Planning Approaches to Advance Zero Net Energy

- ZNE Tools for Planning & the ZNE Planning & Policy Workbook
- ZNE Charrette Process: San Mateo Pilot

Heather Flint Chatto, New Buildings Institute
ZNE Early Adopters Leadership Network

CPUC-NBI-DGS public sector peer learning group to support:

- Local governments
- State agencies
- K-12 schools
- Higher Education
- Utilities

energy upgrade CALIFORNIA

zero net energy
Zero Net Energy Early Adopters Network

Tools & Resources for ZNE Plans

1. Laying the Foundation
2. Orchestrating Resources
3. Developing a ZNE Plan

BayREN 2016 Fall Forum: ZNE For Local Governments Workshop
Assembling the Building Blocks to Develop Your ZNE Plans & Policies

Planning Templates & Worksheets

**STEP 1 - Laying the Foundation**
- Vision & Target Setting (Worksheet 1A & Instructions)
- Backcasting to ZNE - Portfolio Scale & Building Scale (Worksheet 1B)

**STEP 2 - Orchestrating Resources**
- Stakeholder Communication Goals (Worksheet 2A & Sample)
- Stakeholder Mapping (Worksheets 2B)
- ZNE Communications Planning Strategies for Internal & External Stakeholders

**STEP 3 - Developing your ZNE Plans**
- ZNE Gap Analysis (Sample Considerations & Worksheet 3A)
- Alignment Plan for Addressing Gaps (Sample Strategies & Worksheet 3B)
- Integrating ZNE Into your Delivery Model (Sample & Worksheet 4)

Education & Training Presentations

1. **Introduction to ZNE** (Part of the ZNE Communications Toolkit)

2. **Assembling the Building Blocks to Develop your ZNE Plans & Policies**
   - Vision & Target Setting & Backcasting
   - Developing your Communication & Outreach Plans: ZNE Toolkit, Message Platform & Stakeholder Mapping
   - Gap Analysis & Alignment
   - Delivery Methods

Learn more at:
www.newbuildings.org/zne-communications-toolkit or visit www.newbuildings.org/zero-energy
Assembling the Building Blocks of your ZNE Plan

1. Set your goals & milestones (Worksheet)
2. Backcast how you will get to ZNE (Worksheet)
3. Identify your key stakeholders and communication goals, then map stakeholder interaction (Worksheet)
4. Develop your Communication & Outreach Plan, then engage stakeholders
5. Conduct a gap analysis & create a plan for alignment (Worksheets)
6. Review your current/future building & retrofit plans for ZNE opportunities and develop criteria for prioritizing
Assembling the Building Blocks of your ZNE Plan

7. Identify & conduct any special research/studies needed
8. Select a pilot project
9. Evaluate available delivery method options for best likely ZNE result (Worksheet)
10. Explore alternative financing approaches to help offset costs
11. Create RFQ/RFP that sets clear owner requirements and targets for ZNE
12. Conduct an integrated design process and use proven technologies & design strategies
Planning Approaches to Advance Zero Net Energy

1. Set your ZNE Vision, Goals, Targets/Milestones
2. “Backcast” how you will get from 2030 to today
3. Identify your Stakeholders & Target Messages
4. Develop your ZNE Communication Plan
5. Conduct a ZNE Gap Analysis & Plan for Alignment
6. Map your Building Process to ID Barriers to ZNE
7. Tie 1-6 Together & Develop your ZNE Action Plan
1. Set your ZNE Vision, Goals, Targets/Milestones

2. “Backcast” from 2030 to today

- Engage Stakeholders
- Backcast to ZNE
- Set ZNE goals and milestones
- Map stakeholders
- Develop Communication Plan
- Educate leadership
- Develop training & education plan for planning through ongoing operation
3. Identify your Stakeholders & Target Messages

**SCHOOLS SAMPLE - ZNE STAKEHOLDERS**
Identify your project goals, audiences, stakeholders and decision makers.

**Project Goals:** ZNE Campus By 2025
- 1 yr – Engage stakeholders in learning about ZNE; 2 yr - benchmark all school buildings; 5 yr – Install dashboards for visitor and user to learn from; 10 yr – ZNE Campus

**Communication Goals:**
- Engage leadership to set ZNE targets
- Establish a ZNE task force to develop ZNE plans and a key education and outreach strategy
- Help internal operations and planning staff learn about opportunities for ZNE in upgrades and new buildings
- Integrate ZNE into curriculum
- Communicate key role of behavior and operations in achieving goals for ZNE

**Key Communication Messages:**
- Leadership opportunity
- Improving learning classrooms
- Science-based curriculum for innovation and environmental sustainability
- Resources are available to help schools achieve many levels of energy efficiency

**Key Audiences:**
- Facilities Manager*
- Vice-Superintendent*
- School Board
- Science Teachers
- Grant Funders
- Utilities
- *Key Decision Makers:

**Internal Stakeholders:**
- Administration
- Teachers
- Students
- PTAs

**External Stakeholders:**
- Architecture & Design Consultants

**Stakeholders Map**
Create your own Stakeholder Map on the following page using the illustration below as inspiration

**Activities for Engagement**
- Note needed activities to engage each stakeholder group - form of communication & frequency
  - outreach
  - education
  - research
  - planning
4. Develop your ZNE Communication Plan

ZNE COMMUNICATIONS & OUTREACH PLANNING

INTERNAL STAKEHOLDER ENGAGEMENT

Use the following form to outline how you will engage stakeholders throughout the planning process. Identify specific Staff on the lines below.

<table>
<thead>
<tr>
<th>Internal Stakeholders</th>
<th>Strategies for Engagement</th>
<th>Actions, Timing</th>
</tr>
</thead>
</table>
| **Leadership. Decision makers, those who can provide input on priorities, timelines, goals, financing, etc.** | □ Work with leadership to secure commitment to ZNE goals and identify opportunities where they can provide ongoing support  
□ Identify opportunities and challenges that need to be addressed in organizational/governmental planning  
□ Plan for opportunities to put leadership representatives before other stakeholders  
□ Regularly communicate to keep the issue top of mind; provide feedback/updates from facilities group | □ Conduct an introductory workshop with leaders that will introduce ZNE concepts; share proposed goals and targets from backcasting exercise, engage discussion of short term priorities and long-term vision; share gap analysis and recommendations for alignment  
□ Report out on the workshop with shared vision and commitments  
□ Conduct annual meetings to verify progress  
□ Create a calendar with priorities for leadership input  
□ Provide quarterly progress updates and at key milestones |
| **Facilities & Operations Staff. Leader for planning, develops project timelines, RFPs for special studies/other needed consultant’s work plans** | □ Create a cadre of advocates who understand the ZNE goals and concepts and can share with others  
□ Provide resources that advocates can tap into to advance ZNE projects and goals (RFP guidelines, messaging, etc.)  
□ Facilitate communications that keep advocates up-to-date on progress; share and learn from each other | □ Identify critical staff and bring them together for initial meeting that reports on outcomes of leadership workshop  
□ Identify initial inventory of resources; ask for gaps and prioritize  
□ Hold monthly/bi-monthly internal operations planning meetings with one of these each quarter including occupant champions  
□ Provide quarterly updates to leadership on advocate activities/progress |
| **Occupants/users. Provides feedback on schedules, comfort, aesthetics, acoustics, usability, needed education** | □ Educate occupants so they can understand ZNE goals and better support implementation  
□ Create champions within staff to act as a point of contact for occupants and work with operations to provide resources and carry feedback  
□ Facilitate communications that keep champions up-to-date on progress; share and learn from each other | □ Identify and tap possible champions to be point of contact for staff  
□ Create an introductory package of information about behavior impacts on ZNE building performance and share in a staff event (perhaps over two events)  
□ Survey users regarding needs, comfort levels, priorities  
□ Provide monthly communications with champions on resources, performance metrics (are we on target?) and key milestones that they can share  
□ Hold quarterly meeting with champions and facilities advocates |
# 4. Develop your ZNE Communication Plan

## ZNE Communications & Outreach Planning
### External Stakeholder Engagement

Use the following form to outline how you will engage stakeholders throughout the planning process. Identify specific staff on the lines below.

<table>
<thead>
<tr>
<th>External Stakeholders</th>
<th>Strategies for Engagement</th>
<th>Actions, Timing</th>
</tr>
</thead>
</table>
| **A&E Consultants. Support for planning and design recommendations, special studies, etc.** | □ Tap A&E consultants as a resource and as possible educators for facilities and staff  
□ Create mechanisms that ensure the design teams vision is manifested in the building operations (i.e., assumptions match reality or are appropriately adjusted)  
□ Create engagement opportunities between key parties throughout the design, construction and commissioning process | □ Conduct a ZNE design charrette for projects that includes leadership, facilities and occupant representatives  
□ Allow A&E consultant to attend staff event to answer questions and report on charrette outcomes  
□ Publish monthly communication between project manager/A&E consultants and facilities/occupant contacts on progress of design, construction and commissioning  
□ Create opportunities for champions/advocates to provide feedback |
| **External Partners/Audiences. Entities that can help support and broaden knowledge and understanding of ZNE goals**  
- Utilities  
- Other Agencies  
- Nonprofits  
- Medias  
- General Public | □ Ensure that targeted external partners are aware of the project and ZNE goals  
□ Connect with local utility to gain access to technical support and incentives as well as possible opportunities to help communicate the project more broadly  
□ Prepare a messaging platform of key ZNE messages specific to your audiences (use ZNE toolkit resources) and distribute to all champions/advocates who can speak about the entities ZNE plans and goals | □ Identify key external audiences and categorize as partners or general stakeholders  
□ Reach out to partners who can further support communications efforts (utilities, nonprofits, etc.)  
□ Identify and integrate information about the ZNE efforts into regular communications to stakeholders and general public; this could be direct, through agencies or via media outlets |

**Key Communication Tools**

- ZNE Communications Tools & Resources – [www.newbuildings.org/zero-energy](http://www.newbuildings.org/zero-energy)
- **ZNE Action Bulletin** - News, case studies, policy, research, events and trainings
- **Message Platform** - Key target audience messages
- **Intro to ZNE Presentation** - ZNE what, why & how
- **Case Studies** - California project examples, including design strategies, planning, cost, and lessons learned
- **ZNE Companion Guide/Fact Sheets** - General info, key audiences messages

© New Buildings Institute, 2015
5. Conduct a ZNE Gap Analysis & Plan for Alignment

### ZNE Gap Analysis - Considerations

**Evaluate the following with ZNE in mind.** Where are the interventions or assessment needs? Where are there missing pieces? Are special studies needed? Are any in progress?

**New construction plans:** [Review of capital projects planned for any possible ZNE or ultra-low energy opportunities]
- Do you have any new building construction plans?
- Have you established energy performance goals/targets yet?

**Renovation Plans:**
- Do a design review of any plans for possible compatibility with ZNE (controls, systems, envelope)
- Can you leverage other natural cycles of improvements at the same time as a renovation/upgrade?

**Building upgrade plans:** [Review of existing buildings and any planned or needed upgrades]
- Do you have any major system upgrades anticipated? Have you benchmarked your buildings/portfolio yet?
- Which buildings are chronic under-performers, either in energy use or comfort? Which buildings might be a priority for energy upgrades?

**Monitoring data:**
- Do you have a way to compare energy performance of your buildings? Is it presented in a way that is understandable to a non-technical audience? Is the feedback loop to the users complete (i.e. dashboards, data method/presentation is actionable)?

**Policy:** [Review of policies that support/hinder ability to implement solar or other renewables]
- Do you have a green building policy?
- Have you set 2030 goals? Do you have a climate or carbon policy?
- Do you have a data collection and benchmarking policy?
- Do you have a policy for actively managing building energy?

**Financing:**
- Does your building valuation reflect the impact of energy performance ($ savings, comfort, productivity, reflection of organization mission)?
- Tie performance to which buildings to buy or lease.
- If you are paying to certify your building are you prioritizing energy performance?

**Operations:**
- Have your buildings been commissioned?
- Facilities, building managers training
- Do you have a mechanism to identify operational issues
- Do you have a technology or policy that allows you to monitor

**Occupant Training & Education:**
- Do the occupants have the opportunity for actionable feedback?
- Do you have a training program for building operations both for facilities staff and users?

**Staffing:**
- Have you evaluated or done a schedule/system integration study? i.e. reviewed employee schedules for impacts on energy performance? Do you have the funding or person-power to manage an energy reduction program
5. Conduct a ZNE Gap Analysis & Plan for Alignment

### PLAN TO ADDRESS IDENTIFIED GAPS

Consider strategies to align goals and plans to overcome any gaps identified.

<table>
<thead>
<tr>
<th>GAP</th>
<th>ALIGNMENT STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy</strong></td>
<td>• Assess gaps and create a summary to brief leadership</td>
</tr>
<tr>
<td></td>
<td>• Identify any champions and leaders</td>
</tr>
<tr>
<td></td>
<td>• Set up task force to evaluate internal/external building policy barriers and strategies.</td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td>• Work with capital projects staff to pursue/require and integrated design process (IDP) on any new high performance building projects</td>
</tr>
<tr>
<td><strong>Financing</strong></td>
<td>• Explore creative financing strategies:</td>
</tr>
<tr>
<td></td>
<td>o Utility incentives</td>
</tr>
<tr>
<td></td>
<td>o Upgradeable design - renewables added in annual phases</td>
</tr>
<tr>
<td></td>
<td>o Prototypical building types that allow for inexpensive replication</td>
</tr>
<tr>
<td></td>
<td>o Technology innovation pilots or demonstration funding</td>
</tr>
<tr>
<td><strong>Building Plans</strong></td>
<td>• Work with capital project staff to prioritize projects</td>
</tr>
<tr>
<td></td>
<td>• Meet with operations staff to review building/campus/portfolio energy performance</td>
</tr>
<tr>
<td></td>
<td>• Identify new construction/renovation projects might support ZNE</td>
</tr>
<tr>
<td></td>
<td>• Evaluate which system upgrades will have the biggest value (cost, efficiency, innovation/demonstration)</td>
</tr>
<tr>
<td></td>
<td>• Identify special studies needed. Determine if these can be done in-house or requires external consultant support. If external support is needed, develop a scope of work and RFP.</td>
</tr>
<tr>
<td><strong>Data Monitoring</strong></td>
<td>• Benchmark all building energy use</td>
</tr>
<tr>
<td></td>
<td>• Establish a standardized metric for energy performance (e.g. zEPI)</td>
</tr>
<tr>
<td><strong>Operations Training &amp; Education</strong></td>
<td>• Ensure building delivery includes a full set of plans and quick start guide</td>
</tr>
<tr>
<td></td>
<td>• Review and establish meaningful and actionable feedback loops</td>
</tr>
<tr>
<td><strong>Staffing &amp; Training</strong></td>
<td>• Develop user training for both new and current staff, as well as ongoing training and education</td>
</tr>
</tbody>
</table>
6. Map your Building Process to ID Barriers to ZNE

Integrating ZNE into your Delivery Method

**Visioning/Planning**
- Engage Stakeholders
- Backcast to ZNE
- Set ZNE goals and milestones
- Map stakeholders
- Develop Communication Plan
- Educate leadership
- Develop training & education plan for planning through ongoing operation

**RFP**
- Write contractor requirements and design specs for ZNE
- Consider how integrated design process (IDP) is part of a design firm's regular practice as a proposal evaluation criteria

**Design**
- Model building performance
- Conduct integrated design process (IDP)
- Set owners project requirements
- Establish basis of design
- Include design requirements to maximizing building performance before integration of

**Bid**
- Write contractor and construction specifications
- Select contract method – design-bid-build, CMGC, design-build, guaranteed max. price.
- Consider various contract delivery methods will support or hinder an integrated design process – a

**Operate**
- Establish actionable feedback loop
- Commissioning/re-commissioning plan
- Ensure proper handoff of the building includes providing operators and occupants with resources and documentation to operate building including: copy of CD's to building
- Written description of systems and

**Measure/Monitor**
- Establish data collection protocols
- Share your data with others
- Provide visible dashboards

**Build**
- Establish quality control mechanism related to energy system calibration, commissioning, and proper installation.

**Educate/Train**
- Develop user manual for operators and occupants
- Conduct trainings for operators and users
- Establish training process for new occupants and regular maintenance

**Finance**
- Choose a lender that values energy performance
- Clearly make valuation argument including benefits of long-terms savings, energy independence, leadership, carbon/climate impacts, marketing, etc.

**Certify/Market/Promote**
- Verify/certify performance
- Share your data with others
- Tell your story, case studies, news media, websites
DEVELOPING YOUR ZNE PLAN

San Mateo ZNE Charrette
Workshop Goals

1. Create consensus around ZNE goals and priorities
2. Develop a Draft ZNE Plan
3. Discuss policy and implementation gaps and opportunities
4. Identify stakeholders, any groups needing special engagement, and priorities for a draft communication plan
5. Develop a plan for alignment of policy and process gaps
6. Discuss role of Codes & Standards – tie in with Energy Watch goals

Outcomes:

- Support NBI ZNE planning pilot process: Test workbook use and value and get feedback for refinement;
- Create a sample ZNE Plan with SMC as model
DEVELOPING YOUR ZNE PLAN

Pre-Charrette ZNE Meetings with Stakeholders

Agenda & Discussion Questions

1. Introductions
2. Background on Current ZNE State Goals, Emerging Policies & Codes
   1. ZNE as building code 2020/2030
3. What is ZNE & Why is it important
4. Collecting information for Developing Our ZNE Plan
5. Questions:
   1. What do you think about ZNE?
      1. Barriers? Expectations?
   2. Our capacity is to support county planning and building in the transition to ZNE- what could you use from us?
   3. At what point in the process do you think ZNE requirements for a new construction project would work best? Ex. Capital project checklist
      1. What about for major renovation projects?
   4. What is your role throughout the process of a new construction project?
   5. Who would you say are the top stakeholders on a new construction project?
   6. Are there any barriers you think might inhibit this plan?

PROCESS:
Interviews with:
• Building Department
• Planning Department
• Public works,
• Office of Sustainability
• Office of Budget & Finance
ZNE Workshop: Team Building

• Establishes ZNE goals
• Identifies strategies
• Develops an action plan
ZNE Workshop: Outcomes

- Vested stakeholders
- Consensus
- Guiding Principles
- An action plan
- A report for reference
San Mateo County Energy Watch ZNE Framework

1. Support municipalities to develop ZE action plans and policy templates
2. Nurture early adopters and influence projects
3. Train professionals about Zero Energy Buildings
4. Provide training and information materials

County Facility ZNE Strategic Plan
- Charrette
- ZNE Policy for New Construction and Renovations

Templates
- RFP Template: ZNE Language
- Sample Building Incentive Program
- ZNE Lease Language

Educational Materials
- Workshop Materials
- Videos
- Webinars

ZNE Resource Toolkit
A PROCESS FOR ZNE PLANNING

1. Set your ZNE Vision, Goals, Targets/Milestones
2. “Backcast” from 2030 to today
3. Identify your Stakeholders & Target Messages
4. Develop your ZNE Communication Plan
5. Conduct a ZNE Gap Analysis & Plan for Alignment
6. Diagram your Building Process & Integrate ZNE
7. Tie 1-6 Together & Develop your ZNE Action Plan
DEVELOPING YOUR ZNE PLAN

Engaging Stakeholders:

ZNE Planning Charrette Process

Who might be involved? Energy managers, facility managers, planning & building staff, capital projects staff, sustainability, department heads and decisionmakers, local government commission, consultants, human resources
San Mateo County

1. Draft ZNE Vision for Municipal Facilities:

Our vision is to establish a County facilities policy that requires ZNE and Lifetime 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 attributes of the project are addressed- with ZNE being one of those attributes. ZNE should be included in both an early conceptual checklist as well as a second checklist addressed with the designer down the line. We hope that ZNE designs are specifically favored by the finance department as these designs address lifetime costs and operations rather than only upfront costs.

In order to achieve these goals we would

1. Create 1-2 checklists for Capital Project Project Managers to refer to for each project that includes ZNE requirements and

2. Include ZNE language in any RFPs so all proposals received with address ZNE.
1. Set your ZNE Vision, Goals, Targets/Milestones

San Mateo County Draft ZNE Vision

2. Community Scale ZNE Facilitation:

Our vision for the community is to have the San Mateo County Office of Sustainability (OOS) to act as a facilitator in the community in the effort towards ZNE market transformation. Ideally the OOS will have a strong presence with the building community, building departments and city staff as a ZNE leader.

The OOS would also provide resources and assistance to multiple building sectors and enable early adopters to switch to ZNE building processes before Title 24 code requires it. In order to accomplish this we would:

1. Create a toolkit of resource for others to use
2. Facilitate workshops and workgroups for the building community and
3. Facilitate appropriate trainings for building departments.
## 2. Backcast from 2030 to today

<table>
<thead>
<tr>
<th>Goals &amp; Milestones</th>
<th>2017</th>
<th>2020</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy</strong></td>
<td>- Lease language</td>
<td></td>
<td>- ZNE Reach Code for Unincorp. Commercial</td>
</tr>
<tr>
<td></td>
<td>- Owners Project Requirements (OPR) w/ ZNE language</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- ZNE RFP/RFQ language</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- New Construction policy for ZNE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Checklist for ZNE Evaluations</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>People</strong></td>
<td>- Engage Leadership</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Engage other departments, HR?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Form a ZNE Task Force?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Education &amp; Outreach</strong></td>
<td>- Develop Reach Code Templates for Cities</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Development Process</strong></td>
<td>- ZNE Feasibility study for Exist. Buildings</td>
<td>* 1 New ZNE by 2020</td>
<td>* 1 Retrofit by 2023</td>
</tr>
<tr>
<td><strong>Finance</strong></td>
<td>- 5 Year Plan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Identify your Stakeholders & Target Messages

WORKSHEET 2B - ZNE Stakeholder Mapping

Map your internal and external stakeholders – use a * or other marker to denote which are the key decisionmakers and influencers.

Stakeholder Identification

providers

suppliers

partners

governance

audit

steering groups

regulatory

boards

influencers

trade unions

media

local interest groups

users/beneficiaries

customers

staff

STAKEHOLDERS

Co. BLDG

PLANNING

ARCHITECTS

DESIGNERS

CONTRACTORS

BOE/CLO

SUSTAINABILITY

CITY CHAMBER

CITY MGMT

CITY PLAN

CITY BLDG

CVE

CONTRACTORS

VENDORS

MEDIA

STATE REGULATORY

HUMAN RESOURCES

VENTURE CAPITAL

BIG PEAK

ESTATE HOLIDERS

BayREN 2016 Fall Forum: ZNE For Local Governments Workshop
3. Identify your Stakeholders & Target Messages

Map your internal and external stakeholders – use a * or other marker to denote which are the key decisionmakers and influencers.

**Internal Stakeholders**
- Facilities & Operations
- Capital Projects Team
- Board of Supervisors
- OOS
- Finance
- DPW
- Building & Planning

**External Stakeholders**
- RICAPS
- SAMCAR
- Sustainable SMC
- Menlo Spark
- Joint Venture
- Builder Unions?
- Clean Coalition
- DNVGL
- Zero Net Energy

San Mateo County ZNE Planning Charrette | September 2016
Worksheet 2A – ZNE Stakeholder Goals
Identify your project goals, audiences, stakeholders and decision

Project Goals: ZNE Building, Portfolio, or Policy? Timeframe: 2030 Goals?
1 Year Engagedepartmentsandadoptmunicipal policy 2 Year Become a resource in the community on ZNE
TARGETS: 1 New ZNE BLDG by 2020; 1 Retrofit by 2023.

Communication Goals:
• Department Heads: Educate & engage as champions
• Facilities & Operations: Involve in the design process for ZNE
• Board of Supervisors: Educate & engage as advocates + champions of projects.
• Vendors: Engage as advocates.
• Real estate holders + managers: Engage around financial benefits of ZNE
• Businesses: Explore corporate sponsorship of projects.
• Cities in Co.: Leverage General Pan updates to encourage ZNE

Key Communication Messages:
• Walk the talk, demonstrate leadership.
• ZNE is part of comprehensive green/sustainable approach.
• The County is creating better buildings
• Wise use of resources to have assessment + cost analysis of long term energy + operations of municipal buildings.

Key Audiences:
• Facilities and Operations
• Capital Project Managers
• Department of Public Works
• Board of Supervisors
• Building and Planning Depart.
• Community Groups- MenloSpark, RICAPS, SAMCAR

Stakeholders Map – create your own Stakeholder Map on the following page

Internal Stakeholders:
• Facilities and Operations
• Capital Project Managers
• Department of Public Works
• Board of Supervisors
• Building and Planning Departments

External Stakeholders:
MenloSpark, RICAPS, SAMCAR, Sustainable SMC, Joint Venture

Activities for Engagement:
• Educate building industry & clients
• Workshop with Board of Supervisors
• Challenge to the design community
• Analysis of cost to support communications
Country Building Delivery Process

**Project Delivery Process:**
1. Capital Projects creates an initial conceptual budget to send to finance
   a. Finance then approves/denies conceptual budget
2. Capital Projects goes out to bid for project involving designers, contractors, architects
3. Capital projects then bring bids and budgets to finance to get approved
4. Capital Projects and designers work together to build building
5. Capital projects hand off building to Operations (energy manager and facilities)
6. Operations works with Finance to determine budgets for improvement projects and monthly costs (utility costs)
**5. Conduct a ZNE Gap Analysis & Plan for Alignment**

**WORKSHEET 3 | ZNE Gap Analysis**

**DIRECTIONS:** Consider the following categories below with ZNE in mind. Answer Yes/No and then make notes regarding any ZNE progress already being made or challenges you anticipate facing. As you identify next steps, think about any immediate action items.

**Key Messages for Consideration:** where are the interventions or assessment needs? Where/what are the missing pieces? Are special studies needed? Are any in progress?

<table>
<thead>
<tr>
<th>Policy</th>
<th>Yes</th>
<th>No</th>
<th>Next Steps/Possible Actions</th>
<th>Lead(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of policies that support/hinder ability to implement solar or other renewables</td>
<td>Yes</td>
<td>No</td>
<td>If yes, describe; if no, note any issues or challenges why not, and next actions (e.g. special study, policy review, task force)</td>
<td>Who will lead project and who needs to be engaged?</td>
</tr>
<tr>
<td>Do you have a green building policy that addresses energy?</td>
<td>□</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you set 2030 goals for buildings?</td>
<td>□</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you have a climate or carbon policy?</td>
<td>□</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you have a data collection and benchmarking policy?</td>
<td>□</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you have a policy for actively managing building energy?</td>
<td>□</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contracting</td>
<td>Yes</td>
<td>No</td>
<td>Next Steps/Possible Actions</td>
<td>Lead(s)</td>
</tr>
<tr>
<td>In your RFP's and RFQ's for construction projects do you have a provision for ZNE?</td>
<td>□</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do RFP’s &amp; RFQ’s include extended commissioning and designer involvement to ensure ZNE performance?</td>
<td>□</td>
<td>□</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ZNE Goals & Targets from the San Mateo County ZNE Planning Charette

1) Assess Portfolio of Existing Buildings

2) Consider Possible ZNE Pilots: 1 New ZNE BLDG by 2020; 1 ZNE Retrofit by 2023

3) Integrate ZNE into RFPs & RFQs

4) Develop ZNE Owners Project Requirements (OPR’s)

5) Establish a ZNE Policy for Specific Building Types

6) Update County Facility Design Standards

7) Explore Finance Options
CHARRETTE OUTCOMES

- Draft ZNE Plan (in progress)
- Sustainability Plan that integrates ZNE
- ZNE Buildings Policy Actions
- ZNE Co. Pilot Project Goals for new and existing buildings
- Energy Watch Program Refinement
- Refinements to the ZNE Planning & Policy Workbook

DRAFT San Mateo County ZNE Plan
November 2016

Background:

State:
In 2006 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 2020/2030 goals.

Governor Brown also passed an Executive Order for State buildings and ZNE Executive Order 11-16-12 State buildings starting construction after 2020 shall be ZNE and 50% of state buildings space renovated to ZE after 2020.

Local:
In response to these mandates, the San Mateo County Energy Watch Program, along with sponsors, hosted a ZNE Workshop in May 2016 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 create 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 the California Energy Commission on the ZNE Planning and Policy Toolkit to create this draft ZNE Plan for the County to assist in the development of their Sustainable Building Policy.

The effort included updating the “Tools & Resources for Developing ZNE Plans and Policies” (ZNE Toolkit). The ZNE Planning and Policy Toolkit was developed based on trainings held by NIH on behalf of the CPUC to support ZNE early adopters. A planning charrette, interviews with staff from multiple departments and completed workbook templates were used upon to create the following draft as a template for others and to support further ZNE County Strategy 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 project teams to utilize a checklist to ensure all necessary sustainability attributes of a project are addressed, with ZNE being a major component. ZNE should also 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
BACKCASTING GROUP EXERCISE

For your organization / project:

1. Begin with the end in mind: Set your vision & goals
2. Choose your own adventure: building or portfolio or broader community strategy
3. Backcast to today
4. Plan each component for your building/portfolio
5. Define your targets and milestones
6. Determine measures of success
### ZERO NET ENERGY BUILDINGS

**Backcasting Timeline**

<table>
<thead>
<tr>
<th>Year</th>
<th>Envelope</th>
<th>HVAC</th>
<th>Lighting</th>
<th>Space Planning</th>
<th>Finance - Strategies + Opportunities</th>
<th>Process - Planning, Contracting, Design</th>
<th>People - Stakeholder Engagement, Education + Outreach</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Building Scale**

- 1 Year
- 5 Year
- 10 Year

**2015 Goals**

**2020 Goals**

**2030 Goals**