Prop 39: Maximizing Financial, Environmental and Learning Outcomes through Strategic Facilities Improvements, Conservation & Education
Help to design holistic school energy initiatives including facility upgrades, conservation, and student and staff education.

Holistic approach improves:
- energy savings,
- cost-effectiveness,
- ease of implementation, and
- student-learning outcomes
Nationwide, schools spend more than $8 billion per year on energy, an operational expense second only to spending on books and computers.

The EPA estimates that 30% of energy in commercial buildings is wasted.
Introductions

Energize Schools
The Schools Clean Energy Partnership
Energize Schools is a holistic program designed to make it easy and affordable for schools to invest in Energy Efficiency Retrofits and Renewable Energy while engaging students in Energy Conservation, Education, and Leadership.
The Energize Schools Partnership

A collaborative of **nonprofit mission-driven experts** that helps school districts holistically approach energy management.

1. **Technical Support:** Comprehensive planning and implementation services for your energy efficiency and renewable energy projects.

2. **Conserve:** Staff and student engagement in conservation to create lasting energy savings.

3. **Educate:** Curriculum and hands-on activities to turn your school buildings into real-world learning opportunities for your students.

*Energize Schools delivers expert, vendor neutral guidance and technical expertise*
Mission-Driven Non-Profits

SEI creates green communities by designing sustainability programs for education, housing, government, and the workforce.

Ecology Action provides innovative programs that make it easy to save energy.

Bay Area Climate Collaborative accelerates the clean energy economy by launching scalable market-oriented initiatives.
School Facility Energy Upgrades
The Proposition 39 Process

CHANGES TO CEC GUIDELINES & EXPENDITURE PLAN DEVELOPMENT
Changes to CEC Guidelines

1. Several changes went into effect in February 2015
   a. New Prop 39 online submission portal
   b. Project cost-effectiveness requirement
   c. Public Works project award requirements
   d. Additional energy efficiency measures added
   e. CDE release of funding/Audit clarification
   f. Changes in funding allocation

2. Full list of changes:
1. **Prop 39 Portal url:**

2. Replaces previously required Forms A&B


4. **Prop 39 EEP Handbook:**

5. LEAs must submit the new Energy Commission’s Utility Data Release Authorization Form
Project Cost-Effectiveness Requirements

1. Savings-to-Investment Ratio (SIR) = (NPV/Project Cost – Rebates – Other non-repayable funds – non-energy benefits)

2. LEAs can now bundle energy efficiency or clean energy installation across an LEA

3. Minimum SIR threshold of 1.05 remains

4. Two ways that lower SIR projects may now be eligible:
   a. Bundle low SIR measures with higher SIR measures
   b. Leverage non-repayable funds
1. LEA and Contractor Requirements:
   a. LEAs
      i. Notify Department of Industrial Relations of a public works project
   b. Contractors
      i. Register with DIR
      ii. Report payroll records to DIR

2. List of registered contractors:
   https://efiling.dir.ca.gov/PWCR/Search

3. DIR Presentation:
Added Energy Efficiency Measures

1. Appendix E – Estimated Useful Life (EUL) of Energy Efficiency Measures
   a. Economizer repairs
   b. Water/Irrigation
   c. Kitchen Appliances

2. Prop 39 Guidelines:
Prop 39 Funding

1. CDE Release of funding
   a. Single-year plan
   b. Multi-year plan
2. Annual and final audit reports
3. Changes in funding allocation
   a. $381M in 2013/14
   b. $279M in 2014/15
   c. 27% decrease
10 Steps For Expenditure Plan Development

1. Electric and Gas Utility Usage and Customer release
2. Benchmarking or Energy Rating System
3. Energy Project Prioritization
4. Decision Maker Support
5. **Audit Buildings selected through benchmarking**
6. Sequencing of Facility Improvements
7. **Identify specific energy projects**
8. **Cost-effectiveness Determination**
9. Complete and Submit Energy Expenditure Plan
10. Interface with CEC
Technical Audits

1. Determine which level of audit is right for you
   a. What are your goals for P39 and for EE beyond P39?
   b. Identifying measures to be supported by an Energy Policy

2. What is actually included in each different type of audit?
   a. Clarify your assumptions before you proceed

3. Cost Estimates (Inclusions and Exclusions)
   a. What information do you need to get projects done?
1. **Low-cost, high SIR projects**
   a. Lighting, pool pump VFDs, RCx
   b. Ongoing commissioning contract for “soft” RCx measures (eg. Equipment set points, hours of operation, economizers)
1. Your utility rep can be a great ally in your quest to reduce your energy spend
   a. Low or no-cost audits
   b. Rebates and Incentives

2. Financing Options
   a. On-Bill Financing/On-Bill Repayment
   b. 0% Interest ECAA-ED Loans: http://www.energy.ca.gov/efficiency/financing/index.html#application
Making Energy Efficiency Stick

1. Ongoing energy management
   a. Any portion of planning funds plus 10% of annual Prop 39 allocation

2. Conservation & Education
Conservation & Education

Energize Schools
The Schools Clean Energy Partnership

SEI - Strategic Energy Innovations
BACC - Bay Area Climate Collaborative
Strategies for Conservation & Education

**Conservation:** Support for student-led campus conservation initiatives while teaching leadership and project management skills.

- School Green Team recruitment, planning and implementation
- Participation in the Energize Schools Energy Conservation Competition
- School-wide Sustainability Fairs

**Education:** Support to build sustainability career awareness and skills through project-based learning. Supportive services include:

- Project-based curriculum, aligned with Common Core and Next Generation Science Standards.
- In-person and online teacher trainings
- Instructional planning and direct instruction
How to Encourage Energy Conservation in Schools

BEHAVIOR CHANGE: A LOW-COST, HIGH-RETURN INVESTMENT
Conservation Keys to Success

- Multi-stakeholder involvement
  - Both top down and bottom up strategies
- Share the savings
- Readily available information to all stakeholders
- Make it fun!
Multi-Stakeholder Involvement

Support and involvement at all levels from the School Board and Superintendent to the Parents, Teachers, Students.
Top Down Strategies

- Signed leadership commitment
- Energy Policy
- District Green Initiative
  - Goal setting: develop strategies and tactics
  - Include Facilities staff
- Competitions
- Share the Savings
Energy Conservation Competitions

During the 3-week Energize Schools Energy Conservation Competition in the Fall last year, the 46 participating schools reduced their electricity consumption by an average of 5.7%.

Together participating schools saved over 80,500 kWh and $10,000, which resulted in avoided emissions of over 56,000 lbs of CO₂.
Shared Savings Example: SFUSD

- If over 5% savings on utility bills are achieved, half of the money saved is shared with the school.
- 2013-2014 saved $240K total over baseline (2010-2013)
Shared Savings Example: Elk Grove

- Model: If District meets savings goal, 10% goes to schools that met individual goal.
  - Last year saved $1.5 mil - $150,000 returned to discretionary school budgets.
- EGUSD’s Energy Conservation Program has saved $5 mil and 52,000,000 kWh’s in 4 years.
- Equivalent to:
  - Emissions from 7,650 vehicles, 4 million gallons of gasoline, the electricity consumed by 5,100 homes and the carbon sequestered annually from 31,000 acres of trees.
Bottom Up Strategies

- Green School Leadership Teams
- School-level goals: Develop strategies and tactics to achieve them
- Empower student leadership
- Energy Education – Engage students in the work.
Case Study: Dixie District

Outcome: Regularly achieve 10-20% annual savings below baseline at each school in the District

Strategies:

- Energy Ed curriculum and teacher trainings
- Energy Teams
- Peer education
- Student audits
- Student tracking
- Student videos
Key Information

People take action on good information

- Share utility bill data openly online
- Use PG&E My Account tool
- Student tracking and monitoring
- Display of energy use
- Student-led energy audits
Make it Fun!

- Award schools that reduce energy by the greatest amount
- Sustainability Fairs
An effective, low-cost strategy for:

- Increasing your operating budget,
- Decreasing your environmental footprint, and
- Developing student leadership skills.
Project-based Learning Resources

Student-led sustainability initiatives using facilities as learning laboratories:

**Certificates:**
- School Energy Auditing
- Sustainable Enterprise
- Energy

**Units:**
- School Solar Analysis
- Small Business Auditing
- Home Energy Auditing

**Guides:**
- Sustainability Fairs
- Green School Leadership Teams
Student Energy Auditors

Low-cost members of your Prop 39 team!
SMUD Auditing, Conservation, & Training

The Sacramento Municipal Utility District sponsors an internship of 40 hours of hands on training and an audit of a high school.

- **2013:**
  - 38 students
  - 13 schools
  - 7 districts

- **2014:**
  - 59 students
  - 8 schools
  - 8 districts
SMUD Auditing, Conservation, & Training

Student auditors evaluated and reported on savings related to:

- Lighting
- Appliances
  - Computers
  - Projectors
  - TVs
- Building envelope
- Mechanical systems
  - HVAC
  - Water heaters
  - Motors
Energy Education and Conservation

- A great way to:
  - Develop transferrable career skills
  - Stretch your Prop 39 dollars
Building Operator Training

A LOW-COST, HIGH-RETURN ENERGY EFFICIENCY INVESTMENT
What is Building Operator Certification?

- Industry-recognized credential in energy efficient building operation practices
- Created with 100 industry experts
- Launched in 1996 by the Northwest Energy Efficiency Council
- 9,000 building engineers and maintenance technicians hold the BOC® credential
  - Energy efficient operational practices
  - Utility cost reduction
  - Sustainable building operation for LEED® and ENERGY STAR® initiatives
What is Building Operator Certification?

- An educational program that uses classroom training and learning guides taught by industry experts
- Certification of individuals which involves testing and applied projects
BOC Has Two Levels

- **Level I: Building Systems Maintenance**
  - Two or more years experience (5 yrs avg)
  - Outcome: Basic understanding of electrical, HVAC and lighting systems. With supervision, establish or review PM program and optimize operations

- **Level II: Equipment Troubleshooting**
  - Five or more years experience (8 yrs avg)
  - Outcome: Independently develop PM programs and optimize equipment operations
Level I Classes

BOC 1001 - Energy Efficient Operation of HVAC Systems
BOC 1002 - Measuring Energy Performance
BOC 1003 - Efficient Lighting Fundamentals
BOC 1004 - HVAC Controls Fundamentals
BOC 1005 - Indoor Environmental Quality
BOC 1006 - Common Opportunities for Operational Improvement


74 hours of training
5 application projects
700 pages of reference books
Level II Classes

BOC 201 - Preventive Maintenance & Troubleshooting
BOC 202 - Advanced Electrical Diagnostics
BOC 203 - HVAC Troubleshooting & Maintenance
BOC 204 - HVAC Controls & Optimization

Supplemental Courses: Water Efficiency, Motors, Demand Reduction, Building Commissioning

61 hours of training
3 application projects
600 pages of reference books
What are the Project Assignments?

- Facility floor plan
- Energy benchmark
- HVAC operations review
- Lighting survey
- Electrical distribution plan
Facilities Departments use BOC for...

- Standard for professional development
- Cross-training and team building
- Meet safety training requirements
- Achieve utility cost reduction
- Support sustainability initiatives for LEED®, Green Globes, ENERGY STAR®
BOC Graduates Save Money

- A third-party auditor found that each BOC graduate saves their employer an average of $12,000 annually on utility costs.
- Operators are 70-80% more likely to take advantage of new technology and energy efficient retrofit programs.
- Implement energy saving strategies
  - Optimize operations by recording occupant schedules and adjusting controls
  - Track energy consumption
  - Provide supervisor with ideas for energy saving opportunities
Case Studies

- **Pleasant Valley School District** in Ventura was facing school closures: 2 BOC-trained HVAC technicians saved $250,000 annually, avoiding closures.

- A BOC-certified operator at **Kern High School District** saved his District $2.6 million over 19 months, primarily through behavior change initiatives.
Fees

Generally $1,495 per certified registrant and $995 for additional registrants from the same organization.

BOC is an admissible activity of Prop 39

Prop 39 Guidelines allow 2% of allocation for BOC training.

Includes:

- 74 hours of technical training
- 700 page Student Handbook
- 5-part Project Workbook
- Exams
- Credential
A holistic approach to school energy initiatives increases energy savings, cost-effectiveness, the ease of implementation, and student-learning outcomes by engaging students in energy conservation, education, and leadership.
Discussion

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