucial for Telecom Companies

*IT Business Edge (07/08/13) Weinschenk, Carl*

Data centers used by companies consume large amounts of energy. Saving a small percentage of that energy could result in substantial financial savings. Before savings can be earned companies must first determine how much power their data centers are using. Most companies use a Power Usage Effectiveness (PUE) method to calculate their consumption. However, in recent months, leading-edge data center operators eBay and Facebook have announced energy efficiency dashboards that show how much energy the companies' facilities are consuming — in real time, in the case of Facebook — and they are trying to get other companies, telcos included, to adopt their methodologies. Telcos use data centers differently, however, and these companies won't necessarily adopt the new approach. A Sprint Vice President has suggested that the new method, Digital Service Efficiency (DSE), is better suited to the transaction-oriented firms such as eBay than to telcos. Meanwhile, other companies are taking advantage of solar energy to power data centers located in warm areas. Traditionally, data centers are built in colder areas to take advantage of lower cooling costs. Now companies are looking at sunny and hot locales to build centers. A survey also revealed that consolidation of servers, use of blades, energy efficient equipment, virtualization, outsourcing, adoption of modular options, and data center infrastructure management software have all become popular methods to increase efficiency. As new centers cost hundreds of millions to build, companies will increasingly look to run them more efficiently.

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## Featured Articles

### The importance of SEER vs. EER in utility air conditioning programs

by Paul Bony

The Seasonal Energy Efficiency Ratio (SEER) has been the federal efficiency metric for residential air conditioners since the late 1980s. Because the federal standard is based on SEER, many utilities have also based their efficiency program incentives on SEER. Manufacturers have responded by focusing their efforts on building units that have high SEER ratings. Unfortunately, this has resulted in overlooking the Energy Efficiency Ratio (EER) which provides a more accurate measure of the peak demand impacts of cooling equipment.



Paul Bony

Seasonal Energy Efficiency Rating (SEER)-based utility programs may directly hurt utility load factor by reducing kWh sales without a corresponding reduction in peak demand. This is because SEER provides a reasonable measure of seasonal energy efficiency but it does not reflect efficiency (and related peak demand) on peak load days driven by above average temperatures. In fact, it is not uncommon for air conditioning units with the highest SEER ratings to have lower efficiency (and higher peak demand) at high outdoor temperature than units with lower SEER values. If a utility's goal is to reduce air conditioning kWh consumption without regard to peak demand, SEER is a useful tool. However if the utility's goal is to reduce peak demand from air conditioning loads, the utility planner must look at the Energy Efficiency Ratio (EER) of air conditioning units at the expected summer peak weather (outdoor air temperature) condition.

SEER was developed to provide a proxy for the expected average efficiency of an air

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conditioner or heat pump throughout an average cooling season in the U.S. It is a calculated value that uses the estimated Btus that will be provided for cooling over the year divided by the estimated watt-hours that will be used to provide this cooling (Btus/watt-hours). The formula for this calculation is based on measurements of a unit's performance at several different operating conditions/temperatures in a testing lab. The resulting data points are then used to calculate the SEER rating using an established Department of Energy (DOE) protocol. This calculation protocol was developed to represent the expected total cooling energy delivered by the unit during an average cooling season and the total electric energy that would be consumed to deliver the cooling over the course of the season. Because it is a calculated value based on a few measurement points, SEER does not measure peak load efficiency and it cannot be used to predict a unit's peak demand requirements on the hottest days of the year. It can only be used to estimate the unit's annual cost of operation against other units with different SEER ratings.

### **EER (Energy Efficiency Ratio)**

The Energy Efficiency Ratio was developed to indicate the cooling performance of an air conditioner or heat pump at a single, fully loaded operating point (outdoor air temperature). EER is calculated by dividing the cooling output of a unit in Btus over the course of one hour (Btu/hour) by the peak electric energy (watt) used to deliver the cooling ((Btu/hour)/watt). Consequently, EER represents the peak cooling capacity divided by the electric power input during steady state continuous operation. EER is typically measured and reported at standard test conditions of 95°F outdoor and 80°F indoor dry bulb temperatures using the Air Conditioning and Refrigeration Institute's (ARI) test procedures. It is important to note that the published EER data does not represent the peak demand conditions on an individual utility's system. Many utilities have peak conditions above 95 degrees and many consumers keep their homes well below 80 degrees. Consequently, industry EER ratings are good for comparing the relative peak performance of different cooling equipment but the EER rating of a unit at the expected indoor and outdoor air temperatures must be used to calculate the true expected peak demand of the unit on the utility's peak load condition. It is possible to estimate the actual peak demand of a unit using published EER values. For every 1°F change in outdoor temperature above 95°F the EER drops by approximately 0.1 (an outside temperature of 105°F would drop the published EER of a unit by 1.0 point below the listed EER value). An accurate EER can only be developed by testing a unit at the expected indoor and outdoor air temperatures.

SEER based utility programs can directly hurt a utility's financial position by inadvertently ignoring peak demand impacts. Because air conditioning is often the biggest component of a utility's summer peak, it is important for utilities to consider the peak demand impacts of its demand-side management programs. If peak capacity is not an issue for the utility, SEER is a good measure for efficiency programs. If demand reduction is important to the utility, using SEER can result in utility program investments that do not provide peak load reductions because SEER provides a reasonable measure of seasonal energy efficiency but does not reflect peak demand when load is driven by above average temperatures.

If demand reduction is an important consideration for a utility's demand-side program, the utility must specify the equipment EER it requires at its peak load/outdoor air temperature condition to be eligible for loans, rebates, or other program incentives. While manufacturers are not required to certify the EER values of their equipment, most do publish their standard EER values in their central air conditioner and heat pump catalogs. Fortunately, the California Energy Commission also publishes a directory that lists both the SEER and EER for many, but not all, air source cooling equipment.

*Paul Bony is the director of residential market development for [ClimateMaster, Inc.](#), a leading manufacturer of American-made residential geothermal heating and cooling systems.*

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## **Program connects energy management firms with car dealers**



The National Automobile Dealers Association (NADA) has rolled out a new initiative calling on energy management firms to work with new-car and -truck dealers to help complete a benchmark survey on energy usage that will result in the first ever ENERGY STAR® certification program for dealerships.

But before the certification process can begin, the energy usage of at least 500 dealerships needs to be benchmarked. Businesses that assist at least five dealerships complete the survey will be awarded an NADA Energy Ally designation. Contractors can use the recognition to market their products and services to other dealerships. Information on how to apply to become an Energy Ally is available at [www.nada.org/regulatory\\_affairs/energy/default](http://www.nada.org/regulatory_affairs/energy/default).

New-car dealerships are one of the few categories of commercial buildings that do not have an ENERGY STAR benchmark. The data collection survey undertaken by dealers and partnering businesses will allow ENERGY STAR to develop a one to 100 energy performance scale for dealerships interested in benchmarking their performance against their peers, and will also generate significant data for NADA on dealership energy use that is not currently available.

The survey asks dealers to share their yearly utility bills, square footage—inside and out—and different types of equipment used at the dealership, among other questions.

Regarding energy use, some of the challenges facing auto dealers today include a lack of information on energy costs and savings alternatives that can be put into action. Vendor claims can also be difficult to verify.

The ENERGY STAR program, managed by the U.S. Environmental Protection Agency, provides a proven “strategic energy management” approach, that in combination with its free, online Portfolio Manager energy measurement and tracking tool, can help dealerships make solid business decisions on energy management to improve productivity without compromising performance or comfort.

Beginning with improved operations and maintenance practices, there are several cost-saving improvements available to dealerships. For example, with today’s technology, lighting quality for selling cars, employee work and security can be improved while reducing operating costs.

Most commercial facilities of all types have the opportunity on average to attain about 25 to 30 percent energy and cost savings through the implementation of efficient measures, as well as reducing pollution.

For more information about NADA’s Energy Ally program, contact Lauren Bailey at [lbailey@nada.org](mailto:lbailey@nada.org).

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**AESP News**

**New faces to match new voices!**



Don't be surprised to hear a new voice the next time you call AESP. In the last three months, AESP welcomed (L-R) **Jason Lake**, accountant; **Allie Detrio**, contractor for My Energy Gateway and new business development; **April Tourangeau**, administrative assistant; and **Kara Kelly**, marketing coordinator.

#### **AESP Fall Conference is just around the corner**

Want to avoid paying a late registration fee? If you're planning to attend AESP's Fall Conference on "Tools & Technologies to Drive Program Participation" on Sept. 30-Oct. 2, be sure to [register](#) before Sept. 17, and [reserve your room](#) before Sept. 13 (use Code: AESP0928 to receive the conference rate).

#### **Field trip! Register early for Bullitt Center tour**

Immediately after the closing session at the Fall Conference, we will be taking 75 privileged attendees on an exclusive tour of Seattle's newest landmark — the Bullitt Center, world famous as a net-zero commercial building. You can sign up for the tour after you've registered for the conference, while there's still space.

#### **Wished you had attended "CSI Online: Codes, Standards and Improvements"?**

Don't fret. The recording for the online conference on August 20 is now available for only \$169 (member rate). Listen to the complete presentations as well as the Q&A that follows. To order, [click here](#).

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