Mission Statement

Western Cooling Efficiency Center at the

University of California, Davis

The WCEC (the “Cooling Center”) is an element of the UC Davis Energy Efficiency Center (EEC). The EEC was founded in 2006 with support from the California Clean Energy Fund (CalCEF), and is supported by industry affiliates including manufacturers, contractors, utilities, and the California Energy Commission.

Our mission is to partner with stakeholders to identify technologies, disseminate information, and implement programs that reduce cooling system electrical demand and energy consumption in the Western United States.

The hot climates of California’s high growth areas are causing increased energy use for cooling. Most California buildings experience large afternoon “load spikes” that are the major cause of electric load peaks. Conventional cooling systems are sub-optimal for California; for example, they usually dehumidify unnecessarily, increasing loads and operating costs by as much as 15%. Conventional practice also suffers from inattention to integrated design strategies, application of oversized system designs, and a general failure to take advantage of natural cooling alternatives such as flushing buildings with cool night air. The WCEC catalogs and supports a range of cooling strategies that in concert can significantly and cost-effectively reduce the impact of cooling systems on California’s electricity grid. Several projects completed over the last ten years show the potential to reduce cooling energy consumption on California buildings by 50 to 90% with improved or equivalent comfort compared to conventional systems. Modeled after the CLTC, the WCEC is implementing an organized process for bringing a wide range of emerging cooling technologies to market, with a combination of technical support and educational efforts.

The WCEC is guided by a 12 person Steering Committee that meets three times annually. Steering Committee members currently represent the major California electric utilities, the California Energy Commission, the UC Davis Energy Efficiency Center, the U.S. National Renewable Energy Laboratory, major retailers, and the New Buildings Institute.

The WCEC will accomplish its mission and goals through activities that:

- Confront Market Barriers; we will develop strategies to overcome market impediments for energy-saving cooling systems

- Guide Research and Development; we will identify and support technology development projects that can cost-effectively reduce cooling system energy use and peak demand in California within a market-oriented context.

- Support Full-Scale Demonstration Projects; we will encourage, organize, and monitor “high impact” emerging cooling technology demonstrations, and publicize results.

- Provide Business Support; by working with the UC Davis Graduate School of Management, we will support product and business plan development, and entrepreneurial firms committed to producing and marketing emerging cooling technologies.

- Conduct Outreach Activities; we will catalog available energy-efficient cooling systems, create a Cooling Center website, and conduct educational activities that support the WCEC Mission.

- Develop Example Facilities; we will design WCEC offices that function as a working laboratory and allow partners and affiliates to display and demonstrate emerging cooling technologies.

Exciting cooling technology opportunities now being evaluated at the WCEC include:

- Using dry outdoor air to evaporatively cool ventilation and condenser air, reducing peak afternoon demand and energy use up to 30% without adding moisture to indoor air

- Cooling concrete slabs at night, without compressors, to reduce daytime cooling loads

- Raising evaporator temperatures to minimize unnecessary moisture removal from indoor air, and reusing collected water to reduce condensing temperatures

- Using improved controls that diagnose HVAC problems and improve demand response

- Purging and pre-cooling buildings with cool night air

- Applying multi-stage evaporative and hybrid cooling systems that combine the best features of advanced evaporative and compressor-based cooling

- Using liquid desiccant technologies instead of conventional compressor-based cooling

- Implementing strategies that significantly reduce blower use and associated motor heat output

Like the CLTC, the WCEC partners with industry and utility groups to conduct both in-house and outreach training programs that help owners and design professionals with selection and design of emerging and available energy-saving products and systems. The WCEC also networks with utility energy centers to assist with technology transfer over a wider geographical area, sharing exhibits, presentations, and descriptive materials related to efficient cooling systems.