

LGEP

External Workshops Listing

Updated: 3/25/05

Title	Description	Start Date	Time	Location	Presenter/Moderator	Sponsor	Contact info	Registration/More Info
<b>Building Commissioning</b>								
Identifying and Assessing Common Retrocommissioning Opportunities	Topics will include utility consumption analysis and benchmarking, building documentation review, and site inspection and observation techniques. We will include staff interviews, noting obvious visible indicators, trending and data logging, and system configuration.	Wednesday, May 25, 2005	9:00 am to 4:30 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	David Sellers	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Retrocommissioning Workshop One	To be provided	Thursday, May 26, 2005	9:00 am to 4:30 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	David Sellers	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Exploring the New and Improved Functional Test Guide	The Functional Test Guide (a PIER and DOE sponsored tool targeted to provide technical guidance and support for the commissioning process) is currently undergoing a revision and expansion based on feedback from users of the first version. The new version will be released at the National Conference on Building Commissioning in early May 2005 and will include basic information on commissioning chilled water, heating water and condenser water systems, expanded content in the Integrated Operation chapter of the air handling system section and more functional tests. Owners, operators, and others associated with building operations will find the information to be of interest because the theory and techniques can be applied to the day-to-day operation and troubleshooting of building systems and continuous commissioning processes, enhancing the persistence of the benefits of new construction, and retrocommissioning processes.	Tuesday, June 14, 2005	9:00 am to 4:30 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	David Sellers	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Identifying and Assessing Common Retrocommissioning Opportunities	Topics will include utility consumption analysis and benchmarking, building documentation review, and site inspection and observation techniques. We will include staff interviews, noting obvious visible indicators, trending and data logging, and system configuration.	Wednesday, June 15, 2005	9:00 am to 4:30 pm	San Jose - Chamber of Commerce	David Sellers	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Retrocommissioning Workshop Two	To be provided	Thursday, June 16, 2005	9:00 am to 4:30 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	David Sellers	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Retrocommissioning Workshop Three	To be provided	Thursday, July 14, 2005	9:00 am to 4:30 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	David Sellers	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Collaborative for High Performance Schools Video Series	In these overviews, State Architect Stephan Castellanos introduces the purpose of this High Performance Schools video series and Commissioner Robert Parnell introduces the Collaborative for High Performance Schools (CHPS) and its resources.	any time		<a href="http://dsa.ishow.com/">http://dsa.ishow.com/</a>			<a href="http://dsa.ishow.com/">http://dsa.ishow.com/</a>	free, go to website and download video
<b>Energy Efficiency Planning and Design</b>								

Sustainable Design Concepts for Electrical and Lighting Systems	This presentation is for electrical engineers who are interested in designing sustainable electrical and lighting systems but are not sure where to start. David Kaneda, PE, AIA, will cover a range of topics aimed at introducing electrical engineers to the electrical and lighting aspects of sustainable design, including high efficiency light sources, various energy saving lighting controls, efficient lighting concepts, basic daylighting design, renewable energy sources, cogeneration, light pollution, scotopic lighting, and environmental pollution. He will highlight trends in electrical engineering and areas that need further development. The presentation will conclude with a discussion of useful resources and issues to be aware of when pursuing LEED, CHPS, and Savings by Design certification.	Tuesday, April 19, 2005	9:00 am to 4:30 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	David Kaneda	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Understanding Financial Analysis Methods for Photovoltaic (PV) Systems	Andy Black will provide an overview of solar electric (PV) system costs and approximate savings for commercial and residential systems. He will provide detailed information on each of the state and federal incentives available and how to apply and receive them. Incentives include rebates, tax credits, and depreciation. He will explain the choices for electric rate structures and the advantages of each relative to building load profile, system design, and site specifics (shading, orientation, etc). Andy will discuss the various methods of performing financial analyses in conjunction with the savings realized. Financial analysis methods presented will include Simple Payback, Internal Rate of Return (IRR), Cash Flow analysis, and appraisal resale value. He will provide interactive examples of residential, commercial, and non-taxable (nonprofit or government) sites, including discussion of the salient differences and advantages of each method. He will cover the assumptions and variables that affect each analysis, including inflation, maintenance expenses, and interest rates.	Thursday, April 21, 2005	9:00 am to 1:00 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	Andy Black	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
2005 Title 24 Nonresidential Building Envelope Requirements	<p>Martyn Dodd of EnergySoft, LLC will discuss nonresidential building envelope requirements affecting commercial new construction under California's 2005 Title-24 Energy Efficiency Standards, scheduled to take effect October 1, 2005. Attend this program to learn how the latest version of the Standards will affect building envelope design in your commercial new construction projects. Mr. Dodd will highlight aspects of the Standards that are new for 2005. Changes for 2005 are primarily aimed at further reducing peak electricity consumption and incorporating greater energy efficiency measures.</p> <p>Topics slated for discussion include:</p> <ul style="list-style-type: none"> <li>- Site Built Fenestration</li> <li>- Fenestration U-factors for Windows and Skylights</li> <li>- Fenestration Solar Heat Gain Coefficients (SHGC) for Windows and Skylights</li> <li>- Prescriptive limitations on glazing area</li> <li>- Insulation requirements: calculation of assembly R-Values and U-Factors for walls, roofs, dropped ceilings, demising walls, and heated floor slabs</li> <li>- New Cool Roof requirements</li> </ul>	Tuesday, April 26, 2005	9:00 am to 12:15 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103  Internet	Martyn Dodd	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>

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Affordable Green Design Strategies	The largest, privately funded LEED Gold-rated project in the country, Toyota's Headquarters, was constructed for the same price as a typical office campus. Steve Kendrick, Principal of LPA Inc., the architect design firm for the project, will present its main green elements including sustainable design and development, energy, indoor air quality, water, and one of the largest privately-owned	Tuesday, May 03, 2005	9:00 am to 12:00 pm	CSC 6301 S Street, Rubicon Meeting Room Sacramento, CA	Steve Kendrick	SMUD	Contact: Jodi Newman	<a href="https://usage.smud.org/yourAccount/ETCstudent/ClassDescription.asp?id=148">https://usage.smud.org/yourAccount/ETCstudent/ClassDescription.asp?id=148</a>
Title 24 In-Depth Review of Energy Standards Compliance	This half-day session will include a review of the new CF-1R, CF-4R and CF-6R documentation. The instructor will emphasize the EnergyPro and MICROPAS software documents. Each page of the form will be reviewed with special emphasis on the specific items that are essential for compliance with the Standards. The combination of the CF-1R and C-2R forms will be combined into a new CF-1R form that will be carefully reviewed. Be a step ahead by	Wednesday, May 04, 2005	9:00 am to 12:00 pm	Stockton--ETC	To be provided	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Public Sector ENERGY STAR Overview	This descriptive presentation offers a broad introduction to ENERGY STAR. Learn about what ENERGY STAR can do for your organization, including energy-efficient solutions that not only save money, but also protect the environment for future generations. During this 60-minute informative session you will learn about the strategy, products, services, and tools used to integrate ENERGY	Thursday, May 05, 2005	12:30 pm to 1:30 pm (Eastern Time)	On-line	Michael Segal		Register on Energy Star website	<a href="http://es.netspoke.com/attendee/conferenceDetails.asp?conferenceID=1119">http://es.netspoke.com/attendee/conferenceDetails.asp?conferenceID=1119</a>
2005 Title 24 Nonresidential Building Envelope Requirements	<p>Martyn Dodd of EnergySoft, LLC will discuss nonresidential building envelope requirements affecting commercial new construction under California's 2005 Title-24 Energy Efficiency Standards, scheduled to take effect October 1, 2005. Attend this program to learn how the latest version of the Standards will affect building envelope design in your commercial new construction projects. Mr. Dodd will highlight aspects of the Standards that are new for 2005. Changes for 2005 are primarily aimed at further reducing peak electricity consumption and incorporating greater energy efficiency measures.</p> <p>Topics slated for discussion include:</p> <ul style="list-style-type: none"> <li>- Site Built Fenestration</li> <li>- Fenestration U-factors for Windows and Skylights</li> <li>- Fenestration Solar Heat Gain Coefficients (SHGC) for Windows and Skylights</li> <li>- Prescriptive limitations on glazing area</li> <li>- Insulation requirements: calculation of assembly R-Values and U-Factors for walls, roofs, dropped ceilings, demising walls, and heated floor slabs</li> <li>- New Cool Roof requirements</li> </ul>	Tuesday, May 10, 2005	9:00 am to 12:15 pm	Stockton--ETC	Martyn Dodd	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>

Understanding Financial Analysis Methods for Photovoltaic (PV) Systems	Andy Black will provide an overview of solar electric (PV) system costs and approximate savings for commercial and residential systems. He will provide detailed information on each of the state and federal incentives available and how to apply and receive them. Incentives include rebates, tax credits, and depreciation. He will explain the choices for electric rate structures and the advantages of each relative to building load profile, system design, and site specifics (shading, orientation, etc). Andy will discuss the various methods of performing financial analyses in conjunction with the savings realized. Financial analysis methods presented will include Simple Payback, Internal Rate of Return (IRR), Cash Flow analysis, and appraisal resale value. He will provide interactive examples of residential, commercial, and non-taxable (nonprofit or government)	Tuesday, May 10, 2005	9:00 am to 1:00 pm	San Jose - Chamber of Commerce	Andy Black	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
2005 Title 24 Prescriptive Lighting Requirements	Upcoming 2005 Title 24 Standards are hot off the press with significant changes in the lighting sections! James R. Benya, PE, FIESNA, IALD, LC, a major player in the development of the lighting sections, will conduct this program. With the focus on the prescriptive requirements for lighting, he will compare the new 2005 standard to the current 2001 standard, discuss the 2005 changes in	Wednesday, May 11, 2005	1:00 pm to 4:00 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	James Benya	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Assessing the Future of Green Building	The rate of adoption of green building practices will be a function of the context that shapes political and public priorities. Dr. Ray Cole, an internationally recognized expert on environmental building practices, leads an exploration of the current context and then compares and contrasts several short and long-term scenarios--some certain, others more speculative--and their direct and indirect consequences for environmental progress in building design	Thursday, May 12, 2005	9:00 am to 1:00 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	Raymond Cole	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Principles of Energy	What is the difference between a kilowatt and a kilowatt-hour? Why is gas measured in therms? How do you determine if HVAC equipment is energy-efficient? Why is the customer still cold when the thermostat says 78 degrees F? If heat doesn't rise, why is the ceiling warm? Learn the answers to these questions and other	Tuesday, May 17, 2005	9:00 am to 1:00 pm	Stockton		PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Green Building Materials Selection	Lynn N. Simon, AIA, of Simon & Associates, Inc., Green Building Consultants, will discuss the selection and specification of environmentally preferable building materials: products selected to conserve resources, reduce pollution and waste, protect indoor air quality, or to meet other green criteria during their lifecycle. Lynn will discuss materials selection in the context of the USGBC's LEED-NC and LEED-CI rating system credits, and will also discuss green product certification standards. The presentation will cover green	Wednesday, May 18, 2005	9:00 am to 12:30 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	Lynn Simon	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
A Light Affair III	This event is co-sponsored with the Golden Gate Section of the Illuminating Engineering Society of North America and The Lighting Forum. Manufacturers will display and demonstrate the latest lighting products and technologies featured during LIGHTFAIR INTERNATIONAL 2005 held in New York City in April. Join us for an evening of refreshments and enlightenment.	Thursday, May 19, 2005	6:00 pm to 9:00 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103		PG&E		<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Designing High Performance Schools	The Collaborative for High Performance Schools (CHPS) has released Volumes I, II and III of the 2005 Best Practices Manual. A diverse panel of experts will discuss the effect of daylighting design on student productivity, high performance electric lighting, optimized HVAC systems, sustainable site planning and materials, how to	Tuesday, May 24, 2005	9:00 am to 3:00 pm	CSC 6301 S Street, Rubicon Meeting Room Sacramento, CA	Collaborative for High Performance Schools	SMUD	Contact: Jodi Newman	<a href="https://usage.smud.org/yourAccount/ETCstudent/ClassDescription.asp?id=149">https://usage.smud.org/yourAccount/ETCstudent/ClassDescription.asp?id=149</a>
Designing High Performance Schools	The Collaborative for High Performance Schools (CHPS) has released Volumes I, II and III of the 2005 Best Practices Manual. A diverse panel of experts will discuss the effect of daylighting design on student productivity, high performance electric lighting, optimized HVAC systems, sustainable site planning and materials, how to exceed 2005 Title 24 requirements, and available tools for design	Wednesday, May 25, 2005	9:00 am to 4:30 pm	CSC 6301 S Street Rubicon Meeting Room Sacramento, CA		PG&E	Contact: Jodi Newman	

Public Sector ENERGY STAR Overview	This descriptive presentation offers a broad introduction to ENERGY STAR. Learn about what ENERGY STAR can do for your organization, including energy-efficient solutions that not only save money, but also protect the environment for future generations. During this 60-minute informative session you will learn about the <u>strategy, products, services, and tools used to integrate ENERGY</u>	Wednesday, June 01, 2005	2:30 pm to 3:30 pm (Eastern Time)	On-line	Michael Segal	Energy Star	Register on Energy Star website	<a href="http://es.netspoke.com/attendee/conferenceDetails.asp?conferenceID=1120">http://es.netspoke.com/attendee/conferenceDetails.asp?conferenceID=1120</a>
Geoexchange Alternative	Geoexchange systems (ground source heat pumps) use the earth as a heat source in the winter and a heat sink in the summer. In California, geoexchange savings can exceed 50% for heating and 30% for cooling. Such systems have been successfully installed throughout Northern California and have proven to be energy efficient. <u>Take this opportunity to learn about ground source heat</u>	Wednesday, June 01, 2005	9:00 am to 5:00 pm	Stockton	Karl Fisher	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
New Collaborative for High Performance Schools (CHPS) Design Workshop	The Collaborative for High Performance Schools (CHPS) is pleased to release an updated version of the Best Practices Manual and a new design training! The goal of the CHPS workshop is to educate all attendees about the benefits of high performance school construction as defined by CHPS. The training will give those involved in school construction the tools and resources to design and build educational facilities that are safe, healthy, efficient and provide the amenities for a quality education. The training will begin with a general overview that identifies a CHPS classroom, notes the benefits to utilizing the design guidelines, and provides case study examples. <u>A panel of experts will present design strategies that are</u>	Tuesday, June 07, 2005	9:00 am to 4:30 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	James Benya	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Advanced Photovoltaics (PV) for Grid-Tied Applications	This one-day course is for individuals who may be investigating and evaluating photovoltaic (PV) applications for their own facilities or their clients' and want to learn more about the technical aspects of PV. The class is designed for individuals who are already aware of the various types of PV modules available and who already have a general understanding of siting and design issues useful in evaluating grid-connected PV projects from a project manager's, architect's, and/or owner's perspective. These topics will not be discussed in this class. In addition, we will not cover benefits and costs of PV and the current financial incentives available in this class. <u>If you are interested in this information, please register for</u>	Thursday, June 09, 2005	9:00 am to 4:30 pm	San Jose - Chamber of Commerce	Kristopher Sutton	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Evaluating Combined Heat and Power (CHP) Applications	This one-day course is for individuals who may be investigating and evaluating Combined Heat and Power (CHP) applications for their own facilities or their clients' facilities and want to learn more about CHP system analysis. The course is primarily directed at CHP <u>applications for commercial buildings and industrial process</u>	Thursday, June 16, 2005	9:00 am to 4:30 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	Ronald Ishii	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Green Building Materials Selection	Lynn N. Simon, AIA, of Simon & Associates, Inc., Green Building Consultants, will discuss the selection and specification of environmentally preferable building materials: products selected to conserve resources, reduce pollution and waste, protect indoor air quality, or to meet other green criteria during their lifecycle. Lynn will discuss materials selection in the context of the USGBC's LEED-NC and LEED-CI rating system credits, and will also discuss green <u>product certification standards. The presentation will cover green</u>	Wednesday, June 22, 2005	9:00 am to 12:30 pm	San Jose - Chamber of Commerce	Lynn Simon	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Sustainable Site Planning and Landscape Design Workshop	Drawing on the expertise of three instructors of varied backgrounds, this full day class for designers provides an exploration of sustainability as it relates to site design issues. Cheryl Barton of the Office of Cheryl Barton provides a landscape architect's perspective on the topic. Tom Sweet of URS Corporation shares his civil engineering expertise as it relates to site planning and water management concerns. The Energy Center's Ryan Stroupe examines the impact of site and climate on building energy use and occupant comfort. The class will end with a site design exercise in which teams will analyze the site conditions and develop a design proposal for an urban open space. The exercise at the end of the class allows the attendees to immediately apply what they have learned. Working in small groups, each team will be asked to	Tuesday, June 21, 2005	9:00 am to 4:30 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	Ryan Stroupe Cheryl Barton Tom Sweet	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>

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Implementing Energy Efficiency	Discuss options to survey and assess the energy usage at your facility, develop a plan for implementing energy efficiency projects that are appropriate and economically viable, and measure the savings achieved. Determine how to move from the general checklist or screening audit that identifies efficiency measures, through evaluation and cost-benefit data, to an in-depth feasibility study, which includes life cycle analysis of equipment replacement or upgrades. This class covers the design criteria to get a productive	Thursday, July 21, 2005	9:00 am to 4:00 pm	Campbell		PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
<b>HVAC/Motors/Pumps</b>								
Title 24 Duct Installation Standards and Diagnostic Testing	This class includes a review of the current Title 24 New Construction Standards for airtight ducts; test and documentation requirements; and hands-on experience operating duct tester, flow hood, digital manometer, and blower door equipment. The instructor will provide a full explanation of UL181 requirements, approved materials, installation criteria, sealing and testing requirements, and duct	Tuesday, April 19, 2005	9:00 am to 5:00 pm	Fresno--Johnstone Supply	To be provided	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Compressorless Cooling	Come hear Steve Brennan of the nationally acclaimed Davis Energy Group "breeze" through the details on how to make compressorless cooling technologies work for your customers! Learn the details on: whole house fans, single-stage direct evaporative cooling, indirect/direct two-stage evaporative cooling, residential economizers, and utility rebates for whole house fans and	Tuesday, April 19, 2005	9:00 am to 5:00 pm	Stockton	Steve Brennan	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Pool Filtration at Half the Cost	This class focuses on pool pumping technology that can reduce a pool owner's filtration costs by 50%. Learn how to keep your customers happy, how to save them a bundle in the process, and how to give them a better option than resetting their timers. Yes, it is possible to have clean pools and big dollar savings!	Wednesday, April 20, 2005	9:00 am to 5:00 pm	Stockton	To be provided	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Proper Procedures for Charging Air Conditioners and Heat Pumps	Terry Norris of Advanced Energy Corporation will provide HVAC contractors a detailed review of checking refrigerant charge and airflow for all residential refrigerant system types. This is a valuable opportunity--please don't miss it!	Tuesday, April 26, 2005	9:00 am to 5:00 pm	Fresno--Johnstone Supply	Terry Norris	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>

Packaged HVAC: Economizers, Compressors, Analysis	In this full-day seminar, we take a close look at this prevalent yet problematic equipment. The beginning of the class is an overview of the components of packaged units: compressors, condenser coils, evaporator coils, filters, economizer dampers, heating coils, fans, electric power supply, natural gas infrastructure and controls. The code compliant and optimal operation of each will be noted. Special attention is paid to the expected performance of airside economizers, compressor operation and control sequencing. As a measurement class, attendees will be exposed to tools and software that can help building operators and service technicians understand the operation of packaged units. We will provide training on the programming and data retrieval procedures for a variety of	Tuesday, April 26, 2005	9:00 am to 4:00 pm	Santa Rosa	Ryan Stroupe / Christine Condon	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Reducing Commercial Pool Energy Cost	Electricity for filtration pumping is a major cost for large commercial and smaller homeowner association or multifamily swimming pools. In this class we will review major swimming pool energy uses, including filtration pumping, water heating, automatic cleaning, and lighting systems. The emphasis will be on choices that can improve energy efficiency and reduce cost, consistent with maintaining compliance with health department requirements. We will emphasize gaining a conceptual (non-analytic) understanding of basic hydraulics, pumps, electric motor, and heating system efficiency. Those with interest in a specific pool should bring as much information about it as possible (size, volume, pump, HP)	Wednesday, April 27, 2005	9:00 am to 1:00 pm	Campbell Community Center, 1 W Campbell Ave Campbell, CA 95008-1004	To be provided	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Proper Procedures for Charging Air Conditioners and Heat Pumps	Terry Norris of Advanced Energy Corporation will provide HVAC contractors a detailed review of checking refrigerant charge and airflow for all residential refrigerant system types. This is a valuable opportunity--please don't miss it!	Thursday, April 28, 2005	9:00 am to 5:00 pm	Bakersfield--Veterans Hall	Terry Norris	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Title 24--Duct Installation Standards & Diagnostic Testing	This class includes a review of the current Title 24 New Construction Standards for airtight ducts; test and documentation requirements; and hands-on experience operating duct tester, flow hood, digital manometer, and blower door equipment. The instructor will provide a full explanation of UL181 requirements, approved materials, installation criteria, sealing and testing requirements, and duct	Wednesday, May 04, 2005	9:00 am to 5:00 pm	Stockton	To be provided	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
HVAC Energy Efficiency	Bill Tschudi, P.E., from Lawrence Berkeley National Laboratory will offer an update on activities being investigated under the California Energy Commission, Public Interest Energy Research (PIER) Project. Attendees will learn best practices, strategies, and practical measures to improve energy efficiency in data centers and clean rooms.	Thursday, May 05, 2005	8:00 am to 10:00 am	CSC 6301 S Street, Rubicon Meeting Room Sacramento, CA	Bill Tschudi, P.E., from Lawrence Berkeley National Laboratory	SMUD	Contact: Thomas Dean	<a href="https://usage.smud.org/yourAccount/ETCstudent/ClassDescription.asp?id=158">https://usage.smud.org/yourAccount/ETCstudent/ClassDescription.asp?id=158</a>
Title 24--Equipment Sizing and Selection (ACCA Manual J)	In this course we will review ACCA load calculation and equipment selection process, room-by-room loads that lead into Manual D Duct Design (compliance credit component), safeguards for "right" sizing while avoiding undersizing, and ACCA-approved software. This course is a prerequisite for Title 24 - Zoning Design	Thursday, May 05, 2005	9:00 am to 5:00 pm	Stockton	To be provided	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Natural Gas Systems	The class will focus mainly on the combustion process, the furnace, package units, ventilation and heat recovery, and boilers for space and water heating. It will include strategies to reduce energy use in space heating and air-handling units with heating coils, their heating distribution systems, controls and energy management systems. Discuss tips for the building envelope and get the latest information on incentive programs available to cut the cost of your facilities	Thursday, May 12, 2005	9:00 am to 4:00 pm	Stockton		PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Proper Procedures for Charging Air Conditioners and Heat Pumps	Terry Norris of Advanced Energy Corporation will provide HVAC contractors a detailed review of checking refrigerant charge and airflow for all residential refrigerant system types. This is a valuable opportunity--please don't miss it!	Tuesday, May 17, 2005	9:00 am to 5:00 pm	Stockton--ETC	Terry Norris	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
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Proper Procedures for Charging Air Conditioners and Heat Pumps	Terry Norris of Advanced Energy Corporation will provide HVAC contractors a detailed review of checking refrigerant charge and airflow for all residential refrigerant system types. This is a valuable opportunity--please don't miss it!	Thursday, May 19, 2005	9:00 am to 5:00 pm	Santa Rosa	Terry Norris	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Title 24 Nonresidential HVAC Measures	Mark Hydeman, PE, will present the new requirements of Title 24 for 2005, including performance verification of controls, limitations on air-cooled chillers, and variable-flow hydronic system designs. New Title 24 Standards include documentation forms that are significantly different than those required under previous versions of the code. This seminar will also cover details of the tests that are covered by the forms, what needs to be reviewed/tested and by whom.	Thursday, May 19, 2005	8:30 am to 3:30 pm	CSC 6301 S Street, Rubicon Meeting Room Sacramento, CA	Mark Hydeman	SMUD	Contact: Thomas Dean	<a href="https://usage.smud.org/yourAccount/ETCstudent/ClassDescription.asp?id=159">https://usage.smud.org/yourAccount/ETCstudent/ClassDescription.asp?id=159</a>
Title 24 HVAC System Change Outs: Duct Testing Requirements for Residential and Nonresidential	This half-day session will include an explanation of the upcoming duct testing rules for change-outs of HVAC systems and a demonstration of a duct test. The demonstration will focus on the relatively easy test to perform to assist participants in preparing to comply with the new Title 24 Standards effective October 1, 2005.	Tuesday, May 24, 2005	9:00 am to 12:00 pm	Stockton--ETC	Doug Beaman	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Title 24--Duct Installation Standards & Diagnostic Testing	This class includes a review of the current Title 24 New Construction Standards for airtight ducts; test and documentation requirements; and hands-on experience operating duct tester, flow hood, digital manometer, and blower door equipment. The instructor will provide a full explanation of UL181 requirements, approved materials, installation criteria, sealing and testing requirements, and duct	Tuesday, June 07, 2005	9:00 am to 5:00 pm	Sacramento	To be provided	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Reducing Commercial Pool Energy Cost	Electricity for filtration pumping is a major cost for large commercial and smaller homeowner association or multifamily swimming pools. In this class we will review major swimming pool energy uses, including filtration pumping, water heating, automatic cleaning, and lighting systems. The emphasis will be on choices that can improve energy efficiency and reduce cost, consistent with maintaining compliance with health department requirements. We will emphasize gaining a conceptual (non-analytic) understanding of basic hydraulics, pumps, electric motor, and heating system efficiency. Those with interest in a specific pool should bring as much information about it as possible (size, volume, pump HP, motor type, water flow rates, heater type, chemical treatment system, etc.) for more detailed work with the instructor.	Wednesday, June 08, 2005	9:00 am to 1:00 pm	Hodells, 5917 Knudsen Dr Bakersfield, CA 93308-2946	To be provided	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Title 24--Equipment Sizing and Selection (ACCA Manual J)	In this course we will review ACCA load calculation and equipment selection process, room-by-room loads that lead into Manual D Duct Design (compliance credit component), safeguards for "right" sizing while avoiding undersizing, and ACCA-approved software. This course is a prerequisite for Title 24 - Zoning Design	Wednesday, June 08, 2005	9:00 am to 5:00 pm	Sacramento	To be provided	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
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Energy Management Systems and Controls	Seminar attendees will hear a practical, systematic approach for identifying, designing, and planning the implementation of an energy management control system (EMS) to achieve maximum savings with currently available technologies. This course uses the example of heating and air conditioning (HVAC) system equipment managed by an EMS and describes current control methods, alternative levels of control, specific control points and techniques for air systems, direct expansion package units, central refrigeration, hot water boiler plants, and lighting systems. Beyond a review of common HVAC configurations and fundamentals of how an EMS works, the class includes an overview of communication networks, equipment studies, and a cost-benefit analysis.	Thursday, June 30, 2005	9:00 am to 4:00 pm	Vallejo	David Wylie	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Motors and ASDs	Explore the principles of electric motors and the benefits of adjustable speed drives. The class includes a comparison of standard and rewind motors to new energy-efficient motors, and the criteria for making viable economic decisions in selecting energy-efficient motors. Special attention is given to how variable speed drives result in lower energy costs, extended equipment life and a reduction in overall maintenance costs. We discuss nameplate data, high-efficient motors load analysis, record keeping, motor maintenance, and motor replacement program development. Motor Master+® software (tips and information) is presented along with the	Friday, July 22, 2005	9:00 am to 4:00 pm	San Ramon		PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
<b>Energy Efficiency Project Financing</b>								
Money for your Energy Upgrades	In today's tight economy, operating and capital budgets are being reduced despite increasing infrastructure needs. This 60-75 minute session focuses on using operating budgets as a potential source of "revenue" to pay for energy efficiency projects. Public sector financing options are discussed, including an overview of tax-exempt lease purchase agreements and energy service performance contracts. In addition, the Cash Flow Opportunity Calculator (CFO Calculator), a model that calculates the costs of delaying energy efficiency improvements, is introduced.	Thursday, June 02, 2005	1:00 pm to 2:00 pm (Eastern Time)	On-line	Neil Zobler	Energy Star	Register on Energy Star website	<a href="http://es.netspoke.com/attendee/conferenceDetails.asp?conferenceID=1123">http://es.netspoke.com/attendee/conferenceDetails.asp?conferenceID=1123</a>
<b>Facility Tracking/Energy Accounting</b>								
EnergyPro	EnergyPro is a comprehensive energy analysis program that performs multiple calculations and energy modeling for California Title 24 energy analysis of buildings, including both prescriptive and performance based approaches.	Thursday, April 28, 2005	8:00 am to 5:00 pm	CSC 6301 S Street Rubicon Meeting Room Sacramento, CA	Martyn Dodd		Contact: Thomas Dean	
EnergyPro	EnergyPro is a comprehensive energy analysis program that performs multiple calculations and energy modeling for California Title 24 energy analysis of buildings, including both prescriptive and performance based approaches.	Thursday, May 12, 2005	8:00 a.m.-5:00 p.m.	CSC 6301 S Street Rubicon Meeting Room Sacramento, CA	Martyn Dodd		Contact: Jodi Newman	
Public Sector Benchmarking	This training teaches you how to use ENERGY STAR's portfolio manager to benchmark your properties' energy performance. Use this Web-based analytical tool to track the energy consumption of an individual building or an entire portfolio.  You will learn how to collect and input relevant energy consumption data and how to interpret the Energy Performance Rating, used to compare energy performance within your own portfolio and against national averages. The session will also include information on the relationship between energy and financial performance, as well as	Thursday, May 19, 2005	2:30 pm to 3:30 pm (Eastern Time)	On-line	Steve Jurovics	Energy Star	Register on Energy Star website	<a href="http://es.netspoke.com/attendee/conferenceDetails.asp?conferenceID=1128">http://es.netspoke.com/attendee/conferenceDetails.asp?conferenceID=1128</a>

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Basics of Electrical Concepts and Measuring Energy Savings	See PEC website	Tuesday, June 07, 2005	9:00 am to 4:00 pm	Woodward Park Library, 944 E Perrin Ave Fresno, CA 93720-5011	Ryan Stroupe	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
<b>Facility Tracking/ Operations &amp; Maintenance</b>								
New Developments in Demand Response (DR)	Demand Response is a set of activities to reduce or shift electricity use to improve the electric grid reliability and manage electricity costs. In this class we will focus on Automated Demand Response in which electric loads are shed automatically based on a remote signal. Although participants can choose to opt out if desired, Automated Demand Response systems can be designed to operate without human intervention. Speaker David Watson will discuss results from field tests conducted by Lawrence Berkeley National Laboratory in 2003 and 2004.	Thursday, April 28, 2005	9:00 am to 12:00 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103 / Also offered same day & time on Internet	Dave Watson	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
Building Performance Investigations for Architects, Engineers, and Facility Operators	The primary objective of the workshop is to provide experience in the use of relatively low-cost instrumentation (coupled with a structured methodology) to better understand building system and component performance. Participants will be taught appropriate use of such instrumentation and methods to increase confidence in their ability to address building performance concerns. Students will <u>develop a mini-case study to use as a template for future</u>	Tuesday, May 17, 2005	8:30 am to 4:30 pm	Pacific Energy Center 851 Howard Street San Francisco, CA 94103	Alison Kwok / Walter Grondzik	PG&E	Register on Pacific Energy Center website	<a href="http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults">http://www.pge.com/education_training/classes/energy_efficiency/index.jsp#classresults</a>
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