

The David and Lucile Packard  
Foundation Headquarters | Los Altos, CA  
Credit: Jeremy Bittermann

# Delivering on Top Shelf Design

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

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

Incorporating ZE expertise into the firm's practice also prepares it for future building requirements as jurisdictions take legislative steps to limit energy use in buildings or consider carbon emissions taxes and penalties.

Many jurisdictions are advancing their energy codes to ZE or near ZE. Cities and states like the District of Columbia, New York, and California plan to issue code progressions that will continue to require energy efficiency until all new construction is required to be ZE. By committing to



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

ZE buildings now, firms will be better positioned to compete in the future.

## ZE 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 in different markets. However, there are a number of examples of commercial buildings that have achieved ZE within typical construction costs, including solar, for the building type. Incremental costs for reported examples of ZE buildings range from zero% 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.

# BENEFITS OF DELIVERING A ZE PROJECT

1

**PROVIDE INCREASED VALUE** to clients 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. Buildings designed for resiliency provide an opportunity for owners to continue to operate, limiting business disruption, and occupant comfort.

2

**ELEVATE DESIGN FIRM** above the rest by delivering buildings that combine the highest architectural, mechanical, and environmental performance.

3

**ESTABLISH FIRM EXPERTISE** and capacity for innovative design and development solutions that meet the highest standards for performance and energy savings.

4

**EMBRACE THE MARKET OPPORTUNITIES** presented by ZE and push high performance design into the mainstream. The technologies and design strategies needed to create ZE buildings are available today.

5

**FUTURE-PROOF BUSINESS SERVICES** by illustrating design services to work with clients through upcoming energy code and greenhouse gas emissions regulations.

## INTEGRATED DESIGN: KEY TO DESIGNING A ZE BUILDING

Achieving a ZE or ultra-low energy goal for any new construction or deep renovation project requires a commitment by the design team to participate in the integrated design process. By engaging the full team (owner, architect, engineers, consultants, contractors, operators, users, etc.) to collaborate on the project goals before design, it becomes possible for each member to understand the project vision and how their role contributes to the success.

This team-oriented, integrated design process will ensure the most appropriate design strategies are specified to integrate building systems. Integrated building system design encourages interactive efficiencies of readily available, high-performance technologies to achieve the significant energy load reductions critical to ZE outcomes.

### THE FOUR MAJOR COMPONENTS OF INTEGRATED DESIGN

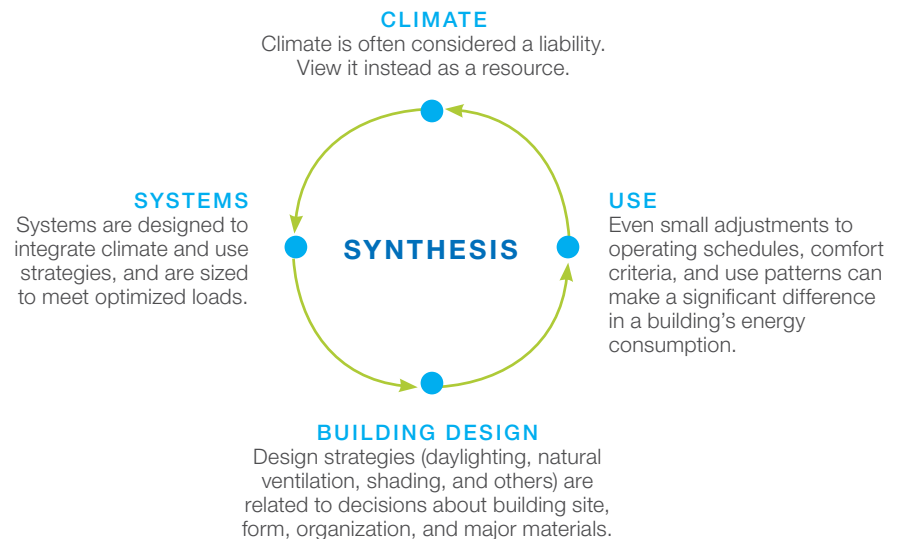


Image courtesy of BetterBricks/NEEA





Photo: David Wakely

## PROJECT PROFILE

IDEAS Z2  
DESIGN FACILITY

SAN JOSE, CA

This 6,5600-square-foot building reached ZE 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 the use of controls and 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

To access NBI's collection of ZE resources, including case studies, research, and tools and guides for getting your project to ZE, visit [gettingtozeroforum.org](http://gettingtozeroforum.org).



New Buildings Institute (NBI) is a nonprofit organization driving better energy performance in commercial buildings. We work collaboratively with industry market players—governments, utilities, energy efficiency advocates and building professionals—to promote advanced design practices, innovative technologies, public policies and programs that improve energy efficiency. We also develop and offer guidance and tools to support the design and construction of energy efficient buildings.

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