Public Interest Energy Research (PIER) Technical Briefs and Fact Sheets

The links below lead to an array of concise documents designed to help architects, builders, energy professionals, and consumers like you get the most for your energy dollars.

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Tech Briefs | Fact Sheets

Each two-page PDF identifies common problems and explains the features, benefits, and field-tested applications of e
solutions in lighting, zero net energy buildings, HVAC, commissioning, roofing, and more.

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How Efficient Are New Homes in California?

January 5, 2012

A study examined 40 single-family and 40 multifamily units (apartments and townhouses) that were built under the 2005 Building Ene
Residential Buildings. Data showed that the homes often didn't perform up to code.

Content type: Tech Brief | **Document ID:** CEC-TB-62 | **Author:** Ira Krepchin

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Advanced LED Downlighting System

October 10, 2011

Newly designed downlights use light-emitting diodes to their full potential while maintaining the features and functionality that have ma

Content type: Tech Brief | **Document ID:** CEC-TB-52 | **Author:** Essie Snell

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Achieving Zero-Net Energy Affordable Multifamily Homes

July 21, 2011

Developing affordable zero-net energy (ZNE) multifamily housing requires unique technical and financing models. Two San Diego dev
success of such development models in supporting California's bold ZNE goals.

Content type: Tech Brief | **Document ID:** CEC-TB-48 | **Author:** Bryan Jungers

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Developing Energy-Efficient Communities

July 21, 2011

The potential exists to make new communities far more efficient than current codes require. This brief describes research that helped
explored the technologies, strategies, and policies that would make it real.

Content type: Tech Brief | **Document ID:** CEC-TB-46 | **Author:** Ira Krepchin

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Lighting the Way to Demand Response

April 21, 2011

Commercially available advanced lighting-control systems can be used today in demand-response programs. This Tech Brief examin
and the best way to implement these systems.

Content type: Tech Brief | **Document ID:** CEC-TB-47 | **Author:** Ira Krepchin

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Automated Demand Response Cuts Commercial Building Energy Use and Peak Demand

December 3, 2008

Automated demand-response (AutoDR) systems use Internet-based electricity pricing and demand-response signals to initiate prepro
provide fully automated management of building energy use. When electricity prices are high or when the grid is nearing full capacity,

Content type: Tech Brief | **Document ID:** CEC-TB-31 | **Author:** Jessica Rivas

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Builder's Guide: Reducing Mold Risk

November 30, 2008

To better understand the problem of mold occurrence, the California Energy Commission sponsored an investigation, led by the Gas
causes of moisture intrusion. This research consisted of laboratory and field studies of structures that are designed to keep building m

Content type: Tech Brief | **Document ID:** CEC-TB-35 | **Author:** Peter Criscione

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DC Power Distribution Cuts Data Center Energy Use

November 1, 2008

The Lawrence Berkeley National Laboratory led a demonstration project that showed that alternative, direct-current (DC)–based powe
reduce the total system energy use in a data center by 5 to 7 percent compared to the most efficient alternating current (AC) systems

Content type: Tech Brief | **Document ID:** CEC-TB-40 | **Author:** Peter Criscione

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Wireless Lighting Controls Make Retrofits Practical

October 1, 2008

An innovative wireless lighting control, monitoring, and management system developed by Adura Technologies is easy to install, cost
significant energy savings. It eliminates the costly and time-consuming installation of control wiring and can be easily installed by facil

Content type: Tech Brief | **Document ID:** CEC-TB-38 | **Author:** Ira Krepchin

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Task/Ambient Lighting: Efficient, Stylish, and Portable

October 1, 2008

A desk lamp has been developed to provide individually controllable uplighting and downlighting. The designs incorporate improved o
low-cost manufacturing. The California Lighting Technology Center worked with Full Spectrum Solutions to develop the products. Full

Content type: Tech Brief | **Document ID:** CEC-TB-43 | **Author:** Ira Krepchin

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These PDFs provide the issues and research project scope for currently funded projects underway, such as zero net e
improvement of vehicle emissions, and engine technology.

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Community-Scale Environmental Measures and Urban Heat Island Impacts

March 5, 2012

Community-scale environmental measures can reduce energy use community wide, but the impacts of the technologies and their inte
This project will use advanced computer simulations to predict the outcome of community-scale environmental measures.

Content type: Fact Sheet | **Document ID:** CEC-FS-13 | **Author:** California Energy Commission/Public Interest Energy Research

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Improving Real-World Efficiency of High-Performance Buildings

March 5, 2012

High-performance buildings are designed to maximize energy efficiency, but those improvements aren't always realized. A study will a
selected California buildings, and follow-up projects will identify feedback loops and tools to help stakeholders optimize building perfo

Content type: Fact Sheet | **Document ID:** CEC-FS-14 | **Author:** California Energy Commission/Public Interest Energy Research

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LED Manufacturing Process Modifications Will Boost Quality and Cut Costs

February 9, 2012

Light-emitting diode (LED) lighting products have made great strides in terms of performance, but LED manufacturing techniques hav
develop an advanced layering technique that will cut manufacturing costs and increase the efficiency of the process by which LEDs c

Content type: Fact Sheet | **Document ID:** CEC-FS-12 | **Author:** California Energy Commission/Public Interest Energy Research

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Planning for Renewable-Based Energy Security and Prosperity in Humboldt County

May 1, 2011

The project team will develop and implement an energy-optimization model to determine a renewable-based energy portfolio for Hum
greenhouse gas emissions, maximizes local economic benefits and maintains grid stability.

Content type: Fact Sheet | **Document ID:** CEC-FS-3 | **Author:** California Energy Commission/Public Interest Energy Research

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Research on External Power Supplies Will Save Californians Millions

April 1, 2011

If all existing stock of power supplies were upgraded to the California Energy Commission's external power supply standard, Californi
gigawatts per hour the amount of energy used by 92,000 homes in one year, or about $90 million annually.

Content type: Fact Sheet | **Document ID:** CEC-FS-1 | **Author:** California Energy Commission/Public Interest Energy Research

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The Advanced Natural Gas Vehicle Fuel Tank Project

April 1, 2011

This research will develop a replacement for the bulky cylindrical, heavy-walled compressed natural gas tanks currently used in natur
have a storage capacity that meets the U.S. Department of Energy target.

Content type: Fact Sheet | **Document ID:** CEC-FS-2 | **Author:** California Energy Commission/Public Interest Energy Research

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Comparing Utilization Data for Siting New Wind Power Generation

March 1, 2011

Avian use data from the Altamont Pass wind resource area in Alameda County will be adjusted for observer biases so the data can b
models of avian use.

Content type: Fact Sheet | **Document ID:** CEC-FS-6 | **Author:** California Energy Commission/Public Interest Energy Research

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Healthy Zero Energy Buildings

March 1, 2011

The Healthy Zero Energy Buildings program is a six-year, two-phase multidisciplinary program that includes field and chamber studie
indoor air quality, energy use, and human outcomes as a function of ventilation rates.

Content type: Fact Sheet | **Document ID:** CEC-FS-9 | **Author:** California Energy Commission/Public Interest Energy Research

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Efficiency and Air Quality Implications of Distributed Generation and Combined Heat and Power in California

March 1, 2011

This project is investigating the efficiencies of distributed generation power combined with heating and cooling usage. Specific market
the highest potential for wide-scale urban implementation of distributed generation/combined heat and power in the near future.

Content type: Fact Sheet | **Document ID:** CEC-FS-4 | **Author:** California Energy Commission/Public Interest Energy Research

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New Energy Efficient Infrared Drying and Blanching Technologies for Fruits and Vegetables

March 1, 2011

The proposed research is to develop and demonstrate an infrared dry-blanching and drying system for fruits or vegetables that results
sequential infrared and freeze-drying method and infrared dry-blanching and dehydration method are discussed.

Content type: Fact Sheet | **Document ID:** CEC-FS-5 | **Author:** California Energy Commission/Public Interest Energy Research

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For questions about the content of these reports, please contact **David Weightman** at the California Energy Commission.

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