Smart Schools Symposium:
Energy Retrofits & New Funding Options

A one-day event to improve the efficiency and performance of California’s K–12 and community college facilities

September 5, 2013
UC Davis Conference Center
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Expanding the boundaries of lighting™
Welcome

Thank you for being part of the Smart Schools Symposium. Funding from Proposition 39 will soon allow California’s K–12 schools and community colleges to make some long-overdue improvements to classrooms and other facilities.

As one of the most sustainable campuses in the nation and a leading source for research and innovations in energy efficiency and environmental policies, UC Davis is committed to helping California schools take full advantage of this opportunity.

Following best practices can truly transform the comfort, beauty, efficiency and financial health of your schools. This forum is designed to provide the information and resources needed to plan, finance and carry out successful retrofits and renovation projects.

The tools you will gather here today will help you make decisions that result in deep energy savings, deep cost savings and profound benefits to your students, staff and faculty—for years to come.

The case studies, programs and technologies you will learn about today will provide plenty of practical direction for your school improvement projects; still, we recognize that this symposium is just the beginning.

As you prepare to begin work, we want to continue to provide you with the answers, resources and support you need to succeed. It is our sincere hope that the colleagues you meet, the organizations you connect with, and the professional relationships you begin building here today will continue to offer guidance, support and solutions in the months and years to come.

Thank you for participating in this unique event and for your commitment to improving both the quality and the sustainability of California’s schools.

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California’s K–12 schools spend an estimated $700 million total each year on energy expenses—about the same amount spent on books and supplies.

*California Energy Commission Consumer Energy Center: Energy Tips for Schools*

With the passage of Proposition 39, California schools may soon have new opportunities to make energy efficiency improvements. With entire buildings in need of attention, what should be addressed first?

Today’s symposium is designed to help you gather the information, expertise and insights you will need as school leaders to make the most of every dollar invested.

You will discover technologies designed to make campuses and classrooms healthier, more comfortable and more efficient. You will also learn about innovative financing options and receive expert guidance and support from every corner—public agencies, utilities, corporate partners, nonprofit organizations, and colleagues.
## Agenda

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<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
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<td>8:30 am – 9:00 am</td>
<td>Registration, Coffee &amp; Light Refreshments, Exhibitor Networking</td>
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<tr>
<td>9:00 am – 9:10 am</td>
<td>Welcome/Opening</td>
<td>Konstantinos Papamichael Co-Director CLTC, UC Davis</td>
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<tr>
<td>9:10 am – 9:15 am</td>
<td>Introduction of Keynote Speaker</td>
<td>Tim Hogan VP – Education Market Acuity Brands</td>
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<tr>
<td>9:15 am – 9:35 am</td>
<td>Keynote Address</td>
<td>Kate Gordon VP &amp; Director, Energy &amp; Climate Program Next Generation</td>
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<tr>
<td>9:35 am – 10:55 am</td>
<td>Financing Retrofits for K–12 Schools &amp; Community Colleges</td>
<td>Julia Burrows (moderator) President &amp; Executive Director Greenwise Joint Venture</td>
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<td></td>
<td>Proposition 39: Implementing California’s Clean Energy Jobs Act</td>
<td>Marcia Smith Manager, Special Projects Office California Energy Commission</td>
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<td>Property Assessed Clean Energy (PACE) &amp; SB 555</td>
<td>Stacey Lawson CEO Ygrene Energy Fund</td>
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<td>SMUD Programs and Plans for K–12 &amp; Community College Facilities</td>
<td>Elisabeth Brinton Chief Customer Officer Sacramento Municipal Utility District</td>
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<td>PG&amp;E Support of Schools &amp; Proposition 39</td>
<td>Maril Pitcock Director Pacific Gas and Electric Company</td>
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<td>11:20 am – 12:10 pm</td>
<td>Technical Keynote Talks</td>
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<td>Relighting Schools to Achieve Deeper Energy Savings &amp; Greater Benefits</td>
<td>Konstantinos Papamichael Co-Director CLTC, UC Davis</td>
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<td>What Are the Unique Challenges for HVAC in Schools?</td>
<td>Mark Modera Director WCEC, UC Davis</td>
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<td>Water Conservation &amp; Energy Efficiency</td>
<td>Frank Loge Director CWEE, UC Davis</td>
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<tr>
<td>12:10 pm – 12:20 pm</td>
<td>Afternoon Overview and Exhibitor Thank You</td>
<td>Kelly Cunningham</td>
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<td>Time</td>
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<tr>
<td>12:20pm – 1:30pm</td>
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<td>1:30 pm – 2:30 pm</td>
<td>Concurrent Workshops: Session #1 (details on pg.8)</td>
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<td>Lighting Conference Room 1</td>
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<td>HVAC Conference Room 2</td>
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<td>1:30 pm – 2:30 pm</td>
<td>Exhibitor Information / Vendor Match</td>
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<td>Acuity Brands, VELUX/TLC Integration Systems, Trane, Chevron, California Conservation Corps</td>
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<td>2:30 pm – 2:45 pm</td>
<td>Afternoon Break</td>
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<td>2:45 pm – 3:45 pm</td>
<td>Concurrent Workshops: Session #2 (details on pg.8)</td>
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<td>Water Efficiency Conference Room 2</td>
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<td>2:45 pm – 3:45 pm</td>
<td>Strategic Planning for Successful Projects</td>
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<td>Moderated by Julia Burrows (Greenwise Joint Venture)</td>
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<td>Bright Schools</td>
<td>Karen Perrin</td>
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<td>Energy Specialist, Bright Schools Program</td>
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<td>Operations Report Card</td>
<td>Ariel Dekovic</td>
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<td>Case Study: Revitalizing The Met Charter School, Sacramento City USD</td>
<td>Paul Breckenridge</td>
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<td>3:45 pm – 4:00 pm</td>
<td>Closing Comments</td>
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<td>Julia Burrows</td>
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<td>Greenwise Joint Venture</td>
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<tr>
<td>4:30 pm – 5:30 pm</td>
<td>Tour of CLTC or WCEC (optional)</td>
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Partnering for Progress

Chevron Energy Solutions is proud to sponsor the Smart Schools Symposium. Chevron Energy Solutions brings energy-saving programs to schools and colleges across the U.S. This means lower costs, and more money for education. Because better schools will help today’s students solve tomorrow’s energy challenges.

To learn more, visit chevronenergy.com
## Concurrent Workshops

### Concurrent Workshops: Sessions #1

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<td><strong>HVAC #1</strong></td>
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<td>Paul Fortunato (moderator) WCEC, UC Davis</td>
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<td>Case Study: Hillview Middle School</td>
<td>Ahmad Sheikholeslami (moderator) Director of Facility Planning &amp; Construction, Menlo Park City School District</td>
<td>Conference Rm 2</td>
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<td>2:05 pm – 2:30 pm</td>
<td><strong>Best Practices for K-12 Lighting Upgrades</strong></td>
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<td><strong>Industry Regulatory Update</strong></td>
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<td>Conference Rm 1</td>
<td>Pedram Arani (moderator) CLTC, UC Davis</td>
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<td>2:55 pm – 3:20 pm</td>
<td><strong>Water Conservation &amp; Energy Efficiency #1</strong></td>
<td>Conference Rm 2</td>
<td>Edward Spang (moderator) CWEE, UC Davis</td>
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<tr>
<td>Case Study: American Canyon HS, Napa Valley USD</td>
<td>Aaron Jobson (moderator) AIA, LEED AP Quattrocchi Kwok Architects</td>
<td>Water Conservation &amp; Energy Efficiency #1 Conference Rm 2</td>
<td>Challenges and Opportunities for Reducing Water Use in Schools Amy Marie Talbot Water Efficiency Project Manager Regional Water Authority</td>
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<tr>
<td>3:20 pm – 3:45 pm</td>
<td><strong>Case Study: Laney College Classroom Lighting Controls Retrofit</strong></td>
<td>Conference Rm 1</td>
<td>Charles Neal (moderator) Energy &amp; Environmental Sustainability Manager Peralta Community College District</td>
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<td><strong>Project Green: Student-Driven Water Efficiency Programs</strong></td>
<td>Conference Rm 2</td>
<td>Farah Wissinger (moderator) Green School Fellow Sacramento City Unified School District</td>
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<td><strong>Auditing School Facilities for High-Value Water Conservation Opportunities</strong></td>
<td>Conference Rm 2</td>
<td>Steven Chov (moderator) CLIA, CII Program Manager WaterWise Consulting, Inc.</td>
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<td><strong>Getting the Job Done</strong></td>
<td>Conference Rm 2</td>
<td>Michelle Maddaus, P.E. President, Maddaus Water Management</td>
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Conference Center Map

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6 | Full Spectrum Solutions / EverLast Lighting
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Entrance Displays
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SMUD

Osram Sylvania

Siemens

Aztec Solar

Transformation Wave

CPS

Stafford King Wiese Architects
Presentations

FINANCING RETROFITS FOR K–12 SCHOOLS AND COMMUNITY COLLEGES

Julia Burrows (Moderator)
President & Executive Director
Greenwise Joint Venture

Proposition 39: Implementing California’s Clean Energy Jobs Act
Marcia Smith, Manager, Special Projects Office, California Energy Commission

Learn about Proposition 39, the California Clean Energy Jobs Act, including the strategies and schedule for implementing the program.

Property Assessed Clean Energy (PACE) & SB 555
Stacey Lawson, CEO, Ygrene Energy Fund

Discover how long-term, low-interest financing, made possible through PACE and under SB 555, can support energy efficiency upgrades.

SMUD Programs and Plans for K–12 and Community College Facilities
Elisabeth Brinton, Chief Customer Officer, SMUD

Learn about SMUD’s incentive programs, Behavior Modification Program, and Smart Grid Grants, as well as local school districts’ success stories, SMUD’s training programs to engage at-risk youth in energy-efficiency training, and more.

Pacific Gas and Electric Support of Schools and Proposition 39
Maril Pitcock, Director of Energy Efficiency Products & Programs, Pacific Gas and Electric Company

Pacific Gas and Electric Company has a number of programs and tools for schools making energy efficiency improvements and undertaking clean energy projects.

This presentation will cover Pacific Gas and Electric Company’s strategy to continue supporting its schools customers and ensure that Proposition 39 is as successful as possible.

TECHNICAL KEYNOTES AND Q&A

Kelly Cunningham (Moderator)
Outreach Director, CLTC, UC Davis

Daylighting and Electric Lighting Opportunities for Deeper Energy Savings
Konstantinos Papamichael
Co-director, CLTC, UC Davis

What Are the Unique Challenges for HVAC in Schools?
Mark Modera
Director, WCEC, UC Davis

Water & Energy Efficiency
Frank Loge
Director, CWEE, UC Davis

STRATEGIC PLANNING FOR SUCCESSFUL PROJECTS

Julia Burrows (Moderator)
President & Executive Director
Greenwise Joint Venture

Bright Schools
Karen Perrin, Energy Specialist, Bright Schools Program, California Energy Commission

Learn about the Bright Schools Program, which aids K–12 schools and districts in identifying energy savings opportunities.
Operations Report Card
Ariel Dekovic, Senior Program Manager, Collaborative for High Performing Schools (CHPS)
Learn how to create a data-driven capital improvement plan based on the actual performance of your campus using the CHPS Operations Report Card™ (ORC). This discussion will cover how to use the Web-based program to benchmark school performance and develop an outcomes-oriented improvement plan that will enhance learning environments and save operating dollars.

Streamlining Plans for the Division of the State Architect
Bob Chase, Deputy State Architect, State of California
Hear about the review and approvals process for Prop 39 projects, with explanation of how the Division of the State Architect (DSA) plans to expedite energy efficiency improvement projects. Learn how certain exceptions and exemptions, allowed by state statutes and regulations, can eliminate DSA review and help move Prop 39 projects forward.

Case Study: Revitalizing The Met Charter School, Sacramento City Unified School District
Paul Breckenridge, Principal Architect, Community Architecture
This discussion will cover the holistic approach taken to renovating The Met, Sac City USD’s first campus to be CHPS verified for high performance. Learn how The Met’s existing building envelope was renovated to optimize daylighting, with advanced electric lighting controls and improved HVAC efficiency. The grants and funding strategies that made it possible will also be discussed.

LIGHTING SESSION #1:
BEST PRACTICES
Conference Room 1
Pedram Arani (Moderator)
Associate Development Engineer, CLTC, UC Davis

Case Study: Hillview Middle School
Ahmad Sheikholeslami, Director of Facilities and Operations, Menlo Park City School District
Erwin Lee, Principal Architect, DLM Architecture
Learn about the energy-efficient daylighting and lighting controls systems implemented in the new Hillview Middle School in Menlo Park. The two-story school, which serves 1,000 students, opened in September 2012. Hear what went into the planning stage of the project, how energy models were developed, design techniques used to increase daylighting while balancing heat gain, and electric lighting controls selected. Energy savings, costs and lessons learned after the first year of operation will also be addressed.

Best Practices for K–12 Lighting Upgrades
Tim Hogan, Vice President, Education Market, Acuity Brands
Learn how to determine which parts of school campuses will produce the greatest energy savings from lighting system upgrades and how to conduct a total lifecycle cost assessment on proposed measures. Discussion of recent projects will illustrate the application of best practices.

Please Note: While every effort has been made to ensure the accuracy of the information contained in this program, UC Davis and related research centers cannot be held liable for possible errors or omissions and reserve the right to edit and/or delete copy.
HVAC EFFICIENCY
Conference Room 2
Paul Fortunato (Moderator)
Outreach Coordinator, WCEC

Industry Regulatory Update
Richard Lord, Carrier Fellow, Carrier Corporation
Learn about changes in equipment efficiency requirements, including requirements for variable speed fans and economizers, and how these can impact performance. Concepts like energy recovery and regulations on combined efficiency will also be discussed, as will future trends in regulatory requirements.

Approaches to HVAC Improvements in K–12 Schools
David Casentini, Vice President of Programs, Resource Solutions Group
This session will provide a better understanding of the challenges K–12 schools face in identifying projects and securing resources to implement effective and comprehensive HVAC operational improvements. Its aim is to help those attending develop an evaluation and implementation strategy to pursue best-practice improvements, including—and beyond—standard hardware upgrades.

LIGHTING SESSION #2: DAYLIGHTING & CONTROLS
Conference Room 1
Pedram Arani (Moderator)
Associate Development Engineer, CLTC, UC Davis

Daylighting a Green High School Case Study: American Canyon HS, Napa Valley USD
Aaron Jobson, Principal Architect, Quattrocchi Kwok Architects
This case study presentation will examine the varied approaches used to create balanced daylighting throughout American Canyon High School (American Canyon, CA). The presentation will cover the various architectural and lighting design approaches used to daylight the many different spaces on this new high school campus, as well as the BIM tools used to develop them.

Case Study: Laney College Classroom Lighting Controls Retrofit
Charles Neal, Energy & Environmental Sustainability Manager, Peralta Community College District
Wireless lighting controls installed in 39 Laney College classrooms reduced energy use and carbon emissions by 54 percent, saving the campus $17,500 annually. This presentation will cover the integrated classroom lighting system (ICLS) installed, its advantages for faculty and maintenance staff, funding and financing sources and strategies, and lessons learned.
**Challenges and Opportunities for Reducing Water Use in Schools**
Amy Marie Talbot, Water Efficiency Project Manager, Regional Water Authority

Water efficiency efforts provide an excellent opportunity to educate children on the benefits of reduced water use. This presentation will focus on related case studies from the Sacramento region and will also provide a realistic overview of some of the challenges schools and utilities have faced along the way.

**Project Green: Student-Driven Water Efficiency Programs**
Farah Wissinger, Environmental Sustainability Manager, Sacramento City Unified School District

Project Green gives the students of Sacramento City Unified School District an opportunity to have a real and lasting impact on the schools they occupy on a daily basis. The program offers student research opportunities and implements current recommendations for capital improvement projects that are then implemented with funding from the 2012 bond measure.

**Auditing School Facilities for High-Value Water Conservation Opportunities**
Steven Chov, Director, Envirosmart Solutions Group, WaterWise

This presentation will include details about water use at schools of all types, ranging from elementary schools to colleges. It will provide information on water use trends found at each type of school and what areas typically consume the most water. It will also cover potential savings available to schools making retrofits with high-efficiency water use fixtures.

**Getting the Job Done — Implementing Water Conservation Projects at Schools**
Michelle Maddaus, P.E.
President, Maddaus Water Management

Based on 10 years of experience working with schools in California, this presentation will cover: which types of technology are really needed and work well at schools, funding strategies, and tips for working with facilities to get equipment replaced. The presentation will include real case study data.
Speakers

WELCOMING & KEYNOTE REMARKS

Konstantinos Papamichael
Professor & Co-Director of CLTC
UC Davis

Konstantinos Papamichael is a professor in the Department of Design and co-director of the California Lighting Technology Center at UC Davis. He holds an Architectural Engineering degree from the Aristotelian University of Thessaloniki, Greece, a master’s degree in Architecture from Iowa State University, and a Ph.D. in Architecture from UC Berkeley. Dr. Papamichael is a leading authority on daylight harvesting and automated building energy management. He has spent over 30 years developing energy efficiency strategies and technologies for buildings.

Kate Gordon
Vice President & Director
Energy & Climate Program
Next Generation

Kate Gordon is a nationally recognized expert on the intersection of clean energy and economic development, most recently as Vice President for Energy and Environment at the Center for American Progress (CAP) in Washington D.C. Ms. Gordon leads the Energy & Climate team at Next Generation, developing policies and communications strategies to move the U.S. to a clean energy economy. She earned a J.D. and master’s degree in city planning from UC Berkeley and an undergraduate degree from Wesleyan University.

Tim Hogan
Vice President of Education Market
Acuity Brands

Tim Hogan has over 17 years’ experience improving lighting solutions for both K–12 and higher education campuses. His articles have been published in numerous magazines for education facility designers and managers, and he is a frequent presenter at regional and national conferences.

Julia Burrows (Moderator)
President & Executive Director
Greenwise Joint Venture

Julia Burrows is the president and executive director of Greenwise Joint Venture, a nonprofit focused on transforming the Sacramento area into a hub for clean technology. Greenwise is working to match financing and technical assistance for green school retrofits with many of the 68 school districts in the Sacramento region. Ms. Burrows previously worked for 22 years for the City of Roseville, most recently as deputy city manager and economic development director. She holds a B.S. in environmental policy analysis and planning from UC Davis.

FINANCING RETROFITS FOR K–12 SCHOOLS AND COMMUNITY COLLEGES
Marcia Smith
Manager, Special Projects Office
California Energy Commission
Marcia Smith joined the Energy Commission in 2010. She currently manages the Special Projects Office and leads implementation of the California Clean Energy Jobs Act (Proposition 39). Ms. Smith was a senior consultant for state agencies; for six years, she provided policy and regulation development, knowledge management and workforce planning. She worked 14 years with the Department of Toxic Substances Control as chief of public participation and education, and deputy director of external affairs, managing staff in five offices.

Stacey Lawson
CEO
Ygrene Energy Fund
As CEO of Ygrene, Stacey Lawson brings 20 years of experience as a business executive in the areas of manufacturing, technology and clean energy. Ms. Lawson co-founded the Center for Entrepreneurship & Technology (CET) at UC Berkeley. She previously held positions as division general manager for Siebel Systems, senior vice president for Parametric Technology Corporation and co-founder of InPart Design. She holds a B.S. in chemical engineering and an MBA from Harvard Business School.

Elisabeth Brinton
Chief Customer Officer
SMUD
Elisabeth Brinton runs SMUD’s $1.2 billion retail electric business, including customer operations, services, and programs such as energy efficiency, renewables and advanced energy solutions. Her role includes corporate strategy, marketing, communications, and economic and community development, among other things. She joined SMUD’s executive team in 2008 after serving as an executive in the clean technology and manufacturing sector. Ms. Brinton is a Harry S. Truman Scholar and graduate with honors from Principia College.

Maril Pitcock
Director of Energy Efficiency Products & Programs
Pacific Gas & Electric
Maril Pitcock is director of Energy Efficiency Products and Programs for Pacific Gas and Electric Company (PG&E). She is responsible for key regulatory programs for Residential, Commercial, Industrial, Agriculture, and Codes & Standards. She also oversees the process of transitioning a new incentive offering from an idea or an emerging technology into a business reality. Ms. Pitcock holds a B.S. in Industrial Engineering from California Polytechnic State University, San Luis Obispo.

Kelly Cunningham
(Moderator)
Outreach Director
CLTC, UC Davis
Kelly Cunningham is the outreach director at CLTC. She oversees communications and marketing, education and outreach campaigns, and coordinates public relations for CLTC’s research and technology demonstration projects. Ms. Cunningham also co-designs and teaches education and training programs on lighting technologies, codes and standards, and topics related to design. She received her master’s degree in design from North Carolina State University in 2008.
**Konstantinos Papamichael**  
See page 18.

**Mark Modera**  
*Professor & Director of WCEC  
UC Davis*

Mark Modera is the Sempra Energy Chair in Energy Efficiency at UC Davis, where he is also a professor in Civil and Environmental Engineering, director of the Western Cooling Efficiency Center (WCEC), and associate director of the Energy Efficiency Center. He was vice president of strategic operations for WCEC Carrier Corporation, and spent 25 years as a staff scientist at Lawrence Berkeley National Laboratory. Dr. Modera has bachelor’s, master’s and doctor’s degrees in Mechanical Engineering.

**Frank Loge**  
*Professor & Director of CWEE  
UC Davis*

Dr. Frank Loge is director of the Center for Water-Energy Efficiency (CWEE) and a professor in the Department of Civil and Environmental Engineering at UC Davis. Over his career, his strong interest in the relationship between energy, water and health has informed his research, which applies an entrepreneurial, financially informed perspective to the design of sustainable systems and technologies. His work includes examination of the energy and health implications of engineered and natural systems.

**Pedram Arani (Moderator)**  
*Associate Development Engineer  
CLTC, UC Davis*

Pedram Arani is an associate development engineer for CLTC. He is currently conducting market research, modeling illumination levels, and managing a field demonstration project of energy-efficient lighting technologies in coordination with California’s State Partnership for Energy Efficient Demonstrations (SPEED) program. Mr. Arani received his degree in civil engineering from UC Davis in 2009.

**Ahmad Sheikholeslami**  
*Director of Facilities and Operations  
Menlo Park City School District (MPCSD)*

Ahmad Sheikholeslami has overseen and managed over $100M of modernization and new construction in the last six years with MPCSD, including construction of the new Hillview Middle School. Before joining MPCSD, he was a consultant with Vanir Construction Management, working on a variety of school modernization projects. Mr. Sheikholeslami has a B.S. in civil engineering from UC Davis and an M.S. from UC Berkeley in construction management.

**Erwin Lee**  
*Principal Architect  
DLM Architecture*

Erwin Lee’s firm is an industry leader in the planning and design of K–12 educational facilities in Northern California. DLM’s award-winning work is recognized for incorporating the best environmental practices in both new construction and the modernization of
existing educational facilities. Mr. Lee has over 30 years of experience in all phases of project development. He received his bachelor’s degree in architecture from the UC Berkeley and his master’s degree in architecture from Harvard University.

Tim Hogan
See page 18.

HVAC: HEATING, VENTILATION & AIR CONDITIONING

Paul Fortunato
(Moderator)
Outreach Coordinator
WCEC, UC Davis

Paul Fortunato is the outreach coordinator for the Western Cooling Efficiency Center (WCEC) at UC Davis. He has over six years of professional graphic design experience and has worked with many notable companies and organizations, including the Sacramento Kings, Page Design Group and the Leukemia and Lymphoma Society. Today his work communicates the achievements, goals and mission of the WCEC to the center’s affiliates and the public.

Richard Lord
Carrier Fellow
Carrier Corporation

Richard Lord graduated from Clarkson University and has worked for the Carrier Corporation, a division of United Technologies, for the past 40 years. He is currently an Engineering Fellow with expertise in systems, heat transfer and controls. He has worked on the design of commercial HVAC equipment, including air and water cooled chillers, rooftops, splits systems, air handlers, and advanced controls for units and systems. He is also active in the development of industry standards.

David Casentini
Vice President of Programs
Resource Solutions Group

With over 30 years of industry experience, David Casentini, vice president of programs, leads Resource Solutions Group’s (RSG) resource management programs that deliver energy and water savings to reduce building operating costs, improve the environment, and help customers manage and reduce costs. RSG has been particularly successful in introducing new technologies and energy efficiency practices, and providing project implementation support, to a variety of market segments, including agriculture, schools, commercial, and industrial customers.

STRATEGIC PLANNING FOR SUCCESSFUL PROJECTS

Julia Burrows (Moderator)
See page 18.

Karen Perrin
Energy Specialist,
Bright Schools Program
California Energy Commission

Karen Perrin is an energy specialist, and has been with the California Energy Commission’s Bright Schools Program for six years. She holds a degree in business administration with a concentration in marketing. As a project manager, Ms. Perrin has assisted with many projects that have helped schools with benchmarking and energy audits. She has also managed many implementation energy projects funded by the Energy Commission’s low interest loan program.
Ariel Dekovic  
*Senior Program Manager*  
*Collaborative for High Performing Schools*

Ariel Dekovic has over a decade of experience working with a variety of non-profit organizations in program development and marketing. As senior program manager at the Collaborative for High Performance Schools (CHPS), she helps schools and districts across the U.S. create healthy, green learning environments, with a focus on improving existing schools. Ms. Dekovic received a B.A. from Vassar College and holds an M.B.A. from UC Berkeley’s Haas School of Business.

Bob Chase  
*Deputy State Architect, AIA, LEED AP*  
*Division of the State Architect, State of California*

Prior to being appointed as deputy state architect, Mr. Chase served as chief building official for several jurisdictions in the Sacramento region. He was the first architect ever appointed to this position by the City of Sacramento. Before that, he spent 35 years practicing architecture in the private sector in Boston, Los Angeles and Sacramento. He is a LEED AP, a Certified Green Building Professional and has taught and guest lectured extensively on green building and sustainability.

Paul Breckenridge  
*Principal Architect, AIA, LEED AP*  
*Community Architecture*

Paul P. Breckenridge, award-winning architect, has designed dozens of sustainably oriented projects throughout California as well as Nevada, Arizona, Texas, Vietnam, and Taiwan. Mr. Breckenridge’s wide-ranging experience includes leadership for high-performance architecture, interiors and master planning projects. Mr. Breckenridge was instrumental in the development of the first USGBC LEED Certified public safety facility in the nation and the first school designed to CHPS criteria for Sacramento City Unified School District.

**LIGHTING #2:**  
**DAYLIGHTING & CONTROLS**

**Pedram Arani (Moderator)**  
See page 20.

**Aaron Jobson**  
*Principal Architect, AIA, LEED AP*  
*Quattrocchi Kwok Architects*

Aaron Jobson served as project architect for the highly sustainable, $121M American Canyon High School. As principal architect with Quattrocchi Kwok Architects in Santa Rosa, Mr. Jobson promotes inspired design and sustainable strategies within the firm and throughout the community. He contributed to California’s Division of the State Architect’s Handbook for Grid Neutral Schools and is a founding board member of the School Energy Coalition. Mr. Jobson has a Bachelor’s of Architecture from UC Berkeley.

**Charles Neal**  
*Energy & Environmental Sustainability Manager*  
*Peralta Community College District*

Charles Neal is the energy and environmental sustainability manager for the Peralta Community College District, based in Oakland, CA. Mr. Neal is leading the charge with projects such as the Laney College classroom lighting retrofit. He holds a Juris Doctorate from the Northwestern School of Law of Lewis & Clark College, where he is a member of the Cornelius Honor Society. He also holds a master’s degree in business administration from the Graziadio School of Business, Pepperdine University.
WATER CONSERVATION & ENERGY EFFICIENCY

Edward Spang (Moderator)
Program Manager
Center for Water Energy Efficiency
Ned Spang is program manager for the Center for Water-Energy Efficiency (CWEE).

His doctoral research focused on the link between water and energy at the global level, and the importance of improving efficiency in both sectors. His previous research included analyzing regional case studies related to improved water resource management in Central and South America. Mr. Spang holds a B.A. from Dartmouth College and an M.A.L.D. and Ph.D. from the Fletcher School of Law and Diplomacy, Tufts University.

Amy Marie Talbot
Water Efficiency Project Manager
Regional Water Authority
Amy Talbot is the manager of the Regional Water Efficiency Program’s award-winning public outreach campaign and school education program. RWA’s mission is to represent regional water supply interests and to assist members in protecting and enhancing the reliability, availability, affordability, and quality of water resources. Ms. Talbot graduated from University of Texas, Austin and received a bachelor’s degree in urban studies from the Department of Geography and the Environment.

Farah Wissinger
Environmental Sustainability Manager
Sacramento City Unified School District
Farah Wissinger received her master’s degree in sustainable building and has been connected with the construction industry for over 10 years, receiving her bachelor’s degree in construction management in 2001 from Colorado State University. She contributed to the development of building-focused sustainability clubs in seven Poudre School District K–12 green schools. She also taught a summer energy conservation class to middle school students in Roaring Fork School District.

Steven Chov
Director, Envirosmart Solutions Group, WaterWise
Steven Chov is the director of Envirosmart Solutions Group, a division of WaterWise Consulting Inc. Mr. Chov’s work includes building teams to tackle environmental projects that go beyond water conservation. He began working with WaterWise in 2008 as a water conservation specialist, after graduating from San Jose State University in 2007 with a B.S. in Environmental Studies; his concentration was in Energy.

Michelle Maddaus
President, Maddaus Water Management
Michelle Maddaus is a registered civil engineer in California with 14 years of experience focused on water efficiency projects and demand forecast modeling. She is President of Maddaus Water Management and has been conducting commercial, industrial and institutional (CII) water surveys, and training students to do the same, for over 10 years. She received a B.S. in Civil and Environmental Engineering and an M.B.A. from UC Davis.
Exhibitors

TITLE SPONSOR

Acuity Brands

Acuity Brands is maximizing the potential of technology to create the highest quality lighting for every environment. Acuity’s industry-leading portfolio and proven expertise includes indoor and outdoor luminaires, controls, components, LED lighting technology, and daylighting. Acuity Brands delivers integrated, intelligent solutions that expand the boundaries of lighting.

PREMIUM SPONSORS

Chevron

Chevron Energy Solutions works with education and government entities to find new and responsible ways to improve performance, reduce costs and address their most critical challenges. Renewables and energy efficiency form the foundation of the programs Chevron designs and implements, and because its customers’ priorities extend beyond energy alone, so does Chevron’s work. Chevron Energy Solutions partners with customers to find solutions that transform their organizations and communities. This work helps protect the environment, improve lives and power progress.

TLC Integration Systems

TLC Integration is now pioneering the use of advanced illumination systems to create an optimal, energy-saving lighting environment. TLC’s intelligent, autonomous, user-friendly control system improves lighting conditions while saving energy and reducing maintenance. Features include sunlight control, triple technology occupancy sensing, time-of-use scheduling, daylighting, solar powered sun shade control, and automatic light-level monitoring.

Velux

The VELUX name is derived from two words: ventilation and lux, the Latin word for light. With manufacturing companies in 11 countries and sales companies in just under 40 countries, VELUX is one of the strongest brands in the global building materials sector. VELUX creates better living environments with daylight and fresh air through the roof. The company has worked with many schools to accomplish a balance of natural light and artificial light that saves energy and money.

Trane

With a century of innovation and commitment to excellence, Trane knows how to deliver exceptional performance in educational
The comfort of your students, staff, teachers, and administrators is Trane’s first priority. The people at Trane understand that building performance is directly related to classroom performance, and they look forward to providing more energy-efficient, reliable and sustainable solutions that foster productivity and stand the test of time.

SPONSORS

Aztec Solar

Aztec Solar is a solar energy solutions provider committed to meeting its customers’ energy needs with top-quality solar products and technologies. All systems are sold as a turn-key solution, and Aztec Solar systems come with award-winning customer service, support from the company’s knowledgeable solar experts, and the peace of mind that comes with knowing Aztec Solar has been a solar energy provider of the State of California for over 30 years.

Beutler

For over 65 years, Beutler Corporation has provided innovative, affordable and energy-efficient solutions to both the residential and commercial marketplaces. Specialized services include heating and air, solar, plumbing, fire sprinklers, and low-voltage products and services. Beutler Corporation has completed over 500,000 installations while consistently meeting and exceeding its clients’ expectations for reducing energy use and improving comfort.

Big Ass Fans

The Big Ass Fans Company designs, engineers and manufactures the world’s most efficient ceiling fans, ranging in size from 5 to 24 feet in diameter. They pair energy-efficient motors with advanced airfoil technology to circulate large volumes of air, providing occupant comfort and energy savings year round. Big Ass Fans can reduce necessary AC tonnage and ductwork for schools with new construction projects, and they can help schools undertaking retrofits save substantially on energy bills, year-round.

California Conservation Corps (CCC)

The California Conservation Corps is a state agency dedicated to improving and protecting California’s natural resources. Corps members—young men and women between the ages of 18 and 25—also assist with emergency response efforts. CCC is partnering with UC Davis to offer free energy audits to school districts interested in using Proposition 39 funding for efficiency improvement projects.
Bright Schools
Table 21 | energy.ca.gov/efficiency/brightschools
All publicly funded California K–12 school districts and non-profit K–12 schools are eligible for assistance from the Bright Schools Program, which provides technical assistance with efficiency improvement projects, usually at no cost. Program offerings include energy audits/feasibility studies, specifications for equipment performance, review of proposals, designs and commissioning plans, and assistance selecting contractors.

Collaborative for High Performing Schools (CHPS)
Table 24 | chps.net
The Collaborative for High Performance Schools (CHPS) believes kids learn better in schools with good lighting, clean air and comfortable classrooms. That is why CHPS works with schools and building experts to ensure that every child has the best possible learning environment with the smallest impact on the planet. For over a decade, CHPS has been working to make every school an ideal place to learn. Visit chps.net to learn how you can be part of the high performance school movement.

Coolerado
Table 4 | coolerado.com
Coolerado Corporation produces and sells the most efficient air conditioners made. Their products create a healthier living environment by providing fresh, filtered, ideal-humidity air. Coolerado air conditioners are used for commercial, industrial and residential applications throughout the world.

Cooper Lighting
Table 16 | cooperindustries.com
Cooper Lighting is the leading provider of world-class lighting fixtures and controls. As lighting technologies have advanced, Cooper has been at the forefront of the industry in helping businesses and communities leverage the latest technologies to improve efficiency, reduce costs and meet environmental concerns. In 2009, the company opened a 60,000 sq. ft. Innovation Center, home to the research, design, validation and manufacturing of proprietary LED and other advanced lighting technologies.

Enlighted
Table 19 | enlightenedinc.com
Enlighted Inc. is an advanced building energy management company that provides facility managers with resources to fully understand their buildings’ energy consumption needs. Enlighted’s solution offers superior lighting controls, as well as accurate building information acquisition, enabling more efficient deployment of HVAC controls and other building management functions. Enlighted’s solution is designed to be installed by electricians, requiring no pre-provisioning or lighting architects, making it the simplest, lowest-cost solution available.
Everlast

Table 6 | everlastlight.com

EverLast Lighting, Inc. is a sister company of Full Spectrum Solutions, Inc., which was founded in 1997 and has quickly become the leading manufacturer of energy-efficient lighting solutions for roadway, parking structure, facility and area lighting applications. By incorporating its SMART bi-level controls technology with on/off photosensors, EverLast induction fixtures can reduce energy use by up to 70 percent. These impressive results have garnered national awards for sustainability.

Finelite

Table 14 | finelite.com

Finelite, Inc. is focused on making better lighting for a better workplace. It does that by providing fast delivery, great service and selling its fixtures at surprisingly low prices. Finelite fixtures are high performance and attractively styled. Finelite can deliver quality at a low price through superior engineering, investment in high-volume production tooling, fast-turn manufacturing capabilities, and a service attitude at every level of the firm.

Kenall

Table 10 | kenall.com

Kenall Manufacturing, a recognized leader in the advancement of solid-state lighting technologies, offers intelligent, durable and sustainable lighting solutions for the most demanding environments. Kenall provides sealed lighting for cleanroom or containment spaces, high-abuse lighting for public access areas, security lighting, and specialized transportation applications. All Kenall products are proudly made in the U.S.A. and built in our state-of-the-art, vertically integrated manufacturing facility complete with certified UL Test Lab.

Lutron

Table 3 | lutron.com

Lutron Electronics Co., Inc., headquartered in Coopersburg, Pennsylvania, designs and manufactures lighting controls and automated window treatments for residential and commercial applications. Lutron products, including occupancy sensors, daylight sensors and dimming controls, save energy and make light bulbs last longer, making them an eco-friendly way to reduce energy use and enhance lighting in classrooms, lab spaces, offices, and homes. Daylight harvesting controls continually balance natural light and electric light, saving energy and money.

Osram Sylvania

Table 12 | sylvania.com

OSRAM SYLVANIA is the North American business of OSRAM GmbH of Germany, one of the world’s largest lighting manufacturers and part of the Siemens family of companies. The company manufactures and markets a wide range of lighting products as well as precision materials and components for business and industry, consumers, the automotive industry, and for computer, aerospace and other major industries worldwide.
Pacific Gas and Electric Company

Table 23 | pge.com

Pacific Gas and Electric Company (PG&E) is one of the largest investor-owned utilities in the country. PG&E delivers electric service to approximately 4.8 million customers and natural gas service to nearly 4 million customers in Northern and Central California. PG&E serves 20,833 schools.

Peak Demand Automation

Table 15 | peakdemandautomation.com

Peak Demand Automation supplies energy management hardware and software for HVAC, lighting and computers. Internet-based HVAC controls allow you to monitor your system from anywhere. Peak Demand Automation provides automated demand response (open-ADR). All lighting and HVAC controls are occupancy based, so you only use power when rooms or zones are occupied. Everything is wireless for easy installation, and computer energy management software makes it easy to hibernate computers with Wake-On LAN and still retain network management.

Siemens

Table 2 | siemens.com

SIEMENS

Siemens’ Building Technologies Division is the world’s market leader for safe and energy-efficient buildings and infrastructures. As a service provider, system integrator and product vendor, Building Technologies has offerings for building automation, lighting, heating, ventilation and air conditioning (HVAC), fire protection, and security. For more information, visit usa.siemens.com/buildingtechnologies.

Sacramento Municipal Utilities District (SMUD)

Table 22 | smud.org

The Sacramento Municipal Utility District (SMUD) was founded with the idea that providing electric power to Sacramento was a job best done by a public utility overseen by an elected board of directors. SMUD has developed partnerships with local schools and organizations to conduct seminars and community outreach programs. SMUD’s rebate program also supports schools improving the efficiency and quality of their facilities.

Stafford King Wiese Architects

Table 17 | skwarchitects.com

Stafford King Wiese Architects (SKW) specializes in the planning and design of exceptional learning environments. We have partnered with school districts and community colleges throughout California for nearly 70 years, bringing design solutions that support curriculum delivery.
philosophies and the sustainability of educational facilities. SKW provides full-service architecture to districts throughout Northern California and Western Nevada.

Transformative Wave Technologies

Transformative Wave Technologies (TWT) is dedicated to its mission of developing and bringing to market its growing line of energy-saving, environmentally-responsible products and services. Owner Danny Miller formed TWT in 2009 as a wholly owned subsidiary of Performance Mechanical Group, in order to consolidate the company’s growing inventory of innovative technologies under one umbrella. Performance Mechanical Group is in its 25th year of serving the Puget Sound area with innovative HVAC installations, maintenance and service.

Wattstopper

WattStopper is a leading manufacturer of energy-efficient lighting controls for commercial, industrial and residential use. WattStopper helps customers find convenient ways to save energy, meet green initiatives, and comply with energy codes with its comprehensive range of products, programs and services.

TLC Integration Systems

PATENTED INTEGRATED CONTROL SYSTEM

NEXT-GENERATION BUILDING ENERGY MANAGEMENT

- Optimize lighting, power and temperature controls with one automated unit.
- Manage facilities via computer, even from afar.
- Protect costly equipment with stable, surge-free power.
- Monitor precisely where and when occupants have been in different rooms and buildings.
- Install and control efficient electric lighting when needed.

The system works most efficiently in conjunction with additional elements provided by TLC, such as automated skylights to provide daylighting and unnoticeable light transitions, and induction lighting, which has an array of benefits over LEDs.

TLCintegrationsystems.com
For more information about technologies and presentations featured at the Smart Schools Symposium, please visit:

cltc.ucdavis.edu/smart-schools-symposium-2013

Greenwise Joint Venture

Greenwise Joint Venture is a high-impact regional nonprofit organization focused on transforming the Sacramento area into the greenest region in the country and a hub for clean technology. As a catalyst for action, Greenwise is working to match financing and technical assistance for green school retrofits with many of the 68 school districts in the Sacramento region.

California Lighting Technology Center, UC Davis

The California Lighting Technology Center (CLTC) is dedicated to advancing energy-efficient lighting and daylighting technologies. Part of the Department of Design at the University of California, Davis, the center operates full-scale laboratories for research and development, and it provides instruction in daylighting and lighting design to undergraduate and graduate UC Davis students. CLTC also conducts prototype testing, technology demonstrations and case studies, in collaboration with manufacturers, utilities, government agencies, and other partners. CLTC’s resources, training and outreach programs help more design and building professionals implement best practices for lighting.