



DATE: September 12, 2016

TO: Council Sustainability Committee

FROM: Director of Utilities & Environmental Services

SUBJECT

Solar and Zero Net Energy Requirements for Public and Private Construction

RECOMMENDATION

This is an informational report.

BACKGROUND AND DISCUSSION

This report is informational only. The purpose is to inform the Committee about solar and Zero Net Energy (ZNE) requirements that Council has adopted for public and private construction.

In addition, staff has created a webpage that summarizes these and other energy policy topics that have appeared before the Sustainability Committee. The webpage will be kept up to date if new policies are adopted or existing policies are amended in the future:

www.Hayward-ca.gov/CouncilSustainability/Energy

Relevant General Plan Policies

There are a range of General Plan Policies and Implementation Programs that are related to building energy use and renewable energy. These are listed in Attachment I.

What is Zero Net Energy?

The term Zero Net Energy (ZNE) typically refers to a building or set of buildings that generate enough renewable energy onsite to offset the energy used over the course of a year. However, the manner in which ZNE is calculated depends on the entity:

- **DOE Definition:** The U.S. Department of Energy defines a ZNE as “an energy-efficient building [campus, or community] where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy.” The State of California will use this definition to evaluate new and existing state buildings.
- **CEC Definition:** The California Energy Commission (CEC) defines ZNE for new buildings in the Energy Code using modeling that includes time dependent valuation.

- **Zero Cost:** The term ZNE is less frequently used to refer to the cost of energy to the customer – in other words, zeroing out a customer’s utility bill.

Solar and ZNE Requirements for Private Construction

Council adopts energy efficiency and solar requirements for private construction when it adopts the California Building Code. The current Building Code is the 2013 Code, which Council adopted on December 17, 2013.

Previous to 2013, Council had adopted a “reach code” for private construction, which required new buildings and major upgrades to implement greater energy efficiency measures than were required by the State. However, with the adoption of the 2013 Building Code, Council decided to forgo Hayward’s local green building requirements for private development because the 2013 State Code was more aggressive than Hayward’s local code.

Energy Requirements in the 2013 Building Code: The 2013 Code requires standards that are designed to use 25% less energy for lighting, heating, cooling, ventilation, and water heating than the 2008 Code. These requirements apply to all new construction and commercial tenant improvements greater than 1,000 square feet or \$500,000 valuation.

In addition, the 2013 Code requires new buildings to be “solar ready.” This includes the creation of a solar zone on the roof that is properly oriented towards the sun and that is not obstructed by building elements or shadows. It also requires a series of electrical measures that promote the easy connection of a future photovoltaic (PV) system. For more information, Attachment II is an FAQ that was released by the CEC on the 2013 Code.

Promoting Solar Through Discretionary Review: As part of the discussion leading up to the adoption of the 2013 Building Code, the Sustainability Committee recommended that developers for residential projects of twenty or more units be required to offer solar systems as an optional upgrade. To support this policy, Planning staff requires that all residential developments involved in rezoning from a base zoning district to Planned Development District include installation of solar as a standard amenity for all residential units.

2016 Building Code - Coming Soon: The State recently published the 2016 California Building Code, which the City is required to adopt before January 1, 2017. Staff will bring an overview of the new code to the Committee in November. The 2016 Code further increases energy efficiency requirements, but does not yet require renewable energy. Staff anticipates that solar will be required in the 2019 Code. According to the CEC, “the 2019 standards will take the final step to achieve ZNE for newly constructed residential buildings throughout California.”

Solar and ZNE Requirements for City of Hayward (Municipal) Construction

For municipal buildings, Council has set solar and ZNE requirements that go above and beyond the State Building Code:

LEED Silver: In 2008, Council adopted Green Building Requirements for Municipal Buildings, which is Section 10-21 of the Hayward Municipal Code. This requires that all new City construction and renovations that exceed 20,000 square feet or \$5 million in construction costs “meet a minimum LEED™ Silver rating and be so certified by the US Green Building Council. All Covered Projects shall also have a LEED-Accredited Professional as a principal member of the design team from the beginning of the project.” Note that the LEED Silver rating does not require a building to have any renewable energy features.

Zero Net Energy for City Buildings: On May 17, 2016, City Council adopted a resolution that requires all new City construction, and renovations exceeding 50% of a building’s value, to be zero net energy starting January 1, 2017. For buildings where it is not feasible to install on-site renewable energy, equivalent renewable energy is required to be installed at other city-owned properties. In addition, lesser renovations should include efficiencies and technologies that facilitate achieving zero net energy by 2030. (For the full staff report on this topic, see the Related Items section in Legistar at the end of this report.)

ZNE for Citywide Operations: On July 11, 2016, the Committee received a report from staff outlining a potential policy to achieve cumulative zero net energy for all municipal facilities by 2025. At that meeting, the Committee members recommended the policy be brought before Council. The Committee also requested that staff draft a phased implementation plan and consider the feasibility of achieving cost neutrality for PG&E bills. Staff will bring this item to Council later in 2016. (For the full staff report on this topic, see the Related Items section in Legistar.)

FISCAL AND ECONOMIC IMPACTS

There are no fiscal or economic impacts anticipated as a result of this informational report.

SUSTAINABILITY FEATURES

Energy: Electricity/natural gas/other fossil fuels.

Solar and ZNE requirements have a direct impact on the amount and the sources of energy used by the Hayward community. These requirements help the City meet its energy goals of reduced consumption and reduced greenhouse gas emissions.

Air: Air emissions of pollutants?

Use of renewable energy instead of fossil fuel will result in a reduction in community Greenhouse Gas (GHG) emissions.

Prepared by: Mary Thomas, Management Analyst

Recommended by: Alex Ameri, Director of Utilities & Environmental Services

Approved by:



Kelly McAdoo, City Manager

Related Items in Legistar

- Related Item I [Renewable Energy Generation Potential at City Facilities & Establishment of a Cumulative Municipal Zero Net Energy Goal](#)
(Policy appeared before Council Sustainability Committee)
- Related Item II [Zero Net Energy Policy for Municipal Buildings](#)
(Policy adopted by Council)
- Related Item III [Zero Net Energy Policy for City Buildings](#)
(Policy appeared before Council Sustainability Committee)
- Related Item IV [City Council Meeting December 17, 2013](#)
(2013 Building code adopted)
- Related Item V [City Council Meeting December 10, 2013](#)
(2013 Building Code introduced)