

ZNE Architecture & Engineering

A ZNE building produces as much energy as it consumes over the course of a year

The Value of ZNE Expertise

As sustainable design practices and goals are more commonly adopted by the architectural and engineering communities, designing for zero net energy (ZNE) goals offers firms and consultants an opportunity to **distinguish themselves from the field**.

Demonstrating the expertise needed to create ZNE-level performance signals a proficiency in the advanced technology application and design strategies needed to achieve this goal. This capability **sets you apart from your peers and provides a high value asset to your clients**.

Incorporating ZNE expertise into your practice also prepares for future building requirements as California continues to take legislative steps to limit energy use in buildings and enforce carbon emission taxes and penalties.

The State will adopt the next level of efficiency standards (Title 24) in 2014 for all newly constructed buildings as the next step toward achieving its goal of having all new residential construction be ZNE by 2020 and all new commercial by 2030. **By committing to ZNE buildings now, you will better position your business to compete in the future.**

ZNE Costs Are In Line With Other Green Buildings

Commercial buildings cover a broad array of building types, and information on costs is based on a limited number of buildings. However, there are a number of examples of commercial buildings that have achieved ZNE including solar within typical construction costs for their building type.

Incremental costs for reported examples range from 0% to 15%.

For example, construction costs at Turkey Foot Middle School in Edgewood, Kentucky, were **\$204 per square foot compared to the national median of \$216 per square foot** for new school construction.



Bacon Street Offices | San Diego, CA
Photo: Auda-Coudayre Photography / Kessler Photography

Benefits of Delivering a ZNE Project

Elevate your firm above the rest by delivering buildings that combine the highest architectural, mechanical, and environmental performance.

Embrace the market opportunities presented by ZNE and push high performance design into the mainstream. The technologies and design strategies needed to create ZNE buildings are available today.

Establish your expertise and capacity for innovative design and development solutions that meet the highest standards for performance and energy savings.

Provide increased value to your client by delivering a building that has less tenant turnover, generates higher rents and leasing rates, and provides more comfortable, healthy and productive environments in which to live and work.

The Four Major Components of Integrated Design

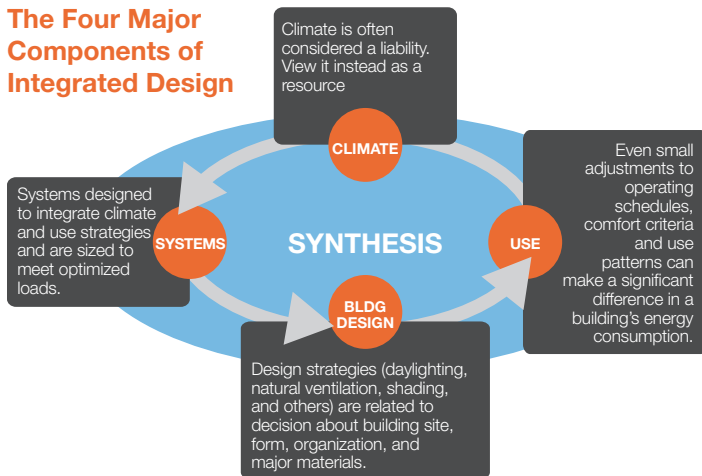


Image courtesy of BetterBricks/NEEA

The Integrated Design Process: Key to Designing a ZNE Building

Achieving a ZNE goal for any new construction or deep renovation project requires a commitment by the design team to a fully integrated process and an understanding of how to incorporate readily available, high performance technologies to achieve significant energy load reductions.

By making all members of the design team aware of the project goals and engaging them early in the design process it becomes possible for each member to understand how their role contributes to the greater design of the whole project. This team-oriented approach will ensure the proper design strategies are selected for the varying California climates and that the most appropriate high performance technologies critical to the outcome of ZNE buildings are selected and installed.

PROJECT PROFILE

IDeAs Z2 Design Facility | San Jose, CA



Photo: David Wakely

This 6,560 square-foot building reached zero net energy by renovating a windowless 1960s-era bank building. The project team added skylights, high performance windows, and increased insulation. A radiant heating and cooling system is coupled with a ground-source heat pump and displacement ventilation. Very importantly, extra attention was placed on minimizing plug loads, both through the selection of equipment as well as controls and designing systems to manage internal loads. Lighting is controlled with occupancy sensors and photosensors. A custom control sequence was also implemented to shut off specified circuits when the security system is armed at night. This eliminates phantom loads and ensures equipment is not left on overnight.

Resources for more information:

California Public Utilities Commission ZNE Information
www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/Zero+Net+Energy+Buildings.htm

New Buildings Institute ZNE Resources
<http://newbuildings.org/zero-net-energy-resources>