



ZNE Knowledge Exchange

QUESTIONS ANSWERED. INFO SHARED.



FIRST IN A SERIES OF ARTICLES ON ZNE

Understanding Zero Net Energy And Latest Updates to Mandates

By Wayne Alldrege, VCA GREEN

This is the first in a series of articles focused on California state mandates for Zero Net Energy (ZNE) buildings. We'll present concise, applicable information on subjects related to ZNE. We invite questions regarding building codes like CALGreen, Technology and Design, and any other ZNE-related subjects.

What is ZNE? In 2007, the California Public Utilities Commission (CPUC) set a goal that "all new residential construction in California will be zero net energy by 2020" and "all new commercial construction in California will be zero net energy by 2030."

The definition has since been revised, adding "or equivalent to zero net energy" to each of those statements. This results in the inclusion of some type of renewable energy producing system (e.g. solar, wind, hydro, bio-mass) into the design of the building so that

it generates energy to offset its consumption.

The Zero "NET" energy definition is being refined by the California Energy Commission to state "... where the value of the energy produced by on-site renewable energy resources is equal to the value of the energy consumed annually by the building...."

This "value" has a time-dependent valuation (TDV) that favors certain energy sources more highly at

peak demand times. Accordingly, the refined TDV definition allows trade-offs between different energy sources throughout the course of a day, week, season, or year, which can create options for builders.

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The bottom line is that buildings will offset their energy consumption with equivalent or greater renewable energy production.

The ZNE goal is here to stay and has since been incorporated into the California Long Term Energy Efficiency Strategic Plan, the 2015 Integrated Energy Policy Report (IEPR), the California Energy Action Plan, the Governor's Clean Energy Jobs Plan, and the AB 32 Scoping Plan.

The requirement to offset building energy usage becomes mandated in California on January 1, 2020, which is the date the 2019 Energy Code is scheduled to become enforceable by City and County Building departments.

Outside California, ZNE is also applicable in certain instances. For example, in 2009 the Federal government issued Executive Order 13514 with ZNE targets for federal facilities. Additionally, states such as Illinois, Maryland, Washington, and others are adopting advanced energy efficiency goals targeting ZNE by some future date. This ripple effect is expected to continue to expand throughout the nation.

Design Update

Energy modeling is expected to become more prevalent, because

it is the best tool for achieving ZNE goals in the most affordable fashion. When modeling energy usage of a building, proper sealing of the building envelope can be considered "low hanging fruit." Architects and Engineers will no doubt be involved with designing air-tight wall and ceiling assemblies to achieve ZNE.

Construction Update

We expect heat-pump water heaters to become more prevalent in residential construction.

In a study commissioned in part by the National Resources Defense Council (NRDC), heat-pump water

heaters were shown to cut CO₂ emissions by 50%. Additionally, when coupled with renewable only energy, CO₂ emissions are effectively eliminated.

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Wondering how ZNE will affect current and future projects? We welcome your questions.

Please call or email:

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