



# THE BOC Bulletin

WINTER/SPRING 2006

A Newsletter for BOC Graduates, Enrollees and their Employers

## Starting from Point Green

The Providence Newberg Medical Center was considered one of the top twenty small hospitals in the country, but the size of the facility was not meeting the needs of the growing community in the Yamhill Service Area in Oregon. In 2002, the Providence Health System (PHS) decided that an entirely new facility was required. A grounds-up facility had not been built for almost thirty years, so PHS decided to use the opportunity to approach the construction with all aspects of building functionality taken into consideration.



Artist's rendering of the Providence Newberg Medical Center which will open its doors to patients in June of 2006.

a consideration. When "building green" there is a greater up-front cost. Generally, projects are considered viable if the payoff period is five years, which was the initial estimate for the new medical center.

To defray costs and achieve a more optimum payback, PHS investigated various funding possibilities for grants, incentives and tax credits. The Energy Trust of Oregon (ETO) gave a grant of \$199,858 through its Building Efficiency

Research of the various aspects involved in ground-up construction led to the U. S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) accreditation program. LEED™ maps out areas in which building owners can reduce long-term operating costs by giving detailed attention to choices of design and equipment options at the initial planning phase, choices that could significantly reduce energy costs down the road.

A design/construction group teamed with leaders from the Yamhill Service Area to brainstorm about everything from appropriate land excavation to lighting options to patient transportation to-and-from downtown Newberg. Funding the project was obviously

Program; utility provider Portland Gas & Electric (PGE), through their Earth Advantage Program, offered \$156,000 for the upgrade of proposed generators so that they could serve as an alternate power resource during brown-outs. The Northwest Energy Efficiency Alliance (NEEA) granted the project \$15,000 for building commissioning, which in turn qualified the medical center for a \$141,000 tax credit through the Oregon Office of Energy.

So what does all that mean? It means a reduced payback period of just fourteen months. As Mike Antrim, Senior Public Affairs and Marketing Coordinator, puts it, "We anticipate a 26% savings in energy costs during the first year. The project is also proving that building green can be a smart investment."

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### Reminder: 2005 BOC Grads

By March 2007, you will need Continuing Ed credit to renew your Level certification. Level I renewal requires 5 hours annually and Level II requires 10 hours. See page 9 in this newsletter for details.

**Point Green** (Continued from page 1).

### **A Project Participant's Take**

BOC graduate Glenn Monzon came to the project when he relocated from Seattle, Washington to Oregon in 2004. In Washington, where he had his BOC training, his background was in HVAC. At Providence Newberg, he is now the Head of Housekeeping Services. Because of his BOC training, Monzon was in step with what the LEED™ project was doing, even though he came in mid-stream. His enthusiasm for the project is palpable as he describes the process.

**"We anticipate a 26% savings in energy costs during the first year. The project is also proving that building green can be a smart investment."**

**– Mike Antrim**

"Twice a month, we get together and go over the progress to make sure everything is up to expectations and is integrated properly. Everyone has input and works together to 'fine-tune' the process," says Monzon. "We are in a service industry and the focus is on the customer, which is the patient, to give them as good an experience as possible. One of the key motivators is that this is going to be a special place – as user-friendly as possible."

Monzon is currently putting together a training book for

environmentally-friendly cleaning products and procedures. How a facility is cleaned and maintained contributes directly to the health and air quality of the building itself and needs to be ecologically responsible as well. To this end, he uses products recommended by Green Seal ([www.greenseal.org](http://www.greenseal.org)) which are biodegradable and contain no dyes or odors. These products are also designed to use only cold water to clean, increasing energy savings for the facility.

"From my training, I knew what green cleaning was so when I'd talk to people and tell them it was going to be a green building, they'd say, 'No, the brick is brown,'" Monzon relates. "After I explained, they caught on pretty quickly and were very interested and excited."

### **Attention to Detail**

Details in cleaning, details in design, details in efficiency: The LEED™ parameters encompass a lot of details, all integrating to serve the purpose of creating a consummate user- and eco-friendly environment. The layout of the building is such that all rooms have pleasing views. Courtyards bring natural lighting to the interiors, and specially-treated windows increase heating and cooling efficiency. A healing and wellness garden enhances the tranquility of the center for patients and their families.

**"One of the very neat things about this facility is that the whole community is behind it and people are really looking forward to its opening."**

**– Glenn Monzon**

"One of the very neat things about this facility is that the whole community is behind it and people are really looking forward to its opening," says Monzon.

They will not have to wait much longer. The first-ever "green" hospital on the west coast - and the second in the country – is on schedule and slated to open in June of this year.

## **ANNOUNCEMENTS**

### **BOC Grads Help Their Companies Earn ENERGY STAR Leaders Status**

At the ENERGY STAR 2005 Leadership Conference in Arlington, Virginia, U.S. EPA Administrator Steve Johnson honored the 2005 ENERGY STAR Leaders and among those announced, four had BOC graduates on staff. We congratulate the organizations on this special status and also want to recognize the program's graduates:

**Clifford Paulsen**, certified November 2004, *Columbus Hospitality*

**David Cone**, certified January 2000, *Gresham-Barlow School District*

**James Brown**, certified December 2003, *San Diego Unified School District*

**Stephen Gay**, certified January 2004, *South Colonie Central School District*



### **Seattle Chapter of IFMA Announces BOC Scholarship**



The Seattle chapter of the International Facility Management Association has announced that it will provide \$500 in scholarship funds to the BOC program. Detailed information regarding selection process and timeline will soon be available at [www.ifmaseattle.org](http://www.ifmaseattle.org).



# Energy Savings a Boon to School Budgets

Dave Cone was a property manager for a multi-family housing facility when an opening came up as assistant facilities manager at the Gresham-Barlow School District. Interested in a change, he applied for and won the position, thus beginning a new career in building operations that would help change the culture of the community he served and result in a personal award from the Association of Professional Energy Managers and, for the district, recognition as Energy Star Leader for 2005.

But that is by no means the end of the story. Cone's commitment to energy conservation and efficient facilities management continues to help drive the Gresham-Barlow School District to improve their schools' situation, as well as spread the word to others, both in the public and the private sector.

Gresham-Barlow School District is one of the ten largest districts in the state of Oregon and comprises eleven elementary schools, five middle schools three high schools and a Center for Advanced Learning. The district's oldest building was constructed in 1914, while its newest was built in 2002, so the parameters of building operations are quite extensive.

Several years ago, the Gresham-Barlow School District initiated a drive to control its waste stream and established the Waste Reduction Committee, dedicated to determining ways to effectively "reduce, reuse, and recycle." As it evolved, committee members recognized that energy use was a significant component of waste reduction and eventually changed the name of the committee to the "Resource Conservation Committee" to reflect the inclusion of energy as a manageable resource.

This expansion of focus naturally altered the responsibilities of the district's assistant facilities supervisor, David Cone. Around this time, Cone attended the BOC training seminars to understand how to approach the process of improving energy systems at the district's schools. "The BOC was a real eye-opener about where to look for system flaws and how to get your arms around how you use energy," says Cone.

The tools are out there. The incentives are out there. The will is out there. It just takes some know-how, determination, cooperation and creativity to get results.

From the training, Cone understood that there were numerous ways to save on energy consumption. Unfortunately, some of these involved expenditures that would not pay off immediately



*Dave Cone,  
Resource Conservation Manager*



*Jim Mathews,  
HVAC Technician & DDC Specialist*



*Suzanne Murphy,  
Data Entry*



*Jim Koehler,  
HVAC Technician*

– something most people who manage budgets have a hard time getting past. Says Cone, "Many people still think of this stuff as smoke and mirrors, but it isn't. It's technology, it's available and the savings are irrefutable."

But BOC training also involves learning to quantify spending against potential savings so that the financial justifications are concrete. Cone made a persuasive case for investment in energy-efficient measures and in 1999, at his recommendation the district invested \$5,000 in energy management software, training, data retrieval and data input. Recording four years' worth of data gave Cone and his staff enough information to spotlight areas ripe for overhaul.

"So much of what we did was intuitive. There were some lighting retrofits, things like that, but most of the changes were behavioral. It's not like we're out there spending thousands of dollars – it's more getting the word out to people and coming up with ideas to make people more aware of energy conservation and easy ways to achieve better use."

And getting people to change ingrained practices for new ones isn't easy. But it can be done. Cone says that in most cases, it is just a matter of making people understand. "One school that had been one of our best energy-efficient performers was suddenly at the bottom of the list. It turned out that the old custodian had left. The new custodian had no idea of the various measures his predecessor had used. When we sat down with him and discussed the change, he was more than happy to re-implement what had been in practice. He just didn't know. It's all about educating people."

Education has been a major priority. Getting everyone involved has been a hallmark of the Gresham-Barlow School District's program because the district's success is based upon integral components acting cohesively, with a common goal in mind. Everyone needs to buy into the program: administrators, teachers, students, custodial staff – everyone, starting with the crucial support of the administration and carrying through to the newest students that enter the school doors. In effect, this buy-in of all parties creates a culture of energy conservation.

Ron Maynard, head custodian at Hollydale Elementary School, had students participate in an energy audit of the school. He also promoted an incentive program where unnecessary energy usage was reprimanded, instituting a ticketing program whereby those who left unneeded lights on were called to task. Flipping a switch is not something

*Continued on page 4. See **Gresham-Barlow.***

**Gresham-Barlow** (Continued from page 3).

people necessarily think to do, but habits can be changed and the students certainly got a kick out of catching their principal leaving the lights on in an empty room. Maynard found a creative way to make learning about better operating efficiency fun for the students.

In August 2004, the district signed an agreement with New Energy Technology (NET) for a pilot project to provide "real-time" meter data for six of the district's 19 sites. Concurrently, a "Building Performance Plan" (BPP - see below) was being developed for each of these sites detailing how each building's energy systems should operate. The plan was presented to the buildings' principals and custodians for their review, suggestions and ultimately, approval and agreement to operate the building in the manner described. By January 2005, everyone within a building was on the same page according to their specific Building Performance Plan.

The BPPs were invaluable as tools because having an actual blueprint for building operational procedures freed principals and custodians from the ancillary task of determining energy policies. Once a plan was determined however, responsibility was shared and everyone was accountable for successful implementation.

**"The BOC was a real eye-opener about where to look for system flaws and how to get your arms around how you use energy."**

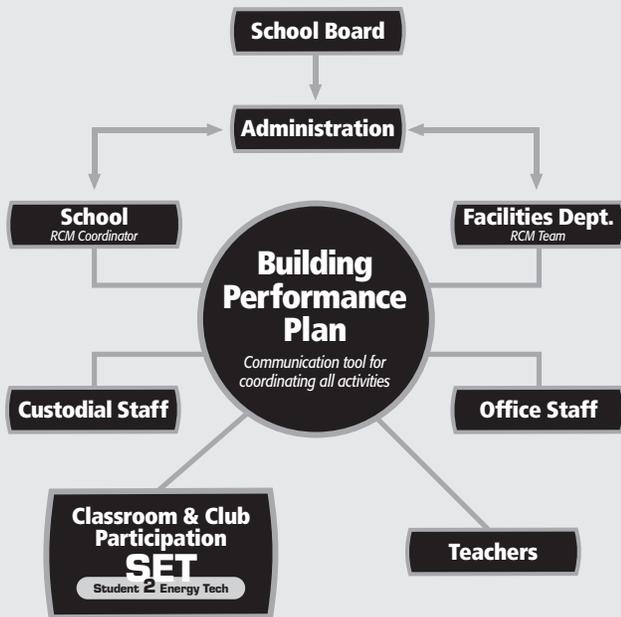
– Dave Cone

Integral to the project was the installation of interval meter data collection points for electricity for each of the 6 pilot-project schools. Data was collected and assessed with Save More Resources' (SMR) energy-management software, Utility Manager Pro and Utility Manager Profiler. This software interprets collection-point data and presents it to building operators via the Internet as real time data. Thus, operational problems that trigger changes in energy consumption patterns – or over-usage – can be targeted and corrected almost immediately, instead of waiting, as previously done, for utility billing data which usually represents a 30-day period and can be 45-60 days old upon receipt. Even then, some usage discrepancies could go unnoticed.

For example, one of the buildings in Cone's district had not been "turned off" for the summer and was running in school-year mode. "Without interval meter data reporting, that building could have run all summer long," said Cone. The same can be true when setting building run-times for special events. Simply forgetting to reset the run-time would mean the system would continue to run for a "special event" that wasn't taking place. Forgetting is human, but with real-time reporting, the consequences are far less wasteful.

Continued on page 5. See **Gresham-Barlow**.

## Gresham-Barlow School District Building Performance Plan



### SAMPLE

#### Table of Contents For a Building Performance Plan (BPP)

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The graph and outline above come from one of Gresham-Barlow School District's BPP documents and illustrate the attention to detail and the extent of participant "buy-in" needed to orchestrate the success the district has achieved. Because of the district's commitment and effort, the US Department of Energy in Washington DC has said, "The Gresham Barlow School District is hands down the most effective school district in the Nation when it comes to managing their energy."

The Oregon Department of Energy has several programs designed to help schools lower their energy costs, from low-cost loans to the partner-based Business Energy Tax Credit Pass-through Option. Find out more at [www.oregon.gov/energy](http://www.oregon.gov/energy).

**Gresham-Barlow** (Continued from page 4).

Needless to say, it only took about two months into the pilot project for the district to realize its value and the go-ahead was given to implement the program district-wide.

Since 1998, the base year used to measure the program's results, the district's total utility bill has grown from \$1.4 million in 1998 to \$1.6 million in 2005. A small rise, yes, but consider also that over the time period, the district has added over 140,000 square feet of space (a 9% increase), installed 3,000 computers, and absorbed energy cost increases of 45% for electricity and 125% for natural gas. This calculates to avoided costs from the 1998 benchmark of \$4.2 million.

Energy savings for the school year 2003/2004 amounted to about \$870,000. Savings for 2004/2005 were an even more impressive \$1.2 million. How does this translate for the school district? It means an additional seventeen teacher salaries from the first year's savings and twenty-two for the second.

### **Getting the Word Out**

Eager to share the success story, the district has sent representatives to various conferences throughout the Pacific Northwest in the hope that the practices in the Gresham-Barlow School

District will inspire others to start similar energy savings programs. A video has been produced and is available upon request - to schools and businesses. Project partner New Energy Technology was so enthusiastic about the results at Gresham-Barlow, they are promoting the same energy conservation measures for businesses and has worked with JC Penney to implement a plan for their facilities. It is not often you hear of a business modeling its practices on a school district's procedures!

Dave Cone has been a driving force behind the success of the energy conservation enjoyed in the Gresham-Barlow School District. His enthusiasm has been contagious and his efforts were recognized when he was honored by the Association of Professional Energy Managers as 2004 Energy Manager of the Year for Oregon. He emphasizes though that this is a district-wide effort and a district-wide success and believes that even though the process got its start with a few people, continued success is not dependent on those few.

***"Many people still think of this stuff as smoke and mirrors, but it isn't. It's technology, it's available and the savings are irrefutable."***  
- Dave Cone

"We have a different culture here. If you go into another school and ask about energy usage, they'll refer you to someone in maintenance or accounting or the like. Our idea is that the behavior of energy conservation should permeate every level of the school system."

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## **BOC Grads Making A Difference**

**Jennifer Balliet, BOC grad and Administrative Electrical Crew Chief for the Port of Seattle's Corporate Headquarters,** looked at the old-fashioned single- and double-sided exit signs

used at the port's Pier 69 and recognized an opportunity for savings. At the same time, area utility Seattle City Light was giving rebates of \$30 per unit for LED replacements of older, incandescent lighting. Balliet took advantage of the offer and replaced 47 units at Pier 69, reducing kilowatt usage by 93% per year, achieving long-term energy - and cost - savings, and taking advantage of the chance to do it less expensively.

**Randy Madison, BOC grad and Fleet & Facilities Manager for the City of Woodland,** together with the city's facilities team, orchestrated a project combining various energy-efficiency incentives available to companies in the state of California. A grant from the CEC (California Energy Commission) Loan Program (CEC Express Efficiency grant) gave them the funds to perform an initial energy audit of six of the city's facilities. Their analysis showed that efficiency could be improved by: 1) replacing 28 HVAC units of various size and function with new energy-efficient ones at four buildings; 2) installing "Cool Roof" systems from Tremco Roofing; and 3) installing the Metasys Computer Automated Control program from Johnson Controls and retrofitting old and new units at all six facilities to implement the system.

A logistics delay in starting the plan gave them more time to come up with new ideas, so a fourth component was added: replacing several of the city's water system well motors - some of which



were between 30 and 50 years old - with new, energy-efficient ones. The project costs were calculated at \$2.15 million and funded by a low-interest loan from the CEC's Loan Program.

An incentives package put together with the city's energy provider, Pacific Gas & Electric (PG&E), will provide the city with an additional \$145,006 in rebates (6.7% of the total costs), giving the city a payback time for the project of just over eight years. Paying back the loan over a 10-15 year schedule will create a positive cash flow for the city within six months of the project's completion.

Looking for improvements in efficiency goes hand in hand with looking for the incentives to make those improvements happen. Vending machines are everywhere and guzzle an undue amount of energy to be always "at the ready".

**Brian McBroom, BOC Grad and Lead A/C Mechanic of the Bakersfield City School District,** decided to test a Vending Miser on machines at four schools. The results were dramatic. Using a "watts up" power analyzer to record a week's worth of data comparing five vending machines pre- and post Miser installation, he found savings per machine of between 37% and 53%, depending on the change in non-use hours per machine. Stats in hand, McBroom was given the go-ahead for a district-wide installation of the schools' 139 vending machines. Kilowatt-hour savings alone would have paid for installations in about a year, but with rebates from area utility PG&E (Pacific Gas & Electric), payback for the project was just over eight months.

# Congratulations!

## **BOC Level I & II Students Certified in California, Oregon and Washington July – December 2005**

### **Level I Certified Students**

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**Abaya, Leodegario**, Vista Unified School District  
**Ammerman, Billy**, MiraCosta College  
**Aranda, Renato**, Woodbury University  
**Arroyo, Joel**, Woodbury University  
**Beddie, Dana**, The Capital Group, Inc.  
**Boyd, Ron**, Portland Parks  
**Bozzo, Robert**, City of Gilroy  
**Brandini, Rick**, City of Gilroy  
**Britsch, James**, City of Santa Barbara, Public Works  
**Bryan, Al**, Fontana Unified School District  
**Carlson, Richard**, Humboldt State University Housing  
**Caro, Jonathon**, Kern County Superintendent Schools  
**Cocklin, Jeff**, Providence Hood River Memorial Hosp  
**Cortese, John**, Linn County  
**Critchlow, Tim**, West Valley School District No. 208  
**Crocker, Clifford**, Air Force Village West  
**Cruz, Irma**, Huntington Memorial Hospital  
**Dean, Douglas**, Eureka City Schools  
**Dominguez, Joseph Allen**, Stryker  
**Donley, Robert**, San Bernardino City USD  
**Donnelly, Kathryn**, Jones Lang LaSalle  
**Dorn, Bryan**, Able Engineering  
**Dotta, Dan**, City of Pasco  
**Duarte, Douglas**, Raytheon Electronics  
**Dyer, Joe**, City of Whittier  
**Ekstrom, Chuck**, Murrieta Valley Unified School Dist  
**Epperson, Steven**, San Marcos Unified School District  
**Era, Tímectocles**, Huntington Hospital  
**Finley, Lloyd**, County of Tulare, Res Mgmt Agency  
**Fitzpatrick, Shawn**, North Coast Coop  
**Flanagan, Tim**, College of the Redwoods  
**Frederickson, Ralph**, City of Ventura  
**Freeman, Tim**, Humboldt State University  
**Frost, Robin**, Richland School District  
**Fukutomi, Michael**, Oxnard School District  
**Fussel, Dean**, Kern High School District  
**Gambrell, Mike**, State of WA - Dept of GA  
**Gannon, John**, San Marcos Unified School District  
**Garcia, Casey**, Stanislaus County Office of Educ  
**Garcia, Enrique**, Marlborough School  
**Gee, Edwin**, Roche Biosciences  
**Gehrig, Jay**, Providence St. Peter's Hospital  
**Gerner, Rob**, IAP World Services  
**Geyer, Jeff**, Vista Unified School District  
**Gonzalez, Jose**, Hueneme School District  
**Guadez, Renato**, Huntington Hospital  
**Guardado, Ricardo**, Int'l Church of the Foursquare Gosp  
**Guevara, Gabriel**, Southwest Healthcare Systems  
**Gyll, Brad**, Santa Barbara City College

**Hall, Christopher**, Kern High School District  
**Hamel, Sr., Phil**, Rose Hills Company  
**Harris, Tom**, Quincy School District  
**Hedrick, Della**, East Valley SD #361  
**Hernandez, Alfredo**, City of Whittier  
**Hernandez, Michael**, Kern High School District  
**Hodges, Edward**, Northrop Grumman  
**Holmes, Tyler**, County of Humboldt  
**Jackson, Joseph**, Fontana Unified School District  
**Jeffress, Michael**, Northern Humboldt Union High SD  
**Jimenez, Victor**, Verizon Wireless  
**Johnson, Jerry**, MiraCosta College  
**Johnston, Dennis**, Boeing Service Company  
**Jordan, Matthew**, Leiner Health Pro ducts  
**Kennaley Sr., Timothy**, Pleasant Valley School District  
**Kerravic, Sergio**, Guidant Corp  
**King, Thomas**, Community Hospital of Long Beach  
**Knight, Paul**, Sunset Development  
**Kuklinski, George**, City of Richland  
**Lapid, Edmon**, J. Paul Getty Trust  
**Lauritson, Ron**, Rancho Springs Medical Center  
**Lee, Steven**, Rancho Bernardo Comm Presbyt Church  
**Lewis, Marshall**, Genie Industries  
**Lopez, Marcos**, The Archer School for Girls  
**Mackin, Will**, Walla Walla General Hospital  
**Marshall, John**, San Bernardino City USD  
**Martin, Ronald**, Northrop Grumman Fac Plant Svcs  
**Martinez, William**, Huntington Hospital  
**Meek, Jim**, Amgen  
**Micciche, Tony**, Fontana Unified School District  
**Monfils, Carl**, Murrieta Valley Unified School Dist  
**Monson, Edward**, Benton PUD  
**Myles, Norma**, Richland School District #400  
**Nava, James**, Stanislaus County Office of Educ  
**Oilar, Scott**, McKinleyville Union School District  
**Oswald, James**, Morton Salt  
**Perez, Raul**, Raytheon Co.  
**Phipps, Ted**, County of Tulare, Res Mgmt Agency  
**Quaschnick, Curtis**, Children's Hospital Central Calif  
**Quezada, Gilberto**, Hueneme School District  
**Quintard, Fred**, Transportation Corridor Agencies  
**Ray, Gary**, Northern Humboldt Union High SD  
**Read, John**, Humboldt State University  
**Reichert, Sandra**, East Valley SD #361  
**Richters, Kelly**, WA State DOH  
**Robinson, Ben**, Palo Alto Unified School District  
**Robinson, Max**, MiraCosta Community College  
**Rodriguez, Enrique (Hank)**, Richland School District  
**Rogers, Chris**, City of Gilroy

## **Level I Certified Students**

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**Rogers, Julie**, NVIDIA Corp.  
**Ross, Bob**, San Diego Convention Center Corp  
**Roylance, Roger**, Othello Community Hospital  
**Sanders, Joel**, Department of the Air Force  
**Schill, Craig**, L3 Comm/Interstate Electronics Corp  
**Sesuca, Romarico**, US Salinity Laboratory, USDA  
**Simmons, David**, Cushman & Wakefield  
**Sloane, David**, Arcata School District  
**Smith, Kenneth**, Skeletech  
**Sportelli, Laura**, Verizon Wireless  
**Stangier, Hans**, Linn County Sheriff  
**Tepus, Pete**, City of Palos Verdes Estates  
**Terris, Stan**, City of Eureka  
**Umana, Adonis**, Northrop Grumman  
**Valles, Ruben**, Guidant Corp  
**Van Putten, Casey**, Rose Hills Company  
**Veronica, Phillip**, Oxnard Elementary School District  
**Vickery, Jeffery**, Welk Resort Group  
**Walkenhauer, Rob**, Humboldt County Office of Education  
**Walker, Annie**, WSDOT  
**Waltner, David**, Baker Boyer Bank  
**Weathermon, Lynn**, Stanfield School District 61-R  
**Wilhite, Andrew**, Hyatt Regency Irvine  
**Williams, Steven**, Richland School District  
**Wilson, Bryan**, Estacada School District  
**Young, Sr., William**, Jones Lang LaSalle  
**Zuffinetti, Wes**, CA State University Bakersfield

## **Level II Certified Students**

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**Adams, Gary**, Northrop Grumman  
**Alvarez, Anton**, SMM, USA, Inc.  
**Amador, Raul**, CSU LA Facilities Services  
**Ancheta, Fulgencio**, Northrop Grumman  
**Arellano, Jose Luis**, Paper Pak Products  
**Ashford, Ernest**, Long Beach Hilton Hotel & Ex Mtg Ct  
**Barba, Jesus**, Union Tribune Publishing Company  
**Barham, Ronald, San** Diego Convention Center Corp  
**Bennett, James**, Equity Office Properties  
**Brusko, Jan**, University California of San Diego  
**Busse, Ken**, Corgentech  
**Campbell, David**, Town and Country Resort  
**Cerf, Jaime**, Northrop Grumman  
**Chua, Antonio (Tony)**, Jones Lang La Salle Americas, Inc.  
**Cureton, Tom**, Viejas Casino  
**Duarte, Anthony**, Guidant Corporation



**Fanelli, Gary**, SMM, USA, Inc.  
**Florez, David**, Travis Unified School District  
**Fulkerson, Eric**, Equity Office Properties  
**Gabbard, Troy**, Tybrin Corporation  
**Gallardo, Martin**, Union Tribune Publishing Co.  
**Garcia, George**, Raytheon Company  
**Garza Jr., Moises**, San Mateo County Comm College Dist  
**Gibson, John**, ABS CBRE  
**Gotelli, Al**, San Mateo County Comm College Dist  
**Hermosillo, David**, Equity Office Properties  
**Hipperson, Duane**, Gen-Probe Incorporated  
**Hohloch, Vern**, Vertex Pharmaceuticals  
**Holland, Eric**, Equity Office Properties  
**Hood, Lonnie**, Moog, Inc.  
**Hopper, Bill**, Equity Office Properties  
**Howard, Mitchell**, Raytheon Facilities Maintenance  
**Jones, Velma**, Moog Inc.  
**Knapp, Dale**, Siemens Medical  
**Kriscunas, Paul**, Equity Office Properties  
**Le, Hung**, Southern California Edison  
**Lovell, Doug**, City of Costa Mesa  
**Lynch, Robert**, Tybrin Corporation  
**Martin, Ronald**, Northrop Grumman Fac Plant Svcs  
**Martinez, Roger**, Embassy Suites Hotel  
**Mayfield, J.C.**, YMCA Camping Services  
**Moss, Eddie**, Verizon Wireless  
**Murdock, James**, Southern California Edison  
**Navarro, Mario**, Equity Office Properties  
**Noblejas, Ernesto**, Amgen, Inc.  
**Ortiz, Gerardo**, Equity Office Properties  
**Owens, David**, Guidant Corp.  
**Owens, James**, Atlas Hotels, Inc.  
**Pascua, Zebbs**, Occidental College  
**Pelts, Marty**, Roche Molecular Systems  
**Perez, Manuel**, Equity Office Properties  
**Pettibone, Michael**, Fox Digital  
**Plummer, Russ**, Northrop Grumman Fac Plant Svcs  
**Redmond, Joel**, Moog, Inc.  
**Robbins, Larry**, Viejas Casino  
**Robertson, Barbara**, Northrop Grumman Facilities  
**Rodriguez, Jose**, Northrop Grumman  
**Ruiz, Pedro**, Mt. San Antonio College  
**Saldana, J. Cesar**, Atlas Hotels, Inc.  
**Salerno, Robert**, Cal State LA  
**Schmidt, Jeffrey**, Raytheon Systems  
**Silva, Al**, Viejas Casino  
**Stevens, Bud**, La Jolla Beach & Tennis Club, Inc.  
**Stiles, Thomas**, Tybrin/AF  
**Synegal, Reginald**, Equity Office Properties  
**Thompson, Jerry**, University of Redlands  
**Veal, Johnny**, Fox Digital  
**Veres, Jozsef**, San Mateo County Comm College Dist  
**Virden, James**, Hesperia Unified School District  
**Wheeler, Timothy**, Wheeler Company  
**White, Kevin**, Websense, Inc.  
**Youssef, Sameer**, State of CA - Dept of Gnl Svcs

# BOC Energy Saving Quick Tips

## Energy Efficiency Through Improved Facility Operation

*"Turn it down, tune it up, turn it off!" QuickTips are low-cost, no cost operational measures for saving energy and money brought to you by the Building Operator Certification (BOC) program.*

### TIP #1

**Reduce lighting** where feasible – indoors and outdoors. In open common areas, take light meter readings to determine if there are opportunities to adjust lighting levels through delamping. Make sure outside lights are not on during the day.

### TIP #2

**Lighting may be dimmed** in response to incoming daylight, occupancy or time schedules where dimming ballasts and appropriate sensing and programming have been installed. Even without dimming ballasts, a portion of lighting may be controlled as a result of on-off schedules, occupancy sensing, or dimming on a schedule.

### TIP #3

**Boiler tune-ups** can reduce boiler gas consumption up to 20% and increase steam output. Tune-ups restore a boiler to its normal efficient operating condition by detecting and correcting excess air losses, smoking, unburned fuel losses, sooting, fireside fouling and high flue gas temperatures. Many local gas utilities offer rebates for up to 50% of a gas boiler tune-up cost, up to \$300. Check with your local gas utility.

### TIP #4

**Fume hood exhaust fan control** can be deployed in kitchens and labs. Through add-on devices, the closing of fume hood sashes reduces exhaust fan speed, cutting power use and outside air intake.

### TIP #5

**Varying air handler speeds** reduces power consumption significantly during the many hours of the year when peak fan speed is not needed to meet comfort and air quality requirements. Even a slight reduction in fan speed of 15 percent can yield a noticeable drop in fan motor power demand – almost 30 percent – because of the inverse square law inherent in fan motor loading.

### TIP #6

**Periodically visit** the building during off hours to see if lights and equipment are on unnecessarily.

### TIP #7

**Publicize** energy-saving ideas through company Intranet announcements and newsletters. Solicit ideas from occupants. Recognize good ideas with KUDOS announcements.

### SAMPLE Energy Conservation Message to Occupants on Lighting



One of the many ways our company is conserving energy is to reduce unnecessary lighting of our spaces. Starting this week << Insert day and date here >> the building control system will automatically turn off lights in << Insert list of areas here >> starting at 4 p.m. instead of the normal 6 p.m. As always, the lights will blink twice (at approximately 3:50 p.m.) to remind you they will be going out in 10 minutes. If you are working late you can override this automatic turn off feature by pressing the light switch in your space. This override will give you an additional 2 hours of lighting, at which time the lights will blink twice again and you can repeat the process, if required. If you will be working in your space past 6 p.m. on a regular basis, please call the Facilities Maintenance & Operation Help desk << Insert phone number here >> and we can tailor the lighting schedule for your space to correspond to your work schedule. Conversely, if you consistently stop work before 4 PM, let us know, and we will tailor the lighting schedule accordingly. This and other energy conservation initiatives were mentioned in the first edition of our school's newsletter. If you have a good idea for energy conservation, please let our Director of Facilities know <<Insert phone number here>>.

*More QuickTips at: [www.theBOC.info](http://www.theBOC.info)*

# Continuing Education Opportunities For Certification Renewal Credit

Below you will find listings of various organizations that offer continuing education courses that are applicable to annual BOC certification renewal. Check out the Education and Events Calendars at these sites or call for information regarding upcoming training opportunities.

## **BOMI – Building Owners & Managers Institute**

*Class Information:* [www.bomi-edu.org](http://www.bomi-edu.org)

## **BOMA – Greater Los Angeles**

*Class Information:* [www.bomagla.org](http://www.bomagla.org)

## **CASBO – California Association of School Business Officials**

*Class Information:* [www.casbo.org](http://www.casbo.org)

## **California Society for Healthcare Engineering**

*Class Information:* [www.cshe.org](http://www.cshe.org)

## **California Utility Collaboration – Energy Efficiency Center**

*Class Information:* [www.energyefficiencycenter.com/index.html](http://www.energyefficiencycenter.com/index.html)

Contact specific utilities through the "Contact Us" links on this website. Sponsored by PG&E, San Diego Gas & Electric, Edison, and the Gas Company.

## **Energy Services**

*Class Information:* [www.energyexperts.org/calendar/](http://www.energyexperts.org/calendar/)

## **FEMP – Federal Energy Management Program Workshops & Conferences**

*Website:* [www.eere.energy.gov/sro/](http://www.eere.energy.gov/sro/)

For WA, OR & CA, you can also try [www.eere.energy.gov/regions/western/events.html](http://www.eere.energy.gov/regions/western/events.html)

## **FSTC – Food Service Technology Center**

*Website:* [www.fishnick.com/education/seminars/list.php](http://www.fishnick.com/education/seminars/list.php)

## **ERC Food Service Events:**

*Website:* [www.socalgas.com/business/foodservice/](http://www.socalgas.com/business/foodservice/)

## **HVACR Education: On-Line Learning for the HVACR Industry**

*Website:* [www.hvacreducation.net/](http://www.hvacreducation.net/)

## **IFMA International Facility Management Association**

*Website:* [www.ifma.org](http://www.ifma.org)

The International Facilities Management Association has several regional chapters, all of which can be accessed from the association's main web site address above. Be sure to check out the site for the variety of learning options available both online and via seminar.

## **NEEI - Northwest Energy Education Institute**

*Website:* [www.nweei.org](http://www.nweei.org)

*Contact:* Erik Westerholm at 541-463-3154 or

*E-mail:* [westerholme@lanecc.edu](mailto:westerholme@lanecc.edu)

## **Northwest Lighting Design Lab & Portland Daylighting Lab**

*Class Information:* [www.lightingdesignlab.com/calendar/index.html](http://www.lightingdesignlab.com/calendar/index.html)

*Registration Questions:* 206-325-9711 x0 or 800-354-3864 x0

## **Sacramento Municipal Utility District**

*Class Information:* [www.smud.com/education/index.html](http://www.smud.com/education/index.html)

## **University of Washington Engineering Professional Programs**

*Phone:* 866-791-1275

*E-mail:* [west@enr.washington.edu](mailto:west@enr.washington.edu)

*Website:* [www.enr.washington.edu/epp](http://www.enr.washington.edu/epp)

## **WAMOA – Washington Association of Maintenance & Operations Administrators**

*Website:* [www.wamoa.org](http://www.wamoa.org)

## **Washington State Society for Health Care Engineering**

*Website:* [www.wsshe.org](http://www.wsshe.org)

## **WSU Energy Program – Continuing Education Calendar**

*Website:* [www.energyideas.org](http://www.energyideas.org)

## BOC Certification Renewal

To retain BOC certification, graduates must accumulate continuing education (CE) hours each year, following a full calendar year after their graduation. Level I certification renewal requires 5 CE hours each year, and Level II renewal requires 10 CE hours each year. The hours may be earned in any of the following ways:

### BOC Certification Renewal Activities

### CE Hours Equivalency

- |   |                                |
|---|--------------------------------|
| • Continued employment in building operations.....                | 2 hours/year                   |
| • Continuing education in building operations.....                | Actual hours of classroom time |
| • Energy efficiency projects completed at your facility.....      | Up to 11 hours per year        |
| • Membership in a building operations membership association..... | 1 hour/year                    |
| • Offices held in membership associations.....                    | 2 hours/year                   |
| • Awards received for efficient building operations.....          | 2 hours/award                  |
| • BOC Newsletter quiz (see below).....                            | 1 hour/passed quiz             |

You will be notified by mail when your certification is up for renewal (your renewal date appears on your wallet card). Once you have received a renewal notice, complete the short application, provide a list of your certification renewal activities from the past year and return the information to NEEC. For 2006, the renewal fee is \$45 for each of Level I and Level II, or \$75 for a "combo" renewal of both Level I and Level II.

### Easy Certification Renewal Credit

Another easy way to add some continuing education credits towards your yearly certification renewal requirement is right here in the BOC Bulletin newsletter. Just read our selected article on page 10 and continued on the website, then take the short quiz provided in the newsletter. Send or fax it back to us for a one CE credit hour per quiz passed.

# Conferences & Symposiums

Washington, Oregon and California 2006

## NATIONALLY

### National Facilities Management & Technology Conference & Symposium Maintenance Solutions Expo

Baltimore Convention Center  
Baltimore, MD • March 7 - 9, 2006  
*More info:* [www.nfamt.com](http://www.nfamt.com)

### Total Facility Management Show

Chicago, IL • April 10 - 11, 2006  
*More info:* [www.tfmshow.com](http://www.tfmshow.com)

### National School Plant Management Association

Hyatt Regency Crown Center  
Kansas City, MO • April 29 - May 2, 2006  
*More info:* [www.nspma.org](http://www.nspma.org)

## CALIFORNIA

### Central Valley Plant Engineering & Facilities Maintenance Show (CVPE)

Modesto Centre Plaza  
Modesto, CA • March 15 - 16, 2006  
*More info:* [www.proshows.com/pro/CVPE/index.po](http://www.proshows.com/pro/CVPE/index.po)

### CASBO (California Association of School Business Officials)

San Diego, CA • April 19 - 20, 2006  
*More info:* [www.casbo.org](http://www.casbo.org)

### Facility Management Show West (WESTFAC)

Anaheim, CA • April 19 - 20, 2006  
*More info:* [www.westfac.com](http://www.westfac.com)

### National Conference on Building Commissioning

San Francisco, CA • April 19 - 21, 2006  
*More info:* [www.peci.org/nbc/nbc.htm](http://www.peci.org/nbc/nbc.htm)

### CSHE Annual Institute (California Society for Healthcare Engineering)

Crowne Union Square  
San Francisco, CA • April 20 - 21, 2006  
*More info:* [www.cshe.org](http://www.cshe.org)

The 35th Annual Institute – “Bridging the Gap between Technology and Healthcare” – is set up as a two-track informational conference, covering both the administrative/management issues and the maintenance concerns that confront healthcare facilities.

### Bay Area Facility Management Show

Santa Clara, CA • May 9 - 10, 2006  
*More info:* [www.nationalexpositions.com/info/bafacpg.pdf](http://www.nationalexpositions.com/info/bafacpg.pdf)

## OREGON

### Northwest Plant Engineering & Facilities Maintenance Show (NWPE)

Oregon Convention Center  
Portland, OR • May 10 - 11, 2006  
*More info:* [www.proshows.com/pro/NWPE/index.po](http://www.proshows.com/pro/NWPE/index.po)

## WASHINGTON

### 24th West Coast Energy Management Congress (EMC)

Seattle, WA • June 7 - 8, 2006  
*More info:* [www.energyevent.com](http://www.energyevent.com)

## Heating Systems: Auditing for Efficiency

*Close inspection and testing of key system components - including boilers and control systems – reveal opportunities for improvement*

*By James Piper*

Improving the performance of a building's heating system is one of the most effective ways of reducing energy costs and operating costs while making the system more reliable. While retrofit programs that focus on replacement of heating system components and systems can achieve the same – and often even greater – benefits, their high implementation costs and corresponding high level of disruption often makes them unsuitable for many institutional facilities.

For maintenance and engineering managers of these facilities, the best option is simply to make certain that the equipment already installed operates properly and at peak efficiency.

### Cutting off trouble

It is easy to ignore building heating systems. Unless a piece of equipment fails or building occupants complain, most assume that these systems work properly. But just because a system is operating and people are not complaining is no guarantee that it is working efficiently or effectively.

Burners can go out of adjustment, reducing their efficiency. Dirt can clog filters, coils and distribution systems, reducing air-flow rates. Control systems can go out of calibration, causing setpoints to drift away from their optimum setpoints.



You can complete your reading of this article on the Web at [www.facilitiesnet.com/ms/article.asp?id=2399](http://www.facilitiesnet.com/ms/article.asp?id=2399)

### About the Author

*James Piper, P.E. is a national consultant based in Bowie, MD, with more than 25 years of experience in facilities maintenance and engineering issues.*

*This article is reprinted with permission and was originally published in Maintenance Solutions December 2004 Issue by Trade Press Publishing Corporation.*

# Heating Systems: Auditing for Efficiency

## REVIEW QUIZ

**Here is an easy way to earn one continuing education hour towards annual BOC re-certification. Read the article *Heating Systems: Auditing for Efficiency* that begins on page 10 of the newsletter and take this short quiz on the material. Mail or fax your answers to our offices as directed at the end of the quiz. With a passing grade, we will apply one credit hour to your record. Note that there is also a brief polling question at the end of the quiz. Please let us know your thoughts and return with the quiz.**

### Check your answer(s):

- 1) How often should medium-to-large boilers be cleaned and inspected?
  - a. \_\_\_\_\_ twice yearly - pre and post heating season
  - b. \_\_\_\_\_ once yearly
  - c. \_\_\_\_\_ every other year
  
2. What are the two largest energy users in a facility's heating system?
  - a. \_\_\_\_\_ boilers and distribution systems
  - b. \_\_\_\_\_ boilers and control systems
  - c. \_\_\_\_\_ water treatment and control systems
  - d. \_\_\_\_\_ control and distribution systems
  
3. What is the best time of year to perform a walk-through audit?
  - a. \_\_\_\_\_ just prior to heating season
  - b. \_\_\_\_\_ during heating season
  - c. \_\_\_\_\_ at the close of heating season
  
4. The first step in a detailed system audit starts with the boilers and control system.
  - a. \_\_\_\_\_ TRUE      b. \_\_\_\_\_ FALSE
  
5. How often should a detailed audit be performed on a moderately sized building?
  - a. \_\_\_\_\_ yearly      c. \_\_\_\_\_ every other year
  - b. \_\_\_\_\_ twice a year      d. \_\_\_\_\_ every 3 to 5 years
  
6. As a rule, if the facility occupants do not register complaints and the boilers have been cleaned on a scheduled yearly basis, it is safe to assume that the heating system is running efficiently.
  - a. \_\_\_\_\_ TRUE      b. \_\_\_\_\_ FALSE
  
7. The first step in a detailed audit of a building's boiler(s) is a thorough review of the operating log(s).
  - a. \_\_\_\_\_ TRUE      b. \_\_\_\_\_ FALSE

8. Retrofit programs are the best option for improvement of a heating system
  - a. \_\_\_\_\_ TRUE      b. \_\_\_\_\_ FALSE
  
9. Even if you perform walk-through and detailed audits on a regular schedule, characteristics of the facility's heating systems do not change, for example system settings, once determined, will remain fixed measures.
  - a. \_\_\_\_\_ TRUE      b. \_\_\_\_\_ FALSE
  
10. Walk-through audits identify which of the following (check any applicable):
  - a. \_\_\_\_\_ areas of abnormally high maintenance frequency
  - b. \_\_\_\_\_ areas of heat extremes (over and under desired levels)
  - c. \_\_\_\_\_ number of boiler tubes that have been plugged for repair
  - d. \_\_\_\_\_ complaints by occupants in various areas

### End of Quiz

#### What's Your Opinion?

It has been suggested that it might be helpful to post job openings for facilities management, engineering and maintenance positions in the BOC newsletter and/or on the BOC web site. Would this be helpful to you? (Comments welcome as well.)

Newsletter	_____ yes	_____ no
Web site	_____ yes	_____ no
Both	_____ yes	_____ no

*We include a quiz like this in each of our bi-annual newsletters. Also, please remember to answer the poll question above. This can be returned with your quiz. To submit your completed quiz for re-certification credit (1 credit per quiz passed), please complete the following and either fax it to **206-292-4125** or mail it to: **BOC Quiz, NEEC Office, 157 Yesler Way, Ste 409; Seattle, WA 98104***

Your Name: \_\_\_\_\_

Title: \_\_\_\_\_

Employer: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_



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206-292-4125

Email:   
[Admin@theBOC.info](mailto:Admin@theBOC.info)

**Thank you to these sponsors of Building Operator Certification in California, Oregon & Washington:**

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Pacific Power • Puget Sound Energy  
Sacramento Municipal Utility District  
San Diego Gas & Electric • Seattle City Light  
Snohomish County PUD • Southern California Edison • Southern California Gas  
Tacoma Power • U.S. Dept. of Energy, Federal Energy Management Program

Editor and Contributing Writer: Christine Doonan  
Graphic Design: Thom Harris Design

**2006-2007 COURSE SCHEDULE \***

**BOC Level I Certification**

The Level I series comprises eighty hours of training and project work in building systems maintenance. Courses include: Building Systems Overview, HVAC Systems and Controls, Facility Electrical Systems, Indoor Air Quality, Environmental Health & Safety Regulations, Efficient Lighting Fundamental and Energy Conservation Techniques. See websites for cost and updated dates and locations.

**BOC Level II Certification**

Level II has seventy hours of training and project work in equipment troubleshooting and maintenance. Courses include four core classes and two supplemental classes. The four core classes include: Preventive Maintenance & Troubleshooting Principles, Advanced Electrical Diagnostics, HVAC Troubleshooting & Maintenance, HVAC Controls and Optimization. See websites for supplemental class topics, dates and locations.

**California – Level I** ——— [www.theBOC.info/ca](http://www.theBOC.info/ca)

- Downey.....Feb 2, '06 - Aug 3, '06
- Santa Rosa.....Mar 7, '06 - Sep 7, '06
- Stockton.....Mar 8, '06 - Sep 6, '06
- Sherman Oaks.....May 23, '06 - Nov 14, '06
- Ontario.....May 24, '06 - Nov 15, '06
- San Francisco.....Sep 12, '06 - Mar 13, '07
- San Jose.....Sep 13, '06 - Mar 14, '07
- San Diego.....Sep 27, '06 - Mar 21, '07
- Irwindale.....Sep 28, '06 - Mar 22, '07

**California – Level II**

- Irwindale.....Apr 12, '06 - Aug 30, '06
- San Francisco.....Apr 13, '06 - Aug 29, '06
- Irvine.....Oct 25, '06 - Mar 28, '07
- San Diego.....Oct 26, '06 - Mar 29, '06

**Oregon – Level I** ——— [www.nweei.org](http://www.nweei.org)

- Bend/Redmond.....Starts Spring '06 (dates TBA)

**Oregon – Level II**

- Portland.....Mar '06 - Aug '06 (dates TBA)

**Washington – Level I** ——— [www.theBOC.info/wa](http://www.theBOC.info/wa)

- Spokane.....April 4, '06 – Nov. 8 '06
- Renton.....Sept. 19 '06 – Mar 15, '07
- Everett.....Oct. 26, '06 – April 26, '07

**Washington – Level II**

- Everett.....May 4, '06 - Nov 16, '06
- Renton.....Oct 5, '06 - Mar 8, '07

\*As of publication date; see BOC website for up-to-date schedule information ([www.theBOC.info](http://www.theBOC.info)).