

Energy

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EFFICIENCY

News From BPA - Your Northwest Energy Partner

NEXT HOUSE... ELECTRIC POSSIBILITIES OF THE FUTURE

Imagine walking into your new house with your arms full of groceries, "Hall lights ON" you say, and your path to the kitchen is illuminated. You glance at your net electric billing status as you pass by your computer, and note with a smile that your utility connected, solar array sold more power to the utility today than you used, so you are currently a little bit ahead. State-of-the-art windows, proper solar orientation, and well insulated building components have kept the house cool on this mid-summer day. The air you are breathing is fresh and pollen free – thanks to your carefully designed and installed HVAC system. You take a shower with hot water that was efficiently heated by a geothermal heat pump, and then you slip out to the garden to enjoy a refreshing beverage while you admire the low-maintenance, low-water use landscape.

It's all possible if you live in the NeXt House.

BPA is sponsoring the NeXt House to demonstrate the possibilities for all-electric houses of the future. This is part of our efforts to educate and inform the region about what's happening in the field of energy efficiency. Currently in the plan development stage, the NeXt House will be located in Post Falls, Idaho. Architects, interior designers and building

science experts are working to produce a mid-price house that can be replicated by other builders. Blueprints will be available through "plan books" for purchase.

The NeXt house will be part of the 1999 Parade of Homes in the greater Coeur d'Alene area. Plans should be finished by October 1, and the construction will begin in early 1999. Look for more on the NeXt House later, as the project develops.

If you have any questions please call Mark Jackson at (503) 230-5475.

- Mark Jackson

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MARKET TRANSFORMATION

NW Energy Efficiency Alliance and Siemens Solar Industries to Share Cost of Silicon Crystal Production Process

Siemens Solar Industries and the Northwest Energy Efficiency Alliance have agreed to work together to cut energy use and production time in the manufacture of silicon crystals for photovoltaic cells and computer chips. The two organizations will share the cost of the \$2-million project, according to the agreement signed today.

Together, the two organizations will investigate technical improvements that will reduce the amount of electricity used in the energy-intensive process of growing single-crystal silicon ingots. Ingots are cylindrical-shaped bars of silicon that are sliced into round wafers and used to manufacture photovoltaic cells. Siemens estimates that the improvements could eventually yield energy savings of 40 to 50 percent and cut the time necessary to produce the ingots by 15 percent.

This project offers exciting promise for semiconductor manufacturing as well because the same equipment is used to produce ingots for that industry. These technical improvements, if realized, could be transferable to companies such as Mitsubishi Semiconductors and Wacker Siltronic. If these improvements are successfully transferred to the semiconductor industry, the energy saved could amount to enough to serve a community of 50,000 people.

To make the ingots, raw polysilicon is placed in a crucible and melted in a super-heated furnace. A small piece of pure silicon lowered into the spinning crucible touches the liquid silicon and slowly draws out the material to produce the ingot. During this process, argon gas is also used to regulate the temperature.

Specific improvements in the process to be studied under the project include insulating the crucible in which the silicon is melted; installing a heat shield to permit more rapid cooling of the crystal as it is pulled from the crucible; and redesigning the argon gas management system. In addition to the potential energy savings, improved gas management could cut argon use by up to 50 percent.

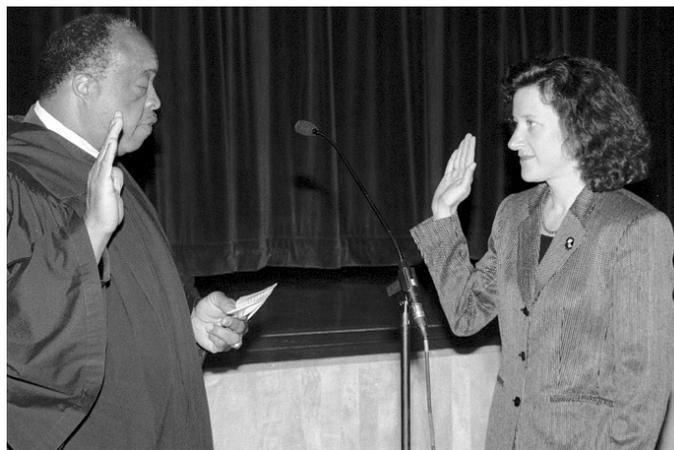
Project testing will be conducted at Siemens' facility in Vancouver, Washington which produces the largest volume of single-crystal ingots for photovoltaic cell production in the world.

For more information please contact the Northwest Energy Efficiency Alliance at (503) 827-8416/ (800) 411-0834.

- NWEEA News Release

Judi Johansen Rejoins the BPA Family!!

On June 8th, Judi Johansen stepped up to the podium and took the oath of office, becoming the 12th administrator in the 61 years of BPA's existence. Johansen left BPA in 1996, after three years, to become vice president of business development for Avista, the wholesale power marketing arm of Washington



Water Power. Today she returns to lead BPA into the future. Among the key themes that Johansen brings with her is the belief that BPA is here for good public policy reasons, which includes making sure that conservation is an important part of the restructured industry.

INFORMATION TECHNOLOGY

WHAT DO YOU DO WITH THE DATA?

With the advent of electric industry deregulation looming inevitable, many businesses, industries and individuals will be asking how do I make the right choice or choices that will result in the best management of my energy system. It starts with knowing and understanding where, when and how you currently use energy.

In our last issue we shared with you an overview of information technology and took a closer look at metering as a means of recording “raw” energy use data. But, how do you take that “raw” data and make sense of it? That’s where the second component of the information technology platform — energy analysis software — comes in. It provides a way to understand and interpret the data, ultimately helping you manage and control energy use.

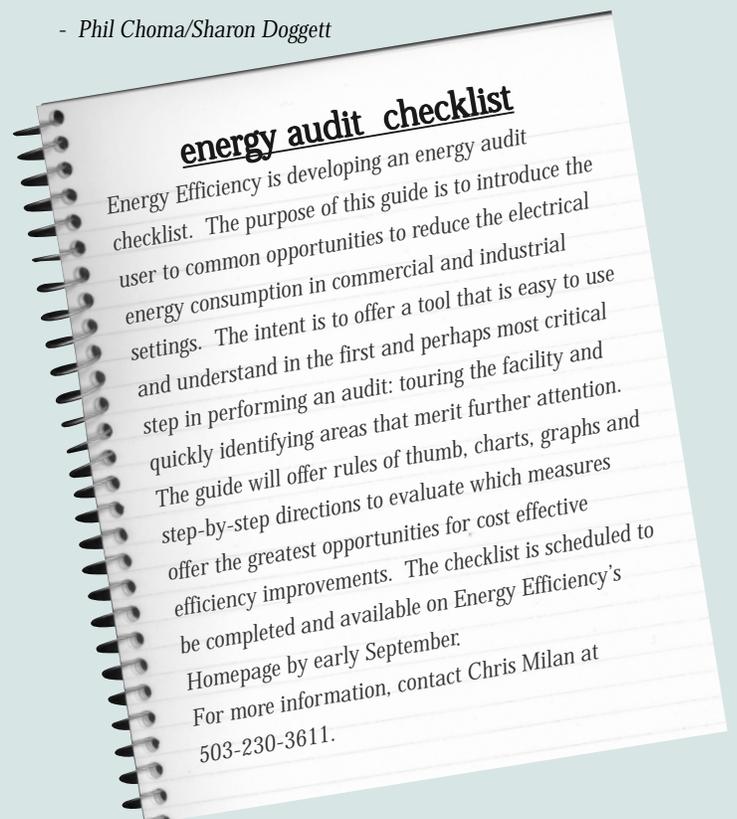
Many energy analysis software packages are available in today’s market. Some simply connect to the meter and download a load profile while others have complex energy analysis tools built in. There are systems designed so you can call up the meter/recorder; and systems that call a central processing site. Those systems that call a central site charge a fee to process the data and a fee to access the data, usually via an Internet-based site. Yes, now by surfing the web you could reduce your electric bill. Unlike the systems with automatic call in devices, systems that allow you to dial in directly do not have fees. Some software tools are designed to connect to a variety of meters and logging devices. However, most digital meters and logging devices have a software package that is designed to function only with that device, so you must look at each site and decide which is most appropriate.

Depending on the sophistication of the meter and software, the possibilities leading to savings opportunities can be many. Consumers might choose to reduce power bills by analyzing time-of-use and demand charges, or reduce penalties for poor power factor. In some of the software packages you can even perform “what if” scenarios, which under deregulation could be a valuable tool. There are software packages that come with sophisticated graphics that can display a historical profile or a real-time picture of energy use including a three phase vector diagram depicting the voltage, current, phase angle, power factor, reactive power, volt-amps and kilowatt. Using the historical profile,

the percent of power that has been consumed during peak periods can be analyzed and an estimated bill can be created. You can even compare daily maximum, minimum and average load profiles, in addition to comparing day-to-day use, to find unusual usage patterns. With the peak profile function, you can compare an average day to the peak day and the peak energy use may be reduced by analyzing the time and date of use. Most of the data is based on 15-minute intervals.

For many industries and businesses, their power bill has a significant impact on the “bottom line” and reducing energy costs may become a critical survival factor. Savings can come from seemingly minor sources like altering employee behaviors that waste energy (leaving lights on in unoccupied areas) as well as major changes like retrofits of critical systems. Changes in energy purchases can also lead to savings. The opportunities and benefits are out there. To find these usually all it takes is a new digital meter or a recorder, a phone line, a PC and an analysis software tool to support them.

- Phil Choma/Sharon Doggett



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We would like to hear from
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