

DRAFT San Mateo County ZNE Plan

November 2016

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 External County Policies & Practices.

Local:

In response to these mandates, the San Mateo County Energy Watch Program, along with sponsors, hosted a ZNE Workshop in May 2015 with 2 full day sessions for local governments and community members. Based on the interest of attendees and the desire to align our program with state goals, the SMCEW developed a Zero Energy Strategic Plan to assist residents and working professionals realize a thriving ZE community in our county. A link to the plan is available on the SMC Energy Watch website.

In 2016, building upon these earlier efforts, the SMCEW encouraged the County to collaborate with New Buildings Institute and the California Public Utilities Commission to pilot a set of ZNE Planning and Policy tools and templates to create this draft ZNE Plan for the County to assist in the development of their Sustainable Building Policy.

This effort included "Tools & Resources for Developing ZNE Plans and Policies Workbook" (ZNE Workbook). This ZNE Planning and Policy Workbook was developed based on trainings held by NBI on behalf of the CPUC to support ZNE early adopters. A planning charrette, interviews with staff from multiple departments, and completed workbook templates were pulled upon to create the following draft as a template for others and to support further ZNE County Strategic ZNE planning, policy and building targets.

Vision, Goals and Milestones:

Internal County Policies & Practices

Vision for Municipal Facilities: Our vision is to establish a county facilities policy that requires ZNE and lifecycle costs to be incorporated in RFPs for all new construction projects by 2018. Ideally, we'd like our capital projects team to utilize a checklist to make sure all necessary sustainability attributes of a project are addressed, with ZNE being a major component. ZNE should be included in early conceptual discussions and as the project moves into the design and/or construction phase, with some "vehicle", such as a checklist, to ensure ZNE elements are

included and not value-engineered out of the design. The ZNE process and design should be favored by the finance department as ZNE addresses lifecycle costs and operations rather than only upfront costs. In order to achieve these goals we would 1) create 1-2 checklists for Capital Project PMs to refer to for each project that includes ZNE requirements, and 2) include ZNE language in all construction RFPs so proposals received are required to address ZNE.

Internal ZNE Goals

Establish a county facilities policy (or portion of a larger sustainable building policy) that requires all RFP's responses to include ZNE and life-cycle costs instead of just capital costs, identifies target energy use goals and requires adequate monitoring to ensure buildings are performing as modeled. The County would also like to have 1 ZNE new construction project (at minimum under design phase) by 2020 and 1 retrofit ZNE project (at minimum under design phase) by 2023.

Internal ZNE Milestones

1. Create 1-2 checklists for Capital Project PM's to refer to for each project. This checklist/s would include modeling for ZNE.
2. Include ZNE language in all RFPs
3. OOS to continue facilitating internal discussions about developing Sustainable Building Policy

Targets and Action Items:

Targets

1. 1 new construction ZNE project by 2020
2. 1 retrofit ZNE project by 2023

Action Items:

The following action items were identified as key steps to take in order to reach our target projects.

1. Assess Existing Buildings
 - a. Identify the worst performers in our portfolio and set priorities for those projects to increase their energy performance. This will be done by our County Energy Manager
2. Consider Possible ZNE Pilots:
 - a. We would like our project teams to look at current or upcoming projects to identify a building for a potential pilot project. A few identified upcoming/current projects:
 - i. Emergency Operations Facility,
 - ii. Animal Shelter (next up in pipeline)
 - iii. E. Palo Alto Gov. Center
3. Integrate ZNE into RFPs and Owners Project Requirements
 - a. An area that has been identified as the best place to introduce ZNE in the project is the RFP/RFQ and OPRs. This would allow the county to require proposals include ZNE within their budget restrictions and identify the applicants with ZNE experience
 - b. This is already being developed by the San Mateo County BayREN team with their consultants, DNVGL
4. Develop ZNE Owners Project Requirements
 - a. Another template currently being developed is an example OPR that includes ZNE. We would like to incorporate this into the county's process for any capital projects.

- b. This will include description of desired team makeup: Commissioning Agent, Energy Modeler, and an Integrated Design Process.
- 5. Establish a ZNE Policy for Specific Building Types
 - a. We are looking into having different energy use intensity targets based on the type of building E.g. libraries, small office, and large office.
 - i. This policy, that will identify targets by designed EUI, will be included in our new Sustainable Facilities Policy that integrates occupancy, water, energy, etc. This policy is in its early phases of development now. A taskforce will be created in the next few months and work will begin on the writing of the policy.
- 6. Update County Facility Design Standards
 - a. We're looking to include performance based EUI targets within our Facility Design standards- this would be included in the Sustainable building policy(EUI, Cal green), EMS.
 - i. →Move toward Performance Criteria vs. Prescriptive Design.
- 7. Conduct a ZNE Feasibility Study for County Buildings
 - i. Identify best opportunity(s), worst performer(s), biggest upgrades needed
- 8. Explore Finance Options
 - a. We will analyze whether an EE Reserve fund would work. We would put the money the county saved from the associated energy savings into a revolving fund that would then pay for more energy efficiency measures.

Identified Gaps:

The following gaps were identified using the Gap Analysis Workbook template from the New Buildings Institute. At the ZNE Charrette on September 8th the attendees worked through the template to identify where there was opportunity to improve within County departments to ensure that ZNE transitions could occur smoothly.

1. **County's Strategic Energy Master Plan:** The current plan identifies a goal of reducing overall energy consumption by 10% by 2020 but does not include any targets for zero net energy. This plan should be updated with 2030 goals and to incorporate ZNE and would follow refinements to a new Sustainable Building Plan for County Facilities.
 - a. Public Works will take the lead on the Strategic Energy Master Plan efforts. Andy Jain the County Energy Manager would be the specific lead for this task which is estimated to start in 2018. The 2030 goals will include building and renovating to ZNE in an effort to reach higher reduction goals.
2. **Climate Action Plan:** The County's Climate Action Plan does not currently have ZNE building performance targets, which should be added at the next update.
 - a. The Office of Sustainability will take the lead on this task, with the Climate Action Group as the primary entity driving this work.
3. **Green Building Policy for County Facilities:** The gaps in this area included a need for a policy addressing specific building types, setting owners project requirements, assessment of existing buildings, lease requirements for County facilities, specific targets within County facilities standards for things such as lighting power density (LPD) per square foot, as well as higher standards for thermal comfort, daylighting, and overall energy intensity, among others.
 - a. As a result, a new Sustainable Building Plan for County Facilities was identified as a critical next step to develop. This plan will specifically address ZNE as well as other green building and resources goals and targets. (See Integrating ZNE into Municipal Building Delivery Process section for specific actions).
4. **Lease facilities** requirements were identified as a key project to develop as the County is a tenant in some buildings and also has a few facilities that are currently being leased.

- a. The Office of Sustainability is a subcontractor on a CEC grant where one of their main focuses will be to research, analyze and produce draft lease language that incorporates ZNE or energy efficiency. This work will begin in 2017 and end by 2018.
5. **RFP'S + RFQ Language for County Facilities** – New templates for RFPs & RFQ's that include ZNE are being developed and will be finalized by the end of 2016. These will support not only the County Facilities but also be a model for other jurisdictions.
- a. The Office of Sustainability is the lead on this task, specifically the BayREN team who has a contract with a consultant to develop these materials. The templates will then be incorporated with the Capital Projects team in Public Works for any future projects.

Backcasting/Timeline:

The following timeline was generated using the NBI Backcasting Template

Goals & Milestones	2017	2020	2025
Policy	- Lease language - Owners Project Requirements (OPR) w/ ZNE language - ZNE RFP/RFQ language - New Construction policy for ZNE - Checklist for ZNE Evaluations		-ZNE Reach Code for Unincorp. Commercial
People	- Engage Leadership - Engage other departments, HR? - Form a ZNE Task Force?		
Education & Outreach	- Develop Reach Code Templates for Cities		
Development Process	- ZNE Feasibility study for Exist. Buildings	* 1 New ZNE by 2020	*1 Retrofit by 2023
Finance	- 5 Year Plan		

Communications and Messaging:

The following were identified as some key messages and actions the County might integrate into their communications around why they are pursuing future zero net energy building approaches and plans. Several ideas were brainstormed during the ZNE planning charrette which are listed below.

Key Messages

- Walk the talk: San Mateo County should take on a leadership role to inspire change in other jurisdictions.
- Building to ZNE is a responsible and wise use of county resources. It allows the County to assess the cost analysis of long term energy and operations of municipal buildings, thereby reducing use and cost over time.
- ZNE is part of comprehensive sustainable and resilient approach.

- The County is creating better, healthier, less polluting buildings for its employees and community.
- Organizations spend more money on employees than energy and operations so it is a very important investment that can support financial savings due to overall higher retention of staff due to higher occupant comfort, satisfaction, reduced absenteeism, etc.
- ZNE can help create better working environments for staff overall health, productivity, and employee retention. Refer to the "3-30-300" rule of thumb (\$3 - Energy Cost | 30 - Operations Cost | \$300 - Employees Cost) to further put these investments into perspective. If retaining employees is increased this will have a significant payback.
- ZNE buildings are more Resilient in emergencies, power outages.
- California Building Code is moving to ZNE: County Facilities should not be built to be out of date in a few years. When we build a building expecting it to last 50-70 years, we should build it to expected code.
- GFOA is encouraging San Mateo County to focus more on long term operations costs.

Actions

- Designate a County ZNE leader to help with communications
- Communications with HR to highlight importance of ZNE in influencing overall health, productivity, employee retention. This is an opportunity to tie in with an existing County initiative around employee retention.

Recommended Improvements:

As a result of the charrette and workbook process it was recommended that a new procedure be developed to review new construction projects and existing building upgrades based on green building goals and targets that will be identified in a new San Mateo County Sustainable Buildings Plan and Policy.

An updated energy portion of the Sustainable Building Policy might include:

- Required use of RFP & RFQ language for ZNE and other energy performance targets
- Owners Project Requirements including options for targets such as: integrated design, energy use intensity restrictions, equipment purchasing, future leasing, commissioning, monitoring and metering, design team members, role of occupants and facilities (to ensure occupant and behavior are addressed in the planning for ZNE operations), commissioning and training.
- Explore Financing opportunities for ZNE
- Review for consistency with County green building policies and related plans including the Climate Action Plans, Energy Master Plan, and a new County Sustainable Buildings Plan

Next Steps:

Below are examples of possible next steps the SMCEW can take to encourage ZNE within the County.

- Form a ZNE task force- possibly a team within a larger Sustainable Building Taskforce
- Future ZNE Feasibility Study for Municipal Building Portfolio: Get data to back up goals (long-term operations, savings, climate goal achievement strategy, evidence of reduced staff costs, boost productivity)
- Get HR engaged – possibly add comfort satisfaction on employee surveys (get a baseline, post occupancy surveys)
- Summarize ZNE planning process for leadership
- Follow up meetings – charrette group, key staff, department heads to brief them on outcomes of charrette, County Managers Office/Board of Supervisors

- Meeting or tour of ZNE building for supervisors, capital projects team and building departments to help educate staff with real world ZNE examples.