



ZNE ACTION BULLETIN

Progress Towards Zero Net Energy Buildings



Issue:19

Summer 2016

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Studies

California Public
Utilities Commission

CA Energy
Efficiency Plans

ZNE
Toolkit

Key Resources &
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Design Resources



Dashboards provide feedback for the new ZNE "Plus" IBEW/NECA training center

News & Highlights

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New IBEW/NECA opens largest ZNE retrofit in the country

The nation's largest zero net energy (ZNE) commercial building retrofit opened this June at the Net Zero Plus

Electric Training Institute (NZP-ETI) in Los Angeles. The 144,000-square-foot demonstration center and living laboratory on advanced and emerging clean energy technologies showcases the future of smart energy-efficiency design, microgrid system integration, energy storage solutions, building resiliency, and a suite of integrated electrical technologies and controls. It is designed to generate more energy than it consumes each year making it a ZNE "plus" building.

The center, part of a partnership of the International Brotherhood of Electrical Workers (IBEW) Local 11 and the Los Angeles Chapter of the National Electrical Contractors Association (NECA), is also an educational facility that trains approximately 1,500 electrical apprentices, journeymen and contractors annually for careers at the forefront of the electrical industry. It is the second IBEW/NECA zero net energy facility in California. Building on lessons learned from its first project in [San Leandro](#), the new center is aiming to be ZNE "plus" by producing more than the energy it uses on an annual basis. The NZP-ETI utilizes advanced efficiency measures, an extensive educational dashboard array, and power generation technology including:



HVAC/Envelope. High efficiency HVAC system with passive ventilation includes the addition or replacement of new insulation, an automated main entrance, electrochromatic glazing to windows, and an exterior shade wall on its east facing side.

Lighting. All interior lights utilize the newest generation of LEDs and state-of-the-art controls. After installation, a tuning process further reduced lighting demand by 20%.

Plug Loads. To reduce plug loads all desktop computers were replaced with more efficient laptop computers cutting usage by 66%.

Renewable Energy. An onsite photovoltaic solar array will power the building and store excess energy in the center's battery system or discharge it back into the electric grid system.

Read more at <http://nzp-eti.com/>

California approves over \$30 million for ZNE research projects

The California Energy Commission approved in April and May over \$30 million in EPIC (Electric Program Investment Charge) research funds to projects pursuing ZNE goals. EPIC works to help buildings become more energy efficient, enable research to improve the electrical system and provide direct energy savings to communities. Highlights of the funding include:

- \$5 million to the California Homebuilding Foundation for a community-scale demonstration of cost-effective ZNE homes in the City of Chino.
- \$3 million to Prospect Silicon Valley to retrofit a low-income, multi-unit, mixed-use building in San Francisco with ZNE upgrades to demonstrate their effectiveness in meeting the energy efficiency challenges.
- Nearly \$3 million to Prospect Silicon Valley to fund the demonstration of large scale, cost-effective energy efficiency improvements to achieve ZNE performance in a Bay Area grocery store.
- Over \$17 million in grants for 12 projects across California that will vie for additional future funding under a new program called the EPIC Challenge. Teams composed of private and governmental entities compete against each other to demonstrate innovative strategies as models to help accelerate the development of ZNE communities.
- \$1.5 million to UC Davis to develop and demonstrate approaches to improve ventilation and indoor environmental quality during HVAC and whole building energy efficiency retrofits in California schools to and feasibility for ZNE performance.

In addition, the funding will support development of a research roadmap that identifies and analyzes the challenges to achieving ZNE as a standard practice and describes and prioritizes research, development, demonstration and deployment gaps that need to be addressed to achieve the state's goals for ZNE.

For a complete listing of the EPIC funding decisions, visit: <http://www.energy.ca.gov/contracts/epic.html>

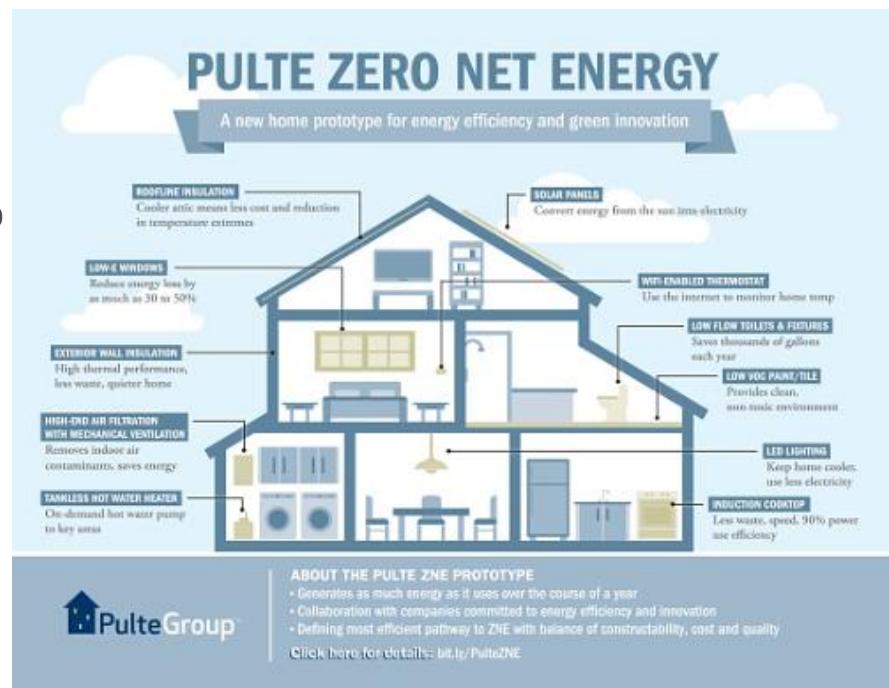
Zero net energy homes market poised for growth

The zero net energy (ZNE) homes market is just beginning to emerge, according to a recent report from Navigant Research called *ZNE, Near-ZNE, and ZNE-Ready Homes: Market Drivers, Case Studies, and Forecast Data*. The growth is expected to reach 27,000 total units by 2025, the report states, and is being driven by increasing stringency in building codes, the potential for onsite generation to help tackle growing grid loads, and mainstreaming of new technologies.

Most of the current count of ZNE single-family homes in North America are located in California with inventory largely limited to custom projects by small builders, the report says. However, a recent announcement from Pulte Group may signal a sea change for the ZNE residential market. The

company, which is the third largest U.S. home builder, stated that it is now producing a ZNE home prototype. The number of multi-unit projects is poised to grow, says Shilpa Sankaran of the Net Zero Energy Coalition, which tracks cases of ZNE single-family and multifamily projects.

[Read more](#)



Research & Reports

New ZNE Buildings Watchlist highlights growing number of California schools

Education buildings are the leading ZNE building types across the U.S., and this new edition of the **ZNE Watch List** highlights that California is right in line with this national trend. New Buildings Institute produces this semi-annual report for the California Public Utilities Commission which documents verified and emerging ZNE buildings and includes trends in California locations, building types and sizes. The Spring/Summer 2016 edition of the **California ZNE Watch List** highlights more than 108 ZNE and emerging buildings which is a significant marker that zero net energy is continuing to be a fast growing building trend. The list includes 43 education buildings targeting ZNE across higher education, K-12, and general education sectors and spotlights the first ZNE certified school building in California. With efforts underway to advance ZNE school retrofits through California's Proposition 39, it is anticipated that many more buildings in the education sector will soon be on the path to zero.

See the [Spring/Summer 2016 Watchlist](#)

Book Review

New case studies spotlighted in ILFI's The Power of Zero

The number one response when asked what is needed most to raise awareness and understanding about ZNE: case studies. The International Living Future Institute (ILFI) has delivered on that need with 19 residential, commercial and institutional building case studies presented in a new book that chronicles project details and illustrates with vibrant photography. The book, *The Power of Zero: Learning from the World's Leading Net Zero Energy Buildings*, showcases projects awarded ZNE status through ILFI's Net Zero Energy Buildings Certification program. The program defines net zero energy as "one hundred percent of the project's energy needs being supplied by on-site renewable energy on a net annual basis."

The book lays out a well explained case for buildings as a critical solution to the current climate crisis, the impacts if we do nothing, and the important process and key technologies necessary to achieve ZNE. Author Brad Liljequist, who directs ILFI's Net Zero Energy Programs, has compiled over 150-pages depicting the 19 projects with information on cost and financing, energy use data, a summary of the project and design intentions, as well as a key aspects of the design and technology applications.

Learn more about [ILFI's The Power of Zero](#)

Additional resources:

[Pacific Gas & Electric's in-depth set of case studies](#)

[New Buildings Institute's set of ZNE and ultra-efficient building case studies](#)

Policy & Planning

Palo Alto adopts a new zero net energy ready ordinance

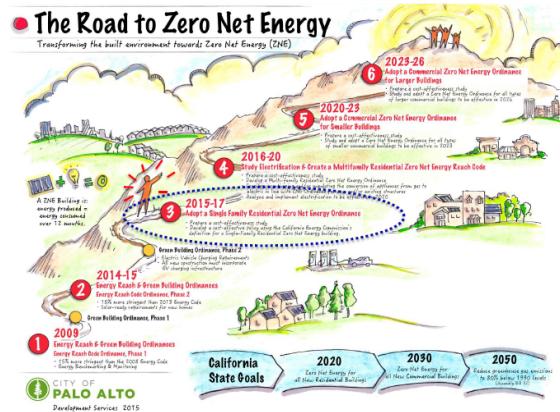
The Palo Alto City Council unanimously approved May 2 a new local amendment to the California Energy Code that would improve the energy efficiency of all new buildings in Palo Alto by making them "zero net energy ready." The new ordinance outlines local amendments to the 2016 California Energy Code, Title 24, Chapter 6 and will impact new single family, multifamily and non-residential projects in the city. It will become effective Jan. 1, 2017.

"This new Energy Reach Code aligns with Palo Alto's commitment to sustainability, zero net energy, and carbon reduction" said Development Services Director Peter Pirnejad. "We look forward to implementing this policy in support of a zero net energy future."

Palo Alto's amendment to the State's Energy code essentially offers two pathways for developers building new projects to comply with the "reach" code. For single family projects that opt not to install photovoltaics (PVs), the project must exceed Title 24 baseline code by 10%. If they chose to install PV, the project must exceed minimum state code by 20% but can use PV towards meeting the requirement. For multifamily, projects without PV must exceed code by 10%; those with PV must exceed code by 12% and can offset the efficiency with PV.

Commercial projects also have two pathways to comply with the reach code. These projects can either exceed minimum state code by 10% or install a minimum 5 kW PV system and meet state code.

[See city of Palo Alto press release](#)



Progress on 100% renewable energy goal for San Diego

Marking a big step toward implementing San Diego's Climate Action Plan and renewable energy goals, Mayor Kevin Faulconer recently shared findings of a [new report](#) that shows San Diego ranks second nationally in solar energy capacity following a 26% increase in solar panel installations over the past year.

Increasing the amount of solar panels used in San Diego will help meet the ambitious goals in the City's Climate Action Plan, including using 100% renewable energy citywide and cutting greenhouse gas emissions in half by 2035. The City Council unanimously approved Mayor Faulconer's plan in December 2015.

"Rooftop solar is key to San Diego achieving a 100% clean energy future," said Nicole Capretz, Executive Director of the Climate Action Campaign. "In fact, rooftop solar will contribute nearly 20% of that goal. We can't get there without it."

[See city of San Diego announcement](#)

Education & Events

Program information available for the Getting to Zero National Forum

October 12 - October 14 | Denver, CO

**GETTING TO
zero**
NATIONAL FORUM 2016

The program for the 2016 Getting to Zero National Forum is being finalized and includes three-days of jam-packed sessions covering five tracks. Forum organizers have also scheduled two workshops featuring buildings at the grid edge and zero net energy schools as well as four tours of residential, school, office and public buildings. For details visit the event website: gettingtozeroforum.org

3rd Annual Net Zero Conference, Energy + Water + Waste

August 19 | Downey , CA

The Net Zero Conference, Energy + Water + Waste returns to the SoCalGas® Energy Resource Center in Downey on August 19. The no-cost, half-day conference includes: six short TED style net zero case study presentations from nationally leading AEC firms, an exhibitor table expo, and high quality networking opportunities. Learn more at: <https://www.eventbrite.com/e/net-zero-2016-tickets-21282599829>

Net Zero Energy Retreat

July 28-31 | Trinidad and Arcata, CA

Redwood Energy, a ZNE affordable housing developer, is gathering high performance building and renewable energy experts to a Net Zero Energy Retreat in Northern California on July 28-31. The event will present case studies and technical deep dives covering topics including zero net energy and water, baby safe and elder health and social justice. Learn more at: www.zneretreat.com/

Did you miss "Creating demand for zero energy"?

Never fear! This hot webinar attracted over 110 attendees from across the country, and now you can watch and listen to it online at your leisure. Learn about NZEC's findings on trends in zero energy growth, and how market leaders Sean Armstrong (Redwood Energy) and Carter Scott (Transformations) didn't wait for this projected \$1.3 trillion market to come to them.

Notes & Briefs

New social network helps home owners realize ZNE with everything from products to professionals.

Houzz offers those looking for home improvement inspiration and advice the ability to better visualize ideas for home and garden and then find a local professional needed to get the job done including creating a zero net energy living space. A search for zero net energy homes brought up over 4,000 photographs including houses using the Passive House standards, and tagged images with product information. Learn more at houzz.com

Architecture at Zero is now accepting applications for its 2016 program.

Architecture at Zero, presented by Pacific Gas and Electric Company (PG&E) and the American Institute of Architects, California Council (AIACC), is a zero net energy design competition open to students and professionals worldwide, engaging architecture, engineering, planning students and professionals in the pursuit of energy-efficient design. This year's competition is a student housing project on San Francisco State University campus. Submissions are due Sept. 30. Learn more: architectureatzero.com

Energy Upgrade California™ is a state initiative to educate residents and small business consumers about energy management. The initiative helps Californians take action to save energy and conserve natural resources, reduce demand on the electricity grid, and make informed energy management choices at home and at work. It is supported by an alliance of the California Public Utilities Commission, the California Energy Commission, utilities, regional energy networks, local governments, businesses, and nonprofits to help communities meet state and local energy and climate action goals. Funding comes from investor-owned utility customers under the auspices of the California Public Utilities Commission. ©2013 Energy Upgrade California. Trademarks are property of their respective owners. All rights reserved.

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We look forward to hearing about your ZNE efforts. If you want to get the word out on related upcoming ZNE events, new research, buildings or other ZNE Action Plan news, please send info to Connie Umphress at connie@newbuildings.org



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