CITY OF MORRO BAY
PLANNING COMMISSION
AGENDA

The City of Morro Bay is dedicated to the preservation and enhancement of the quality of life. The City shall be committed to this purpose and will provide a level of municipal service and safety consistent with and responsive to the needs of the public.

Regular Meeting - Wednesday, March 6, 2013
Veteran's Memorial Building - 6:00 P.M.
209 Surf Street, Morro Bay, CA

Chairperson Rick Grantham
Vice-Chairperson John Solu — Commissioner John Fennacy
Commissioner Michael Lucas — Commissioner Robert Tefft

Commissioner John Solu will be communicating by
teleconference from the following location:
4415 Waha Pl., Haiku, HI 96708

ESTABLISH QUORUM AND CALL TO ORDER
MOMENT OF SILENCE / PLEDGE OF ALLEGIANCE
PLANNING COMMISSIONER ANNOUNCEMENTS

ELECTION OF CHAIR AND VICE CHAIR

PUBLIC COMMENT PERIOD
Members of the audience wishing to address the Commission on matters other than scheduled hearing items may do so at this time. Commission hearings often involve highly emotional issues. It is important that all participants conduct themselves with courtesy, dignity and respect. All persons who wish to present comments must observe the following rules to increase the effectiveness of the Public Comment Period:

- When recognized by the Chair, please come forward to the podium and state your name and address for the record. Commission meetings are audio and video recorded and this information is voluntary and desired for the preparation of minutes.
- Comments are to be limited to three minutes so keep your comments brief and to the point.
- All remarks shall be addressed to the Commission, as a whole, and not to any individual member thereof. Conversation or debate between a speaker at the podium and a member of the audience is not permitted.
- The Commission respectfully requests that you refrain from making slanderous, profane or personal remarks against any elected official, commission and/or staff.
- Please refrain from public displays or outbursts such as unsolicited applause, comments or cheering.
- Any disruptive activities that substantially interfere with the ability of the Commission to carry out its meeting will not be permitted and offenders will be requested to leave the meeting.
- Your participation in Commission meetings is welcome and your courtesy will be appreciated.

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Public Services' Administrative Technician at (805) 772-6291. Notification 24 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting. There are devices for the hearing impaired available upon request at the staff's table.

PRESENTATIONS

Informational presentations are made to the Commission by individuals, groups or organizations, which are of a civic nature and relate to public planning issues that warrant a longer time than Public Comment will provide. Based on the presentation received, any Planning Commissioner may declare the matter as a future agenda item in accordance with the General Rules and Procedures. Presentations should normally be limited to 15-20 minutes.

A. CONSENT CALENDAR

A-1 Approval of minutes from Planning Commission meeting of February 6, 2013
Staff Recommendation: Approve minutes as submitted.

B. PUBLIC HEARINGS

Public testimony given for Public Hearing items will adhere to the rules noted above under the Public Comment Period. In addition, speak about the proposal and not about individuals, focusing testimony on the important parts of the proposal; not repeating points made by others.

B-1 ***Continued from February 6, 2013 meeting***
Case No.: Coastal Development Permit #CP0-382
Site Location: *nearest address* 2990 Alder
Proposal: Request to install a 29 foot wood pole in public right-of-way for purpose of installation of a solar-powered data collector unit for the Advanced Meter project.
CEQA Determination: Categorically exempt, Class 3
Staff Recommendation: Continue item to April 3, 2013.
Staff Contact: Cindy Jacinth, Assistant Planner, (805) 772-6577

B-2 ***Continued from February 6, 2013 meeting***
Case No.: Coastal Development Permit #CP0-383
Site Location: *nearest address* 499 Little Morro Creek Road
Proposal: Request to install a 29 foot wood pole in public right-of-way for purpose of installation of a solar-powered data collector unit for the Advanced Meter project.
CEQA Determination: Categorically exempt, Class 3
Staff Recommendation: Continue item to April 3, 2013.
Staff Contact: Cindy Jacinth, Assistant Planner, (805) 772-6577

B-3 ***Continued from February 6, 2013 meeting***
Case No.: Coastal Development Permit #CP0-384
Site Location: *nearest address* 781 Quintana**.** This location is located in the Coastal Commission Appeals Jurisdiction.
Proposal: Request to install a 29 foot wood pole in public right-of-way for purpose of installation of a solar-powered data collector unit for the Advanced Meter project.
CEQA Determination: Categorically exempt, Class 3
Staff Recommendation: Continue item to April 3, 2013.
Staff Contact: Cindy Jacinth, Assistant Planner, (805) 772-6577

B-4 ***Continued from February 6, 2013 meeting***
Case No.: Coastal Development Permit #CP0-385
Site Location: *nearest address* 255 Driftwood
Proposal: Request to install a 29 foot wood pole in public right-of-way for purpose of installation of a solar-powered data collector unit for the Advanced Meter project.
CEQA Determination: Categorically exempt, Class 3
Staff Recommendation: Continue item to April 3, 2013.
Staff Contact: Cindy Jacinth, Assistant Planner, (805) 772-6577

B-5 ***Continued from February 6, 2013 meeting***
Case No.: Coastal Development Permit #CP0-388
Site Location: *nearest address* 300 Kings
Proposal: Request to install a 29 foot wood pole in public right-of-way for purpose of installation of a solar-powered data collector unit for the Advanced Meter project.
CEQA Determination: Categorically exempt, Class 3
Staff Recommendation: Continue item to April 3, 2013.
Staff Contact: Cindy Jacinth, Assistant Planner, (805) 772-6577

B-6 **Case No.:** Coastal Development Permit #CP0-390
Site Location: Morro Strand Campground, 065-211-001
Proposal: Request to upgrade 25 existing campsites to include recreational vehicle hook-ups in order to modernize services as well as increase visitation and revenue.
CEQA Determination: Categorically exempt, Class 1
Staff Recommendation: Conditionally approve.
Staff Contact: Cindy Jacinth, Assistant Planner, (805) 772-6577

C. UNFINISHED BUSINESS

C-1 Current and Advanced Planning Processing List
Staff Recommendation: Receive and file.
Upcoming Projects: SoCal Gas Advance Meter Project

D. NEW BUSINESS

D-1 Discussion on Central Coast Greenhouse Gas Emission Reduction Plan
Recommendation: Review draft Greenhouse Gas Emission Reduction Plan and provide comments and direction to staff as necessary.

E. DECLARATION OF FUTURE AGENDA ITEMS

F. ADJOURNMENT
Adjourn to the next regularly scheduled Planning Commission meeting at the Veteran's Memorial Building, 209 Surf Street, on Wednesday, March 20, 2013, at 6:00 p.m.

PLANNING COMMISSION MEETING PROCEDURES

This Agenda is subject to amendment up to 72 hours prior to the date and time set for the meeting. Please refer to the Agenda posted at the Public Services Department, 955 Shasta Avenue, for any revisions or call the department at 772-6291 for further information.

Written testimony is encouraged so it can be distributed in the Agenda packet to the Commission. Material submitted by the public for Commission review prior to a scheduled hearing should be received by the Planning Division at the Public Services Department, 955 Shasta Avenue, no later than 5:00 P.M. the Tuesday (eight days) prior to the scheduled public hearing. Written testimony provided after the Agenda packet is published will be distributed to the Commission but there may not be enough time to fully consider the information. Mail should be directed to the Public Services Department, Planning Division. Materials related to an item on this Agenda are available for public inspection during normal business hours in the Public Services Department, at Mill's/ASAP, 495 Morro Bay Boulevard, or the Morro Bay Library, 695 Harbor, Morro Bay, CA 93442. Materials related to an item on this Agenda submitted to the Planning Commission after publication of the Agenda packet are available for inspection at the Public Services Department during normal business hours or at the scheduled meeting.

This Agenda may be found on the Internet at: www.morro-bay.ca.us/planningcommission or you can subscribe to Notify Me for email notification when the Agenda is posted on the City's website. To subscribe, go to www.morro-bay.ca.us/notifyme and follow the instructions.

The Brown Act forbids the Commission from taking action or discussing any item not appearing on the agenda, including those items raised at Public Comment. In response to Public Comment, the Commission is limited to:

1. Responding to statements made or questions posed by members of the public; or
2. Requesting staff to report back on a matter at a subsequent meeting; or
3. Directing staff to place the item on a future agenda. (Government Code Section 54954.2(a))

Commission meetings are conducted under the authority of the Chair who may modify the procedures outlined below. The Chair will announce each item. Thereafter, the hearing will be conducted as follows:

1. The Planning Division staff will present the staff report and recommendation on the proposal being heard and respond to questions from Commissioners.

2. The Chair will open the public hearing by first asking the project applicant/agent to present any points necessary for the Commission, as well as the public, to fully understand the proposal.

3. The Chair will then ask other interested persons to come to the podium to present testimony either in support of or in opposition to the proposal.

4. Finally, the Chair may invite the applicant/agent back to the podium to respond to the public testimony. Thereafter, the Chair will close the public testimony portion of the hearing and limit further discussion to the Commission and staff prior to the Commission taking action on a decision.

APPEALS

If you are dissatisfied with an approval or denial of a project, you have the right to appeal this decision to the City Council up to 10 calendar days after the date of action. Pursuant to Government Code §65009, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the Commission, at, or prior to, the public hearing. The appeal form is available at the Public Services Department and on the City's web site. If legitimate coastal resource issues related to our Local Coastal Program are raised in the appeal, there is no fee if the subject property is located with the Coastal Appeal Area. If the property is located outside the Coastal Appeal Area, the fee is $250 flat fee. If a fee is required, the appeal will not be considered complete if the fee is not paid. If the City decides in the appellant's favor then the fee will be refunded.

City Council decisions may also be appealed to the California Coastal Commission pursuant to the Coastal Act Section 30603 for those projects that are in their appeals jurisdiction. Exhaustion of appeals at the City is required prior to appealing the matter to the California Coastal Commission. The appeal to the City Council must be made to the City and the appeal to the California Coastal Commission must be made directly to the California Coastal Commission Office. These regulations provide the California Coastal Commission 10 working days following the expiration of the City appeal period to appeal the decision. This means that no construction permit shall be issued until both the City and Coastal Commission appeal period have expired without an appeal being filed. The Coastal Commission's Santa Cruz Office at (831) 427-4863 may be contacted for further information on appeal procedures.

AGENDA ITEM: A- 1

DATE: March 6, 2013

ACTION:

SYNOPSIS MINUTES - MORRO BAY PLANNING COMMISSION
REGULAR MEETING – FEBRUARY 6, 2013
VETERANS MEMORIAL HALL – 6:00 P.M.

Chairperson Grantham called the meeting to order at 6:00 p.m.

PRESENT:	Rick Grantham	Chairperson
	John Solu	Vice-Chairperson
	Paul Fennacy	Commissioner
	Robert Tefft	Commissioner
	Michael Lucas	Commissioner
STAFF:	Rob Livick	Public Services Director
	Kathleen Wold	Planning Manager
	Cindy Jacinth	Assistant Planner

ESTABLISH QUORUM AND CALL TO ORDER
MOMENT OF SILENCE / PLEDGE OF ALLEGIANCE
PLANNING COMMISSIONER ANNOUNCEMENTS

Chairperson Grantham opened the discussion to the Commissioners regarding the nomination of a new Chairperson and Vice-Chairperson of the Planning Commission.

MOTION: Commissioner Fennacy moved to nominate Chairperson Grantham as the Chairperson of the Planning Commission.

The motion was seconded by Commissioner Solu and the motion passed (4-0), with Chairperson Grantham abstaining.

MOTION: Commissioner Fennacy moved to nominate Commissioner Solu as the Vice-Chairperson of the Planning Commission.

The motion was seconded by Commissioner Tefft and the motion passed unanimously. (5-0).

PUBLIC COMMENT

Chairperson Grantham opened Public Comment period.

Jim Polly, resident of Morro Bay, spoke against the installation of the proposed Nutmeg water tank and stated be believed there would be a negative visual impact. He suggested moving the

proposed tank north and east, and dropping it below the ridge line. Polly expressed concern that the trucks required to move the dirt will disturb the neighborhood.

Chairperson Grantham closed Public Comment period.

PRESENTATIONS – None.

Unless an item is pulled for separate action by the Planning Commission, the following actions are approved without discussion.

A. CONSENT CALENDAR

A-1 Approval of minutes from Planning Commission meeting of January 16, 2013
Staff Recommendation: Approve minutes as submitted.

MOTION: Chairperson Grantham moved to approve the Consent Calendar. Commissioner Solu seconded and the motion.

Commissioner Fennacy noted a correction to the minutes. Regarding Item B-3 on the January 16, 2013 Minutes, Fennacy stated the project was a City of Morro Bay property rights issue, not a general property rights issue.

AMENDED MOTION: Commissioner Fennacy moved to approve the minutes as amended. Chairperson Grantham seconded and the motion and the motion passed (4-0), with Commissioner Lucas abstaining.

B. PUBLIC HEARINGS

B-1 **Case No.:** Coastal Development Permit #CP0-389
Site Location: 170 Atascadero
Proposal: Modifications to existing water treatment plant (DESAL) including new tanks, new transformer, replacement of pumps, installation of various mechanical equipment.
CEQA Determination: Categorically exempt, Class 1
Staff Recommendation: Conditionally approve.
Staff Contact: Kathleen Wold, Planning Manager

Wold presented the staff report with one amendment to the conditions. She stated there shall be an archaeological monitor on site to oversee all ground disturbance activities.

Chairperson Grantham asked staff to clarify who awarded the grant. Livick confirmed the grant was awarded by California Department of Health Services and it is a Proposition 84 grant that was awarded, in part, to make the necessary upgrades in order to treat contaminated groundwater from Morro Basin. Livick stated the City is currently working with Coastal Commission Staff to get the permit approved.

Chairperson Grantham asked staff what portion of the total project cost would be covered by the grant. Livick stated the grant would likely cover a little less than half of the total cost and the remainder would come from accumulation funds.

Chairperson Grantham asked how long the facility would be out of service. Livick estimated it would be closed for a few months but noted the Applicant would have a more exact estimate.

Barry Rands, Applicant, asked the Commission for approval of the Coastal Development Permit. He stated the proposed upgrade would primarily serve to increase the reliability and efficiency of the brackish water systems. Rands confirmed the facility would be shut down for 150 days, per the contract.

Chairperson Grantham asked Rands if the only time the City would not want to shut down the facility would be during state water shutdown. Rands confirmed the desalination plant is primarily used during state water shutdowns, but also during emergency shutdowns and periods of peak demand when there is not enough state water.

Commissioner Lucas asked Rands to clarify the cause of the nitrate contamination in Morro Well, and Rands stated the contamination was agriculturally-related.

Commissioner Lucas asked for clarification regarding what the City will be asking the Coastal Commission to approve. Livick stated the City will be asking for permanent operations. He stated the existing desalinization facility is permitted, but the permits on the ancillary facilities are expiring, so the City would like authorization to upgrade the permanent facility while also working on the permanent permit for the ancillary facilities.

Commissioner Lucas asked if the City is self-insured on this project, as the development would be occurring in the flood zone. Livick stated the new structures must be elevated two feet above existing elevation, consistent with the new flood damage prevention regulations.

Commissioner Lucas noted the staff report did not address visual mitigations.

Commissioner Fennacy asked if there is a risk of losing grant funding if the City does not meet certain deadlines. Livick stated the current deadline is July 1, 2013 and noted there are possibilities for extension which the City will likely pursue.

Commissioner Fennacy asked staff to clarify whether the City currently operates the plant without the authorization of a Coastal Development Permit, and Livick confirmed the City does operate without a permit.

Commissioner Solu noted the plant will be shut down during peak summer months, and asked Rands what will happen if state water shuts down at the same time. Rands clarified the City is able to request more state water if needed.

Commissioner Solu noted the existing structures sit below the floodplain and expressed concern that the City may be required to move the facility in the future. Livick stated it is possible that the City may need to relocate the facility in the future, but because the proposed upgrade does

not involve a significant addition of equipment, it does not face the same issues as the wastewater treatment plant upgrade.

Commissioner Tefft asked staff if the City has a contingency plan in case state water and the desalination plant shut down at the same time. Livick stated the City would rely on its emergency storage tanks or on the emergency exchange agreement with the California Men's Colony (CMC).

Commissioner Tefft asked staff how long the City could sustain itself without state water. Livick stated the water supply from the CMC could sustain the City for a fairly extended period of time.

Commissioner Tefft asked for clarification regarding which water sources are processed at the desalination plant. Livick stated state water does not come through the desalination facility but is delivered directly to the Kings Tank site.

Chairperson Grantham spoke about the previous issue the City had with nitrates in the water.

Chairperson Grantham opened Public Comment period.

Bill Martony, resident of Morro Bay, asked for clarification regarding whether the City is allowed to operate the desalination plant without a Coastal Development Permit. Martony also stated some of the nitrates in the water are coming from failed septic tanks or from the collections system in Cayucos.

Chairperson Grantham closed Public Comment period.

Commissioner Tefft expressed support for the project and stated he would like the City to reexamine CEQA as the facility's use has expanded since the original EIR was written.

Livick responded to Martony's comment and noted the saltwater wells and outfall line do not have permits to operate but the desalination plant does. Livick discussed alternative measures for treating water if the desalination plant is not allowed to operate without a permit. Because it is a public health and safety issue, however, the City will continue to operate the plant as needed.

Commissioner Lucas expressed support for the project but stated he would like to see the City develop a different long term strategy for treating the City's water.

Commissioner Fennacy expressed support for the project but stated he has concerns about the visual aspects of the project.

Chairperson Grantham expressed support for the project.

MOTION: Commissioner Solu moved to approve Item B-1 as stated with the attached amendment to have an archaeological monitor on site during construction.

The motion was seconded by Chairperson Grantham and the motion passed unanimously. (5-0).

Livick stated the City will work to better screen the yard equipment so as to reduce the visual impacts of the facility.

B-2 **Case No.:** Abandonment #E00-103 and Coastal Development Permit #CP0-391
Site Location: 3420 Toro Lane
Proposal: A Coastal Development Permit for the abandonment of approximately 15,600 square foot portion of fee owned Toro Lane right of way, North of Yerba Buena and Westerly of the existing West curb line of Toro Lane. The abandonment will be processed using the procedures identified in the California Streets and Highways Code Section 8300 et seq. These procedures require that the abandonment (vacation) be in conformance with the City's General Plan.
CEQA Determination: Categorically exempt, Class 5
Staff Recommendation: Conditionally recommend approval to City Council.
Staff Contact: Rob Livick, Public Services Director (805) 772-6261

Livick presented the staff report.

Commissioner Lucas discussed with staff the height requirements and development potential in this zone. Lucas asked whether the applicant could add a second floor to a house on the property, and Livick confirmed that would be a possibility. Lucas asked staff if the easements on the abandonment would prohibit development there. Livick stated he was unsure what the actual development potential is for the site.

Livick reviewed the procedural steps for how the abandonment would continue if approved.

Chairperson Grantham opened Public Comment period.

Bill Martony, resident of Morro Bay, spoke against the project, stating there is a need for more parking in the area and this property should be used for overflow parking; the property is public property and should stay in the public domain; and the northern part of the property is already developed.

Roger Ewing, resident of Morro Bay, spoke against the project and seconded Martony's notions regarding parking. He also spoke against the proposed installation of the solar-powered data collector units for the Advanced Meter project.

Russ Nikata, resident of Morro Bay, spoke against the project, stating he would like a better indication of how the applicant intends develop the property in the future.

Mark Starbel, resident of Morro Bay, spoke against the project, stating the project area should be used as a parking lot. He asked the Commission to identify the access point on the property. Grantham stated the driveway would be indicated on the precise plan, which would be developed at a later phase of the project.

Chairperson Grantham closed Public Comment period.

Commissioner Fennacy expressed support for the project, stating there is substantial evidence to show this project is in conformity with public access and public recreation.

Commissioner Solu asked Livick to address some of the concerns mentioned during Public Comment.

Livick stated the following:

- Regarding the improvements in the blue shaded area of the site plan, they were authorized under a Coastal Development Permit and a Special Encroachment Permit which allow private improvements to exist on publicly owned property.
- Regarding access points on the property, there are several, including a 10-foot wide access way onto Yerba Buena, an exit onto Toro Lane, and a small section of the property which exits onto Beachcomber. Livick noted the request for abandonment was not for access purposes but for a more orderly development of the property.

Commissioner Solu asked Livick if the property would be sold to the highest bidder. Livick stated he was unsure about the City's practices regarding the selling of property but noted that any member of the public could potentially buy it. He stated the strip of land would not be developable.

Commissioner Tefft asked Livick to clarify the riparian setback on the property. Livick stated, due to the ESHA on the property, there is a minimum 50 foot setback. He noted an ESHA buffer reduction is allowed under Code, with Planning Commission approval.

Commissioner Tefft stated he appreciates the need for parking in the area but noted the City has no plans of developing parking there. Livick confirmed the General Plan does not anticipate developing parking there.

Commissioner Tefft expressed concern that the proposal is unfinished and stated he would not vote for the project.

Commissioner Lucas expressed concern that future development on the site would negatively impact the surrounding residences.

Chairperson Grantham expressed support for the project.

MOTION: Commissioner Solu moved the Commission forward a favorable recommendation on Abandonment #E00-103 and Coastal Development Permit #CP0-391 with the removal of Condition C from the Resolution.

The motion was seconded by Commissioner Fennacy and the motion passed. (3-2), with Commissioners Lucas and Tefft dissenting.

B-3 **Case No.:** Coastal Development Permit #CP0-382
Site Location: *nearest address* 2990 Alder
Proposal: Request to install a 29 foot wood pole in public right-of-way for purpose of

installation of a solar-powered data collector unit for the Advanced Meter project.
CEQA Determination: Categorically exempt, Class 3
Staff Recommendation: Conditionally approve.
Staff Contact: Cindy Jacinth, Assistant Planner, (805) 772-6577

Jacinth presented the staff report.

Chairperson Grantham opened Public Comment period.

Timothy Mahoney, Applicant's Representative, explained the motivation for the project.

Livick noted this item was brought before City Council as an informational item last fall, and at that time, staff told Council this project would require a Coastal Development Permit.

Michael Jean Thibodeau-Hall, resident of Morro Bay, spoke against the project, citing potential radiation as well as aesthetic and environmental impacts. He suggested relocating the poles.

Sherry Hainey, resident of Morro Bay, spoke against the project, stating it would block her view of the ocean. She expressed concern that both the new housing development across from her home and the proposed pole would negatively impact the neighborhood.

Bill Martony, resident of Morro Bay, suggested co-locating the poles with existing poles so as to reduce clutter on the streets.

Chairperson Grantham closed Public Comment period.

Chairperson Grantham stated he is concerned about visual blight and stated he would like to see the meters installed on existing poles. He suggested the applicant contact the City about renting existing poles for this purpose.

Commissioner Solu seconded Grantham's notion regarding visual blight and asked the applicant how they have addressed this issue in other cities where they have installed poles.

Scott Loveless, Applicant's Representative, explained that if a community has undergrounded utilities, the Gas Company is still obligated to serve that community and thus install the poles.

Commissioner Solu asked Loveless about the reception of poles in the undergrounded communities and Loveless stated it varies from community to community. The Gas Company does consider co-locating the poles when the location permits. Loveless stated the Gas Company has examined each site closely and has determined any existing poles are not feasible for co-location due to suitability issues. Each location was selected in order to provide 100 percent network coverage as mandated by the California Public Utilities Commission.

Commissioner Solu asked Loveless if any of the proposed poles have been identified for co-location. Loveless confirmed the only site that would potentially work for co-location would be at the corner of Pacific and Main where there are two street light poles. Once ownership is

identified, the Gas Company will be able to move forward and determine the feasibility of co-location. The other four sites lack above-ground structures that would work for these purposes.

Commissioner Solu discussed with Loveless what alternatives have been proposed to the cities with mixed reception. Loveless stated the Gas Company works with other utility companies when possible to arrange for co-location on distribution poles. Commissioner Solu asked Loveless to clarify whether the Gas Company is able to find alternative locations if a city determines it does not want the poles. Loveless stated they are mandated to provide 100 percent coverage to each of the communities they serve.

Commissioner Solu asked Loveless if there would be any savings to the community if the project is approved. Loveless stated there are operational savings, and the technology allows customers to gauge their energy usage.

Commissioner Tefft asked if the DCUs emit radiation. Loveless confirmed the DCUs receive and transmit data, so there are EMF emissions associated with the DCU but they are negligible.

Tefft asked for clarification regarding the power level of the DCUs. Juan Maldonado, Construction Manager for the project, stated the power output is less than four watts.

Commissioner Tefft asked the Applicant to clarify why there is such a disparity in the density of coverage in the City. Loveless stated there are DCUs outside the City limits (not shown on the coverage map) that provide the same redundancy because this is a region-wide project and not confined to City limits.

Commissioner Tefft asked Loveless if the Gas Company has conducted an inventory of poles for potential co-location. Loveless stated the Gas Company conducted site visits with the City and determined at the time there were no feasible poles that could be used for co-location. Tefft and Loveless discussed the potential for mounting the DCUs on buildings but Loveless explained funding is not available to do so.

Livick stated the City owns very few street light poles. The City pays PG&E to own and maintain the street lighting system.

Commissioner Fennacy asked about the consequences of denying this project. Loveless stated the Gas Company is obligated to provide 100 percent network coverage to the community.

Commissioner Lucas suggested exhausting all co-location options before installing new poles.

Chairperson Grantham asked about the possibility of renting pole space from PG&E. Loveless stated the Gas Company has executed an agreement with PG&E for co-location, but it does not allow co-location on distribution poles.

Chairperson Grantham and Livick discussed the options available to the Applicant and the Commission if the City decided to review alternatives to installing the poles. Loveless stated four of the five proposed sites are the best solution for the community in terms of allowing the gas company to provide adequate network coverage. The fifth site may be able to be relocated.

Mahoney asked the Commission to approve the proposed pole at Little Morro Creek Road.

Commissioner Solu spoke against the project.

Commissioners Fennacy and Lucas stated they would like to continue the item and examine other options.

MOTION: Commissioner Fennacy moved to continue Coastal Development Permit #CP0-382 to the next Planning Commission meeting on March 6, 2013 at 6 pm.

The motion was seconded by Chairperson Grantham and the motion passed unanimously. (5-0).

B-4 **Case No.:** Coastal Development Permit #CP0-383
Site Location: *nearest address* 499 Little Morro Creek Road
Proposal: Request to install a 29 foot wood pole in public right-of-way for purpose of installation of a solar-powered data collector unit for the Advanced Meter project.
CEQA Determination: Categorically exempt, Class 3
Staff Recommendation: Conditionally approve.
Staff Contact: Cindy Jacinth, Assistant Planner, (805) 772-6577

Jacinth presented the staff report.

Chairperson Grantham opened Public Comment period and hearing none, closed Public Comment period.

Commissioner Fennacy echoed his same concerns from Item B-3.

MOTION: Commissioner Fennacy moved to continue Coastal Development Permit #CP0-383 to the next Planning Commission meeting on March 6, 2013 at 6 pm.

The motion was seconded by Chairperson Grantham and the motion passed unanimously. (5-0).

B-5 **Case No.:** Coastal Development Permit #CP0-384
Site Location: *nearest address* 781 Quintana**.** This location is located in the Coastal Commission Appeals Jurisdiction.
Proposal: Request to install a 29 foot wood pole in public right-of-way for purpose of installation of a solar-powered data collector unit for the Advanced Meter project.
CEQA Determination: Categorically exempt, Class 3
Staff Recommendation: Conditionally approve.
Staff Contact: Cindy Jacinth, Assistant Planner, (805) 772-6577

Jacinth presented the staff report.

Chairperson Grantham opened Public Comment period and hearing none, closed Public Comment period.

MOTION: Commissioner Fennacy moved to continue Coastal Development Permit #CP0-384 to the next Planning Commission meeting on March 6, 2013 at 6 pm.

The motion was seconded by Chairperson Grantham and the motion passed unanimously. (5-0).

B-6 **Case No.:** Coastal Development Permit #CP0-385
Site Location: *nearest address* 255 Driftwood
Proposal: Request to install a 29 foot wood pole in public right-of-way for purpose of installation of a solar-powered data collector unit for the Advanced Meter project.
CEQA Determination: Categorically exempt, Class 3
Staff Recommendation: Conditionally approve.
Staff Contact: Cindy Jacinth, Assistant Planner, (805) 772-6577

Jacinth presented the staff report.

Chairperson Grantham opened Public Comment period.

Michael Jean Thibodeau-Hall, resident of Morro Bay, expressed appreciation to the Commission for their decision to examine alternative options.

Chairperson Grantham closed Public Comment period.

MOTION: Commissioner Fennacy moved to continue Coastal Development Permit #CP0-385 to the next Planning Commission meeting on March 6, 2013 at 6 pm.

The motion was seconded by Chairperson Grantham and the motion passed unanimously. (5-0).

Chairperson Grantham recused Commissioner Solu from the following hearing item.

B-7 **Case No.:** Coastal Development Permit #CP0-388
Site Location: *nearest address* 300 Kings
Proposal: Request to install a 29 foot wood pole in public right-of-way for purpose of installation of a solar-powered data collector unit for the Advanced Meter project.
CEQA Determination: Categorically exempt, Class 3
Staff Recommendation: Conditionally approve.
Staff Contact: Cindy Jacinth, Assistant Planner, (805) 772-6577

Commissioner Solu recused himself from this hearing item.

Jacinth presented the staff report.

Chairperson Grantham opened Public Comment period and hearing none, closed Public Comment period.

Commissioner Tefft requested that the Applicant think creatively about alternative options.

MOTION: Commissioner Fennacy moved to continue Coastal Development Permit #CP0-388 to the next Planning Commission meeting on March 6, 2013 at 6 pm.

The motion was seconded by Chairperson Grantham and the motion passed (4-0).

Chairperson Grantham reopened the Public Comment period to allow the Applicant's representative to speak.

Timothy Mahoney, Applicant's Representative, stated he did not need clarification from the Commission regarding the next steps in the process.

Commissioner Solu rejoined the meeting.

UNFINISHED BUSINESS

C-1 Current and Advanced Planning Processing List
Staff Recommendation: Receive and file.
Upcoming Projects: #CP0-390, State Park's request to upgrade 25 campsites at Morro Strand Campground

Livick reviewed the Work Program with Commissioners.

NEW BUSINESS – None.

DECLARATION OF FUTURE AGENDA ITEMS

Commissioner Lucas asked staff about the desalination plant's capability to provide a back-up supply of water if needed. Livick stated the plant does have this capability.

Livick stated Rob Schultz will be providing a refresher on the Brown Act at the next Planning Commission meeting.

ADJOURNMENT
The meeting adjourned at 8:47 pm to the next regularly scheduled Planning Commission meeting at the Veteran's Hall, 209 Surf Street, on Wednesday, March 6, 2013 at 6:00 pm.

_____
Rick Grantham, Chairperson

ATTEST:

_____
Rob Livick, Secretary

AGENDA NO: B-1 through B-5

MEETING DATE: March 6, 2013

TO: **Planning Commissioners** **DATE: February 26, 2013**

FROM: **Cindy Jacinth, Assistant Planner**

SUBJECT: **Coastal Development Permits (#CP0-382, CP0-383, CP0-384, CP0-385, CP0-388) for the SoCal Gas Company Advance Meter Project**

RECOMMENDATION:
Staff recommends a continuance to the April 3, 2013 Planning Commission meeting.

BACKGROUND:
Staff has received a request from the applicant, So Cal Gas Company dated February 26, 2013 to continue their five public hearing items to the April 3, 2013 Planning Commission meeting in order to allow sufficient time to research alternate locations. The five publicly noticed locations are:

2990 Alder Street – CP0-382
499 Little Morro Creek Road - CP0-383
781 Quintana Road - CP0-384
255 Driftwood Street - CP0-385
300 Kings - CP0-388

Attachment:

A. Letter dated February 26, 2013 from So Cal Gas Company

Prepared By: CJ **Dept Review:** _____

Southern California Gas Company

A Sempra Energy utility®

ADVANCEDmeter

RECEIVED

FEB 26 2013

City of Morro Bay
Public Services Department

Date: February 26, 2013

Cindy Jacinth
Assistant Planner
Public Services Dept.
City of Morro Bay
955 Shasta Ave.

Dear Ms. Jacinth,

As discussed, Southern California Gas Company (SoCalGas) requests that the Planning Commission agenda item pertaining to its five Advanced Meter network locations in Morro Bay be continued from the March 6th meeting to the April 3rd meeting. The continuance will allow SoCalGas to provide a comprehensive feasibility analysis of attaching the network equipment to existing poles per the Planning Commission's direction.

Thank you,
Scott Loveless

Advanced Meter Project
Site Acquisition Project Manager
Southern California Gas Company
555 West 5th Street, Los Angeles, CA
(213) 369-1153 (mobile)
sloveless@semprautilities.com

AGENDA NO: B-6

MEETING DATE: March 6, 2013

Staff Report

TO: **Planning Commissioners** **DATE: February 28, 2013**

FROM: **Cindy Jacinth, Assistant Planner**

SUBJECT: **Coastal Development Permit (#CP0-390) to allow the upgrade of existing campsites located at Morro Strand State Park Campground**

RECOMMENDATION:

CONDITIONALLY APPROVE THE PROJECT by adopting a motion including the following action(s):

A. Adopt the Findings included as Exhibit "A";

B. Approve Coastal Development Permit (#CP0-390) subject to the Conditions included as Exhibit "B" and the site development plans dated January 23, 2013.

APPLICANT/AGENT: California State Parks

LEGAL DESCRIPTION/APN: Morro Strand State Park Campground / 065-211-001

PROJECT DESCRIPTION: The Applicant is seeking Coastal Development permit approval to upgrade 25 existing campsites plus the two camp host sites at Morro Strand State Park Campground to include recreational vehicle hook-ups in order to modernize services as well as increase visitation and revenue.

PROJECT SETTING:

Adjacent Zoning/Land Use			
North:	OA-2/PD, open space	South	OA-1/PD, open space
East:	R-1/S.2A, moderate density	West:	OA-1/PD, open space

Site Characteristics	
Site Area	168,000 square feet
Existing Use	State Parks campground site
Terrain	Flat /Graded adjacent to cut slope
Vegetation/Wildlife	Previously disturbed site
Archaeological Resources	Property not within 300 feet of archaeological resource.
Access	Trinidad Street and Yerba Buena

General Plan, Zoning Ordinance & Local Coastal Plan Designations	
General Plan/Coastal Plan Land Use Designation	Open Space/ Recreation
Base Zone District	OA-2
Zoning Overlay District	PD
Special Treatment Area	N/A
Combining District	N/A
Specific Plan Area	N/A
Coastal Zone	Located within the Appeals Jurisdiction

BACKGROUND:

The Morro Strand State Parks Campground is seeking to upgrade 25 existing campsites plus the two camp host sites to include recreational vehicle hook-ups in order to modernize services as well as increase visitation and revenue. The campground has been used for camping since the early 1980s and has had few improvements. The original site was constructed as a day use parking lot.

The campground currently consists of 85 campsites which include sites 1-81, plus sites A-D and 2 camp hosts. The campsites measure 12 feet by 24 feet in length. Currently campsites 1-81 are 24 feet or less in length and campsites A-D are 30-40 feet. The campground currently limits camp reservations to trailers less than 24 feet with tent camping allowed at the campsites along the west side of the campground.

PROJECT SPECIFICS

Under State Parks' proposal, campsites 47-71 plus the two camp host sites (number 72 and 73) along the eastern border of the campground would be angled to increase to 30-40 feet. The existing campsites 1-46, 74-81 and sites A-D would remain at their existing size and configuration.

Picnic tables and BBQ pits will be added as well as surface improvements to accommodate full utility hook-ups for the recreational vehicles. The project will include improvements to drainage and existing viewshed from adjacent residences. The improved viewshed will be due to replacement of diseased myoporum trees; utilities will be undergrounded and a PG&E drop pole

removed. The recreational vehicle hook-ups will be sites against the cut slope and out of the viewshed. The campsites are currently located in parallel spaces to one another. The improvement project will involve angling the campsites to increase the length and therefore accommodate recreational vehicles increasing the campsite from 24 feet or less to between 30 to 40 feet.

The campground consists of an existing site of disturbed, paved, flat campsite loops adjacent to a cut slope and a beach fore-dune complex. Existing drainage is poor and will be corrected by the installation of drainage inlets to increase permeability with less run-off. The existing structures on site include two public restrooms and two existing sheds.

Environmental Determination

Pursuant to the California Environmental Quality Act, the project is categorically exempt pursuant to Section 15301. Class 1 consists of the operation, repair, maintenance, permitting, leasing, licensing or minor alter of existing public or private structures, facilities, mechanical equipment or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. The project as described above involves minor alterations to the existing campground through the upgrade of 25 existing campsites plus the 2 camp host sites to include recreational vehicle hook-ups in order to modernize services as well as increase visitation and revenue. The upgrade of the campsites at this campground will not result in an intensification of use.

The project was reviewed for proximity to cultural and archaeological resources. A biological assessment was submitted by the Applicant on February 26, 2013 which disclosed that no impacts to sensitive species or habitat will occur as a result of this proposed project. The proposed project is entirely within the footprint of the existing campground which is a graded and previously disturbed site. The archaeological review conducted was determined to be outside the threshold distance and therefore the project was found to be eligible for a Notice of Exemption from CEQA.

General Plan

The General Plan designation for this area is Open Space/Recreation. The campground is addressed in the Land Use, Open Space and Conservation Element which details plans and policies for the preservation of open space to protect natural resources and to provide spaces for outdoor recreation. The Open Space Element states the important planning area of the North Morro Strand State Beach, formerly known as Atascadero State Beach and "recommends facilities improvement at Atascadero State Beach and provision of overflow RV spaces…" The proposed upgrade of 25 existing campsites plus two camp host sites at North Morro Strand campground is consistent with and meets the policy objectives of the General Plan.

Zoning Ordinance

The OA-2 (Open Space/Recreation) zone district provides for public and private open space areas including those which can be used for recreational functions not involving significant structures. Although a campground is a conditionally permitted use under the OA-2 district, as a superior government agency, the applicant, State Parks Department is only required to obtain Coastal Development Permit approval pursuant to the Coastal Act.

PUBLIC NOTICE: Notice of this item was published in the San Luis Obispo Tribune newspaper on February 22, 2013 and all property owners of record within 300 feet of the subject site and occupants within 100 feet of the subject site were notified of this evening's public hearing and invited to voice any concerns on this application.

CONCLUSION: The Morro Strand State Park Campground project to upgrade 25 existing campsites plus the two camp host sites as proposed is consistent with the General Plan, Local Coastal Plan, and Municipal Code for development standards. The Open Space Element of the General Plan aims to increase recreational opportunities and recommends facilities improvement at Morro Strand State Beach, formerly known as Atascadero State Beach. No additional campsites will be added with this proposal, nor is the footprint increased, as the existing campsites will be angled in order to accommodate recreational vehicles and therefore increase visitation and revenue year-round. Amenities will be added including picnic tables and BBQs as well as full utility hookups provided for recreational vehicles. Additionally, the viewshed along Beachcomber and area drainage will be improved as a result of this project with no impacts to sensitive species or habitat to occur as a result of the project. Therefore staff recommends Planning Commission approval of the Coastal Development Permit.

Exhibits:
Exhibit A – Findings
Exhibit B – Conditions of Approval
Exhibit C – Plans / Reductions
Exhibit D – Proposed and Existing Campground Layout
Exhibit E – Camp Host site layout
Exhibit F – Aerial image of Proposed Layout
Exhibit G – Site Photographs
Exhibit H – Biological Report dated February 26, 2013
Exhibit I – Correspondence received February 28, 2013

EXHIBIT A

FINDINGS

SITE: MORRO STRAND STATE PARK CAMPGROUND

PROJECT DESCRIPTION:. The Morro Strand State Parks Campground is seeking to upgrade 25 existing campsites plus the two camp host sites to include recreational vehicle hook-ups in order to modernize services as well as increase visitation and revenue.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Pursuant to the California Environmental Quality Act the project is categorically exempt pursuant Section 15301, Class 1 consists of the operation, repair, maintenance, permitting, leasing, licensing or minor alter of existing public or private structures, facilities, mechanical equipment or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. The project as described above involves minor alterations to the existing campground through the upgrade of 25 existing campsites plus the two camp host sites to include recreational vehicle hook-ups in order to modernize services as well as increase visitation and revenue. The upgrade of the campsites at this campground will not result in an intensification of use.

COASTAL DEVELOPMENT PERMIT FINDINGS

A. That the project is an allowable use in its zoning district and is also in accordance with the certified Local Coastal Program and the General Plan for the City of Morro Bay based on the analysis contained within the staff report.

B. The project is in conformity with the public access and public recreation policies of Chapter 3 of the California Coastal Act and it was found that the campsite upgrades proposed are contained within the original footprint of the project area and therefore will not impact access to the beach or other recreational endeavors.

EXHIBIT B

CONDITIONS OF APPROVAL

SITE: MORRO STRAND STATE PARK CAMPGROUND

PROJECT DESCRIPTION:. The Morro Strand State Parks Campground is seeking to upgrade 25 existing campsites plus the two camp host sites to include recreational vehicle hook-ups in order to modernize services as well as increase visitation and revenue.

STANDARD CONDITIONS

1. This permit is granted for the land described in the staff report dated February 26, 2013, for the project depicted on plans dated January 23, 2013 on file with the Public Services Department. Site development, including all buildings and other features, shall be located and designed substantially as shown on plans, unless otherwise specified herein.

2. Inaugurate Within Two Years: Unless the construction or operation of the structure, facility, or use is commenced not later than two (2) years after the effective date of this approval and is diligently pursued thereafter, this approval will automatically become null and void; provided, however, that upon the written request of the applicant, prior to the expiration of this approval, the applicant may request up to two extensions for not more than one (1) additional year each. Said extensions may be granted by the Public Services Director, upon finding that the project complies with all applicable provisions of the Morro Bay Municipal Code, General Plan and Local Coastal Program Land Use Plan (LCP) in effect at the time of the extension request.

3. Changes: Minor changes to the project description and/or conditions of approval shall be subject to review and approval by the Public Services Director. Any changes to this approved permit determined not to be minor by the Director shall require the filing of an application for a permit amendment subject to Planning Commission review.

4. Compliance with the Law: (a) All requirements of any law, ordinance or regulation of the State of California, City of Morro Bay, and any other governmental entity shall be complied with in the exercise of this approval, (b) This project shall meet all applicable requirements under the Morro Bay Municipal Code, and shall be consistent with all programs and policies contained in the certified Coastal Land Use Plan and General Plan for the City of Morro Bay.

5. Hold Harmless: The applicant, as a condition of approval, hereby agrees to defend, indemnify, and hold harmless the City, its agents, officers, and employees, from any claim, action, or proceeding against the City as a result of the action or inaction by the City, or from any claim to attack, set aside, void, or annul this approval by the City of the applicant's project; or applicants failure to comply with conditions of approval. Applicant understands and acknowledges that City is under no obligation to defend any legal

actions challenging the City's actions with respect to the project. This condition and agreement shall be binding on all successors and assigns.

6. Compliance with Conditions: The applicant's establishment of the use and/or development of the subject property constitutes acknowledgement and acceptance of all Conditions of Approval. Compliance with and execution of all conditions listed hereon shall be required prior to obtaining final building inspection clearance. Deviation from this requirement shall be permitted only by written consent of the Public Services Director and/or as authorized by the Planning Commission. Failure to comply with these conditions shall render this entitlement, at the discretion of the Director, null and void. Continuation of the use without a valid entitlement will constitute a violation of the Morro Bay Municipal Code and is a misdemeanor.

7. Compliance with Morro Bay Standards: This project shall meet all applicable requirements under the Morro Bay Municipal Code, and shall be consistent with all programs and policies contained in the certified Coastal Land Use plan and General Plan for the City of Morro Bay.

8. Conditions of Approval on Building Plans: Prior to the issuance of a Building Permit, the final Conditions of Approval shall be attached to the set of approved plans. The sheet containing Conditions of Approval shall be the same size as other plan sheets and shall be the last sheet in the set of Building Plans.

FIRE DEPARTMENT CONDITIONS

1. Fire safety during construction, alteration, and demolition of the project shall be in accordance with 2010 California Fire Code, Chapter 14.

2. Timing of Installation. When fire apparatus access roads or water supply for fire protection is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction. (CFC 501.4)

3. Premises Identification. New and existing buildings shall have approved address numbers, building numbers or approved building identification placed in a position that is plainly legible and visible from the street fronting the property. (CFC 505.1) Provide space numbers

4. Fire Access Roads. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet and vertical clearance of not less than 13 feet 6 inches. (CFC 503.2.1)

5. Fire Protection Water Supplies-Hydrants and Water Mains. An approved water supply capable of supplying the required fire flow for fire protection shall be provided to the premises upon which facilities, buildings or portions of buildings are constructed. (CFC 507)

a. Private fire service mains shall be installed in accordance with NFPA 24. (CFC 507.2.1)

b. Fire hydrant systems requirements shall be determined and comply with 2010 California Fire Code, Appendix C. (CFC 507.5)

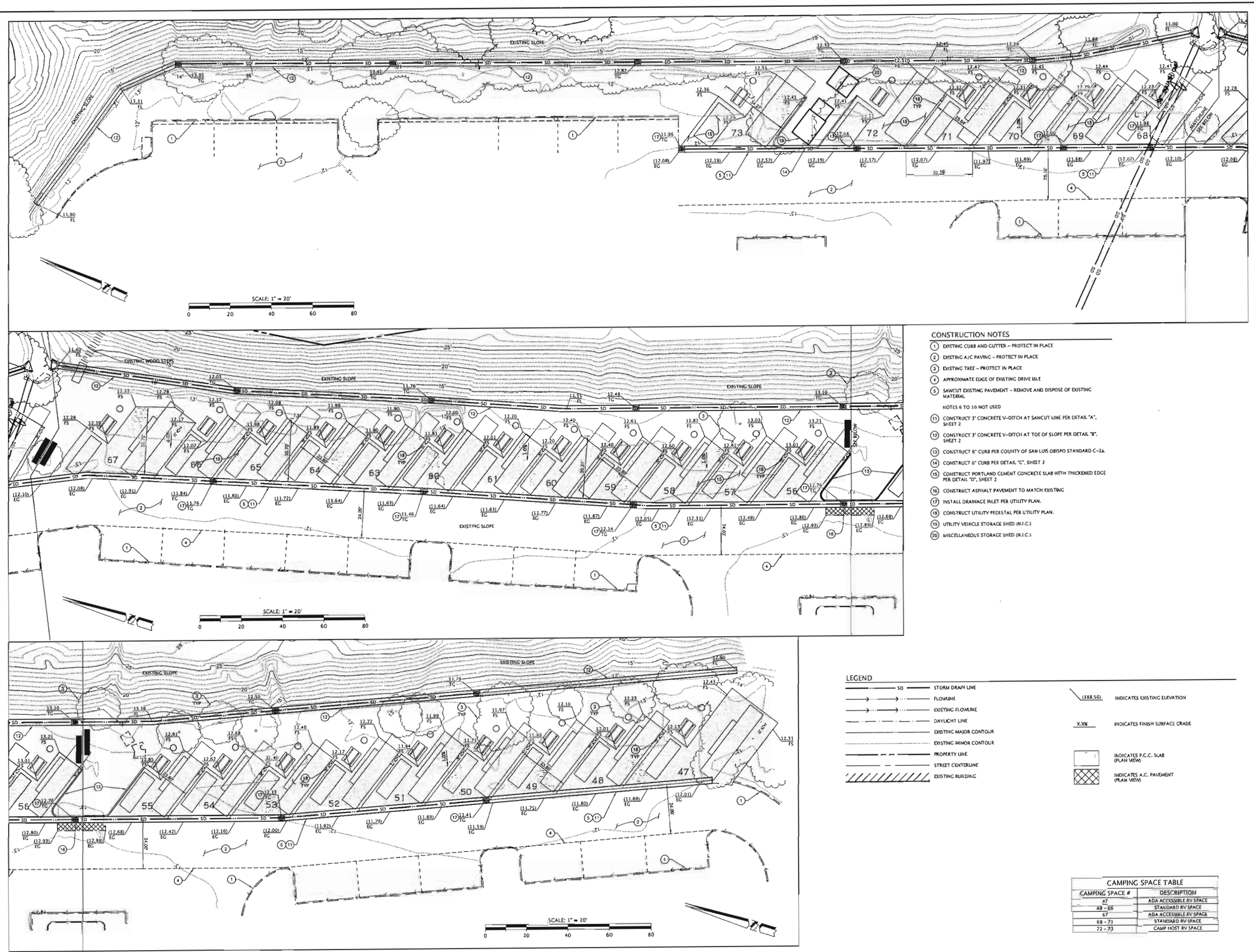
6. General Means of Egress. The requirements specified in Sections 1003 through 1013 shall apply to all three elements of the means of egress system, in addition to those specific requirements for exit access, the exit and the exit discharge. (CFC 1003)

7. Occupant Load. In determining means of egress requirements, the number of occupants for whom means of egress facilities shall be determined. Where occupants from accessory areas egress through a primary space, the calculated occupant load for the primary space shall include the total occupant load of the primary space plus the number of occupants egressing through it from the accessory area. (CFC 1004.1)

PLANNING CONDITIONS

1. Applicant shall contact the Planning Division of the Public Services Department for a final inspection upon completion of the project.

Exhibit C



CONSTRUCTION NOTES

1. EXISTING CURB AND GUTTER – PROTECT IN PLACE
2. EXISTING A/C PAVING – PROTECT IN PLACE
3. EXISTING TREE – PROTECT IN PLACE
4. APPROXIMATE EDGE OF EXISTING DRIVE ISLE
5. SAWCUT EXISTING PAVEMENT – REMOVE AND DISPOSE OF EXISTING MATERIAL

NOTES 6 TO 10 NOT USED

11. CONSTRUCT 3' CONCRETE V-DITCH AT SAWCUT LINE PER DETAIL "A", SHEET 2
12. CONSTRUCT 3' CONCRETE V-DITCH AT TOE OF SLOPE PER DETAIL "B", SHEET 2
13. CONSTRUCT 6" CURB PER COUNTY OF SAN LUIS OBISPO STANDARD C-24.
14. CONSTRUCT 0" CURB PER DETAIL "C", SHEET 2
15. CONSTRUCT PORTLAND CEMENT CONCRETE SLAB WITH THICKENED EDGE PER DETAIL "D", SHEET 2
16. CONSTRUCT ASPHALT PAVEMENT TO MATCH EXISTING
17. INSTALL DRAINAGE INLET PER UTILITY PLAN.
18. CONSTRUCT UTILITY PEDESTAL PER UTILITY PLAN.
19. UTILITY VEHICLE STORAGE SHED (N.I.C.)
20. MISCELLANEOUS STORAGE SHED (N.I.C.)

LEGEND

- SD — STORM DRAIN LINE
- FLOWLINE
- EXISTING FLOWLINE
- DAYLIGHT LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPERTY LINE
- STREET CENTERLINE
- EXISTING BUILDING
- (388.50) INDICATES EXISTING ELEVATION
- X.XX INDICATES FINISH SURFACE GRADE
- INDICATES P.C.C. SLAB (PLAN VIEW)
- INDICATES A.C. PAVEMENT (PLAN VIEW)

CAMPING SPACE TABLE

CAMPING SPACE #	DESCRIPTION
47	ADA ACCESSIBLE RV SPACE
48 – 66	STANDARD RV SPACE
67	ADA ACCESSIBLE RV SPACE
68 – 71	STANDARD RV SPACE
72 – 73	CAMP HOST RV SPACE

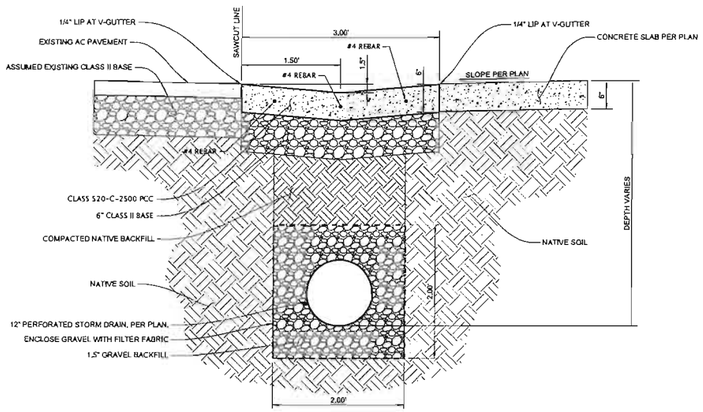
Plan Prepared by:
Ashley&Vance ENGINEERING, INC.
860 Walnut St., Suite C
San Luis Obispo, CA 93401
www.ashleyvance.com (805) 545-0010 • (323) 744-0010
CIVIL • STRUCTURAL

Project Name:

MORRO STRAND STATE PARK
RV CAMPSITE CONVERSION
SITE PLAN

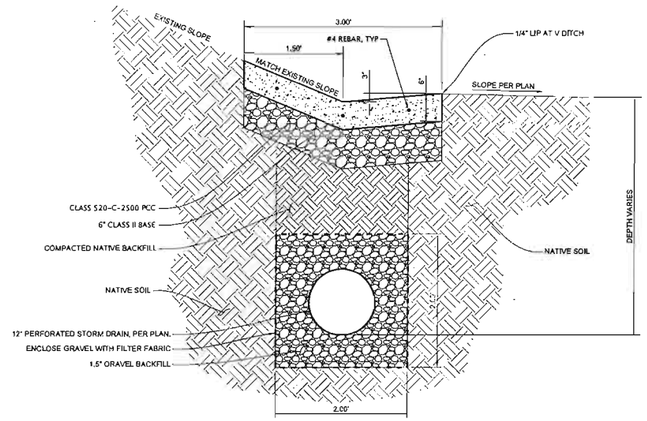
CALIFORNIA STATE PARKS SINCE 1864

1



11 DETAIL "A": CONCRETE V GUTTER AT SAWCUT LINE

SCALE: NTS

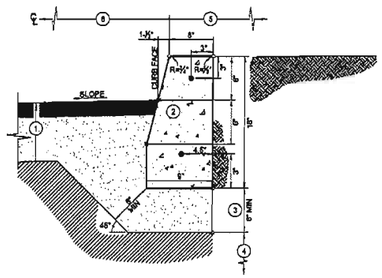


12 DETAIL "B": CONCRETE V GUTTER AT SLOPE

SCALE: NTS

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 2	REM	NOV 07			



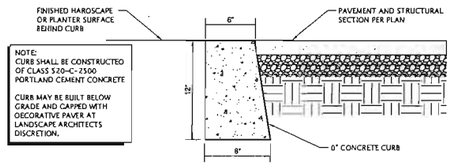
TYPE "C" CONCRETE CURB

NOTES:
1. ROADWAY STRUCTURAL SECTION PER PLAN OR AS EXISTING.
2. CONCRETE CURB SHALL CONFORM TO STATE STANDARD 90-1.01, 520 LBS CEMENTITIOUS MATERIAL PER CUBIC YARD (5-1/2 SACK). EXTRUDED CURB SHALL CONFORM TO STATE STANDARD 73-1.01. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE.
3. 6" MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION OR MATCH BASE THICKNESS REQUIREMENT FOR NEW OR EXISTING ROAD SECTION, WHICHEVER IS GREATEST.
4. 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION.
5. SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).
6. PAVEMENT WIDTH MEASURED FROM ROAD CENTERLINE TO TYPE POINT.
7. 1/2"Ø x 18" LONG GREASED SMOOTH DOWELS (4) SHALL BE CONSTRUCTED AT ALL EXPANSION JOINTS PER STANDARD DRAWING C-1.
8. EXPANSION JOINTS SHALL BE CONSTRUCTED AT 30-FEET MAXIMUM INTERVALS, AT ENDS OF ALL CURB RETURNS, AND EACH SIDE OF DRIVEWAY DEPRESSIONS. THE INTERVALS BETWEEN EXPANSION JOINTS SHALL VARY TO ALLOW MATCHING OF JOINTS ADJACENT EXISTING IMPROVEMENTS WHEN APPLICABLE PER STANDARD DRAWING C-1.
9. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT 10-FEET MAXIMUM INTERVALS PER STANDARD DRAWING C-1. THE INTERVALS BETWEEN EXPANSION JOINTS SHALL VARY TO ALLOW MATCHING OF JOINTS ADJACENT EXISTING IMPROVEMENTS WHEN APPLICABLE.
10. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN THE TOP OF CURB.

DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

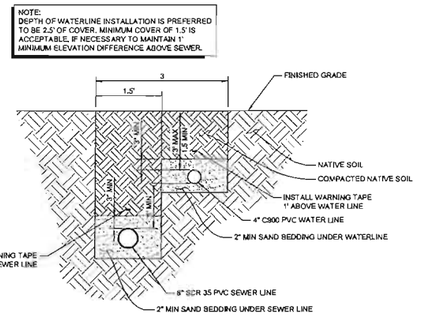
TYPE "C" CONCRETE CURB

Scale:	Adopted:
NTS	2011
Drawing No:	C-2a
Sheet No:	1 OF 1



14 DETAIL "C": 0" CURB

SCALE: NTS

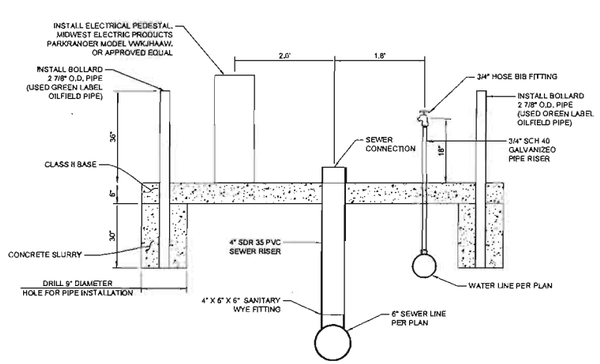


31 DETAIL "E": UTILITY TRENCH DETAIL

SCALE: NTS

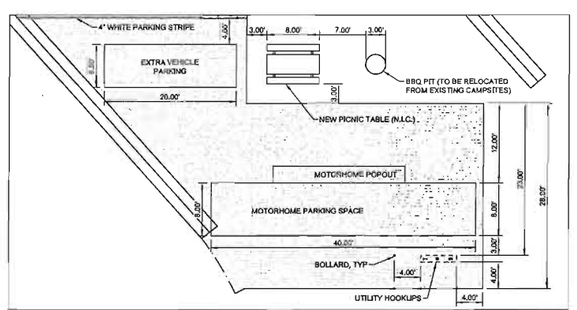
15 DETAIL "D": CONCRETE SLAB WITH THICKENED EDGE

SCALE: NTS



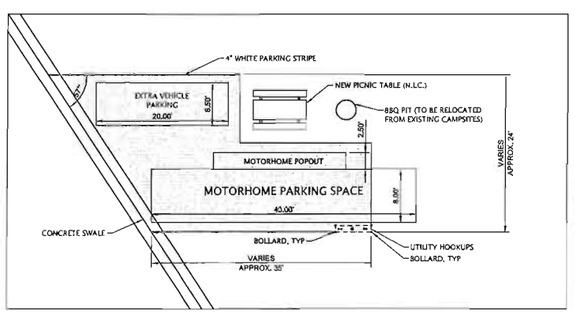
55 42 32 DETAIL "F": TYPICAL UTILITY HOOKUP

SCALE: NTS



DETAIL "G": TYPICAL ACCESSIBLE RECREATIONAL VEHICLE CAMP SPACE DIMENSIONS

SCALE: 1" = 10'



DETAIL "H": TYPICAL RECREATIONAL VEHICLE CAMP SPACE DIMENSIONS

SCALE: 1" = 10'

Plan Prepared By:
Ashley&Vance ENGINEERING, INC.
860 Walnut St., Suite C
San Luis Obispo, CA 93401
(805) 545-0010 • (323) 744-0010
www.ashleyvance.com
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Project Name:

MORRO STRAND STATE PARK

RV CAMPSITE CONVERSION

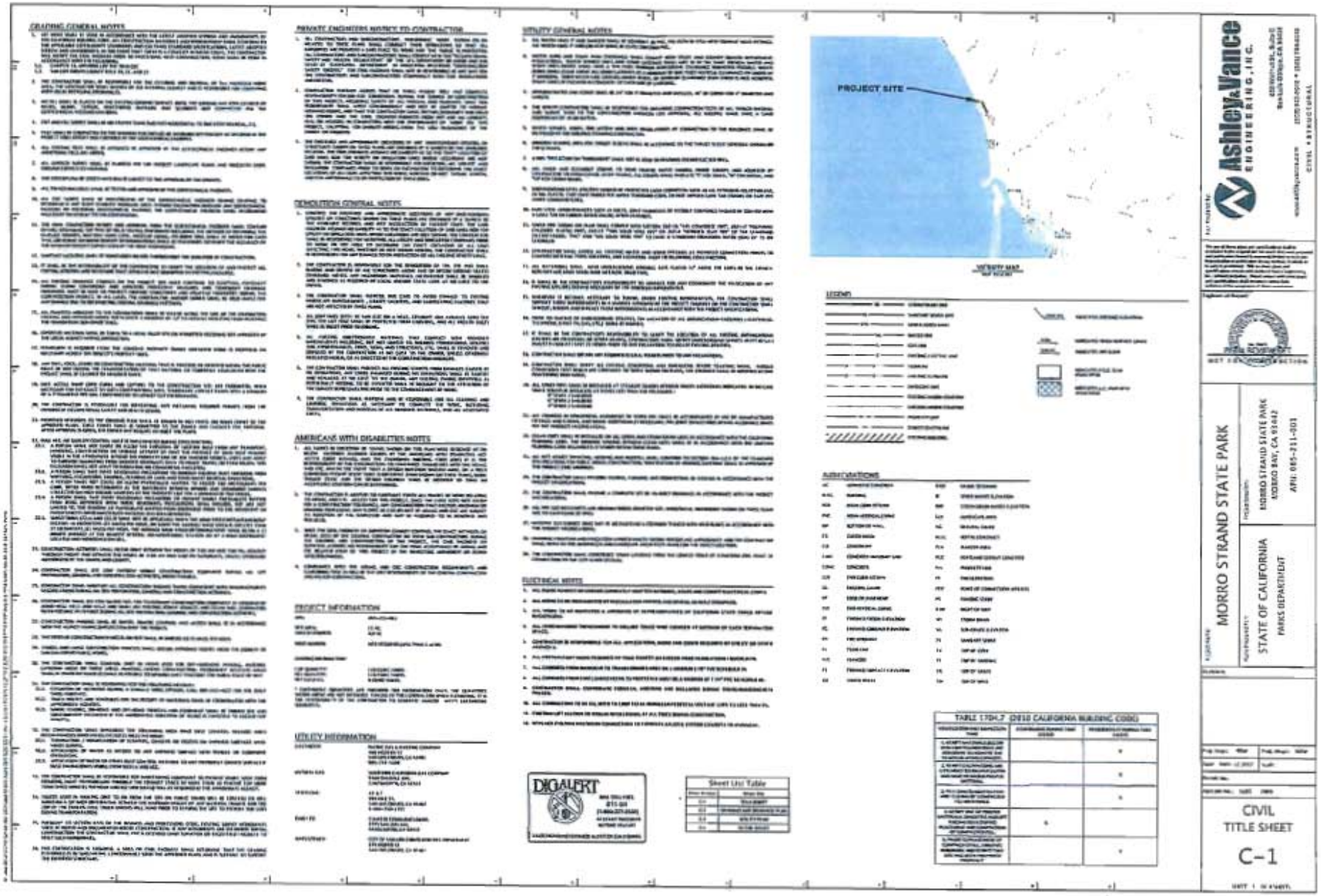
DETAIL SHEET

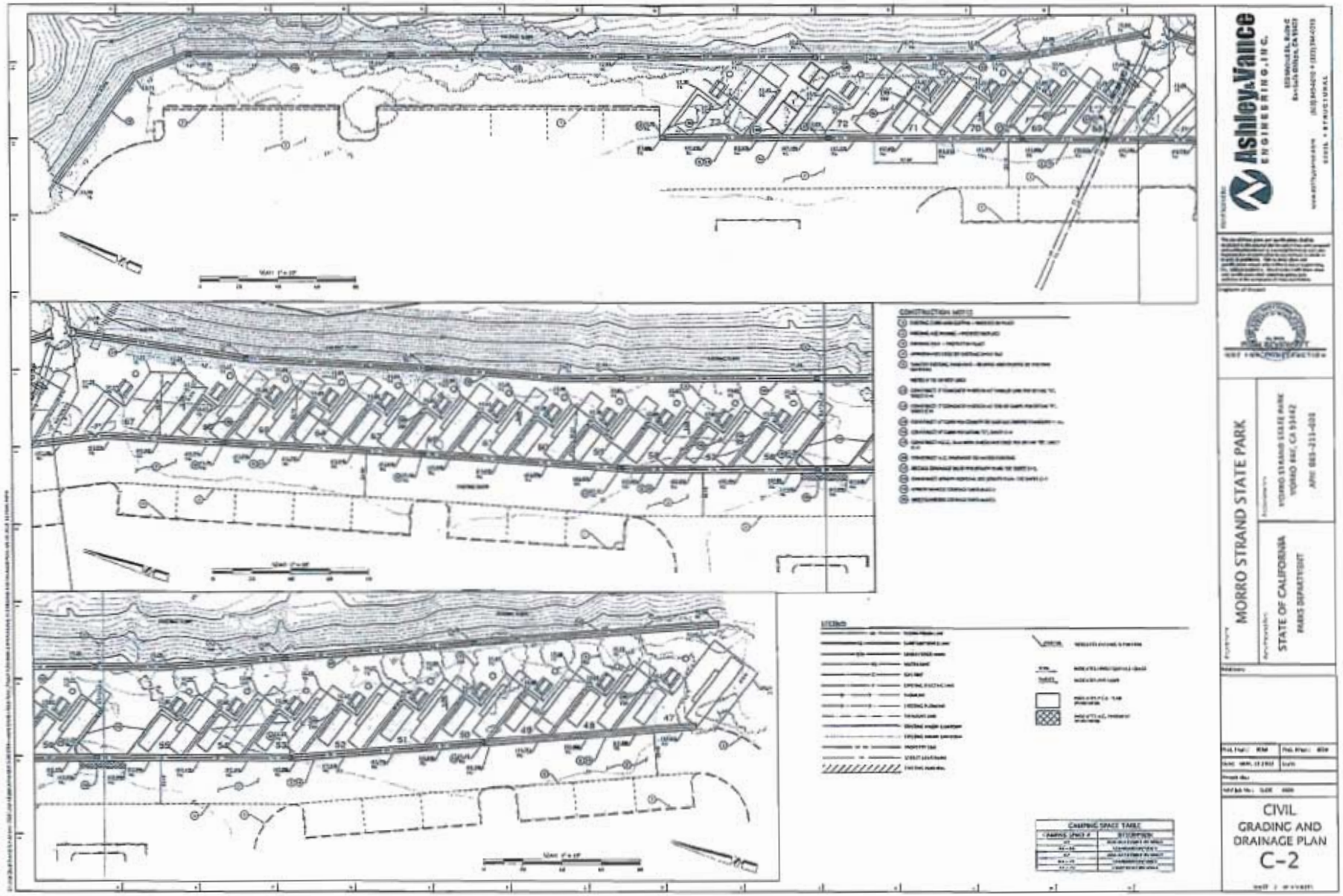
CALIFORNIA STATE PARKS SINCE 1864

2

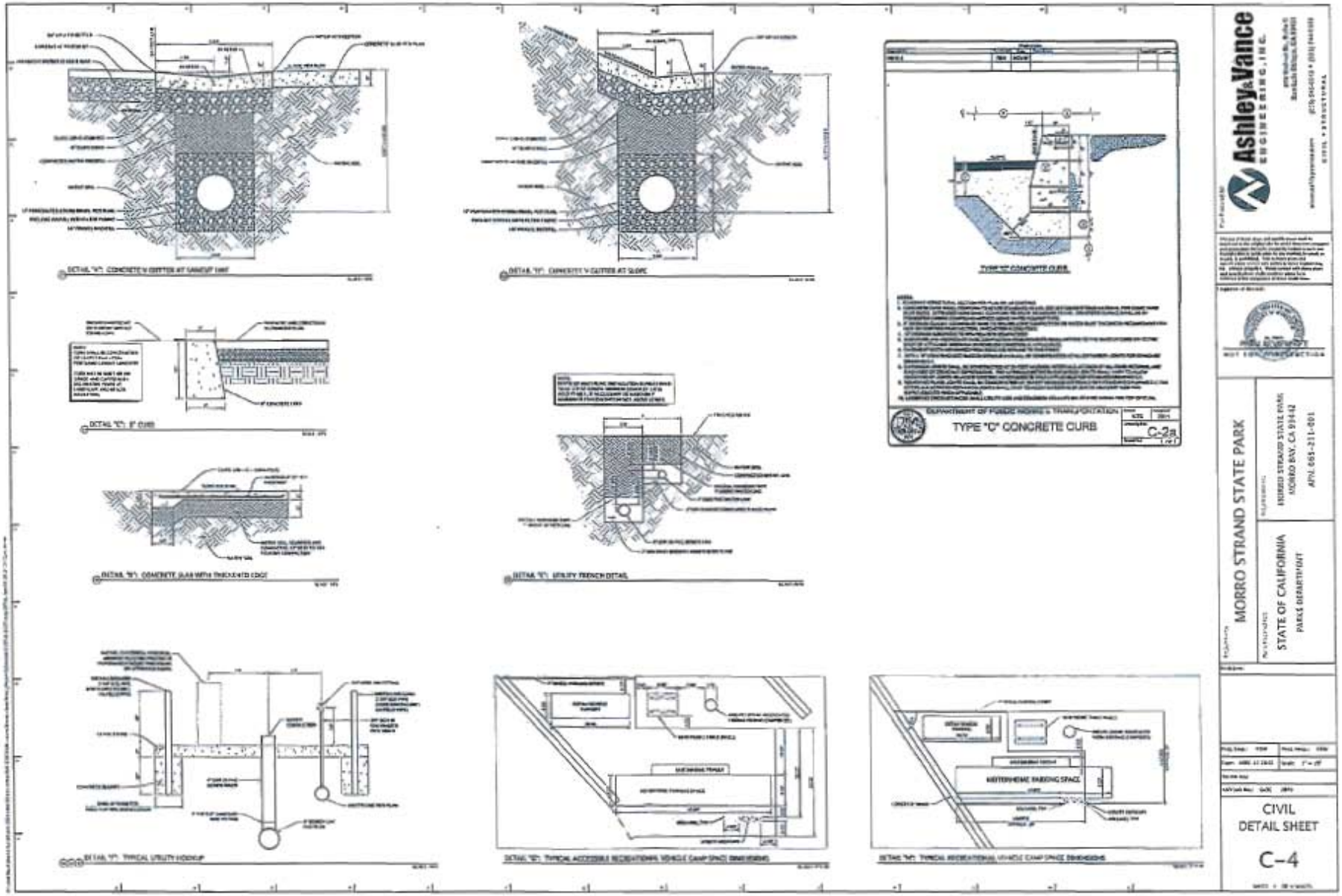
SHEET 2 OF 2

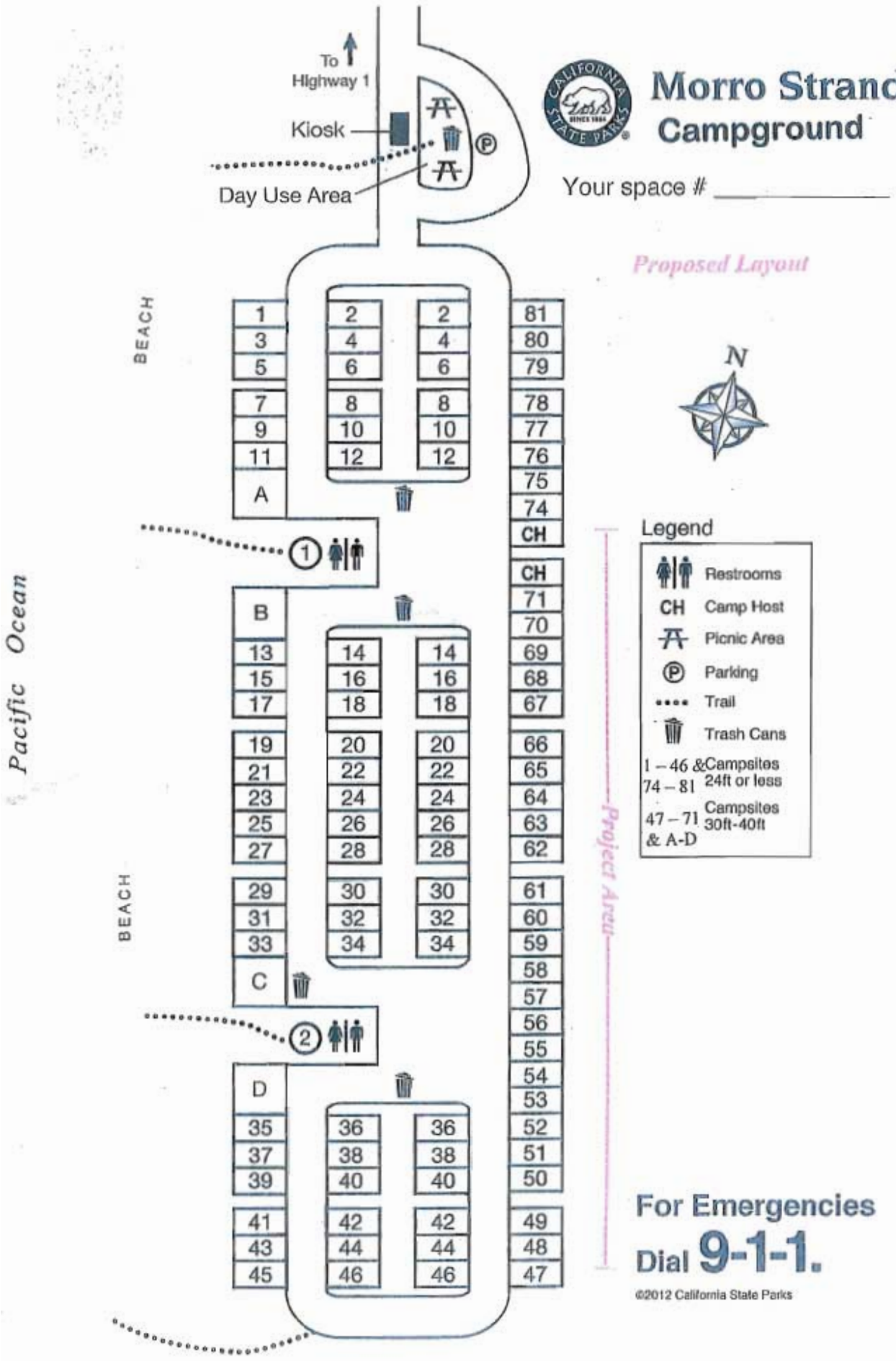
Exhibit C


PROJECT SITE
MORRO STRAND STATE PARK
STATE OF CALIFORNIA
PARKS DEPARTMENT
CIVIL
TITLE SHEET
C-1


Ashley Vance
ENGINEERING, INC.
MORRO STRAND STATE PARK
STATE OF CALIFORNIA
PARKS DEPARTMENT
CIVIL
GRADING AND
DRAINAGE PLAN
C-2

MORRO STRAND STATE PARK
STATE OF CALIFORNIA
PARKS DEPARTMENT
MORRO STRAND STATE PARK
MORRO BAY, CA 93442
APN: 066-211-008
Ashley&Vance
ENGINEERING, INC.
CIVIL
UTILITY PLAN
C-3

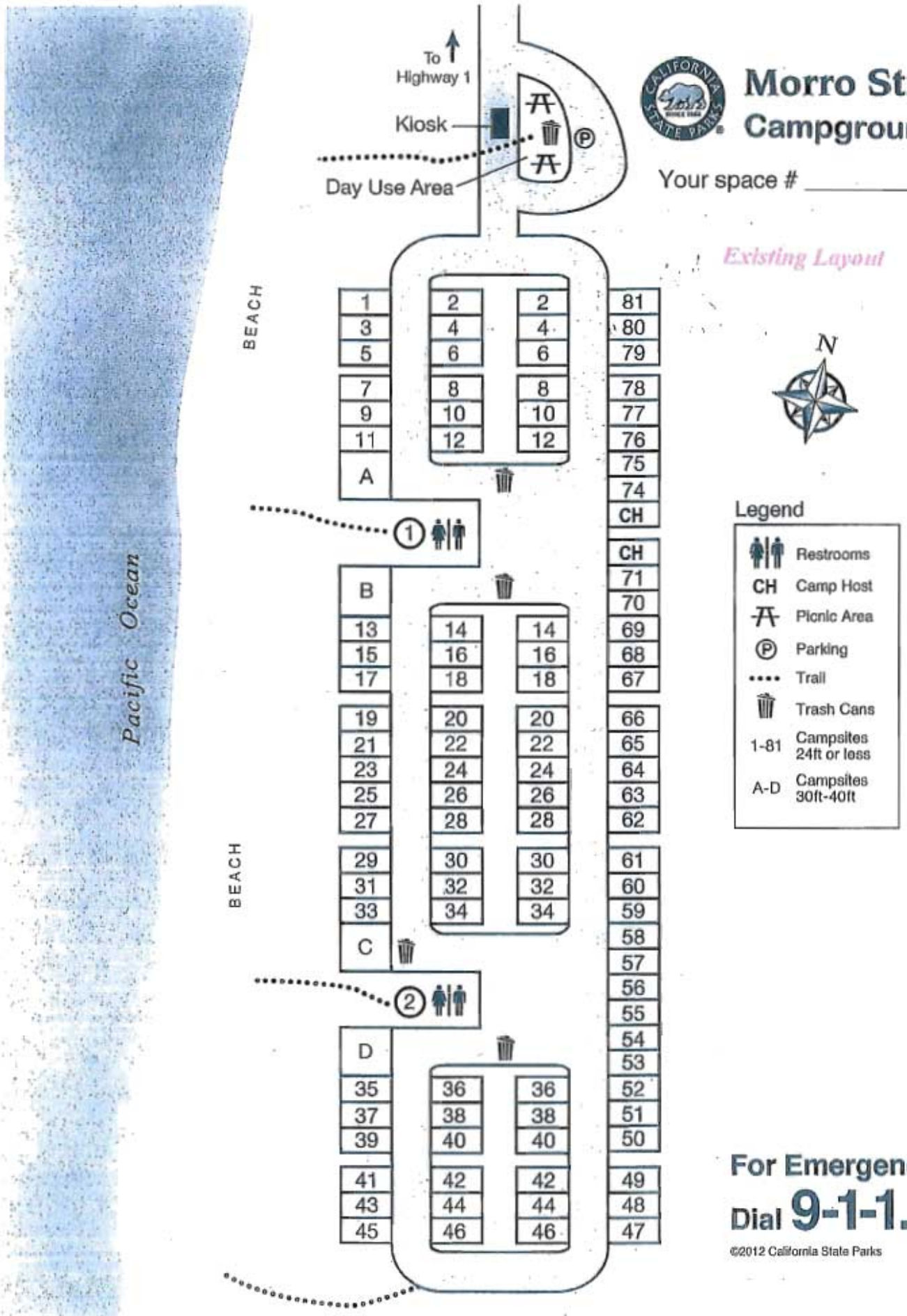

DETAIL "A": CONCRETE V GUTTER AT GRADE BREAK
DETAIL "B": CONCRETE V GUTTER AT SLOPE
TYPE "C" CONCRETE CURB
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPE "C" CONCRETE CURB
C-2a
DETAIL "C": 8" CURB
DETAIL "D": CONCRETE GUARD WITH THICKENED EDGE
DETAIL "E": UTILITY TRENCH DETAIL
DETAIL "F": TYPICAL UTILITY HOOKUP
DETAIL "G": TYPICAL ACCESSIBLE RECREATIONAL VEHICLE CAMP SPACE DIMENSIONS
MOTTER/HOME PARKING SPACE
DETAIL "H": TYPICAL RECREATIONAL VEHICLE CAMP SPACE DIMENSIONS
Ashley & Vance ENGINEERING, INC.
MORRO STRAND STATE PARK
MORRO STRAND STATE PARK
MORRO BAY, CA 93442
APN: 065-211-001
STATE OF CALIFORNIA
PARKS DEPARTMENT
CIVIL
DETAIL SHEET
C-4


To Highway 1
Kiosk
Day Use Area
Morro Strand Campground
Your space # _____
Proposed Layout
BEACH
BEACH
Pacific Ocean
1 3 5 7 9 11 A B 13 15 17 19 21 23 25 27 29 31 33 C D 35 37 39 41 43 45
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46
81 80 79 78 77 76 75 74 CH CH 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47
N
Legend
Restrooms
CH Camp Host
Picnic Area
Parking
Trail
Trash Cans
1 – 46 & 74 – 81 Campsites 24ft or less
47 – 71 & A-D Campsites 30ft-40ft
Project Area
For Emergencies Dial 9-1-1.
©2012 California State Parks

Morro Strand Campground

Your space # _____

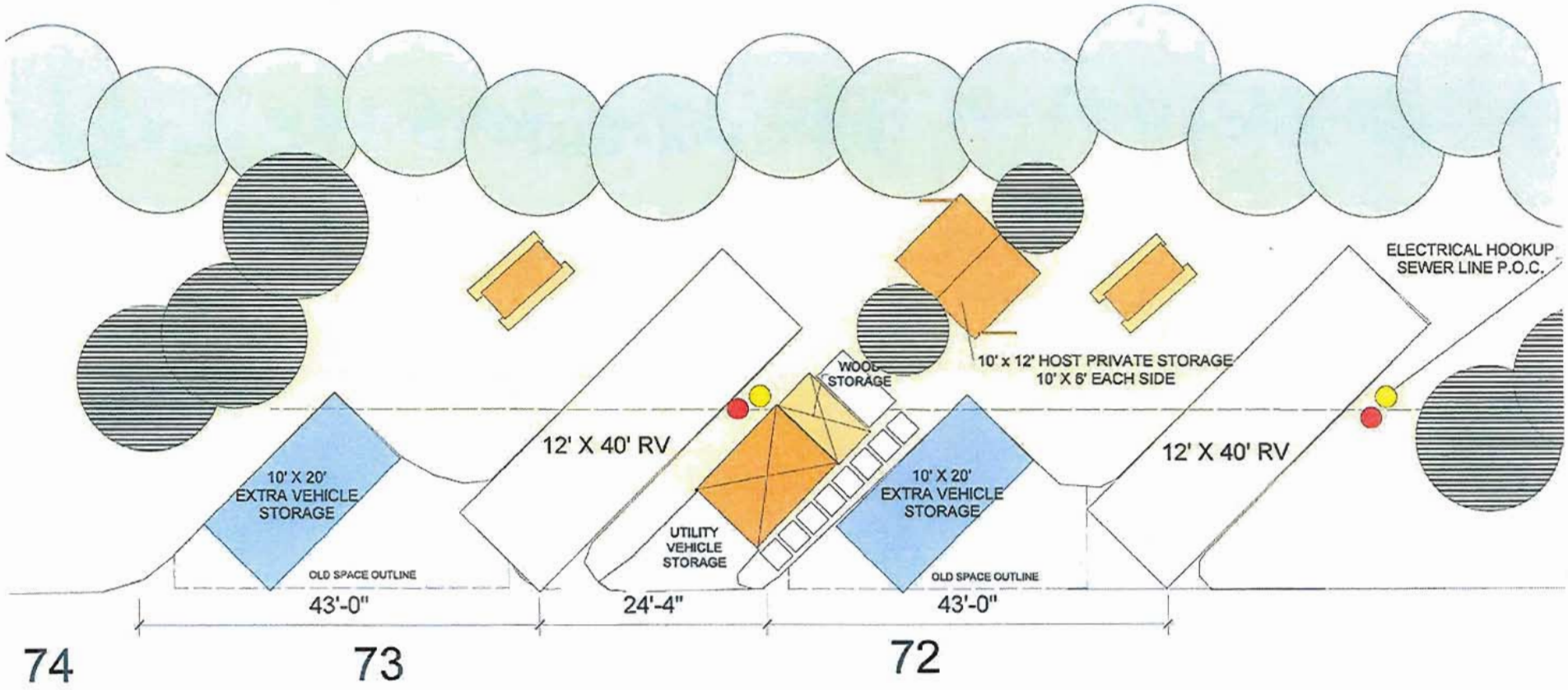
Existing Layout



Legend

	Restrooms
CH	Camp Host
	Picnic Area
Ⓟ	Parking
	Trail
	Trash Cans
1-81	Campsites 24ft or less
A-D	Campsites 30ft-40ft

For Emergencies Dial 9-1-1.



PROPOSED CAMP HOST PROJECT
MORRO STRAND STATE PARK

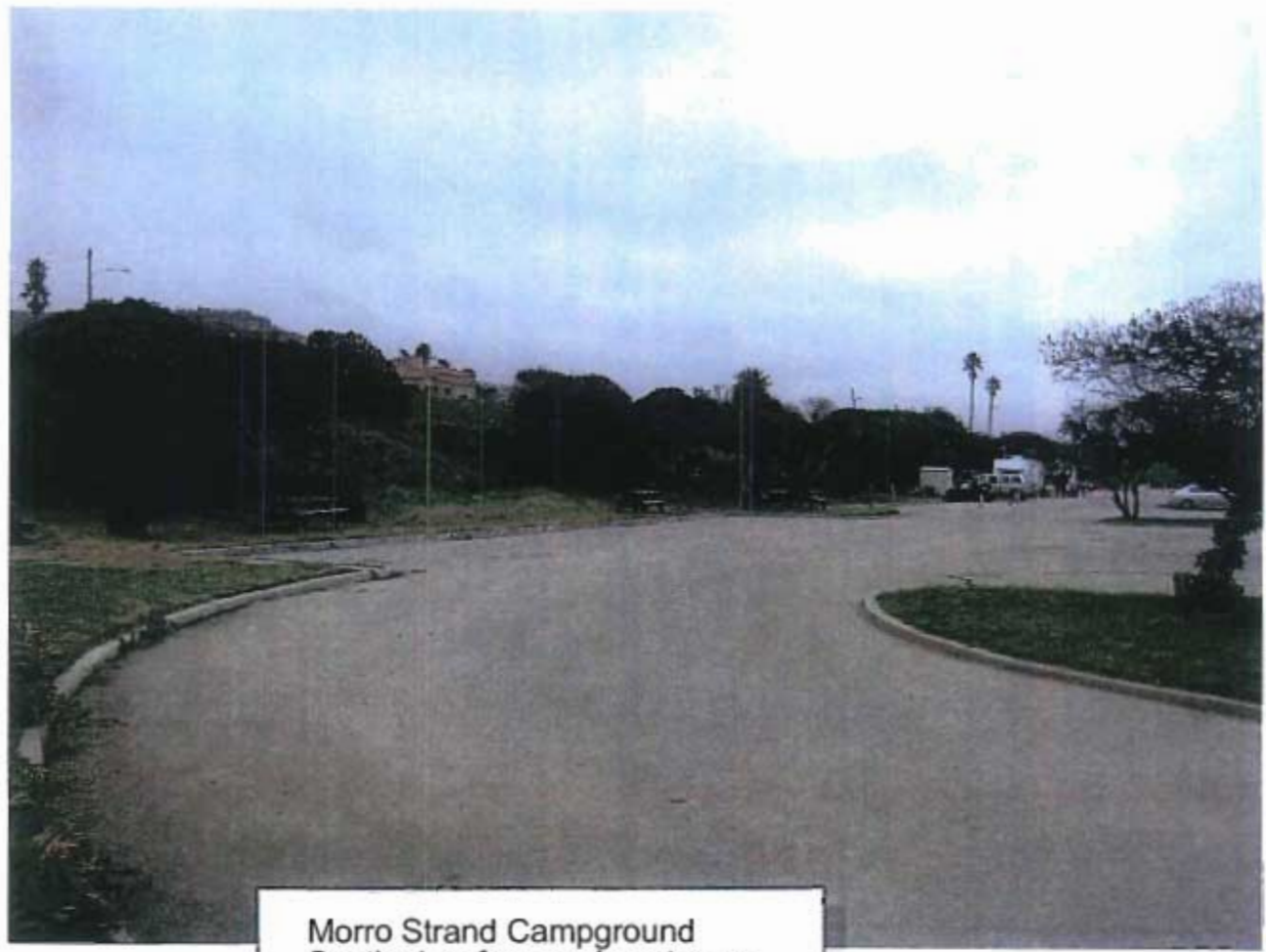
NORTH

Exhibit E


Rennel St
Panay St
Mindoro Way
Beachcomber St
CAMP HOST
CAMP HOST
EXISTING RESTROOM
EXISTING RESTROOM
MORRO STRAND RV PROPOSAL
2 CAMP HOSTS
25 RV SITES
0
150
300
NORTH
TC 2-28-13

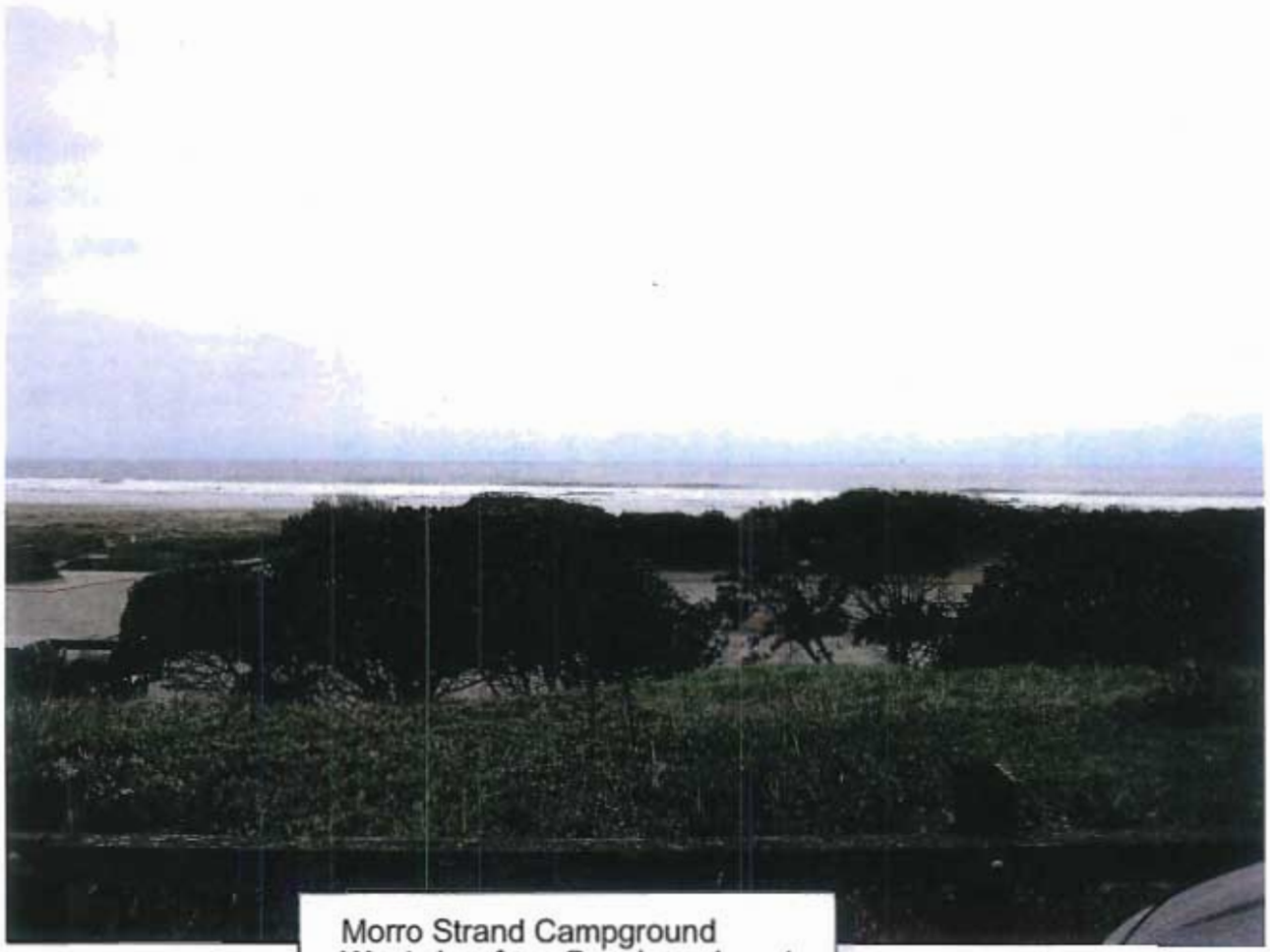
Exhibit G

Morro Strand Campground
North View showing cut slope
below Beachcomber St



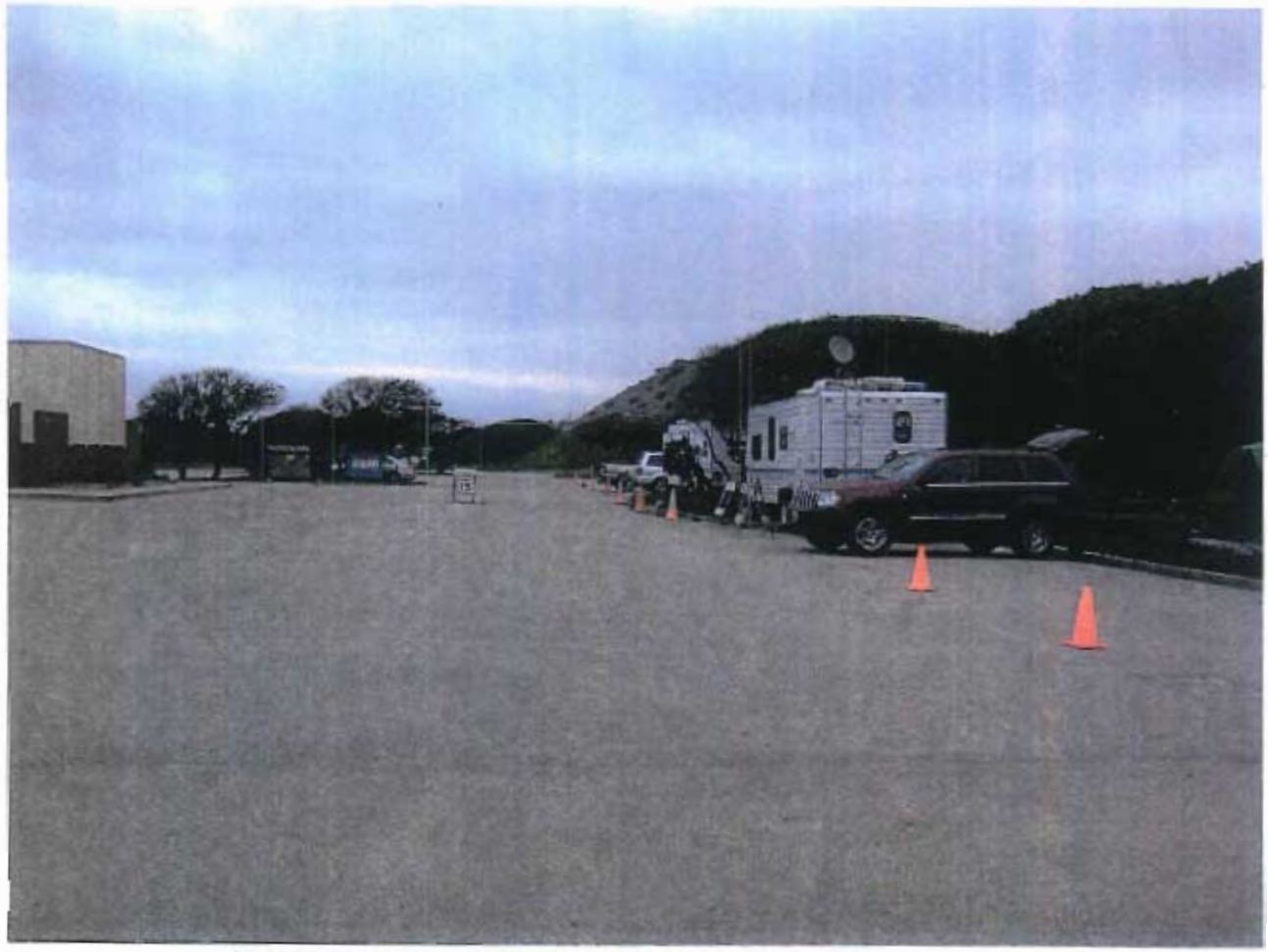
Morro Strand Campground
South view from main entrance.
Note RV site below grade & out
of viewshed from residence
above.

Morro Strand Campground
South View of camphost sites



Morro Strand Campground
West view from Beachcomber st
Note diseased Myoporum and
viewshed impacts from trees

Morro Strand State Beach
West view from east side of
Beachcomber St. Note viewshed
impact from trees.



Morro Strand Campground
North view showing camphost sites. Note RV height below grade & out of viewshed from residences above.

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*
DEPARTMENT OF PARKS AND RECREATION
Major General Anthony L. Jackson, USMC (Ret), *Director*
San Luis Obispo Coast District
750 Hearst Castle Road
San Simeon, CA 93452
(805) 927-2065 telephone
(805) 927-2031 fax

February 26, 2013

Kathleen Wold
Senior Planner
Public Services Department
City of Morro Bay
955 Shasta Avenue
Morro Bay, CA 93442

Subject: Biological Description for Morro Strand Coastal Development Permit application CP0-390

Dear Ms. Wold:

Although Morro Strand State Beach (Strand) is predominately characterized by coastal dune, strand, and dune wetland habitats, the campground at the Strand contains little, if any, of these sensitive habitats. The proposed campsite conversion located on the easterly side of the Beach campground will occur entirely on the existing footprint of the current campsites. The sites have been used for camping since the early 1980's and have had few improvements. The original site was constructed as a day use parking lot.

Very little vegetation occupies the area proposed for campsite realignment. The extant plant community would be classified as ruderal consisting of introduced plant species. Common species include iceplant (*Carpobrotus edulis*), buckhorn plantain (*Plantago coronopus*), myoporum (*Myoporum laetum*), sour grass (Oxalis pes-caprae), kikuyu grass (*Pennisetum clandestinum*), and radish (*Raphanus sativus*). One highly invasive plant occurs on site, spiny threecornerjack (*Emex spinosa*), currently being monitored and controlled by state park resource staff. The existing drainage ditch at the toe of slope has been manually cleared on an annual basis to facilitate drainage and sustains limited cover by introduced plant species.

Myoporum and Monterey cypress (*Cupressus macrocarpa*) are the only tree species located in the campground. Recent weather patterns have promoted a significant increase in myoporum thrips that have deleteriously affected the health of the species in the park (Plant "die back" has occurred on the nearby Cal Trans Right-of-Way as well.). The project proposes to replace some of the myoporum that may be removed with native tree/shrub species such as arroyo willow (Salix lasiolepis) that naturally occurs in the dune system.

As the proposed project does not expand the footprint of the existing camping area, the project will not have any impact to sensitive species or habitat. The project will not disturb coastal dune or strand habitat, located to the west of the campground, or the riparian habitat located southerly of the campground. Adjoining Alva Paul Creek, known habitat for the federally listed California red-legged frog (*Rana draytonii*), will not be affected by the project. As the project footprint is limited to the easterly (inland) side of the campground, the proposed project will not impact the coastal dune community. Concomitantly, the project will not affect nesting habitat for the federally listed Western snowy plover (*Charadrius nivosus nivosus*). Currently, the dune system is fenced off separating westerly side of the campground from sensitive habitat. Access corridors are established and signed, and Western snowy plover habitat is fenced and monitored during the nesting season. As part of the Department's Natural Resource Program, these sensitive habitats have been restored and are being managed by ongoing state park natural resource projects.

As stated above, no impacts to sensitive species or habitat will occur as a result of this proposed project. Thank you for the opportunity to address any extant biological issues. Please do not hesitate to contact me if you have any questions.

Sincerely,

Vincent Cicero
Senior Environmental Scientist

cc: Cindy Jacinth, Assistant Planner, City of Morro Bay
Nick Franco, District Superintendent

Exhibit I

RECEIVED

FEB 28 2013

City of Morro Bay
Public Services Department

February 28, 2013

To: Morro Bay Planning Commission

Re: Application from State Parks for Improvements to Morro Strand Campground

We would like to introduce some observations and comments about the State Parks proposal to improve/expand the Morro Strand State Beach Campground. In general, we support modest, environmentally and people- sensitive improvements to the park and campground. We also support public access to coastal resources, and some of our comments and thoughts result from what we perceive as a conflict between unfettered public access and paid campground uses that State Parks may be perpetuating by this proposal.

We had a brief opportunity to look at the contents of the file at the Planning Department, and spoke briefly with the applicant about a couple of our concerns. We appreciate the willingness of both Cindy Jacinth and Doug Barker to discuss these concerns in person.

The proposed site improvements are closer to our properties than any other adjoining properties along Beachcomber Drive. We (as well as many others along Beachcomber Drive) operate very popular vacation rentals that bring hundreds of people to Morro Bay each year, along with their vacation spending and occupancy taxes. We also enjoy our homes as residents as much as possible, so we are very aware of the campground and the effect it has on our properties and businesses. In short, we believe the project as proposed could have significant impacts on both, and urge the City to consider our comments in their deliberations. Our specific comments are listed below:

Change/Increase in Use: The application seems to represent this project as a simple conversion of existing campsites to the same number of larger campsites. While the map of existing camping "sites" shows that, these sites are not really used as individual sites at all. They are 10-foot by 20-foot paved parking stalls, which are rarely if ever full. In fact, the campground as a whole is rarely if ever full, and more regularly it seems to be virtually empty. We question whether the overall business model for this site is realistic, given how it is used and managed currently. We would ask that State Parks provide more revenue and user information on this and their other nearby facilities that demonstrates there is a current shortage of larger camp sites or revenue in general that requires immediate attention, and any alternative ways to address those shortfalls. For instance, today with apparently few changes they could allow larger vehicles to park parallel to the slope, entirely within the paved areas. If such a test reveals that these sites are in demand to the point where they are running out of availability, then it would seem appropriate to increase the number of larger campsites. Further, rather than expanding the facilities now for a select few users who are able to purchase very large and expensive rigs, why not consider the entire site in a master plan that looks to make improvements to facilities and address existing deficiencies across the board? State Parks must be aware that there are quite a few negative comments about this campground because it is "camping in a parking lot" and not a quality experience other than its' proximity to the beach. As you know, the site was a day use area long before it was a campground. We don't know what the decision process was in the conversion to a campground, but maybe that decision should be reconsidered as well. A comprehensive master plan would allow the

public to weigh in more thoroughly, and ensure these concerns as well as others listed here are vetted completely before such an investment of public funds is made.

Parking: State Parks does not currently provide sufficient space for public and overflow parking for the uses this campground and beach support, and that lack of parking impedes public access and enjoyment of Beachcomber Drive. Beachcomber Drive is a hugely popular street for pedestrians, dog walkers, bicycles and sightseers. Daily, winter and summer, there is an endless stream of non-motorized uses including many disabled users in wheelchairs, walkers, recumbent bikes and other personal mobility devices. These users come from all over the Beach Tract and the opposite side of Highway 1 because of the views, and the level and accessible roadway. We support and encourage expansion of these public uses, and support future bicycle improvements that are planned in the City's Bicycle Master Plan.

Public parking is necessary to this popular beach, but the State provides just a few spots at the entrance. This leaves everyone else to park along the road, climb down the slope, and walk through the campground to reach the beach, creating erosion and water quality issues. The layout of the proposed campsites creates a wall of large vehicles which will make that prospect even more difficult. The result will be more people parking along the street adjacent to our homes and businesses, where the only stairway exists leading down the slope to the campground.

The handout given to campers by State Parks staff encourages campers with additional vehicles to park them along Beachcomber Drive. While it is a city street and parking is allowed, campers use that opportunity to save money and park for extended periods of time on the street. Savvy campers may roll their vehicle to a new spot a few feet away before the 72-hour parking limit is up. In any case, a State Parks policy of encouraging offsite parking is inconsistent with their stated desire to increase revenue. Further, providing only one parking spot for a separate vehicle for each large campsite is insufficient, and longer-term campers will have even less willingness to pay extra vehicle fees. This will force even more vehicles onto Beachcomber Drive.

We believe that the use of Beachcomber Drive as an overflow parking lot for the campground will increase, as will the concentration and frequency of parking directly in front of our homes and businesses. City Code requires that onsite parking be provided in conjunction with any other commercial business. We have to provide it for our vacation rental, and we discourage our guests from parking on the street. We believe that State Parks should be required to provide sufficient parking for all public uses (day use and paid campground) in conjunction with expansion of the camping facilities, and stop encouraging campers to park offsite. This will improve access by the public to the State Beach, reduce conflicts between day users and campers, and improve access to the views and safety of Beachcomber Drive for the thousands of public users who enjoy it free of charge as a spectacular coastal promenade.

Lighting: The application seems to include a reference to new lighting associated with these campsites. We could not find any locations or details of lighting on the plans in the file. We would ask the Planning Commission to not approve any new lighting sources west of Beachcomber Drive. New lighting in that area would be inconsistent with the overall public enjoyment of coastal views.

Further, the existing lighting on the restroom buildings is not shielded, and casts a glare directly into the windows of all the homes on Beachcomber. This is noticeable and distinct from the intersection lights on the street. We would ask that State Parks be required to shield all existing lighting in the campground, consistent with best practices in other areas.

Noise/Odors: The proposed campsites are directly in front of our properties. Each of these large vehicles has a generator, and all of them will be running at about the same time for cooking, TV watching, etc. We would like the City to request more information on possible noise and odor impacts, and how those will be mitigated.

Visual: Separate from the lighting, we are concerned about the layout and visual impact of the proposed sites. The application suggests that there will be no impact, or any impacts will be mitigated by some tree removal and removal of a pole. This doesn't seem sufficient to us. The sheer number of the large RV sites seems inconsistent with enjoyment of a coastal view. What the walkers along the Beachcomber promenade will see is the top side of 25 or more diesel pushers, stacked up like a mobile home park. We ask that the Planning Commission consider additional ways to shield this view from the public who currently enjoy the view from Beachcomber Drive at no charge. Further, these vehicles are very large and very tall, and our opinion is that they will project above the top of bank view line from the residences along Beachcomber. We would like to see State Parks develop cross sections and alternative mitigation showing how that will be shielded from view.

Other: We often witness campers flying tall flags or kites in the parking lot below us. The public is prohibited from flying kites on the beach as it is a habitat for the Snowy Plover, so we don't understand why campers who pay to be there are allowed to fly flags or kites at all. This should be corrected in any proposed improvement to the site.

We hope that our comments are considered in the spirit intended; that of working as partners in this neighborhood to ensure that everyone's use and enjoyment of the coast is valued and protected.

Thanks for your consideration.

Sincerely,

Wally Auerbach and Cindy Gustafson, 3200 Beachcomber Drive

Fred and Candi Wickman, 3198 Beachcomber Drive

C: Doug Barker, via email to dbarker@hearstcastle.com

Agenda No: C-1

Meeting Date: March 6, 2013

City of Morro Bay
Public Services/Planning Division
Current Project Tracking Sheet
This tracking sheet shows the status of the work being processed by the Planning Division
New Planning items or items recently updated are highlighted in yellow. Building permit updates are highlighted in green.

Approved projects are deleted on next version of log.

#	Applicant/ Property Owner	Project Address	Date	Permit Numbers	Project Description/Status	Planning Comments and Notations	Building/Fire Comments and Notations	Engineering Comments and Notations	Harbor/Admin Comments and Notations
Hearing or Action Ready									
1	*State Park*	*North Morro Strand*	*1/23/13*	*CP0-390*	***Upgrade 25 existing campsites plus camp host sites to include RV hookups in order to modernize services and increase visitation***	*Reviewed and scheduled for March Planning Commission meeting.*			
2	*So Cal Gas Company*	*255 Driftwood (Nearest Address)*	*10/10/12*	*CP0-385*	***Advance Metering Project - 5 separate locations***	*Incomplete letter sent 11-29-12. Various sites. Resubmittal received 1/3/12 and ready for Planning Commission. CJ. Applicant requesting continuance to April PC.*	Building insert comments here	Engineering insert comments here	
3	*So Cal Gas Company*	*499 Little Morro Creek (Nearest Address)*	*10/10/12*	*CP0-383*	***Advance Metering Project - 5 separate locations***	*Incomplete letter sent 11-29-12. Various sites. Resubmittal received 1/3/12 and ready for Planning Commission. Applicant requesting continuance to April PC.*	Building insert comments here	Engineering insert comments here	
4	*So Cal Gas Company*	*781 Quintana (Nearest Address)*	*10/10/12*	*CP0-382*	***Advance Metering Project - separate locations***	*Incomplete letter sent 11-29-12. Various sites. Resubmittal received 1/3/12 and ready for Planning Commission. Applicant requesting continuance to April PC.*	Building insert comments here	Engineering insert comments here	
5	*So Cal Gas Company*	*300 Kings (Nearest Address)*	*10/10/12*		***Advance Metering Project -5 separate locations***	*Incomplete letter sent 11-29-12. Various sites. Resubmittal received 1/3/12 and ready for Planning Commission. Applicant requesting continuance to April PC.*	Building insert comments here	Engineering insert comments here	

#	Applicant/ Property Owner	Project Address	Date	Permit Numbers	Project Description/Status	Planning Comments and Notations	Building/Fire Comments and Notations	Engineering Comments and Notations	Harbor/Admin Comments and Notations
6	*So Cal Gas Company*	*2990 Alder (Nearest Address)*	*10/10/12*	*CP0-382*	***Advance Metering Project -5 separate locations***	*Incomplete letter sent 11-29-12. Various sites. Resubmittal received 1/3/12 and ready for Planning Commission. Applicant requesting continuance to April PC.*	Building insert comments here	Engineering insert comments here	
7	*City of Morro Bay*	*End of Nutmeg*	*1/18/12*	*UP0-344*	***Environmental.*** *Permit number for tracking purposes only County issuing permit. Demo existing and replace with two larger reservoirs. City handling environmental review*	*KW--Environmental contracted out to SWCA estimated to be complete on 4/27/2012. SWCA submitted draft I.S. to City on May 1, 2012. MR-Reviewed MND and met with SWCA to make corrections. In contact with County Environmental Division for their review. MND received by SWCA on 10/7/12. MND out for public notice and 30 day review as of 11/19/12. 30 day review ends on 12/25/12. No comments received. Scheduled for 1/16/13 Planning Commission meeting and then to be referred back to SLO County. Planning Commission continued this item to address concerns regarding traffic generated from the removal of soil.*	Not applicable	BCR- drainage study required for impact on City storm drain facilities	Not applicable
30 -Day Review, Incomplete or Additional Submittal Review									
8	*Peter*	*190 Dana Way*	*2/27/13*	*CP0-392*	***New Single Family Home***	*Under review.*			
9	*Drinkwater*	*301 Main*	*11/2/12*	*S00-116*	***Certificate of Compliance for portion of APN.***	*Under review. Applicant to submit a copy of the deed for the subject lots. R. Livick to complete. Lot tie agreement in process.*	N/A	Engineering insert comments here	
10	Perry	3202 Beachcomber	9/8/11	CP0-381	***Coastal Development Permit. Demo/Reconstruct new home with basement in S2.A overlay.***	*KW--Planning requested status of CDP for house and LLA for parcels. Item scheduled for July 18 2012. Applicant requested a continuance to August 15, 2012. P.C. approved height at 9-19-12 PC Meeting. CDP application submitted. Initial Study reqt. letter sent 12-12. Corrections letter sent 12-17-12. Waiting to hear from Applicant.*	Building approved 10/29/12	Flood study approved 6/18/12	No Comments to date

#	Applicant/ Property Owner	Project Address	Date	Permit Numbers	Project Description/Status	Planning Comments and Notations	Building/Fire Comments and Notations	Engineering Comments and Notations	Harbor/Admin Comments and Notations
11	*Lemos*	*1320 Main*	*6/1/12*	*CUP0-373/CP0-350*	***New Commercial Building***	*MR- Met with applicant - revising plans to leave storage building as in in order to reduce potential environmental impacts. Applicant submitted letter in August 2012 to City Council requesting purchase or easement of city property for access to existing facility. Submittal received 11/9/12. Deemed incomplete letter sent 12/7/12. MR. Met with project architect on 1/22/2013 regarding setbacks. 2nd meeting held on 1/30/2013 project moving ahead to environmental review*	Building insert comments here	BCR- requested revised drainage and flood study from developer	
Projects in Process									
12	*Diaz*	*1149 Market*			***Business License App for Mexican Market.***	*Directed Applicant on 11-27-12 to re-submit parking plan demonstrating compliance with Zoning Ordinance. Parking plan submitted demonstrating seven parking spaces 12-20-2012. Sent letter requesting plan corrections. 1-15-13. CJ*	Building insert comments here		
13	LaPlante	3093 Beachcomber	11/3/11	CP0-365	**New SFR.** Resubmittal and Phase 1 Arch report 2/6/12.	SD-- Incomplete Letter 12/12/11. Phase 1 Arch Report required and Environmental Document. Environmental in process. Letter sent 4/11/2012 requesting environmental study. Applicant has requested a meeting on August 9, 2012 to review environmental study request. MR- Met with Applicant and discussed potential impacts of project and CEQA information requested to complete MND. Applicant will provide MND fees with submittal of Biological report. 8/9/12 MR met with applicant and owner to discuss environmental issues. Would require a detailed MND. Applicant is still considering preparation of Biological Report. Staff met with applicant and his agent, discussed elements of the project especially the Biological report that needs to be prepared, staff waiting on submittal.	No Comments to date	comments submitted 1/18/2012	No Comments to date
Environmental Review									

#	Applicant/ Property Owner	Project Address	Date	Permit Numbers	Project Description/Status	Planning Comments and Notations	Building/Fire Comments and Notations	Engineering Comments and Notations	Harbor/Admin Comments and Notations
14	*Sequoia Court Estates*	*670 Sequoia*	*4/3/12*	*UP0-349 & S00-112*	***Parcel Map. 3 parcels and an open space parcel.*** *A revised subdivision map was submitted for review on August 6, 2012.*	*Incomplete letter sent to applicant/agent. Project submitted without necessary materials for processing. Applicant submitted a revised plan reducing the number of lots, and is providing additional information as requested addressing City requested information. Additional information submitted; waiting for biological report. Report should be submitted in September 2012. Needs drainage plans. MR: Second incomplete letter sent 11/13/12. MND in preparation. Susan Craig, Coastal Commission staff confirmed property is entirely outside coastal zone. Met with applicant on 1/30/2013 project moving ahead, staff waiting on resubmittal*			
15	City of Morro Bay	Morro Bay State Park	3//8/12		**Environmental Review of the Morro Bay State Park Waterline Interconnect Project**	MR-Reviewed request and determined the project needed MND; major issues are archaeological and presence of habitat for Morro Shoulderband Dune Snail. Waiting for Archaeological surface survey and Shoulderband Snail Protocol survey. Expect by May 2013. Arch report results indicate no issues. Snail report came back negative. Project exempt from CDP requirement.	Not applicable	Not applicable	Not applicable
Grants									
16	*Community Development Block Grant (CDBG) / HOME Program through Urban County Consortium*		*11/13/12*		***CDBG Applications received 10/12/12. Nine applications received. Draft funding recommendations to be adopted at 11/13/12 City Council Meeting. Final Funding Approval to be heard at February City Council Meeting.***	*Application recommended for funding is Pedestrian Accessibility Improvements for City of Morro Bay. Council approved on 11-13 funding for Senior Nutrition and Pedestrian Accessibility. 2nd Funding Workshop to be held at Community Center on 1/9/13. Subreceipient Agreement and Environmental Review under review.*	Not applicable	Not applicable	Not applicable
17	*Sustainable Communities*	*City-wide*			***$900,000 Grant application due Feb. 2013 for funding for long-range planning activities including LCP update, General Plan.***	In process			
Project requiring coordination with anther jurisdiction									

#	Applicant/ Property Owner	Project Address	Date	Permit Numbers	Project Description/Status	Planning Comments and Notations	Building/Fire Comments and Notations	Engineering Comments and Notations	Harbor/Admin Comments and Notations
Projects Continued Indefinitely, No Response to Date on Incomplete Letter or inactive									
17	Larry Newland	Embarcadero	11/21/05	UP0-092 & CP0-139	**Embarcadero-Maritime Museum (Larry Newland)**. Submitted 11/21/05. Resubmitted 10/5/06, tentative CC for landowner consent 1/22/07 Landowner consent granted. Resubmitted 5/25/07. Applicant resubmitted additional material on 9/30/2009. Applicant working with City Staff regarding an lease for the subject site. Applicants enter into an agreement with City Council on project. Applicant to provide revised site plan. Staff is processing a "Summary Vacation (abandonment)" for a portion of Surf Street. Staff waiting on applicant's resubmittal. Meeting held with applicant on 2/23/2011. Staff met with applicant on January 27, 2011 and reviewed new drawings, left meeting with the applicant indicating they would be resubmitting new plans based on our discussions.	KW--Incomplete 12/15/05. Incomplete 3/7/07. Incomplete Letter sent 6/27/07. Met to discuss status 10/4/07 Incomplete 2/4/08. Met with applicants on 3/3/09 regarding inc. later. Met with applicants on 2/19/2010. Environmental documents being prepared. Meeting held with city staff and applicants on 2/3/2011.	Not applicable	An abandonment of Front street necessary. To be scheduled for CC mtg.	Not applicable
18	Nicki Fazio	360 Cerrito	08/15/07	CP0-246	**Appeal of Demo/Rebuild SFR and 2 trees removal. Planning Commission c**ontinued to a date uncertain. Project folder given to Rob S.	Deemed withdrawn letters to be sent to provide response to City by 12/31/12. Letter returned undeliverable.			
19	Ron McIntosh	190 Olive	8/26/08	UP0-232 &CP0-288	**New SFR**. Submitted 8/26/08. Resubmitted 12/10/08. Applicant resubmitted on 2/06/09. Environmental under review. Applicant and City agree to continuance. Applicant put project on hold.	KW--Inc. Letter 9/24/08. 1/9/09 request for more information. Deemed withdrawn letters to be sent to provide response to City by 12/31/12. MR: Send deemed withdrawn letter on November 20, 2012.			
20	*James Maul*	*530, 532, 534 Morro Ave*	*3/12/10*	*SP0-323 & UP0-282*	***Parcel Map.** CDP & CUP for 3 townhomes. Resubmittal 11/8/10. Resubmittal did not address all issues identified in correction letter.*	*KW-Incomplete letter sent 4/20/10. Met with applicant 5/25/10. Letter sent to applicant/agent indicating the City's intent to terminate the application based on inactivity. City advised there will be a new applicant and to keep the application viable.MR: Received letter from applicant's rep 11/15/12 requesting project remain open. Called B. Elster for further information.*			
Applications to Coastal Commission									

#	Applicant/ Property Owner	Project Address	Date	Permit Numbers	Project Description/Status	Planning Comments and Notations	Building/Fire Comments and Notations	Engineering Comments and Notations	Harbor/Admin Comments and Notations
21	City of Morro Bay	Citywide	2/1/13	Ordinance 556	AMENDING THE MUNICIPAL CODE BY ADDING CHAPTER 17.27 ESTABLISHING REGULATIONS AND PROCEDURES ENTITLED "Antennas and Wireless Telecommunications Facilities" AND MODIFYING CHAPTER 17.12 TO INCORPORATE NEW DEFINITIONS, 17.24 to MODIFY primary district matrices to incorporate the text changes , 17.30 to eliminate section 17.30.030.F "antennas", 17.48 modify to eliminate section 17.48.340 "Satellite dish antennas" and Modify THE TITLE PAGE TO REFLECT THE NEW CHAPTER.				
Projects Appealed to City Council									
22	*Perry*	*3202 Beachcomber*	*9/8/11*	*AD0-067*	***Variance.*** *Demo/Reconstruct. New home with basement in S2.A overlay. Variance approved for deck only; the issue of stories was resolved due to inconsistencies in Zoning Ordinance.*	*Variance approved at 8/15/12 PC meeting. Appealed by 3 parties to City Council. Appeal to be heard. City Attorney reviewing.Appeal in abeyance until coastal application complete.*			
Projects in Building Plan Check									
23	Gilbert	2760 Alder St.	10/23/12	B-29799	New SFR	Requested corrections 1/23/13. CJ.	BC- RTI pending planning approvals		
24	Sangren	675 Anchor	11/28/12	B-29813	SFR Addition	Requested corrections 1/9/13. CJ.	BC- Returned for corrections 1/9/13.		

#	Applicant/ Property Owner	Project Address		Date	Permit Numbers	Project Description/Status	Planning Comments and Notations	Building/Fire Comments and Notations	Engineering Comments and Notations	Harbor/Admin Comments and Notations
25	LaPlante	3093	Beachcomber	11/3/11	B-29586	New SFR	SD--Incomplete Letter 12/12/11. Phase 1 Arch Report required and Environmental Document. Incomplete letter sent 2/2012. MR: Met with applicant to go over environmental issues.	BC- Application on hold during planning process		
26	Diaz	365	Driftwood	1/2/13	B-29828	SFR Addition	Planning approved 1-29-13. CJ.	BC- Returned for corrections 1/7/13.		
27	Lee	190	Easter	1/14/13	B-29835	SFR Addition	Conditionally approved 1-29-13 CJ			
28	Imani	571	Embarcadero	4/23/12	B-29695	Commercial alteration, addition	CJ- Incomplete Memo 11/26/2012 sent to applicant's representative. Awaiting response.	BC- resubmitted 11/5/2012.		
29	Hall	2234	Emerald Circle	12/2/10	B-29359	New SFR	SD--Incomplete Memo 12/21/10.	BC- application extended, awaiting resubmittal.		
30	Methodist Church	3000	Hemlock	8/16/12	B-29752	Construct new modular classroom, sitework.		BC- Returned for corrections 10/1/2012		
31	Sturgill	1885	Ironwood	12/29/11	B-29677	14 new townhouses		BC- first three building permits issued.		
32	Allen	2627	Laurel	1/28/13	B-29842	Deck	Planning approved. CJ.			
33	Econolodge	1100	Main	1/24/13	B-29846	Commercial Remodel	Parking incomplete. Determined that remodel would require amendment to use permit.			
34	Storm	1029	Monterey	5/3/12	B-29702	Partial Demo/ Reconstruct of MFR dwelling	KW-under review	BC- Returned for corrections 7/3/2012.		
35	Markowitz	589	Morro Avenue	8/17/11	B-29820	Roof Deck	Under review. Spoke with architect 1/23/13 to clarify requested corrections. Architect to discuss with applicant. CJ.	BC- Resubmitted 1/10/2013.		
36	City of Morro Bay	850	Morro Bay	8/20/12	B-29753	Remove and Replace communications tower		BC- conditionally approved, pending final construction plans.	BCR-Maintenance & Repair	
37	Arco	940	Morro Bay	1/22/13	B-29839	Vapor Recovery System				
38	Frantz	499	Nevis	9/23/12	B-29510	New SFR				
39	McGonagill	690	Olive	6/7/12	B-29248	SFR Addition		BC- spoke with applicant 8-30-		
40	Hsiao	341	Rennell	11/14/12		SFR Demo		BC- On hold during planning process.		
41	Rock Harbor	1478	Quintana	1/10/13	B-29834	Microwave Dish	Planning approved. CJ.			
Final Map Under Review										

#	Applicant/ Property Owner	Project Address	Date	Permit Numbers	Project Description/Status	Planning Comments and Notations	Building/Fire Comments and Notations	Engineering Comments and Notations	Harbor/Admin Comments and Notations
42	Zinngarde	1305 Teresa	5/9/11	Map	**Final Map. Public Works review of the final map, CCR's and conditions of approval. Plans 8/5/11. Applicant resubmitted CCRS. Incomplete submittal as of 1/23/12. Resubmitted 4/4/2012**	KW--Comments given to applicant, held meeting on 9/27/2011 regarding comments. Biological being review by applicant to address drainage issues. Biological Report approved by Planning as well as the CCRs.		DH - map check complete, PIP are in the building permit process.	
43	Medina	3390 Main	10/7/11	Map	**Final Map. Issues with ESH restoration. Applicant placed processing of final map on hold by proposing an amendment to the approved tentative map and coastal development permit. Applicant proposed administrative amendment. Elevated to PC, approved 1/4/12. Appealed, scheduled for 2/14/12 CC Meeting. Appeal upheld by City Council, and project with denied 2/14/12. map check returning for corrections on 3/9/12**	SD--Meeting with applicant regarding ESH Area and Biological Study. MR- Received letters from biologist regarding revegetation on 9/2/12. Letter sent to biologist. Recent Submittal reviewed and memo sent to PW regarding deficiencies.	Initial review shows resubmitted map does not meet the 50 foot ESH boundary. CJ.	DH - resubmitted map and Biological study on Dec 19th 2012. PW has completed their review. Received a letter from Median's lawyer and preparing response.	
44	Strugill	1885 Ironwood		Map	**Final Map: Submitted on 6/26/12 complete application.**	MR - review map and gave corrections on CC&Rs		DH - reviewed map gave corrections on 8/15	
Projects & Permits with Final Action									

AGENDA NO: D-1

MEETING DATE: March 6, 2013

Memorandum

TO: PLANNING COMMISSIONERS

FROM: KATHLEEN WOLD, PLANNING MANAGER

EFFECTIVE: FEBRUARY 26, 2013

SUBJECT: DISCUSSION ON THE REGIONAL GREENHOUSE GAS EMISSIONS REDUCTION PLAN INCLUDING SPECIFIC REDUCTION MEASURES TO BE INCLUDED IN THE CITY OF MORRO BAY'S CLIMATE ACTION PLAN (CAP)

RECOMMENDATION:
Staff recommends the Planning Commission review the materials and make a recommendation on specific Greenhouse Gas (GHG) emission reduction measures to include in the City's Climate Action Plan (CAP).

BACKGROUND:
The City of Morro Bay adopted Resolution 56-08 on September 22, 2008 which authorized the City's participation in a climate protection campaign to reduce greenhouse gas and air pollution emissions throughout the community. This resolution acknowledged the benefits to reducing GHG including decreased air pollution, creating jobs, reducing energy expenditures and saving money for the local government and in addition pledged to take a leadership role in promoting public awareness about the causes and impacts of climate change. The resolution contained the following five milestones:

- Conduct a baseline emissions inventory and forecast;
- Adopt an emissions reduction target for the forecast year
- Develop a local action plan;
- Implement policies and measures; and
- Monitor and verify results.

The City has a complete GHG inventory and a target for reduction (15% below 2005 levels or 4,256 metric tons) and therefore has been working on the next step which is to complete the Climate Action Plan.

Through a grant and assistance from the San Luis Obispo Air Pollution Control District, Rincon

consultants were hired in March 2012 to assist all cities in San Luis Obispo County, except for the City of San Luis Obispo, to develop a Regional GHG Reduction Plan and six (6) city Climate Action plans (CAPS) to reduce countywide GHG emission consistent with the goals of California State Assembly Bill 32 (AB 32). AB 32 established a statewide greenhouse gas emission reduction by the year 2020.

An integral part of developing a Climate Action Plan is the development of the Greenhouse Gas emission reduction toolbox. This toolbox contains the measures which will be utilized by the community to reduce greenhouse gas emissions. While the toolbox was created to be utilized by the 6 cities, each community can customize the toolbox to that city's specific needs. The draft toolbox contained in this packet has been customized to include measures which are predominately voluntary.

ANALYSIS OF ISSUES:

A CAP generally includes policies, measures, and strategies to improve the health, safety, mobility and livability of a given community. The objectives of a CAP are to reduce GHG emissions, streamline the California Environmental Quality Act (CEQA) review by serving as a qualified GHG reduction plan, and prioritize measures to comply with California environmental and land use planning laws.

Similar to a General Plan or a Downtown Revitalization Plan, a CAP is a policy document with goals and a work program that may require adoption of ordinances prior to implementation. At this time the CAP is intended to be a stand-alone document but at some point may be integrated into the General Plan/Local Coastal Plan.

The Central Coast GHG Planning Measure Evaluation Toolbox is intended to assist with evaluating GHG emissions reduction measures, which are the heart of any CAP document. It contains 36 measures. Each city will select from this list of 36 measures which ones will be included into that City's customized toolbox. Some of the criteria utilized in determining the measures to be included are applicability, cost effectiveness and whether the measure is voluntary or required.

The measures are divided into six (6) categories as follows:

- Energy
- Transportation and Land Use
- Off-Road
- Water
- Solid Waste
- Trees and Open Space

Each measure includes information on the GHG reduction potential, estimated costs and savings, co-benefits, case studies, implementation details, calculation assumptions, detailed calculation methodology and equations, notes and references. Within each category, measures are separated based on whether they are applicable to the community as a whole, or to the local government (municipal measures).

Community measures contain both voluntary and regulatory measures. Although voluntary measures are generally more acceptable from a political perspective, they can be more expensive (i.e. public outreach, public education and financial incentives) than regulatory measures. The outcomes are also less certain than regulatory measures, and therefore the actual GHG reduction may be less than predicted. All these issues need to be weighed when considering which measures are appropriate to be included into the City's toolbox.

The current version of the toolbox presented to you tonight will provide sufficient GHG reduction to include cushion of 287 metric tons beyond the required reduction. Included in the toolbox are estimates on the additional staff time to implement the measures including adoption of ordinances etc. The project gives estimates of additional staff time needed over the life of the project for each individual measure to ensure implementation, however there may be significant overlap of estimated time when you aggregate the measures resulting in an over estimate. As such, there are continuing efforts being made to streamline the worksheet and reduce projected staff time for implementation. The toolbox is also available online and can be found at www.centralcoastghgplanning.com.

Attachments:

A. Facts about Assembly Bill 32
B. City Council Resolution 56-08
C. FAQ for Greenhouse Gas (GHG) Planning
D. Morro Bay Current Strategies
E. Toolbox

Exhibit A

FACTS ABOUT

Assembly Bill 32

Global Warming Solutions Act

Establishes first-in-the-world comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gases (GHG).

Assembly Bill 32 (AB 32) makes the Air Resources Board (ARB) responsible for monitoring and reducing GHG emissions. Continues the existing Climate Action Team to coordinate statewide efforts.

Requires ARB to:

- Establish a statewide GHG emissions cap for 2020, based on 1990 emissions by January 1, 2008.
- Adopt mandatory reporting rules for significant sources of greenhouse gases by January 1, 2008.
- Adopt a plan by January 1, 2009 Indicating how emission reductions will be achieved from significant GHG sources via regulations, market mechanisms and other actions.
- Adopt regulations by January 1, 2011 to achieve the maximum technologically feasible and cost-effective reductions in GHGs, including provisions for using both market mechanisms and alternative compliance mechanisms.
- Convene an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee to advise ARB.
- Ensure public notice and opportunity for comment for all ARB actions.
- Prior to imposing any mandates or authorizing market mechanisms, requires ARB to evaluate several factors, including but not limited to: impacts on California's economy, the environment, and public health; equity between regulated entities; electricity reliability, conformance with other environmental laws, and to ensure that the rules do not disproportionately impact low-income communities.
- Adopt a list of discrete, early action measures by July 1, 2007 that can be implemented before January 1, 2010 and adopt such measures.

Implementation Timeline	
September 27, 2006	AB 32 signed by Governor
January 25, 2007	ARB creates Environmental Justice and Economic and Technology Advancement Advisory Committees
June 21, 2007	ARB adopts first list of early action measures
October 25, 2007	ARB adopts augmented list of early action measures
December 6, 2007	ARB adopts Mandatory Reporting regulations for greenhouse gases and sets Target for 2020 greenhouse gas emissions
December 2007	ARB adopts 1st discrete early action measure
December 12, 2008	ARB approves AB 32 Climate Change Scoping Plan
April 23, 2009	ARB adopts Low Carbon Fuel Standard
May 22, 2009	ARB and Cal/EPA create the Economic and Allocation Advisory Committee to advise on Cap-and-Trade Program
June 25, 2009	ARB adopts last discrete early action measure
2009 - 2010	ARB and other agencies develop and adopt greenhouse gas rules and programs
January 1, 2010	Early action measures take effect
November 2010	ARB public hearing on Cap-and-Trade regulation
January 1, 2012	All greenhouse gas rules take effect

climate CHANGE

For More Information

Visit the California Air Resources Board's Climate Change Program website at:
www.arb.ca.gov/climatechange

For more information or to obtain this document in an alternative format or language please contact the ARB's Helpline at (800) 242-4450 or at *helpline@arb.ca.gov*.
TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

RESOLUTION NO. 56-08

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORRO BAY, CALIFORNIA AUTHORIZING PARTICIPATION IN THE CITIES FOR CLIMATE PROTECTION CAMPAIGN TO REDUCE GREENHOUSE GAS AND AIR POLLUTION EMISSIONS THROUGHOUT THE COMMUNITY

THE CITY COUNCIL
City of Morro Bay, California

WHEREAS, a scientific consensus has developed that carbon dioxide and other greenhouse gases released into the atmosphere have a profound effect on the Earth's climate; and

WHEREAS, the 2007 Fourth Assessment Report from the International Panel on Climate Change (IPCC) states that it is very likely that most of the observed increases in globally averaged temperatures since the mid-20th century are due to human-induced greenhouse gases; and

WHEREAS, in 2006 the U.S. National Climatic Data Center confirmed clear evidence of human influences on climate due to changes in greenhouses gases; and

WHEREAS, the U.S. Conference of Mayors endorsed the 2005 U.S. Mayors' Climate Protection Agreement initiated by Seattle Mayor Nickels and signed by more than 600 mayors in the United States, including our own; and

WHEREAS, the Urban Environmental Accords adopted by local government delegates during the United Nations World Environment Day in 2005 calls for reduced emissions through energy efficiency, land use and transportation planning, waste reduction and wiser energy management; and

WHEREAS, in 2001, at the request of the Administration, the National Academy of Sciences (NAS) reviewed and declared global warming a real problem likely due to human activities; and

WHEREAS, 162 countries including the United States pledged under the United Nations Framework Convention on Climate Change to reduce their greenhouse gas emissions; and

WHEREAS, energy consumption, specifically the burning of fossil fuels, accounts for more than 80 percent of U.S. greenhouse gas emissions; and

WHEREAS, local government actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, creating jobs, reducing energy expenditures, and saving money for the local government, its businesses and its residents; and

WHEREAS, the Cities for Climate Protection Campaign sponsored by ICLEI – Local Governments for Sustainability has invited the City of Morro Bay to join ICLEI and become a partner in the Cities for Climate Protection Campaign;

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Morro Bay, California, that the City of Morro Bay will join ICLEI as a Full Member and participate in the Cities for Climate Protection Campaign, and as a participant, pledges to take a leadership role in promoting public awareness about the causes and impacts of climate change.

BE IT FURTHER RESOLVED, that the City of Morro Bay will undertake the Cities for Climate Protection Campaign's five milestones to reduce both greenhouse gas and air pollution emissions throughout the community, and specifically:

- Conduct a baseline emissions inventory and forecast;
- Adopt an emissions reduction target for the forecast year;
- Develop a Local Action Plan;
- Implement policies and measures; and
- Monitor and verify results.

BE IT FURTHER RESOLVED, that the City of Morro Bay requests assistance from ICLEI's Cities for Climate Protection Campaign as it progresses through the milestones.

PASSED AND ADOPTED by the City Council of the City of Morro Bay at a regular meeting thereof held on the 22nd day of September, 2008 on the following vote:

AYES: DeMeritt, Grantham, Peirce, Winholtz, Peters
NOES: None
ABSENT: None

JANICE PETERS, MAYOR

ATTEST:

JAMIE BOUCHER, DEPUTY CITY CLERK

Exhibit C

Q: What is a Climate Action Plan?

A: A climate action plan is a detailed and strategic framework for measuring, planning, and reducing greenhouse gas emissions and anticipated climatic impacts. Local governments design and utilize climate action plans as customized road maps for making informed decisions and understanding where and how to achieve the largest and most cost-effective emissions reductions that are in alignment with other municipal and community goals. Climate action plans generally include an inventory of existing and projected greenhouse gas emissions, a reduction goal or target, measures or actions to reduce greenhouse gas emissions, an analysis of each measure's reduction potential, costs and savings, and an implementation and monitoring strategy that identifies required resources and funding mechanisms.

Q: Why are the climate action plans being prepared?

A: Assembly Bill 32 establishes a target to reduce statewide greenhouse gas emissions to 1990 levels by 2020. In order to achieve this target, the California Air Resources Board calls on local governments to reduce greenhouse gas emissions by 15 percent from 2005 levels by 2020, consistent with the statewide commitment. Senate Bill 97 requires lead agencies to analyze greenhouse gas emissions and mitigate climate change impacts under the California Environmental Quality Act (CEQA). These laws together create a framework for greenhouse gas emissions reductions and identify local governments as having a vital role to play in assisting the state in meeting California's reduction target. Recognizing the important role and responsibility that local governments have in reducing greenhouse gas emissions and mitigating their potential impacts, the central coast cities are working together to prepare individual climate action plans to increase the effectiveness and efficiency of greenhouse gas reduction efforts, demonstrate consistency with Assembly Bill 32, and mitigate their greenhouse gas emissions impact.

Q: What are the benefits of climate action plans?

A: In addition to reducing greenhouse gas emissions, implementation of the climate action plans will help achieve multiple community goals such as lowering energy costs, reducing air and water pollution, downtown revitalization, supporting local economic development, and improving public health and quality of

life. The climate action plans would also support the streamlining of the environmental review process for future projects within the cities in accordance with State CEQA Guidelines Sections 15152 and 15183.5.

Q: How will the greenhouse gas reduction goals of each climate action plan be achieved?
A: The goals of each climate action plan will be achieved through a series of greenhouse gas emission reduction measures that will be outlined in the document. The measures will build on and maintain consistency with the cities' existing planning documents and be selected based on careful consideration of local conditions, public input, potential costs and benefits, existing opportunities and resources, and emissions reduction potential. Some measures may include incentive programs for individuals and businesses to increase efficiency and reduce costs. Categories that the reduction measures may fall into include energy efficiency and conservation, renewable energy, transportation and land use, solid waste reduction, and water and wastewater efficiencies. Public participation will be very important in development of the greenhouse gas emission reduction measures and throughout the development of the climate action plans. Please refer to the Get Involved section of this website to find out how to participate in the development of the greenhouse gas reduction measures and climate action plans.

Q: Who is involved in developing the CAP?
A: A consultant team led by locally based Rincon Consultants under contract to the APCD will lead the preparation of the climate action plans with regular input from the Stakeholder Committee. Public input from residents, businesses, community organizations, and elected officials will be solicited throughout the process to ensure that each plan is crafted to meet the unique needs and goals of each city, with final decision-making regarding measure selection and climate action plan adoption up to each of the City Councils.

Q: What happens if the City Council doesn't adopt the climate action plan?
A: It is ultimately the local City Council's decision whether to adopt the climate action plan. It is important to note that the plans will be prepared with extensive local public input, as well as input from decision makers and stakeholders. There are no penalties if a local jurisdiction fails to adopt its climate action plan; however, the City would not be able to demonstrate it is comprehensively mitigating greenhouse gas emissions consistent with Assembly Bill 32 and Senate Bill 97. In addition, project applicants would not benefit from the CEQA streamlining opportunities provided by a climate action plan. Additionally, co-benefits of climate action plan policies, including reduced energy costs, may not be realized.

Q: How does the San Luis Obispo Council of Governments' (SLOCOG) Senate Bill 375 Sustainable Communities Strategy process relate to this effort?
A: Senate Bill 375 (2009) requires the California's Air Resources Board to develop regional reduction targets for greenhouse gas emissions, and prompts the creation of regional plans to reduce emissions from vehicle use throughout the state. California's 18 Metropolitan Planning Organizations (MPOs), including SLOCOG, have been tasked with creating "Sustainable Community Strategies" (SCS). The MPOs are required to develop the SCS through integrated land use and transportation planning and demonstrate an ability to attain the proposed reduction targets by 2020 and 2035. Greenhouse gas reduction measures in the climate action plans related to transportation and land use would help the region meets its SB 375 target.

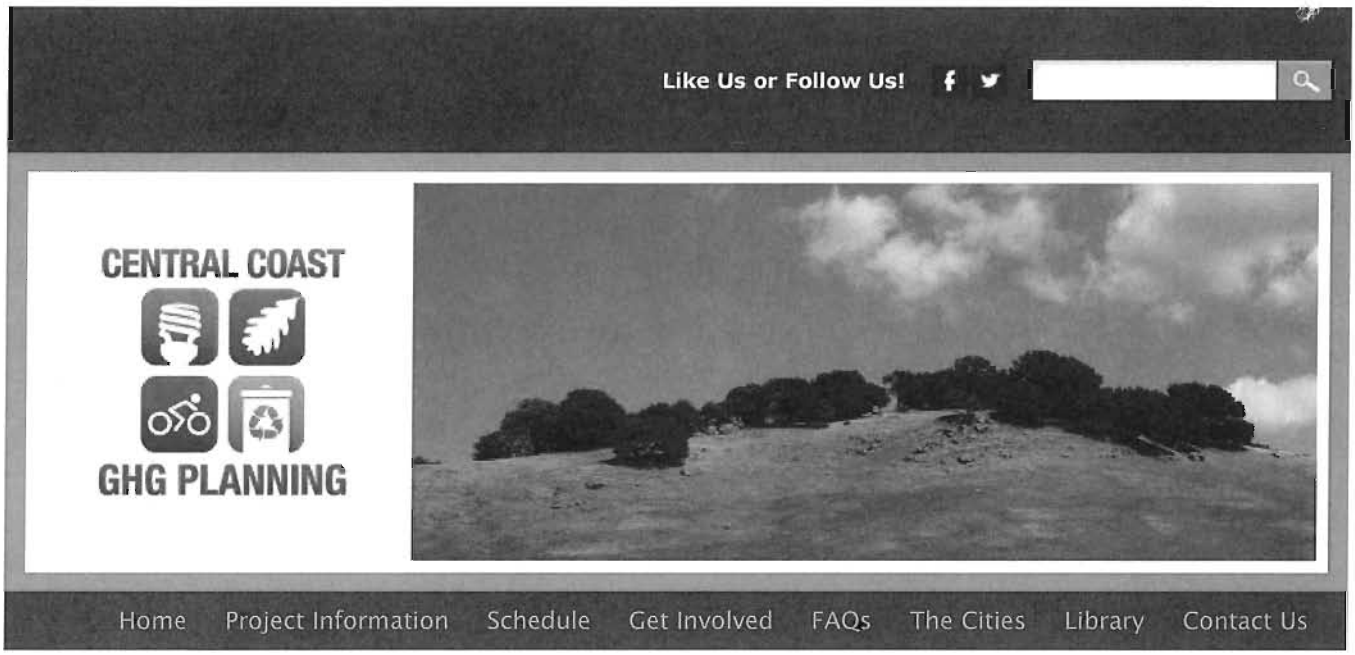
Q: How can I get involved?
A: To find more about how to get involved in the planning process, visit the Get Involved section of this website. Also, you are invited to join our eNews list to receive project updates and announcements.

Q: What is the anticipated schedule for the project?
A: This project will be completed in approximately 12 months with the Final Climate Actions Plans due to be presented to the cities for adoption in Spring 2013. Please refer to the Schedule section for additional details.

Q: How is preparation of the climate action plans being funded?
A: Preparation of the climate action plans is funded through the Pacific Gas and Electric Company (PG&E) Green Communities Program, Southern California Gas Company, and the APCD's mitigation grant funding.

Q: How will the climate action plan impact my business, house, and/or way of life?
A: The climate action plans will be designed to provide incentives and flexible options to reduce GHG emissions, whether you are a homeowner, business owner, or both. The climate action plans will not infringe upon private property rights or limit the development potential of properties. Measures that rely on regulatory or financial incentives would reduce costs and existing regulatory barriers. The climate action plans will identify measures that provide ways for individuals and businesses to reduce costs by taking action if desired.

Exhibit D



Morro Bay

These are the reduction measures currently in place in the City of Morro Bay:

ENERGY

- Solar Energy Installation
- Municipal Building Energy Efficiency Improvements
- Green Building Incentive Program

TRANSPORTATION AND LAND USE

- Increase Density and Diversity of Land Uses
- Bicycle and Pedestrian Network Improvements
- Utilize Electric or Hybrid Municipal Vehicles

WATER

- Water Conservation Program

SOLID WASTE

- Green Waste Diversion
- Construction and Demolition Debris Diversion

Central Coast GHG Planning Measure Evaluation Toolbox

Introduction to the Toolbox

This Toolbox serves to assist with evaluating and selecting greenhouse gas (GHG) emissions reduction measures for the Central Coast GHG Planning project by highlighting key information for each measure, such as GHG reduction potential, cost effectiveness and co-benefits. It contains approximately forty measures considered most applicable to the cities and that can be quantified using current industry established methods. The selected GHG emissions reduction measures ultimately would be included in a Climate Action Plan for your City.

Each measure includes the following information to facilitate measure evaluation and selection: measure name, measure description, menu of implementation actions, GHG reduction potential, estimated costs and savings, co-benefits, case studies, implementation details, calculation assumptions, detailed calculation methodology and equations, notes, and references. The measures are organized in six categories: Energy, Transportation and Land Use, Off-Road, Water, Solid Waste, and Trees. Within each category, measures are separated based on whether they are applicable to the community as a whole, or the local government (municipal measures). Community measures contain both voluntary and regulatory measures.

While all governments would prefer to solely use voluntary programs to achieve their objectives, staff should consider the relative advantages and disadvantages of the different options available. Voluntary measures encourage GHG reducing actions by residents and businesses in the community. These measures often rely on outreach, public education, and financial incentives. Voluntary measures are usually more acceptable to community members, but the GHG reduction potential can be lower than their mandatory counterparts. To create high levels of participation in voluntary measures, a community often needs to make substantial investments in program development, rebates, or other financial incentives. Regulatory measures require residents and businesses to implement GHG reducing actions through ordinances and other regulations. They are usually implemented in association with other required processes such as building code inspection, pre-occupancy inspection, etc. While less popular, mandatory measures often create higher levels of GHG reduction. If structured appropriately, regulatory measures can be low-cost or cost-neutral. Municipal measures include local government actions that reduce communitywide GHG emissions through the investment in public infrastructure, properties, or equipment. GHG reduction potential and cost vary widely depending on the type and level of action taken.

This Toolbox is organized as follows:

Introductory Worksheets
-1: Introduction - summarizes purpose and organization of Toolbox
-2: Instructions - details how to use the Toolbox
-3: List of Measures - provides a comprehensive list of all the measures in the Toolbox and a general description for each. A "measure" is defined as a general way to reduce emissions; detailed implementation actions are provided in each measure worksheet.

Individual Measure Worksheets
-4a - 4m: Energy Measures
-5a - 5m: Transportation Measures
-6a-6b: Off-Road Measures
-7a: Water Measure
-8a - 8e: Solid Waste Measures
-9a-9b: Tree Measures

The following information is provided for each measure in its individual measure worksheet: measure name, measure description, menu of implementation actions, GHG reduction potential, estimated costs and savings, co-benefits, case studies, implementation details, calculation assumptions, detailed calculation methodology and equations, notes, and references.

Summary Worksheets
-10: Summary of Measures - summarizes each measure and its GHG reduction potential, costs/savings, and other key details
-11: Summary of GHG Target and Reduction from Selected Measures - summarizes the City's 2005 baseline emissions, 2020 adjusted forecast, GHG emissions target (based on a 15% reduction from 2005 emissions levels), remaining GHG reduction necessary to meet the target that will need to be achieved through selected measures, and total GHG reduction potential from GHG measures selected in the Toolbox.
-12: List of Common Assumptions - identifies commonly used assumptions throughout the Toolbox
-13: Demographic Data - identifies cities' population, households, jobs, etc. used for Toolbox calculations
-14: Cities Inventory Data - identifies results of the cities' inventories used for Toolbox calculations

About the Methods and Calculations
The GHG emission reduction potential of a given measure is quantified following standardized methods for estimating emissions detailed in the California Air Pollution Control Officers Association's (CAPCOA) report Quantifying Greenhouse Gas Mitigation Measures (August 2010). The calculations utilize emissions factors and results from the selected City's GHG Emissions Inventory, as well as assumptions made by the user about the degree of implementation in the year 2020. Two of the Transportation and Land Use measures, 5j and 5k, are not quantified in the Toolbox, as they will be quantified separately using the San Luis Obispo Council of Government's Regional Traffic Model to ensure better accuracy with a more complex model.

Costs and savings directly associated with the implementation of each measure were estimated for the City, as well as for residents and businesses, where feasible. Costs estimated generally include initial capital costs (e.g., purchase and installation of technology, program development, etc.) needed to produce the emission reductions estimated by the GHG Analysis in 2020, and are based on current (2012) prices. Savings include reduced costs associated with electricity, natural gas, and fuel usage, as well as the reduced need for maintenance, and are also based on current (2012) prices.

Costs and savings were estimated using information specific to the region—when available—or for similar cities in the region, State of California, or United States, prioritized in that order. There are numerous factors that will affect the actual costs incurred if the measures are implemented. In some cases, assumptions had to be made about the specific actions taken to implement a given measure, although the actual approach to implementing the measure could vary. Because of the uncertainties and variability associated with costs and savings, they are reported as ranges. In addition, it is important to understand that in many cases, costs and savings are born by different entities. For example, a local government may incur costs associated with planting and maintaining urban trees, but the savings from reduced electricity bills accrue to local businesses and residents. Where appropriate, we distinguish among the key players incurring the costs and savings.

Central Coast GHG Planning Measure Evaluation Toolbox

Instructions

1. When you open the workbook, a security warning may appear that says an automatic update of links has been disabled, depending on the version of Word you have, click the Options or Enable box in the top left corner of the Toolbox and select "Enable."

2. To begin, select your city's name from the drop down menu at the top of the "List of Measures" worksheet by clicking on the blue cell (Worksheet 3 -cell C2). This first step is important as it populates key calculation cells throughout the workbook with city-specific GHG inventory and demographic data.

3. Next, the user should review the complete list of measures in the "List of Measures" worksheet (Worksheet 3) to become familiar with the GHG reduction measures.

4. Move on to the Individual Measure Worksheets (worksheets 4a through 9b). Within each Individual Measure Workbook, there are several items to note:

- **Blue** cells will either appear blank or contain sample data. The cells should be replaced with your own assumptions.
- **Green** cells contain pre-loaded data. These cells may be adjusted, but adjustment is not required.
- **Grey** and **white** cells should not be modified.

The worksheets are designed so that when your city enters data regarding **key assumptions (blue cells under "Calculation Methodology and Equations" toward the bottom of each worksheet)** into the worksheet for each measure, the estimated costs and benefits (including GHG emission reductions) are automatically calculated based on those assumptions.

5. The municipal cost/savings calculations assume $100,000 for a full time City employee. This value may be adjusted by changing the value in blue cell A82 of the **12-Common Assumptions worksheet**.

6. Each Individual Measure Worksheet contains a "**Menu of Implementation Actions**." For each action, the City should identify whether the action is already being implemented (by entering Yes or No), and whether the City would like to include the action in the climate action plan (by entering Yes or No). Please note that some of the actions are required to receive any GHG reduction credit for the measure. Selection of additional actions will ensure maximum credit is received for the measure.

7. As you scroll down in the Individual Measure Worksheet, you should also enter the following data (blue cells): **Responsible Department/Agency** (responsible for measure implementation) and **Key Assumptions**, which are used to calculate the reduction potential, costs, and savings.

You may also wish to adjust the **Implementation Mechanism** (select from: Codes and Standards, Incentives, Capital Improvement, Municipal Policy or Program, or Conditions of Approval) and/or **Implementation Timing** (select from: Near Term 2013-2014, Mid-Term 2015-2016, Long-Term 2017-2020) (green cells).

8. Once you have entered your assumptions and obtained costs/savings estimates, please note that the ranges for cost savings near the top of the workbook (green cells), may need to be adjusted based on the results.

9. Once you have gone through all the individual measure worksheets, please identify measures you wish to include in your Climate Action Plan by selecting Yes or No (blue cell C8 at the top of each worksheet). (Note that the worksheets for the measures that are not chosen do NOT need to be deleted from the workbook. The measures that are not selected should automatically receive a score of zero in the Summary of Target and Reduction Measures worksheets.)

10. Worksheet 10 will provide a list of all measures selected.

11. Worksheet 11 will provide the combined reduction potential of all selected measures and compares the reduction potential against the reduction target. If the reduction potential is greater than the reduction target, the City will meet its 2020 reduction target.

SUMMARY OF MEASURES

Category	Measure Name	Measure Description	Applicability (Community or Municipal Measure)	GHG Reduction Potential in 2020 (MT CO_2e)	Actual Measure or Commitment	Voluntary or Mandated	Implementation Mechanism	Aggregated Municipal Costs	Aggregated Municipal Savings	Per Unit Community Costs	Per Unit Community Savings	Was this Strategy Selected? (Yes = 1, No = 0)	Notes
Energy	Energy Efficiency Outreach and Incentive Programs	Expand participation in and the promotion of existing programs, such as Energy Upgrade California and San Luis Obispo County Energy Watch, to increase community awareness of existing energy efficiency rebates and financial incentives, and no- and low-cost actions community members can take to increase energy efficiency.	Community	172	Percent of households and businesses participating; percent energy (electricity and natural gas) savings	Voluntary	Incentives	Very Low	None	Very Low	Low	0	
Energy	Energy Audit and Retrofit Program	Collaborate with San Luis Obispo County Energy Watch, local utility providers, local businesses and organizations to develop and promote a residential and commercial educational energy audit program with direct installation of no- and low-cost measures, leveraging existing rebates.	Community	1,099	Number of residential and non-residential buildings retrofitted by 2020; percent energy (electricity and natural gas) savings	Voluntary	Incentives	Very Low	None	Very Low to Medium	Very Low to Medium	0	
Energy	Income-Qualified Energy Efficient Weatherization Programs	Facilitate energy efficient weatherization of low- and middle-income housing through promotion of existing programs, such as Community Action Partnership (CAPSLO).	Community	88	Residential units upgraded by 2020; percent energy (electricity and natural gas) savings	Voluntary	Incentives	Very Low	None	None	Very Low	0	
Energy	Energy Conservation Ordinance	Require through a new City ordinance that cost-effective energy efficiency upgrades in existing buildings be implemented at point of sale or during major renovation of residential units. A maximum cost ceiling would be established to protect owners from excessive fees.	Community	1,459	Number of residential and non-residential buildings retrofitted by 2020; percent energy (electricity and natural gas) savings	Mandatory	Codes and Standards	Low	None	Very Low to Medium	Very Low to Medium	0	
Energy	Incentives for Exceeding Title 24 Building Energy Efficiency Standards	Provide incentives (e.g., priority permitting, reduced permit fees, etc.) for new development and/or major remodels that voluntarily exceed State energy efficiency standards by an identified percentage.	Community	227	New residential and commercial units that exceed State standards by 2020; percentage of energy (electricity and natural gas) savings	Voluntary	Incentives	Very Low	None	Medium	Very Low to Low	0	
Energy	Energy Efficient Public Realm Lighting Requirements	Require through a new City ordinance that new development utilize high efficiency lights in parking lots, streets, and other public areas.	Community	4	Number of LED or CFL public realm lights installed by 2020	Mandatory	Codes and Standards	Very Low	Very Low	Very Low	Very Low	0	

Energy	Small Solar Photovoltaic (PV) Incentive Program	Facilitate the voluntary installation of small solar PV systems and solar hot water heaters in the community through expanded promotion of existing financial incentives, rebates, and financing programs, and by helping the average resident and business overcome common regulatory barriers and upfront capital costs.	Community	705	kW of residential and commercial solar PV installations and number of solar hot water heaters installed	Voluntary	Incentives	Very Low	None	High	Low to High	0	
Energy	Income-Qualified Solar PV Program	Facilitate the installation of solar PV systems on and solar hot water heaters in income-qualified housing units by promoting existing programs offered through the California Solar Initiative and New Solar Homes Partnership and by collaborating with organizations, such as Grid Alternatives, on outreach and eligibility.	Community	75	kW of PV and solar hot water heaters installed	Voluntary	Incentives	Very Low	None	None	Medium	0	
Energy	Community Choice Aggregation Program (CCA)	Assembly Bill 117 (2002) enables California cities and counties, either individually or collectively, to supply electricity to customers within their jurisdiction by establishing a community choice aggregation (CCA) program. Unlike a municipal utility, a CCA does not own transmission and delivery systems, but is responsible for providing electricity to residents and businesses. The CCA may own electric generating facilities, but more often, it purchases electricity from private electricity generators. The City would either individually or through a regional partnership develop a CCA program and ensure that the energy generation portfolio of the electricity supplied has a higher percentage of clean energy than that mandated by the State Renewable Portfolio Standard (RPS).	Community	991	Percent reduction in carbon intensity of electricity above RPS	Voluntary	City Program	Low	Low	None	Very Low - Low	0	
Energy	Municipal Energy Efficiency Retrofits and Upgrades	Establish a target to reduce municipal energy use by a certain percent by 2020 and implement cost-effective improvements and upgrades to achieve that target.	Municipal	57	Percent energy (electricity and natural gas) savings	Voluntary	City Program	Varies	Medium	None	None	0	
Energy	Municipal Energy Efficient Public Realm Lighting	The City would continue to replace city-owned or -operated street, traffic signal, park, and parking lot lights with higher efficiency lamp technologies.	Municipal	7	Number of LED or CFL lights installed	Voluntary	Capital Improvement	Low	Very Low	None	None	0	
Energy	Energy Efficiency Requirements for New Municipal Buildings	Adopt a policy to exceed minimum Title 24 Building Energy Efficiency Standards by a certain percentage for the construction or renovation of new City buildings and facilities.	Municipal	17	New municipal building square feet by 2020; percent energy (electricity and natural gas) savings	Mandatory	Capital Improvement	High	Very Low	None	None	0	
Energy	Renewable Energy Systems on City Property	The City would pursue municipally-owned renewable energy generation facilities.	Municipal	14	kw of municipal solar PV and number of solar water heaters installed	Voluntary	Capital Improvement	High	Low	None	None	0	

Transportation and Land Use	Bicycle Network	Continue to improve and expand the city's bicycle network and infrastructure.	Community	231	Miles of new bike lanes, routes, and paths by 2020	Mandatory	Codes and Standards	Low	None	None	Varies	0	
Transportation and Land Use	Pedestrian Network	Continue to improve and expand the city's pedestrian network.	Community	102	Miles of added sidewalk by 2020	Mandatory	Capital Improvement	Low	None	None	Varies	0	
Transportation and Land Use	Expand Transit Network	Work with the Regional Transit Authority (RTA) and transit service providers to expand the local transit network (i.e., additional routes or stops, and/or expanded hours of operation) based on the greatest demand for service.	Community	19	Percent increase in transit service	Mandatory	Policy	Very Low	None	Very Low	Medium	0	
Transportation and Land Use	Increase Transit Service Frequency/Speed	Work with the Regional Transit Authority (RTA) and transit services providers to increase transit service frequency (i.e., reducing headways) by identifying routes where increased bus frequency would improve service.	Community	8	Percentage reduction in transit headways	Mandatory	Policy	Very Low	None	Very Low	Medium	0	
Transportation and Land Use	Employer-Based Transportation Demand Management (TDM) Program	Require through a new City ordinance that employers with 25 or more employees develop a TDM program that provides encouragement, incentives, and support for employees to reduce their single occupancy vehicle trips. Some examples of resources and incentives include telecommuting, alternative scheduling (e.g., 9/80 or 4/40 work schedules), rideshare matching, and walking, cycling and transit incentives.	Community	69	Percent of businesses with more than 25 employees	Mandatory	Codes and Standards	Very Low	None	None	Very Low	0	
Transportation and Land Use	Transportation Demand Management (TDM) Program - Voluntary	Work with San Luis Obispo Regional Ride Share and Ride-On to conduct additional outreach and marketing of existing TDM programs and incentives to discourage single-occupancy vehicle trips and encourage alternative modes of transportation, such as carpooling, taking transit, walking, and biking.	Community	37	Percent of employees participating	Voluntary	Policy	Very Low	None	None	Very Low	0	
Transportation and Land Use	Parking Supply Management	Amend the Municipal Code to reduce parking requirements in areas such as the downtown where a variety of uses and services are planned in close proximity to each other and to transit.	Community	71	Net reduction in parking spaces; new parking spaced by 2020 forecast under existing regulations	Mandatory	Codes and Standards	Very Low	None	None	Very Low	0	
Transportation and Land Use	Public Parking Pricing	Establish market-based pricing for public parking spaces, where appropriate.	Community	342	Number of public parking spaces where parking pricing would apply; percentage increase in parking prices	Voluntary	Capital Improvement	Low	High	Medium	Very Low	0	

Transportation and Land Use	Electric Vehicle Network and Alternative Fueling Stations	The City would continue to work with the San Luis Obispo County Air Pollution Control District (APCD), Central Coast Clean Cities Coalition, and neighboring jurisdictions to create and implement the electric vehicle readiness plan. The City would continue to pursue funding for plug-in electric vehicle charging stations.	Community	662	Percent adoption of electric vehicles based on implementation of comprehensive EV Network	Voluntary	Policy	Very Low	None	None	None	0	
Transportation and Land Use	Incentives for Infill and Transit Oriented Development	The City would identify and implement additional incentives to encourage mixed-use, higher density, and infill development near transit routes, in existing community centers/downtowns, and in other designated areas. Incentives may include, but are not limited to, priority permitting, lower permit fees, density bonuses, or reduced parking requirements.	Community	1,438	Number of new homes and/or businesses within 0.25 miles of transit	Voluntary	Policy	Low	None	Varies	Medium	0	
Transportation and Land Use	Service Nodes	Work with private developers to encourage the development of convenient commercial and shopping opportunities near existing employment and/or residential areas, through incentives or the removal of existing regulatory barriers, as a means of shortening the distance between origins and destinations, and increasing the potential for walking or biking to obtain services.	Community	Not calculated	Percent of new homes within walking distance of retail and services.	Voluntary	Policy	Very Low to Lo	None	Varies	Varies	0	
Transportation and Land Use	Transportation Demand Management (TDM) Program for Municipal Employees	The City would implement a Transportation Demand Management (TDM) program for its own employees. Reduced single-occupant vehicle commuting would reduce GHG emissions.	Municipal	46	Percent City employee participation	Voluntary	Codes and Standards	Very Low	Low	None	None	0	
Transportation and Land Use	Zero and Low Emission Municipal Fleet Vehicles	Continue to replace official City vehicles and equipment with low-emission and zero-emission vehicles, including smaller, hybrid, electric, compressed natural gas, biodiesel, and neighborhood electric vehicles.	Municipal	53	Number of municipal vehicles replaced by 2020	Voluntary	Policy	Medium	Very Low	None	None	0	
Off-Road	Construction Equipment Technologies	Reduce GHG emissions from construction equipment by requiring various actions as appropriate to the construction project	Community	407	Percent of construction equipment replaced with electric equipment/alternatively fueled equipment	Mandatory	Codes and Standards	Very Low	None	Varies	Varies	0	
Off-Road	Equipment Upgrades, Retrofits, and Replacements	The City would support the APCD programs that fund equipment upgrades, retrofits, and replacement through the Carl Moyer heavy-duty vehicle and equipment program or other funding mechanisms	Community	4	Percent of off-road equipment replaced with electric equipment/alternative fuel vehicles	Voluntary	Incentives	Low	None	None	Varies	0	

Water	Exceed SB X7-7 (Water Conservation Act of 2009, Water Conservation Target)	The City would adopt a water conservation target that exceeds the SB X7-7 (Water Conservation Act of 2009) target and identify and implement additional water efficiency and conservation measures to meet that target by 2020.	Community	6	Percent water savings above SBx7-7	Mandatory	Codes and Standards	Low	None	Varies	Varies	0	
Solid Waste	Solid Waste Diversion Rate	The City would adopt a specified solid waste diversion rate that exceeds the state-mandated rate of 50% and identify programs to meet the identified rate by 2020.	Community	379	Percent waste diversion beyond State-mandated 50% (2020)	Mandatory	Policy	Low	None	None	None	0	
Solid Waste	Organic Waste Diversion Program	The City would develop a combined or separate organic waste (yard trimming, food scraps, and food-soiled paper) collection system and encourage residents and businesses to divert these materials from landfills. The City would develop a marketing campaign to educate the community and facilitate composting.	Community	84	Percent diversion of organic waste	Mandatory	Incentives	Very Low	None	None	None	0	
Solid Waste	Construction and Demolition Debris Diversion Requirements	Require the reuse or recycling of construction and demolition materials from development projects beyond the state-mandated 50% requirement.	Community	44	Percent waste diversion beyond State-mandated 50% (2020)	Mandatory	Codes and Standards	Very Low	None	None	None	0	
Solid Waste	Recycling at Public Events	The City would adopt an ordinance requiring the provision of recycling receptacles at all events requiring a permit or held on City-owned or -operated property.	Community	2	Percentage of waste recycled at public events	Mandatory	Codes and Standards	Very Low	None	None	None	0	
Solid Waste	Municipal Solid Waste Reduction	Adopt a specified solid waste diversion rate and identify steps to meet that rate by 2020.	Municipal	13	Percent waste diversion beyond State-mandated 50% (2020); number of new recycling receptacles	Mandatory	Policy	Low	None	None	None	0	
Trees and Open Space	Tree Planting Program	Develop a program to facilitate voluntary tree planting within the community, working with local non-profit organizations and community partners. Develop and adopt tree planting guidelines that address tree and site selection.	Community	6	Number of trees planted (net new trees)	Voluntary	Capital Improvement	Low	None	Very Low	None	0	
Trees and Open Space	Municipal Tree Planting Program	Establish a tree planting program to increase the number of native, drought-tolerant trees on City-owned property, parks and streetscapes.	Municipal	6	Number of net new trees planted on City-owned property	Mandatory	City Program	Low	None	None	None	0	

Energy Efficiency Outreach and Incentive Programs

Measure Name	Energy Efficiency Outreach and Incentive Programs
Description of Measure	Expand participation in and the promotion of existing programs, such as Energy Upgrade California and San Luis Obispo County Energy Watch, to increase community awareness of existing energy efficiency rebates and financial incentives, and no- and low-cost actions community members can take to increase energy efficiency.

Category	Energy
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	Yes

Menu of Implementation Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Conduct additional outreach and promotional activities, either individually or in collaboration with San Luis Obispo County Energy Watch, targeting specific groups or sectors within the community (e.g., homeowners, renters, businesses, etc.).	Yes	Required
Designate one week per year to conduct an energy efficiency outreach campaign targeting a specific group. The campaign week can also be used to recognize and encourage programs and educational outreach conducted by industry organizations, non-governmental entities, government agencies, and other community groups.	Yes	Required
Direct community members to existing program websites, such as Energy Upgrade California and San Luis Obispo County Energy Watch.	Yes	Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	172

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Very Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	From reduced energy use with average payback periods ranging from 0 to 5 years depending on upgrades.
Improve Public Health	Yes	By improved safety and/or indoor air quality depending on the improvement/upgrade.
Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	No	

Improve Equity	No	
Reduce Water Consumption	Yes	Depending on the upgrade/improvement.
Reduce Energy Consumption	Yes	
Increases Property Value	Yes	
Adaptation	Yes	

Case Studies

California Air Resources Board CoolCalifornia.org	http://www.coolcalifornia.org/article/energy-makeover
Sonoma County Climate Protection Campaign	http://climateprotection.org/our-work/sonoma-county/energy-efficiency

Implementation

Responsible Department/Agency	Community Development; Public Works
Actual Measure or Commitment	Percent of households and businesses participating; percent energy (electricity and natural gas) savings
Implementation Mechanism	Incentives
Implementation Timing	Near-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Note: This measure should use conservative assumptions to avoid double counting with other energy measures.

Key Assumptions for Calculations:

Percent of households participating by 2020	35%	Percent
Percent of businesses participating by 2020	40%	Percent
Targeted percent residential energy savings	5%	Percent
Targeted percent commercial energy savings	6%	Percent
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	Residential Electricity Savings (kWh) = Rp × Rs x 95% x Re Residential Natural Gas Savings (therms) = Rp × Rs x 5% x Rn Commercial Electricity Savings (kWh) = Cp x Cs x 95%x Ce Commercial Natural Gas Savings (kWh) = Cp x Cs x 5% x Cn		
	Where:		
	Rp=	35%	Percent of residences participating in rebate and programs by 2020
	Cp=	40%	Percent of businesses participating in rebate and incentive programs by 2020
	Rs=	5%	Percent residential energy savings (applied 95% electricity, 5% natural gas)
	Cs=	6%	Percent commercial energy savings (applied 95% electricity, 5% natural gas)
	Re=	23,960,695	2020 residential electricity usage (kWh)
	Rn=	2,000,271	2020 residential natural gas usage (therms)
	Ce=	33,862,892	2020 commercial electricity use (kWh)
	Cn=	1,073,871	2020 commercial natural gas usage (therms)

Resource Savings	398,347	Residential electricity saved (kWh)	
	1,750	Residential natural gas saved (therms)	
	772,074	Commercial electricity saved (kWh)	
	1,289	Commercial natural gas saved (therms)	
GHG Emission Reduction Calculations	GHG Savings (MT CO2e) = (Se/1,000 × 0.133) + (Sg/10 × 53.2/1,000)		
	Where:		
	Se=	Residential or commercial electricity savings	
	Sg=	Residential or commercial natural gas savings	
	1,000	= Conversion factor for kWh to MWh (electricity equation) or from kg to metric tons (natural gas equation)	
	10	= Conversion factor for therm to MMBtu	
	0.133	= Average projected emissions factor for electricity in 2020 in MT CO_2e/MWh	
	53.20	= Average emissions factor for natural gas (kg CO2e/MMBtu)	
GHG Emission Reduction	62	Residential Reduction (MT CO2e)	
	110	Commercial Reduction (MT CO2e)	
	172	Total Reduction (MT CO2e) in 2020	
Municipal Costs and Savings Calculations	Staff time to participate in and promote existing programs.		
	FTE =	0.05	Estimated staff time per year
	$/FTE=	$100,000	FTE cost per year
Municipal Costs and Savings	Municipal Cost =	$5,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Total savings = [Electricity Savings x $/kWh] + [Natural Gas Savings x $/therms]		
	Where:		
	Residential $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Residential $/therm=	$0.92	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Commercial $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Commercial $/therm=	$0.81	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Total residential savings=	$77,296	Dollars per year
	Total commercial savings=	$144,650	Dollars per year
	Households =	6,348	Total number of households projected in 2020
	Households participating =	2,222	Households participating by 2020
	Commercial units =	1,178	Total number of projected commercial units in 2020
	Commercial units participating =	471	Commercial units participating by 2020
Community Cost and Savings	Residential Cost =	Varies	Dollars per household
	Commercial Cost =	Varies	Dollars per business
	Residential Savings =	$35	Dollars per household
	Commercial Savings =	$307	Dollars per business

Notes

Assumes that of the total percent reduction in energy use, 95% applies to electricity and 5% applies to natural gas.

References

1. Pacific Gas and Electricity Company. 2012. Energy Overview Tableau Reports.
2. Rincon Consultants. November 2012. Cities Greenhouse Gas Emissions Inventories.
3. California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast

Energy Audit and Retrofit Program

Measure Name	Energy Audit and Retrofit Program
Description of Measure	Collaborate with San Luis Obispo County Energy Watch, local utility providers, local businesses and organizations to develop and promote a residential and commercial educational energy audit program with direct installation of no- and low-cost measures, leveraging existing rebates.

Category	Energy
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Collaborate with San Luis Obispo County Energy Watch, local utilities, and local jurisdictions to develop and promote a residential and commercial energy audit program with direct installation of no- and low-cost measures by qualified contractors, leveraging existing rebates.		Required
Collaborate with San Luis Obispo County Energy Watch to conduct outreach and promotional activities targeting specific groups (e.g., owners of buildings built prior to Title 24 [1980]).		Required
As part of the business licensing and renewal process, encourage businesses to participate in the program and receive an energy audit.		
Participate in and promote a single-family residential energy efficiency financing program, such as a Property Assessed Clean Energy [PACE] program, to encourage investment in energy efficiency upgrades.		
Continue to participate in and promote the CaliforniaFIRST energy efficiency financing program for multi-family residential and commercial buildings.		
Work with Energy Upgrade California, local utilities, and/or community businesses and organizations, to annually conduct a "do-it-yourself" workshop for building energy retrofits.		
Highlight the effectiveness of energy audits and retrofits by showcasing the success of retrofits on the City's website or in its newsletter.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	1,099

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Very Low to Medium	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Very Low to Medium	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	From reduced energy use with average payback periods ranging from 1 to 6 years depending on upgrades.
Improve Public Health	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).

Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	Yes	Depending on the upgrade/improvement.
Reduce Energy Consumption	Yes	
Increases property value	Yes	Efficient buildings have higher property values and resale prices than less efficient buildings.
Adaptation	Yes	

Case Studies

Fresno Energy Watch Program	http://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/economicdevelopment/partners/FresnoEnergyWatch_fact_sheet.pdf
PG&E Energy Upgrade California Workshops	http://www.pgecurrents.com/2012/11/06/rebates-galore-workshops-teach-homeowners-how-to-save-money-and-energy/
City of Chula Vista Business Energy Evaluations (begins on page 5)	http://www.chulavistaca.gov/clean/conservation/climate/documents/AttA_ClimateActionPlanUpdate_Apr12ProgressReport_FINAL.pdf

Implementation

Responsible Department/Agency	Building Services, Community Development and Planning
Actual Measure or Commitment	Number of residential and non-residential buildings retrofitted by 2020; percent energy (electricity and natural gas) savings
Implementation Mechanism	Incentives
Implementation Timing	Mid-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Number of households audited by 2020	700	Units
Number of businesses audited by 2020	525	Units
Target percentage of energy savings	25%	Percent
Staff time needed for this measure	0.10	Full Time Equivalent (FTE)

Calculations:

Residential Square Feet (Rsf) = Ru × 1,545
Residential Electricity Energy Savings (kWh)=E × 0.40 × Rsf × 3.5
Residential Natural Gas Savings (therms)=E × 0.40 × Rsf × 0.3

Ru=	700	# residential units audited by 2020
Average residential unit size=	1,545	Square feet/dwelling unit (California Energy Commission [CEC] 2010 Residential Appliance Saturation Survey [RASS])
Audit to retrofit conversion rate=	40%	Percentage of units that receive an audit that complete energy efficiency installation (Energy Savvy)
Rsf=	432,600	# square feet of residential space retrofitted by 2020
E=	25%	Target percentage of energy savings
Residential electricity use intensity=	3.5	kWh/square foot/year (Average electric use intensity for residential buildings in kWh/square foot/year [RASS]).
Residential natural gas use intensity=	0.3	Therms/square foot/year (Average natural gas usage intensity for residential buildings in therms/square foot/year [RASS]).

Resource Savings Calculations	Commercial Square Feet (Csf) = Cu × 4,500 Commercial Electricity Energy Savings (kWh)=E × 0.40 × Csf × 12.95 Commercial Natural Gas Savings (therms)=E × 0.40 × Csf × 0.3		
	Where:		
	Cu=	S25	# of commercial units or buildings audited by 2020
	Average commercial unit size=	4,500	Average commercial unit/business size in square feet
	Audit to retrofit conversion rate=	40%	Percentage of units that receive an audit that complete energy efficiency installation (Energy Savvy)
	Csf=	945,000	Square feet of commercial space upgraded by 2020
	E=	25%	Target percentage of energy savings
	Commercial electricity use intensity=	12.95	kWh/square foot/year (Average electric use intensity for commercial buildings in kWh/square feet/year (California Energy Commission [CEC] 2005 California End Use Survey [CEUS], page 184)).
	Commercial natural gas use intensity=	0.3	therms/square foot/year (Average natural gas usage intensity for commercial buildings in therms/square feet/year (CEC 2005 CEUS, page 184)).
Resource Savings	383,922	Residential electricity saved (kWh)	
	37,842	Residential natural gas saved (therms)	
	3,060,619	Commercial electricity saved (kWh)	
	82,685	Commercial natural gas saved (therms)	
GHG Emission Reduction Calculations	GHG Savings (MT CO2e) = (Se/1,000 × 0.133) + (Sg/10 × 53.20/1,000)		
	Where:		
	Se=	electricity savings	
	Sg=	natural gas savings	
	1,000	= conversion factor for kWh to MWh (electricity equation) or from kg to metric tons (natural gas equation)	
	10	= conversion factor for therm to MMBtu	
	0.133	= average projected 2020 electricity emissions factor (MT CO2e/MWh)	
	53.20	= average emissions factor for natural gas (kg CO2e/MMBtu)	
GHG Emission Reduction	252	Residential Reduction (MT CO2e) in 2020	
	847	Commercial Reduction (MT CO2e) in 2020	
Municipal Cost and Savings Calculations	Staff time developing and administering program.		
	FTE =	0.10	Staff time needed for this measure
	$/FTE=	$100,000	Cost associated with staff time
Municipal Cost and Savings	Municipal Cost=	$10,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Total savings = [Electricity Savings x $/kWh] + [Natural Gas Savings x $/therms]		
	Where:		
	Residential $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Residential $/therm=	$0.92	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Commercial $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Commercial $/therm=	$0.81	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	$107,759	Residential Savings ($/year)	
	$636,250	Commercial Savings ($/year)	
	Total Cost of residential retrofit =	$3,000	Cost per home (average ACEEE)

	Available residential rebates =	$2,500	Energy Upgrade California offers rebates ranging from $2,000-$4,000 ($2,500 rebate for 25% energy savings).
	Total cost of commercial retrofit =	$4,545	Cost per commercial unit ($1.01 per square foot - AECOM 2010; Gregerson 1997)
	Available commercial rebates =	$2,273	PG&E offers $0.09/kWh (PG&E Customized Retrofit Incentives) and SCE offers $1.00/therm (SCE Financial Incentives for Energy Efficiency) for retrofit projects, with the total incentive capped at 50% of the measure cost
Community Costs and Savings	Residential Cost =	$500	Dollars per household
	Commercial Cost =	$2,273	Dollars per business
	Residential Savings =	$154	Dollars per household
	Commercial Savings =	$1,212	Dollars per business

Notes

This is based on average energy consumption. Programs that emphasize audits and retrofits to buildings constructed prior to Title 24 (1980), will see greater reductions.

Audit to retrofit conversion rates and energy savings vary significantly by program. In a study of 16 audit programs around the country, audit to retrofit conversion rates ranged from 30% to 50% (Energy Savvy). In a study of 7 residential audit programs between 2000 and 2004 in California, expected savings ranged from 50 kWh per audit to 800 kWh per audit (NEEBPG). This represents between 1% and 15% of energy use (NEEBPG).

When combining energy measures, the City should be aware of double-counting emission reductions. Some actions in this measure overlap with actions in Measures 3a and 3d, and this overlay diminishes the overall effectiveness of the measure and its actions. If the City selects both measures, it should lower the commitment established in terms of units or percent reduction in order to address the issue of double-counting.

References

1. Energy Savvy - Energy Audit Programs That Work http://www.energysavvy.com/blog/2010/09/14/energy-audit-programs-that-work/
2. NEEBPG - Residential Audit Programs Best Practices Report http://www.eebestpractices.com/pdf/BP_R7.PDF
3. California Energy Commission [CEC] 2010 Residential Appliance Saturation Survey [RASS] - http://www.energy.ca.gov/appliances/rass/
4. PG&E Energy House Calls - http://www.energyhousecalls.com/?WT.mc_id=GSEHC154&WT.srch=1&gclid=CJ6xi8_jmLMCFQSqnQodsAEAiA
5. Energy Upgrade California - http://www.pge.com/myhome/saveenergymoney/energysavingprograms/euca.shtml
6. Energy Information Administration, 1995 Commercial Buildings Energy Consumption Survey - http://www.eia.gov/emeu/consumptionbriefs/cbecs/pbawebsite/retailserv/retserv_howlarge.htm
7. CONSOL. August 2008. Meeting AB 32 -- Cost-Effective Green House Gas Reductions in the Residential Sector, available at: http://www.cbia.org/go/cbia/?LinkServID=D3BFD657-F8E2-4F63-97B404B55FD856B5&showMeta=0
8. PG&E Third Party Screen and Certification of Home Improvement Contractors - http://www.egia.org/Academy/rockymountainexchange2011/docs/JaneKruse.pdf
9. PG&E Customized Retrofit Incentives - http://www.pge.com/mybusiness/energysavingsrebates/rebatesincentives/ief/
10. SCE Financial Incentives for Energy Efficiency - http://www.socalgas.com/documents/business/EECIPFactSheet.pdf
11. U.S. Department of Energy (DOE). 2011a. Home Energy Saver. Available: <http://hes.lbl.gov/consumer>. Accessed: July 6, 2011.
12. American Council for an Energy-Efficient Economy (ACEEE), Berkeley RECO Case Study - http://aceee.org/sector/local-policy/case-studies/berkeley-california-residential-energ

Income-Qualified Energy Efficient Weatherization Programs

Measure Name	Income-Qualified Energy Efficient Weatherization Programs
Description of Measure	Facilitate energy efficient weatherization of low- and middle-income housing through promotion of existing programs, such as Community Action Partnership (CAPSLO).

Category	Energy
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Establish partnership with CAPSLO related to income-qualified weatherization programs, such as PG&E's Middle Income Direct Install program.		Required
Collaborate with CAPSLO to identify and promote program to additional income-qualified households using additional sources of data available to the City, (e.g., water bills, housing records, etc.).		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	25

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Very Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	
Improve Public Health	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	No	

Improve Equity	Yes	Income-qualified families are particularly susceptible to high and fluctuating energy costs, based on the earnings to expenditure ratio. Estimates indicate that while the average U.S. household's energy costs are equal to 7% of household income, income-qualified households spend 17% of their household earnings (Source: Flex Your Power).
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	
Increases property value	Yes	Efficient buildings have higher property values and resale prices than less efficient buildings.
Adaptation	Yes	

Case Studies

City of Oakland	http://www2.oaklandnet.com/Government/o/DHS/s/CommunityActionPartnership/OAK022616
Community Action Partnership of San Luis Obispo County (CAPSLO)	http://www.capslo.org/programs/menu-energy-services/menu-weatherization

Implementation

Responsible Department/Agency	Human Services, Community Development and Planning
Actual Measure or Commitment	Residential units upgraded by 2020; percent energy (electricity and natural gas) savings
Implementation Mechanism	Incentives
Implementation Time Frame	Near-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Residential units upgraded by 2020	20	Units
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	Residential Square Feet (Rsf) = Ru × 1,545 Residential Electricity Energy Savings (kWh)=E × Rsf × 3.5 Residential Natural Gas Savings (therms)=E × Rsf × 0.3		
	Ru=	20	Residential units upgraded by 2020
	Average residential unit size=	1,545	Square feet/dwelling unit California Energy Commission [CEC] 2010 Residential Appliance Saturation Survey [RASS])
	Rsf=	30,900	Square feet of residential space upgraded by 2020
	E=	35%	Average first-year weatherization energy savings (Oak Ridge National Laboratory (ORNL) 2010 Weatherization Assistance Program Technical Memorandum: Background Data and Statistics. Page 5.)
	Residential electricity use intensity=	3.5499	kWh/square foot/year (Average electric use intensity for residential buildings in kWh/square foot/year [RASS]).

	Residential natural gas use intensity=	0.3	Therms/square foot/year (Average natural gas usage intensity for residential buildings in therms/square foot/year [RASS]).
Resource Savings	38,392	Residential electricity saved (kWh)	
	3,784	Residential natural gas saved (therms)	
GHG Emission Reduction Calculations	GHG Savings (MT CO2e)=(Se/1,000 × 0.133)+(Sg/10 × 53.2/1,000)		
	Where:		
	Se=	electricity savings	
	Sg=	natural gas savings	
	1,000	= conversion factor for kWh to MWh (electricity equation) or from kg to metric tons (natural gas equation)	
	10	= conversion factor for therm to MMBtu	
	0.133	= average projected emissions factor for electricity in 2020 in MT CO2e/MWh	
	53.20	= average emissions factor for natural gas (kg CO2e/MMBtu)	
GHG Emission Reduction	25	MT CO2e	
Municipal Costs and Savings Calculations	Staff time coordinating with CAPSLO and local utilities, and conducting outreach.		
	FTE =	0.05	Staff time needed for this measures
	$/FTE=	$100,000	Dollars per year
Municipal Costs and Savings	Municipal Cost=	$5,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Residential cost savings = [Electricity Savings x $/kWh] + [Natural Gas Savings x $/therms]		
	Where:		
	Residential $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Residential $/therm=	$0.92	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Total Community Savings =	$10,776	Residential Savings
Community Cost and Savings	Community Cost =	$0	Dollars per household
	Community Savings =	$539	Dollars per household

Notes

The first-year energy savings for LIHEAP households is approximately 34.5% or $437 (ORNL). The average energy savings per low-income housing unit for Weatherization Assistance is estimated by the State of California Department of Community Services and Development (CSD) to be $418 per year.

When combining energy measures, the City should be aware of double-counting emission reductions. Some actions in this measure overlap with actions in Measures 3a and 3d, and this overlay diminishes the overall effectiveness of the measure and its actions. If the City selects both measures, it should lower the commitment established in terms of units or percent reduction in order to address the issue of double-counting.

PG&E and SoCalGas contract with CAPSLO to provide weatherization services to the region as part of the statewide Energy Savings Assistance Program (ESAP). http://www.cpuc.ca.gov/PUC/energy/Low+Income/liee.htm

For low-income households: no-cost weatherization under Energy Savings Assistance Program. For middle-income households: free weatherization under PG&E's Middle Income Direct Install program.

References

1. CSD - Helps Low-Income Families Manage and Reduce Energy Costs http://www.csd.ca.gov/Contractors/documents/Energy%20tab/LIHEAP-DOE%20Fact%20Sheet%20%282008%29.pdf
2. California Energy Commission [CEC] 2010 Residential Appliance Saturation Survey [RASS] - http://www.energy.ca.gov/appliances/rass/
3. ORNL 2010 Weatherization Assistance Program Technical Memorandum: Background Data and Statistics (page 5) - http://weatherization.ornl.gov/pdfs/ORNL_TM-2010-66.pdf
4. California Energy Commission (CEC) 2005 California End Use Survey - http://www.energy.ca.gov/2006publications/CEC-400-2006-005/CEC-400-2006-005.PDF
5. California Flex Your Power - http://www.fypower.org/feature/lowincome/
6. PG&E Direct Install -http://www.staplesenergy.com/residential-case-studies/pge-middle-income-direct-install-program

Energy Conservation Ordinance

Measure Name	Energy Conservation Ordinance
Description of Measure	Require through a new City ordinance that cost-effective energy efficiency upgrades in existing buildings be implemented at point of sale or during major renovation of residential units. A maximum cost ceiling would be established to protect owners from excessive fees.

Category	Energy
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	Existing and/or Completed Action?	Selected?
	Yes or No	**Yes or No**
Coordinate with the other local jurisdictions in the region to develop a local energy conservation ordinance.		
Develop and adopt a local residential energy conservation ordinance.		Required
Enforce existing commercial energy disclosure rules, pursuant to (AB 531) that require commercial businesses to provide twelve months of energy-use information using the U.S. Environmental Protection Agency's ENERGY STAR Portfolio Manager.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	1,459

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Very Low to Medium	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Very Low to Medium	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	Yes/No	Notes
Reduce Costs	Yes	From reduced energy use with average payback periods ranging from 1 to 6 years depending on upgrades.
Improve Public Health	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	Yes	Depending on the upgrade/improvement.
Reduce Energy Consumption	Yes	

Increases property value	Yes	Efficient buildings have higher property values and resale prices than less efficient buildings.
Adaptation	Yes	

Case Studies

City of Berkeley	http://www.ci.berkeley.ca.us/reco/ http://aceee.org/sector/local-policy/case-studies/berkeley-california-residential-energ
City of Chico	http://www.chico.ca.us/building_development_services/building_services/home_page.asp

Implementation

Responsible Department/Agency	Building Services, Community Development and Planning
Actual Measure or Commitment	Number of residential and non-residential buildings retrofitted by 2020; percent energy (electricity and natural gas) savings
Implementation Mechanism	Codes and Standards
Implementation Time Frame	Mid-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Number of residential units retrofitted by 2020	500	Units
Number of non-residential buildings retrofitted by 2020	250	Units
Target percentage of energy savings	25%	Percent
Staff time needed for this measure	0.15	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	Residential Square Feet (Rsf) = Ru × 1,545 Residential Electricity Energy Savings (kWh)=E × Rsf × 3.5 Residential Natural Gas Savings (therms)=E × Rsf × 0.3		
	Ru=	500	# residential units affected by ordinance by 2020
	Average residential unit size=	1,545	Square feet/dwelling unit (California Energy Commission [CEC] 2010 Residential Appliance Saturation Survey [RASS])
	Rsf=	772,500	# square feet of residential space retrofitted by 2020
	E=	25%	Target percentage of energy savings
	Residential electricity use intensity=	3.5	kWh/square foot/year (Average electric use intensity for residential buildings in kWh/square foot/year [RASS]).
	Residential natural gas use intensity=	0.3	Therms/square foot/year (Average natural gas usage intensity for residential buildings in therms/square foot/year [RASS]).
	Commercial Square Feet (Csf) = Cu × 4,500 Commercial Electricity Energy Savings (kWh)=E × Csf × 12.95 Commercial Natural Gas Savings (therms)=E × Csf × 0.3		
	Where:		
	Cu=	250	# of commercial units or buildings audited by 2020

	Average commercial unit size=	4,500	Average square feet for all commercial buildings
	Csf=	1,125,000	Square feet of commercial space upgraded by 2020
	E=	25%	Target percentage of energy savings
	Commercial electricity use intensity=	12.95	kWh/square foot/year (Average electric use intensity for commercial buildings in kWh/square feet/year(California Energy Commission [CEC] 2005 California End Use Survey [CEUS])).
	Commercial natural gas use intensity=	0.3	therms/square foot/year (Average natural gas usage intensity for commercial buildings in therms/square feet/year (CEC 2005 CEUS)).
Resource Savings	685,574	Residential electricity saved (kWh)	
	67,574	Residential natural gas saved (therms)	
	3,643,593	Commercial electricity saved (kWh)	
	98,435	Commercial natural gas saved (therms)	
GHG Emission Reduction Calculations	GHG Savings (MT CO2e) = (Se/1,000 × 0.133) + (Sg/10 × 53.20/1,000)		
	Where:		
	Se=	electricity savings	
	Sg=	natural gas savings	
	1,000	= conversion factor for kWh to MWh (electricity equation) or from kg to metric tons (natural gas equation)	
	10	= conversion factor for therm to MMBtu	
	0.133	= average projected 2020 electricity emissions factor (MT CO2e/MWh)	
	53.20	= average emissions factor for natural gas (kg CO2e/MMBtu)	
GHG Emission Reduction	451	Residential Reduction (MT CO2e) in 2020	
	1,008	Commercial Reduction (MT CO2e) in 2020	
Municipal Cost and Savings Calculations	Staff time developing and administering program.		
	FTE =	0.15	Staff time needed for this measure
	$/FTE=	$100,000	Cost associated with staff time
Municipal Cost and Savings	Municipal Cost=	$15,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Total Savings = [Electricity Savings x $/kWh] + [Natural Gas Savings x $/therms]		
	Where:		
	Residential $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Residential $/therm=	$0.92	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Commercial $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Commercial $/therm=	$0.81	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	$192,428	Total Residential Savings ($/year)	
	$757,440	Total Commercial Savings ($/year)	
	Total cost of residential upgrades =	$3,000	Cost per home can ranges from approximately $800 to 1% of sale price (ACEEE)
	Available residential rebates =	$2,500	Energy Upgrade California offers rebates ranging from $2,000-$4,000 (% energy savings*1,000)
	Total cost of commercial upgrades =	$4,545	Cost per commercial unit (average $1.01 per square foot - from LBNL in SPUR)

	Available commercial rebates =	$2,273	PG&E offers $0.09/kWh (PG&E Customized Retrofit Incentives) and SCE offers $1.00/therm (SCE Financial Incentives for Energy Efficiency) for retrofit projects, with the total incentive capped at 50% of the measure cost
Community Costs and Savings	Residential Cost =	$500	Dollars per household
	Commercial Cost =	$2,273	Dollars per business
	Residential Savings =	$385	Dollars per household
	Commercial Savings =	$3,030	Dollars per business

Notes

Energy savings depends on the stringency of requirements. San Francisco estimates a 15% reduction in energy use as a result of their RECO (Eco Leader). Similarly, an evaluation of RECO ordinance options in Boulder found a range of 10%-20% reductions in energy use (Boulder).

When combining energy measures, the City should be aware of double-counting emission reductions. Some actions in this measure overlap with actions in Measures 3a and 3b, and this overlay diminishes the overall effectiveness of the measure and its actions. If the City selects both measures, it should lower the commitment established in terms of units or percent reduction in order to address the issue of double-counting.

References

1. California Energy Commission [CEC] 2010 Residential Appliance Saturation Survey [RASS] - http://www.energy.ca.gov/appliances/rass/
2. Eco Leader - Residential Energy Conservation Ordinance Factsheet http://ecoleader.org/assets/downloads/RECO/RECO_factsheet.pdf
3. City of Boulder RECO Report (page 4) -http://www.bouldercolorado.gov/files/reco_report_boulder.pdf.
4. American Council for an Energy-Efficient Economy (ACEEE), Berkeley RECO Case Study - http://aceee.org/sector/local-policy/case-studies/berkeley-california-residential-energ
5. SPUR - Reinstate the Commercial Energy Conservation Ordinance (CECO) -
http://www.spur.org/publications/library/report/critical_cooling/option4
http://www.spur.org/publications/library/report/critical_cooling/option3

Incentives for Exceeding Title 24 Building Energy Efficiency Standards

Measure Name	Incentives for Exceeding Title 24 Building Energy Efficiency Standards
Description of Measure	Provide incentives (e.g., priority permitting, reduced permit fees, etc.) for new development and/or major remodels that voluntarily exceed State energy efficiency standards by an identified percentage.

Category	Energy
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	Yes

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Collaborate with community organizations and businesses, local utilities, and other local jurisdictions in the region to develop and promote a technical assistance and best practices program that aids developers in selecting and implementing energy efficiency measures that exceed State standards.	Yes	
Identify and provide incentives (e.g., expedited or streamlined permitting, reduced fees, public recognition, etc.) for applicants whose project exceeds State requirements by a specified percent.	Yes	Required
Update building permit process to incentivize higher building performance.	Yes	
Launch an educational campaign for builders, permit applicants, and the general public to promote best practices and incentive program; provide information and assistance about energy efficiency options online and at permit counter.	Yes	Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	76

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Medium	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Very Low to Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	
Improve Public Health	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	No	

Improve Equity	No	
Reduce Water Consumption	Yes	
Reduce Energy Consumption	Yes	
Increases property value	Yes	Efficient buildings have higher property values and resale prices than less efficient buildings.
Adaptation	Yes	

Case Studies

City of Chula Vista Green Building	http://www.chulavistaca.gov/clean/conservation/climate/documents/AttA_ClimateActionPlanUpdate_Apr12ProgressReport_FINAL.pdf
City of Santa Cruz	http://www.cityofsantacruz.com/index.aspx?page=1177 http://www.ca-ilg.org/post/city-santa-cruz-green-building-program-address-climate-change

Implementation

Responsible Department/Agency	Building Services, Community Development and Planning
Actual Measure or Commitment	New residential and commercial units that exceed State standards by 2020; percentage of energy (electricity and natural gas) savings
Implementation Mechanism	Incentives
Implementation Timing	Mid-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

New or remodeled residences exceeding State standards	100	Units
New non-residential buildings exceeding State standards	50	Units
Target percentage of energy savings above State standards	20%	Percent
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

Calculations:

Residential Square Feet (Rsf) = Ru × 1,545
Residential Electricity Energy Savings (kWh) = E × Eec × Rsf × (1 - CSP) × 3.5
Residential Natural Gas Savings (therms) = E × Egc × Rsf × (1 - CSP) × 0.3

Ru=	100	# of new residential units exceeding State standards by 2020
Average residential unit size=	1,545	Square feet/dwelling unit (California Energy Commission [CEC] 2010 Residential Appliance Saturation Survey (RASS))
Rsf=	154,500	# square feet of residential space that exceed State standards by 2020
E=	20%	Target percentage of energy savings above State standards
Eec=	32.8%	Percent of single family electricity use covered by Title 24 (Statewide Energy Efficiency Collaborative [SEEC] 2011 Greenhouse Gas Forecasting Assistant, page 7)
Egc=	85.7%	Percent of single family natural gas use covered by Title 24 (SEEC 2011 Greenhouse Gas Forecasting Assistant, page 7)

Resource Savings Calculations	CSP=	25%	Percent single family residential energy savings above current State standards (CEC 2013 Building Efficiency Standards, slide 11)
	Residential electricity use intensity=	3.5	kWh/square foot/year (Average electric use intensity for residential buildings in kWh/square foot/year [RASS]).
	Residential natural gas use intensity=	0.3	Therms/square foot/year (Average natural gas usage intensity for residential buildings in therms/square foot/year [RASS]).
	Commercial Electricity Energy Savings (kWh)= E × Egc × (1 - CSP) × 12.95 × Csf Commercial Natural Gas Savings (therms)=E × Egc × (1 - CSP) × 0.3 × Csf		
	Where:		
	Cu=	50	# of commercial units or buildings audited by 2020
	Average commercial unit size=	4,500	Average square feet for all commercial buildings (Energy Information Administration)
	Csf=	225,000	# of new square feet of commercial space that exceeds State standards by 2020
	E=	20%	Target percentage of energy savings above State standards
	Eec=	64%	Percent of commercial electricity use covered by Title 24 (SEEC 2011 Greenhouse Gas Forecasting Assistant, page 9)
	Egc=	70%	Percent of commercial natural gas use covered by Title 24 (SEEC 2011 Greenhouse Gas Forecasting Assistant, page 9)
	CSP=	30%	Percent non-residential energy savings above current State standards (CEC 2013 Building Efficiency Standards, slide 17)
	Commercial electricity use intensity=	12.954999	kWh/square foot/year (Average electric use intensity for commercial buildings in kWh/square feet/year (California Energy Commission [CEC] 2005 California End Use Survey [CEUS]))
	Commercial natural gas use intensity=	0.34999	therms/square foot/year (Average natural gas usage intensity for commercial buildings in therms/square feet/year (CEC 2005 CEUS))

Resource Savings	26,984	Residential electricity saved (kWh)
	6,949	Residential natural gas saved (therms)
	261,173	Commercial electricity saved (kWh)
	7,717	Commercial natural gas saved (therms)

GHG Emission Reduction Calculations	GHG Savings (MT CO2e) = (Se/1,000 × 0.133) + (Sg/10 × 53.2/1,000)	
	Where:	
	Se=	electricity savings
	Sg=	natural gas savings
	1,000	= conversion factor for kWh to MWh (electricity equation) or from kg to metric tons (natural gas equation)
	10	= conversion factor for therm to MMBtu
	0.13	= average projected emissions factor for electricity in 2020 in MT CO2e/MWh
	53.20	= average emissions factor for natural gas (kg CO2e/MMBtu)

GHG Emission Reduction	41	Residential Reduction (MT CO2e/year)
	76	Commercial Reduction (MT CO2e/year)

Municipal Costs and Savings Calculations	Staff time developing new materials, identifying and adopting incentives.		
	FTE =	0.05	Estimated staff time per year to develop new program
	$/FTE=	$100,000	FTE cost
Municipal Costs and Savings	Municipal Cost=	$5,000	Dollars per year

Municipal Costs and Savings	Municipal Savings =	$0	Dollars per year
Community Costs and Savings Calculations	Total savings = [Electricity Savings x $/kWh] + [Natural Gas Savings x $/therms]		
	Where:		
	Residential $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Residential $/therm=	$0.92	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Commercial $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Commercial $/therm=	$0.81	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Total residential savings =	$11,520	Residential Savings ($/year)
	Total commercial savings =	$54,829	Commercial Savings ($/year)
	Average residential Cost =	$0.91	Residential average cost to implement (sqft) - Projected PG&E Zone 5 Costs (US Department of Energy)
	Average commercial Cost =	$1.25	Commercial average cost to implement (sq ft) - Projected PG&E Zone 5 Costs (CA Department of Energy)
Community Costs and Savings	Residential Cost =	$1,406	Dollars per household
	Commercial Cost =	$5,625	Dollars per business
	Residential Savings =	$115	Dollars per household
	Commercial Savings =	$1,097	Dollars per business

Notes

Title 24 covers only 64% of commercial electricity use and 70% of natural gas use (SEEC, page 7). 2013 Title 24 updates are expected to reduce non-residential energy use by 30% (CEC).

Title 24 covers only 32.8% of single family residential electricity use and 85.7% of natural gas use (SEEC, page 7). 2013 Title 24 updates are expected to reduce single family residential energy use by 25% and multifamily residential by 14% (CEC).

When combining energy measures, the City should be aware of double-counting emission reductions. Some actions in this measure overlap with actions in Measure 3k and 3l, and this overlay diminishes the overall effectiveness of the measure and its actions. If the City selects both measures, it should lower the commitment established in terms of units or percent reduction in order to address the issue of double-counting.

References

1. 2005 California End Use Survey http://www.energy.ca.gov/ceus/
2. CEC 2013 Building Efficiency Standards, slide 17 - http://www.energy.ca.gov/title24/2013standards/rulemaking/documents/2012-05-31_2013_standards_adoption_hearing_presentation.pdf
3. SEEC 2011 Greenhouse Gas Forecasting Assistant, page 7 - http://californiaseec.org/documents/forecasting-tools/seec-forecast-assistant-documentation
4. http://www.energy.ca.gov/title24/2008standards/ordinances/san_luis_obispo/CZ5_Cost-Effectiveness_Report-Final.pdf

Energy Efficient Public Realm Lighting Requirements

Measure Name	Energy Efficient Public Realm Lighting Requirements
Description of Measure	Require through a new City ordinance that new development utilize high efficiency lights in parking lots, streets, and other public areas.

Category	Energy
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Develop and adopt an ordinance that requires new development to utilize high efficiency lights in parking lots, streets, and other public areas.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	4

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Very Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Very Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	Reduced operation and maintenance costs.
Improve Public Health	Yes	Improved safety from improved night visibility.
Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	
Adaptation	Yes	

Case Studies

San Francisco Commercial Lighting Ordinance	http://sfenvironment.org/article/commercial/commercial-lighting-ordinance http://www.nrel.gov/docs/legosti/old/16267.pdf
City of Palo Alto	http://www.ca-ilg.org/post/led-streetlights-palo-alto

City of Palo Alto	http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/gateway_palo-alto.pdf

Implementation

Responsible Department/Agency	Public Works, Community Development and Planning
Actual Measure or Commitment	Number of LED or CFL public realm lights installed by 2020
Implementation Mechanism	Codes and Standards
Implementation Timing	Near-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Note: This Measure should not be double counted with Measure 4e, Incentives for Exceeding State Building Energy Efficiency Standards, or 4j, Municipal Public Lighting. This measure addresses privately installed outdoor lighting.

Key Assumptions for Calculations:

Number of Private LED street lights installed by 2020	50	Street Lights
Number of Private LED traffic signals installed by 2020	12	Traffic Signals
Number of LED or CFL other outdoor lights installed by 2020	400	Other Outdoor Lights
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	Total electricity saved (kWh) = (N x (Wi-We) x (h/Cf)		
	Where Street Lights:		
	N_{street} =	50	Number of street lights installed lights
	Wi =	200	Average estimated power rating in watts of high pressure sodium street light (Department of Energy [DOE] 2004. U.S. Lighting Market Characterization)
	We =	50	Average power rating in watts of LED street lighting (DOE and PG&E 2008. LED Street Lighting)
	h =	4,100	Number of hours per year operating
	Cf =	1,000	Conversion factor for W to kW
	Where Traffic Signals:		
	$N_{traffic}$ =	12	Number of traffic installed lights
	Wi =	150	Average estimated power rating in watts of incandescent traffic signal light (DOE 2004)
	We =	15	Average power rating in watts of LED traffic signal light (DOE 2004)
	h =	8,760	Number of hours per year operating (24 hours a day)
	Cf =	1,000	Conversion factor for W to kW
	Where Other Private Outdoor Lighting (in Public Realm):		
	N_{other} =	400	Number of other outdoor installed lights
	Wi =	150	Average estimated power rating in watts of public realm lighting (DOE 2004)

	We =	20	Average power rating in watts of LED public realm lighting (DOE 2004)
	h =	3,650	Number of hours per year operating
	Cf =	1,000	Conversion factor for W to kW
Resource Savings	30,750	Electricity saved from LED street lights (kWh)	
	14,191	Electricity saved from LED traffic signals (kWh)	
	189,800	Electricity saved from LED "other" public realm lighting (kWh)	
	30,750	Total electricity saved (kWh)	
GHG Emission Reduction Calculations	GHG Savings (MT CO2e)=(Se/1,000 × 0.133)		
	Where:		
	Se=	electricity savings	
	1,000	= conversion factor for kWh to MWh	
	0.133	= average projected emissions factor for electricity in 2020 in MT CO2e/MWh	
GHG Emission Reduction	4	MT CO2e/year	
Municipal Costs and Savings Calculations	Staff time needed to develop and adopt ordinance. Would be incorporated into permitting process.		
	FTE =	0.05	Estimated staff time to develop requirements
	$/FTE=	$100,000	Dollars
	Maintenance savings per fixture =	$17	Annual maintenance savings/fixture (City of Palo Alto)
	Maintenance savings =	$1,054	Dollars (for streetlights and traffic signals)
Municipal Costs and Savings	Municipal Cost=	$5,000	Dollars
	Municipal Savings =	$1,054	Dollars
Community Cost and Savings Calculations	Total Savings = kWh reduced/year x $/kWh		
	Where:		
	$/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Total capital savings =	$5,843	Dollars
	Maintenance savings per fixture =	$17	Annual maintenance savings/fixture (City of Palo Alto)
	Total maintenance savings =	$6,800	Dollars (other public realm lighting)
	Total Capital Cost = [Number of units installed x cost per unit] – [Available rebates]		
	Where Streetlights:		
	Number of units installed =	50	Units
	Cost per unit installed =	$350	Dollars/unit (Energy Solutions 2008; PNNL 2010)
	Total cost=	$17,500	Dollars
	Available rebates =	$125	Dollars/unit ($125 for 200 watt unit replaced - PG&E)
	Net cost =	$11,250	Dollars (total cost - available rebates)
	Where Traffic Signals:		
	Number of units installed =	12	Units
	Cost per unit installed =	$193	Dollars/unit (assuming a standard three 12" (red, yellow, and green) balls per signal (Western Pacific Signal 2011; eLightBulbs 2011))
	Cost installation =	$2,316	Dollars

	Available rebates =	$100	Dollars ($100 for 150 watt unit replaced - PG&E)
	Net cost =	$1,116	Dollars (total cost - available rebates)
	Where Other Private Outdoor Lighting (in Public Realm):		
	Number of units installed =	400	Units
	Cost per unit installed =	$300	Dollars/unit (Energy Solutions 2008; PNNL 2010)
	Cost installation =	$120,000	Dollars
	Available rebates =	$100	Dollars ($100 for 150 watt unit replaced - PG&E)
	Net cost =	$80,000	Dollars (total cost - available rebates)
Community Cost and Savings	Community Cost =	$200	Dollars per light
	Community Savings =	$30	Dollars per light

Notes

References

1. PG&E Streetlight program - http://www.pge.com/mybusiness/energysavingsrebates/rebatesincentives/ref/lighting/lightemittingdiodes/streetlightprogram.shtml
2. PG&E LED Street Light Turnkey Replacement Service - http://www.pge.com/mybusiness/energysavingsrebates/rebatesincentives/ref/lighting/lightemittingdiodes/ledturnkey/
3. DOE U.S. Lighting Market Characterization Study. National Lighting Inventory and Energy Consumption Estimate - http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/lmc_vol1_final.pdf
4. DOE and PG&E LED Street Lighting study - http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/gateway_sf-streetlighting.pdf
5. IES Model Lighting Ordinance - http://www.ies.org/PDF/MLO/MLO_FINAL_June2011.pdf

6. PG&E LED Streetlight Rebates - http://www.pge.com/mybusiness/energysavingsrebates/rebatesincentives/ref/lighting/lightemittingdiodes/incentives/index.shtml
7. Western Pacific Signal 2011; eLightBulbs 2011; Energy Solutions 2008; PNNL 2010 from Stockton Draft CAP - http://www.stocktongov.com/files/ClimateActionPlanDraftFeb2012.pdf
8. Palo Alto - Demonstration Assessment of Light-Emitting Diode (LED) Roadway Lighting on Residential and Commercial Streets - http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/gateway_palo-alto.pdf

Small Solar Photovoltaic (PV) Incentive Program

Measure Name	Small Solar Photovoltaic (PV) Incentive Program
Description of Measure	Facilitate the voluntary installation of small solar PV systems and solar hot water heaters in the community through expanded promotion of existing financial incentives, rebates, and financing programs, and by helping the average resident and business overcome common regulatory barriers and upfront capital costs.

Category	Energy
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	Existing and/or Completed Action?	Selected?
	Yes or No	Yes or No
Conduct a comprehensive review of the City's solar permitting process based on the Governor's Office of Planning and Research's (OPR) California Solar Permitting Guidebook (June 2012), identifying any existing barriers.		
Improve the permit review and approval process for small solar PV systems by implementing recommendations for streamlined permitting identified in the California Solar Permitting Guidebook (e.g., use standardized forms, provide clear written instructions on the permitting process and a checklist of required application materials, make information available on the City's website and at the permit counter, etc.).		Required
Collaborate with other local jurisdictions in the region to standardize requirements across jurisdiction, by using common permit materials, such as checklists and standard plans, to reduce permit submittal errors among contractors working throughout a region.		
Participate in and promote a residential and commercial renewable energy financing program (through a Property Assessed Clean Energy [PACE] program, CaliforniaFIRST, a joint powers authority with neighboring jurisdictions, or other mechanisms) allowing residential and commercial property owners to voluntarily invest in renewable energy upgrades for their buildings.		
Expand education on and promotion of existing incentive, rebate, and financing programs for solar PV systems and solar hot water heaters targeting specific groups or sectors within the community.		Required
Designate one week per year to conduct a renewable energy outreach campaign targeting a specific group. The campaign week can also be used to recognize community members that have implemented noteworthy or unique renewable energy projects.		

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	705

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	High	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Low to High	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	Yes/No	Notes
Reduce Costs	Yes	
Improve Public Health	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	No	
Increase in Property Value	Yes	
Adaptation	Yes	

Case Studies

City of Berkeley - BerkeleyFirst	http://www.ci.berkeley.ca.us/berkeleyfirst/ http://www.ca-ilg.org/sites/main/files/file-attachments/resources_Berkeley-FIRST.pdf
City of San Jose - Energy Fund	http://www.ca-ilg.org/sites/main/files/file-attachments/resources_SanJose_EnergyFund.pdf

Implementation

Responsible Department/Agency	Public Works, Building Services, Community Development and Planning
Actual Measure or Commitment	kW of residential and commercial solar PV installations and number of solar hot water heaters installed
Implementation Mechanism	Incentives
Implementation Timing	Near-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Number of commercial solar PV installations (between 2013-2020)	60	Systems
Number of residential solar PV installations (between 2013-2020)	120	Systems
Number of residential solar water heaters installed by 2020*	75	Systems
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

*Approximately 0.013 installations per household as a result of the Solar Water Heating program established under Assembly Bill 1470, the Solar Thermal Heating Act of 2007.

Calculations:

Commercial Electricity Energy Savings (kWh)= Csi × Acsi × 1,900
Residential Electricity Energy Savings (kWh)= (Rsi × Arsi × 1,900) + (Rsw × Ee)
Residential Natural Gas Energy Savings (therms) = Rswg × Eg

Where:

Csi =	60	# of commercial solar installations by 2020
Rsi =	120	# of residential solar installations by 2020

Resource Savings Calculations	Rsw =	8	# of residential solar electric water heater installations by 2020 (assumes 10% electric)
	Rswg =	68	# of residential solar natural gas water heater installations by 2020 (assumes 90% natural gas)
	Acsi =	33.8	average commercial solar installation size in kW (Cal Solar Initiative [CSI 1])
	Arsi =	4.6	average residential solar installation size in kW (CSI 1)
	Ee =	2,945	average expected residential solar water heater savings in kWh per year (California Solar Initiative (CSI 2) Thermal Program Cal Solar statistics)
	Eg =	139	average expected residential solar water heater savings in therms per year (CSI 2 - 2012 Thermal Program Cal Solar statistics)
	Conversion factor =	1,900	conversion factor from kW to kWh per year (Solar Energy Industries Association [SEIA] Solar Radiation Conversion Map)
Resource Savings	1,070,888	Residential electricity saved (kWh)	
	9,383	Residential natural gas saved (therms)	
	3,853,200	Commercial electricity saved (kWh)	
GHG Emission Reduction Calculations	GHG Savings (MT CO2e) = (Se/1,000 x 0.133) + (Sg/10 x 53.2/1,000)		
	Where:		
	Se=	electricity savings	
	Sg=	natural gas savings	
	1,000	= conversion factor for kWh to MWh (electricity equation) or from kg to metric tons (natural gas equation)	
	10	= conversion factor for therm to MMBtu	
	0.133	= average projected emissions factor for electricity in 2020 in MT CO2e/MWh	
	53.20	= average emissions factor for natural gas (kg CO2e/MMBtu)	
GHG Emission Reduction	705	MT CO2e	
Municipal Costs and Savings Calculations	Staff time developing new materials and performing marketing and outreach activities.		
	FTE =	0.05	Estimated staff time per year to develop new program
	$/FTE	$100,000	Dollars per year
Municipal Costs and Savings	Municipal Cost =	$5,000	Dollars per year
	Municipal Savings =	$0	Dollars per year
Community Costs and Savings Calculations	Commercial cost savings = [Electricity Savings x $/kWh] Residential cost savings = [Electricity Savings x $/kWh] + [Natural Gas Savings x $/therms]		
	Where:		
	Residential $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Commercial $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Residential $/therm=	$0.92	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Total residential savings =	$212,101	Dollars
	Total commercial savings =	$716,695	Dollars
	Commercial solar installed cost =	$4.38	Commercial Solar Installations per watt (Green Tech Media)
	Residential solar installed cost =	$5.46	Residential Solar Installations per watt (Green Tech Media)
	Total cost of installed commercial solar =	$8,882,640	Dollars

	Total cost of installed residential solar =	$3,013,920	Dollars
	Residential solar water heater cost =	$4,650	Dollars (Incremental installed cost of solar hot water heater (National Renewable Energy Lab, August 2012))
	Available rebates =	$2,175	Dollars (available Rebate for replacing natural gas heater with solar (Go Solar CA))
	Cost of solar hot water heater with rebate =	$2,475	Dollars (cost of solar hot water heater installation minus rebate)
	Total cost of solar water heaters =	$185,625	Dollars
Community Cost and Savings	Residential Cost =	$16,408	Dollars per household
	Commercial Cost =	$148,044	Dollars per business
	Residential Savings =	$1,088	Dollars per household
	Commercial Savings =	$11,945	Dollars per business

Notes

Commercial and residential installation size assumptions are the averages for San Luis Obispo County PV installations for completed and PBI projects (Cal Solar). The installation size uses the CSI rating, which accounts for a design factor, and is a more accurate reflection of energy generated by the installation. Solar water heater savings is an average of the expected savings for all the projects that have applied for the CSI-Thermal rebate in San Luis Obispo County (CSI 2).

When combining energy measures, the City should be aware of double-counting emission reductions. Should not double count with Measure 3k, Low Income Solar Program, and Measure 3q, Municipal Solar Installations.

The model assumes that solar water heaters are installed in combination with both electric and natural gas water heaters. The model assumes that 90% of the systems installed offset natural gas water heaters; 10% offset electric water heaters.

Installed cost of conventional natural gas system is $1,350 and installed cost of residential solar water heaters: $6,000 (National Renewable Energy Lab).

References

1. Cal Solar - http://www.californiasolarstatistics.ca.gov/
2. California Solar Initiative CSI-Thermal Program - http://www.gosolarcalifornia.ca.gov/solarwater/index.php
3. CEC Planning and Permitting Resources For Renewable Energy Systems - http://www.energy.ca.gov/localgovernment/planning_resources/
4. SEIA Solar Radiation Conversion Map - http://www.getsolar.com/blog/what-can-one-kilowatt-of-solar-do-for-you/13483/
5. http://www.nrel.gov/docs/fy11osti/48986.pdf
6. http://www.greentechmedia.com/research/ussmi
7. National Renewable Energy Lab, August 2012 - http://www.nrel.gov/solar/
8. Go Solar CA - http://www.gosolarcalifornia.ca.gov/

Income-Qualified Solar PV Program

Measure Name	Income-Qualified Solar PV Program
Description of Measure	Facilitate the installation of solar PV systems on and solar hot water heaters in income-qualified housing units by promoting existing programs offered through the California Solar Initiative and New Solar Homes Partnership and by collaborating with organizations, such as Grid Alternatives, on outreach and eligibility.

Category	Energy
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Collaborate with Grid Alternatives and other community organizations to provide targeted education and outreach to developers and homeowners about incentives offered through the Single Family Affordable Solar Homes (SASH) Program and the Multifamily Affordable Solar Homes Program (MASH).		Required
Provide targeted outreach to homeowners about solar water heating incentives offered through the California Solar Initiative.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	76

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Medium	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	
Improve Public Health	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	No	
Increase in Property Value	Yes	
Adaptation	Yes	

Case Studies

GoSolarSF Program	http://sfenvironment.org/article/solar-electricity-photovoltaic/financial-incentives-for-solar-pv
Northeast Denver Housing Center	http://www1.eere.energy.gov/solar/pdfs/51075.pdf

Implementation

Responsible Department/Agency	Public Works, Building Services, Community Development and Planning
Actual Measure or Commitment	kW of PV and solar hot water heaters installed
Implementation Mechanism	Incentives
Implementation Timing	Near-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Number of low-income residential solar PV installations by 2020	50	Systems
Number of low-income residential solar water heaters installed by 2020	25	Systems
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	Residential Electricity Energy Savings (kWh)= (Rsi × Arsi × 1,900) + (Rsw × Ee) Residential Natural Gas Energy Savings (therms) = Rswg × Eg		
	Rsi=	50	# of low-income residential solar PV installations
	Rsw=	2.5	# of low-income residential solar electric water heater installations by 2020 (assumes 10% electric)
	Rswg=	22.5	# of residential solar natural gas water heater installations by 2020 (assumes 90% natural gas)
	Arsi=	4.6	average residential solar installation size in kW (Cal Solar Initiative [CSI 1])
	Ee=	2,945	average expected residential solar water heater savings in kWh per year (California Solar Initiative (CSI 2) Thermal Program Cal Solar statistics)
	Eg=	139	average expected residential solar water heater savings in therms per year (CSI 2 - 2012 Thermal Program Cal Solar statistics)
	Conversion factor=	1,900	conversion factor from kW to kWh per year (Solar Energy Industries Association [SEIA] Solar Radiation Conversion Map)
Resource Savings	444,363	Residential electricity saved (kWh)	
	3,128	Residential natural gas saved (therms)	
GHG Emission Reduction Calculations	GHG Savings (MT CO2e) = (Se/1,000 × 0.133) + (Sg/10 × 53.2/1,000)		
	Where:		
	Se=	electricity savings	
	Sg=	natural gas savings	
	1,000	= conversion factor for kWh to MWh (electricity equation) or from kg to metric tons (natural gas equation)	

	10	= conversion factor for therm to MMBtu	
	0.13	= average projected emissions factor for electricity in 2020 in MT CO2e/MWh	
	53.20	= average emissions factor for natural gas (kg CO2e/MMBtu)	
GHG Emission Reductions	76	MT CO2e	
Municipal Costs and Savings Calculations	Staff time for collaboration and outreach.		
	FTE =	0.05	Estimated staff time per year to develop new program
	$/FTE=	$100,000	Dollars per year
Municipal Costs and Savings	Municipal Cost=	$5,000	Dollars per year
	Municipal Savings =	$0	Dollars per year
Community Costs and Savings Calculations	Residential savings = [Electricity Savings x $/kWh] + [Natural Gas Savings x $/therms]		
	Where:		
	Residential $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Residential $/therm=	$0.92	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Total residential savings =	$87,306	Dollars
Community Costs and Savings	Community Cost =	$0	Dollars per household (Assumes to be paid for through programs.)
	Community Savings =	$1,164	Dollars per household

Notes

Residential installation size assumptions are the averages for San Luis Obispo County PV installations for completed projects (Cal Solar 1). The installation size uses the CSI rating, which accounts for a design factor, and is a more accurate reflection of energy generated by the installation. Solar water heater savings is an average of the expected savings for all the projects that have applied for the CSI-Thermal rebate in San Luis Obispo County (Cal Solar 2).

When combining energy measures, the City should be aware of double-counting emission reductions. Some actions in this measure overlap with actions in Measures 3q, and this overlay diminishes the overall effectiveness of the measure and its actions. If the City selects both measures, it should lower the commitment established in terms of units or percent reduction in order to address the issue of double-counting.

The model assumes that solar water heaters are installed in combination with both electric and natural gas water heaters. The model assumes that 90% of the systems installed offset natural gas water heaters; 10% offset electric water heaters.

References

1. California Solar Initiative (CSI) - http://www.californiasolarstatistics.ca.gov/
2. California Solar Initiative CSI-Thermal Program - http://www.gosolarcalifornia.ca.gov/solarwater/index.php
3. CEC Planning and Permitting Resources For Renewable Energy Systems - http://www.energy.ca.gov/localgovernment/planning_resources/
4. SEIA Solar Radiation Conversion Map - http://www.getsolar.com/blog/what-can-one-kilowatt-of-solar-do-for-you/13483/

Community Choice Aggregation Program (CCA)

Measure Name	Community Choice Aggregation Program (CCA)
Description of Measure	Assembly Bill 117 (2002) enables California cities and counties, either individually or collectively, to supply electricity to customers within their jurisdiction by establishing a community choice aggregation (CCA) program. Unlike a municipal utility, a CCA does not own transmission and delivery systems, but is responsible for providing electricity to residents and businesses. The CCA may own electric generating facilities, but more often, it purchases electricity from private electricity generators. The City would either individually or through a regional partnership develop a CCA program and ensure that the energy generation portfolio of the electricity supplied has a higher percentage of clean energy than that mandated by the State Renewable Portfolio Standard (RPS).

Category	Energy
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Participate in and consider the results of the Renewable Energy Secure Communities project for San Luis Obispo County (SLO-RESCO), a regional partnership working to identify the best mix of resources for clean, secure and affordable energy.		
Develop a CCA program and purchase a portfolio comprised of cleaner generation sources above the 33% RPS by 2020.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	991

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,000-$50,000	$50,000-$100,000	$100,000+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	Low	$1-$10,000	$10,000-$50,000	$50,000-$100,000	$100,000+
		Very Low	Low	Medium	High
3. Aggregated Community Cost	None	$1-$100	$101-$250	$251-$500	$500+
		Very Low	Low	Medium	High
4. Aggregated Community Savings	Very Low - Low	$1-$100	$101-$250	$251-$500	$500+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	
Improve Public Health	Yes	
Improve Air Quality	Yes	
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	No	
Adaptation	Yes	

Case Studies

Marin Energy Authority (Marin County)	http://www.marinenergyauthority.org/
Clean Power SF (City and County of San Francisco)	http://cleanpowersf.org/

Implementation

Responsible Department/Agency	Community Development/Planning
Actual Measure or Commitment	Percent reduction in carbon intensity of electricity above RPS
Implementation Mechanism	City Program
Implementation Timing	Long-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Percentage of commercial electricity use opting into CCA in 2020	75%	Percent
Percentage of residential electricity use opting into CCA in 2020	75%	Percent
Percentage of municipal electricity use opting into CCA in 2020	100%	Percent
Percent reduction in carbon intensity of electricity above the 33% Renewable Portfolio Standard (RPS)*	17%	Percent
Staff time needed for this measure	0.50	Full Time Equivalent (FTE)

*17% reduction in carbon intensity of electricity would result in 50% of electricity supplied by renewable sources

Calculations:

Resource Savings	None		
GHG Emission Reduction Calculations	GHG Savings (MT CO2e)=((Ceu x Commercial kWh) + (Reu x Residential kWh) + (Meu x Municipal kWh))/1,000 x (0.133 - 0.110)		
	Where:		
	Projected (2020) non-residential electricity use =	33,862,892	kWh
	Projected (2020) municipal electricity use =	1,889,150	kWh
	Projected commercial electricity use =	31,973,742	kWh
	Projected (2020) residential electricity use =	23,960,695	kWh
	Ceu=	75%	Percentage of commercial electricity use opting into CCA in 2020)
	Reu=	75%	Percentage of residential electricity use opting into CCA in 2020)
	Meu=	100%	Percentage of residential electricity use opting into CCA in 2020)
	1,000	= conversion factor for kWh to MWh	
	0.133	= average projected emissions factor for electricity in 2020 in MT CO2e/MWh	
	17%	= percent reduction in carbon intensity of electricity above the RPS (the RPS for 2020 is 33%)	
	0.110	= emissions factor for electricity in 2020 from CCA in MT CO2e/MWh	

GHG Emission Reduction	991	MT CO2e	
Municipal Costs and Savings Calculations	Staff time for collaboration and program development and implementation.		
	FTE =	0.50	Estimated staff time per year to develop new program (may vary depending on the City's decision to participate in a regional CCA)
	$/FTE=	$100,000	Dollars per year
	PG&E utility rate =	$0.19	Dollars per kWh
	Average utility rate savings =	5%	Percent (Average from Local Government Commissions' 2009 CCA Pilot Project)
	CCA utility rate =	$0.18	Dollars per kWh
Municipal Costs and Savings	Municipal Cost=	$50,000	Dollars per year
	Municipal Savings =	$17,947	Dollars per year
Community Costs and Savings Calculations	Aggregated residential savings =	$170,720	Dollars per year
	Aggregated commercial savings =	$227,813	Dollars per year
	Projected (2020) households =	6,348	Households
	Number of households opting in =	4,761	Households
	Projected (2020) commercial units =	1,178	Businesses
	Number of commercial units opting in =	884	Businesses
Community Costs and Savings	Residential Cost =	None	Dollars per household
	Commercial Cost =	None	Dollars per business
	Residential Savings =	$36	Dollars per household
	Commercial Savings =	$258	Dollars per business

Notes

The RPS is 33% in 2020. If the City wants to purchase a portfolio comprised of 50% renewable sources by 2020, then the percent reduction in carbon intensity of electricity above the RPS is 17% (50% - 33% = 17%).

A 2009 CCA Pilot Program of 12 California local governments found that forming a community choice aggregation could bring rate benefits to customers, anywhere from 1 percent to 10 percent of bills on average, due primarily to capital financing advantages the community choice aggregator would possess (Local Government Commission).

References

1. CPUC California Renewables Portfolio Standard http://www.cpuc.ca.gov/PUC/energy/Renewables/index.htm
2. LGC Community Choice Aggregation http://www.lgc.org/cca/what_is_cca.html
3. CPUC Community Choice Aggregation
http://www.cpuc.ca.gov/PUC/energy/Retail+Electric+Markets+and+Finance/070430_ccaggregation.htm
4. Local Government Commission. Community Choice Aggregation Pilot Project (prepared for California Energy Commission). February 2009.
http://www.energy.ca.gov/2008publications/CEC-500-2008-091/CEC-500-2008-091.PDF

Municipal Energy Efficiency Retrofits and Upgrades

Measure Name	Municipal Energy Efficiency Retrofits and Upgrades
Description of Measure	Establish a target to reduce municipal energy use by a certain percent by 2020 and implement cost-effective improvements and upgrades to achieve that target.

Category	Energy
Community or Municipal?	Municipal
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Adopt a municipal energy target.		Required
Complete energy audits and benchmarking of all municipal facilities, leveraging existing programs, such as PG&E's Automated Benchmarking Service or the U.S. Environmental Protection Agency's ENERGY STAR Challenge program.		Required
Maintain a regular maintenance schedule for heating and cooling, ventilation and other building functions.		Required
Establish a prioritized list of energy efficiency upgrade project and implement as funding becomes available.		Required
Install an energy management system that monitors energy use and controls heating, cooling, and ventilation to increase efficiency.		

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	57

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Varies	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	Medium	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	
Improve Public Health	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	Yes	
Reduce Energy Consumption	Yes	
Adaptation	Yes	

Case Studies

City of Atascadero	http://www.fypower.org/bpg/case_study.html?b=institutional&c=Atascadero%2c_City_of
City of Redondo Beach	http://www.fypower.org/bpg/case_study.html?b=institutional&c=Redondo_Beach

Implementation

Responsible Department/Agency	Public Works, Building Services, Community Development
Actual Measure or Commitment	Percent energy (electricity and natural gas) savings
Implementation Mechanism	City Program
Implementation Timing	Near-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Note: This measure excludes reductions from street, traffic signal, and public lighting, which is accounted for in Municipal Public Lighting measure.

Key Assumptions for Calculations:

Target percentage of energy savings	20%	Percent
Staff time needed for this measure	0.20	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	Municipal Electricity Energy Savings (kWh)=Em x P x 0.95 Municipal Natural Gas Savings (therms)=NGm x P x 0.05		
	Where:		
	Em=	2,175,677	Municipal electricity usage (GHG Emissions Inventory)
	NGm=	36,264	Municipal natural gas usage (GHG Emissions Inventory)
	P=	20%	Target percentage of energy savings (applied 95% electricity, 5% natural gas)
Resource Savings	413,379	Municipal electricity saved (kWh/year)	
	363	Municipal natural gas saved (therms/year)	
GHG Emission Reduction Calculations	GHG Savings (MT CO2e)=(Se/1,000 × 0.133)+(Sg/10 × 53.2/1,000)		
	Where:		
	Se=	electricity savings	
	Sg=	natural gas savings	
	1,000	= conversion factor for kWh to MWh (electricity equation) or from kg to metric tons (natural gas equation)	
	10	= conversion factor for therm to MMBtu	
	0.133	= average projected emissions factor for electricity in 2020 in MT CO2e/MWh	
	53.20	= average emissions factor for natural gas (kg CO2e/MMBtu)	
GHG Emission Reduction	57	MT CO2e	
Municipal Cost and Savings Calculations	Staff time needed to apply for funding and implement the upgrades.		
	FTE =	0.20	Estimated staff time per year to develop new program
	$/FTE=	$100,000	FTE cost
	Cost of staff time =	$20,000	Dollars
	Total Savings = kWh reduced/year x $/kWh + therms reduced/year x $/therm		
	Where:		

	$/kWh =	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	$/Therm =	$0.92	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
Municipal Cost and Savings	Municipal Cost =	Varies	Dollars (costs will vary based on the level of implementation and financial rebates)
	Municipal Savings =	$78,876	Dollars

Notes

Actual energy and greenhouse gas emissions savings proposed upgrades. A study of building commissioning found whole-building energy savings of 15% at a cost of $0.27 per square foot (LBNL). An estimate of LEED for Existing Buildings found the program reduced energy use by 20% (SPUR).

Implementation Resources: PG&E webpage for local governments - http://www.pge.com/mybusiness/energysavingsrebates/incentivesbyindustry/government/local/

References

1. 2005 California End Use Survey http://www.energy.ca.gov/ceus/
2. Lawrence Berkeley National Laboratory. 2004. Cost-Effectiveness of Commercial-Buildings Commissioning: A Meta-Analysis of Energy and Non-Energy Impacts in Existing Buildings and New Construction in the United States (page 1). www.ga.wa.gov/eas/bcx/Cx_Cost Effectiveness.pdf
3. SPUR - San Francisco Commercial Energy Ordinance http://www.spur.org/publications/library/report/critical_cooling/option4

Municipal Energy Efficient Public Realm Lighting

Measure Name	Municipal Energy Efficient Public Realm Lighting
Description of Measure	The City would continue to replace city-owned or -operated street, traffic signal, park, and parking lot lights with higher efficiency lamp technologies.

Category	Energy
Community or Municipal?	Municipal
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Conduct an inventory of existing outdoor public light fixtures.		
Identify and secure funding to replace inefficient city-owned or -operated public lighting.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	7

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	Reduced operation and maintenance costs.
Improve Public Health	Yes	Improved safety from improved night visibility.
Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	
Adaptation	Yes	

Case Studies

City of Palo Alto	http://www.ca-ilg.org/post/led-streetlights-palo-alto http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/gateway_palo-alto.pdf

City of La Mesa	http://www.fypower.org/bpg/case_study.html?b=institutional&c=La_Mesa%2c_City_of

Implementation

Responsible Department/Agency	Public Works
Actual Measure or Commitment	Number of LED or CFL lights installed
Implementation Mechanism	Capital Improvement
Implementation Time Frame	Near-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Number of LED street lights installed by 2020	25	Street Lights
Number of LED traffic signals installed by 2020	10	Traffic Signals
Number of LED or CFL other outdoor lights installed by 2020	50	Other Outdoor Lights
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	Total electricity saved (kWh) = (N x (Wi-We) x (h/Cf))		
	Where Street Lights:		
	N_{street} =	25	Number of street lights installed lights
	Wi =	200	Average estimated power rating in watts of high pressure sodium street light (Department of Energy [DOE] 2004. National Lighting Inventory and Energy Consumption Estimate)
	We =	50	Average power rating in watts of LED street lighting (DOE and PG&E 2008. LED Street Lighting)
	h =	4,100	Number of hours per year operating
	Cf =	1,000	Conversion factor for W to kW
	Where Traffic Signals:		
	$N_{traffic}$ =	10	Number of traffic installed lights
	Wi =	150	Average estimated power rating in watts of incandescent traffic signal light. (U.S.Department of Energy, 2004 in Stockton Climate Action Plan).
	We =	15	Average power rating in watts of LED traffic signal light (CAPCOA 2010)
	h =	8,760	Number of hours per year operating (24 hours a day)
	Cf =	1,000	Conversion factor for W to kW
	Where Other Private Outdoor Lighting (in Public Realm):		
	N_{other} =	50	Number of other outdoor installed lights
	Wi =	200	Average estimated power rating in watts of public realm lighting (Department of Energy [DOE] 2004. National Lighting Inventory and Energy Consumption Estimate)
	We =	50	Average power rating in watts of LED public realm lighting (DOE 2004)

	h =	3,650	Number of hours per year operating
	Cf =	1,000	Conversion factor for W to kW
Resource Savings	15,375	Electricity saved from LED street lights (kWh)	
	11,826	Electricity saved from LED traffic signals (kWh)	
	27,375	Electricity saved from LED "other" public realm lighting (kWh)	
	54,576	Total electricity saved (kWh)	
GHG Emission Reduction Calculations	GHG Savings (MT CO2e)=(Se/1,000 × 0.133)		
	Where:		
	Se=	electricity savings	
	1,000	= conversion factor for kWh to MWh (electricity equation) or from kg to metric tons (natural gas equation)	
	0.133	= average projected emissions factor for electricity in 2020 in MT CO2e/MWh	
GHG Emission Reduction	7	MT CO2e/year	
Municipal Costs and Savings Calculations	Total energy savings = kWh reduced/year * $/kWh		
	Where:		
	$/kWh =	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Total annual energy cost savings=	$10,369	Dollars per year
	Maintenance savings per fixture =	$17	Annual maintenance savings/fixture (Palo Alto)
	Some staff time may be needed to implement the program.		
	FTE =	0.1	Estimated staff time per year to develop new program
	$/FTE=	$100,000	FTE cost
	Cost of staff time =	$10,000	Dollars
	Total Capital Cost = [Number of units installed x cost per unit] – [Available rebates]		
	Where Streetlights:		
	Number of units installed =	25	Units
	Cost per unit installed =	$350	Dollars/unit (Energy Solutions 2008; PNNL 2010)
	Total cost=	$8,750	Dollars
	Available rebates =	$125	Dollars/unit ($125 for 200 watt unit replaced - PG&E)
	Net cost =	$5,625	Dollars (total cost - available rebates)
	Where Traffic Signals:		
	Number of units installed =	10	Units
	Cost per unit installed =	$193	Dollars/unit (assuming a standard three 12" (red, yellow, and green) balls per signal (Western Pacific Signal 2011; eLightBulbs 2011))
	Cost installation =	$1,930	Dollars
	Available rebates =	$100	Dollars ($100 for 150 watt unit replaced - PG&E)
	Net cost =	$930	Dollars (total cost - available rebates)
	Where Other Private Outdoor Lighting (in Public Realm):		
	Number of units installed =	50	Units

Energy Efficiency Requirements for New Municipal Buildings

Measure Name	Energy Efficiency Requirements for New Municipal Buildings
Description of Measure	Adopt a policy to exceed minimum Title 24 Building Energy Efficiency Standards by a certain percentage for the construction or renovation of new City buildings and facilities.

Category	Energy
Community or Municipal?	Municipal
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Review existing municipal building policies and standards.		Required
Adopt a policy to exceed Title 24 building efficiency standards by a certain percent.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	17

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	High	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	
Improve Public Health	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	Yes	
Improve Equity	Yes	
Reduce Water Consumption	Yes	
Reduce Energy Consumption	Yes	
Adaptation	Yes	

Case Studies

City of Manhattan Beach	http://www.citymb.info/Index.aspx?page=121
City of Berkeley	http://www.ci.berkeley.ca.us/uploadedFiles/Planning_and_Development/Level_3_-_Energy_and_Sustainable_Development/Green%20Building%283%29.pdf http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CA52R&re=0&ee=0

Implementation

Responsible Department/Agency	Building Services, Public Works, Community Development and Planning
Actual Measure or Commitment	New municipal building square feet by 2020; percent energy (electricity and natural gas) savings
Implementation Mechanism	Capital Improvement
Implementation Timing	Mid-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

New municipal building square feet by 2020	50,000	Square Feet
Target percentage of energy savings above State standards	20%	Percent
Staff time needed for this measure	0.08	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	Municipal Electricity Energy Savings (kWh)=E × Eec × (1 - CSP) × 12.95 × Msf Municipal Natural Gas Savings (therms)=E × Egc × (1 - CSP) × 0.29 × Msf		
	Where:		
	Msf=	50,000	New municipal building square feet by 2020
	E=	20%	Target percentage of energy savings
	Eec=	64%	Percent of commercial electricity use covered by Title 24 (SEEC 2011 Greenhouse Gas Forecasting Assistant, page 9)
	Egc=	70%	Percent of commercial natural gas use covered by Title 24 (SEEC 2011 Greenhouse Gas Forecasting Assistant, page 9)
	CSP=	30%	Percent non-residential energy savings above current State standards (CEC 2013 Building Efficiency Standards, slide 17)
	Municipal electricity use intensity=	12.954999	kWh/square foot/year (Average electric use intensity for commercial buildings in kWh/square feet/year (California Energy Commission [CEC] 2005 California End Use Survey [CEUS], page 8))
	Municipal natural gas use intensity=	0.34999	therms/square foot/year (Average natural gas usage intensity for commercial buildings in therms/square feet/year (CEC 2005 CEUS, page 8))
Resource Savings	58,038	Municipal kWh/year saved	
	1,715	Municipal therms/year saved	
	GHG Savings (MT CO2e) = (Se/1,000 × 0.133) + (Sg/10 × 53.2/1,000)		
	Where:		

GHG Emission Reduction Calculations	Se=	electricity savings	
	Sg=	natural gas savings	
	1000	= conversion factor for kWh to MWh (electricity equation) or from kg to metric tons (natural gas equation)	
	10	= conversion factor for therm to MMBtu	
	0.133	= average projected emissions factor for electricity in 2020 in MT CO2e/MWh	
	53.20	= average emissions factor for natural gas (kg CO2e/MMBtu)	
GHG Emission Reduction	17	MT CO2e	
Municipal Costs and Savings Calculations	Staff time developing policy Municipal cost savings = [Electricity Savings x $/kWh] + [Natural Gas Savings x $/therms]		
	Commercial $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Commercial $/therm=	$0.81	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	FTE =	0.08	Estimated staff time per year to develop new program
	$/FTE=	$100,000	FTE cost
	Total cost off staff time =	$8,000	Dollars
	Cost of implementation =	$1.25	Average cost to implement (sq ft) - Projected PG&E Zone 5 Costs (CA Department of Energy)
	Total implementation cost =	$62,500	Dollars
Municipal Cost and Savings	Municipal Cost =	$162,500	Dollars
	Municipal Savings =	$12,184	Dollars

Notes

Title 24 covers only 64% of commercial electricity use and 70% of natural gas use (SEEC, page 7). 2013 Title 24 updates are expected to reduce non-residential energy use by 30% (CEC).

References

1. 2005 California End Use Survey http://www.energy.ca.gov/ceus/
2. CEC 2013 Building Efficiency Standards, slide 17 - http://www.energy.ca.gov/title24/2013standards/rulemaking/documents/2012-05-31_2013_standards_adoption_hearing_presentation.pdf
3. SEEC 2011 Greenhouse Gas Forecasting Assistant, page 7 - http://californiaseec.org/documents/forecasting-tools/seec-forecast-assistant-documentation
4. http://www.energy.ca.gov/title24/2008standards/ordinances/san_luis_obispo/CZ5_Cost-Effectiveness_Report-Final.pdf

Renewable Energy Systems on City Property

Measure Name	Renewable Energy Systems on City Property
Description of Measure	The City would pursue municipally-owned renewable energy generation facilities.

Category	Energy
Community or Municipal?	Municipal
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	Existing and/or Completed Action?	Selected?
	Yes or No	Yes or No
Complete a feasibility study on the installation of solar or other renewable energy projects at select City facilities and install where feasible.		Required
Identify funding sources and opportunities for municipal renewable energy generation.		
Replace inefficient hot water heaters with those powered by solar energy.		

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	14

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	High	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	Yes/No	Notes
Reduce Costs	Yes	
Improve Public Health	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Air Quality	Yes	Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	
Adaptation	Yes	

Case Studies

City of San Jose	http://energy.sanjoseca.gov/municipal-energy/default.asp#renewable-energy
City of Santa Barbara	http://icma.org/en/icma/knowledge_network/documents/kn/Document/304014/Santa_Barbara_California_Solar_Case_Study

Implementation

Responsible Department/Agency	Public Works, Building Services
Actual Measure or Commitment (solar installation size)	kw of municipal solar PV and number of solar water heaters installed
Implementation Mechanism	Capital Improvement
Implementation Timing	Mid-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

kW of municipal solar PV installations by 2020	50	kW
Number of solar hot water heaters	2	Systems
Staff time needed for this measure	0.10	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	Municipal Electricity Energy Savings (kWh)=(kW × 1,900) + (Msw × Ee)		
	Where:		
	Msi=	50	kW of solar installations by 2020
	Msw=	0.2	# of solar electric water heater installations by 2020
	Mswg=	1.8	# of solar natural gas water heater installations by 2020
	Ee=	2,945	average expected municipal solar water heater savings in kWh per year (California Solar Initiative (CSI 2) Thermal Program Cal Solar statistics)
	Eg=	139	average expected municipal solar water heater savings in therms per year (CSI 2 - 2012 Thermal Program Cal Solar statistics)
	Conversion factor=	1,900	conversion factor from kW to kWh per year (Solar Energy Industries Association [SEIA] Solar Radiation Conversion Map)
Resource Savings	250	Municipal natural gas saved (therms/year)	
	95,589	Municipal electricity saved (kWh/year)	
GHG Emission Reduction Calculations	GHG Savings (MT CO2e) = (Se/1,000 × 0.133) + (Sg/10 × 53.2/1,000)		
	Where:		
	Se=	electricity savings	
	Sg=	natural gas savings	
	1,000	= conversion factor for kWh to MWh (electricity equation) or from kg to metric tons (natural gas equation)	
	10	= conversion factor for therm to MMBtu	
	0.133	= average projected emissions factor for electricity in 2020 in MT CO2e/MWh	
	53.20	= average emissions factor for natural gas (kg CO2e/MMBtu)	

GHG Emission Reductions	14	MT CO2e	
Municipal Costs and Savings Calculations	Municipal cost savings = [Electricity Savings x $/kWh] + [Natural Gas Savings x $/therms]		
	Where:		
	Commercial $/kWh=	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Commercial $/therm=	$0.81	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Staff time to obtain grant funding and implement project		
	FTE =	0.1	Estimated staff time to develop new program
	$/FTE	$100,000	Dollars per year
	Total Staff Cost=	$10,000	Dollars per year
	Total Capital Cost = Total Cost of Solar Units (bulk purchase + installation) + Total Staff Cost - Available Rebates		
	Where:		
	Commercial solar installation cost =	$4.38	Commercial Solar Installations per watt (Green Tech Media)
	Total solar PV installation cost =	$416,100	Average capital cost per kW (CSI statistics)
	Solar water heater cost =	$4,650	Dollars (Incremental installed cost of solar hot water heater (National Renewable Energy Lab, August 2012))
	Available rebates =	$2,175	Dollars (available Rebate for replacing natural gas heater with solar (Go Solar CA))
	Cost of solar hot water heater with rebate =	$2,475	Dollars (cost of solar hot water heater installation minus rebate)
	Total cost of solar water heaters =	$4,950	Dollars
Municipal Costs and Savings	Municipal Cost =	$431,050	Dollars
	Municipal Savings =	$17,982	Dollars

Notes

Municipal installation size assumptions are the averages for PV installations in California. The installation size uses the CSI rating, which accounts for a design factor, and is a more accurate reflection of energy generated by the installation. Municipal solar water heater savings is an average of the expected savings for all the projects that have applied for the CSI-Thermal rebate in California (Cal Solar).

When combining energy measures, the City should be aware of double-counting emission reductions. Some actions in this measure overlap with actions in Measures 3r and this overlay diminishes the overall effectiveness of the measure and its actions. If the City selects both measures, it should lower the commitment established in terms of units or percent reduction in order to address the issue of double-counting.

The model assumes that solar water heaters are installed in combination with both electric and natural gas water heaters. The model assumes that 90% of the systems installed offset natural gas water heaters; 10% offset electric water heaters.

References

1. California Solar Initiative (CSI) - http://www.californiasolarstatistics.ca.gov/
2. California Solar Initiative CSI-Thermal Program - http://www.gosolarcalifornia.ca.gov/solarwater/index.php
3. CEC Planning and Permitting Resources For Renewable Energy Systems -http://www.energy.ca.gov/localgovernment/planning_resources/
4. SEIA Solar Radiation Conversion Map - http://www.getsolar.com/blog/what-can-one-kilowatt-of-solar-do-for-you/13483/
5. http://www.greentechmedia.com/research/ussmi
6. National Renewable Energy Lab, August 2012 - http://www.nrel.gov/solar/
7. Go Solar CA - http://www.gosolarcalifornia.ca.gov/

Bicycle Network

Measure Name	Bicycle Network
Description of Measure	Continue to improve and expand the city's bicycle network and infrastructure.

Category	Transportation and Land Use
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Implementation Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Continue to pursue public and private funding to expand and link the city's bicycle network in accordance with its General Plan and Bicycle Plan.		Required
Annually identify and schedule street improvement and maintenance projects to preserve and enhance the bicycle network.		Required
Incorporate bicycle facility improvements into pavement resurfacing, restriping, and signalization operations where the safety and convenience of users can be improved within the scope of work.		
Coordinate with and support SLOCOG in the implementation of bicycle plans to facilitate non-auto travel within and between communities.		Required
Collaborate with the San Luis Obispo Bicycle Coalition to assist with event promotions and publications to increase awareness and ridership during Bike Month.		Required
Through conditions of approval, require new subdivisions and large developments to incorporate bicycle lanes, routes, and/or shared-use paths into street systems to provide a continuous network of routes, facilitated with markings, signage, and bicycle parking.		
Continue to enforce mandatory California Green Building Standards Code bicycle parking standards for non-residential development.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	231

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Varies	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	Private savings from avoided driving.
Improve Public Health	Yes	Shift to biking promotes active lifestyles.

Improve Air Quality	Yes	Reducing vehicle miles traveled (VMT) may reduce criteria pollutant emissions.
Improve Water Quality	Yes	Reducing VMT may reduce criteria pollutant emissions.
Improve Equity	Yes	New transportation options for those without access to a vehicle.
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	Reduced VMT reduces gasoline consumption.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

Santa Cruz Regional Transportation Bicycle Network investments	http://sccrtc.org/ http://www.santacruzlive.com/blogs/streetsmarts/2011/11/13/bicycle-pedestrian-trail-to-link-santa-cruz-monterey-counties/
San Francisco Bay Area Air Quality Management District Emissions Reduction Grants: Performance review (including bicycle facilities projects)	http://hank.baaqmd.gov/pln/grants_and_incentives/tfca/TFCA%20Performance%20Lit%20Review%20Final.pdf

Implementation

Responsible Department/Agency	Planning and Public Works Departments	
Actual Measure or Commitment	Miles of new bike lanes, routes, and paths by 2020	
Implementation Mechanism	Codes and Standards	Policy
Implementation Timing	Near-Term	
Outside Funding Available?	Yes	
Synergies with Existing Initiatives/Partnerships	Yes	

Calculation Methodology and Equations

Key Assumptions for Calculations:

Miles of new bike lane by 2020	20	Miles
Staff time needed for this measure	0.2	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	VMT Reduction = (A*B)+(A*D)		
	City Area =	5.303	Square Miles
	Forecast VMT (2020) =	58,053,794	VMT in 2020
	Decrease in VMT (B) =	1.0%	Estimated VMT reduction factor for incorporating bike lanes into street design (CAPCOA) (Assumes 1% decrease in VMT per mile of new bike lane per square mile area. Maximum reduction capped at 1% to avoid double counting from alternative travel related VMT reductions.)
	VMT reduction for installing bicycle racks (D)=	0.06%	Percent - (CAPCOA, SDT-6)
Resource Savings	Total VMT Reduction =	617,112	VMT per year
GHG Emission Reduction Calculations	GHG Savings = VMT Reduction × Cef		
	Where: Cef =	0.000374	Composite emission factor; MT CO2 per VMT (EMFAC 2011)
GHG Emission Reduction	Total GHG Savings =	231	MT CO2e

Municipal Costs and Savings Calculations	Staff time required for developing policies and acquiring grant funding for bicycle infrastructure. There would be minimal additional costs associated with staff time needed for plan checks; however, this cost will be absorbed through development/permitting fees.		
	FTE =	0.15	Estimated staff time per year to develop new program
	$/FTE=	100,000	Dollars per year
Municipal Costs and Savings	Municipal Cost =	$15,000	Dollars (Assumes that grant funding would be used to implement bicycle infrastructure. Minimal costs would occur as a result of incorporating multi-modal improvements into pavement resurfacing, restriping, and signalization operations (less than $5,000).)
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Community VMT Reduced=	617,112	Dollars per year
	Community operating cost per mile =	$0.56	Dollars
	Average round trip length =	17.82	Miles (Fehr & Peers)
	Round trips switching from driving to biking =	34,630	Round trips
	Cost per mile of new bicycle lane =	$40,000	Dollars per mile (Assumes $40,000 per mile average. Actual cost would depend on the type of bicycle lane being installed - see notes below)
	Total cost of new bicycle lanes =	$800,000	Dollars
	Cost of bicycle parking =	$0	Dollar (Bicycle parking standards for non-residential development went into effect January 1, 2001 as part of California Green Building Standards Code, and are therefore now a cost associated with doing business-as-usual)
Community Costs and Savings	Community Cost =	$0	Dollars per person (Assumes cost of bike lanes would be incurred by the City through grant funding and private developers.)
	Community Savings =	$10	Dollars per trip (Savings varies depending on how many bicycle trips are made by a single person.)

Notes

Calculation methodology derived from CAPCOA measures SDT-5 and SDT-6

The following is provided for informational purposes:
Cost of infrastructure development is highly variable. Cost estimates for bicycle infrastructure: Class I Bike Path - approximately $1,000,000 per mile; Class II Bike Lanes - $10,000 - $1,000,000 per mile (depending on level of roadway improvement required); Class III Bike Routes - $2,000 - $60,000 per mile (depending on the level of treatment; route signage only would be lower end, signage and shoulder striping, pavement markings, signal actuation would be higher end). The cost per mile of sidewalk is approximately $250,000.

References and Links

1. CAPCOA, Quantifying Greenhouse Gas Mitigation Measures (2010): http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf
2. Cambridge Systematics. Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions (2009). http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendices_Complete_102209.pdf
3. Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions. (p.13) http://www.airquality.org/ceqa/GuidanceLUEmissionReductions.pdf
4. US Department of Transportation, http://www.nhtsa.gov/people/injury/pedbimot/bike/Safe-Routes-2002/safe.html#8
5. SLO COG RTP - http://www.slocog.org/cm/Programs_and_Projects/2010_Regional_Transportation_Plan.html

Pedestrian Network

Measure Name	Pedestrian Network
Description of Measure	Continue to improve and expand the city's pedestrian network.

Category	Transportation and Land Use
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	Existing and/or Completed Action?	Selected?
	Yes or No	Yes or No
Continue to pursue public and private funding to expand and link the City's pedestrian network.		Required
Annually identify and schedule sidewalk improvement and maintenance projects to preserve and enhance the pedestrian circulation network.		Required
Incorporate pedestrian-facilities improvements into pavement resurfacing, restriping, and signalization operations where the safety and convenience of users can be improved within the scope of work.		
Expand and promote the Safe Routes to School program.		
Require through conditions of approval that new development projects provide a pedestrian access network that internally links all uses and connects all existing or planned external streets and pedestrian facilities contiguous with the project site. It would also require that the project minimize barriers to pedestrian access and interconnectivity.		
Require new development to implement traffic calming improvements as appropriate (e.g., marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, median islands, mini-circles, tight corner radii, etc.) through conditions of approval.		

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	102

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Varies	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	Yes/No	Notes
Reduce Costs	Yes	Private savings from avoided driving.
Improve Public Health	Yes	Shift to walking promotes active lifestyles.
Improve Air Quality	Yes	Reducing VMT may reduce criteria pollutant emissions.
Improve Water Quality	Yes	Reducing VMT may reduce criteria pollutant emissions.

Improve Equity	Yes	New transportation options for those without access to a vehicle.
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	Reduced VMT reduces gasoline consumption.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

Sacramento Pedestrian Program Complete Streets Projects	http://www.cityofsacramento.org/transportation/dot_media/engineer_media/pdf/ProjectHandout_11x17_2010.pdf
Bay Area Air Quality Management District Emissions Reduction Grants: 2006 Performance review (including pedestrian facilities projects) Pg. 20-24	http://hank.baaqmd.gov/pln/grants_and_incentives/tfca/TFCA%20Performance%20Lit%20Review%20Final.pdf

Implementation

Responsible Department/Agency	Planning and Public Works Departments	
Actual Measure or Commitment	Miles of added sidewalk by 2020	
Implementation Mechanism	Capital Improvement	Policy
Implementation Timing	Near-Term	
Outside Funding Available?	Yes	
Synergies with Existing Initiatives/Partnerships	Yes	

Calculation Methodology and Equations

Key Assumptions for Calculations:

Miles of new sidewalk added by 2020	5	Miles
Staff time needed for this measure	0.2	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	VMT Reduction = Forecast VMT x Percent VMT reduction		
	City Area =	5.303	Square Miles
	Forecast VMT (2020) =	58,053,794	VMT
	Percent VMT reduction from pedestrian network improvements=	0.5%	Percent reduction in VMT (CAPCOA SDT-1)
Resource Savings	Total VMT Reduction =	273,684	VMT per year
GHG Emission Reduction Calculations	GHG Savings = VMT Reduction × Cef		
	Where: Cef =	0.000374	Composite emission factor; MT CO2 per VMT (EMFAC 2011)
GHG Emission Reduction	Total GHG Savings =	102	MT CO2e
Municipal Costs and Savings Calculations	Staff time required for review and approval of projects and acquiring grant funding for pedestrian infrastructure.		
	FTE =	0.2	Estimated staff time per year to develop new program
	$/FTE=	100,000	Dollars per year

Municipal Costs and Savings	Municipal Cost =	$20,000	Dollars (Assumes that grant funding would be used to implement pedestrian infrastructure. Minimal costs would occur as a result of incorporating multi-modal improvements into pavement resurfacing, restriping, and signalization operations (less than $5,000).)
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Community VMT Reduced=	273,684	Dollars per year
	Community operating cost per mile =	$0.56	Dollars
	Cost per mile of new sidewalk =	$250,000	Dollars per mile
	Total cost of new bicycle lanes =	$1,250,000	Dollars
Community Costs and Savings	Community Cost =	$0	Dollars per person (Assumes cost would be incurred by the City through grant funding and the private developer.)
	Community Savings =	Varies	Dollars per person (Varies based on number of trips made by foot and distance travelled. Savings of $0.555 per mile.)

Notes

Calculation methodology derived from CAPCOA measure SDT-1

References

1. CAPCOA, Quantifying Greenhouse Gas Mitigation Measures (2010): http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

2. Cambridge Systematics. Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions (2009). http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendices_Complete_102209.pdf

3. Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions. (p.13) http://www.airquality.org/ceqa/GuidanceLUEmissionReductions.pdf

Expand Transit Network

Measure Name	Expand Transit Network
Description of Measure	Work with the Regional Transit Authority (RTA) and transit service providers to expand the local transit network (i.e., additional routes or stops, and/or expanded hours of operation) based on the greatest demand for service.

Category	Transportation and Land Use
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	Existing and/or Completed Action?	Selected?
	Yes or No	Yes or No
Work with RTA and transit service providers to implement the Short Range Transit Plan.		Required
Work with the San Luis Obispo Regional Transit Authority and local transit agency to identify and map existing and future bus lines (routes) and transit corridors.		Required
Support the County's EnergyWise Plan strategy to add transit routes that provide intercity express services.		Required
Continue to research federal and local funding for transit service upgrade projects.		Required
Require new development to provide safe and convenient access to alternative transportation within the project area and safe access to public transportation as feasible.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	19

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Very Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Medium	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	Yes/No	Notes
Reduce Costs	Yes	Reduced private transportation costs for those using service. Additional public transit subsidies.
Improve Public Health	No	
Improve Air Quality	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Water Quality	No	
Improve Equity	Yes	New transportation options for those without access to a vehicle.

Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	Reduced VMT yeilds lower gasoline consumption.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

Bakersfield, California - Bus Service Expansion (p. 10-56)	http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c10.pdf
Santa Clara County, California (VTA) Transit Service Expansion (p. 10-58)	http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c10.pdf

Implementation

Responsible Department/Agency	
Actual Measure or Commitment	Percent increase in transit service
Implementation Mechanism	Policy
Implementation Timing	Near-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Percent Increase in Transit Service	10%	Percent
Staff time needed for this measure	0.02	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	% VMT Reduction = Coverage * Elasticity * Mode* Adjustment (CAPCOA, Strategy TST-3, Page 277)		
	Forecast VMT (2020) =	58,053,794	VMT in 2020
	Coverage =	10%	Percent increase in transit service
	Elasticity =	1.01	Elasticity of transit ridership with respect to service coverage (CAPCOA, Strategy TST-3, Page 277)
	Mode =	1.3%	Existing transit mode share, countywide (CAPCOA, Strategy TST-3, Page 277)
	Adjustment =	0.67	Adjustments from transit ridership increase to VMT (CAPCOA, Strategy TST-3, Page 277)
	% VMT Reduction =	0.1%	Percent
Resource Savings	Total VMT Reduction due to transit network expansion=	51,071	VMT
GHG Emission Reduction Calculations	GHG Savings = VMT Reduction × Cef		
	Where: Cef =	0.000374	Composite emission factor; MT CO2 per VMT (EMFAC 2011)
GHG Emission Reduction	Total GHG Savings =	19	MT CO2e
Municipal Costs and Savings Calculations	Staff time required for coordinating with RTA/transit agencies.		
	FTE =	0.02	Estimated staff time per year to develop new program

	$/FTE =	100,000	Dollars per year
Municipal Costs and Savings	Municipal Cost =	$2,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Private costs and savings of increasing transit service, scaled to City population.		
	Private VMT reduced =	51,071	VMT
	Private vehicle operating cost =	$0.56	Dollars per mile
	Private savings from avoided driving =	$28,344	Dollars
	Cost of transit fare =	$2	Dollars/day (may vary depening on pass) (SLO RTA)
	City forecast (2020) population =	10,244	People
	Number of people switching to from driving to transit =	9	People
	Private cost from transit fares =	$18	Dollars
Community Costs and Savings	Community Cost =	$2	Dollars
	Community Savings =	$3,145	Dollars

Notes

Calculation methodology derived from CAPCOA measure TST-3.

References

1. CAPCOA, Quantifying Greenhouse Gas Mitigation Measures (2010): http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

2. Transit Cooperative Research Program. TCRP Report 95 Traveler Response to System Changes – Chapter 10: Bus Routing and Coverage. 2004. (p. 10-8 to 10-10)

3. US Census Journey to Work

4. SLO RTA - http://www.slorta.org/fares/rta

Increase Transit Service Frequency/Speed

Measure Name	Increase Transit Service Frequency/Speed
Description of Measure	Work with the Regional Transit Authority (RTA) and transit services providers to increase transit service frequency (i.e., reducing headways) by identifying routes where increased bus frequency would improve service.

Category	Transportation and Land Use
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	Existing and/or Completed Action?	Selected?
	Yes or No	Yes or No
Work with RTA and transit service providers to implement the Short Range Transit Plan.		Required
Work with RTA and transit service providers to shorten regional service headways to 30 minutes or shorter at commute peaks subject to passenger load demand.		Required
Support streamlined transit services and infrastructure that create a Bus Rapid Transit (BRT) network on main commute corridors.		

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	8

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Very Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Medium	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	Yes/No	Notes
Reduce Costs	Yes	Reduce private transportation costs for those using service, but requires additional transit subsidies from public agencies.
Improve Public Health	Yes	Improved transportation choices may promote more active lifestyles.
Improve Air Quality	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Water Quality	No	
Improve Equity	Yes	New transportation options for those without access to a vehicle.
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

Santa Clarita Transit (p. 9-9 and 9-10)	Transit Cooperative Research Program. TCRP Report 95 Traveler Response to System Changes – Chapter 9: Transit Scheduling and Frequency (p. 9-9 and 9-10) gulliver.trb.org/publications/tcrp/tcrp_rpt_95c9.pdf
Santa Monica, CA Big Blue Bus system (p. 9-10)	Transit Cooperative Research Program. TCRP Report 95 Traveler Response to System Changes – Chapter 9: Transit Scheduling and Frequency (9-10) gulliver.trb.org/publications/tcrp/tcrp_rpt_95c9.pdf

Implementation

Responsible Department/Agency	
Actual Measure or Commitment	Percentage reduction in transit headways
Implementation Mechanism	Policy
Implementation Timing	Near-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Percentage reduction in headways (increase in frequency)	10%	Percent
Bus rapid transit selected? (1 for yes, 0 for no)	1	Yes or No
Staff time needed for this measure	0.02	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	% VMT Reduction = Headway * B * C * Mode * E (CAPCOA, TST-4, Page 281)		
	Forecast VMT (2020) =	58,053,794	VMT
	Headway =	10%	Percent reduction in headways
	B =	0.36	Elasticity of transit ridership with respect to increased frequency of service (CAPCOA, TST-4, Page 281)
	C =	50%	Adjustment for level of implementation (number of lines improved/total number of lines assumed to be less than 50%) (CAPCOA, TST-4, page 281)
	Mode =	1.3%	Existing transit mode share, countywide (CAPCOA, TST-4, Page 281)
	E =	0.67	Ratio of decreased VMT to increased transit ridership (CAPCOA, TST-4, Page 281)
	% VMT Reduction from Headway=	0.02%	Percent VMT Reduction
	% VMT Reduction from Bus Rapid Transit =	0.02%	Percent VMT Reduciton if selected (0.02% VMT reduction from CAPCOA, TST-1, page 272)
	Total % VMT Reduction	0.04%	Percent VMT Reduction
Resource Savings	Total VMT Reduction due to transit network expansion=	20,712	Annual Reduced VMT due to transit frequency improvement
GHG Emission Reduction	GHG Savings = VMT Reduction × Cef		

Calculations	Where: Cef =	0.000374	Composite emission factor; MT CO2 per VMT (EMFAC 2011)
GHG Emission Reduction	Total GHG Savings =	8	MT CO2e
Municipal Costs and Savings Calculations	Staff time required for coordinating with RTA/transit agencies.		
	FTE =	0.02	Estimated staff time per year to develop new program
	$/FTE=	100,000	Dollars per year
Municipal Costs and Savings	Municipal Cost =	$2,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Private VMT reduced =	20,712	VMT
	Vehicle operating cost per mile =	$0.56	Dollars per mile
	Private savings from avoided driving =	$11,495	Dollars
	Cost of transit fare =	$2	Dollars/day (may vary deepening on pass) (SLO RTA)
	City forecast (2020) population =	10,244	People
	Number of people switching to from driving to transit =	2	People
	Private cost from transit fares =	$3	Dollars
Community Costs and Savings	Community Cost =	$2	Dollars
	Community Savings =	$7,158	Dollars

Notes

Calculation methodology derived from CAPCOA measure TST-1 and TST-3.

References

1. Transit Cooperative Research Program. TCRP Report 95 Traveler Response to System Changes – Chapter 9: Transit Scheduling and Frequency (p. 9-14)

2. SLO RTA - http://www.slorta.org/fares/rta

Employer-Based Transportation Demand Management (TDM) Program

Measure Name	Employer-Based Transportation Demand Management (TDM) Program
Description of Measure	Require through a new City ordinance that employers with 25 or more employees develop a TDM program that provides encouragement, incentives, and support for employees to reduce their single occupancy vehicle trips. Some examples of resources and incentives include telecommuting, alternative scheduling (e.g., 9/80 or 4/40 work schedules), rideshare matching, and walking, cycling and transit incentives.

Category	Transportation and Land Use
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Develop and adopt a TDM ordinance for employees with 25 or more employees.		Required
Establish performance standards (e.g., trip reduction requirements).		Required
Set up system to require regular monitoring and reporting to assess the employer's status in meeting the ordinance goals (e.g., as part of the business licensing and renewal process).		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	69

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Very Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	Reduce private transportation costs for employees switching to alternative modes of travel.
Improve Public Health	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Air Quality	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Water Quality	No	
Improve Equity	Yes	
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	Reduced VMT reduces consumption of gasoline.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

City of Pasadena Trip Reduction Ordinance	http://www.ci.pasadena.ca.us/transportation/transportation_demand_management/
Genentech Corporate TDM Program (San Francisco Bay Area)	http://knowlton.osu.edu/ped/price.644/2012%20Webcasts/April%2020th/APA%20Webinar%20-%20Genentech%20gRide.pdf

Implementation

Responsible Department/Agency	Community Development; Planning/Transportation; Public Works
Actual Measure or Commitment	Percent of businesses with more than 25 employees
Implementation Mechanism	Codes and Standards
Implementation Timing	Near-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Note: Reductions from this measure should not be combined with reductions from Measure 5f, TDM Marketing, to avoid double counting.

Key Assumptions for Calculations:

Percent of businesses with more than 25 employees	45%	Percent
Staff time needed for this measure	0.10	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	VMT Reduced = A x B x C x D		
	Forecast Annual VMT (2020) =	58,053,794	VMT
	Forecast Annual Employee Commute VMT (2020) (A)=	9,811,091	Employee commute VMT in 2020 (16.9% of total VMT, Fehr & Peers)
	Percent Reduction in Commute VMT (B)=	21%	Percent in reduction in vehicle mode share from base commute trip reduction programs (CAPCOA, page 225)
	Percent of businesses with more than 25 employees (C)=	45%	Percent
	Employee Participation (D)=	20%	Percent employees to participate in commute program (20% suggested eligibility in CAPCOA, page 225)
Resource Savings	VMT Reduction =	185,430	VMT
GHG Emission Reduction Calculations	GHG Reduction = VMT Reduction x Cef		
	Where:		
	Cef =	0.000374	Composite emission factor; MT CO2 per VMT (EMFAC 2011)
GHG Savings	Total GHG Savings =	69	MT CO2e

Municipal Costs and Savings Calculations	Annual staffing costs from program implementation as well as development and distribution to businesses of information, training, and incentives.		
	FTE =	0.10	Estimated staff time per year
	$/FTE =	$100,000	Total annual cost per FTE
Municipal Costs and Savings	Municipal Cost =	$10,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Private VMT Reduced =	185,430	VMT
	Private vehicle operating cost per mile =	$0.56	Dollars per mile
	Total community savings =	$102,913	Dollars
	Total employees =	4,000	Employees (projected in 2020)
	Employees participating in TDM =	800	Employees
Community Costs and Savings	Community Cost=	$0	Dollars per employer (Assumes $0 capital cost - San Luis Obispo Rideshare works directly with employers to develop TDM programs, offering free tools and services.)
	Community Savings=	$129	Dollars per employee

Notes

Calculation methodology derived from RICAPS and CAPCOA measures TRT-1, TRT-2, TRT-11, and TRT-15; users should consult detailed CAPCOA guidance and example calculations when using this methodology.

References

1. CAPCOA, Quantifying Greenhouse Gas Mitigation Measures (2010): http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf
2. SLO COG Rideshare - http://www.rideshare.org/employers.aspx

Transportation Demand Management (TDM) Program - Voluntary

Measure Name	Transportation Demand Management (TDM) Program - Voluntary
Description of Measure	Work with San Luis Obispo Regional Ride Share and Ride-On to conduct additional outreach and marketing of existing TDM programs and incentives to discourage single-occupancy vehicle trips and encourage alternative modes of transportation, such as carpooling, taking transit, walking, and biking.

Category	Transportation and Land Use
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Collaborate with San Luis Obispo Ride Share and Ride-On to conduct additional outreach through event promotions and publications, targeting specific groups or sectors within the community (e.g., employers, employees, students, seniors, etc.).		Required
Provide information on and promote existing employer based TDM programs as part of the business licensing and renewall process.		
Collaborate with San Luis Obispo Ride Share and the San Luis Obispo Bicycle Coalition to assist with event promotions and publications to increase awareness and ridership during Bike Month and Rideshare month.		Required
Direct community members to existing program websites.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	37

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Very Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	Reduce private transportation costs for employees switching to alternative modes of travel.
Improve Public Health	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Air Quality	Yes	Reduced VMT may yield lower emissions of criteria pollutants.

Improve Water Quality	No	
Improve Equity	Yes	
Reduce Water Consumption	No	
Reduce Energy Consumption	No	
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

Alameda County, CA TravelChoice Marketing	http://transformca.org/campaign/travelchoice
Stanford University Commute Club	http://www.mtc.ca.gov/news/transactions/ta10-08/stanford.htm

Implementation

Responsible Department/Agency	Community Development; Planning/Transportation; Public Works
Actual Measure or Commitment	Percent of employees participating
Implementation Mechanism	Policy
Implementation Timing	Near-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Note: Reductions from the measure may not be combined with reductions from Measure 5e, TDM Ordinance, to avoid double counting.

Key Assumptions for Calculations:

Targeted percent of employees participating	25%	Percent
Staff time needed for this measure	0.04	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	VMT Reduction = Forecast Employee Commute VMT x (A x B)		
	Where:		
	Forecast Annual VMT (2020) =	58,053,794	VMT in 2020
	Forecast Annual Employee Commute VMT (2020)=	9,811,091	Employee commute VMT in 2020 (16.9% of total VMT, Fehr & Peers)
	Percent Reduction in Commute VMT (A) =	4%	Percent (4% from CAPCOA, page 240)
	Percent of Employees Participating (B) =	25%	Percent of employees to participate in the TDM program
Resource Savings	VMT Reduction =	98,111	VMT in 2020
GHG Emission Reduction Calculations	GHG Reduction = VMT Reduction x Cef		
	Where:		
	Cef =	0.000374	Composite emission factor; MT CO2 per VMT (EMFAC 2011)
GHG Emission Reduction	Total GHG Savings =	37	MT CO2e
	Annual staffing costs associated with coordination and marketing.		

Municipal Costs and Savings Calculations	FTE =	0.04	Estimated cost of staff time
	$/FTE =	$100,000	Total annual cost per FTE
Municipal Costs and Savings	Municipal Cost =	$4,000	Dollars
	Municipal Savings =	$0	Dollars
Community Cost and Savings Calculations	Private VMT Reduced =	98,111	VMT
	Private vehicle operating cost per mile =	$0.56	Dollars per mile
	Total community savings =	$54,452	Dollars
	Total employees =	4,000	Employees (projected in 2020)
	Employees participating in TDM =	1,000	Employees
Community Costs and Savings	Community Cost=	$0	Dollars per employee
	Community Savings=	$54	Dollars per employee

Notes

Calculation methodology derived from CAPCOA measures TRT-7, page 240.

References

1. CAPCOA, Quantifying Greenhouse Gas Mitigation Measures (2010): http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

2. Fehr & Peers calculation of countywide VMT associated with employee commute from the San Luis Obispo Council of Governments Regional Traffic Model 2.0, November 2012.

Parking Supply Management

Measure Name	Parking Supply Management
Description of Measure	Amend the Municipal Code to reduce parking requirements in areas such as the downtown where a variety of uses and services are planned in close proximity to each other and to transit.

Category	Transportation and Land Use
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Amend the Municipal Code to reduce parking requirements (e.g., eliminate or reduce minimum parking requirements, create maximum parking requirements, and/or provide shared parking).		Required
Establish optional in-lieu fees in place of minimum parking requirements where appropriate.		

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	71

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Very Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	Reduces parking construction costs for new development.
Improve Public Health	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Air Quality	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Water Quality	Yes	Reduces stormwater runoff by reducing impermeable surface coverage.
Improve Equity	Yes	Reduced development costs may improve housing affordability.
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	Minimal savings from less parking lot lighting.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

City of Sacramento Parking Code Update	http://www.sacgp.org/ZoningCodeParkingUpdate.html
City of Mountain View Downtown Precise Plan (including parking code update)	http://www.mountainview.gov/civica/filebank/blobdload.asp?BlobID=2768

Implementation

Responsible Department/Agency	
Actual Measure or Commitment	Net reduction in parking spaces; new parking spaced by 2020 forecast under existing regulations
Implementation Mechanism	Codes and Standards
Implementation Timing	Mid-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	No

Calculation Methodology and Equations

Key Assumptions for Calculations:

Implementation Year	2015	Year
Net reduction in parking spaces	500	Parking Spaces
New parking spaces by 2020 forecast under existing regulations	4,000	Parking Spaces
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	VMT Reduction = VMT Growth x (((N - O)/O) x 0.5)		
	Baseline VMT (2005) =	48,897,505	Annual Vehicle Miles Traveled (VMT)
	Forecast VMT (2020) =	58,053,794	Annual VMT
	VMT Growth =	3,052,096	VMT generated by forecast development between implementation year and 2020
	N =	3,500	Parking spaces forecast under proposed regulations. (Placeholder value assumes 1,000,000 square feet of new development and 3.5 spaces per 1,000 square feet)
	O=	4,000	Parking forecast under existing regulations. (Placeholder value assumes 1,000,000 square feet of forecast development and 4 spaces per 1,000 square feet)
	P =	0.5	Estimated ratio of reduction in parking supply to reduction in vehicle trips (CAPCOA PDT-1)
	Percent change =	-13%	Percent change in new parking supply
Resource Savings	Annual VMT Reduction =	190,756	Annual reduction in VMT (CAPCOA PDT-1)
GHG Emission Reduction Calculations	GHG Savings = VMT Reduction × Cef		
	Where:		
	2020 Composite Emissions Factor Cef=	0.000374	Composite emission factor; MT CO2 per VMT (EMFAC 2011)
GHG Emission Reduction	Total GHG Savings =	71	MT CO2e
	Staff time to develop policy and establish in-lieu fees.		

Municipal Costs and Savings Calculations	FTE =	0.05	Estimated staff time per year
	$/FTE=	$100,000	FTE cost per year
Municipal Costs and Savings	Municipal Cost =	$5,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Private costs and savings of increasing transit service, scaled to City population. Change in private costs = (A*B)+((D*E)/G)		
	Private VMT Reduced (A) =	190,756	VMT
	Private vehicle operating cost per mile (B) =	$0.56	Dollars per mile
	Private Savings from avoided driving (C) =	$105,870	Dollars
	Reduction in required parking spaces (D) =	500	Reduction in required parking spaces
	Surface parking construction costs (Excludes cost of land) =	$10,000	Dollars per space (U.S. parking structure construction costs are reported to average about $15,000 per space in 2008. Adjusted to reflect cost of ground floor spaces.) (Victoria Transport Policy Institute)
	Total cost savings from reduced parking construction (F) =	$5,000,000	Dollars (This is a savings for the project applicant/developer, not the general public.)
Community Costs and Savings	Community Cost =	$0	Dollars per parking space reduced
	Community Savings =	$212	Dollars per parking space reduced (Excludes savings to private developers.)

Notes

Calculation methodology derived from CAPCOA measure PDT-1.

References

1. California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (August 2010): http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

2. Nelson\Nygaard (2005). Crediting Low-Traffic Developments (p. 16): http://www.montgomeryplanning.org/transportation/documents/TripGenerationAnalysisUsingURBEMIS.pdf

3. SF Bay Area Metropolitan Transportation Commission Parking Code Guidance - http://www.mtc.ca.gov/planning/smart_growth/parking/6-12/Parking_Code_Guidance_June_2012.pdf

4. Victoria Transport Policy Institute - www.vtpi.org/tca/tca0504.pdf

Public Parking Pricing

Measure Name	Public Parking Pricing
Description of Measure	Establish market-based pricing for public parking spaces, where appropriate.

Category	Transportation and Land Use
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Decouple parking and housing and commercial development in order to allocate the true cost of parking directly to users.		Required
Add meters to public parking spaces, where appropriate, and charge market prices.		Required
Set prices to achieve an 85% utilization on each block face and 90% utilization in each off-street lot.		Required
Conduct parking occupancy studies to consider priority areas for price increases.		

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	342

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	High	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Medium	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Very Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	No	Raises fees for drivers while increasing public revenue.
Improve Public Health	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Air Quality	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Water Quality	No	
Improve Equity	Yes	Reduced development costs may improve housing affordability.
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	Reduced VMT yields lower consumption of gasoline.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

Old Pasadena Parking Management Plan	http://www.metroplanning.org/news-events/article/6510
City of Ventura Downtown Parking Management	http://www.cityofventura.net/parking http://www.cityofventura.net/files/community_development/planning/planning_communities/resources/downtown/Ventura_FinalMobility+PkngMngmntPlan.04.06_Accepted.pdf

Implementation

Responsible Department/Agency	
Actual Measure or Commitment	Number of public parking spaces where parking pricing would apply; percentage increase in parking prices
Implementation Mechanism	Capital Improvement
Implementation Timing	Mid-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Total public parking spaces where parking pricing would apply	4,000	Parking Spaces
Percentage increase in parking prices	25%	Percent
Staff time needed for this measure	0.25	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	VMT Reduction = Baseline VMT associated with Public Parking x (P × Epp)		
	Public parking spaces =	4,000	Total number of on- and off-street public parking spaces where parking pricing would apply
	Baseline VMT associated with public parking =	33,312,000	VMT calculated by multiplying public parking spaces by: (a) The number of times a public space "turns over" (e.g. twice per day) (b) The average vehicle trip length times two for inbound and outbound trips (e.g. 6 x 2 = 12 miles) (c)Annual miles are calculated using an annualization factor of 347 to account for reduced weekend and holiday mileage (consistent with California Air Resources Board standard practice).
	P =	25%	Percent increase in parking prices (minimum of 25% increase: Moving Cooler, p. B-10)
	Epp =	0.11	Elasticity of VMT with respect to parking price (Clinch & Kelly)
Resources Savings	Annual VMT Reduction =	916,080	Annual reduction in vehicle miles traveled
GHG Emission Reduction Calculations	GHG Savings = VMT Reduction × Cef		
	Where: Cef =	0.000374	Composite emission factor; MT CO2 per VMT (EMFAC 2011)
GHG Emission Reduction	Total GHG Savings =	342	MT CO2e
	New meters and some staff time may be needed to implement the programs. Additional revenue to cover meter and staff costs will be generated due to on-street parking prices. Change in public costs = B -		

Municipal Costs and Savings Calculations	FTE =	0.25	Estimated staff time to develop new program
	$/FTE =	$100,000	Total annual cost per FTE
	Daily revenue per fee parking space =	$6.00	Dollars (Assumes parking cost is $1 per hour and each parking space is occupied 6 hours per day.)
	Total annual municipal revenue from parking fees =	$8,760,000	Dollars
Municipal Costs and Savings	Municipal Cost =	$25,000	Dollars
	Municipal Savings =	$8,660,000	Dollars
Community Costs and Savings Calculations	Private costs increase as drivers pay parking fees. New costs are offset somewhat by reduced driving costs.		
	Private VMT reduced =	916,080	VMT
	Private vehicle operating cost per mile =	$0.56	Private vehicle operating cost per mile
	Private savings from avoided driving =	$508,424	Private savings from avoided driving.
	Increase in parking fees paid =	$8,760,000	Increase in parking fees paid
Community Costs and Savings	Community Cost =	$2,190	Dollars per new paid parking space
	Community Savings =	$127	Dollars per new paid parking space

Notes

Calculation methodology derived from CAPCOA measure PDT-3; users should consult detailed CAPCOA guidance and example calculations when using this methodology.

Where on-street parking is currently above 85% occupancy, market-priced parking will also reduce VMT and congestion by eliminating driver's need to circle for parking. This potential reduction is not accounted for in the above calculations.

References

1. California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (August 2010): http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

2. Cambridge Systematics. Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions. Technical Appendices. Prepared for the Urban Land Institute. (p. B-10)

3. J. Peter Clinch and J. Andrew Kelly (2003), Temporal Variance Of Revealed Preference On-Street Parking Price Elasticity, Department of Environmental Studies, University College Dublin (www.environmentaleconomics.net)

Electric Vehicle Network and Alternative Fueling Stations

Measure Name	Electric Vehicle Network and Alternative Fueling Stations
Description of Measure	The City would continue to work with the San Luis Obispo County Air Pollution Control District (APCD), Central Coast Clean Cities Coalition, and neighboring jurisdictions to create and implement the electric vehicle readiness plan. The City would continue to pursue funding for plug-in electric vehicle charging stations.

Category	Transportation and Land Use
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Work with the San Luis Obispo County Air Pollution Control District (APCD), Central Coast Clean Cities Coalition, and neighboring jurisdictions to create and implement the electric vehicle readiness plan through expanding the use of alternative fuel vehicles and fueling stations in the community.		Required
Provide streamlined installation and permitting procedures for vehicle charging facilities.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	662

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	Depending on the vehicles purchased, more efficient vehicles may yield a long-run cost savings.
Improve Public Health	No	
Improve Air Quality	Yes	Reduced vehicle emissions may yield lower emissions of criteria pollutants.
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	More efficient vehicles will require less gasoline.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

City of Rancho Cucamonga Electric Vehicle (EV) Charging Stations	http://www.cityofrc.us/news/displaynews.asp?NewsID=385
City of Rohnert Park Electric Vehicle Promotion Program	http://www.rpcity.org/index.aspx?page=520

Implementation

Responsible Department/Agency	Public Works
Implementation Mechanism	Percent adoption of electric vehicles based on implementation of comprehensive EV Network
Implementation Timing	Policy
Outside Funding Available?	Near-Term
Synergies with Existing Initiatives/Partnerships	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations

Percent Adoption of Electric Vehicles Based on Implementation of Comprehensive EV Network	5%	Percent
Staff time needed for this measure	0.1	Full Time Equivalent

Calculations:

GHG Emission Reduction Calculations	GHG reduction = (City Forecast VMT x B) x D		
	City Forecast VMT (2020) =	58,053,794	VMT
	Estimated percent of drivers switching to EV's by 2020 (B) =	5%	Percent
	VMT driven by those shifting to EV's (C) =	2,902,690	VMT
	Default composite emissions factor =	0.000374	MT CO2e per VMT
	Emissions factor for plug-in hybrid vehicle =	0.000146	MT CO2e per VMT (Ex. Toyota Prius Plug-in Hybrid, http://www.google.org/recharge/experiment/CO2.html)
	Emissions-per mile difference between average car and EV (D) =	0.000228	MT CO2e per VMT
GHG Emission Reduction	Total GHG Savings =	662	MT CO2e
Municipal Costs and Savings Calculations	Staff time needed for EV Readiness streamlining and coordination with APCD and Central Coast Clean Cities Coalition. (A specific program of investments has not yet been identified by APCD and the Central Coast Clean Cities Coalition. It is expected that localities would seek outside funds to support investments in EV charging stations and alternative fuel stations.)		
	FTE =	0.1	Estimated staff time to develop new program
	$/FTE =	$100,000	Total annual cost per FTE

Municipal Costs and Savings	Municipal Cost =	$10,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Cost of EV charging station =	$8,000	Dollars (Average total cost for commercial charging station including hardware and installation for AC Level 2, 7.5 kW, 240V Charger) (Ready Set Charge California)
Community Costs and Savings	Community Cost =	$0	Dollars per charging station (Assumes cost of EV charging stations would be incurred by private developer. Developer costs may be covered by applicable grants.)
	Community Savings =	$0	Dollars per charging station

Notes

References

1. Argonne National Laboratory. 2009. Multi-Path Transportation Futures Study: Vehicle Characterization and Scenario Analyses. ANL/ESD/09-5. Table 3-11a, p. 53.).

2. "Electric Vehicle Infrastructure, A Guide for Local Governments in Washington State: Model Ordinance, Model Development Regulations, and Guidance Related to Electric Vehicle Infrastructure and Batteries per RCW 47.80.090 and 43.31.970." http://www.psrc.org/assets/4325/EVI_full_report.pdf

3. RechargeIT Driving Experiment: Demonstration of energy efficiency for electric vehicles. Google, org, 2007. http://www.google.org/recharge/

4. Ready, Set, Charge California - A Guide to EV Ready Communities - http://www.rmi.org/Content/Files/Readysetcharge.pdf

Incentives for Infill and Transit Oriented Development

Measure Name	Incentives for Infill and Transit Oriented Development
Description of Measure	The City would identify and implement additional incentives to encourage mixed-use, higher density, and infill development near transit routes, in existing community centers/downtowns, and in other designated areas. Incentives may include, but are not limited to, priority permitting, lower permit fees, density bonuses, or reduced parking requirements.

Category	Transportation and Land Use
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	Existing and/or Completed Action?	Selected?
	Yes or No	Yes or No
Update land use and zoning code to allow new development in the mixed-use and medium- and high-density land use categories located within ¼-mile of a transit node, existing bus route, or park and ride facility with regularly scheduled, daily service at a minimum density of 20 dwelling units per acre.		Required
Provide and promote incentives (e.g., parking reductions, priority permitting, etc.) for mixed-use and medium- and high-density land use categories located within ¼-mile of a transit node, existing bus route, or park and ride facility with regularly scheduled, daily service at a minimum density of 20 dwelling units per acre.		Required
Develop a form-based zoning code for the central business district/downtown. Form-based codes emphasize building form rather than use. This increases flexibility for a variety of complementary uses to be permitted in the same area, and the potential for mixed-use development, which helps to reduce vehicle miles traveled.		
Develop and adopt incentives for live/work developments, such as reduced permit fees, expedited permits, or waiving business license fees for residents in live/work units. Live/work developments allow residents to live at their place of work and thereby reduce vehicle miles traveled and associated GHG emissions.		

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	1,438

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Varies	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Medium	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	Yes/No	Notes
Reduce Costs	Yes	May reduce barrier to development, decreasing long-term housing costs. More homes near transit reduces transportation costs for some.
Improve Public Health	Yes	Improved transportation choices may promote more active lifestyles.
Improve Air Quality	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Water Quality	No	
Improve Equity	Yes	New transportation options for those without access to a vehicle.
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	Reduced VMT will reduce gasoline consumption.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

Santa Monica General Plan Land Use and Circulation Element	http://www.shapethefuture2025.net/PDF/luce_2010/0.01_executive_summary.pdf
Uptown District TOD, San Diego (pg. 11)	http://transitorienteddevelopment.dot.ca.gov/PDFs/TOD%20Study%20Exectutive%20Summary.pdf

Implementation

Responsible Department/Agency	Planning department
Actual Measure or Commitment	Number of new homes and/or businesses within 0.25 miles of transit
Implementation Mechanism	Policy
Implementation Timing	Near-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Note: This measure includes a rough estimate of GHG reductions that may occur. Quantification using the regional travel demand model will yield more accurate results.

Key Assumptions for Calculations:

Number of new residential units located within 0.25 miles of transit by 2020	500	Units
Staff time needed for this measure	0.10	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	VMT Reduction = new residences x persons per household x per capita VMT reduction		
	Number of new residences =	500	Units
	City forecast (2020) Population =	10,244	People
	City forecast (2020) Households =	6,348	Households
	Average persons per household =	1.61	Persons per household

	Annual reduction in VMT per person in residence within 0.25 miles of transit =	4,770	Annual VMT reduction per person (ICLEI CAPPA)
Resource Savings	Annual VMT Reduction =	3,848,762	Vehicle miles traveled
GHG Emission Reduction Calculations	GHG Savings = VMT Reduction × Cef		
	Where: Cef =	0.000374	Composite emission factor; MT CO2 per VMT (EMFAC 2011)
GHG Emissions Reduction	Total GHG Savings =	1,438	MT CO2e
Municipal Costs and Savings Calculations	Staff time needed to identify incentives and update codes and regulations.		
	FTE =	0.1	Estimated staff time to develop new program
	$/FTE =	$100,000	Total annual cost per FTE
Municipal Costs and Savings	Municipal Cost =	$10,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Private developers will gain from a wider choice of potential development opportunities, costs of which would vary based on the incentives provided.		
	Private VMT reduced =	3,848,762	VMT
	Private vehicle operating cost per mile =	$0.56	Private vehicle operating cost per mile
	Private savings from avoided driving =	$2,136,063	Private savings from avoided driving.
Community Costs and Savings	Community Cost =	Varies	Dollars per unit
	Community Savings =	$4,272	Dollars per unit

Notes

CAPCOA measures LUT- (see link below); users should consult detailed CAPCOA guidance and example calculations when using this methodology.

References

1. CAPCOA, Quantifying Greenhouse Gas Mitigation Measures (2010): http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

3. Nelson\Nygaard, 2005. Crediting Low-Traffic Developments (p.12). Journal of the American Planning Association: http://www.montgomeryplanning.org/transportation/documents/TripGenerationAnalysisUsingURBEMIS.pdf

4. Boarnet, Marlon and Handy, Susan. 2010. "Draft Policy Brief on the Impacts of Residential Density Based on a Review of Empirical Literature."

5. Criteron Planner/Engineers and Fehr & Peers Associates (2001). Index 4D Method. A Quick-Response Method of Estimating Travel Impacts from Land-Use Changes. Technical Memorandum prepared for US EPA, October 2001.

6. TCRP Report 95, Transit Oriented Development Traveler Response to Transportation System Changes, Transit Oriented Development. (p 17-35) http://www.fta.dot.gov/documents/Transit_Oriented_Development_-_Traveler_Response_to_Transportation_System_Changes_TCRP_Report_95.pdf

7. ICLEI CAPPA version 1.5 - Transit Oriented Development tab

Service Nodes

Measure Name	Service Nodes
Description of Measure	Work with private developers to encourage the development of convenient commercial and shopping opportunities near existing employment and/or residential areas, through incentives or the removal of existing regulatory barriers, as a means of shortening the distance between origins and destinations, and increasing the potential for walking or biking to obtain services.

Category	Transportation and Land Use
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Conduct a study of key unserved areas of demand for retail and services.		
Adjust zoning and regulations as necessary to encourage and incentivize the development of service nodes.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	Not calculated

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low to Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Varies	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Varies	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	More services near homes reduces transportation costs for some.
Improve Public Health	Yes	Retail and services near homes may promote more active lifestyles.
Improve Air Quality	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Water Quality	No	
Improve Equity	Yes	New transportation options for those without access to a vehicle.
Reduce Water Consumption	No	

Reduce Energy Consumption	Yes	Reduced VMT will reduce gasoline consumption.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

Berkeley, CA: West Berkeley Plan (Commercial Zoning section)	http://webserver.ci.berkeley.ca.us/contentdisplay.aspx?id=396
City of Oakland Retail Enhancement Strategy	http://www2.oaklandnet.com/Government/o/PBN/OurOrganization/PlanningZoning/DOWD008389

Implementation

Responsible Department/Agency	Planning department
Actual Measure or Commitment	Percent of new homes within walking distance of retail and services.
Implementation Mechanism	Policy
Implementation Timing	Near-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Note: Quantification of this measure is to be carried out through use of the regional travel demand during CAP development.

Resource Savings	Quantification to be carried out through regional travel demand model. A potential range of impacts has not been identified for this strategy.
Costs and Savings	Specific municipal and community costs and savings associated with measure not quantified. Generally, municipal costs of zoning adjustments would be very low to low, while private developers will gain from a wider choice of potential development opportunities. In addition, community savings would vary based on the incentives provided.

Notes

References

Transportation Demand Management (TDM) Program for Municipal Employees

Measure Name	Transportation Demand Management (TDM) Program for Municipal Employees
Description of Measure	The City would implement a Transportation Demand Management (TDM) program for its own employees. Reduced single-occupant vehicle commuting would reduce GHG emissions.

Category	Transportation and Land Use
Community or Municipal?	Municipal
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	Existing and/or Completed Action?	Selected?
	Yes or No	Yes or No
Establish an ordinance that requires the City to meet employee commute trip VMT reduction targets by offering one or more services from a menu of options, including: Encourage the use of the carpools; Provide ride matching services and assistance; Allow flexible work schedules and telecommuting; Provide end of trip facilities (parking, showers, lockers); Providing subsidized transit passes; hiring a transportation coordinator to manage TDM programs; or others at the employer's discretion.		Required
Hire a transportation coordinator to manage TDM programs.		
Require parking cash-out (a requirement that City employers who subsidize employee parking costs provide an equivalent cash reimbursement for employees who choose not to drive).		

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	46

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	Yes/No	Notes
Reduce Costs	No	
Improve Public Health	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Air Quality	Yes	Reduced VMT may yield lower emissions of criteria pollutants.
Improve Water Quality	No	

Improve Equity	Yes	
Reduce Water Consumption	No	
Reduce Energy Consumption	No	Reduced VMT reduces consumption of gasoline.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

City of Pasadena Trip Reduction Ordinance	http://www.ci.pasadena.ca.us/transportation/transportation_demand_management/
City of Glendale TDM Ordinance (and supporting narrative)	http://www.ci.glendale.ca.us/planning/pdf_files%5CMobilityPlan/ParkingTDMREPORT_06.05.06.pdf

Implementation

Responsible Department/Agency	Community Development; Planning/Transportation; Public Works
Actual Measure or Commitment	Percent City employee participation
Implementation Mechanism	Codes and Standards
Implementation Timing	Near-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Percent City employee participation	20%	Percent
Staff time needed for this measure	0.1	Full Time Equivalent (FTE)

Calculations: MANDATORY TDM PROGRAM w/ option for vanpool/shuttle and parking "cash-out."

Resource Savings Calculations	VMT Reduced from TDM program(C) = Vehicle Miles Travelled for City Employee Commute (A) x Percent Participation		
	Vehicle Miles Travelled for City Employee Commute (A) =	620,149	VMT
	Percent City Employee Participation=	20%	Percent
Resource Savings	VMT Reduced from "Base" TDM program (C) =	124,030	VMT
GHG Emission Reduction Calculations	Cef =	0.000374	Composite emission factor; MT CO2 per VMT (EMFAC 2011)
GHG Emission Reduction	Total GHG Savings =	46	MT CO2e
Municipal Costs and Savings Calculations	Annual staffing costs from program development and implementation.		
	FTE =	0.1	Staff time needed for this measure
	$/FTE=	$100,000	FTE cost per year
	Private VMT Reduced =	124,030	VMT
	Private vehicle operating cost per mile =	$0.56	Dollars per mile

Municipal Costs and Savings	Municipal Cost =	$10,000	Dollars (Assumes $0 capital cost - San Luis Obispo Rideshare works directly with employers to develop TDM programs, offering free tools and services.)
	Municipal Savings =	$68,837	Dollars

Notes

Calculation methodology derived from RICAPS and CAPCOA measures TRT-1, TRT-2, TRT-11, and TRT-15; users should consult detailed CAPCOA guidance and example calculations when using this methodology.

References

1. CAPCOA, Quantifying Greenhouse Gas Mitigation Measures (2010): http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

2. SLO COG Rideshare - http://www.rideshare.org/employers.aspx

Zero and Low Emission Municipal Fleet Vehicles

Measure Name	Zero and Low Emission Municipal Fleet Vehicles
Description of Measure	Continue to replace official City vehicles and equipment with low-emission and zero-emission vehicles, including smaller, hybrid, electric, compressed natural gas, biodiesel, and neighborhood electric vehicles.

Category	Transportation and Land Use
Community or Municipal?	Municipal
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Develop and adopt a low- and zero- emissions replacement/purchasing policy for official City vehicles and equipment.		
Work with the Central Coast Clean Cities Coalition to obtain funding for low-emission and zero-emission fleet vehicles.		Required
Identify fleet vehicles near replacement and options for lower emission vehicles.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	53

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Medium	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	Depending on the vehicles purchased, more efficient vehicles may yield a long-run cost savings.
Improve Public Health	No	
Improve Air Quality	Yes	Reduced vehicle emissions may yield lower emissions of criteria pollutants.
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	More efficient vehicles will require less gasoline.
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

Los Angeles Low-Emissions Fleet Vehicles	http://www.afdc.energy.gov/case/17
City of San Jose Green Fleet Policy	http://greenvision.sanjoseca.gov/CleanFleetVehicles.aspx

Implementation

Responsible Department/Agency	Department of Public Works
Actual Measure or Commitment	Number of municipal vehicles replaced by 2020
Implementation Mechanism	Policy
Implementation Timing	Near-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Number of vehicles in municipal fleet	40	Vehicles
Number of municipal vehicles replaced by 2020	20	Vehicles
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	Fuel savings (gallons) = V x M (1/Fi - 1/Fe)		
	Where:		
	Number of vehicles replaced (V) =	40	Vehicles
	Average miles driven per year (M) =	7,500	Miles per year
	Average fuel economy of replaced vehicles (Fi) =	25	Miles per gallon
	Average fuel economy of newer (more efficient) vehicles (Fe) =	50	Miles per gallon
Resource Savings	Fuel Savings =	6,000	Gallons of gasoline fuel
GHG Emission Reduction Calculations	GHG reduced (MT CO2e) = Fuel savings (gallons gasoline) x 8.81 / 1,000		
	8.81	= GHG emission from gasoline (kg CO2/gallon)	
	1,000	= Conversion from kg to metric tons	
GHG Emission Reduction	Total GHG Savings	53	MT CO2e
Municipal Costs and Savings	Energy cost per mile of regular gasoline vehicle =	$0.1468	Dollars per mile (standard car. Ex, Toyota Corolla) (RechargeIT)
	Energy cost per mile of hybrid vehicle =	$0.0690	Dollars per mile (Electric vehicles. Ex, Toyota Prius Plug-in Hybrid, RechargeIT)
	Difference in energy cost per mile =	$0.0778	Dollars per mile

	Estimate average miles driven per year =	7,500	Miles per year
	Difference in purchase price for hybrid above similar non-hybrid vehicle =	$4,315	Dollars (US DOE)
Municipal Costs and Savings	Municipal Costs =	$86,300	Dollars (Assumes no staff time needed above that required for purchasing regular gasoline vehicles.)
	Municipal Savings =	$1,751	Dollars

Notes

See RICAPS, Strategy TM4.

References

1. RechargeIT Driving Experiment: Demonstration of energy efficiency for electric vehicles. Google, org, 2007. http://www.google.org/recharge/

2. US Department of Energy (DOE)- fueleconomy.gov

Construction Equipment Techniques

Measure Name	Construction Equipment Techniques
Description of Measure	Reduce GHG emissions from construction equipment by requiring various actions as appropriate to the construction project.

Category	Off-Road
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	Existing and/or Completed Action?	Selected?
	Yes or No	Yes or No
Require a percentage of construction equipment to be electrically-powered or use alternative fuels such as compressed natural gas (CNG).		Required
Limit heavy-duty equipment idling time to a period of three minutes or less, exceeding the California Air Resources Board's standard of five minutes.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	407

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Varies	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Varies	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	Yes/No	Notes
Reduce Costs	Yes	Reduced cost from decreased fuel usage.
Improve Public Health	Yes	
Improve Air Quality	Yes	
Improve Water Quality	Yes	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

San Francisco Clean Construction Ordinance	http://www.nrdc.org/media/2007/070406a.asp http://www.sfbos.org/ftp/uploadedfiles/bdsupvrs/ordinances07/o0070-07.pdf

Implementation

Responsible Department/Agency	Community Development
Actual Measure or Commitment	Percent of construction equipment replaced with electric equipment/alternatively fueled equipment
Implementation Mechanism	Codes and Standards
Implementation Timing	Long-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Percentage of construction equipment replaced with electric equipment	20%	Percent
Percentage of construction equipment replaced with alternatively fueled equipment	20%	Percent
Limit idling time to 3 minutes	Yes	Yes or No
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

Calculations:

GHG Emissions Reduced = Reduction from Replacement with Electric Equipment + Reduction from Alternative Fuels + Reduction from Reduced Idling Time

1 - GHG Reduced from Replacement with Electric Equipment = (Forecast Construction Emissions x Percent Equipment Replaced x Percent Diesel Equipment x Diesel Reduction) + (Forecast Construction Emissions x Percent Equipment Replaced x Percent Gasoline Equipment x Gasoline Reduction)

2 - GHG Emissions Reduced from Alternative Fuels = (Forecast Construction Emissions x Percent Equipment Replaced x Percent Diesel Equipment X Diesel Reduction) + (Forecast Construction Emissions x Percent Equipment Replaced x Percent Gasoline Equipment x Gasoline Reduction)

3 - Reduction from Reduced Idling Time = Remaining GHG Emissions x 0.40%

Forecast (2020) construction GHG emissions=	2,200	MT CO2e
Percentage construction emissions from diesel equipment=	99%	Percent
Percentage construction emissions from gasoline equipment=	1%	Percent
GHG Reduction from Replacing Diesel Equipment with Electric Equipment =	72.9%	Percent (CAPCOA C-2, page 421)

GHG Emission Reduction Calculations	GHG Reduction from Replacing Gasoline Equipment with Electric Equipment =	72.4%	Percent (CAPCOA C-2, page 421)
	GHG Reduction from Replacement with Electric Equipment =	321	MT CO2e
	Emission Reduction Due to Fuel Switch from Diesel to Compressed Natural Gas =	18%	Percent (CAPCOA C-1, page 415)
	Emission Reduction Due to Fuel Switch from Gasoline to Compressed Natural Gas =	20%	Percent (CAPCOA C-1, page 415)
	GHG Reduction from use of alternative fuels =	79	MT CO2e
	Limit Idling Time to 3 Minutes =	1	"1" = Yes, "0" = No
	Reduction from Reducing Idling Time from 5 to 3 Minutes =	0.4%	Percent (CAPCOA, C-3)
	Remaining Emissions (After Reduction from Equipment Replacement and Alternative Fuels) =	1,800	MT CO2e
	GHG Reduction from limiting idling time =	7	MT CO2e
GHG Emission Reduction	Total GHG Reduction =	407	MT CO2e
Municipal Costs and Savings Calculations	Staff time needed to develop efficient construction equipment codes and standards.		
	FTE =	0.05	Estimated staff time needed
	$/FTE =	$100,000	FTE cost per year
Municipal Costs and Savings	Municipal Cost =	$5,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings	Community Cost =	Varies	Dollars (Varies based on vehicle/equipment replacement type.)
	Community Savings =	Varies	Dollars (Varies based on vehicle/equipment replacement type.)

Notes

Off-Road GHG Emissions were calculated from County-wide data from OFF-ROAD 2007. Construction GHG Emissions were disaggregated based on the City's percentage of construction and mining jobs.

Emissions reduction percentages from switching from diesel to compressed natural gas and from gasoline to compressed natural gas were calculated using the averages for all construction equipment type and horsepower categories for 2020 Tables in CAPCOA, C-1.

References

1. California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (August 2010): C-1, C-2, C-3

2. California Air Resources Board (ARB). Off-road Emissions Inventory. OFFROAD2007

Equipment Upgrades, Retrofits, and Replacements

Measure Name	Equipment Upgrades, Retrofits, and Replacements
Description of Measure	The City would support the APCD programs that fund equipment upgrades, retrofits, and replacement through the Carl Moyer heavy-duty vehicle and equipment program or other funding mechanisms.

Category	Off-Road
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Continue to support the APCD through the Carl Moyer program.		Required
Conduct additional outreach and promotional activities targeting specific groups (e.g., agricultural operations, construction companies, homeowners, etc.).		Required
Direct community members to existing program websites (e.g., San Luis Obispo Air Pollution Control District, Carl Moyer Grant page).		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	4

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Varies	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	
Improve Public Health	No	
Improve Air Quality	Yes	
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	
Adaptation	Yes	Decreases air pollutants and improves air quality.

Case Studies

Air Resources Board Audit of San Luis Obispo County APCD's Carl Moyer Program	http://www.arb.ca.gov/msprog/moyer/audits/2010/sloauditrpt.pdf
Bay Area AQMD - Carl Moyer Program	http://www.baaqmd.gov/Divisions/Strategic-Incentives/Funding-Sources/Carl-Moyer-Program.aspx

Implementation

Responsible Department/Agency	
Actual Measure or Commitment	Percent of off-road equipment replaced with electric equipment/alternative fuel vehicles
Implementation Mechanism	Incentives
Implementation Timing	Mid-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Is this measure selected in conjunction with Measure 5a - Construction Equipment Efficiency?	Yes	Yes or No
Percentage of off-road equipment replaced with electric equipment	10%	Percent
Percentage of off-road equipment replaced with alternative fuels	10%	Percent
Staff time needed for this measure	0.2	Full Time Equivalent (FTE)

Calculations:

GHG Emissions Reduced = Reduction from Replacement with Electric Equipment + Reduction from Alternative Fuels

1 - GHG Reduced from Replacement with Electric Equipment = Forecast Construction Emissions x Percent Equipment Replaced x (Percent Diesel Equipment x Diesel Reduction) x (Percent Gasoline Equipment x Gasoline Reduction)

2 - GHG Emissions Reduced from Alternative Fuels = Forecast Construction Emissions x Percent Equipment Replaced x (Percent Diesel Equipment X Diesel Reduction) x (Percent Gasoline Equipment x Gasoline Reduction)

Total Forecast (2020) Off-Road GHG Emissions =	3,238	MT CO2e
Forecast (2020) Off-Road GHG Emissions from Construction Equipment =	2,200	MT CO2e
Percentage GHG Emissions from Diesel Equipment =	90%	Percent
Percentage GHG Emissions from Gasoline Equipment =	8%	Percent

GHG Emission Reduction Calculations	Percentage GHG Emissions from Compressed Natural Gas =	2%	Percent
	GHG Reduction from Replacing Diesel Equipment with Electric Equipment =	72.9%	Percent (CAPCOA C-2, page 421)
	GHG Reduction from Replacing Gasoline Equipment with Electric Equipment =	72.4%	Percent (CAPCOA C-2, page 421)
	GHG Reduction from Purchase of Electric Equipment =	4	MT CO2e
	Emission Reduction Due to Fuel Switch from Diesel to Compressed Natural Gas =	18%	Percent (CAPCOA C-1, page 415)
	Emission Reduction Due to Fuel Switch from Gasoline to Compressed Natural Gas =	20%	Percent (CAPCOA C-1, page 415)
	GHG Reduction from Use of Alternative Fuels =	0	MT CO2e
GHG Emission Reduction	Total GHG Reduction =	4	MT CO2e
Municipal Costs and Savings Calculations	Staff time needed to conduct outreach and promotional activities.		
	FTE =	0.2	Estimated staff time per year
	$/FTE =	$100,000	FTE cost per year
Municipal Costs and Savings	Municipal Cost =	$20,000	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings	Community Cost =	$0	Dollars (Assumes equipment replacement and upgrades would be funded through the Carl Moyer program.)
	Community Savings =	Varies	Dollars (Varies based on vehicle/equipment replacement type.)

Notes

If used in conjunction with measure 5a, emissions reductions associated with upgrading construction equipment are removed to avoid double-counting.

Off-Road GHG Emissions were calculated from County-wide data from OFF-ROAD 2007.

Emissions reduction percentages from switching from diesel to compressed natural gas and from gasoline to compressed natural gas were calculated using the averages for all construction equipment type and horsepower categories for 2020 Tables in CAPCOA, C-1.

References

1. California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (August 2010): C-1, C-2, C-3

2. California Air Resources Board (ARB). Off-road Emissions Inventory. OFFROAD2007

Exceed SB X7-7 (Water Conservation Act of 2009), Water Conservation Target

Measure Name	Exceed SB X7-7 (Water Conservation Act of 2009), Water Conservation Target
Description of Measure	The City would adopt a water conservation target that exceeds the SB X7-7*, (Water Conservation Act of 2009), target and identify and implement additional water efficiency and conservation measures to meet that target by 2020.

Category	Water
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Adopt a water conservation ordinance to exceed SB X7-7 by a specified percentage.		Required
Enhance retrofit programs for existing residences and commercial buildings.		Required
Adopt CALGreen Tier 1 or Tier 2 standards for water efficiency and conservation in new development.		
Expand the use of grey water or recycled water infrastructure.		

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	5

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Varies	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	Varies	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	
Improve Public Health	No	
Improve Air Quality	No	
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	Yes	
Reduce Energy Consumption	Yes	
Adaptation	Yes	

Case Studies

San Diego - Climate Mitigation and Adaptation Plan	http://www.sandiego.gov/environmental-services/sustainable/eestf.shtml

Implementation

Responsible Department/Agency	
Actual Measure or Commitment	Percent water savings above SBx7-7
Implementation Mechanism	Codes and Standards
Implementation Timing	Mid-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Calculations:

Percent water savings	10%	Percent
Staff time needed for this measure	0.5	Full Time Employee (FTE)

Calculations:

Resource Savings Calculations	Total Water Savings (gallons) = (Projected Water Consumption x Percentage Residential) x Savings Total Electricity Savings (kWh) = Gallons saved x 0.0013 kWh/gallon		
	Where:		
	Projected water consumption (2020 w/ SBx7-7) =	422,513,780	Gallons
	Percentage residential water consumption =	67%	Percent (Average for cities in San Luis Obispo County, calculated from 2010 Urban Water Management Plans)
	Projected residential water consumption (2020 w/ SBx7-7) =	283,084,233	Gallons
	Savings =	10%	Expected water use savings target per household (recommend 10%)
	0.00130	= kWh saved per gallon of water reduced (California Energy Commission, December 2006)	
Resource Savings	Total Water Savings =	28,308,423	gallons/year
	Total Electricity Savings =	36,801	kWh/year
GHG Emission Reduction Calculations	Total Emissions Savings (MT) from Electricity Reductions = Electricity Savings (kWh)/1000 x 0.13		
	Where:		
	0.133	= Projected PG&E emissions factor in metric Ton per MWh (LGOP)	
	1,000	= Conversion factor from kWh to MWh (electricity equation)	
GHG Emission Reduction	Total GHG Emissions Savings =	5	MT CO2e
Municipal Costs and Savings Calculations	Staff time needed to write, implement, and enforce water policy. No capital costs expected.		
	FTE =	0.5	Estimated staff time per year
	$/FTE =	$100,000	FTE cost per year
Municipal Costs and Savings	Municipal Cost =	$50,000	Dollars
	Municipal Savings =	$0	Dollars

Community Costs and Savings Calculations	Residential cost savings = [Electricity Savings x $/kWh]		
	$/kwh =	$0.19	California Energy Commission, California Energy Demand 2010-2020, Adopted Forecast
	Aggregated community savings=	$6,992	Dollars
Community Cost and Savings	Community Cost =	Varies	Dollars (Costs will vary based on implementation programs and mechanisms.)
	Community Savings =	Varies	Dollars (Per unit savings varies since the number of participating households and businesses is currently unknown.)

Notes

Senate Bill X7-7* (Water Conservation Act of 2009) was enacted in November 2009, requiring all water suppliers to increase water use efficiency. The legislation sets an overall goal of reducing per capita urban water use by 20% by December 31, 2020.

2020 energy rates are calculated based on information provided in the CEC's Report, California Energy Demand 2010-2020, Adopted Forecast. See Table 7, and also Form 2.3-California Energy Demand 2009 Natural Gas Rates, and Form 2.3: Electricity Prices (2007 cents/kwh) - PG&E.

References

1. California Energy Commission (CEC) Refining Estimates of Water-Related Energy Use in California (December 2006)
2. Morro Bay 2010 Urban Water Management Plan. June 2011.
http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Morro%20Bay,%20City%20of/MorroBay 2010 UWMP.pdf
3. California Energy Commission (CEC) California Energy Demand 2010-2020, Adopted Forecast.
4. ICLEI Local Government Operations Protocol Version 1.1 (May 2010)
5. California Department of Water Resources - http://www.water.ca.gov/wateruseefficiency/sb7/

Solid Waste Diversion Rate

Measure Name	Solid Waste Diversion Rate
Description of Measure	The City would adopt a specified solid waste diversion rate that exceeds the state-mandated rate of 50% and identify programs to meet the identified rate by 2020.

Category	Solid Waste
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Adopt a solid waste diversion rate that exceeds the state-mandated rate by a certain percentage.		Required
Identify programs to meet the identified diversion rate.		Required
Develop an education and outreach program in support of the measure.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	379

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	
Improve Public Health	No	
Improve Air Quality	Yes	
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	

Reduce Energy Consumption	Yes	
Adaptation	No	

Case Studies

Alameda County 75% Diversion Goal	http://www.acgov.org/sustain/documents/75waste_reduction_resolution.pdf
Oceanside 75% Diversion Goal	http://www.ci.oceanside.ca.us/civica/filebank/blobdload.asp?BlobID=25844

Implementation

Responsible Department/Agency	Public Works
Actual Measure or Commitment	Percent waste diversion beyond State-mandated 50% (2020)
Implementation Mechanism	Policy
Implementation Time Frame	Mid-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Key Assumptions for Example Calculations:

Target additional diversion rate (2020)	15%	Percent
Estimated staff time needed for this measure	0.5	Full Time Employee (FTE)

Calculations:

Tons Diverted = Future Year Landfilled Tonnage x Future Year Diversion Rate

1 - Future Year Landfilled Tonnage = (1 + CAGR)^15 x Baseline Year Landfilled Solid Waste

Baseline Year (2005) Landfilled Solid Waste (Community-Wide) =	9,235	Tons
Baseline Year (2005) GHG Emissions from Landfilled Solid Waste =	2,695	MT CO2e
Projected (2020) GHG Emissions from Landfilled Solid Waste =	2,523	MT CO2e
Compound Annual Growth Rate (CAGR) =	-0.04%	Percent
Total City Future Year (2020) Solid Waste Tonnage =	8,644	Tons
Paper Products =	21.0%	Percent

Resource Savings Calculations	Food Waste =	14.6%	Percent
	Plant Debris =	6.9%	Percent
	Wood/Textiles =	21.8%	Percent
	All Other Waste =	35.7%	Percent
	Future Year Paper Products =	1,815	Tons
	Future Year Food Waste =	1,262	Tons
	Future Year Plant Debris =	596	Tons
	Future Year Wood/Textiles =	1,884	Tons
	Future Year All Other Waste =	3,086	Tons
	Paper Products Diverted =	272	Tons
	Food Waste Diverted =	189	Tons
	Plant Debris Diverted =	89	Tons
	Wood/Textiles Diverted =	283	Tons
	All Other Waste Diverted =	463	Tons
Resource Savings	Future Year Total Waste Diverted =	1,297	Tons
GHG Emission Reduction Calculations	Total MT CO2e Diverted = (2.138)(Paper Products)(0.9072) + (1.120)(Food Waste)(0.9072) + (0.686)(Plant Debris)(0.9072) + (0.605)(Wood/Textiles)(0.9072) + (0.00)(All Other Waste)(0.9072) 1 - Emission Reduction Per Waste Category = Emissions Factor for Category x Future Year Category Tonnage Diverted x 0.9072 x (1 - Emissions captured at landfill)		
	0.9072	= Conversion from short tons to metric tons	
	Emission Factor - Paper Products =	2.138	MT CO2e / MT waste
	Emission Factor - Food Waste =	1.210	MT CO2e / MT waste
	Emissions Factor - Plant Debris =	0.686	MT CO2e / MT waste
	Emission Factor - Wood/Textiles =	0.605	MT CO2e / MT waste
	Emission Factor - All Other Waste =	0.000	MT CO2e / MT waste
	Emissions from Paper Products =	528	MT CO2e
	Emissions from Food Waste =	208	MT CO2e
	Emissions from Plant Debris =	56	MT CO2e
	Emissions from Wood/Textiles =	155	MT CO2e
	Emissions from All Other Waste =	0	MT CO2e
	Emissions captured at landfill =	60%	Percent
GHG Emission Reduction	Total GHG Emissions Reductions =	379	MT CO2e
Municipal Costs and Savings Calculations	Cost may include additional staff time.		
	FTE =	0.5	Estimated staff time per year
	$/FTE =	$100,000	FTE cost per year

Municipal Costs and Savings	Municipal Costs=	$50,000	Dollars
	Municipal Savings=	$0	Dollars
Community Costs and Savings	Community Costs =	$0	Dollars
	Community Savings =	$0	Dollars

Notes

All cities are assumed to have a baseline year diversion rate of 50%. This diversion has already been accounted for in the baseline year landfilled solid waste tonnage.

CAGR growth rates were calculated based on population growth.

ICLEI's CACP software incorporates emission factors for the diversion of certain materials from the waste stream, derived from the EPA WARM model.

GHG Emissions Calculations assume a landfill methane recovery rate of 60%.

References

1. DRAFT City of Stockton Climate Action Plan (February 2012) - pg. C-77,C-78

2. Hayward Climate Action Plan (October, 2009) - pg. 170

3. County of San Bernardino Greenhouse Gas Emissions Reduction Plan (September 2011) - pg. 91

4. EPA's Waste Reduction Model (WARM), available at: http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html

5. ICELI's Clean Air Climate Protection (CACP) Software (for members), available at: http://www.icleiusa.org/action-center/tools/cacp-software

Organic Waste Diversion Program

Measure Name	Organic Waste Diversion Program
Description of Measure	The City would develop a combined or separate organic waste (yard trimming, food scraps, and food-soiled paper) collection system and encourage residents and businesses to divert these materials from landfills. The City would develop a marketing campaign to educate the community and facilitate composting.

Category	Solid Waste
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Develop a program for the expanded collection of organic waste.		Required
Establish a community-wide organics composting program.		Required
Develop a marketing campaign to educate the community about the program.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	84

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	
Improve Public Health	No	
Improve Air Quality	Yes	
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	No	
Adaptation	No	

Case Studies

San Diego Commercial Food Waste Recycling Program	http://www.sandiego.gov/environmental-services/miramar/greenery/foodwaste/foodwasteparticipants.shtml

Curbside Collection of Residential Food Waste (San Francisco - pg 3, Alameda - pg 5)	http://swana.org/www/Portals/ARF/Curbside_Collection_of_Resid_Food_Waste-SWANA-ARF-FY08.pdf

Implementation

Responsible Department/Agency	Public Works
Actual Measure or Commitment	Percent diversion of organic waste
Implementation Mechanism	Incentives
Implementation Timing	Mid-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

NOTE: This measure should only be quantified if measure 8a is NOT quantified. The quantification of this measure and 8a will result in double-counting of reductions.

Key Assumptions for Example Calculations:

Target organic waste diversion rate (2020)	75%	Percent
Staff time needed for this measure	0.08	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	In general, this measure should be considered supplemental to 7a: Raising Diversion Rates and associated actions. However, to calculate independent of 7a:		
	Tons Organic Waste Diverted = Future Organic Waste Tonnage x Diversion Rate (2020) 1 - Future Organic Waste Tonnage = Paper Products + Plant Debris + Food Debris Paper Products = Total Future Year Landfilled Solid Waste x Percentage Paper Products (21.0%) Food Waste Tonnage = Total Future Year Landfilled Solid Waste x Percentage Food Waste (14.6%) Plant Debris Tonnage = Total Future Year Landfilled Solid Waste x Percentage Plant Debris (6.9%) 2 - Total Future Year Landfilled Solid Waste = (1 + CAGR)^15 x Baseline Year Landfilled Solid Waste		
	Baseline Year (2005) Landfilled Solid Waste (Community-Wide) =	9,235	Tons
	Baseline Year (2005) GHG Emissions from Landfilled Solid Waste =	2,695	MT CO2e
	Compound Annual Growth Rate (CAGR) =	-0.04%	Percent
	Total City Future Year (2020) Solid Waste Tonnage =	9,176	Tons
	Paper Products =	21.0%	Percent
	Food Waste =	14.6%	Percent
	Plant Debris =	6.9%	Percent
	Future Year Paper Products =	1,927	Tons

	Future Year Food Waste =	1,340	Tons
	Future Year Plant Debris =	633	Tons
	Future Year Total Organic Waste Tonnage =	3,900	Tons
	Paper Products Diverted =	1,445	Tons
	Food Waste Diverted =	1,005	Tons
	Plant Debris Diverted =	475	Tons
Resource Savings	Future year total Organic Waste Tonnage Diverted =	2,925	Tons
GHG Emission Reduction Calculations	MT CO2e Diverted = (2.138)(Paper Products)(0.9072) + (1.120)(Food Waste)(0.9072) + (0.686)(Plant Debris)(0.9072) Note: Effectiveness typically ranges between 2-5%. Make sure to apply effectiveness factor.		
	0.9072	= Conversion from short tons to metric tons	
	Emission Factor - Paper Products =	2.138	MT CO2e / MT waste
	Emission Factor - Food Waste =	1.210	MT CO2e / MT waste
	Emissions Factor - Plant Debris =	0.686	MT CO2e / MT waste
	MT CO2e diverted from paper products =	2,803	MT CO2e
	MT CO2e diverted from Food Waste =	1,103	MT CO2e
	MT CO2e diverted from Plant Debris =	296	MT CO2e
	Emissions captured at landfill =	60%	Percent
	Total GHG Emissions Reduction at 100% =	1,681	MT CO2e
GHG Emission Reduction	Total GHG Emissions Reduction at 5% Effectiveness =	84	MT CO2e
Municipal Costs and Savings	Cost may include additional staff time.		
	FTE =	0.08	Estimated staff time per year
	$/FTE	$100,000	FTE cost per year
Municipal Costs and Savings	Municipal Costs=	$8,000	Dollars
	Municipal Savings=	$0	Dollars
Community Costs and Savings	Community Costs =	$0	Dollars
	Community Savings =	$0	Dollars

Notes

All cities are assumed to have a baseline year diversion rate of 50%. This diversion has already been accounted for in the baseline year landfilled solid waste tonnage.

ICLEI's CACP software incorporates emission factors for the diversion of certain materials from the waste stream, derived from the EPA WARM model.

Assumed 5% effectiveness.

CAGR growth rates were calculated based on population growth.

GHG Emissions Calculations assume a landfill methane recovery rate of 60%.

References

1. Hayward Climate Action Plan (October, 2009) - pg. 169

2. EPA's Waste Reduction Model (WARM), available at: http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html

3. ICELI's Clean Air Climate Protection (CACP) Software (for members), available at: http://www.icleiusa.org/action-center/tools/cacp-software

Construction and Demolition Debris Diversion Requirements

Measure Name	Construction and Demolition Debris Diversion Requirements
Description of Measure	Require the reuse or recycling of construction and demolition materials from development projects beyond the state-mandated 50% requirement.

Category	Solid Waste
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Adopt an ordinance requiring that a specified percentage of construction and demolition debris from development projects be diverted from landfills.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	44

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	No	
Improve Public Health	No	
Improve Air Quality	Yes	
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	No	
Adaptation	No	

Case Studies

Alameda County Waste Management Authority (WMA) Job Site Case Study	http://www.calrecycle.ca.gov/LGCentral/Library/canddmodel/instruction/CaseStudies.htm
Los Angeles Construction and Demolition Debris Diversion	http://www.epa.gov/region9/waste/solid/construction/casestud.html

Implementation

Responsible Department/Agency	Public Works
Actual Measure or Commitment	Percent waste diversion beyond State-mandated 50% (2020)
Implementation Mechanism	Codes and Standards
Implementation Time Frame	Mid-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

NOTE: This measure should only be quantified if measure 8a is NOT quantified. The quantification of this measure and 8a will result in double-counting of reductions.

Key Assumptions for Example Calculations:

Percent waste diversion beyond State-mandated 50% (2020)	15%	Percent
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

Calculations:

Emissions Reduction Calculations	Tons C&D Waste Diverted = Future Year C&D Landfilled Waste x Diversion Rate (202) 1 - C&D Diversion Emission Reduction = Future Year Landfilled Solid Waste Emissions x Percentage C&D X Percentage Non-Hazardous Recyclable x Diversion Rate		
	Future Year (2020) GHG Emissions from Landfilled Solid Waste=	2,523	MT CO2e
	Percent of Waste Attributed to Construction and Demolition Debris =	29%	Percent
	Future Year C&D Emissions =	732	MT CO2e
	Percent of Non-Hazardous and Recyclable Construction and Demolition Debris =	40%	Percent
	Future Year Non-Hazardous Recyclable C&D Emissions =	293	MT CO2e
GHG Emission Reduction	Additional C&D Diversion Emission Reduction=	44	MT CO2e
Municipal Costs and Savings Calculations	Cost may include additional staff time.		
	FTE =	0.05	Estimated staff time per year
	$/FTE =	$100,000	FTE cost per year
Municipal Costs and Savings	Municipal Costs=	$5,000	Dollars
	Municipal Savings=	$0	Dollars
Community Costs and Savings	Community Costs =	$0	Dollars
	Community Savings =	$0	Dollars

Notes

According to the California 2008 Statewide Waste Characterization Study, construction and demolition debris makes up 29% of the waste stream and 40% of that is non-hazardous and recyclable.

It is assumed that emissions are directly proportional to mass (this means all types of materials are reduced in the same portions).

CAGR growth rates were calculated based on population growth.

All cities currently meet the 50 percent requirement for C&D. GHG emissions reductions associated with this diversion were accounted for in the gap analysis.

ICLEI's CACP software incorporates emission factors for the diversion of certain materials from the waste stream, derived from the EPA WARM model.

GHG Emissions Calculations assume a landfill methane recovery rate of 60%.

References

1. California 2008 Statewide Waste Characterization Study
2. California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (August 2010) - p. 43; SW-2
3. County of San Bernardino Greenhouse Gas Emissions Reduction Plan (September 2011) - pg. B-56, B-57
4. EPA's Waste Reduction Model (WARM), available at: http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html
5. ICELI's Clean Air Climate Protection (CACP) Software (for members), available at: http://www.icleiusa.org/action-center/tools/cacp-software

Recycling at Public Events

Measure Name	Recycling at Public Events
Description of Measure	The City would adopt an ordinance requiring the provision of recycling receptacles at all events requiring a permit or held on City-owned or -operated property.

Category	Solid Waste
Community or Municipal?	Community
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Develop and adopt an event recycling ordinance.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	2

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Very Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	Yes	
Improve Public Health	No	
Improve Air Quality	No	
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	Yes	
Adaptation	No	

Case Studies

City of San Francisco Special Events Ordinance	http://www.epa.gov/wastes/conserve/tools/rogo/documents/sf-ca-ord.pdf
City of San Diego Recycling Ordinance	http://www.sandiego.gov/environmental-services/recycling/ro/events/index.shtml http://docs.sandiego.gov/municode/MuniCodeChapter06/Ch06Art06Division07.pdf

Implementation

Responsible Department/Agency	Public Works
Actual Measure or Commitment	Percentage of waste recycled at public events
Implementation Mechanism	Codes and Standards
Implementation Time Frame	Near-Term
Outside Funding Available?	No
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

NOTE: This measure should only be quantified if measure 8a is NOT quantified. The quantification of this measure and 8a will result in double-counting of emission reductions.

Key Assumptions for Example Calculations Below:

Percentage of recycling at events	90%	Percent Effectiveness
Average number of visitors per event	200	Visitors/Event
Average number of events per year	20	Events/Year
Staff time needed for this measure	0.05	Full Time Equivalent (FTE)

Calculations:

Resource Savings Calculations	Waste Generation at Public Event = Visitors Per Event x Events per Year x (Pounds of Trash Per Visitor/2000)		
	Average Waste Generated per Visitor =	2.44	Pounds of Waste/Visitor (CA Integrated Waste Management Board, June 2009)
	2000	= Conversion from pounds to tons	
	Total Event Waste =	5	Tons
	Event Paper Products =	38.9%	Percent of Total Event Waste
	Event Food Waste =	18.4%	Percent of Total Event Waste
	Event Plant Debris =	17.9%	Percent of Total Event Waste
	Event Wood/Textiles =	1.8%	Percent of Total Event Waste
	Event All Other Waste =	23.0%	Percent of Total Event Waste
Resource Savings	Event Paper Products =	1.90	Tons
	Event Food Waste =	0.90	Tons
	Event Plant Debris =	0.87	Tons
	Event Wood/ Textiles =	2.95	Tons
	Event All Other Waste =	0.00	Tons
	Total MT CO2e Diverted = (2.138)(Event Paper Products)(0.9072) + (1.120)(Event Food Waste)(0.9072) + (0.686)(Event Plant Debris)(0.9072) + (0.605)(Event Wood/Textiles)(0.9072) + (0.00)(Event All Other Waste)(0.9072) 1 - Emission Reduction Per Waste Category = Emissions Factor for Category x Future Year Category Tonnage Diverted x 0.9072		
	0.9072	= Conversion from short tons to metric tons	
	Emission Factor - Paper Products =	2.138	MT CO2e / MT waste
	Emission Factor - Food Waste =	1.210	MT CO2e / MT waste
	Emissions Factor - Plant Debris =	0.686	MT CO2e / MT waste

GHG Emission Reduction Calculations	Emission Factor - Wood/Textiles =	0.605	MT CO2e / MT waste
	Emission Factor - All Other Waste =	0.000	MT CO2e / MT waste
	Emissions from Event Paper Products =	1.47	Metric Tons CO2e
	Emissions from Event Food Waste =	0.39	Metric Tons CO2e
	Emissions from Event Plant Debris =	0.22	Metric Tons CO2e
	Emissions from Event Wood/Textiles =	0.65	Metric Tons CO2e
	Emissions from Event All Other Waste =	0.00	Metric Tons CO2e
	Emissions captured at landfill =	60%	Percent
GHG Emission Reduction	Total GHG Emissions Reduction Accounting for Effectiveness and Implementation =	2	Metric Tons of CO2
Municipal Costs and Savings Calculations	Cost may include additional staff time.		
	FTE =	0.05	Estimated staff time per year
	$/FTE =	$100,000	FTE cost per year
Municipal Costs and Savings	Municipal Costs=	$5,000	Dollars
	Municipal Savings=	$0	Dollars
Community Costs and Savings	Community Costs =	$0	Dollars
	Community Savings =	$0	Dollars

Notes

ICLEI's CACP software incorporates emission factors for the diversion of certain materials from the waste stream, derived from the EPA WARM model.

GHG Emissions Calculations assume a landfill methane recovery rate of 60%.

References

1. ICELI's Clean Air Climate Protection (CACP) Software (for members) available at: http://www.icleiusa.org/action-center/tools/cacp-software

2. EPA's WARM tool for additional information on estimating lifecycle impacts is available at: http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html

3. California Integrated Waste Management Board's June 2006 report, "Targeted Statewide Waste Characterization Study: Waste Disposal and Diversion Findings for Selected Industry Groups." Available at: http://www.calrecycle.ca.gov/Publications/Documents/Disposal%5C34106006.pdf

Municipal Solid Waste Reduction

Measure Name	Municipal Solid Waste Reduction
Description of Measure	Adopt a specified solid waste diversion rate and identify steps to meet that rate by 2020.

Category	Solid Waste
Community or Municipal?	Municipal
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	Existing and/or Completed Action?	Selected?
	Yes or No	Yes or No
Develop and adopt a City purchasing policy that emphasizes recycled and recyclable materials.		Required
Install recycling receptacles at municipal buildings and facilities.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	13

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	Yes/No	Notes
Reduce Costs	Yes	
Improve Public Health	No	
Improve Air Quality	No	
Improve Water Quality	No	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	No	
Adaptation	No	

Case Studies

City of Fresno - Local Government Policies and Procedures	http://www.fresno.gov/NR/rdonlyres/9112A6F3-33A3-428E-9762-6EBC0E0523B7/0/ZeroWasteStrategicActionPlan.pdf
City of San Francisco Executive Directive 08-02	http://greencitiescalifornia.org/assets/waste/SF_resource-conserv_enhancement.pdf http://charmeck.org/mecklenburg/county/SolidWaste/ManagementPlan/Documents/BestPracticesRecyclingStudy.pdf

Implementation

Responsible Department/Agency	Recreation & Maintenance Services
Actual Measure or Commitment	Percent waste diversion beyond State-mandated 50% (2020); number of new recycling receptacles
Implementation Mechanism	Policy
Implementation Time Frame	Near-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	No

Calculation Methodology and Equations

Key Assumptions for Example Calculations:

Target diversion rate (2020)	15%	Percent
Number of new recycling receptacles	15	Recycling Receptacles
Staff time needed for this measure	0.1	Full Time Equivalent (FTE)

Calculations:

	Tons Diverted = Landfilled Tonnage x Targeted Diversion Rate		
	Total City Future Year (2020) Solid Waste Tonnage =	298	Tons
	Paper Products =	21.0%	Percent
	Food Waste =	14.6%	Percent
	Plant Debris =	6.9%	Percent
	Wood/Textiles =	21.8%	Percent

Resource Savings Calculations	All Other Waste =	35.7%	Percent
	Future Year Paper Products =	63	Tons
	Future Year Food Waste =	44	Tons
	Future Year Plant Debris =	21	Tons
	Future Year Wood/Textiles =	65	Tons
	Future Year All Other Waste =	106	Tons
	Paper Products Diverted =	9.4	Tons
	Food Waste Diverted =	6.5	Tons
	Plant Debris Diverted =	3.1	Tons
	Wood/Textiles Diverted =	9.7	Tons
	All Other Waste Diverted =	16.0	Tons
Resource Savings	Future Year Total Waste Diverted =	44.7	Tons
GHG Emission Reduction Calculations	Total MT CO2e Diverted = (2.138)(Paper Products)(0.9072) + (1.120)(Food Waste)(0.9072) + (0.686)(Plant Debris)(0.9072) + (0.605)(Wood/Textiles)(0.9072) + (0.00)(All Other Waste)(0.9072) 1 - Emission Reduction Per Waste Category = Emissions Factor for Category x Future Year Category Tonnage Diverted x 0.9072 x (1 - Emissions captured at landfill)		
	0.9072	= Conversion from tons to metric tons	
	Emission Factor - Paper Products	2.138	MT CO2e / MT waste
	Emission Factor - Food Waste	1.210	MT CO2e / MT waste
	Emissions Factor - Plant Debris	0.686	MT CO2e / MT waste
	Emission Factor - Wood/Textiles	0.605	MT CO2e / MT waste
	Emission Factor - All Other Waste	0.000	MT CO2e / MT waste
	Emissions from Paper Products =	18	Metric Tons CO2e
	Emissions from Food Waste =	7	Metric Tons CO2e
	Emissions from Plant Debris =	2	Metric Tons CO2e
	Emissions from Wood/Textiles =	5	Metric Tons CO2e
	Emissions from All Other Waste =	0	Metric Tons CO2e
	Emissions captured at landfill =	60%	Percent
GHG Emission Reduction	Total GHG Emissions Reductions =	13	Metric Tons CO2e
	Cost may include additional staff time.		
	FTE =	0.1	Estimated staff time per year
	$/FTE =	$100,000	FTE cost per year

Municipal Costs and Savings Calculations	Total staff time costs =	$10,000	Dollars
	Capital cost to City =	$7,500	Dollars (Assumes average cost of commercial recycling receptacle is $500.)
	Maintenance cost to City =	$300	Dollars
Municipal Costs and Savings	Municipal Costs=	$17,800	Dollars
	Municipal Savings=	$0	Dollars

Notes

All cities are assumed to have a baseline year diversion rate of 50%. This diversion has already been accounted for in the baseline year landfilled solid waste tonnage.

CAGR growth rates were calculated based on population growth.

GHG Emissions Calculations assume a landfill methane recovery rate of 60%.

ICLEI's CACP software incorporates emission factors for the diversion of certain materials from the waste stream, derived from the EPA WARM model.

Assumes average cost of a commercial recycling receptacle to be $500 and ongoing additional maintenance to be $20 per receptacle.

References

1. DRAFT City of Stockton Climate Action Plan (February 2012) - pg. C-77,C-78
2. Hayward Climate Action Plan (October, 2009) - pg. 170
3. County of San Bernardino Greenhouse Gas Emissions Reduction Plan (September 2011) - pg. 91
4. EPA's Waste Reduction Model (WARM), available at: http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html
5. ICELI's Clean Air Climate Protection (CACP) Software (for members), available at: http://www.icleiusa.org/action-center/tools/cacp-software

Tree Planting Program

Measure Name	Tree Planting Program
Description of Measure	Develop a program to facilitate voluntary tree planting within the community, working with local non-profit organizations and community partners. Develop and adopt tree planting guidelines that address tree and site selection.

Category	Trees and Open Space
Community or Municipal?	Community
Voluntary or Mandatory?	Voluntary
Selected?	

Menu of Actions	Existing and/or Completed Action?	Selected?
	Yes or No	Yes or No
Develop a tree planting assistance program.		Required
Develop and adopt tree planting guidelines that address tree and site selection. Emphasis should be placed on native, drought-tolerant trees.		Required
Track the number of trees planted annually.		Required

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	6

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	Very Low	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	Yes/No	Notes
Reduce Costs	No	
Improve Public Health	Yes	
Improve Air Quality	Yes	
Improve Water Quality	Yes	
Improve Equity	Yes	Depending on location
Reduce Water Consumption	No	
Reduce Energy Consumption	No	
Increase Property Value	Yes	
Adaptation	Yes	Reduces urban heat island effect

Case Studies

Riverside Tree Power Program	http://www.ca-ilg.org/SustainabilityManyFaces
Santa Monica Urban Forest	http://www.smgov.net/Portals/UrbanForest/contentWithSidebar.aspx?id=14796

Implementation

Responsible Department/Agency	Community Development; Public Works
Actual Measure or Commitment	Number of trees planted (net new trees)
Implementation Mechanism	Capital Improvement
Implementation Timing	Near-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Note: There is no reduction in GHG emissions associated with preservation of existing trees or mitigation of trees removed.

Key Assumptions for Calculations:

Target number of trees planted (net new trees)	500	Trees
City subsidy of tree cost and planting	25%	Percent Subsidized by City
Cost per tree	$60	Dollars per Tree
Staff time needed for this measure	0.08	Full Time Equivalent (FTE)

Calculations:

GHG Emission Reduction Calculations	GHG Emissions Reduction=Number of Trees Planted x Carbon Sequestration Rate		
	0.0121	= Average carbon sequestration rate (MT CO_2/Tree)	
	500	= Number of Trees Planted	
GHG Emission Reduction	Total GHG Emissions Reduced =	6	MT CO2e
Municipal Costs and Savings Calculations	Cost per tree =	$60	Dollars/tree (McPherson, et al)
	City subsidy of tree cost and planting =	25%	Percent subsidized
	City cost per tree =	$15	Dollars per tree
	Total capital cost=	$7,500	Dollars
	FTE =	0.08	Estimated staff time to develop program
	$/FTE	$100,000	FTE cost per year
	Cost of staff time =	$8,000	Dollars
Municipal Costs and Savings	Municipal Cost =	$15,500	Dollars
	Municipal Savings =	$0	Dollars
Community Costs and Savings Calculations	Capital cost = (cost per tree x number of trees planted x percentage of city subsidy)		
	Where:		
	Community cost per tree =	$45	Dollars/tree
	Number of trees planted =	500	Trees
	Total tree capital cost (for community)=	$22,500	Dollars

	Maintenance cost = maintenance cost per tree x number of trees planted. (Assumes community covers all maintenance costs.)		
	Maintenance cost=	$34	Dollars/tree (McPherson, et al)
	Total maintenance cost (for community) =	$17,000	Dollars
Community Costs and Savings	Community Cost =	$79	Dollars per tree
	Community Savings =	$0	Dollars per tree

Notes

Carbon sequestration rate from CAPCOA Quantifying GHG Mitigation Measures Report p. 403. There is no reduction in GHG emissions associated with preservation of existing trees or mitigation of trees removed. Account for net new trees only.

References

1. California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (August 2010) - pg. 403

2. McPherson, et al as cited in Stockton Draft CAP - http://www.stocktongov.com/government/boardcom/clim.html

Municipal Tree Planting Program

Measure Name	Municipal Tree Planting Program
Description of Measure	Establish a tree planting program to increase the number of native, drought-tolerant trees on City-owned property, parks and streetscapes.

Category	Trees and Open Space
Community or Municipal?	Municipal
Voluntary or Mandatory?	Mandatory
Selected?	

Menu of Actions	**Existing and/or Completed Action?**	**Selected?**
	Yes or No	**Yes or No**
Develop and adopt a formal tree planting policy and program.		Required
Identify and secure grant funding for tree planting.		

Estimated GHG Reduction Potential

GHG Reduction Potential from Calculations Below (Metric Tons CO_2e)	6

Estimated Costs & Savings

	Select				
1. Aggregated Municipal Cost	Low	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
2. Aggregated Municipal Savings	None	$1-$10,000	$10,001-$50,000	$50,001-$100,000	$100,001+
		Very Low	Low	Medium	High
3. Per Unit Community Cost	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High
4. Per Unit Community Savings	None	$1-$500	$501-$1,000	$1,001-$5,000	$5,001+
		Very Low	Low	Medium	High

Co-Benefits

Co-Benefits	**Yes/No**	**Notes**
Reduce Costs	No	
Improve Public Health	Yes	
Improve Air Quality	Yes	
Improve Water Quality	Yes	
Improve Equity	No	
Reduce Water Consumption	No	
Reduce Energy Consumption	No	
Adaptation	Yes	Reduces urban heat island effect.

Case Studies

Municipal Forest Benefits and Costs in 5 U.S. Cities (Berkeley, CA)	http://www.fs.fed.us/psw/programs/uesd/uep/products/2/cufr_646_Muncpl%20For%20Bnfts%20Csts%20Five%20Cty.pdf

ICLEI Urban Forestry Toolkit for Local Governments (Sacramento, pg. 53-57)	http://www.milliontreesnyc.org/downloads/pdf/talking_trees_urban_forestry_toolkit.pdf

Implementation

Responsible Department/Agency	Public Works, Parks and Recreation
Actual Measure or Commitment	Number of net new trees planted on City-owned property
Implementation Mechanism	City Program
Implementation Timing	Mid-Term
Outside Funding Available?	Yes
Synergies with Existing Initiatives/Partnerships	Yes

Calculation Methodology and Equations

Note: There is no reduction in GHG emissions associated with preservation of existing trees or mitigation of trees removed. Cannot double count with measure 9a.

Key Assumptions for Calculations:

Target number of trees planted on City-owned property	500	Trees
Capital cost per tree ($0 if to be paid for through grant funding)	$60	Dollars per Tree
Staff time needed for this measure	0.08	Full Time Equivalent (FTE)

Calculations:

GHG Emission Reduction Calculations	GHG Emissions Reductions = Number of Trees Planted x Carbon Sequestration Rate		
	0.0121	= Average carbon sequestration (MT CO_2/Tree)	
	500	= Number of Trees Planted	
GHG Emission Reduction	Annual GHG emissions reduced =	6	MT CO2e
Municipal Costs and Savings Calculations	Capital cost = (cost per tree x number of trees planted)		
	Where:		
	Cost per tree=	$60	Dollars/tree (McPherson, et al)
	Number of trees planted=	500	Trees/year
	Capital cost to City=	$30,000	Dollars
	Maintenance cost = maintenance cost per tree x number of trees planted		
	Where:		
	Maintenance cost=	$34	Dollars/tree (McPherson, et al)
	Maintenance costs =	$17,000	Dollars
	Staff time needed to develop policy/ordinance and apply for funding.		
	FTE =	0.08	Estimated staff time per year
	$/FTE =	$100,000	FTE cost per year
	Staff time cost =	$8,000	Dollars
Municipal Costs and Savings	Municipal Cost =	$55,000	Dollars
	Municipal Savings =	$0	Dollars

Notes

Carbon sequestration rate from CAPCOA Quantifying GHG Mitigation Measures Report. There is no reduction in GHG emissions associated with preservation of existing trees or mitigation of trees removed. Account for net new trees only.

References

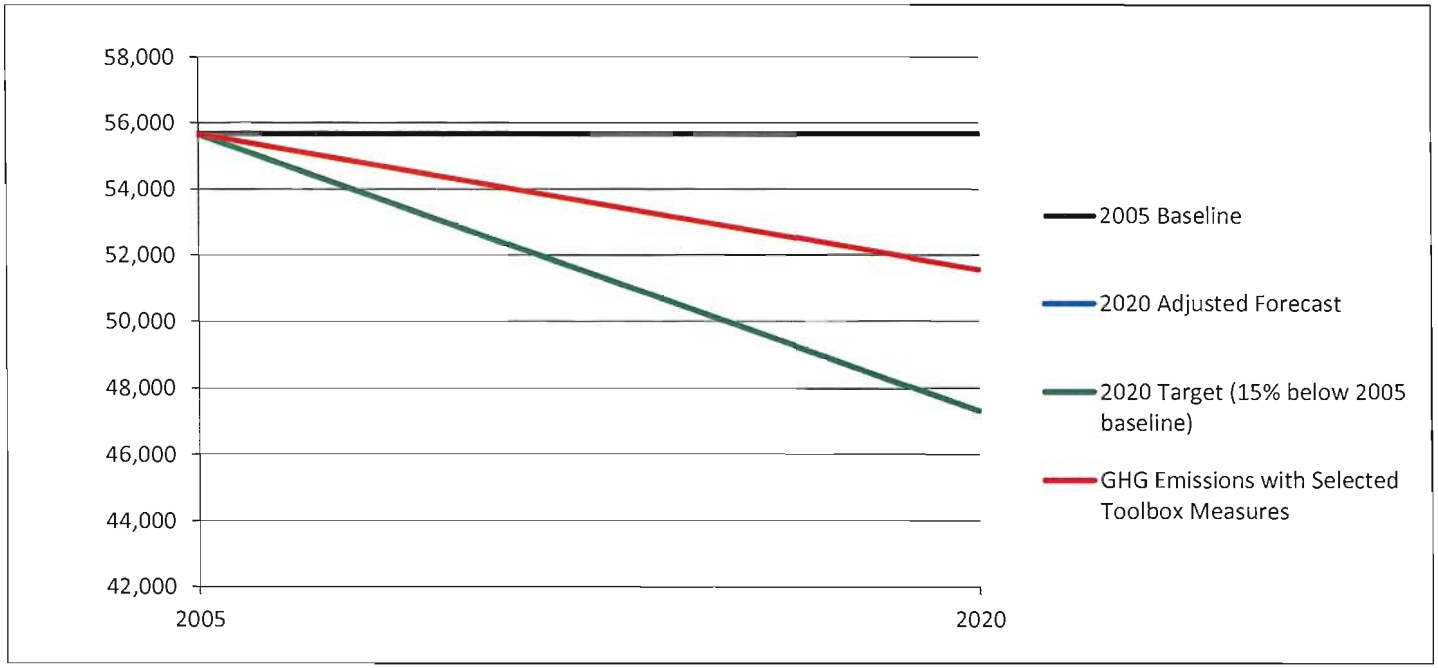
1. California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (August 2010) - pg. 403

2. McPherson, et al as cited in Stockton Draft CAP - http://www.stocktongov.com/government/boardcom/clim.html

SUMMARY OF GHG TARGET AND MEASURE REDUCTIONS

	MT CO2e
2005 Baseline	55,677
2020 Adjusted Forecast	51,582
2020 Target (15% below 2005 baseline)	47,325
Targeted Reduction from CAP Measures	**4,256**

Total Reduction from Selected Toolbox Measures	**0**



Common Assumptions Used in the GHG Emission Reduction and Cost-Savings

Residential Energy Intensity

Electric Use Intensity =	3.5	kwh/ square foot/ year	Average electric use intensity for residential buildings in kWh/sq ft (California Energy Commission [CEC] 2010 Residential Appliance Saturation Survey [RASS]). Used data
Natural Gas Use Intensity=	0.3	therms/ square foot/ year	Average natural gas usage intensity for residential buildings in therms/sq ft (RASS, 2010).

Average Annual Residential Energy Usage

Average Annual Electric Usage=	5,454	kWh/household/ year	Average annual electric use for residential buildings in kWh/household/year. (Average for the six cities from 2005 baseline GHG emissions inventories; Pacific Gas and Electric Company [PG&E]).
Average Annual Natural Gas Usage=	377	therms/ household/year	Average annual natural gas use for residential buildings in therms/household/year. (Average for the six cities from 2005 baseline GHG emissions inventories; Southern California Gas Company [SoCalGas]).
Residential sector average energy use: 36% electricity and 64% natural gas. (Average for six cities from 2005 baseline GHG inventory)			

Commercial Energy Intensity

Electric Use Intensity =	12.95	kwh/square foot/year	Average electric use intensity for commercial buildings in PG&E territory in kWh/sq ft. (CEC 2005 California End Use Survey, Table 9-1, page 184).
Natural Gas Use Intensity=	0.3	therms/square foot/year	Average natural gas usage intensity for commercial buildings in PG&E territory in therms/sq ft (CEC 2005 California End Use Survey, Table 9-1, page 184).
Non-residential sector average energy use: 61% electricity and 39% natural gas. (Average for six cities from 2005 baseline GHG inventory)			

Energy: 2020 GHG Emissions Factors

0.133	Average emissions factor in 2020 from PG&E and Local Government Operations Protocol [LGOP] v1.1 in metric tons CO_2e/MWh (takes into account Renewable Portfolio Standard)
53.20	Average emissions factor from SoCalGas and LGOP v1.1 for natural gas (kg CO_2e/MMBtu)

Energy (Residential): Projected 2020 Energy Costs

$/kwh	$0.19	2012 average electricity rates were taken from the PG&E website. (http://www.pge.com/tariffs/rateinfo.shtml). Used basic general service rates. 2012 average natural gas rates were taken from the SoCalGas website. (http://www.socalgas.com/for-your-business/prices/).
$/therm	$0.92	

Energy (Commercial/Industrial): Projected 2020 Energy Costs

$/kwh	$0.19	2012 average electricity rates were taken from the PG&E website. (http://www.pge.com/tariffs/rateinfo.shtml). Used basic general service rates. 2012 average natural gas rates were taken from the SoCalGas website. (http://www.socalgas.com/for-your-business/prices/).
$/therm	$0.81	

Transportation: 2020 Emissions Factor

Composite emissions factor (Cef) =	0.000374	Composite emissions factor in Metric Tons CO_2e per vehicle mile traveled (VMT); accounts for Pavley I and Low Carbon Fuel Standard. From California Air Resources Board's EMFAC2011 tool for San Luis Obispo County.

Transportation: Cost

$0.555	Private vehicle operating cost per mile, as of 2012 (Internal Revenue Service 2012 Mileage Rate)

Vehicle Use Percentages

Vehicle Fuel & Type	Vehicle Type	Percentage (%)
Gasoline	Passenger	48.85%
	Light Duty	43.39%
	Heavy Duty	0.99%
Diesel	Passenger	0.34%
	Light Duty	2.30%
	Heavy Duty	4.14%

Water Measure Assumptions

174,000	Average household water consumption (174,000 gallons/year, as per AWWA)

0.00115	therms saved per gallon of water reduced
0.0023	kWh saved per gallon of water reduced

Notes: 200 therms/year are used on heating hot water in every household (UC Irvine reference) and each household uses 174,000 gallons of water/year (AWWA reference). Thus, on average, 200/174,000 = therm usage per gallon of water usage in a typical household (0.00115 therm used / gallon of water used).

Solid Waste Characterization

Paper products	Food Waste	Plant Debris	Wood / Textiles	All Other Waste
21.00%	14.60%	6.90%	21.80%	35.70%

From California Integrated Waste Management Board's 2004 Waste Characterization Study

Public Events Waste Characterization

Paper products	Food Waste	Plant Debris	Wood / Textiles	All Other Waste
38.90%	18.40%	17.90%	1.80%	23.00%

From California Integrated Waste Management Board 2006 Report "Waste Disposal and Diversion Findings for Selected Industry Groups," Public Venues and Events Category

Average Annual Solid Waste Tonnage Per Capita

1.13	tons/capita/year

Solid Waste Emissions Factors by Category

Paper Products	2.138	tonnes/tonnes CO2e
Food Waste	1.210	tonnes/tonnes CO2e
Plant Debris	0.686	tonnes/tonnes CO2e
Wood/Textiles	0.605	tonnes/tonnes CO2e
All Other Waste	0.000	tonnes/tonnes CO2e

From USEPA Waste Reduction Model (WARM)

Carbon Sequestration Rate

0.0121	MT CO_2/tree/year	From CAPCOA Quantifying GHG Mitigation Measures Report, page 403.
4.31	MT CO_2/acre/year	From CAPCOA Quantifying GHG Mitigation Measures Report, page 406.

No reduction may be quantified for preservation or mitigation of trees or vegetative space . Net new trees and acreage only.

Unit size

1,545	Average dwelling size for units in PG&E territory (square feet)
From 2009 RASS - Average square footage for residences in square feet/unit. Average of CEC Climate Zone 4 and 5.	
4,500	Average commercial building size (square feet)

Annual Salary of Full Time City Employee

$100,000	Dollars

Demographic Data Used in Measure Worksheets

Arroyo Grande	Population	Households	Jobs
2005	16,330	7,227	7,940
2020	18,407	8,188	5,800
CAGR	0.80%	0.84%	-2.07%

PG&E Non-Residential Accounts
1,365
997

Atascadero	Population	Households	Jobs
2005	25,940	10,505	8,550
2020	28,003	11,893	9,300
CAGR	0.51%	0.83%	0.56%

PG&E Non-Residential Accounts
1,958
2,130

Grover Beach	Population	Households	Jobs
2005	13,100	5,589	3,160
2020	13,432	5,878	6,800
CAGR	0.17%	0.34%	5.24%

PG&E Non-Residential Accounts
1,034
2,225

Morro Bay	Population	Households	Jobs
2005	10,310	6,513	3,390
2020	10,244	6,348	4,000
CAGR	-0.04%	-0.17%	1.11%

PG&E Non-Residential Accounts
998
1,178

Paso Robles	Population	Households	Jobs
2005	27,580	10,640	14,270
2020	32,137	12864	13,000
CAGR	1.02%	1.27%	-0.62%

PG&E Non-Residential Accounts
2,391
2,178

Pismo Beach	Population	Households	Jobs
2005	8,620	5,697	3,160
2020	7,954	5768	4,500
CAGR	-0.53%	0.08%	2.38%

PG&E Non-Residential Accounts
879
1,252

Sources:

2005 population, household and employment data from San Luis Obispo Council of Governments, "Long Range Socio-Economic Projections (Year 2030)" prepared by Economic Research Associates (ERA), July 2006revision.
2020 population, household, and employment data from the San Luis Obispo County 2040 Population, Housing & Employment Forecast prepared for SLOCOG by AECOM, August 2011.

Arroyo Grande

	2005 Baseline	2020 State + Local Adjusted BAU
Residential	25,105	23,685
Commercial/ Industrial	11,932	6,270
Transportation	36,897	34,540
Off-Road	4,556	5,477
Waste	5,909	6,275
Water	N/A	-43
Trees	N/A	-3
TOTAL	84,399	76,201

Arroyo Grande (Detailed Energy Emissions)

	2005 Baseline	2020 State Adjusted BAU	2020 Energy Usage (kWh or therms)
Residential Electricity	8,747	5,835	43,875,166
Residential Natural Gas	16,358	18,096	3,401,593
Residential Total	25,105	23,932	
Commercial Electricity	7,746	3,371	25,343,608
Commercial Natural Gas	4,186	3,058	574,771
Commercial Total	11,932	6,428	

Arroyo Grande Average Annual Vehicle Miles Traveled

2005 Baseline VMT	2020 Forecast VMT	2005 Employee Commute VMT
80,163,593	92,672,596	330,203

Arroyo Grande Solid Waste Tonnage

2005 Tonnage - Community	2005 Tonnage - Municipal	2005 MTCO2e - Municipal
20,245	23	8

Arroyo Grande Wastewater Volume

2020 Wastewater Volume (Liters)
N/A

Arroyo Grande City Area

Area (sqmi)
5.84

Atascadero

	2005 Baseline	2020 State + Local Adjusted BAU
Residential	40,690	36,448
Commercial/ Industrial	20,271	15,999
Transportation	60,041	64,985
Off-Road	8,686	10,521
Waste	9,083	9,236
Wastewater	2,657	2,868
Water	N/A	-19
Trees	N/A	-36
TOTAL	141,428	140,003

Atascadero (Detailed Energy Emissions)

	2005 Baseline	2020 State Adjusted BAU	2020 Energy Usage (kWh or therms)
Residential Electricity	15,912	10,190	76,613,150
Residential Natural Gas	24,778	26,425	4,967,026
Residential Total	40,690	36,614	
Commercial Electricity	13,241	8,506	63,955,884
Commercial Natural Gas	7,030	7,575	1,423,890
Commercial Total	20,271	16,081	

Atascadero Average Annual Vehicle Miles Traveled

2005 Baseline VMT	2020 Forecast VMT	2005 Employee Commute VMT
130,445,975	174,056,935	373,976

Atascadero Solid Waste Tonnage

2005 Tonnage - Community	2005 Tonnage - Municipal	2005 MTCO2e - Municipal
31,123	169	49

Atascadero Wastewater Volume

2020 Wastewater Volume (Liters)
2,461,000,000

Atascadero City Area

Area (sqmi)
25.64

Grover Beach

	2005 Baseline	2020 State + Local Adjusted BAU
Residential	15,915	13,875
Commercial/ Industrial	6,033	8,768
Transportation	18,549	19,878
Off-Road	5,034	6,084
Waste	2,638	2,548
Water	N/A	-23
TOTAL	48,169	51,130

Grover Beach (Detailed Energy Emissions)

	2005 Baseline	2020 State Adjusted BAU	2020 Energy Usage (kWh or therms)
Residential Electricity	5,711	3,484	26,193,473
Residential Natural Gas	10,204	10,420	1,958,663
Residential Total	15,915	13,904	
Commercial Electricity	3,997	4,832	36,331,717
Commercial Natural Gas	2,036	4,109	772,382
Commercial Total	6,033	8,941	

Grover Beach Average Annual Vehicle Miles Traveled

2005 Baseline VMT	2020 Forecast VMT	2005 Employee Commute VMT
40,300,580	53,770,079	374,661

Grover Beach Solid Waste Tonnage

2005 Tonnage - Community	2005 Tonnage - Municipal	2005 MTCO2e - Municipal
9,042	7	3

Grover Beach Wastewater Volume

2020 Wastewater Volume (Liters)
N/A

Grover Beach City Area

Area (sqmi)
2.31

Morro Bay

	2005 Baseline	2020 State + Local Adjusted BAU
Residential	16,094	13,789
Commercial/ Industrial	11,442	10,184
Transportation	22,506	21,658
Off-Road	2,740	3,237
Waste	2,695	2,523
Wastewater	200	199
Water	N/A	-8
TOTAL	55,677	51,582

Morro Bay (Detailed Energy Emissions)

	2005 Baseline	2020 State Adjusted BAU	2020 Energy Usage (kWh or therms)
Residential Electricity	5,384	3,187	23,960,695
Residential Natural Gas	10,710	10,641	2,000,271
Residential Total	16,094	13,828	
Commercial Electricity	6,513	4,504	33,862,892
Commercial Natural Gas	4,929	5,713	1,073,871
Commercial Total	11,442	10,217	

Morro Bay Average Annual Vehicle Miles Traveled

2005 Baseline VMT	2020 Forecast VMT	2005 Employee Commute VMT
48,897,505	58,053,794	620,149

Morro Bay Solid Waste Tonnage

2005 Tonnage - Community	2005 Tonnage - Municipal	2005 MTCO2e - Municipal
9,235	298	106

Morro Bay Wastewater Volume

2020 Wastewater Volume (Liters)	Current Methane Recovery
1,265,552,368	

Morro Bay City Area

Area (sqmi)
5.30

Paso Robles

	2005 Baseline	2020 State + Local Adjusted BAU
Residential	40,188	38,647
Commercial/ Industrial	33,536	22,266
Transportation	67,801	72,499
Off-Road	13,205	15,878
Waste	13,433	14,745

Paso Robles (Detailed Energy Emissions)

	2005 Baseline	2020 State Adjusted BAU	2020 Energy Usage (kWh or therms)
Residential Electricity	15,151	10,433	78,439,999
Residential Natural Gas	25,037	28,494	5,355,948
Residential Total	40,188	38,926	
Commercial Electricity	19,784	10,737	80,726,652
Commercial Natural Gas	13,752	12,528	2,354,906

Paso Robles Average Annual Vehicle Miles Traveled

2005 Baseline VMT	2020 Forecast VMT	2005 Employee Commute VMT
147,306,705	194,102,084	651,608

Paso Robles Solid Waste Tonnage

2005 Tonnage - Community	2005 Tonnage - Municipal	2005 MTCO2e - Municipal
37,575	647	231

Paso Robles Wastewater Volume

2020 Wastewater Volume (Liters)	Current Methane Recovery
5,698,686,101	0%

Paso Robles City Area

Area (sqmi)
19.90

*Installing co-gen facility after the 1st of the year

Wastewater	70	82
Aircraft	1,324	1,543
Water	N/A	-97
TOTAL	169,557	165,563

Commercial Total	33,536	23,265

Pismo Beach

	2005 Baseline	2020 State + Local Adjusted BAU
Residential	14,808	11,653
Commercial/ Industrial	14,958	16,132
Transportation	51,811	65,934
Off-Road	1,821	2,174
Waste	3,479	3,024
Wastewater	200	185
Water	N/A	-23
TOTAL	87,077	99,078

Pismo Beach (Detailed Energy Emissions)

	2005 Baseline	2020 State Adjusted BAU
Residential Electricity	5,349	2,940
Residential Natural Gas	9,459	8,728
Residential Total	14,808	11,668
Commercial Electricity	7,986	6,560
Commercial Natural Gas	6,972	9,585
Commercial Total	14,958	16,146

2020 Energy Usage (kWh or therms)
22,107,232
1,640,635
49,324,557
1,801,758

Pismo Beach Average Annual Vehicle Miles Traveled

2005 Baseline VMT	2020 Forecast VMT	2005 Employee Commute VMT
112,566,800	176,492,875	373,976

Pismo Beach Solid Waste Tonnage

2005 Tonnage	2005 Tonnage - Municipal	2005 MTCO2e - Municipal
11,921	830	267

Pismo Beach Wastewater Volume

2020 Wastewater Volume (Liters)
5,730,732

Pismo Beach City Area

Area (sqmi)
3.60

Municipal Energy for Buildings, Water and Wastewater (from GHG Inventory)

	Electricity (kWh)	Natural Gas (therms)
Arroyo Grande	1,889,150	9,975
Atascadero	2,299,617	12,875
Grover Beach	1,312,945	3,630
Morro Bay	2,175,677	36,264
Paso Robles	11,515,201	139,240
Pismo Beach	3,097,674	5,321

Arroyo Grande Off-Road Emissions

Source	2020 MT CO2e
Construction Equipment	4,152
Industrial Equipment	57
Lawn and Garden Equipment	491
Light Commercial Equipment	708
Agricultural Equipment	69
Total	**5,477**

Arroyo Grande Water Delivery (2020)

Gallons/yr (w/ SBx7-7)	Source
1,001,064,695	2. Arroyo Grande Urban Water Management Plan. November 18, 2011. http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Arroyo%20Grande,%20City%20of/City%20of%20Arroyo%20Grande%202010%20Urban%20Water%20Management%20Plan%20Final.pdf

Atascadero Off-Road Emissions

Source	2020 MT CO2e
Construction Equipment	8,666
Industrial Equipment	124
Lawn and Garden Equipment	714
Light Commercial Equipment	878
Agricultural Equipment	139
Total	**10,521**

Atascadero Water Delivery (2020)

Gallons/yr (w/ SBx7-7)	Source
1,921,000,000	2. City of Atascadero Sphere of Influence Update Municipal Services Review (September 2011)

Grover Beach Off-Road Emissions

Source	2020 MT CO2e
Construction Equipment	4,875
Industrial Equipment	496
Lawn and Garden Equipment	353
Light Commercial Equipment	306
Agricultural Equipment	54
Total	**6,084**

Grover Beach Water Delivery (2020)

Gallons/yr (w/ SBx7-7)	Source
554,002,840	2. Grover Beach 2010 Urban Water Management Plan. June 20, 2011. http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Grover%20Beach,%20City%20of/DocumentView.pdf

Morro Bay Off-Road Emissions

Source	2020 MT CO2e
Construction Equipment	2,200
Industrial Equipment	41
Lawn and Garden Equipment	381
Light Commercial Equipment	420
Agricultural Equipment	196
Total	**3,238**

Morro Bay Water Delivery (2020)

Gallons/yr (w/ SBx7-7)	Source
422,513,780	2. Morro Bay 2010 Urban Water Management Plan. June 2011. http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Morro%20Bay,%20City%20of/MorroBay_2010_UWMP.pdf

Paso Robles Off-Road Emissions

Source	2020 MT CO2e
Construction Equipment	11,197
Industrial Equipment	2,438
Lawn and Garden Equipment	772
Light Commercial Equipment	999
Agricultural Equipment	473

Paso Robles Water Delivery (2020)

Gallons/yr (w/ SBx7-7)	Source
2,263,890,965	2. Paso Robles 2010 Urban Water Management Plan. June 2011. http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Paso%20Robles,%20City%20of/2010%20UWMP%20ADOPTED%20FINAL%20June%202011.pdf

Total	**15,879**

Pismo Beach Off-Road Emissions

Source	2020 MT CO2e
Construction Equipment	1,198
Industrial Equipment	136
Lawn and Garden Equipment	346
Light Commercial Equipment	471
Agricultural Equipment	23
Total	**2,174**

Pismo Beach Water Delivery (2020)

Gallons/yr (w/ SBx7-7)	Source
528,011,190	2. Pismo Beach 2010 Urban Water Management Plan. September 2011. http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Pismo%20Beach,%20City%20of/2010UWMP_FINALSept.pdf