

Zero Energy Strategic Plan Draft

By San Mateo County Energy Watch

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Executive Summary

In order to mitigate the effects of Climate Change as much as possible, the SMCEW plans to address the Greenhouse Gas emissions from the county's building infrastructure through a Zero Energy (ZE) Strategic Plan. This strategic plan will support ZE policy development and implementation of ZE projects in San Mateo County.

The SMCEW will address two scopes of work through this Strategic Plan:

1. Providing technical support and resources to cities
2. Facilitate workforce development surrounding ZE construction

To address these themes, the SMCEW has developed 4 major ZE Commitments with individual goals, as seen below:

- I. Support Municipalities by developing ZE Action Plan and Policy Templates
- II. Nurture Early Adopters and Influence Developing Projects
- III. Train Professionals about Zero Energy Buildings
- IV. Provide Training and Informational Materials to Building Departments and Planning Commissions

These commitments target multiple stakeholders in the county including, but not limited to, municipalities, city staff, building professionals (builders, architects, and designers), real estate professionals, school personnel, building departments, planning commissions and homeowners.

The County of San Mateo and its residents have three main reasons to develop a Zero Energy Strategic Plan: 1) to begin aligning our city and county building code goals with future state goals 2) providing working professionals in the county with workforce development materials, resources and training ensuring they can provide the services necessary to comply with the state's upcoming ZE building code, and 3) providing technical support to cities enables them to adequately assist their citizens with ZE projects. The objective of the San Mateo County Energy Watch's (SMCEW) Zero Energy (ZE) Building Strategic Plan is to provide a framework of tools, trainings and technical support to align the building infrastructure in the county with the state's zero energy goals and reduce the overall energy consumption in San Mateo County, for the purposes of reducing the overall greenhouse gas emissions in the county.

Background

State:

In 2008 the CPUC adopted California's first Long Term Energy Efficiency Strategic Plan, presenting a single roadmap to achieve maximum energy savings across all major sectors in California. This plan, along with the 2007 Integrated Energy Policy Report, adopted zero net energy goals for new construction in California. These goals are as follows:

- All new residential construction will be ZNE in 2020
- All new commercial construction will be ZNE in 2030
- 50% of existing commercial construction will be ZNE in 2030

The CPUC supported these goals with ZE Action plans in 2010 and 2015, and their work was supplemented by the CEC's 2013 Integrated Energy Policy Report which helped define ZE buildings, identify the necessary steps to achieve 2020/2030 goals, and address options for renewables essential to achieving the ZE 2020/2030 goals.

Governor Brown also passed an Executive Order for State buildings and ZNE: Executive Order B-18-12-State Buildings starting construction after 2020 shall be ZNE and 50% of state buildings space renovated to ZNE after 2025

Local:

In response to these mandates, the SMCEW, along with sponsors, hosted a ZE Workshop in May 2015 with 2 full day sessions for local governments, building professionals, real estate professionals and homeowners. The ZE for Local Governments session had 74 attendees, primarily from San Mateo County, but included government workers from all 9 counties in the Bay Area. This workshop helped the attending building inspectors, sustainability coordinators and facilities managers develop a ZE roadmap for their city. The second day of the workshop, Residential ZE for building professionals, real estate professionals and homeowners, focused on the technical feasibility and strategies of building ZE homes, case studies, and tips on how energy usage behavior can affect ZE results. This session had 66 attendees, primarily architects and contractors. The workshop fueled multiple ZE building tours and a ZE networking LinkedIn group for local building professionals. Based on the interest of attendees and the desire to align our program with state goals, the SMCEW developed this Zero Energy Strategic Plan to assist residents and working professionals realize a thriving ZE community in our county.

Defining Zero Energy

The definition of a Zero Energy building differs widely at the state and national level. The most commonly used definition is Zero Net Energy, meaning the building produces as much on site renewable energy as the building consumes over the course of a year. The "net" refers to the idea that there is a net balance of zero over a year, not that the renewables fully offset a building's energy usage at each moment. These buildings are still connected to the utility grid (for San Mateo

County that would be PG&E) and will have a monthly utility bill. These bills will be substantially less than the typical building and will consist of grid connection fees, taxes and any energy needed that could not be supplied by the onsite renewables. Zero Net Energy buildings require renewable energy sources to be included in the initial building phase.

There is also the term Zero Energy Ready (ZER), which refers to a building that is built to operate as efficiently as possible and could be ZE if renewables are added. This allows the builder to focus resources on the efficiency of the building first, while considering and planning for the possible addition of renewables in a phase 2.

For the purposes of this document, ZE, when used refers to a building that meets the following qualifications:

- Either ZNE (strongly encouraged), or, if ZNE is not feasible, ZER. But you must be able to demonstrate measures taken to address a high performance building and have accommodations for renewables in the future
- Renewables cover all site energy consumed, not source*
- Does not allow for renewable energy certificates to count as renewable energy generated**
- Is able to accurately report energy usage/generation data
- Energy purchased from a Community Choice Energy (CCE or CCA) source or other renewable utility portfolio does not count as renewable energy generated. Building must still have on site renewable generation or plan to implement it in the future
- Building does NOT consume Natural Gas

SMCEW ZE Commitments

I. Support Participating Municipalities by developing ZE Action Plan and Policy Templates

Goal 1: Develop a ZE Action Plan Template and sample language for Cities to Adopt

Strategies:

- Work with a partner organization for technical assistance to develop customizable template
- Generate sample language for construction RFPs, building ordinances, general plan updates etc.

*Source Energy: the total amount of energy used to generate and transport the energy consumed on site

In order to make participation from cities as easy as possible, the SMCEW will develop a ZE Action Template that will have customizable measures. This will be a document constructed by SMCEW and a technical assistance partner, and will address implementation of ZE building practices for public, residential and commercial buildings. The template would include four potential elements:

1. Commitment to ZE for all new or majorly remodeled municipal facilities
2. Commitment to implement ZE building incentives and to provide education to building applicants in their city
3. Commitment to consider developing ZE reach codes or other ZE building ordinances
4. Promote and encourage ZE professional development through workforce trainings and resources

During the template development process the SMCEW will seek feedback and suggestions from city sustainability coordinators and building department officials in order to provide appropriate and comprehensive options. Development of the ZE Action Plan template will begin in 2016.

The SMCEW will also generate sample language for RFPs, building ordinances, or general plans that will include ZE goals or requirements. This will allow public agencies to easily include ZE in their next construction project or general plan update.

Goal 2: Municipalities build and implement ZE Action Plans with assistance from SMCEW

Strategies:

- Cities use the Action Plan Templates developed by SMCEW
- SMCEW provide technical assistance to cities by helping them customize the template for their needs and any implementation assistance they may need.

The SMCEW will help participating cities build their own ZE Action Plan by using the supplied ZE template. Each city will be able to customize their own Action Plan by selecting specific goals, ordinances, or incentive programs that work best for their city's needs. The SMCEW will also provide any assistance needed in the implementation of said Action Plan. This may include, but is not limited to, providing comments on proposed ordinances, providing comprehensive information and resources needed to develop ZE goals, or assistance in the development of ZE workforce trainings.

II. Nurture Early Adopters and Influence Developing Projects

Goal 1: 50% of all new public buildings are built to ZE in 2025

Goal 2: 50% of all new commercial buildings are built to ZE in 2025

Strategies:

- Continue and increase public building interventions
- Provide resources through the SMCEW website

- Partner with building departments to identify target ZE opportunities and offer ZE consultations.

New construction is booming in San Mateo County in 2015, and many of these new buildings are being designed to last 50 years. The SMCEW wants to get ahead of these projects and fuel a more efficient building stock for the future. Every building that is built now that is not to ZE standards is a missed opportunity and will be a source of inefficiency for decades to come. That is why the SMCEW has developed the ZE Intervention Strategy. This intervention strategy involves setting meetings early in the design process with project managers, architects and other appropriate parties to introduce the possibility of ZE building practices for the project. This has previously been limited to public projects, but with the adoption of the Strategic Plan will expand to include private commercial buildings as well by reaching out to building professionals from our trainings, and providing resources in building departments when permits are acquired.

To generate opportunities for ZE interventions, the SMCEW plans to work closely with the city building departments to identify ZE projects opportunities. SMCEW will provide trainings and foster an understanding of ZE practices and benefits to all city building department personnel. In these trainings the SMCEW will elaborate on the basic definitions, building/design practices, benefits, and current state goals of ZE to prepare the building department personnel to answer any ZE questions that may arise. The SMCEW will also offer ZE consultations for any building project that desires more information or assistance. This is a purely informational consultation and will not include any engineering or architectural calculations or drafts.

Our goal of 50% of all new public and commercial buildings to be built to ZE starting in 2025 were determined in an attempt to act as a stepping stone to reaching the following state goals:

- 50% of all existing commercial to ZE in 2030
- 50% of all new commercial to ZE in 2030
- State buildings starting construction after 2020 will be built to ZE standards, and 50% of renovations on State buildings will be ZE after 2025.

III. Train Professionals about Zero Energy Buildings

Goal 1: Establish networking and information groups for building professionals (builders, architects, and designers), real estate professionals and school personnel

Goal 2: Establish criteria for being considered a ZE “expert”. List of ZE experts is maintained and published, and grows annually.

Goal 3: Provide trainings for building professionals, real estate professionals and homeowners in an effort to have a prepared workforce when ZE becomes code in 2020

Strategies:

- Host in-person and webinar trainings on ZE

- Host ZER tour events featuring building professionals and their work for commercial, residential and school facilities
- Establish networking and information-sharing groups for professionals.
- Build out the SMCEW website to include more ZE resources and content

The SMCEW believes that establishing and nurturing a network of professionals interested in furthering the ZE cause will help provide the market transformation needed to meet state goals. By fostering a network where professionals can share ideas, tips and work experience we hope to generate a capable ZE workforce in San Mateo County.

Feeding the professional network will be attendees from the professional trainings that SMCEW plans to facilitate, as well as other professionals with ZE experience and interest. These trainings will include topics such as design practices, stakeholder engagement, ZE project team coordination, benefits of living/working in a ZE building, how to market a ZE appropriately and any other ZE topics that may be requested.

As requested by representatives in multiple sectors, SMCEW would like to establish a ZE “expert” qualification or certification. Working professionals prefer to have an easy way to distinguish themselves as a knowledgeable resource on ZE to their customers, and a title or certification is their preferred method of doing this. SMCEW plans to collaborate extensively with local associations representing working professionals to establish the feasibility and technical requirements needed to establish this sort of qualification.

In addition to the trainings, SMCEW will build out the SMCEW website to include more ZE resources and content. The website will include a list of contractors with ZE building experience, ZE animation videos, presentations from trainings, links to ZE industry leading organization websites and any other resources SMCEW feels contributes to the ZE cause.

IV. Provide Training and Informational Materials to Building Departments and Planning Commissions

Goal: For city building dept. personnel, planning commissions and city energy managers to become knowledgeable advocates for ZE and have resources for the public

Strategies:

- Develop a standardized training for SMCEW to present to each city’s building department
- Develop informational materials and a kiosk to display in Building Departments

SMCEW believes that involving cities building departments as early as possible in our endeavor to promote ZE is imperative to our success. Building Departments are the forces that have to enforce and implement the policies or ordinances adopted by cities, and they need to be knowledgeable and willing to support ZE updates. Enforcement of the current Title 24 codes is already a huge task that hasn’t been as effective as hoped, something we want to avoid by providing trainings to building departments so they are prepared when the time comes in 2020 and 2030. These trainings will

include background information about what ZE is, what the state goals are, why ZE matters to our energy and building infrastructure and how they can work to promote the switch to ZE building as a norm. The development and presentations of the training will be by the SMCEW, and will be offered to every building department and planning commission in San Mateo County. SMCEW would also want to present the training to city Energy Managers, as they have intricate knowledge and involvement in city construction and renovation projects.

In coordination with the trainings, SMCEW will also generate hard materials to distribute or display at building departments in the county. These materials will include flyers describing ZE details and referring to online resources on the SMCEW website. There is the possibility of establishing a kiosks in city building departments that would have ZE videos and promotions playing on digital screen. The idea of the hard materials and the kiosk is to generate interest about ZE in the people going into the building department. Though these people are already coming in for permits on a project already under construction, the large majority of these people will be building professionals who have multiple projects and are always looking for their next client. This will help to educate the building professionals working in San Mateo County about the upcoming code changes and state goals as well as the benefits to both building professional and clients of a ZE building.

Next Steps

Milestone: Obtain feedback from RICAPS* working group about prioritization of measures.

In order to be most effective in implementation, the SMCEW will be getting feedback from sustainability coordinators from each city to gauge their sense of what measures should be prioritized. This will include a presentation of the strategic plan, discussion of measures and individual scoring of measures for prioritization purposes. Responses and feedback from this should be ready to act on in January 2016. Based on these responses the SMCEW will begin addressing the appropriate measures in the first half of 2016.

Milestone: Find ZE supporters from local cities to assist the implementation of SMCEW Strategic Plan

The SMCEW would like to find representatives from cities that are willing to promote and advocate for the ZE measures we are proposing.

Other Resources

[California 2007 Energy Policy](#)

[New Residential Zero Net Energy Action Plan 2015-2020](#)

[2013 Integrated Energy Policy Report](#)

CPUC Defining ZNE

*RICAPS: Regional Integrated Climate Action Planning Suite- a multi-city working group made up of sustainability coordinators from each city in San Mateo County