

## WHY CODES AND STANDARDS CONNECTIONS MATTER?

It is important to determine how the PIER Lighting Research Program (LRP) can best translate its successes into workable codes and standards proposals. If a product or finding resulting from the LRP is adopted into the state energy codes, then the market effect will be fairly certain. The codes would then require that type of technology, process, or some strategy of equal efficiency to be implemented in all new buildings.

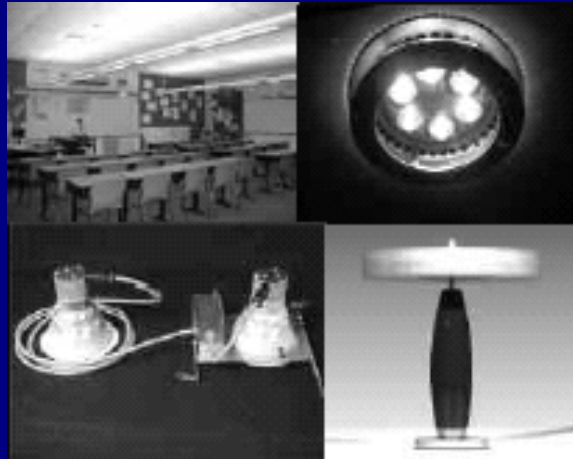
HMG worked with Project Leads to:

- Evaluate all LRP research efforts, and map the path from each research outcome into the codes and standards arena.
- Identify the most code-ready research outcomes and recommend steps to adoption, and identify those that may require additional research and development (R&D) before they can enter the code process.
- Identify lighting codes and standards problems, which require additional R&D, such as outdated lighting industry metrics still referenced by codes.

HMG helped identify efforts within the LRP that are likely to have the largest energy savings and/or demand reduction potential. They also worked to identify additional lighting research needs that could be addressed by future PIER work.

## LIGHTING RESEARCH PROGRAM (LRP) CODES AND STANDARDS CONNECTIONS

*THE HESCHONG MAHONE GROUP, INC. (HMG)  
COLLABORATED WITH THE LRP PROJECT TEAMS  
TO IDENTIFY CODES AND STANDARDS  
CONNECTIONS FOR THE LRP PRODUCTS TO HELP  
PRODUCT DESIGN AND DEVELOPMENT AS WELL AS  
PROMOTION THROUGH FUTURE CODES AND  
STANDARDS PROVISIONS.*



*Various LRP technologies were reviewed by HMG for codes and standards implications.*

The standards process often serves as a catalyst to introduce energy-efficient products into the marketplace. The standards process also encourages utilities and other agencies to grant economic incentives through energy efficiency rebates to stimulate early adoption of technologies.

## CONNECTING RESEARCH TO ENERGY EFFICIENCY STANDARDS

The Codes and Standards Connections project provided the following support to the LRP teams. Reports for each of the categories listed below are available for review.

- Lighting Standards Review - reviewed the various lighting efficiency standards enacted across the nation, and compared them to California's lighting standards.
- Program Projects Reviews - reviewed all of the LRP projects for their potential as code improvements under California's building and appliance efficiency standards.
- Complementary Lighting Research Reviews - identified research activities which can complement the LRP R&D work.
- Lighting Standards Needs Assessments - identified problem areas in the California lighting efficiency standards that require additional R&D.

### Benefits

- Ensure potential energy savings are valid
- Review the cost-effectiveness of the technology
- Evaluate whether the technology is commercially available from more than one manufacturer
- Review if the technologies are feasible and compatible with current building practice

## INTERESTED?

Lighting researchers, code developers, contractors, and utility staff can use the recommendations from this project.

Key next steps include:

- Enhanced support for research needs for codes and standards development in California. This includes research into
  - Consumer or user acceptance problems with code provisions
  - Reliability or other concerns with requirements for a given technology
  - Long-term persistence of energy savings from code measures and technologies
- Increased coordination with utility emerging technology programs to develop energy efficient lighting solutions
- Support for long-term fundamental lighting research into topics such as:
  - Biological and environmental impacts of lighting technologies
  - Understanding the mechanics of human vision and the impact of various lighting frequencies and spectrum on visibility
  - Lighting needs for safety and security inside buildings and in the outdoors
  - New product development through materials research, technology specifications, and industry standards

This project was part of the PIER Lighting Research Program. To view the project results, as well as other current research activities, visit [www.energy.ca.gov/pier](http://www.energy.ca.gov/pier).

Additional information can be found at:

- PIER contractor site:  
[www.archenergy.com/lrp/products/codes.htm](http://www.archenergy.com/lrp/products/codes.htm)



Funded by the  
California Energy Commission  
Public Interest Energy Research Program

### Contact information:

California Energy Commission  
[www.energy.ca.gov/pier](http://www.energy.ca.gov/pier)  
Michael Seaman  
[mseaman@energy.state.ca.us](mailto:mseaman@energy.state.ca.us)

Architectural Energy Corporation  
[www.archenergy.com/lrp](http://www.archenergy.com/lrp)  
Judie Porter  
[jporter@archenergy.com](mailto:jporter@archenergy.com)

Heschong Mahone Group, Inc.  
[www.h-m-g.com](http://www.h-m-g.com)  
Douglas Mahone  
[dmahone@h-m-g.com](mailto:dmahone@h-m-g.com)



Arnold Schwarzenegger, *Governor*  
California Energy Commission  
*Chairman:* Joe Desmond  
*Commissioners:* Arthur H. Rosenfeld, James D. Boyd,  
John L. Geesman, Jackalyne Pfannenstiel

## LIGHTING R&D AND CODES CONNECTIONS



## MAPPING PIER LIGHTING RESEARCH PRODUCTS TO CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS



Public Interest  
Energy Research