SOLANO
City-County Coordinating Council
Special Meeting

AGENDA

November 8, 2012
Solano County Water Agency, Berryessa Room
810 Vaca Valley Parkway, Suite 203, Vacaville, CA.
7:00 P.M. Meeting

PURPOSE STATEMENT – City County Coordinating Council
"To discuss, coordinate, and resolve City/County issues including but not necessarily limited to land use, planning, duplication of services/improving efficiencies, as well as other agreed to topics of regional importance, to respond effectively to the actions of other levels of government, including the State and Federal government, to sponsor or support legislation at the State and Federal level that is of regional importance, and to sponsor or support regional activities that further the purpose of the Solano City-County Coordinating Council."

Time set forth on agenda is an estimate. Items may be heard before or after the times designated.

ITEM **AGENCY/STAFF**

I. CALL TO ORDER (7:00 p.m.)

II. APPROVAL OF AGENDA (7:00 p.m.)

III. OPPORTUNITY FOR PUBLIC COMMENT (7:05 p.m.)

Pursuant to the Brown Act, each public agency must provide the public with an opportunity to speak on any matter within the subject matter of the jurisdiction of the agency and which is not on the agency's agenda for that meeting. Comments are limited to no more than 5 minutes per speaker. By law, no action may be taken on any item raised during public comment period although informational answers to questions may be given and matter may be referred to staff for placement on future agenda.

This agenda shall be made available upon request in alternative formats to persons with a disability, as required by the Americans with Disabilities Act of 1990 (42U.S.C.Sec12132) and the Ralph M. Brown Act (Cal.Govt.Code Sec.54954.2) Persons requesting a disability-related modification or accommodation should contact Jodene Nolan, 675 Texas Street, Suite 6500, Fairfield CA 94533 (707.784.6108) during regular business hours, at least 24 hours prior to the time of the meeting.

IV. CONSENT CALENDAR Chair Batchelor

a. Approval of Minutes for August 9, 2012 (7:10 p.m.) Action Item

V. PUBLIC HEARING

1. Public Hearing to Receive Oral and Written Comments on the Proposed Solano Subregional Housing Unit Methodology and Allocation (7:10 p.m. – 7:25 p.m.)

   Presenters: Matt Walsh, Solano County Resource Management

ITEM **AGENCY/STAFF**

VI. DISCUSSION CALENDAR

1. Presentation on Center for Disease Control Grant and Appointment to the Grant Committee. (Action Item)
   (7:25 p.m. – 7:40 p.m.)

   Presenters: Robin Cox, Solano County Public Health Services

2. Priority Development Areas Implementation Criteria.
   (7:40 p.m. – 8:00 p.m.)

   Presenters: Daryl Halls, STA Executive Director

3. Approval of the PG&E Climate Action Plans. (Action Item)
   (8:00 p.m. – 8:30 p.m.)

   Presenters: Bob MacCaulay, STA Director of Planning

4. State Legislation End of Session Update (Oral Report)
   (8:30 p.m. – 8:50 p.m.)

   Presenter: Michelle Heppner, Solano County Administrator's Office, Paul Yoder, Shaw, Yoder, Antwih, Inc., Nancy Bennet, League of California Cities

5. Discussion of 2013 Calendar / Work Plan
   8:50 p.m. – 9:00 p.m.)

   Presenter: Michelle Heppner, Solano County Administrator's Office

VII. ANNOUNCEMENTS

VIII. CCCC CLOSING COMMENTS

ADJOURNMENT: The next City-County Coordinating Council special meeting is scheduled for December 13, 2012 at 7:00 p.m. at the Solano County Water Agency – Berryessa Room, 810 Vaca Valley Parkway, Suite 203, Vacaville, CA.

CITY-COUNTY COORDINATING COUNCIL
August 9, 2012 Meeting Minutes

The August 9, 2012 meeting of the Solano City-County Coordinating Council was called to order at 7:00 p.m. in the Berryessa Room at the Solano County Water Agency located at 810 Vaca Valley Parkway, Ste 303, Vacaville, CA 95688.

I Roll and Call to Order

Members Present

Jack Batchelor, Chair	Mayor, City of Dixon
Steve Hardy, Vice-Chair	Mayor, City of Vacaville
Elizabeth Patterson	Mayor, City of Benicia
Harry Price	Mayor, City of Fairfield
Jan Vick	Mayor, City of Rio Vista
Barbara Kondylis	Solano County Board of Supervisors (District 1)
Linda Seifert	Solano County Board of Supervisors (District 2)
Jim Spering	Solano County Board of Supervisors (District 3)
John Vasquez	Solano County Board of Supervisors (District 4)
Mike Reagan,	Solano County Board of Supervisors (District 5)

Members Absent:

Osby Davis	Mayor, City of Vallejo
Pete Sanchez	Mayor, City of Suisun

Staff Present:

Nancy Huston	Assistant County Administrator, Solano County
Sean Quinn	City Manager, City of Fairfield
Bill Emlen	Solano County
Matt Walsh	Solano County
Daryl Halls	Solano Transportation Authority
Bob Macaulay	Solano Transportation Authority

a. Opportunity for Public Comment

There were no public comments.

b. Consent Calendar

a. Approval of minutes for May 10, 2012

Supervisor Reagan and Mayor Patterson requested changes to the minutes. Motion to approve the May 10, 2012 minutes with noted changes was made by Supervisor Reagan and seconded by Mayor Hardy. Minutes approved by 10-0 vote.

V Discussion Calendar

Agenda was reordered, moving item 2 to the end of the agenda.

1. **Legislative Update**

Andrew Antwih and Karen Lange from Shaw, Yoder and Antwih provided the City-County Coordinating Council with an oral update noting that the Legislature had just returned from a month-long Summer Recess. It was noted that both the Assembly and Senate had several controversial issues to deal with including pension reform, which was likely to pass before the close of the Legislative session at the end of August. Speculation is that pension reform will impact public safety, particularly with respect to retirement age. Another issue would be preemption with respect to existing pension plans. Also of interest was that the Legislature was dealing with residual budget issues including $54 million funding discovered within the special funds of the California Department of Parks and Recreation and the concern by the Legislatures about other departments potential hidden funds. The Budget audit Committee called for an audit of all the special funds to ensure what was being reported on the Budget Act was accurate. Relative to transportation, there is also a debate on capturing 40% of Cap and Trade revenues to local governments. The 40% came from studies showing that light trucks and vehicles contribute approximately that percentage of the green house gas emissions in California. Similarly, several transit agencies are looking at another pot of money under the Cap and Trade, administered by the Public Utilities Commission, for transit projects. Revenues under Cap and Trade are being targeted at High Speed Rail which may leave little, if any, money for transit operations and projects.

Clarification was provided regarding AB 542 (Allen) - Land use: housing element bill that would prevent communities using the analysis authorized by existing law to demonstrate that sites are zoned at densities that accommodate its share of the regional housing allocation need for low-income households. Existing criteria does not work for Napa County and the bill would be amended to apply solely to Napa County to allow them to move forward with their regional housing needs allocations.

2. **Priority Development Areas (PDA) Investment Strategy**

Daryl Halls provided an update and history of the Priority Development Areas and an update from ABAG. He noted the timing for PDA's was unfortunate relevant to the State eliminating redevelopment Agencies which should have been the vehicle for many of these. Mr. Halls noted that there are still several outstanding issues regarding PDA's and that staff would come back in the next several months to discuss these questions.

1) Will MTC provide additional funds for local PDA implementation at the County level?
2) If additional PDA's are provided to STA, what are the best methods and criteria for supporting PDA investment and implementation?
3) What portion of the $7.63 million OBAG CMAQ funds should go to support PDA projects?
4) How should draft Solano SubRHNA numbers influence allocation of OBAG funds?

3. **Priority Conservation Areas (PCA) – North Bay Pilot Program**

ABAG called for PCA submittals, a total of five came from Solano County. There are five PCA's in Solano: Blue Ridge Hills, Vacaville-Fairfield-Solano Greenbelt, San Francisco Bay Trail, and Tri City and County Cooperative Planning Area. MTC has dedicated $5 million in OBAG funds for North Bay counties. Funds can be used for

planning and for projects. Mr. Halls stated that a four-year PCA delivery plan proposes funds being split evenly among the four North Bay counties. Pilot projects are to be reviewed and selected by the sub-committee of four North Bay Commissioners. The goal is to move PCA from a pilot program to a permanent program. Following a lengthy discussion, Supervisor Kondylis requested staff to bring this item back to the CCCC to discuss options for moving PCA's forward.

4. **PG&E Energy - Climate Action Plans - Update**
   Robert Macauley introduced the two consultants from AE Com working on the climate action plans and provided the CCCC with a comprehensive update. He noted that tasks that have been completed to date include future year emissions projects covering 2020-2035, public kick-off meeting held at the Solano County Administrative Center on July 12th, an administrative draft of a Policy Gap Analysis, and an administrative draft of Emission Reduction Targets.

5. **Regional Housing Needs Allocation (RHNA) Update**
   Matt Walsh provided the CCCC with an update on the RHNA. On July 19th ABAG released its allocation methodology to all the Bay Area counties including the Solano subregion which was allocated 6977 units, a decrease from the current cycle. All cities and the county will be approving the RHNA and returning to the CCCC in January 2013 for approval of a resolution, which is due to ABAG by February 1, 2013.

6. **AB 542 (Allen) - Land Use: Housing Element: Regional Housing Need**
   Matt Walsh explained that AB 542 affects how cities and the County can accommodate low-income units in their housing element. Current law allows for minimum densities (30 units per acre), it also allows for a more general analysis. AB 542 essentially rewrites the analysis option and makes it more restrictive. Matt Walsh recommended the CCCC submit a letter opposing this bill. The CCCC voted (10-0) to send a letter to Oppose unless Amended to Assemblymember Allen. The letter that was sent out on August 9th is attached to these minutes.

7. **2013 CCCC Meeting Schedule Proposed Changes**
   The CCCC voted (10-0) to approve the meeting calendar. A request was made by Supervisor Kondylis to have the CCCC view a 45 minute video titled "Troubled Waters" regarding the Delta. Chair Batchelor suggested the CCCC Executive Committee discuss this request at the next meeting.

VI. ANNOUNCEMENTS:

No announcements.

VII. ADJOURNMENT:

The meeting was adjourned at 8:44 p.m. The next meeting will be November 8, 2012 in the Berryessa Room at the Solano County Water Agency located at 810 Vaca Valley Parkway, Ste 303, Vacaville, CA 95688.

SOLANO
City-County Coordinating Council

August 9, 2012

The Honorable Michael Allen
State Capitol, Room 5158
Sacramento, CA 95814
Fax: (916) 319-2158

RE: AB 542 (Allen). Land use: housing element: regional housing need.
(as amended June 27, 2012)
NOTICE OF OPPOSED UNLESS AMENDED

Dear Assembly Member Allen:

The Solano City County Coordinating Council (CCCC) is opposed to AB 542 (Allen) as drafted in its current form, which would prevent communities from using the analysis authorized under current law to demonstrate that sites are zoned at densities that accommodate its share of the regional housing need for lower income households.

Under existing law, a jurisdiction can show that the site inventory in its housing element accommodates its share of the regional housing need for lower income households using one of two methods. The jurisdiction can either use the "Mullin densities" or do an analysis that includes factors such as market demand, financial feasibility, or information based on development project experience in order to demonstrate how the adopted densities accommodate this need. While it is no easy task to do the analysis requirements, many jurisdictions, including various agencies in Solano County, have done so in order to have a housing element certified by the Department of Housing and Community Development (HCD).

As you know, changing the housing element law is a very controversial topic for both local governments and the housing advocacy community. In the past, any changes to the housing element have been done with input from those that would be affected such as the affordable housing advocates, local governments and HCD. However, in the case of AB 542, no local jurisdiction (other than the sponsors of the bill), were a party to the negotiations. Before such a change to the housing element requirements occurs, input from all stakeholders should be presented and duly considered. If Napa County moves forward with AB 542, then every jurisdiction loses the ability to use the alternative analysis that is available under existing law and all jurisdictions would be limited to the option negotiated for the benefit of one county

The CCCC's cannot support the proposed bill as it is currently drafted. We understand that the authors are proposing to further revise the bill in a fashion that will not affect the ability of agencies to utilize the "analysis" option as it is currently written, but will still allow greater flexibility for Napa County. A revision to this effect will likely garner support from the CCCC's if the bill was unique only to Napa County and would not affect the planning process and work already completed in Solano County.

As such, the CCCC's is opposed to AB 542, unless amended and with existing allowances under the law restored. If you have any questions, please contact Michelle Heppner at (707) 784-3002 or email mheppner@solanocounty.com.

Sincerely,

Mayor Jack Batchelor, Chair
City County Coordinating Council – Solano County

cc: Kirstin Kolpitcke, League of California Cities (Fax: 916/658-8240)
Mark Stivers, Consultant, Senate Transportation and Housing Committee (Fax: 916/445-2209)
Doug Yoakam, Republican Consultant, Senate Transportation and Housing Committee (Fax: 916/445-3105)
Senator Wolk
Senator Evans
Assemblyman Allen
Assemblywoman Yamada
Assemblywoman Bonilla
Solano County Board of Supervisors
Mayor Steve Hardy, City of Vacaville
Mayor Elizabeth Patterson, City of Benicia
Mayor Harry Price, City of Fairfield
Mayor Jan Vick, City of Rio Vista
Mayor Pete Sanchez, City of Suisun City
Mayor Osby Davis, City of Vallejo
Paul Yoder, Shaw / Yoder / Antwih, Inc.

SOLANO
City-County Coordinating Council
Staff Report

Meeting of: November 8, 2012 **Agency/Staff:** Matt Walsh, Solano County
Agenda Item No: V. 1.

Title /Subject: Conduct a public hearing to receive comments on the draft Solano Subregional housing unit allocation

Background/Discussion:

Under State Housing Element law, the Regional Housing Needs Allocation (RHNA) process is the procedure for allocating a "fair share" of housing units, in all income categories, to each city and county in California, including the Bay Area. The Association of Bay Area Governments (ABAG) is responsible for formulating the methodology and allocating the housing units to each jurisdiction. The RHNA planning period has historically addressed a 7 year planning period, however, as referenced below, the next RHNA cycle will be for an 8 year planning period.

Also as provided for under State law, Solano County and its cities have come together and formed a subregion. Under the RHNA process, a subregion is allocated a total number of units, and the subregion itself must develop its own internal methodology for distributing those units among its agencies. The methodology must comply with both California housing law and with the Sustainable Communities Strategy (SCS) which promotes the development of housing in proximity to employment and transit based areas. Once the allocation is final, each agency must then update its Housing Element to incorporate those units into its next planning period for the years 2015 – 2022.

In July 2012, ABAG assigned the Solano Subregion a draft allocation of 6,977 housing units, broken out by income category. For comparative purposes, in the 1999 – 2006 RHNA cycle, the combined total of Solano County agency's allocations was 18,681 housing units. For the 2007 – 2014 cycle, Solano County was allocated a combined total of 12,985 housing units. The proposed allocation for Solano County is lower due to changed economic conditions and an emphasis on locating housing towards the inner areas of the Bay Area where there is a larger concentration of Priority Development Areas.

Staff of each agency, including the Planning Directors, have met several times to discuss how best to allocate the units to each agency in the County. The resulting draft subregional allocation is attached as Exhibit A, imbedded within the notice of public comment period. This subregional allocation generally matches the default number of units that ABAG would have assigned to each agency if they were not part of a subregion. Minor changes were made to reduce the City of Fairfield's allocation by about 340 units. The methodology for disbursement by income category is identical to that of the remainder of the Bay Area region. It is important to note that these numbers are draft at this point in time. They may still be adjusted as a result of requests by a local agency or by ABAG. Final draft allocations will be acted upon by the 4Cs at its January 2013 meeting.

A 60 day notice of public comment period on this draft allocation has been published and will end on December 17, 2012. There is no action requested of the 4Cs at this time other than to hold a public hearing to accept public comments, consistent with state statute.

Recommendation: Receive public comments on the draft Solano Subregional housing unit allocation.

SOLANO
City-County Coordinating Council
Staff Report

Meeting of: November 8, 2012 **Agency/Staff:** Robin Cox, Solano County
Agenda Item No: VI. 1.

Title /Subject: Presentation on Centers for Disease Control and Prevention Grant and Appointment to the Grant Committee

Background/Discussion:

Receive a presentation on the $1.3 million California Community Transformation Initiative Grant through the Centers for Disease Control and Prevention (CDC) and seek approval to appoint City-County Coordinating Council member(s) to the Leadership Team. Below is the executive summary outlining the California Community Transformation Initiative.

Executive Summary

Introduction
The California Community Transformation Initiative (CA4Health) works to improve health in 42 of California's least populous counties by reducing exposing to tobacco smoke, encouraging physical activity and healthy eating, creating healthy and safe physical environments, and promoting quality clinical and preventive services. The five-year Initiative is part of the Community Transformation Grant (CTG) program administered by the Centers for Disease Control and Prevention. The CTG program was created by the 2010 Patient Protection and Affordable Care Act and is funded through the annual federal appropriations process.

California has received 10 CTG awards, including the CA4Health initiative. All other awards are designated for single county or Indian Health projects (San Diego, Los Angeles, San Francisco, Kern, Fresno, Sacramento, Toiyabe Indian Health Project, Stanislaus, and Ventura). By contrast, the CA4Health initiative operates in 42 California counties with populations under 500,000.

CTG's reliance on prevention-oriented public health approaches, rather than medical treatment alone, sets it apart from traditional health care programs. This new approach is validated by the latest research and offers real potential to improve health and quality of life in California's most underserved communities.

CA4HEALTH Structure
The non-profit Public Health Institute leads the CA4Health program, in partnership with the California Department of Public Health. Both organizations coordinate closely with local health departments to advance CA4Health's public health priorities. In addition, the Public Health Institute has engaged the services of expert technical assistance providers for each of the four priority areas to provide further guidance and support to local health departments. PHI also leads the CA4Health evaluation and developed a strong communications program to promote best practices among CA4Health counties and share lessons learned with policymakers and other health leaders throughout the state and the nation.

CA4Health has designated twelve of the 42 participating counties as “intensive intervention” areas. These counties will receive additional support throughout the project term, including approximately $250,000 in annual funding provided directly to local health departments. Intensive intervention counties were selected for a variety of reasons, including chronic disease burden and risk, expressed local interest in CA4Health priorities and existing local capacity.

The twelve intensive intervention counties are Calaveras, Humboldt, Imperial, Madera, Mendocino, Merced, Monterey, Shasta, Siskiyou, Solano, Tulare and Tuolumne. In total, these twelve counties contain 40% of the population of the 42-county CA4Health area and face the greatest health and socioeconomic challenges. Unemployment in the twelve-county intervention area is 25% higher than the statewide average, income is 17% lower and the burden of chronic disease risk factors and health inequities is even more significant in these counties than it is in the large urban centers. Five of the twelve intensive intervention counties are rural (Calaveras, Humboldt, Mendocino, Siskiyou and Tuolumne).

CA4HEALTH Priority Areas
CA4Health has developed four specific priority areas that fit within the broad approaches described previously (reducing exposing to tobacco smoke, promoting physical activity and healthy eating, creating healthy and safe physical environments, and improving the management of chronic disease). CA4Health’s specific priority areas are:

Promoting Smoke-Free Multi-Unit Housing (Tobacco)
Approximately 11 million Californians, or 34% of the state’s population, live in apartment buildings or other multi-unit housing structures. Residents in multi-unit housing face higher risk for involuntary exposure to secondhand smoke, which often drifts in from neighboring units or common outdoor areas. Children, pregnant women and the elderly are especially vulnerable to the effects of second hand smoke, which include asthma and other respiratory ailments, heart disease and cancer. Recent polls report that nearly half of California renters have experienced secondhand smoke drifting in to their apartments, and solid majorities support smoke-free zones in multi-unit housing structures. CA4Health counties working to protect multi-unit housing dwellers from secondhand smoke can encourage tobacco-related disclosures in rental agreements, bar smoking in common areas, and regulate smoking in individual units. All of these approaches may reduce the risk of chronic disease for smokers and non-smokers alike.

Limiting Access to Sugary Beverages (Healthy Eating)
Sugar sweetened beverages (SSBs) provide the single largest source of added sugar in the American diet and are a leading risk factor for Type 2 diabetes, obesity, heart disease and other serious chronic illnesses. SSB consumption is especially high among children: research shows that nearly two-thirds of teens in California consume SSBs every day. In several intensive intervention counties, daily SSB consumption rates approach 75%. CA4Health counties working to reduce access to sugary beverages may promote healthy vending policies in public buildings and on public land, encourage healthy changes to local procurement policies and work toward the elimination of sugar-sweetened sports drinks and energy drinks in schools. All of these policies are likely to have positive public health outcomes.

Chronic Disease Self Management Program (Clinical Services)
Individuals with chronic disease face unique barriers to healthy living, including fatigue, pain, depression and dangerous drug interactions. The Chronic Disease Self Management Program, which relies on community health workers to educate individuals with chronic diseases and enhance communication between patients and health providers, has been proven to mitigate these challenges.

A recent evaluation of the program conducted by the Stanford School of Medicine demonstrated significant improvements in nutrition and exercise, fewer hospital stays, reduced medication errors, and self-reported improvements in overall health. All twelve intensive intervention counties will work to implement the program and link community health workers, providers and participants to resources and policies that will make it possible for residents to effectively implement disease management programs that promote healthy choices and lifestyles.

Safe Routes to School and Related Policies to Enhance Walkable Communities (Healthy and Safe Physical Environments)

Lack of safe, walkable communities and inadequate access to recreational facilities are leading causes of physical inactivity among children and adults. CA4Health counties will work to improve access to safe opportunities to be physically active through two high-impact and low-cost strategies: opening school playgrounds and athletic facilities on afternoons and on weekends (Joint Use) and encouraging walking to schools, both by leveraging existing funding sources and organizing local "walk to school" days and similar promotions (Safe Routes to School). In rural counties, this work will build an evidence base for adapting a Safe Routes to School approach to rural settings, such as by working to create safe routes to bus stops, and walkable school surroundings.

CA4HEALTH Evaluation

By extending the work to create healthier community environments to reach all 42 of California's less populous states, CA4HEALTH will make an important contribution, building the evidence base for strategies that are effective in rural, frontier, and less populous urban areas. Implementation plans will be developed for each of the above-referenced priorities at both the state and local levels. These plans will be linked to the shared data platform and the CDC MIS system to track activities and assess performance. In addition, PHI will develop an evaluation plan to assess the impact of the CA4HEALTH program, focusing intensively on one area of activity with an eye towards building evidence of what works in community based prevention. PHI will also produce case studies of particularly innovative activities.

Recommendation: Approve one or more appointment(s) to the California Community Transformation Initiative Leadership Team.

SOLANO
City County Coordinating Council
Staff Report

Meeting of. November 8, 2012 **Agency/Staff:** Daryl K. Halls, STA
Agenda Item No: VI. 2

Title /Subject: Priority Development Areas Implementation Criteria

Review the criteria to be used by STA in selecting projects to receive funding from MTC's OBAG process.

Background:
The Regional Transportation Plan (RTP) is the long-range transportation plan for the 9-county Bay Area. It is prepared every 4 years by the Metropolitan Transportation Commission (MTC). The RTP sets out a 25-year vision for the region's transportation system, establishes goals and milestones for achieving that vision, and lists projects that are designed to help meet those goals.

In late December 2011, MTC released guidelines for the OneBayArea Grant (OBAG) program. OBAG is a new program developed by MTC and ABAG for the allocation of the region's federal Surface Transportation Program (STP) and Congestion Mitigation and Air Quality (CMAQ) funds. Historically, these have been titled federal cycle funds. The OBAG proposal will combine funds for local streets and roads maintenance, Transportation for Livable Communities (TLC), regional bicycle network and Congestion Management Agency (CMA) Planning activities. Safe Routes to Schools (SR2S) is eligible for OBAG funding, but will also be receiving funds that are specifically allocated to SR2S.

On July 12th, the STA Board issued a Call for Projects for CMAQ-eligible projects and programs. A total of $6.3 million in CMAQ funds is available. STA staff subsequently met with all of the STA staff and citizen advisory committees and with members of the Yoche Dehe tribe to solicit input on priority for OBAG funds.

On September 12, 2012, the STA Board held a workshop to obtain input from the STA advisory committees and the general public on OBAG projects and criteria. At the Board meeting, the OBAG CMAQ Project and Program Criteria were discussed. The STA Board modified ranking criteria 10 to specify that equity should be based upon the largest number of residents and businesses that benefit from a project, rather than its geographical location. On October 10, 2012, the STA Board made final adjustments to the wording of the project selection criteria, and requested STA staff bring back a discussion of methodology and additional sample project rankings.

Discussion:
There are two types of criteria – Screening and Prioritization. Screening criteria will be used to make sure that projects or programs are eligible to receive funds. Projects or programs that do not meet the screening criteria will receive no further analysis.

Prioritization criteria will assist the STA Board in determining which projects will receive funding. There are 13 criteria. They are not listed in order of importance, and are not given numerical weight. Instead, they are designed to help provide the Board with information during a qualitative decision making process. They criteria are designed in part to meet the minimum requirements of MTC Resolution 4035, which establishes the OBAG process; however, they are also designed to reflect local priorities and issues.

STA staff will provide a preliminary ranking for all of the criteria except #8, and will provide that ranking to the STA TAC for comment. The STA Board has asked the 8 Planning Directors to provide the ranking for criteria #8.

The STA Board is scheduled to make its final determination on OBAG funding at its regular meeting of January 9, 2012.

Recommendation:
Information.

Attachments: STA OBAG Project Screening and Prioritization Criteria

Attachment A
STA OBAG Project Screening and Prioritization Criteria

OBAG CMAQ Project and Program Eligibility Criteria

- Projects or programs must be identified in an adopted or draft STA document.
- The project must be delivered by a public agency.
- Projects may only be programmed in jurisdictions with a Housing Element approved by the California Department of Housing and Community Development.
- Projects may only be programmed in jurisdictions that prove compliance with MTC's Complete Streets policy.
- Project funds must be able to be obligated by March 31, 2016.

OBAG Prioritization Criteria (STA)

1. How many of goals of the Regional Transportation Plan (RTP) or the Solano Comprehensive Transportation Plan (CTP) are advanced by the project?

2. Does the project support transportation and land use connections, PDA's and Priority Conservation Areas (PCAs) by:
    - Encouraging housing and employment near transit
    - Directly facilitating development investments addressing access improvements
    - Encouraging users of open space or direct consumer purchase from agricultural producers
    - Implementing a transportation and land use plan with demonstrated community consensus

3. Does the project address safety improvements?
    - Reduction in the number of collisions
    - Reduction in severity of collisions
    - Reduction in bicycle/pedestrian collisions

4. Is the project a recognized priority project in any of the STA's adopted plans, and if so what rank?

5. Is the project located in a community of concern as defined by MTC, and included in any of the STA's Community Based Transportation Plans?

6. Will the project be delivered in the first two years of the OBAG cycle (FY 12-13 or FY 13-14), or the second two years (FY 14-15 or FY 15-16)? Factors that will determine this include:
    a. Is the project identified in a locally-adopted master plan?
    b. Does it have environmental clearance and completed Plans, Specifications and Estimates (PS&Es)?
    c. What is the project delivery record of the sponsoring agency?
    d. If the project is large, can the project sponsor deliver earlier project phases with independent utility?

7. Does the project deliver an element of a Complete Street?

8. Is the project located in a jurisdiction that is taking its fair share of the county's housing allocation in the upcoming Regional Housing Needs Allocation process?

9. Does the project or program support maintaining and expanding the employment base in Solano County?

10. Does the project or program benefit a large number of residents and businesses, including multiple jurisdictions?

11. Does the project encourage or facilitate the use of public transit or other use of alternative modes?

12. Does the project or program contribute towards the equitable distribution of benefits through the OBAG program?

13. Have adequate local match funds been identified for the project?

SOLANO
City County Coordinating Council
Staff Report

Meeting of. November 8, 2012 **Agency/Staff:** Robert Macaulay, STA
Agenda Item No: VI. 3

Title /Subject: Energy Chapter Climate Action Plan (ECCAP) Administrative Drafts for Dixon, Fairfield, Rio Vista and Suisun City

Discuss content of draft ECCAPs for the listed cities, and recommend that each city's Planning Commission hold a hearing on the Draft ECCAP.

Background:

On July 13, 2011, the STA Board authorized staff to pursue funds from the California Strategic Growth Council (SGC) for the development of a multi-agency Climate Action Plan (CAP) and CAP Implementation Strategy, subject to endorsement from the Solano City County Coordinating Council (4Cs). Subsequently, the Pacific Gas and Electric Company (PG&E) contacted STA and stated that funds were available to assist STA in the development of a CAP focused on energy production and use. The ECCAP will cover the cities of Dixon, Fairfield, Rio Vista, Suisun City; the City of Vacaville is developing a CAP as part of its General Plan update, and is coordinating its CAP contents with the STA-led effort.

The County and STA are working together to also implement a CAP for non-energy emissions, and an integrated CAP Implementation Plan, funded by a state Strategic Growth Council (SGC) grant. The ECCAPs will likely not move forward for City Council consideration until the SGC documents are also ready for consideration and adoption.

Discussion:

STA's ECCAP consultant, AECOM, has met with public works, planning and building staffs from the involved cities, and has gathered energy use data from PG&E, in order to develop a profile of current and projected energy use. AECOM has also discussed with city staff the measures that are in place or that may be considered in order to reduce GHG emissions from energy production and consumption. These meetings have been both one-on-one with city staff and at month meetings of the ECCAP Technical Advisory Committee (TAC). The TAC also includes representatives from local business, the Solano College Small Business Development Center and the Solano Economic Development Corporation.

The Draft ECCAPs work the information regarding existing and projected emissions, potential emission reduction strategies and the impact of these strategies into a cohesive narrative which is customized for each city. While each Draft ECCAP is focused on a specific community, they all share a common organization. Where possible, the recommended energy-related GHG emission reduction measures are also common to all of these cities. This will reduce the potential for one community to be at a competitive disadvantage due to its ECCAP measures, and will allow for more efficient implementation of GHG reduction measures by allowing a sharing of resources.

The Draft ECCAPs for each of the four participating cities are included as Attachment A. These documents are still undergoing final city staff review. If city staff recommends changes, those changes will be provided at the 4Cs meeting.

Because of restrictions on the PG&E funding, each of the participating cities is required to have an ECCAP document that could be considered by their City Council by the end of 2012. However, it will be more effective if the actual City Council hearing includes measures from both the ECCAP and the SGC funded work. As a result, the Planning Commissions will be asked to review the Draft ECCAPs and make a recommendation to the City Council, but the final Council action will be coordinated so that the entire CAP can be considered at a single hearing. The final CAP is expected to be ready for consideration in late 2013 or early 2014.

Recommendation:

Approve release of the Draft ECCAPs for the cities of Dixon, Fairfield, Rio Vista and Suisun City, and request that the Planning Commissions of those Cities hold public hearings on the Draft ECCAPs.

Attachments: Draft ECCAPs for the cities of Dixon, Fairfield, Suisun City and Rio Vista

City of Dixon
Climate Action Plan

Administrative Draft
Energy Efficiency Plan
November 2012

City of Dixon
Climate Action Plan

Administrative Draft
Energy Efficiency Plan
November 2012

Prepared for:

City of Dixon

Consultant to the City:

AECOM

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CHAPTER 1
INTRODUCTION: PLANNING FOR CLIMATE CHANGE

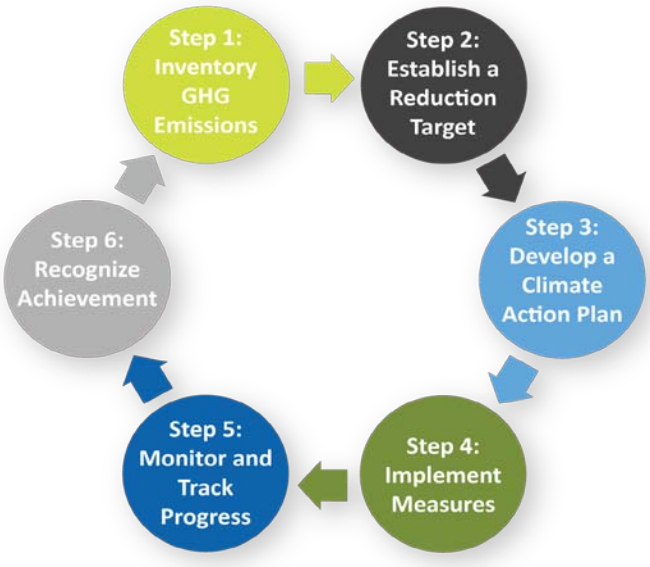
Greenhouse gas (GHG) emissions and resulting climate change impacts are considered by the state of California as a major global challenge for the 21st century. According to most climatologists the planet is starting to experience shifts in climate patterns and increased frequency of extreme weather events at both the global and local levels. At a statewide level, these impacts include reduced snow pack in the Sierra Nevada affecting California water supplies; rising sea levels threatening cities along the coast, San Francisco Bay, and Sacramento River; decreasing air quality affecting public health, particularly in the Central Valley; and, rising temperatures impacting the state's agricultural industry, including Solano County farmers and agricultural businesses.

This plan seeks to address these impacts by increasing local energy independence, improving building energy and water efficiency, and establishing a regional framework for collaboration. This framework would address energy use issues to impact climate change and reduce energy use in a manner that provides cost efficiencies in program implementation. For example, energy costs impact both household and business budgets on a daily basis. Increases in the efficiency of energy use can quickly pay for themselves, helping families stay in their homes and businesses stay in their communities. The emphasis will be on GHG emission reductions, with the understanding that steps taken to reduce GHG emissions will also improve energy efficiency while saving money.

What is a CAP?

A CAP (Climate Action Plan) is a tool that many cities in California are using to quantify their share of statewide GHG emissions and establish action steps toward achieving a local emissions reduction target. A CAP provides a set of strategies intended to guide community efforts to reduce GHG emissions, typically through a combination of statewide and local actions. Figure 1.1 shows the typical steps included in the CAP process.

Figure 1.1 – Steps in the CAP Process



A CAP contains community-specific GHG emission inventories and forecasts to establish a starting point and probable future emissions levels if no action is taken (Step 1). A reduction target is then defined to provide an aspirational goal for improvement (Step 2). Emission reduction measures and implementation programs are then written to help the city meets its goal by achieving the reduction target (Step 3). Upon adoption of the CAP, the jurisdiction takes action to implement the reduction measures (Step 4), monitor their progress towards achievement of the reduction target (Step 5), then evaluate effectiveness, celebrate their successes, and use the monitoring results to make adjustments to CAP measures to improve performance (Step 6). This CAP represents the City's progress on Steps 1-3.

Purpose

The climate action planning process seeks to identify measures which are informed by the goals, values and priorities of the community, while at the same time contributing to the State's climate protection efforts and complying with the local Air Quality District's efficiency standards for GHG emissions. In addition, the climate action plan measures are intended to enhance community resilience by increasing local energy independence, improving building energy and water efficiency, and establishing a regional framework for collaboration on climate change issues. It is anticipated there will be California

Environmental Quality Act (CEQA) review streamlining benefits for development projects occurring within a jurisdiction that has an adopted CAP.

Process

The City of Dixon prepared this CAP as part of a Solano County regional-effort, involving the cities of Rio Vista, Fairfield, and Suisun City. The cities of Benicia, Vallejo, Vacaville, and the County of Solano have adopted CAPs. The intent of preparing this CAP through a regional collaborative process was to establish a common list of reduction measures so that no one jurisdiction would become economically disadvantaged through its CAP actions, and to find collaborative opportunities for plan implementation. This CAP describes how the City of Dixon (Dixon) will achieve GHG reductions through local actions that contribute to the statewide GHG emissions reduction target defined in Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, CEQA guidelines, and other State guidance.

PG&E Green Communities Program

The four participating cities named above, along with the City of Vacaville, received funding through the Pacific Gas & Electric Company's (PG&E's) Green Communities Program to prepare energy efficiency climate action plans. These plans included many components of a full CAP, including evaluation of baseline emissions, future energy use forecasts, target setting, and the development of energy efficiency measures. The resulting information prepared during that effort has been included throughout this CAP.

Strategic Growth Council Planning Grant

The cities of Dixon, Rio Vista, Fairfield, and Suisun City also received funding from the Strategic Growth Council (SGC) to develop the remaining non energy-related components of a CAP. This included preparing emissions forecasts for the transportation, solid waste, wastewater, water, and off-road mobile sources sectors, as well as development of reduction measures targeting these sectors. This work has been combined with the energy efficiency work mentioned above to create a comprehensive CAP.

The participating cities each developed a customized CAP, relevant to their community's specific context, and have reached out to residents and businesses for public feedback and participation.

Context

Many cities in California are using CAPs to quantify their share of statewide GHG emissions and establish action steps toward achieving a local emissions reduction target. CAPs typically address emissions targets through reduced dependency on fossil fuels and nonrenewable energy sources, and through increases in the efficient use of the energy that is consumed. CAPs also provide a way to connect climate change

mitigation (GHG reduction) to climate adaptation, community resilience, and broader community goals.

In Dixon, most GHG emissions come from energy used in buildings and gasoline burned in motor vehicles, with water and waste related emissions contributing relatively smaller proportions. Dixon's CAP examines the communitywide activities that result in GHG emissions and establishes strategies that help reduce those emissions in future and existing development through both voluntary and mandatory actions.

Many of the strategies included in this plan, in addition to reducing GHGs, will also help make Dixon a more attractive place to live – lowering energy and water bills through conservation, improving bike and pedestrian facilities, improving air quality, and reducing waste generation to extend the lifetime of local landfills. See the section on Benefits of Addressing GHG Emissions below.

Scope and Content of the Climate Action Plan

The CAP comprises four chapters: 1) Introduction: Planning for Climate Change; 2) Baseline Emissions Inventory, Forecasts, and Targets; 3) Emissions Reduction Measures; and 4) Benchmarks and Implementation. Appendices A through B provide additional detail on topics covered within the plan. The contents of each chapter and appendix are briefly described below:

- **Chapter 1, Introduction: Planning for Climate Change,** describes the City's rationale for reducing GHG emissions, as well as the goals of the CAP to comply with local Air Quality Management District guidelines, as applicable. This chapter provides an overview of the topics covered in the CAP, presents conventional climate change science findings, and describes statewide actions to address climate change. This chapter also introduces the CAP's relationship to General Plan Environmental Impact Reports (EIRs), and its ability to enable a CEQA tool known as "tiering" to allow consistent future discretionary development projects to skip certain steps in the traditional CEQA process.
- **Chapter 2, Baseline Emissions Inventory and Forecast-Inventories, Projections and Targets**, outlines key steps taken to develop the CAP, including the 2005 baseline GHG inventory, projecting future emissions in 2020 and 2035, setting a communitywide GHG reduction target for 2020 and a long-range target for 2035. This chapter also describes the emissions gap between the reduction target and statewide reductions, as well as the local reductions attributable to implementation of statewide climate change policy.
- **Chapter 3, Emissions Reduction Measures,** addresses five main reduction strategies: energy, land use and transportation, water conservation, waste reduction, and municipal operations. The CAP provides a summary of projected reductions and a description of the reduction strategy development process. The CAP identifies the following for each reduction strategy: key elements, existing programs and accomplishments, implementation actions, performance metrics against which to measure success, and estimated GHG reductions in 2020 and 2030.

- **Chapter 4, Benchmarks and Implementation**, describes the process to monitor the City's progress toward achieving their GHG reduction target. This chapter identifies monitoring procedures, plan update processes and other steps to ensure successful implementation.
- **Appendix A - Emissions Inventory Methodology** provides technical description of methods for the 2005 emission inventories and 2020 and 2030 projections.
- **Appendix B - Emissions Reduction Quantification Methodology** provides assumptions used to determine GHG emission reductions associated with primary CAP measures.

Climate Change Science

The United Nations International Panel on Climate Change (IPCC), defines "climate change" as "a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer." [i] The properties of GHGs are such that they retain heat in the atmosphere, which would otherwise escape to space. GHGs accumulate in the atmosphere when they are emitted faster than they can be naturally removed, and that accumulation prompts changes in the climate system. Once emitted into the atmosphere, GHGs influence the Earth's energy balance for a period of decades to centuries.[ii] [iii]

Trend projections indicate that atmospheric concentrations of GHG emissions will continue to increase throughout this century. If these projections become reality, climate change will threaten our economic well-being, public health, and environment.

California has an advantage in its scientific understanding of climate change. A solid body of vital data is available to assist state and local leaders to better understand how climate change is affecting us now, what is in store ahead and what we can do about it. State-sponsored research has played a major role in recent advances in our understanding of the potential impacts of climate change on California. A first assessment, published in 2006, made clear that the level of impacts is a function of global emissions of greenhouse gases and that lower emissions can significantly reduce those impacts.[iv] The third and most recent publication, The 2012 Vulnerability and Adaptation Study, explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts. [v]

The California legislature passed legislation (addressed below) based upon the findings of the IPCC, the U.S. Global Change Research Program, and the National Research Council of the U.S. National Academy of Sciences, together representing the most comprehensive, advanced, and thoroughly reviewed documents on the science of climate change. The development of CAPs in California in general, and in Solano County specifically, are based upon the actions of the California legislature and its reliance on these findings. For further information on Climate Science, please visit the California Climate Change Portal at http://www.climatechange.ca.gov/.

BENEFITS OF ADDRESSING GHG EMISSIONS

Planning efforts intended to reduce GHG emissions through resource efficiency and conservation measures often have multiple co-benefits as well that will improve the local quality of life. While some co-benefits are qualitative, others are quantifiable improvements over current conditions.

Although the following list is in no way exhaustive of the myriad co-benefits related to climate action planning, this plan references them to illustrate the overlapping benefits of various CAP measures. Overall, these co-benefits:

- Strengthen local economic development (e.g., CEQA streamlining/tiering, transparent development requirements)
- Demonstrate regional sustainability leadership
- Improve neighborhood experience
- Support climate change adaptation strategies

Co-benefits that are applicable to specific measures are listed. The following list uses icons that will be shown with their related CAP measures in Chapter 3:


Improves air quality


Reduces energy use


Promotes regional smart growth


Reduces water use; thus extending community supply


Improves water quality; reduces storm water run-off


Improves local energy independence


Increases natural habitat


Reduces heat island effect


Improves public health


Creates jobs


Reduces waste


Provides long-term savings to residents

California Climate Change Actions

Dixon's strategy for climate protection, as one of eight local plans in the Solano County regional climate action planning effort, must be set within the context of the Bay Area and the State, where much of the momentum for local action in the United States originates.

California has long been a sustainability leader, as illustrated by Governor Schwarzenegger signing Executive Order (EO) S-3-05 in 2005. EO S-3-05 recognizes California's vulnerability to a reduced snowpack, exacerbation of air quality problems, and potential sea-level rise due to a changing climate. To address these concerns, the governor established targets to reduce statewide GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050.

In 2006, California became the first State in the country to adopt a statewide GHG reduction target through AB 32. This law codifies the EO S-3-05 requirement to reduce statewide emissions to 1990 levels by 2020. AB 32 resulted in the 2008 adoption by the California Air Resources Board (ARB) of a *Climate Change Scoping Plan* (Scoping Plan), outlining the State's plan to achieve emission reductions through a mixture of direct regulations, alternative compliance mechanisms, different types of incentives, voluntary actions, market based mechanisms, and funding. The Scoping Plan addresses similar areas to those contained in this CAP, including transportation, building energy efficiency, water conservation, waste reduction, and green infrastructure.

AB 32 engendered several companion laws that can assist Dixon in reducing communitywide GHG emissions. These legislative actions and regulations are referred to as statewide actions throughout this plan, and represent a significant source of estimated GHG reductions. Dixon estimated the GHG emission reductions associated with:

- the Renewable Portfolio Standard (RPS),
- AB 1109,
- 2013 California Title 24,
- AB 1493,
- EO-S-1-07, and
- Vehicle efficiency regulations.

As the regulatory framework surrounding AB 32 grows, it may be possible to evaluate a wider range of statewide reductions.

RENEWABLE PORTFOLIO STANDARD

SB 1078, SB 107, EO-S-14-08, and SB X1-2 have established increasingly stringent Renewable Portfolio Standard (RPS) requirements for California utilities. RPS-eligible energy sources include wind, solar, geothermal, biomass, and small-scale hydro.

- **SB 1078** required investor-owned utilities to provide at least 20% of their electricity from renewable resources by 2020.
- **SB 107** accelerated the SB 1078 timeframe to take effect in 2010.

- **EO-S-14-08** increased the RPS further to 33% by 2020. PG&E, Dixon's electricity provider, delivered 12.1% of its electricity from eligible renewable sources in 2005 and 19% in 2011. **SB X1-2 co**dified the 33% RPS by 2020 requirement established by EO-S-14-08.

AB 1109 – LIGHTING EFFICIENCY

AB 1109 was signed into **law in** 2007. The California Lighting Efficiency and Toxics Reduction Act requires the California Energy Commission to adopt energy efficiency standards for all general purpose lights, reducing lighting energy usage in indoor residences and state facilities by no less than 50%, by 2018, as well as require a 25% reduction in commercial facilities by that same date. To achieve these efficiency levels, the California Energy Commission applied its existing appliance efficiency standards to include lighting products, as well as require minimum lumen/watt standards for different categories of lighting products. In addition, the bill prohibits the manufacturing for sale or the sale of certain general purpose lights that contain hazardous substances.

CALIFORNIA TITLE 24

Title 24 of the California Code of Regulations dictates how new buildings and major remodels are constructed in California. Title 24, Part 6 is a component of Title 24 that details energy efficiency standards for residential and non-residential development. It is updated on approximately a three-year cycle. The State will be increasing building energy conservation requirements through adoption of the 2013 Title 24 standards, which will go into effect beginning in 2014. It is estimated that these revisions to the current 2008 Title 24 standards will result in energy consumption reductions of 25% over the current standards.

AB 1493 – PAVLEY I AND II

AB 1493, California's mobile-source GHG emissions regulations for passenger vehicles, or California Clean Car Standards, was signed into law in 2002. AB 1493 requires ARB to develop and adopt regulations that reduce GHG emissions from passenger vehicles, light-duty trucks, and other non-commercial vehicles for personal transportation. In 2004, ARB approved amendments to the California Code of Regulations adding GHG emissions standards to California's existing standards for motor vehicle emissions.

EO-S-1-07 – THE LOW CARBON FUEL STANDARD

EO-S-01-07 reduces the carbon intensity of California's transportation fuels by at least 10% by 2020. The Low Carbon Fuel Standard (LCFS) is a performance standard with flexible compliance mechanisms that incentivizes the development of a diverse set of clean, low-carbon transportation fuel options to reduce GHG emissions.

VEHICLE EFFICIENCY REGULATIONS

ARB has adopted several regulations to reduce emissions through improved vehicle efficiency that will have local GHG emission reduction benefits in Dixon. The following two regulations were quantified and included in as part of this CAP.

Tire Inflation Regulation

On September 1, 2010, ARB's Tire Pressure Regulation took effect. The purpose of this regulation is to reduce GHG emissions from vehicles operating with under-inflated tires by inflating them to the recommended tire pressure rating. The regulation applies to vehicles with a gross vehicle weight rating (GVWR) of 10,000 pounds or less. Under this regulation, automotive service providers must meet the following requirements:

Check and inflate each vehicle's tires to the recommended tire pressure rating, with air or nitrogen, as appropriate, at the time of performing any automotive maintenance or repair service.

- Indicate on the vehicle service invoice that a tire inflation service was completed and the tire pressure measurements after the service were performed.
- Perform the tire pressure service using a tire pressure gauge with a total permissible error no greater than + two (2) pounds per square inch (psi).
- Have access to a tire inflation reference that is current within three years of publication.
- Keep a copy of the service invoice for a minimum of three years, and make the vehicle service invoice available to the ARB, or its authorized representative upon request.

Heavy-Duty Vehicle GHG Emission Reduction (Aerodynamic Efficiency)

This regulation requires existing trucks/trailers to be retrofitted with the best available technology and/or ARB-approved technology to increase vehicle aerodynamics and fuel efficiency that will result in GHG reductions. This measure has been identified as a Discrete Early Action in the Scoping Plan, which means it must be enforceable beginning in 2010. Technologies that reduce GHG emissions and improve the fuel efficiency of trucks may include devices that reduce aerodynamic drag and rolling resistance. These requirements apply to both California-registered trucks and out-of-state registered trucks that travel to California.

SB 7x

SB 7x requires the state to achieve a 20% reduction in urban per capita water use by December 31, 2020. The state is required to make incremental progress toward this goal by reducing per capita water use by at least 10% on or before December 31, 2015. SB 7x requires each urban retail water supplier to develop both long term urban water use targets and an interim urban water use target. SB 7x also creates a framework for future planning and actions for urban and agricultural users to reduce per capita water consumption 20% by 2020.

Relationship to the General Plan

Whether by local desire, guidance from the State of California, or both, more and more cities and counties are addressing climate change in their general plans and including policies and programs that have a co-benefit of reducing GHG emissions. The City's policy commitment includes encouraging higher density, mixed-use and infill development in appropriate locations, energy efficiency, and renewable energy development that contribute to GHG reduction strategies contained in the CAP. Since GHG emissions are a cross-cutting issue addressed by many General Plan elements, the CAP as a whole is generally considered an implementation measure for the General Plan. This structure allows the City to update the CAP on an ongoing, as-needed basis to ensure that the City's climate protection efforts reflect both current legislation and emerging best practices.

In addition, several state agencies have provided guidance and case studies for local governments to address climate change in their general plans. For example:

- Since 2008, the California Attorney General's office has provided guidance to local government on addressing climate change and greenhouse gas reduction through general plan policies.
- The California Office of Planning and Research (OPR) is preparing a 2013 update to the state's *General Plan Guidelines* that will include guidance for GHG emissions reduction and climate adaptation.
- The California Natural Resources Agency has released a Climate Adaptation Policy Guide for local governments.
- The California Department of Housing and Community Development has released a guidance document on general plan housing elements policies and programs addressing climate change with case study examples.
- The Office of Planning and Research prepared a guidance documents for addressing complete streets in general plans as required by AB 1358.

Relationship to the California Environmental Quality Act

Local governments may prepare a Plan for Reduction of Greenhouse Gases that is consistent with AB 32 goals. By preparing such a plan, the city can streamline CEQA review of subsequent plans and projects consistent with the GHG reduction strategies and target in the plan. To meet the standards of a qualified GHG reduction plan, Dixon's CAP must achieve the following criteria (which parallel and elaborate upon criteria established in State CEQA Guidelines Section 15183.5[b][1]):

- Completing a baseline emissions inventory and projecting future emissions
- Identifying a community-wide reduction target
- Preparing a CAP to identify strategies and measures to meet the reduction target
- Identifying targets and reduction strategies in the General Plan and evaluating the environmental impacts of the CAP in the General Plan EIR
- Monitoring effectiveness of reduction measures and adapting the plan to changing conditions
- Adopting the CAP in a public process following environmental review

This approach allows jurisdictions to analyze and mitigate the significant effects of GHGs at a programmatic level, by adopting a plan for the reduction of GHG emissions. Later, as individual projects are proposed, project-specific environmental documents may tier from and/or incorporate by reference that existing programmatic review in their

cumulative impacts analysis. Project-specific environmental documents prepared for projects consistent with the General Plan and CAP may rely on the programmatic analysis of GHGs contained in an EIR that would be certified for the City's future General Plan and CAP. Chapter 4 provides a discussion of the criteria and process the City will use to determine if a future project is consistent with the CAP.

A project-specific environmental document that relies on this CAP for its cumulative impacts analysis must identify specific CAP measures applicable to the project, and how the project incorporates the measures. If the measures are not otherwise binding and enforceable, they must be incorporated as mitigation measures applicable to the project. If substantial evidence indicates that the GHG emissions of a proposed project may be cumulatively considerable, notwithstanding the project's compliance with specific measures in this CAP, an EIR must be prepared for the project.

Notes

[i] Intergovernmental Panel on Climate Change. (2007). Climate Change 2007: Synthesis Report. Retrieved from: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

[ii] 74 Fed. Reg. 66514

[iii] Section retrieved from https://en.wikipedia.org/wiki/Regulation_of_greenhouse_gases_under_the_Clean_Air_Act; October 2012

[iv] Our Changing Climate 2012. Vulnerability & Adaptation to the Increasing Risks from Climate Change in California. A Summary Report on the Third Assessment from the Climate Change Center. July 2012. Page 1. Retrieved from: http://www.energy.ca.gov/2012publications/CEC-500-2012-007/CEC-500-2012-007.pdf

[v] Retrieved from http://www.climatechange.ca.gov/; October 2012

CHAPTER 2

EMISSIONS INVENTORY, FORECASTS + TARGETS

2

This chapter examines current and projected communitywide greenhouse gas (GHG) emissions for the City of Dixon. It outlines key steps taken to develop the CAP, including preparing the 2005 baseline GHG inventory, forecasting future emissions for 2020 and 2035, and setting a communitywide GHG reduction target for 2020 and a long-range target for 2035. Future emissions are forecast assuming no action is taken to reduce emission levels. These future emissions are based on projected activity data for each sector of the emissions inventory. This chapter also describes the emissions gap between the reduction targets and statewide reductions.

Baseline Inventory (2005)

The purpose of a baseline inventory is to provide a snapshot of communitywide GHG emissions in a given year. Even though AB 32 refers to 1990 levels as baseline, the State has determined 2005 as a viable baseline year, as long as it is on the same trajectory. The City developed a baseline emissions inventory for the 2005 operational year as part of a Countywide climate action planning effort in 2011. Although the City is located within the YSAQMD's jurisdictional boundary, at the time of this analysis, YSAQMD had not developed specific GHG inventory guidance. As a result, the City of Dixon's inventory was calculated to be consistent with BAAQMD's GHG Plan Level Quantification Guidance. The inventory addresses the following emission sectors: energy, transportation, solid waste, off-road equipment, wastewater, and potable water.

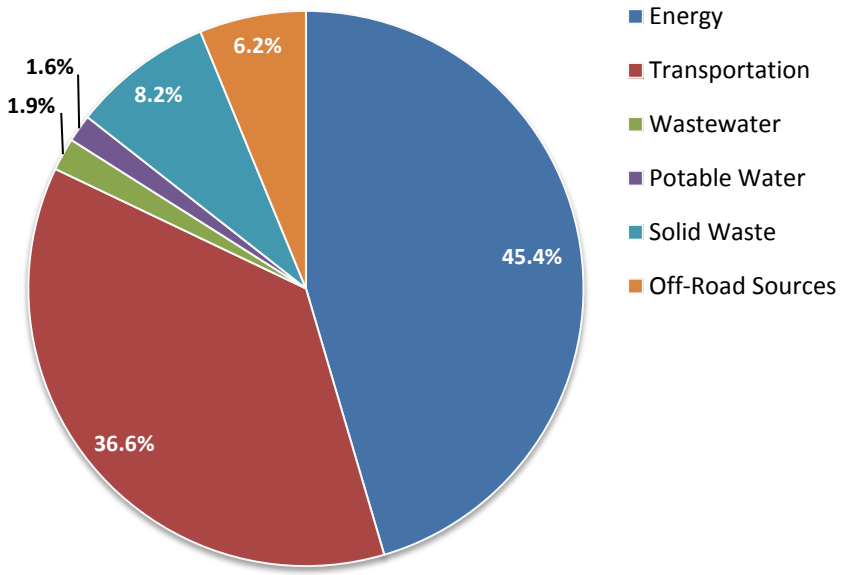
The baseline emissions inventory was prepared using energy consumption data from Pacific Gas and Electric Company (PG&E), solid waste data from city staff and local landfills, and vehicle travel data from the new Metropolitan Transportation Commission activity-based travel model. This empirical data was used along with emission factors to estimate Dixon's communitywide emissions. See Appendix A for the emissions inventory methodology.

The baseline emissions inventory identified a communitywide emissions total of 104,899 metric tons of carbon dioxide equivalent emissions (MT CO_2e) in 2005. As shown in Figure 2.1 and Table 2.1, energy use is the largest contributor of GHG emissions in the city, with transportation emissions contributing a majority of the remainder. The energy and transportation sectors account for approximately 82% of total emissions. Solid waste emissions provide 8% of the inventory, and off-road sources provide another 6%. Wastewater treatment and potable water use are both small contributors in comparison, making up the remaining 3% of the inventory.

Table 2.1 2005 Communitywide Emissions			
Emission Sector	**Subsector**	**Emissions (MT CO_2e/year)**	**Communitywide Total (%)**
Energy		**47,660**	**45.4%**
Electricity Subtotal		*23,180*	*22.1%*
	Residential	10,374	9.9%
	Commercial	12,806	12.2%
Natural Gas Subtotal		*24,480*	*23.3%*
	Residential	12,441	11.9%
	Commercial	12,039	11.5%
Transportation		**38,443**	**36.6%**
	Passenger Vehicles	31,088	29.6%
	Commercial Vehicles	7,354	7.1%
Solid Waste		**8,641**	**8.2%**
Off-Road Sources		**6,475**	**6.2%**
Wastewater	Wastewater Treatment	**2,000**	**1.9%**
Potable Water	Water Demand	**1,680**	**1.6%**
Total		**104,899**	**100.0%**

Source: AECOM 2012
Note: Columns may not total 100% due to rounding

Figure 2.1 – 2005 Baseline Emissions by Sector



Emissions Forecasts (2020 and 2035)

The baseline inventory was used to project the communitywide GHG emissions in 2020 and 2035 under a business-as-usual (BAU) scenario. Dixon's GHG emissions were forecast for the years 2020 and 2035, assuming that historic trends describing energy and water consumption, travel, and solid waste generation will remain the same in the future. Therefore, emissions forecasts demonstrate what emissions levels are likely to be under a scenario in which no statewide or local actions are taken to curtail emissions growth.

BAU emission forecasts provide insight regarding the scale of reductions necessary to achieve an emissions target. GHG reduction measures developed for the CAP are applied to the 2020 and 2035 emissions levels to determine if the City will achieve its GHG reduction targets.

The BAU forecasts use applicable and appropriate indicators for each sector, as well as population and employment growth assumptions established by the Association of Bay Area Governments (ABAG). The 2020 forecast year aligns with the AB 32 target year, while the 2035 forecast year aligns with the SB 375 planning horizon. These projections have been developed for planning purposes, and due to the complexity of each emissions sector, are subject to change. As 2020 approaches, the City will reevaluate its emissions projections and reduction targets to incorporate progress toward long-term GHG reductions, and will repeat this process as 2035 approaches as well. See Appendix A for the emissions forecast methodology.

Table 2.2 identifies projected communitywide emissions by sector for 2020 and 2035. Energy and transportation remain the largest emissions sectors in 2020 and 2035 (XX% and XX%, respectively), followed by solid waste, off-road mobile sources, wastewater, and potable water. Energy use accounts for the largest proportional emissions increase for both projection years (9.5% increase in 2020 and 17.7% increase in 2035).

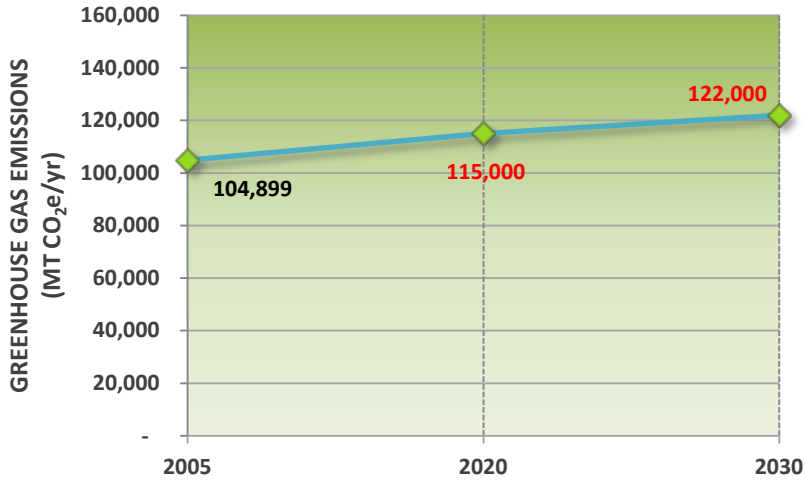
As illustrated in Figure 2.2, communitywide emissions would increase by approximately XX MT CO2e/yr (XX%) between 2005 and 2020, and by approximately XX MT CO_2e/yr (XX%) between 2005 and 2035. The magnitude of communitywide GHG emissions increases from 2005 to 2020 and 2035 is due primarily to anticipated future population and employment growth (and related consumption activity) in Dixon.

Table 2.2
Communitywide Emissions 2005-2035

Emission Sector	2005 Emissions (MT CO_2e/yr)	2020 Emissions (MT CO_2e/yr)	Increase from 2005 (%)	2035 Emissions (MT CO_2e/yr)	Increase from 2005 (%)
Energy	**47,660**	**52,192**	**9.5%**	**56,079**	**17.7%**
Electricity Subtotal	*23,180*	*25,384*	*9.5%*	*27,274*	*17.7%*
Residential	10,374	11,360	9.5%	12,206	17.7%
Commercial	12,806	14,024	9.5%	15,068	17.7%
Natural Gas Subtotal	*24,480*	*26,808*	*9.5%*	*28,805*	*17.7%*
Residential	12,441	13,624	9.5%	14,639	17.7%
Commercial	12,039	13,184	9.5%	14,166	17.7%
Transportation	**38,443**	**XX**	**XX**	**XX**	**XX**
Passenger Vehicles	31,088	XX	XX	XX	XX
Commercial Vehicles	7,354	XX	XX	XX	XX
Solid Waste	**8,641**	**XX**	**XX**	**XX**	**XX**
Off-Road Sources	**6,475**	**XX**	**XX**	**XX**	**XX**
Wastewater	**2,000**	**XX**	**XX**	**XX**	**XX**
Potable Water	**1,680**	**XX**	**XX**	**XX**	**XX**
Total	**104,899**	**XX**	**XX%**	**XX**	**XX%**

Source: AECOM 2012
Note: Columns may not total 100% due to rounding

Figure 2.2 - Dixon Baseline and Projected Emissions



GHG Emission Reductions from Statewide Actions

Most of Dixon's anticipated emission reductions will likely come from statewide actions. This CAP assumes that emissions within the energy, transportation, and water sectors will be reduced through statewide efforts described in Chapter 1. This includes regulations addressing the use of renewable energy sources, energy and water efficiency, and GHG emissions from passenger cars and trucks. These actions provide important reductions that are applied toward Dixon's communitywide emissions targets, reducing the total amount of emissions to be addressed through community actions. The City will monitor the effectiveness of state legislation to ensure that the anticipated level of reductions is achieved locally, and to ensure that all applicable statewide reductions are accounted.

The City considers locally-realized emissions reductions from:

- SB 1078 (Renewable Portfolio Standard)
- AB 1109 (Lighting Efficiency)
- California Title 24
- AB 1493 (Pavley I and II)
- EO-S-1-07 (Low Carbon Fuel Standard)
- Vehicle efficiency regulations
- SB-7X ("20 by 2020"; Urban Water Use)

Including only these statewide initiatives towards the GHG reduction targets is considered a conservative approach because the Scoping Plan describes numerous other actions that will result in statewide emissions reductions. The actions included herein represent those for which a methodology is available to calculate Dixon's likely share of these reductions. Other actions will provide statewide benefits, but cannot be accurately attributed to Dixon.

Table 2.3 summarizes the anticipated reductions associated with these statewide actions in years 2020 and 2035.

Table 2.3
2020 and 2035 Emission Reductions from Statewide Actions

State or Federal Action	2020 Reduction ($MT CO_2e$/year)	2035 Reduction ($MT CO_2e$/year)
Renewable portfolio standard (33% by 2020)	6,058	6,509
AB 1109 lighting efficiency	XX	XX
2008 and 2013 California Title-24 standards	XX	XX
Pavley 1 and II	XX	XX
Low carbon fuel standard	XX	XX
Vehicle efficiency regulations	XX	XX
SB-7X	XX	XX
Total	**XX**	**XX**

GHG Emission Reduction Targets

Dixon has established the following GHG emissions reduction targets for 2020 and 2035:

- **2020:** 15% below 2005 emissions levels
- **2035:** 48% below 2005 emissions levels

The targets will allow the City to contribute to State climate protection efforts described in Chapter 1, and are purposefully set at levels that are likely to provide CEQA streamlining benefits to new development projects in the community. Table 2.4 summarizes the emissions reduction targets, contributions from statewide actions, and the remaining gap for local action.

2020 Emissions Reduction Target

Based on the 2005 emissions inventory and 2020 forecasts presented in this chapter, the 2020 communitywide emissions reduction target is 89,164 MT CO_2e/yr (i.e., 15% below 2005 emissions levels). Reductions totaling XX MT CO_2e/yr in 2020 are required to achieve this target. The 2020 statewide reductions identified in Table 2.3 would contribute emissions reductions of XX MT CO_2e/yr. The remaining gap of XX MT CO_2e/yr must be addressed through local actions described in Chapter 3.

2035 Long-Range Emissions Reduction Target

Achieving the 2035 communitywide emissions reduction target of 54,547 MT CO_2e/yr (i.e., 48% below 2005 emissions levels) would require reductions totaling XX MT

CO_2e/yr. Statewide reductions identified in Table 2.3 would contribute XX MT CO2e/yr, leaving a reductions gap of XX MT CO2e/yr to be addressed through local actions.

Chapter 3 presents proposed local actions, associated emission reductions, and progress toward the 2020 reduction and 2035 reduction targets.

Table 2.4
2020 and 2035 Emissions Reduction Targets

	2005 (MT CO_2e/yr)	2020 (MT CO_2e/yr)	2035 (MT CO_2e/yr)
Jurisdictional Inventory and Projections	104,899	XX	XX
Reduction Target (2020 and 2035)		89,164	54,547
Reductions Needed to Achieve Target		XX	XX
Assumed Statewide Reductions		-XX	-XX
Local Action Reductions Needed to Achieve Target and Goal		**XX**	**XX**

Source: AECOM 2012

CHAPTER 3
EMISSIONS REDUCTION MEASURES

3

This chapter describes measures and actions necessary to reduce communitywide greenhouse gas (GHG) emissions, and achieve the City's 2020 and 2035 reduction targets. Most measures are designed to achieve quantifiable GHG reductions, while others are listed as supporting measures because they cannot be accurately quantified. To ensure proper implementation, each measure is accompanied by a description providing policy background and implementation details that articulate necessary actions; City departments with primary action responsibility; and progress indicator timelines to track implementation. The City will evaluate effectiveness of CAP measures and actions every three years and propose program modifications if necessary to achieve reduction targets.

Summary of Reductions

Table 3.1 summarizes GHG emission reductions anticipated from implementation of the measures and actions presented in this chapter, and the statewide reductions described in Chapter 2.

Table 3.1: Measures and Quantified Reductions

Energy Strategy		2020 (MT CO_2e/yr)	2035 (MT CO_2e/yr)
E-1. Existing Buildings			
E-1.2	Energy Efficiency Retrofit Outreach	252	694
E-1.3	Commercial Energy Conservation Ordinance	27	95
E-2. New Construction			
E-2.1	New Construction Energy Efficiency	10	10
E-4. Building Appliances			
E-4.1	ENERGY STAR Appliances	46	74
E-4.2	Smart Grid	189	419
E-5. Building Cooling			
E-5.1	Building Shade Trees	25	85
E-5.2	Cool Roofs	51	160
E-7. Renewable Energy			
E-7.1	Solar Photovoltaic Systems	2,484	7,019
E-7.2	Solar Water Heaters	50	258
E-7.3	Residential Renewable Energy Requirements	1,223	1,524
E-7.4	Community Choice Aggregation	TBD	TBD
E-8. Street and Area Lighting			
E-8.1	Street Light Upgrade	75	75
E-8.2	Traffic Light Upgrade	1	1
E-8.3	Parking Lot Lighting Upgrade	15	39
E-9. Municipal Actions			
E-9.1	Municipal Renewable Energy Development	111	111
E-9.2	Municipal Building Energy Efficiency	36	38
E-9.3	Wastewater Treatment Plant Process Energy Optimization	220	220
Energy Subtotal		**4,815**	**10,822**

Solid Waste Strategy		
Subtotal	**XX**	**XX**
Water Strategy		
Subtotal	**XX**	**XX**
Transportation Strategy		
Subtotal	**XX**	**XX**
Green Infrastructure Strategy		
Subtotal	**XX**	**XX**
SUBTOTAL CAP MEASURES	**XX**	**XX**
Statewide Reductions		
Renewable Portfolio Standard	6,058	6,509
2013 California Title 24 Standard	XX	XX
AB 1109 – Lighting Efficiency Program	1,594	1,625
AB 1493 – Pavley I and II	XX	XX
Low Carbon Fuel Standard	XX	XX
Vehicle Efficiency Regulations	XX	XX
SB-7X	XX	XX
Subtotal	**XX**	**XX**
TOTAL REDUCTIONS	**XX**	**XX**

Note: Subtotals and totals may not appear to add correctly due to rounding.

Emissions Reductions

PROGRESS TOWARD 2020 TARGET

The reduction measures, together with the communitywide effects of State and federal legislation in Dixon, have the potential to reduce communitywide emissions by XX MT CO_2e/yr from projected 2020 levels. This progress achieves the City's 2020 reduction target (89,164 MT CO_2e/yr), and represents a X.X% reduction in emissions below 2005 conditions.

PROGRESS TOWARD 2035 TARGET

The reduction measures, together with the communitywide effects of State and federal legislation in Dixon, have the potential to reduce communitywide emissions by XX MT CO_2e/yr from projected 2035 levels. This progress falls short of the City's 2035 reduction goal (54,547 MT CO_2e/yr), representing a X.X % reduction in emissions below 2005 conditions.

Measure Structure

This section of the CAP is organized according to four strategy areas: energy, transportation, water, and waste. These strategies represent the primary avenues by which to reduce communitywide GHG emissions in Dixon. Each strategy area section begins with an introduction to the overarching concepts that tie that particular strategy to GHG emission generation and potential reductions. This strategy overview is followed by the specific measures and actions that translate the City's vision into on-the-ground implementation.

Reduction Measures

Measures define the programs, policies, and projects that the City will undertake to accomplish its GHG emission reduction goals. Each measure includes information related to GHG reduction potential, opportunities for regional implementation, sustainability co-benefits, and relative magnitude of cost.

Reduction Potential

The estimated annual emissions reduction potential of each quantifiable measure is provided for 2020 and 2035 in MT CO_2e/yr. Some measures have the same reduction potential for both horizon years because the underlying participation assumptions are held constant. Measures identified as "Supporting Measures" contribute to GHG reductions and are an important component of this CAP, but currently lack a methodology to quantify their emissions reduction potential. For example, the proposed sustainability coordinator position described in Measure E-9.4 is critical to the full implementation of other CAP measures, but it is not possible to accurately calculate the emissions reductions specifically related to that new staff position. Appendix B describes the methodology used to quantify emissions reductions.

Icons

Various icons are used to indicate measures that have regional implementation opportunities, sustainability co-benefits associated with the measures, and simple cost estimates for mandatory components of measures.

Regional Efforts

Measures that would benefit from a regional implementation strategy are denoted as Regional Efforts. The four participating cities (i.e., Dixon, Fairfield, Rio Vista, and Suisun City) could collaborate on implementing these measures to reduce overhead costs associated with new program development, or could partner with other regional agencies to create a sustainability coordinator position to oversee CAP implementation.

Co-Benefits

As described in Chapter 1, implementation of these measures will provide additional community benefits beyond their GHG reductions. The icons listed with each measure represent only a sample of the numerous co-benefits related to individual measures.

Cost Analysis

Some CAP measures require residents and local businesses to take action or direct the City government to develop and implement additional programs. Simple cost estimates (i.e., Low, Medium, High) for these mandatory actions are provided for informational

purposes to help weigh the potential costs and benefits of certain measures. Cost analysis was not performed for measures that describe current and on-going City programs and actions, or voluntary measures that rely on residents and businesses to make personal decisions regarding the importance and value of certain actions. Appendix C provides assumptions use to calculate these simple cost estimates.

Measure Background

The measure background section provides information about the specifics of a measure, including descriptions of various technologies or financing mechanisms. This section also provides information on currently available rebates and other financial incentives related to the measure, and describes any actions the City has taken to date towards implementation of that measure. Additionally, some descriptions provide guidance that will be used in program implementation, such as components of the outreach plan and which segments of the community should be targeted for inclusion.

Actions and Progress Indicators

Action steps and progress indicators are provided in a table following each measure description. Actions identify specific steps that the City will take to implement the measure. The table also identifies responsible departments that would be best positioned to lead or provide input for implementation of certain tasks. Measures that could be implemented by a regional Sustainability Coordinator, as described in Measure E-9.4, are identified should the participating cities secure funding for such a position. In most cases, an alternative responsible department is also listed in the event that a sustainability coordinator position cannot be established.

Progress indicators describe the specific action that is being quantified to estimate the reduction potential. These indicators enable City staff, the City Council, and the public to track implementation and monitor overall CAP progress. Progress indicators are provided for both 2020 and 2035, and are specifically described when possible (e.g., 500 single family homes will install a solar hot water heater). Progress indicators are not provided for supporting measures, which do not have quantifiable emissions reductions.

Reduction Strategies

The strategies identified in this Chapter affect issues within the City's direct influence. Each strategy is subdivided into various sub-strategy headings to help organize the reduction measures. Measures were developed by (a) evaluating existing community conditions, (b) identifying emission reduction opportunities within the community, (c) reviewing best practices from other jurisdictions and organizations, and (d) incorporating State and regional laws, guidelines, and recommendations. Dixon's measures were also developed as part of a regional conversation between the cities of Fairfield, Rio Vista, and Suisun City to provide as much consistency between the four cities CAPs as possible. The adopted CAPs for Solano County and the City of Benecia were also reviewed as part of the measure development process to lay the foundation for regional implementation efforts.

The emission reduction strategies are as follows:

- **Energy:** The Energy Strategy recommends ways to increase energy efficiency in existing buildings, enhance energy performance for new construction, and increase use of renewable energy.
- **Transportation:** The Transportation Strategy encourages transit, carpooling, walking, and bicycling as viable transportation modes to decrease the need to drive.
- **Water:** The Water Strategy promotes the efficient use and conservation of water in buildings and landscapes.
- **Waste:** The Waste Strategy increases waste diversion and recycling, reducing consumption of materials that otherwise end up in landfills.

Energy Strategy

The consumption of electricity for appliances, lighting, and cooling, and combustion of natural gas for heating, cooking, and other processes within residential, commercial, and industrial buildings generated nearly one half of Dixon's communitywide GHG emissions in 2005. These emissions can be reduced by improving energy efficiency in new and existing buildings and increasing the amount of electricity and heat generated from renewable energy sources.

In Dixon, approximately 44%[i] of the housing stock was built before California's energy code, Title 24 Part 6, was first adopted in 1978. Consequently, the building stock offers considerable opportunity for cost-effective energy efficiency retrofits to decrease the use of both electricity and natural gas. The City plans to achieve building energy efficiency improvements in both existing and new buildings through a combination of community outreach and education, incentives, and regulations.

Pacific Gas and Electric Company (PG&E) is Dixon's energy utility, providing both natural gas and electricity for residential, commercial, industrial, and municipal uses. PG&E provides electricity generated at hydroelectric, nuclear, renewable, natural gas, and coal facilities. As of 2011, natural gas facilities provided 25%; nuclear plants provided 22% of the total electricity supply; renewable energy facilities including solar, geothermal, and biomass provided 19%; large hydroelectric operations provided 18%; and unspecified sources provided the remainder[ii].

Under the provisions of SB 107 (2006), investor-owned utilities were required to generate 20% of their retail electricity using qualified renewable energy technologies by the end of 2010. In compliance with this mandate, PG&E will expand its renewable generation portfolio, making additional GHG-free electricity available to customers in Dixon. In 2011, PG&E delivered 19% of total electricity from eligible renewable sources.

The City will encourage communitywide installation of rooftop solar photovoltaic (PV) and solar hot water systems to increase the portion of Dixon's energy portfolio provided from renewable sources. The City has already installed approximately 380 kW of solar PV capacity on municipal buildings to increase the generation of solar energy in the community.

The total GHG emission reduction potential of the Energy Strategy is 4,815 MT CO_2e/yr in 2020 and 10,822 in 2035. This represents about X.X% percent of total 2020 reductions and X.X% of total 2035 reductions anticipated from CAP implementation.

E-1: Existing Buildings

MEASURE E-1.1: ENERGY EFFICIENCY AUDITS

Supporting Measure – Not Quantified

Encourage voluntary energy audits for residential and nonresidential buildings to identify cost-effective improvements.

Measure Background

Approximately 44%[iii] of houses in Dixon were built before 1980, and therefore prior to or about the time of first adoption of California's Title 24 energy efficiency requirements. These homes are excellent candidates for energy-saving retrofits, which could be identified through energy audits.

Building energy audits can help identify and prioritize energy efficiency improvements by providing a building-specific list of retrofit options and their cost-effectiveness. Additionally, the California Energy Commission (CEC) developed the Statewide Home Energy Rating System (HERS) program to allow comparisons of the efficiency levels between California homes. A home's HERS rating is calculated as part of an energy audit, and informs homeowners and renters about energy efficiency much like the MPG metric allows comparisons of vehicles. This type of rating assists in estimating the relative utility costs associated with a home so that renters and buyers can factor those costs into their decision.

The City will partner with the Solano Center for Business Innovation to develop a comprehensive outreach campaign that describes the benefit of energy audits and available rebates, incentives, and financing options, such as PG&E's no- or low-cost energy audit programs for nonresidential customers and residential energy audit rebates available through Energy Upgrade California. Residential audits should be performed per the Whole House Energy Rating required by Energy Upgrade California. To help residents finance home energy audits, the City should pursue grant funding to provide a partial rebate for residents that voluntarily perform energy audits. Previous sources of funding have included Energy Efficiency Conservation Block Grants (EECBG) and the CEC.

As part of this outreach campaign, the City will identify neighborhoods with concentrations of older homes to help focus the outreach toward buildings that will receive the greatest energy savings. The City will also work with PG&E to identify large-energy users that would benefit from energy audits and could be eligible for PG&E's on-bill financing to install retrofit packages identified in the audit. For these larger energy customers, PG&E offers low- or no-cost energy audit services that include on-site analysis of energy consuming systems and customized calculations to help create a strategic plan for implementing projects. The City should also partner with local real estate professionals to help educate home buyers about the value of energy audits at the point of sale. Realtors should also be encouraged to include a home's HERS rating in the MLS listing.

	Action	Responsibility
A	Develop a comprehensive outreach campaign that describes the benefit of energy audits and available rebates, incentives, and financing options.	Solano Center for Business Innovation; Sustainability Coordinator
B	Pursue grant funding to provide a partial rebate for residents and businesses that voluntarily perform energy audits.	Solano Center for Business Innovation; Sustainability Coordinator
C	Identify neighborhoods with concentrations of older building stock to focus outreach campaign.	Community Development; Sustainability Coordinator
D	Work with PG&E to identify large-energy users that would benefit from energy audits. Leverage PG&E's on-bill financing option for nonresidential and municipal customers.	Community Development; Sustainability Coordinator
E	Partner with real estate professional groups to help educate home buyers and business owners about the benefits of energy audits at the point of sale.	Solano Center for Business Innovation; Sustainability Coordinator
F	Provide links on the City website to PG&E's do-it-yourself online energy audit program. (This information could be placed on a new Solano County Sustainability Webpage to leverage regional efforts.)	Community Development; Sustainability Coordinator

MEASURE E-1.2: ENERGY EFFICIENCY RETROFIT OUTREACH

2020 GHG Reduction Potential: **252 MT CO2e/yr**
2035 GHG Reduction Potential: **694 MT CO2e/yr**

Encourage voluntary energy efficiency retrofits in residential and nonresidential buildings through promotion of local efforts.

Measure Background

Energy efficiency improvements to residential and nonresidential structures can reduce both energy bills and GHG emissions. Many residences (approximately 63 percent[iv]) in Dixon are owner–occupied, and thus the financial savings of home energy efficiency retrofits are in the long term economic interest of the homeowner. As such, the City will emphasize voluntary participation in energy efficiency retrofit programs, in lieu of mandatory programs. As part of the outreach program, the City will enhance its website by linking to information on existing energy efficiency rebates and other financial incentives, including PG&E incentives to businesses for energy efficiency improvements. The website could also contain local case studies of businesses that have completed cost effective energy efficiency improvements.

To encourage participation from residential homeowners, the City will partner with the Solano Center for Business Innovation to leverage Energy Upgrade California's educational materials and online platform that provides access to incentives, technical assistance, and qualified contractors. Typical rebates and incentives available to Solano County residents through Energy Upgrade California include PG&E's Basic and Advanced Retrofit Packages, pool pumps and motor rebates, efficient water heaters/blankets, HVAC upgrades, furnace upgrades, and wall insulation installation. The City will also promote resources such as California Flex Alert, the Department of Energy's (DOE) Weatherization Assistance Program for low-income households, and PG&E's SmartEnergy Analyzer™ program, all of which link residential property owners to

educational and financial resources. In addition, PG&E is working to a fulfill Goal 2.2 of the CPUC *Long-Term Energy Efficiency Strategic Plan*, which states, "By 2020, 100 percent of eligible and willing customers will have received all cost-effective Low Income Energy Efficiency measures."

Financing is critical to the success of the energy efficiency retrofit program. The City will continue to support the development of a Property Assessed Clean Energy program (see Measure E-1.4) to further promote energy efficiency retrofits. The City will also partner with local real estate professionals to inform homebuyers about the benefits of home energy audits and the availability of energy efficiency mortgages to finance installation of retrofit packages.

Action		Responsibility
A	Develop and maintain a Solano County Sustainability Website with information about current energy efficiency rebates and incentives (including links to PG&E and Energy Upgrade California rebate pages) and local energy efficiency improvement case studies. Leverage Energy Upgrade California outreach and educational materials.	Sustainability Coordinator
B	Provide training to Building Division counter staff regarding available sources of rebates/incentives and printed pamphlets or FAQ sheets.	Building Division; Sustainability Coordinator
C	Provide targeted outreach to low-income and elderly households with information about the federal weatherization program and statewide Energy Savings Assistance Program, and how improvements can increase occupant comfort levels and reduce utility bills.	Community Development; Sustainability Coordinator

Progress Indicators	Year
175 single-family houses install a comprehensive retrofit package; 500 single-family houses install a basic retrofit package; 25 multi-family units are upgraded with comprehensive retrofit; 60 multi-family units are upgraded with basic retrofit package; 165,000 sqft of nonresidential area installs a comprehensive retrofit package; 470,000 sqft of nonresidential area installs a basic retrofit package	2020
500 single-family houses install a comprehensive retrofit package; 1,500 single-family houses install a basic retrofit package; 75 multi-family units are upgraded with comprehensive retrofit; 200 multi-family units are upgraded with basic retrofit package; 470,000 sqft of nonresidential area installs a comprehensive retrofit package; 1.4 million sqft of nonresidential area installs a basic retrofit package	2035

MEASURE E-1.3: COMMERCIAL ENERGY CONSERVATION ORDINANCE

2020 GHG Reduction Potential: **27 MT CO2e/yr**
2035 GHG Reduction Potential: **95 MT CO2e/yr**

Adopt a Commercial Energy Conservation Ordinance (CECO) requiring energy audits and retrofits for nonresidential buildings of more than 25,000 sqf to achieve an established building efficiency threshold at point-of-sale or major renovation. The ordinance would not apply to recently constructed/renovated buildings.

Measure Background

A CECO requires commercial property owners to install energy conservation measures in their buildings upon transfer of property ownership or when additions or renovations are made. CECO measures often save building owners money on monthly electricity and natural gas costs. The City will adopt a CECO for commercial properties of 25,000 sqft or larger and either establish a building efficiency threshold which must be met through installation of building improvements chosen by the building owner or develop a checklist of mandatory installations. As described in Measure E-1.1, a building energy audit would help to identify the most cost-effective improvements to make if the City adopts an efficiency threshold and lets building owners decide how best to achieve it. Alternatively, the City could develop a CECO checklist for building inspectors that specifies what improvements will be made. For example, ceiling insulation will be installed to achieve a thermal resistance of R30, or all domestic water storage heaters will be insulated with an external insulation blanket rated at a minimum thermal resistance value of R6.

Efficiency upgrades are estimated to cost between $1.00 and $3.00 per square foot. The City will establish a cost ceiling relative to the sales price, over which additional improvements would not be required. Exemptions should be provided for newer construction or upgraded buildings, as these buildings likely already have higher energy efficiency than older buildings, as well as for properties that have already been upgraded and are resold within 5 years.

The expense of required improvements is expected to be absorbed into the building's purchase price and the mortgage, and is typically an acceptable expense for the purchaser considering the long-term savings. Financing options described in Measures E-1.2 and E-1.4 would reduce up-front costs to building owners.

This would be a self-enforcing program. Minimal City resources would be dedicated to inspection or verification. The City would implement the CECO in phases. Phase 1 would consist of a mandatory audit (carried out by private-sector auditors, as described in Measure E-1.1) and voluntary improvements, extending for a period of five years. The City will provide information on available rebates and financing options to encourage improvements identified in audits during Phase 1. Improvements identified in audits would become mandatory in Phase 2.

Action		Responsibility
A	Adopt a Commercial Energy Conservation Ordinance requiring point-of-sale energy efficiency upgrades, and establish an efficiency threshold.	Building Division
B	Partner with the Solano Center for Business Innovation to distribute information on available retrofit rebates and financing options to building owners subject to the CECO.	Solano Center for Business Innovation

Progress Indicators	Year
225,000 sqft of nonresidential area installs a comprehensive retrofit package	2020
760,000 sqft of nonresidential area installs a comprehensive retrofit package	2035

MEASURE E-1.4: PACE FINANCING PROGRAM

Supporting Measure – Not Quantified

Partner with the County in its pursuit to establish the Clean Energy Solano PACE program that would provide financing options for residential and nonresidential energy efficiency upgrades to existing buildings. Work with other Solano County jurisdictions to jointly pursue bond funding for a commercial PACE program through California FIRST.

Measure Background

A property-assessed clean energy (PACE) finance program is enabled through the AB 811 legislation. This bill allows land-secured loans for homeowners and businesses who install energy efficiency projects and clean-energy generation systems. Senate Bill 555 reinforced implementation opportunities for PACE programs by expanding the scope of activities allowed within a community facilities district, as defined by the Mello-Roos Community Facilities Act of 1982. A PACE program permits property owners within participating districts to finance the installation of energy- and water-efficiency improvements in their home or business through a lien against their property that is repaid through their property tax bill. If the property is sold, payment responsibility transfers to the new owners, allowing building owners to avoid up-front installation costs while at the same time requiring little or no investment of local government general funds. In some instances, the new lender may require repayment of the existing lien, in which case the remaining PACE loan is repaid from the proceeds of the property sale.

Dixon is a participating member of the California FIRST program which allows PACE funding for commercial and multi-family residential projects. Dixon would also be within the boundaries of the proposed Clean Energy Solano PACE program, which would provide financing to both residential and nonresidential projects.

An initial market analysis for the proposed Clean Energy Solano program estimated 3.5% participation in the first five years from both the residential and nonresidential sectors, which would lead to local economic benefits including approximately $19 million in state and local tax revenue, the creation of 2,700 new jobs, and the generation of 37 MW of local renewable energy. Furthermore, building owners who participate in the PACE program are not required to front the initial capital costs.

Action		Responsibility
A	Opt into the County's PACE program as a participating member.	Community Development; Sustainability Coordinator; Solano EDC
B	Develop an outreach program describing available PACE financing options. Work with PG&E to identify large energy users to help focus outreach efforts.	Community Development; Sustainability Coordinator
C	Continue to participate in California FIRST to make PACE financing available to commercial, industrial, multi-family residential (5+ units), and nonprofit-owned buildings.	Community Development; Sustainability Coordinator

E-2: New Construction

MEASURE E-2.1: NEW CONSTRUCTION ENERGY EFFICIENCY

2020 GHG Reduction Potential: **10 MT CO_2e/yr**
2035 GHG Reduction Potential: **See Statewide Reduction**
2013 California Title 24 Standard

Encourage energy-efficient new construction through promotion of energy-efficient mortgages and technical assistance programs for developers.

Measure Background

California Building Energy Efficiency Standards (Title 24, Part 6, 2008) serve as the basis for mandatory building energy efficiency standards. The California Green Building Standards Code (CALGreen), effective in 2011, also provide the City with the option of adopting an energy efficiency standard that surpasses the State's basic requirements. CALGreen outlines two options: Tier I requires a building's energy performance to exceed Title 24 requirements by 15 percent, while Tier II increases this standard to 30 percent. Revisions to the Title 24 Standards will be adopted in 2013 and will go into effect in 2015.

Although a mandatory ordinance to exceed Title 24 Standards through adoption of the Tier I or II standards will not be established at this time, the City will develop a technical assistance program for local builders to provide information on green building practices, specifically those which relate to energy- and water-efficient design and construction practices. The Cities of Fairfield, Rio Vista, and Suisun City already have technical assistance programs, which could be used as models for Dixon's efforts. PG&E also developed the Savings by Design program to encourage energy-efficient construction in new commercial buildings. The program offers a range of services to building owners and their design teams, such as design assistance, design team incentives, owner incentives, and educational resources for customized new construction projects that exceed California's Title 24 energy efficiency standards.

To further encourage new construction to participate in this program, the City provides several green-building incentives described throughout this CAP, such as permit streamlining and reduced permit fees for installation of various technologies. The City will also consider developing a local green building recognition program to commend building owners that voluntarily exceed Title 24 Standards. The City will work with local real estate professional groups and area developers to provide information to home buyers about the benefits of energy efficiency mortgages, which allow homebuyers to finance the installation of energy efficient systems, such as solar photovoltaics or high-efficiency windows.

Action		Responsibility
A	Develop a technical assistance program to serve as a resource on green construction practices for local builders. Research the programs at the Cities of Fairfield, Rio Vista, and Suisun City for local examples, as well as PG&E's Savings by Design program.	Building Division
B	Partner with local developers and realtors to distribute informational brochures about energy efficient mortgages to potential new home buyers.	Building Division; Sustainability Coordinator
C	Provide outreach to local developers, architects, and builders on PG&E's Savings by Design program.	Building Division
D	Consider establishing a local green-building recognition award for exemplary projects.	Building Division; Sustainability Coordinator

Progress Indicators	Year
15 new single-family residential buildings exceed 2008 Title-24 by 30%	2020

MEASURE E-2.2: SOLAR READY CONSTRUCTION

Supporting Measure – Not Quantified

Require pre-plumbing for solar hot water in all new residential construction.

Measure Background

Increasing the use of distributed renewable energy systems (e.g., rooftop solar photovoltaic) prevents the combustion of fossil fuels to generate electricity, thereby reducing GHG emissions. Dixon's location and geography result in a high solar insolation rating, which makes it an excellent candidate for effective adoption of solar technologies. The City can encourage installation of solar technologies by requiring new construction to be pre-wired and pre-plumbed to support PV systems and solar hot water systems, which can reduce the cost of post-construction solar applications for homeowners. The City already requires solar pre-wiring, and will work with its Building Division to define pre-plumbing requirements that support solar hot water systems without imposing a financial barrier to new residential construction. Other California cities have adopted similar ordinances, including the Cities of Chula Vista and Rancho Palos Verdes.

Action		Responsibility
A	Define requirements for solar pre-plumbing that minimize additional construction costs and are compatible with the City's existing solar pre-wiring requirements.	Building Division
B	Promote the City's technical assistance program for developers to help implement this measure (see Measure E-2.1).	Building Division

E-3: Financing

MEASURE E-3.1: ENERGY EFFICIENCY REBATE PROGRAM

Supporting Measure – Not Quantified

Consider establishing a City or County rebate program to encourage implementation of energy efficiency retrofits.

Measure Background

PG&E currently offers rebates for various home energy efficiency improvements. In addition to PG&E rebates, numerous programs funded by state agencies and local governments are available to Solano County residents through the Energy Upgrade California program. The City will partner with other Solano County governments and agencies to identify gaps in existing rebate and incentive programs and jointly pursue funding to establish a local (e.g., Solano County) rebate program.

New rebates could be structured to encourage residents to buy goods or services from local businesses. For example, the City could develop an ENERGY STAR-rated appliance rebate program to supplement those currently offered through PG&E, by providing an additional $50 rebate for appliances purchased from local vendors. Alternatively, the new rebate program could be structured to address the building improvement needs of a specific building type, such as small commercial properties or multi-family residential buildings.

Action		Responsibility
A	Identify rebate/incentive gaps in PG&E- and Energy Upgrade California-sponsored programs to identify local financing needs.	Community Development; Sustainability Coordinator
B	Identify an outside funding source to finance rebate program (e.g., EECBG, ARRA).	Community Development; Sustainability Coordinator

E-4: Building Appliances

MEASURE E-4.1: ENERGY STAR APPLIANCES

2020 GHG Reduction Potential: **46 MT CO_2e/yr**
2035 GHG Reduction Potential: **74 MT CO_2e/yr**

Promote voluntary installation of ENERGY STAR and other high-efficiency appliances.

Measure Background

As Title 24 Standards require building shells and systems to become even more efficient, energy consumption from appliances and electronics will become an increasingly important source for reducing building energy use and residents' utility bills. In 2009, approximately 28% of statewide residential electricity use was dedicated to appliances. Televisions, computers, and home office equipment accounted for an additional 20% of electricity use.[v] As big-screen televisions, smart phones, tablets, and other electricity-

consuming devices become more commonplace in homes, their proportional share of home electricity use will likely increase as well. Installing ENERGY STAR appliances is one way to reduce energy use in this sector.

This measure is designed to encourage voluntary community participation to upgrade home appliances and lighting to ENERGY STAR or other energy efficient models. Successful implementation of this measure relies on leveraging the Energy Upgrade California program materials through a public outreach campaign to increase community awareness regarding energy efficient appliance choices. The ENERGY STAR rating is an internationally recognized standard for energy efficient consumer products. According to the EPA, devices that have an ENERGY STAR certification, such as office equipment, home appliances, and lighting products, generally use 20 to 30 percent less energy than required by federal standards. By promoting ENERGY STAR-rated home and business appliances, the City can help to reduce GHG emissions related to the use of lighting, refrigerators, dishwashers, clothes washers, wall air conditioning units, computers, photocopiers, lights, and other appliances.

Through Energy Upgrade California, PG&E currently offers rebates to customers who purchase ENERGY STAR dishwashers, clothes washers, refrigerators/freezers, ceiling fans, pool pumps, and room air conditioners. The City will partner with PG&E, Solano County Water District, local developers, and other relevant organizations to promote existing financial incentives and rebates for energy-efficient appliance upgrades and replacements.

Action		Responsibility
A	Collaborate with PG&E, Solano County Water District, and other local organizations to promote existing financial incentive programs to encourage voluntary replacement of inefficient appliances with new ENERGY STAR appliances.	Community Development; Sustainability Coordinator
B	Provide outreach to local developers regarding sources of available rebates to encourage installation of ENERGY STAR-rated major appliances in new residential construction.	Building Division; Sustainability Coordinator

Progress Indicators	Year
New residential construction installs energy-efficient appliances: 300 refrigerators; 375 clothes washers; 425 dishwashers; Existing residential units replace expired appliances with energy-efficient appliances: 1,500 refrigerators; 2,700 clothes washers; 3,800 dishwashers	2020
New residential construction installs energy-efficient appliances at the following rates: 4 00 refrigerators; 525 clothes washers; 575 dishwashers; Existing residential units replace expired appliances with energy-efficient appliances: 2,500 refrigerators; 4,000 clothes washers; 5,000 dishwashers	2035

MEASURE E-4.2: SMART GRID

2020 GHG Reduction Potential: **189 MT CO_2e/yr**
2035 GHG Reduction Potential: **419 MT CO_2e/yr**

Encourage adoption of smart grid-compatible appliances and energy management systems to shift peak-load energy use.

Measure Background

The 'smart grid' is an emerging energy management system which uses information technology to significantly improve how electricity is managed and controlled. Smart meters, which use a technology that enables users to take full advantage of the smart grid, will eventually provide utility customers with access to detailed energy use and cost information, new time-of-use pricing programs based on peak-energy demand, and the ability to program home appliances and devices to respond to energy use preferences based on cost, comfort, and convenience.

Current smart meters allow for frequent remote reading of energy usage by PG&E. However, the true value of the smart meter program will be fully realized when community residents and businesses begin making more informed energy use decisions based on the two-way communication enabled by smart meters, such as when a homeowner is able to program their washing machine to run when energy prices are lowest.

All California investor-owned utilities are rolling out time-of-use pricing, which offers lower utility rates to customers that switch discretionary energy use to off-peak times. Time-of-use pricing is mandatory for all commercial customers, and will eventually be offered to residential customers as well. PG&E currently offers the SmartRate pricing plan to residential customers, which offers lower prices per kWh to customers that agree to reduce electricity use on "SmartDays" when intense heat drives up air conditioning use and therefore, electricity prices. PG&E has also joined OPower, a social media technology provider that helps customers using smart grid technology to compare their energy use with neighbors. To support use of their various pricing programs, PG&E created the Green Button Connect program to allow customers to share their energy usage data with third-party app developers that already have products to help customers track and manage their energy use. The assumption is that customer access to their own energy use trends will support behavioral changes to energy consumption, which will lower customers' utility bills and lower PG&E's costs to provide energy.

When estimating the potential GHG emission reductions associated with implementation of the smart grid, the City included the energy efficiency improvements gained from integrating smart grid energy management systems for control lighting, heating, ventilation, and air conditioning and other major appliances in residential and commercial buildings. According to CISCO, a world-wide leader in network technology, full integration of the smart grid will take time to realize, but energy analysts estimate it will ultimately be capable of reducing electricity-related GHG emissions by 30 percent below current levels.

Through public outreach efforts and targeted outreach to the development community, the City will promote voluntary adoption of smart-grid technology for homes and businesses. The City will train Building Division staff on the benefits of smart-grid integration and provide informational materials on existing rebate programs.

	Action	Responsibility
A	Develop an outreach program that leverages existing PG&E materials, including description of the O-Power Program. Make information available at Building Division counter.	Building Division; Sustainability Coordinator
B	Identify and advertise available rebates for smart-grid compatible appliances and systems on the County's Sustainability Website.	Building Division; Sustainability Coordinator

Progress Indicators	Year
725 residential units install smart-grid compatible appliances and systems; 615,000 sqft of commercial area installs smart-grid compatible appliances and systems	2020
1,600 residential units install smart-grid compatible appliances and systems; 1.4 million sqft of commercial area installs smart-grid compatible appliances and systems	2035

MEASURE E-4.3: PERMANENT LOAD SHIFT

Supporting Measure – Not Quantified

Encourage participation in PG&E's Permanent Load Shift program to shift thermal cooling loads to off-peak and/or partial-peak hours.

Measure Background

PG&E's Permanent Load Shift program, often referred to as "Shift & Save," is to store thermal cooling capacity during off-peak hours and/or partial-peak hours in order to meet thermal cooling load in subsequent on-peak hours. The goal of this program is to shift 3.9 megawatts of load. The program's targeted customers are bundled service, commercial, industrial, agricultural, and large residential customers in PG&E's electric service territory. PG&E is working with Cypress Ltd. and Trane USA to implement this program.

The City will partner with PG&E to identify and provide outreach to local large-energy users that could financially benefit from participation in the program. The City will partner with the Solano Center for Business Innovation and the Solano Economic Development Corporation in its outreach activities to find regional efficiencies in program expansion and application in other Solano County cities. A statewide Permanent Load Shift technology incentive program is currently under development; the City should monitor its progress to identify opportunities for local application.

	Action	Responsibility
A	Work with PG&E to identify large-energy users that would benefit from peak-load shifting technologies and/or strategies. Targeted customers are bundled service, commercial, industrial, agricultural, and large residential customers.	Building Division; Sustainability Coordinator
B	Monitor development of the statewide Permanent Load Shift program to identify opportunities for local application.	Building Division; Sustainability Coordinator

E-5: Building Cooling

MEASURE E-5.1: BUILDING SHADE TREES

2020 GHG Reduction Potential: **25 MT CO_2e/yr**
2035 GHG Reduction Potential: **85 MT CO_2e/yr**

Adopt a shade tree ordinance for new construction and develop a shade tree outreach campaign to encourage existing property owners to voluntarily plant shade trees.

Measure Background

Properly located trees can provide shading for residential and commercial buildings, and thereby reduce the need for air conditioning. The capacity of a tree to reduce GHG emissions is dependent on its age and species. As trees mature, their canopies increase in size and provide higher levels of shade and greater levels of building cooling in hot weather. Large, deciduous species are ideal for reducing building energy use as they provide shade in summer, but allow winter sunlight into buildings for passive solar gain in cooler weather. Additionally, trees gain carbon-capturing biomass in their trunks and roots as they absorb carbon from the air to grow.

The City will adopt a shade tree ordinance that requires new single-family residential units to plant two shade trees, and new multi-family residential buildings and new nonresidential buildings to plant one shade tree per 1,000 sq ft of air conditioned floor space. The ordinance will allow the installation of building-integrated vegetation in lieu of shade trees. The City will also work with local organizations to promote voluntary shade tree planting at existing buildings. To facilitate proper implementation of this measure, the City will develop a shade tree planting guide to instruct home builders, developers, landscapers, building managers, and property owners on proper shade tree selection and placement to maximize building cooling opportunities while preserving solar access on the roof. Planting guidance should describe the selection of climate-appropriate species and proper siting specifications (i.e., S, SW, or W side of buildings; no more than 20' from the building).

Action		Responsibility
A	Amend the City's Development Standards per the new shade tree ordinance.	Planning Division
B	Work with local environmental and conservation groups to advertise the various benefits of planting shade trees near existing buildings.	Building Division
C	Develop a shade tree planting guide to facilitate proper tree selection and installation.	Building Division; Recreation & Community Services

Progress Indicators	Year
1,775 new shade trees properly installed (does not include replacement trees for existing shade trees)	2020
2,700 new shade trees properly installed (does not include replacement trees for existing shade trees)	2035

MEASURE E-5.2: COOL ROOFS

2020 GHG Reduction Potential: **51 MT CO_2e/yr**
2035 GHG Reduction Potential: **160 MT CO_2e/yr**

Develop a cool roofs program to encourage the installation of cool roof technology in residential buildings.

Measure Background

The urban heat island effect describes the phenomena in which urban areas are hotter than nearby rural areas. Urban heat islands can affect communities by increasing summertime peak energy demand, air conditioning costs, air pollution and GHG emissions, and heat-related illness and mortality. 'Cool roofs' are made of materials with higher solar reflectivity, which mitigate the urban heat island effect and reduce cooling loads during hot days. In contrast, dark roofs absorb heat from the sun, which elevates urban temperatures and increases demand for air conditioning.

According to the EPA, the cost premium for cool roofs versus conventional roofing materials ranges from zero to 10 cents per square foot for most products, or from 10 to 20 cents per square foot for a built-up roof with a cool coating used in place of smooth asphalt or aluminum coating. According to PG&E, customers with cool roofs reduce their air conditioning usage by an average of 10 to 20 percent, which can reduce their electric bill by five to 10 percent during the warm summer months.

Per the 2005 Title 24 standards, cool roofs are already required in new nonresidential construction and retrofits with low-sloped roofs, in most cases. Cool roofs are also required for projects seeking to comply with Tier I or Tier II energy standards under CALGreen (Section A4.304.4 for residential and A5.304.4 for nonresidential).

As financing is critical to the success of the cool roof program, the City will promote the financing programs and resources described in other measures (e.g., PACE financing), and make residents aware of federal and PG&E rebate programs when they file paperwork for a reroof project or pull permits for new construction. In previous years, federal tax credits have been available for the installation of ENERGY STAR cool roof products. PG&E offers a rebate program for residential cool roof installation, which as of 2012 was set at $0.20/square foot.

The City will also provide expedited plan check and refund 50% of roofing permit fees for residents that voluntarily install a cool roof. Given the availability of refunds and incentives to help cover the price premium of cool roofs over conventional roofing systems, a high rate of participation is expected in this program.

Action		Responsibility
A	Implement expedited plan check and roofing permit fee refunds for qualifying roof systems. Encourage active roof technologies and installation of solar panels at time of reroofing.	Building Division
B	Leverage existing cool roof rebates offered by PG&E and federal tax credits for ENERGY STAR-compliant cool roof systems.	Community Development

Progress Indicators	Year
480 residential cool roofs installed	2020
1,575 residential cool roofs installed	2035

E-6: Building Lighting

MEASURE E-6.1: INDOOR LIGHTING EFFICIENCY

2020 and 2035 GHG Reduction Potential:
See Statewide Reduction AB 1109

Encourage voluntary adoption of efficient indoor and outdoor lighting technologies in residential and nonresidential buildings.

Measure Background

According to the 2009 California Residential Appliance Saturation Study, approximately 20% of residential electricity consumption is attributed to lighting[vi]. In nonresidential buildings, conventional commercial lighting, including T12 fluorescent bulbs and old exit sign lights, consume more energy than new T8 lights and light-emitting diode (LED) technologies. Lighting upgrades typically provide a short payback period for their investment, and are a good source of GHG emissions reductions.

The City will provide outreach and technical assistance to nonresidential property owners to encourage participation in PG&E's lighting upgrade program, which includes rebates for fixtures, lamps, accent/directional lighting, controls, and signage. The City will also provide outreach to multi-family property managers regarding lighting rebates through PG&E, including CFL replacement bulbs, activity sensors and timers, and replacing T-12 lamps with magnetic ballasts. Informational materials should demonstrate the simple-payback period associated with lighting improvements (typically 2-4 years). The City will also advertise PG&E's CFL rebate, or other lighting rebate programs, on the new sustainability website.

	Action	Responsibility
A	Develop lighting-efficiency informational materials that demonstrate the simple-payback period associated with lighting improvements and existing rebates. Post information on the Solano County Sustainability Webpage. Provided targeted outreach to large nonresidential building managers and multi-family property managers.	Building Division; Sustainability Coordinator
B	Leverage existing energy-efficient lighting rebate programs offered through Energy Upgrade California, including fixture and lamp replacements/installation, accent and directional lighting, security lighting, lighting control systems, and PG&E's residential CFL rebate program.	Solano Center for Business Innovation; Sustainability Coordinator
C	Encourage small businesses to participate in PG&E programs that provide technical assistance and access to incentives for energy efficiency upgrades (e.g., lighting).	Solano EDC

E-7: Renewable Energy

MEASURE E-7.1: SOLAR PHOTOVOLTAIC SYSTEMS

2020 GHG Reduction Potential: **2,484 MT CO_2e/yr**
2035 GHG Reduction Potential: **7,019 MT CO_2e/yr**

Facilitate the voluntary installation of solar PV systems on residential and nonresidential buildings.

Measure Background

Solar photovoltaic (PV) systems generate electrical power by converting solar radiation into direct current electricity using semiconductors. PV power generation employs solar panels composed of cells containing photovoltaic material. PV systems can be retrofitted into existing buildings, usually by mounting them on an existing roof structure or walls. Dixon's solar potential is approximately 5.1 kWh/m^2/yr, which is sufficient to support a solar PV installation that would cover a large percentage of an average home's electricity demand[vii]. In addition to residential rooftops, commercial and industrial rooftops tend to have large, flat roofs that are often well-suited for solar photovoltaic (PV). Parking lots also provide excellent opportunities for additional solar energy generation. According to PG&E data, Dixon contains nearly 100 residential solar PV systems installed since 2005, with a total capacity of approximately 550 kW. The City also contains nonresidential solar PV systems totaling an additional 1.6 MW[viii]. However, numerous barriers may prevent widespread adoption of solar PV technology, including City regulations, up-front costs, misinformation or lack of information.

Financing is critical to the success of the solar PV program. Property owners will be able to finance their PV systems through various financing programs and rebates. As described in Measure E-1.4, the City will support the development of and participation in two PACE programs to further promote renewable energy systems for residential and nonresidential buildings. Other financing models, such as power purchase agreements (PPAs), can be used to offset the initial capital cost of installing a solar PV system. Solar PV rebates are available through the California Solar Initiative and its related programs: New Solar Homes Partnerships, Multifamily Affordable Solar Housing Program, and Single-Family Affordable Solar Housing Program. Rebate amounts vary, and are typically based on the installed system size and expected performance. Some rebate programs have variable rebate steps, which decline as PV installed capacity increases.

The City will develop a comprehensive solar PV program that encourages homeowners to install PV systems through outreach advertising available rebate and incentive programs. Outreach efforts will aim to maximize community participation from homeowners, builders, and businesses by leveraging existing educational materials and links to technical assistance and rebates and financing programs. The City will encourage homeowners to request free solar PV audits provided by private solar financing and installation companies. The City will also review and revise its zoning and building codes and other applicable ordinances to identify and remove regulatory barriers to solar installations (i.e., PV and solar hot water) on residential and nonresidential properties. The City has already reduced permitting fees associated with rooftop solar PV installation, and will offer priority permitting for new solar PV systems to further reduce implementation barriers.

	Action	Responsibility
A	Review/revise all applicable building, zoning, and other codes and ordinances to identify and remove potential regulatory barriers to the installation of solar PV or solar hot water systems in residential and nonresidential construction.	Building Division
B	Provide priority permitting for building-scale renewable energy projects.	Building Division; Sustainability Coordinator
C	Reduce solar PV permitting fees.	Building Division; Sustainability Coordinator
D	Develop a comprehensive outreach campaign to increase voluntary participation in solar PV installation programs, including a directory of existing rebates/incentive programs, explanation of simple-payback calculations for solar PV systems, and technical assistance. Leverage existing solar PV informational materials from Energy Upgrade California, the California Solar Initiative, and PG&E.	Building Division; Sustainability Coordinator
E	Develop informational materials about the benefits of PPAs offered through independent solar service providers. Post on the Solano County Sustainability Website, and make printed copies available at the Planning Department and Building Division counters.	Building Division; Sustainability Coordinator

Progress Indicators	Year
675 single-family units install 4.5kW PV system 5.4 MW capacity installed on nonresidential and multi-family buildings	2020
1,500 single-family units install 4.5kW PV system 16.8 MW capacity installed on nonresidential and multi-family buildings	2035

MEASURE E-7.2: SOLAR WATER HEATERS

2020 GHG Reduction Potential: **50 MT CO_2e/yr**
2035 GHG Reduction Potential: **258 MT CO_2e/yr**

Promote voluntary installation of solar water heaters in new construction and building retrofits through outreach campaign.

Measure Background

The effectiveness of a solar installation is described, in part, by its solar savings fraction (solar fraction). This measurement describes the percentage of a building's total energy demand that can be met through installation of a solar energy system. A 0% solar fraction indicates that no solar energy utilization is possible, while 100% would indicate full utilization of solar energy to meet building energy demand. Dixon has a 65% solar fraction for low-rise buildings (i.e., 1-2 stories) and a 46% solar fraction for multistory structures (i.e., 3 or more stories), indicating good potential for solar water heater applications[ix].

Solar water heating systems are a simple, reliable, and cost-effective method for harnessing the sun's energy to provide for hot water needs. Solar collectors, usually placed on the roof, absorb the sun's energy to heat water that is stored in a water tank.

The State of California has recognized the value of solar hot water heaters. The California Solar Water Heating and Efficiency Act of 2007 (AB 1470), created a 10-year program aimed at installing solar water heaters in homes and businesses. AB 1470 was designed to lower the initial costs of purchasing a system, which averages around $3,000-$6,000.

Solar hot water systems can also be a cost-effective replacement for inefficient water heaters. According to the California Solar Initiative (CSI), solar hot water systems can lower energy bills by meeting 50 to 80 percent of hot water needs over a year. Though the high capital cost of solar water heater upgrades can pose a financial burden to homeowners, there are a range of financing and rebate options to offset these initial investment costs.

There are a number of financing options that may be used to reduce upfront costs, such as the PACE programs mentioned in Measure E-1.4, federal tax incentives through the Energy Policy Act of 2005, and financial incentives through the CSI-Thermal Program. Similar to the CSI solar rebate programs, the CSI-Thermal Program provides rebates for solar water heaters that decline in value as installation increases.

The Solar Water Heating Pilot Program, operated through San Diego Gas and Electric from 2007-2010, identified numerous barriers to the widespread adoption of solar water heating systems. In particular, participating contractors named permitting and inspection costs and delays as a primary obstacle to widespread adoption for single-family residential buildings because non-material costs represented approximately 65% of total system costs. That means, only 35% of total costs were related to the actual system price. To help address this problem, the City will reduce permitting fees for solar hot water heater systems and will work to streamline the permitting process.

The City will also work with PG&E to create outreach opportunities that provide information about the financial benefits of solar hot water heaters, describe existing financing options and rebate programs, and explain the City's efforts to encourage participation.

Action		Responsibility
A	Collaborate with PG&E and the California Solar Initiative - Thermal Program to develop an outreach program to maximize installation of solar hot water systems and leverage existing funding opportunities.	Community Development; Sustainability Coordinator
B	Streamline permitting process (e.g., building, electric, plumbing) for solar hot water system installation.	Building Division
C	Provide priority permitting for building-scale renewable energy projects.	Building Division
D	Reduce solar hot water heater permitting fees.	Building Division

Progress Indicators	Year
50 single-family residential units install solar hot water system; 10 multi-family units are served by solar hot water system	2020
290 single-family residential units install solar hot water system; 40 multi-family units are served by solar hot water system	2035

MEASURE E-7.3: RESIDENTIAL RENEWABLE ENERGY REQUIREMENTS

2020 GHG Reduction Potential: **1,223 MT CO_2e/yr**
2035 GHG Reduction Potential: **1,524 MT CO_2e/yr**

Require all new residential construction to include solar water heaters, to the fullest extent possible, and require all new single-family residential construction to include a 4.5 kW solar PV system.

Measure Background

Increasing the use of distributed renewable energy systems (e.g., rooftop solar photovoltaics) prevents the combustion of fossil fuels to generate electricity, thereby reducing GHG emissions. Dixon's location and geography result in a high solar insolation rating, which makes it a good candidate for effective adoption of solar technologies.

To increase local renewable energy generation, the City will require new single-family residential homes to include a 4.5 kW solar photovoltaic system, and all new residential construction to install solar water heaters, to the fullest extent possible.

As described in Measures E-7.1 and E-7.2, numerous financing options and rebate programs are available to offset the cost of these systems. Additionally, because new construction will be built to higher efficiency standards than existing buildings, the required PV systems will provide a greater share of total building energy demand.

Reductions associated with this measure are in addition to those shown for measures E-7.1 and E-7.2.

Action		Responsibility
A	Adopt an ordinance requiring all new residential construction to include solar water heaters.	Building Division
B	Adopt an ordinance requiring new single-family residential construction to include 4.5 kW solar PV systems.	Building Division
C	Direct homebuilders to sources for rebates/incentives, including PG&E, the California Solar Initiative, Energy Upgrade California, and the US EPA.	Building Division; Sustainability Coordinator

Progress Indicators	Year
600 single-family units install 4.5 kW PV system 600 residential units are served by solar water heating system	2020
825 single-family units install 4.5 kW PV system 825 residential units are served by solar water heating system	2035

MEASURE E-7.4: DISTRICT ENERGY SYSTEMS

Supporting Measure – Not Quantified

Encourage incorporation of district energy systems in new industrial growth areas that include on-site, or are located near, waste heat generation facilities.

Measure Background

District energy systems can provide a platform for utilizing waste heat and renewable energy sources and moving these resources around in a system to where and when they

are most needed. Waste heat is generated through a variety of industrial processes, and can be captured and used as a heat source for buildings or to power other industrial processes.

District energy systems constructed to offset building heating loads require extensive infrastructure to capture heat from its waste source and deliver it to end users (e.g., residences, office buildings). In colder regions, the proportion of energy costs dedicated to space heating can be very high, which makes this type of system economically viable. Given the relatively low space heating demands in Dixon, an extensive district energy system is not financially feasible. However, the City could identify its waste heat generators and attempt to attract compatible waste heat users that would benefit from the free use of process heat.

The City will work with the Solano Economic Development Corporation (EDC) to identify the thermal capacity of waste heat generators in Dixon, and identify the types of industries that could beneficially use that type of heat in their processes. Should district energy systems prove to be a viable tool for local economic development, the City will work to remove any regulatory barriers to system installation.

Action		Responsibility
A	Inventory and assess existing sources of waste heat in the city.	Solano EDC; Sustainability Coordinator
B	Remove regulatory barriers to the installation/evolution of district energy networks.	Public Works; Building Division
C	Prepare educational and outreach materials with which to communicate Dixon's district energy opportunities to potential developers or other stakeholders.	Community Development; Solano EDC
D	Work with Solano EDC to attract waste heat users (e.g., agricultural drying facilities) that can be co-located near waste heat generators.	Community Development; Solano EDC

MEASURE E-7.5: COMMUNITY CHOICE AGGREGATION

2020 GHG Reduction Potential: **Quantification Pending**
2035 GHG Reduction Potential: **Quantification Pending**

Support the County in its efforts to develop a community choice aggregation program to provide Solano County residents with a choice in their energy provider.

Measure Background

Solano County included a measure in its CAP to investigate the potential for a countywide community choice aggregation program (CCA).

Assembly Bill 117, which was signed into law in 2002, enables California cities and counties, either individually or collectively, to supply electricity to customers within their borders through the establishment of a CCA. Unlike a municipal utility, a CCA does not own the transmission and delivery systems, but is responsible for providing electricity to its constituent residents and businesses. The CCA may own electric generating facilities, but more often, it purchases electricity from private electricity generators.

A key benefit of a CCA is that the participating jurisdictions can determine the amount of renewable energy contained within the generation portfolio. For example, a Solano County CCA could decide to provide 50% of its electricity from renewable sources, which would exceed State requirements directing California's utilities to provide 33% of their electricity from renewable sources by 2020.

Developing a CCA will require a detailed analysis of energy demand, efficiency opportunities, and renewable generation opportunities in Solano County. Using existing models from other counties (e.g., Marin County) is likely to reduce the initial program design costs. The program would be most effective if the City partnered with other Solano County cities and the County government to jointly pursue a CCA program.

The City will work with the County and other interested participants in the preparation of feasibility studies, outreach campaigns, and other efforts to develop a countywide CCA.

	Action	Responsibility
A	Work with the County to prepare necessary study reports, informational materials, and any other supporting research and/or documents to help pursue a CCA program.	Sustainability Coordinator

Progress Indicators	Year
X% of residential units use CCA Green Level (50% RPS); X% of residential units use CCA Deep Green Level (100% RPS); X% of nonresidential area uses CCA Green Level (50% RPS); X% of nonresidential area uses CCA Deep Green Level (100% RPS)	2020
X% of residential units use CCA Green Level (50% RPS); X% of residential units use CCA Deep Green Level (100% RPS); X% of nonresidential area uses CCA Green Level (50% RPS); X% of nonresidential area uses CCA Deep Green Level (100% RPS)	2035

E-8: Street and Area Lighting

MEASURE E-8.1: STREET LIGHT UPGRADE

2020 GHG Reduction Potential: **75 MT CO_2e/yr**
2035 GHG Reduction Potential: **75 MT CO_2e/yr**

Partner with PG&E to upgrade existing street lights to LED, induction, or other energy-efficient technology. Require new street lights to use energy-efficient technology.

Measure Background

Streetlights account for approximately 31% of the City's municipal electricity use.[x] High-pressure sodium bulbs, commonly used in streetlights, require more energy and have a shorter lifespan than new induction and/or light-emitting diode (LED) lights. The short simple-payback period associated with lighting upgrades makes this an easy measure to implement.

The City has already undertaken a pilot program to upgrade streetlights to LED, and is pursuing a grant to fund citywide upgrades. The City has also explored funding options through PG&E and the California Energy Commission. When funding is secured, the City

will upgrade streetlights citywide. The City will also update its streetlight standards to require energy-efficient streetlights for new and replacement installations.

Action		Responsibility
A	Revise the City's street lights standards to include requirements for energy-efficient technology in new and replacement lamps.	Public Works
B	Develop a street light upgrade program that identifies funding sources and an implementation phasing schedule.	Public Works

Progress Indicators	Year
100% of HPS bulbs are replaced with energy-efficient technology	2020 and 2035

MEASURE E-8.2: TRAFFIC SIGNAL UPGRADE

2020 GHG Reduction Potential: **1 MT CO_2e/yr**
2035 GHG Reduction Potential: **1 MT CO_2e/yr**

Reduce energy consumption in the City's traffic signals through installation of energy-efficient lighting technology.

Measure Background

The City has already begun to replace the incandescent bulbs in traffic signals with LED bulbs. The City will continue to use LED bulbs or similar technology in new and existing traffic signals.

Action		Responsibility
A	Ensure that all new and existing traffic signals are installed with energy-efficient technology. Continue to monitor advancements in traffic signal technology that could provide additional cost-effective energy savings.	Public Works

Progress Indicators	Year
100% of incandescent bulbs in traffic signals are replaced with energy-efficient technology	2020 and 2035

MEASURE E-8.3: PARKING LOT LIGHTING UPGRADE

2020 GHG Reduction Potential: **15 MT CO_2e/yr**
2035 GHG Reduction Potential: **39 MT CO_2e/yr**

Develop a parking lot light upgrade pilot program to test available energy-efficient lighting technologies at a municipally-owned parking lot. Upon completion of the pilot program, expand the program to all municipally-owned parking lots. Promote lighting efficiency upgrades at private parking lots.

Measure Background

High-quality parking lot lighting is necessary to provide personal safety and deter theft and vandalism. However, conventional parking lot lighting, including high-wattage metal

halide and high-pressure sodium lights, consumes more energy than new light-emitting diode (LED) technologies, which provide comparable lighting quality at a fraction of the energy consumption.

The City will develop a pilot parking lot lighting upgrade program to reduce electricity use at municipal parking lots. Upon completion of the pilot testing, the City will develop an implementation plan upgrade all municipal parking lot lights to energy efficiency technology. To finance the program, the City could contract with an Energy Service Company (ESCO) to perform parking lot lighting energy audits and identify best available retrofit improvements. In most cases, the ESCO pays up-front costs associated with retrofit installation, further reducing financial risk to the City.

The City will also work with the Solano Center for Business Innovation to provide outreach to local businesses about the simple-payback period associated with parking lot lighting upgrades. Informational materials could include financial characteristics of the City's pilot program and potential resources for financing or rebates. PG&E's *Lighting Rebate Catalog* provides a comprehensive source for exterior lighting rebates, including fixtures and bulbs.

Action		Responsibility
A	Identify a funding source for pilot program.	Public Works
B	Identify a pilot project parking lot, and monitor before and after energy consumption levels.	Public Works
C	Develop outreach materials explaining simple payback period for pilot project, and available funding sources (e.g., PG&E, energy performance contracts).	Solano Center for Business Innovation; Sustainability Coordinator
D	Develop outreach campaign to encourage private parking lot owners to voluntarily upgrade their lighting technology by explaining the simple pay-back period for investments and providing a list of available rebates/incentives.	Solano Center for Business Innovation; Sustainability Coordinator

Progress Indicators	Year
10% of parking lot lights are upgraded from HPS to energy-efficient technology	2020
25% of parking lot lights are upgraded from HPS to energy-efficient technology	2035

E-9: Municipal Actions

MEASURE E-9.1: MUNICIPAL RENEWABLE ENERGY DEVELOPMENT

2020 GHG Reduction Potential: **111 MT CO_2e/yr**
2035 GHG Reduction Potential: **111 MT CO_2e/yr**

Continue to explore opportunities for additional future installations of renewable energy facilities on municipal properties (e.g., landfills, wastewater treatment facilities, building rooftops).

Measure Background

Transitioning to clean energy sources will allow Dixon to reduce communitywide emissions. The installation of renewable energy systems on municipal buildings will show the City's leadership in the area of renewable energy generation. To that end, the City has already taken steps towards adopting solar technology.

The City of Dixon has partnered with First Northern Bank and Belvedere Equipment Finance Corporation to install five independently interconnected solar PV systems located across four municipal properties:

- City Hall
- Fire Department
- Police Department
- Hall Park (Pat Granucci Aquatic Center/Senior Center/Irrigation Pump)

The systems total approximately 380 kW of renewable capacity.

The City will continue to monitor funding sources and financing options that would allow for additional renewable energy development on municipal properties, particularly future developments related to small-scale wind funding programs. Should funding become available, the City will identify potential locations for new renewable facilities and conduct feasibility studies.

Action		Responsibility
A	Continue to monitor availability of small-scale wind turbine funding sources to replace retired PG&E program.	Community Development; Sustainability Coordinator; Solano EDC
B	When new funding sources become available, conduct feasibility study to identify potential sites for additional renewable energy generation and associated costs.	Public Works
C	Collaborate with other Solano County jurisdictions to identify best practices for municipal renewable facilities and funding strategies.	Public Works

Progress Indicators	Year
Maintain use of existing solar PV systems (380 kW)	2020
Maintain use of existing solar PV systems (380 kW)	2035

MEASURE E-9.2: MUNICIPAL BUILDING ENERGY EFFICIENCY

2020 GHG Reduction Potential: **36 MT CO_2e/yr**
2035 GHG Reduction Potential: **38 MT CO_2e/yr**

Establish a goal to reduce business-as-usual electricity use in municipal buildings by 15%.

Measure Background

Reducing municipal energy use will reduce communitywide GHG emissions, save taxpayer dollars, and set an example for the successful implementation of energy-saving technology.

To achieve 15% reductions in energy use the City will review its existing study, which identified ways to reduce municipal energy consumption. As described throughout this chapter, numerous financing options and rebate programs are available to fund energy-efficiency improvements. The City could also explore energy saving performance contracts to finance improvements. Under this type of agreement, an Energy Services Company (ESCO) completes building energy audits to identify the most cost-effective retrofit options. The ESCO guarantees the amount of energy that will be saved under a defined retrofit package, and further guarantees that the value of energy savings would be sufficient to cover efficiency upgrade costs as long as the price of energy does not fall below a stipulated floor price. In most cases, the ESCO pays up-front costs associated with retrofit installation, further reducing financial risk to the City.

In addition to addressing building performance, the City could provide information and training to City employees on how to reduce energy consumption in the workplace. The City could conduct one campaign per year, ideally during National Energy Awareness Month in October, to educate employees about their energy consumption at work and ways to reduce consumption (e.g., turning off computers and monitors, turning off lights, using power strips). To incentivize participation, the City could consider advertising energy consumption trends during the campaign period and provide prizes for quantifiable reductions.

Action		Responsibility
A	Identify near-term actionable items for energy conservation from the City's previously prepared report.	Building Division; Public Works
B	Consider using an energy performance contract to finance efficiency retrofits.	Public Works
C	Conduct City employee energy use reduction campaign and incentivize participation.	Public Works; Sustainability Coordinator

Progress Indicators	Year
Municipal building energy use is reduced by 210,000 kWh/yr	2020
Municipal building energy use is reduced by 225,000 kWh/yr	2035

MEASURE E-9.3: WASTEWATER TREATMENT PLANT PROCESS OPTIMIZATION

2020 GHG Reduction Potential: **220 MT CO_2e/yr**
2035 GHG Reduction Potential: **220 MT CO_2e/yr**

Perform wastewater treatment plant process energy audits to identify areas for efficiency improvements in machinery and plant operation.

Measure Background

The City of Dixon can improve the efficiency of wastewater pumping and treatment facilities by identifying and implementing energy-saving retrofits at the Dixon Wastewater Treatment Plant (DWTP).

PG&E performs Integrated Energy Audits of wastewater treatment facilities to identify the most critical efficiency improvements and help sewer districts to select energy-saving projects and identify available financial incentives. PG&E helped the Fairfield

Suisun Sewer District (FSSD) to save 1.3 million kWh/yr and install wind turbines with a 200 kW capacity. FSSD received $350,000 in incentives from PG&E, contributing to a simple-payback of 2.7 years for its energy efficiency projects.[xi]

The City should work with PG&E to complete an energy audit of the DWTP, and identify cost-saving energy efficiency upgrades and financial incentives. Upon successful completion of its first energy audit, the City should budget for regular energy audits to ensure DWTP is operating efficiently.

Action		Responsibility
A	Coordinate with PG&E to perform an Integrated Energy Audit on wastewater treatment plant operations.	Public Works; DWTP
B	Update the Wastewater Facilities Plan to include regular energy audits and progress monitoring for implemented improvements.	Public Works; DWTP

Progress Indicators	Year
Reduce energy use at DWTP by 1.3 million kWh/yr from 2005 business-as-usual	2020 and 2035

MEASURE E-9.4: SUSTAINABILITY COORDINATOR

Supporting Measure – Not Quantified

Establish a full-time regional sustainability coordinator to monitor CAP implementation and promote regional sustainability efforts. Explore opportunities to partner with other Solano County governments on this effort (e.g., City of Benicia, Solano County).

Measure Background

Implementation of the measures described in this CAP will likely require an effort that surpasses the available capacity of existing City staff. Further, numerous measures are identified as "Regional Opportunities" that would benefit from collaboration among the different Solano County governments. Therefore, the City recommends creation of a regional sustainability coordinator position, which could oversee implementation of CAP measures that rely on regional collaboration.

The sustainability coordinator would act as a liaison between local governments, residents, and businesses in Solano County to implement and track progress of CAP measures and actions. A regional approach would provide implementation efficiencies on certain measures, and would also help to disseminate best practices information to the local governments regarding other measures. The sustainability coordinator could also act as the point of contact for various regional agencies, including STA, PG&E, the Solano EDC, and the Solano Center for Business Innovation. This would allow one person to gain experience in facilitating implementation of the various programs described throughout this CAP, as opposed to multiple employees of each local government having to coordinate their efforts.

In recent years, several city and county governments have been able to sponsor a full-time sustainability coordinator position through American Reinvestment and Recovery Act (ARRA) grant funding or similar programs. The City will collaborate with other local governments to identify and pursue grant funding to establish a regional sustainability coordinator position.

	Action	Responsibility
A	Secure funding for regional Sustainability Coordinator position.	Community Development; Solano EDC
B	Coordinate with other Solano cities and the County to prioritize regional sustainability issues and programs for joint implementation.	Community Development; Solano EDC

E-10: Outreach

MEASURE E-10.1: PUBLIC OUTREACH

Supporting Measure – Not Quantified

Develop coordinated outreach campaign to fulfill the public outreach components recommended throughout this CAP.

Measure Background

Community engagement and effective participation are essential to the successful implementation of this CAP. During the CAP implementation period, the City will conduct outreach programs that involve residents and businesses in various activities, assessments, and actions.

Effective public participation will increase the likelihood that the measures recommended in this plan achieve estimated participation rates. Furthermore, Dixon will see higher participation rates if outreach and education programs are adapted over time to meet the changing needs of the community. Increased participation rates will result in increased emissions reductions.

At the start of each fiscal year, the City will work with local stakeholders to determine the outreach priorities of the community, which could be a certain segment of the community (e.g., a group of neighborhoods, the agricultural community, the retail sector) or a specific action (e.g., carpooling, biking, lighting). Outreach priorities should be related to measures described in the CAP. The City will strive to designate at least one outreach event per quarter to address the chosen priority areas. The City could also designate one week per year to conduct a high-profile energy efficiency outreach campaign targeting a specific group. The campaign week could also be used to recognize community members that have implemented major improvements.

Numerous measures described in this chapter would benefit from a website that could serve as a central source of information on resource conservation strategies, technical assistance for a variety of topics, and a clearinghouse for rebates and other financial incentives to help implement CAP strategies. The City will partner with other local governments to develop a Solano County Sustainability Website that will be a resource for all residents and businesses in the county.

Action		Responsibility
A	Work with local stakeholders to determine the CAP outreach priorities for the year.	Community Development
B	Designate at least one outreach event per quarter to address the priority areas.	Community Development
C	Conduct a high-profile energy efficiency outreach campaign; recognize community members that have implemented major improvements.	Sustainability Coordinator
D	Partner with other Solano County governments to develop a county sustainability website.	Sustainability Coordinator

Transportation Strategy

To be developed following receipt of SGC grant funding

Water Strategy

To be developed following receipt of SGC grant funding

Waste Strategy

To be developed following receipt of SGC grant funding

Notes

[i] US Census, 2010.

[ii] PG&E, 2012. Available at: <http://www.pgecorp.com/sustainability/en03_clean_energy.jsp>

[iii] US Census, 2010.

[iv] US Census, 2010.

[v] California Energy Commission. *2009 California Residential Appliance Saturation Study.* Prepared by KEMA, October 2010.

[vi] California Energy Commission. *2009 California Residential Appliance Saturation Study.* Prepared by KEMA, October 2010.

[vii] National Renewable Energy Laboratory Renewable Resource Data Center, 2011.

[viii] PG&E. *PG&E Generation Interconnection Services Progress Report for Dixon.* October 2012.

[ix] California Energy Commission. *Solar Water Heating CEC 2013 Title 24 Pre-rulemaking Workshop.* June 9, 2011.

[x] PG&E, October 2012.

[xi] PG&E. *Case Study: Fairfield Suisun Sewer District Integrated Energy Management.* August 2009.

CHAPTER 4

BENCHMARKS + IMPLEMENTATION

4

This chapter describes how the City will implement CAP emissions reduction measures and actions in the following sections:

- Implementation and Monitoring: Describes how City staff will implement CAP measures and related actions, and track the performance metrics identified for each measure.
- Program Evaluation and Evolution: Discusses the need to evaluate, update, and amend the CAP over time, so the plan remains effective and current.

Implementation and Monitoring

Ensuring that the CAP measures translate from policy language into on-the-ground results is critical to the success of the plan. To facilitate this, each measure described in Chapter 3 contains a table that identifies specific actions which the City will carry out, and the departments responsible for each action. The table also provides performance metrics to enable City staff, the City Council, and the public to track measure implementation and monitor overall CAP progress.

The tables provide both interim (2020) and final (2035) performance metrics. Interim performance metrics are especially important, as they provide checkpoints to evaluate if a measure is on the right path to achieving its GHG reductions.

The performance metrics are directly related to the estimated GHG emissions reductions. Therefore, they are written to provide a quantifiable measurement to accurately track progress toward the reduction target. For example, Measure E-7.3 requires all new residential construction to include solar water heaters, to the fullest extent possible, and requires all new single-family residential construction to include a 3 kW solar PV system. The measure's estimated GHG emissions reductions are based on numerous assumptions, including the amount of new residential buildings that will be built between 2005 and the 2020 target year. The performance metric assumes that 10% of the building stock in 2020 will be newly constructed and will include a solar hot water system as well as a 3.0 kW solar PV system installed. If any of the newly built homes install solar PV systems greater than 3.0 kW or install more efficient solar hot water systems by 2020, then additional emissions reductions will occur. Likewise, if solar hot water and solar PV systems are not installed on all of the homes, or systems that are less efficient or less than 3.0 kW are installed, then this measure will achieve less than its estimated reductions.

Upon adoption of the CAP, the City departments identified for each measure in Chapter 3 will become responsible for implementing assigned actions. Key staff in each department will facilitate and oversee this work, working in tandem with the proposed regional Sustainability Coordinator. To assess the status of City efforts, CAP plan implementation meetings should take place several times a year. Some actions will require inter-departmental or inter-agency cooperation, and appropriate partnerships will need to be established.

Program Evaluation and Evolution

The CAP represents the City's initial attempt to create an organized, communitywide plan to reduce GHG emissions. Staff will need to evaluate the program's performance over time and be ready to alter or amend the plan if it is not achieving its reduction target.

PROGRAM EVALUATION

Two types of performance evaluation are important: (a) evaluation of the community's overall ability to reduce GHG emissions, and (b) evaluation of the performance of individual CAP measures. Communitywide GHG emission inventories will provide the best indication of CAP effectiveness. It will be important to reconcile actual growth in the City versus the growth projected when the CAP was developed. Conducting these inventories periodically will enable direct comparison to the 2005 baseline inventory and will demonstrate the CAP's ability to achieve the adopted reduction target. The Community Development Department will prepare communitywide inventories every three to five years following adoption of the CAP to assess progress toward the GHG emissions reduction target.

While communitywide inventories provide information about overall emission reductions, it will also be important to understand the effectiveness of each measure. Evaluation of the emissions reduction capacity of individual measures will improve staff and decision makers' ability to manage and implement the CAP. The City can reinforce successful measures and reevaluate or replace under-performing ones. Evaluating measure performance will require data regarding actual community participation.

The proposed regional Sustainability Coordinator, in coordination with the Community Development Department, PG&E and Solano Water Agency, will evaluate measure performance on the same schedule as the communitywide inventories following adoption of the CAP, and summarize progress toward the GHG reduction target in a report that describes estimated annual GHG reductions in 2020, achievement of performance metrics, participation rates (where applicable), and remaining barriers to implementation.

The proposed Sustainability Coordinator (or Community Development Department staff) will report progress on the CAP action items to decision-makers on an annual basis. Staff will deliver this report in conjunction with the State-required annual report to the City Council regarding implementation of the City's General Plan. The progress report will include a cursory assessment of progress and implementation of individual CAP measures, including how new development projects have incorporated relevant measures. The progress report will identify measure gaps and recommend corrections on a more regular basis, through the addition of new CAP measures.

PROGRAM EVOLUTION

To remain relevant, the City must be prepared to adapt and transform the CAP over time. It is likely that new information about climate change science and risk will emerge, new GHG reduction technologies and innovative municipal strategies will be developed, new financing will be available, and State and federal legislation will change. It is also possible that future inventories will indicate that the community is not achieving its adopted target. As part of the evaluations identified above, the City will assess the implications of new scientific findings and technology, explore new opportunities for GHG reduction, respond to changes in climate policy, and incorporate these changes in future updates to the CAP to ensure an effective and efficient program.

Project Consistency with the CAP

The CAP identifies both mandatory and voluntary GHG reduction measures that would apply to different types of future projects.

Mandatory Measures

For each of the following mandatory measures, the CAP either reinforces the implementation of current codes and ordinances, or directs changes to the City's codes and ordinances that would result in GHG reductions:

- Measure E-1.3: Commercial Energy Conservation Ordinance
- Measure E-2.2: Solar-Ready Construction
- Measure E-5.1: Building Shade Trees
- Measure E-7.3: Residential Renewable Energy Requirements

All new projects would be required to comply with these codes and ordinances, as applicable.

Voluntary Measures

The remaining measures are essentially voluntary, relying on assumed levels of community participation to create communitywide GHG reductions. These measures will be tracked to ensure participation rates are reached and that the voluntary measures are being adequately applied to new and existing projects. If not, then additional, more aggressive actions will be necessary to correct shortfalls.

City of Fairfield
Climate Action Plan

Administrative Draft
Energy Efficiency Plan
November 2012

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Climate Action Plan

Administrative Draft
Energy Efficiency Plan
November 2012

Prepared for:

City of Fairfield

Consultant to the City:

AECOM

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CHAPTER 1
INTRODUCTION: PLANNING FOR CLIMATE CHANGE

Greenhouse gas (GHG) emissions and resulting climate change impacts are considered by the state of California as a major global challenge for the 21st century. According to most climatologists the planet is starting to experience shifts in climate patterns and increased frequency of extreme weather events at both the global and local levels. At a statewide level, these impacts include reduced snow pack in the Sierra Nevada affecting California water supplies; rising sea levels threatening cities along the coast, San Francisco Bay, and Sacramento River; decreasing air quality affecting public health, particularly in the Central Valley; and, rising temperatures impacting the state's agricultural industry, including Solano County farmers and agricultural businesses.

This plan seeks to address these impacts by increasing local energy independence, improving building energy and water efficiency, and establishing a regional framework for collaboration. This framework would address energy use issues to impact climate change and reduce energy use in a manner that provides cost efficiencies in program implementation. For example, energy costs impact both household and business budgets on a daily basis. Increases in the efficiency of energy use can quickly pay for themselves, helping families stay in their homes and businesses stay in their communities. The emphasis will be on GHG emission reductions, with the understanding that steps taken to reduce GHG emissions will also improve energy efficiency while saving money.

What is a CAP?

A CAP (Climate Action Plan) is a tool that many cities in California are using to quantify their share of statewide GHG emissions and establish action steps toward achieving a local emissions reduction target. A CAP provides a set of strategies intended to guide community efforts to reduce GHG emissions, typically through a combination of statewide and local actions. Figure 1.1 shows the typical steps included in the CAP process.

Figure 1.1 – Steps in the CAP Process

A CAP contains community-specific GHG emission inventories and forecasts to establish a starting point and probable future emissions levels if no action is taken (Step 1). A reduction target is then defined to provide an aspirational goal for improvement (Step 2). Emission reduction measures and implementation programs are then written to help the city meets its goal by achieving the reduction target (Step 3). Upon adoption of the CAP, the jurisdiction takes action to implement the reduction measures (Step 4), monitor their progress towards achievement of the reduction target (Step 5), then evaluate effectiveness, celebrate their successes, and use the monitoring results to make adjustments to CAP measures to improve performance (Step 6). This CAP represents the City's progress on Steps 1-3.

Purpose

The climate action planning process seeks to identify measures which are informed by the goals, values and priorities of the community, while at the same time contributing to the State's climate protection efforts and complying with the local Air Quality District's efficiency standards for GHG emissions. In addition, the climate action plan measures

are intended to enhance community resilience by increasing local energy independence, improving building energy and water efficiency, and establishing a regional framework for collaboration on climate change issues. It is anticipated there will be California Environmental Quality Act (CEQA) review streamlining benefits for development projects occurring within a jurisdiction that has an adopted CAP.

Process

The City of Fairfield prepared this CAP as part of a Solano County regional-effort, involving the cities of Dixon, Rio Vista, and Suisun City. The cities of Benicia, Vallejo, Vacaville, and the County of Solano have adopted CAPs. The intent of preparing this CAP through a regional collaborative process was to establish a common list of reduction measures so that no one jurisdiction would become economically disadvantaged through its CAP actions, and to find collaborative opportunities for plan implementation. This CAP describes how the City of Fairfield (Fairfield) will achieve GHG reductions through local actions that contribute to the statewide GHG emissions reduction target defined in Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, CEQA guidelines, and other State guidance.

PG&E Green Communities Program

The four participating cities named above, along with the City of Vacaville, received funding through the Pacific Gas & Electric Company's (PG&E's) Green Communities Program to prepare energy efficiency climate action plans. These plans included many components of a full CAP, including evaluation of baseline emissions, future energy use forecasts, target setting, and the development of energy efficiency measures. The resulting information prepared during that effort has been included throughout this CAP.

Strategic Growth Council Planning Grant

The cities of Fairfield, Dixon, Rio Vista, and Suisun City also received funding from the Strategic Growth Council (SGC) to develop the remaining non energy-related components of a CAP. This included preparing emissions forecasts for the transportation, solid waste, wastewater, water, and off-road mobile sources sectors, as well as development of reduction measures targeting these sectors. This work has been combined with the energy efficiency work mentioned above to create a comprehensive CAP. Is this the upcoming grant administered by STA? Clarify the role of STA in the text here.

The participating cities each developed a customized CAP, relevant to their community's specific context, and have reached out to residents and businesses for public feedback and participation.

Context

Many cities in California are using CAPs to quantify their share of statewide GHG emissions and establish action steps toward achieving a local emissions reduction

target. CAPs typically address emissions targets through reduced dependency on fossil fuels and nonrenewable energy sources, and through increases in the efficient use of the energy that is consumed. CAPs also provide a way to connect climate change mitigation (GHG reduction) to climate adaptation, community resilience, and broader community goals.

In Fairfield, most GHG emissions come from energy used in buildings and gasoline burned in motor vehicles, with water and waste related emissions contributing relatively smaller proportions. Fairfield's CAP examines the communitywide activities that result in GHG emissions and establishes strategies that help reduce those emissions in future and existing development through both voluntary and mandatory actions.

Many of the strategies included in this plan, in addition to reducing GHGs, will also help make Fairfield a more attractive place to live – lowering energy and water bills through conservation, improving bike and pedestrian facilities, improving air quality, and reducing waste generation to extend the lifetime of local landfills. See the section on Benefits of Addressing GHG Emissions below.

Scope and Content of the Climate Action Plan

The CAP comprises four chapters: 1) Introduction: Planning for Climate Change; 2) Baseline Emissions Inventory, Forecasts, and Targets; 3) Emissions Reduction Measures; and 4) Benchmarks and Implementation. Appendices A through C provide additional detail on topics covered within the plan. The contents of each chapter and appendix are briefly described below:

- **Chapter 1, Introduction: Planning for Climate Change,** describes the City's rationale for reducing GHG emissions, as well as the goals of the CAP to comply with local Air Quality Management District guidelines, as applicable. This chapter provides an overview of the topics covered in the CAP, presents conventional climate change science findings, and describes statewide actions to address climate change. This chapter also introduces the CAP's relationship to General Plan Environmental Impact Reports (EIRs), and its ability to enable a CEQA tool known as "tiering" to allow consistent future discretionary development projects to skip certain steps in the traditional CEQA process.
- **Chapter 2, Baseline Emissions Inventory and Forecast-Inventories, Projections and Targets**, outlines key steps taken to develop the CAP, including the 2005 baseline GHG inventory, projecting future emissions in 2020 and 2035, setting a communitywide GHG reduction target for 2020 and a long-range target for 2035. This chapter also describes the emissions gap between the reduction target and statewide reductions, as well as the local reductions attributable to implementation of statewide climate change policy.
- **Chapter 3, Emissions Reduction Measures,** addresses five main reduction strategies: energy, land use and transportation, water conservation, waste reduction, and municipal operations. The CAP provides a summary of projected reductions and a description of the reduction strategy development process. The CAP identifies the following for each reduction strategy: key

elements, existing programs and accomplishments, implementation actions, performance metrics against which to measure success; and estimated GHG reductions in 2020 and 2030.

- **Chapter 4, Benchmarks and Implementation**, describes the process to monitor the City's progress toward achieving their GHG reduction target. This chapter identifies monitoring procedures, plan update processes and other steps to ensure successful implementation.
- **Appendix A - Emissions Inventory Methodology** provides technical description of methods for the 2005 emission inventories and 2020 and 2030 projections.
- **Appendix B - Emissions Reduction Quantification Methodology** provides assumptions used to determine GHG emission reductions associated with primary CAP measures.
- **Appendix C - BAAQMD Qualification Standards** describes how the CAP conforms to BAAQMD guidelines.

Climate Change Science

The United Nations International Panel on Climate Change (IPCC), defines "climate change" as "a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer." [i] The properties of GHGs are such that they retain heat in the atmosphere, which would otherwise escape to space. GHGs accumulate in the atmosphere when they are emitted faster than they can be naturally removed, and that accumulation prompts changes in the climate system. Once emitted into the atmosphere, GHGs influence the Earth's energy balance for a period of decades to centuries.[ii] [iii]

Trend projections indicate that atmospheric concentrations of GHG emissions will continue to increase throughout this century. If these projections become reality, climate change will threaten our economic well-being, public health, and environment.

California has an advantage in its scientific understanding of climate change. A solid body of vital data is available to assist state and local leaders to better understand how climate change is affecting us now, what is in store ahead and what we can do about it. State-sponsored research has played a major role in recent advances in our understanding of the potential impacts of climate change on California. A first assessment, published in 2006, made clear that the level of impacts is a function of global emissions of greenhouse gases and that lower emissions can significantly reduce those impacts.[iv] The third and most recent publication, The 2012 Vulnerability and Adaptation Study, explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts. [v]

The California legislature passed legislation (addressed below) based upon the findings of the IPCC, the U.S. Global Change Research Program, and the National Research Council of the U.S. National Academy of Sciences, together representing the most comprehensive, advanced, and thoroughly reviewed documents on the science of climate change. The development of CAPs in California in general, and in Solano County

specifically, are based upon the actions of the California legislature and its reliance on these findings. For further information on Climate Science, please visit the California Climate Change Portal at http://www.climatechange.ca.gov/.

BENEFITS OF ADDRESSING GHG EMISSIONS

Planning efforts intended to reduce GHG emissions through resource efficiency and conservation measures often have multiple co-benefits as well that will improve the local quality of life. While some co-benefits are qualitative, others are quantifiable improvements over current conditions.

Although the following list is in no way exhaustive of the myriad co-benefits related to climate action planning, this plan references them to illustrate the overlapping benefits of various CAP measures. Overall, these co-benefits:

- Strengthen local economic development (e.g., CEQA streamlining/tiering, transparent development requirements)
- Demonstrate regional sustainability leadership
- Improve neighborhood experience
- Support climate change adaptation strategies

Co-benefits that are applicable to specific measures are listed. The following list uses icons that will be shown with their related CAP measures in Chapter 3:


Improves air quality


Reduces energy use


Promotes regional smart growth


Reduces water use; thus extending community supply


Improves water quality; reduces storm water run-off


Improves local energy independence


Increases natural habitat


Reduces heat island effect


Improves public health


Creates jobs


Reduces waste


Provides long-term savings to residents

California Climate Change Actions

Fairfield's strategy for climate protection, as one of eight local plans in the Solano County regional climate action planning effort, must be set within the context of the Bay Area and the State, where much of the momentum for local action in the United States originates.

California has long been a sustainability leader, as illustrated by Governor Schwarzenegger signing Executive Order (EO) S-3-05 in 2005. EO S-3-05 recognizes California's vulnerability to a reduced snowpack, exacerbation of air quality problems, and potential sea-level rise due to a changing climate. To address these concerns, the governor established targets to reduce statewide GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050.

In 2006, California became the first State in the country to adopt a statewide GHG reduction target through AB 32. This law codifies the EO S-3-05 requirement to reduce statewide emissions to 1990 levels by 2020. AB 32 resulted in the 2008 adoption by the California Air Resources Board (ARB) of a *Climate Change Scoping Plan* (Scoping Plan), outlining the State's plan to achieve emission reductions through a mixture of direct regulations, alternative compliance mechanisms, different types of incentives, voluntary actions, market based mechanisms, and funding. The Scoping Plan addresses similar areas to those contained in this CAP, including transportation, building energy efficiency, water conservation, waste reduction, and green infrastructure.

AB 32 engendered several companion laws that can assist Fairfield in reducing communitywide GHG emissions. These legislative actions and regulations are referred to as statewide actions throughout this plan, and represent a significant source of estimated GHG reductions. Fairfield estimated the GHG emission reductions associated with:

- the Renewable Portfolio Standard (RPS),
- AB 1109,
- 2013 California Title 24,
- AB 1493,
- EO-S-1-07, and
- Vehicle efficiency regulations.

As the regulatory framework surrounding AB 32 grows, it may be possible to evaluate a wider range of statewide reductions.

RENEWABLE PORTFOLIO STANDARD

SB 1078, SB 107, EO-S-14-08, and SB X1-2 have established increasingly stringent Renewable Portfolio Standard (RPS) requirements for California utilities. RPS-eligible energy sources include wind, solar, geothermal, biomass, and small-scale hydro.

- **SB 1078** required investor-owned utilities to provide at least 20% of their electricity from renewable resources by 2020.
- **SB 107** accelerated the SB 1078 timeframe to take effect in 2010.

- **EO-S-14-08** increased the RPS further to 33% by 2020. PG&E, Fairfield's electricity provider, delivered 12.1% of its electricity from renewable sources in 2005 and 19% in 2011.
- **SB X1-2** codified the 33% RPS by 2020 requirement established by EO-S-14-08.

AB 1109 – Lighting Efficiency

AB 1109 was signed into law in 2007. The California Lighting Efficiency and Toxics Reduction Act requires the California Energy Commission to adopt energy efficiency standards for all general purpose lights, reducing lighting energy usage in indoor residences and state facilities by no less than 50%, by 2018, as well as require a 25% reduction in commercial facilities by that same date. To achieve these efficiency levels, the California Energy Commission applied its existing appliance efficiency standards to include lighting products, as well as require minimum lumen/watt standards for different categories of lighting products. In addition, the bill prohibits the manufacturing for sale or the sale of certain general purpose lights that contain hazardous substances.

California Title 24

Title 24 of the California Code of Regulations dictates how new buildings and major remodels are constructed in California. Title 24, Part 6 is a component of Title 24 that details energy efficiency standards for residential and non-residential development. It is updated on approximately a three-year cycle. The State will be increasing building energy conservation requirements through adoption of the 2013 Title 24 standards, which will go into effect beginning in 2014. It is estimated that these revisions to the current 2008 Title 24 standards will result in energy consumption reductions of 25% over the current standards.

AB 1493 – Pavley I and II

AB 1493, California's mobile-source GHG emissions regulations for passenger vehicles, or California Clean Car Standards, was signed into law in 2002. AB 1493 requires ARB to develop and adopt regulations that reduce GHG emissions from passenger vehicles, light-duty trucks, and other non-commercial vehicles for personal transportation. In 2004, ARB approved amendments to the California Code of Regulations adding GHG emissions standards to California's existing standards for motor vehicle emissions.

EO-S-1-07 – The Low Carbon Fuel Standard

EO-S-01-07 reduces the carbon intensity of California's transportation fuels by at least 10% by 2020. The Low Carbon Fuel Standard (LCFS) is a performance standard with flexible compliance mechanisms that incentivizes the development of a diverse set of clean, low-carbon transportation fuel options to reduce GHG emissions.

Vehicle Efficiency Regulations

ARB has adopted several regulations to reduce emissions through improved vehicle efficiency that will have local GHG emission reduction benefits in Fairfield. The following two regulations were quantified and included in as part of this CAP.

Tire Inflation Regulation

On September 1, 2010, ARB's Tire Pressure Regulation took effect. The purpose of this regulation is to reduce GHG emissions from vehicles operating with under-inflated tires by inflating them to the recommended tire pressure rating. The regulation applies to

vehicles with a gross vehicle weight rating (GVWR) of 10,000 pounds or less. Under this regulation, automotive service providers must meet the following requirements:

Check and inflate each vehicle's tires to the recommended tire pressure rating, with air or nitrogen, as appropriate, at the time of performing any automotive maintenance or repair service.

- Indicate on the vehicle service invoice that a tire inflation service was completed and the tire pressure measurements after the service were performed.
- Perform the tire pressure service using a tire pressure gauge with a total permissible error no greater than + two (2) pounds per square inch (psi).
- Have access to a tire inflation reference that is current within three years of publication.
- Keep a copy of the service invoice for a minimum of three years, and make the vehicle service invoice available to the ARB, or its authorized representative upon request.

Heavy-Duty Vehicle GHG Emission Reduction (Aerodynamic Efficiency)

This regulation requires existing trucks/trailers to be retrofitted with the best available technology and/or ARB-approved technology to increase vehicle aerodynamics and fuel efficiency that will result in GHG reductions. This measure has been identified as a Discrete Early Action in the Scoping Plan, which means it must be enforceable beginning in 2010. Technologies that reduce GHG emissions and improve the fuel efficiency of trucks may include devices that reduce aerodynamic drag and rolling resistance. These requirements apply to both California-registered trucks and out-of-state registered trucks that travel to California.

SB 7x

SB 7x requires the state to achieve a 20% reduction in urban per capita water use by December 31, 2020. The state is required to make incremental progress toward this goal by reducing per capita water use by at least 10% on or before December 31, 2015. SB 7x requires each urban retail water supplier to develop both long-term urban water use targets and an interim urban water use target. SB 7x also creates a framework for future planning and actions for urban and agricultural users to reduce per capita water consumption 20% by 2020.

Relationship to the General Plan

Whether by local desire, guidance from the State of California, or both, more and more cities and counties are addressing climate change in their general plans and including policies and programs that have a co-benefit of reducing GHG emissions. The City's policy commitment includes encouraging higher density, mixed-use and infill development in appropriate locations, energy efficiency, and renewable energy development that contribute to GHG reduction strategies contained in the CAP. Since GHG emissions are a cross-cutting issue addressed by many General Plan elements, the CAP as a whole is generally considered an implementation measure for the General

Plan. This structure allows the City to update the CAP on an ongoing, as-needed basis to ensure that the City's climate protection efforts reflect both current legislation and emerging best practices.

In addition, several state agencies have provided guidance and case studies for local governments to address climate change in their general plans. For example:

- Since 2008, the California Attorney General's office has provided guidance to local government on addressing climate change and greenhouse gas reduction through general plan policies.
- The California Office of Planning and Research (OPR) is preparing a 2013 update to the state's *General Plan Guidelines* that will include guidance for GHG emissions reduction and climate adaptation.
- The California Natural Resources Agency has released a Climate Adaptation Policy Guide for local governments.
- The California Department of Housing and Community Development has released a guidance document on general plan housing elements policies and programs addressing climate change with case study examples.
- The Office of Planning and Research prepared a guidance documents for addressing complete streets in general plans as required by AB 1358.

Relationship to the California Environmental Quality Act

Local governments may prepare a Plan for Reduction of Greenhouse Gases that is consistent with AB 32 goals. By preparing such a plan, the city can streamline CEQA review of subsequent plans and projects consistent with the GHG reduction strategies and target in the plan. To meet the standards of a qualified GHG reduction plan, Suisun City's CAP must achieve the following criteria (which parallel and elaborate upon criteria established in State CEQA Guidelines Section 15183.5[b][1]):

- Completing a baseline emissions inventory and projecting future emissions
- Identifying a community-wide reduction target
- Preparing a CAP to identify strategies and measures to meet the reduction target
- Identifying targets and reduction strategies in the General Plan and evaluating the environmental impacts of the CAP in the General Plan EIR
- Monitoring effectiveness of reduction measures and adapting the plan to changing conditions
- Adopting the CAP in a public process following environmental review

This approach allows jurisdictions to analyze and mitigate the significant effects of GHGs at a programmatic level, by adopting a plan for the reduction of GHG emissions. Later,

as individual projects are proposed, project-specific environmental documents may tier from and/or incorporate by reference that existing programmatic review in their cumulative impacts analysis. Project-specific environmental documents prepared for projects consistent with the General Plan and CAP may rely on the programmatic analysis of GHGs contained in an EIR that would be certified for the City's future General Plan and CAP. Chapter 4 provides a discussion of the criteria and process the City will use to determine if a future project is consistent with the CAP.

A project-specific environmental document that relies on this CAP for its cumulative impacts analysis must identify specific CAP measures applicable to the project, and how the project incorporates the measures. If the measures are not otherwise binding and enforceable, they must be incorporated as mitigation measures applicable to the project. If substantial evidence indicates that the GHG emissions of a proposed project may be cumulatively considerable, notwithstanding the project's compliance with specific measures in this CAP, an EIR must be prepared for the project.

QUALIFIED GREENHOUSE GAS REDUCTION STRATEGY

BAAQMD encourages such planning efforts and recognizes that careful early planning by local agencies is invaluable to achieving the state's GHG reduction goals. If a project is consistent with an adopted qualified GHG Reduction Strategy that addresses the project's GHG emissions, it can be presumed that the project will not have significant GHG emissions under CEQA. This CAP meets the definition of a Plan for Reduction of Greenhouse Gases under CEQA. Appendix C provides a discussion regarding how the CAP also meets BAAQMD's Plan Level Guidance (Section 4.3 of the Air District's CEQA Guidelines) for the content of a "Qualified GHG Reduction Strategy" that consistent with AB 32 goals and *CEQA Guidelines* relating to GHGs. This guidance is important if a city or county desires to use a climate action plan to support tiering of future development projects for purposes of CEQA review of GHG impacts.

Notes

[i] Intergovernmental Panel on Climate Change. (2007). Climate Change 2007: Synthesis Report. Retrieved from: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

[ii] 74 Fed. Reg. 66514

[iii] Section retrieved from https://en.wikipedia.org/wiki/Regulation_of_greenhouse_gases_under_the_Clean_Air_Act; October 2012

[iv] Our Changing Climate 2012. Vulnerability & Adaptation to the Increasing Risks from Climate Change in California. A Summary Report on the Third Assessment from the Climate Change Center. July 2012. Page 1. Retrieved from: http://www.energy.ca.gov/2012publications/CEC-500-2012-007/CEC-500-2012-007.pdf

[v] Retrieved from http://www.climatechange.ca.gov/; October 2012

CHAPTER 2

EMISSIONS INVENTORY, FORECASTS + TARGETS

2

This chapter examines current and projected communitywide greenhouse gas (GHG) emissions for the City of Fairfield. It outlines key steps taken to develop the CAP, including preparing the 2005 baseline GHG inventory, forecasting future emissions for 2020 and 2035, and setting a communitywide GHG reduction target for 2020 and a long-range target for 2035. Future emissions are forecast assuming no action is taken to reduce emission levels. These future emissions are based on projected activity data for each sector of the emissions inventory. This chapter also describes the emissions gap between the reduction targets and statewide reductions.

Baseline Inventory (2005)

The purpose of a baseline inventory is to provide a snapshot of communitywide GHG emissions in a given year. Even though AB 32 refers to 1990 levels as baseline, the State has determined 2005 as a viable baseline year, as long as it is on the same trajectory. The City developed a baseline emissions inventory for the 2005 operational year as part of a Countywide climate action planning effort in 2011. The City of Fairfield's inventory was calculated to be consistent with BAAQMD's GHG Plan Level Quantification Guidance and discussions with BAAQMD and Yolo-Solano Air Quality Management District (YSAQMD). Although the City is located within the YSAQMD's jurisdictional boundary, at the time of this analysis, YSAQMD had not developed specific GHG inventory guidance.

The inventory addresses the following emission sectors: energy, transportation, solid waste, off-road equipment, wastewater, and potable water.

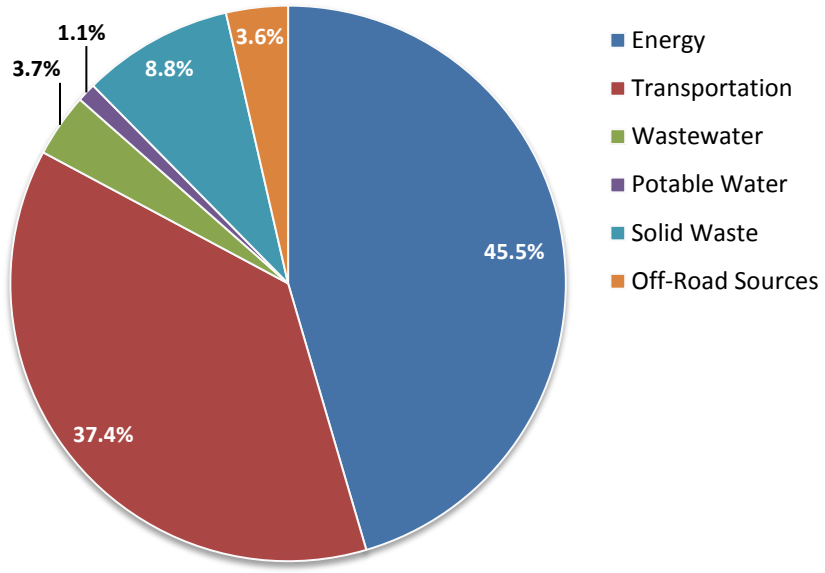
The baseline emissions inventory was prepared using energy consumption data from Pacific Gas and Electric Company (PG&E), solid waste data from city staff and local landfills, and vehicle travel data from the new Metropolitan Transportation Commission activity-based travel model. This empirical data was used along with emission factors to estimate Fairfield's communitywide emissions. See Appendix A for the emissions inventory methodology.

The baseline emissions inventory identified a communitywide emissions total of 703,184 metric tons of carbon dioxide equivalent emissions (MT CO_2e) in 2005. As shown in Figure 2.1 and Table 2.1, energy use is the largest contributor of GHG emissions in the city, with transportation emissions contributing a majority of the remainder. The energy and transportation sectors account for approximately 83% of total emissions. Solid waste emissions provide 9% of the inventory, while off-road sources and wastewater treatment provide 7%. Potable water use is the smallest contributor, making up the remaining 1% of the inventory.

Table 2.1 2005 Communitywide Emissions			
Emission Sector	**Subsector**	**Emissions (MT CO2e/year)**	**Communitywide Total (%)**
Energy		**319,665**	**45.5%**
Electricity Subtotal		*126,985*	*18.1%*
	Residential	53,190	7.6%
	Commercial	70,016	10.0%
		3,779	0.5%
Natural Gas Subtotal		*192,680*	*27.4%*
	Residential	81,405	11.6%
	Commercial	107,674	15.3%
		3,601	0.5%
Transportation		**262,657**	**37.4%**
	Passenger Vehicles	222,507	31.6%
	Commercial Vehicles	40,150	5.7%
Solid Waste		**61,971**	**8.8%**
Off-Road Sources		**25,256**	**3.6%**
Wastewater	Wastewater Treatment	**25,715**	**3.7%**
Potable Water	Water Demand	**7,920**	**1.1%**
Total		**703,184**	**100.0%**

Source: AECOM 2012
Note: Columns may not total 100% due to rounding

Figure 2.1 – 2005 Baseline Emissions by Sector



Emissions Forecasts (2020 and 2035)

The baseline inventory was used to project the communitywide GHG emissions in 2020 and 2035 under a business-as-usual (BAU) scenario. Fairfield's GHG emissions were forecast for the years 2020 and 2035, assuming that historic trends describing energy and water consumption, travel, and solid waste generation will remain the same in the future. Therefore, emissions forecasts demonstrate what emissions levels are likely to be under a scenario in which no statewide or local actions are taken to curtail emissions growth.

BAU emission forecasts provide insight regarding the scale of reductions necessary to achieve an emissions target. GHG reduction measures developed for the CAP are applied to the 2020 and 2035 emissions levels to determine if the City will achieve its GHG reduction targets.

The BAU forecasts use applicable and appropriate indicators for each sector, as well as population and employment growth assumptions established by the Bay Area Association of Governments (ABAG). The 2020 forecast year aligns with the AB 32 target year, while the 2035 forecast year aligns with the SB 375 planning horizon. These projections have been developed for planning purposes, and due to the complexity of each emissions sector, are subject to change. As 2020 approaches, the City will reevaluate its emissions projections and reduction targets to incorporate progress toward long-term GHG reductions, and will repeat this process as 2035 approaches as well. See Appendix A for the emissions forecast methodology.

Table 2.2 identifies projected communitywide emissions by sector for 2020 and 2035. Energy and transportation remain the largest emissions sectors in 2020 and 2035 (XX% and XX%, respectively), followed by solid waste, wastewater, off-road mobile sources, and potable water. Energy use accounts for the largest proportional emissions increase for both projection years (9.5% increase in 2020 and 17.7% increase in 2035). Are we supposed to fill this in? Who is filling in the highlighted data (Brian Miller 10/29/2012)? Or is this the information that is being generated by the upcoming SGS study? Never mind.

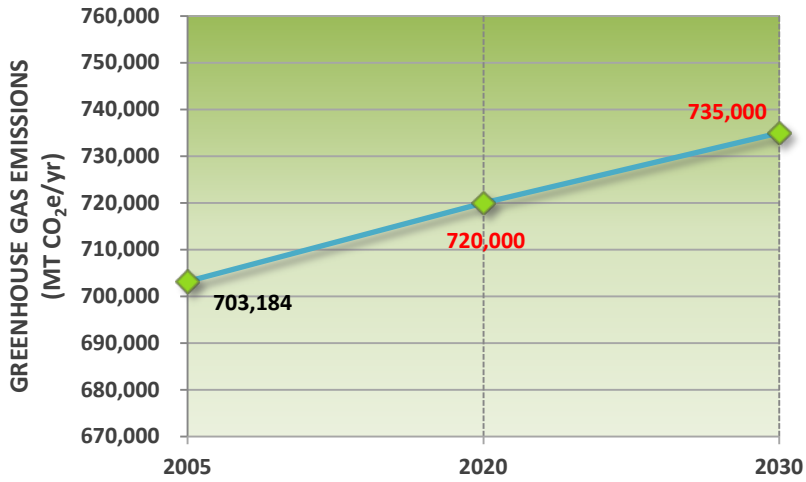
As illustrated in Figure 2.2, communitywide emissions would increase by approximately XX MT CO2e/yr (XX%) between 2005 and 2020, and by approximately XX MT CO_2e/yr (XX%) between 2005 and 2035. The magnitude of communitywide GHG emissions increases from 2005 to 2020 and 2035 is due primarily to anticipated future population and employment growth (and related consumption activity) in Fairfield.

Table 2.2
Communitywide Emissions 2005-2035

Emission Sector	2005 Emissions (MT CO_2e/yr)	2020 Emissions (MT CO_2e/yr)	Increase from 2005 (%)	2035 Emissions (MT CO_2e/yr)	Increase from 2005 (%)
Energy	**319,665**	**379,909**	**15.9%**	**439,414**	**27.3%**
Electricity Subtotal	*126,985*	*150,916*	*15.9%*	*174,554*	*27.3%*
Residential	53,190	63,214	15.9%	73,115	27.3%
Commercial	70,016	83,211	15.9%	96,244	27.3%
Industrial	3,779	4,491	15.9%	5,195	27.3%
Natural Gas Subtotal	*192,680*	*228,993*	*15.9%*	*264,860*	*27.3%*
Residential	81,405	96,747	15.9%	111,900	27.3%
Commercial	107,674	127,967	15.9%	148,010	27.3%
Industrial	3,601	4,279	15.8%	4,950	27.3%
Transportation	**262,657**	**XX**	**XX**	**XX**	**XX**
Passenger Vehicles	222,507	XX	XX	XX	XX
Commercial Vehicles	40,150	XX	XX	XX	XX
Solid Waste	**61,971**	**XX**	**XX**	**XX**	**XX**
Off-Road Sources	**25,256**	**XX**	**XX**	**XX**	**XX**
Wastewater	**25,715**	**XX**	**XX**	**XX**	**XX**
Potable Water	**7,920**	**XX**	**XX**	**XX**	**XX**
Total	**703,184**	**XX**	**XX%**	**XX**	**XX%**

Source: AECOM 2012
Note: Columns may not total 100% due to rounding

Figure 2.2 - Fairfield Baseline and Projected Emissions



GHG Emission Reductions from Statewide Actions

Most of Fairfield's anticipated emission reductions will likely come from statewide actions. This CAP assumes that emissions within the energy, transportation, and water sectors will be reduced through statewide efforts described in Chapter 1. This includes regulations addressing the use of renewable energy sources, energy and water efficiency, and GHG emissions from passenger cars and trucks. These actions provide important reductions that are applied toward Fairfield's communitywide emissions targets, reducing the total amount of emissions to be addressed through community actions. The City will monitor the effectiveness of state legislation to ensure that the anticipated level of reductions is achieved locally, and to ensure that all applicable statewide reductions are accounted.

The City considers locally-realized emissions reductions from:

- SB 1078 (Renewable Portfolio Standard)
- AB 1109 (Lighting Efficiency)
- California Title 24
- AB 1493 (Pavley I and II)
- EO-S-1-07 (Low Carbon Fuel Standard)
- Vehicle efficiency regulations
- SB-7X

Including only these statewide initiatives towards the GHG reduction targets is considered a conservative approach because the Scoping Plan describes numerous other actions that will result in statewide emissions reductions. The actions included herein represent those for which a methodology is available to calculate Fairfield's likely share of these reductions. Other actions will provide statewide benefits, but cannot be accurately attributed to Fairfield.

Table 2.3 summarizes the anticipated reductions associated with these statewide actions in years 2020 and 2035.

Table 2.3
2020 and 2035 Emission Reductions from Statewide Actions

State or Federal Action	2020 Reduction (MT CO_2e/year)	2035 Reduction (MT CO_2e/year)
Renewable portfolio standard (33% by 2020)	36,014	41,655
AB 1109 lighting efficiency	XX	XX
2008 and 2013 California Title-24 standards	XX	XX
Pavley 1 and II	XX	XX
Low carbon fuel standard	XX	XX
Vehicle efficiency regulations	XX	XX
SB-7X	XX	XX
Total	**XX**	**XX**

GHG Emission Reduction Targets

Fairfield has established the following GHG emissions reduction targets for 2020 and 2035:

- **2020:** 15% below 2005 emissions levels
- **2035:** 48% below 2005 emissions levels

The targets will allow the City to contribute to State climate protection efforts described in Chapter 1, and are purposefully set at levels that are likely to provide CEQA streamlining benefits to new development projects in the community. Table 2.4 summarizes the emissions reduction targets, contributions from statewide actions, and the remaining gap for local action.

2020 Emissions Reduction Target

Based on the 2005 emissions inventory and 2020 forecasts presented in this chapter, the 2020 communitywide emissions reduction target is 597,706 MT CO_2e/yr (i.e., 15% below 2005 emissions levels). Reductions totaling XX MT CO_2e/yr in 2020 are required to achieve this target. The 2020 statewide reductions identified in Table 2.3 would contribute emissions reductions of XX MT CO_2e/yr. The remaining gap of XX MT CO_2e/yr must be addressed through local actions described in Chapter 3.

2035 Long-Range Emissions Reduction Target

Achieving the 2035 communitywide emissions reduction target of 365,656 MT CO_2e/yr (i.e., 48% below 2005 emissions levels) would require reductions totaling XX MT CO_2e/yr. Statewide reductions identified in Table 2.3 would contribute XX MT CO_2e/yr, leaving a reductions gap of XX MT CO_2e/yr to be addressed through local actions.

Chapter 3 presents proposed local actions, associated emission reductions, and progress toward the 2020 reduction and 2035 reduction targets.

Table 2.4
2020 and 2035 Emissions Reduction Targets

	2005 (MT CO_2e/yr)	2020 (MT CO_2e/yr)	2035 (MT CO_2e/yr)
Jurisdictional Inventory and Projections	703,184	XX	XX
Reduction Target (2020 and 2035)		597,706	365,656
Reductions Needed to Achieve Target		XX	XX
Assumed Statewide Reductions		-XX	-XX
Local Action Reductions Needed to Achieve Target and Goal		**XX**	**XX**

Source: AECOM 2012

CHAPTER 3
EMISSIONS REDUCTION MEASURES

3

This chapter describes measures and actions necessary to reduce communitywide greenhouse gas (GHG) emissions, and achieve the City's 2020 and 2035 reduction targets. Most measures are designed to achieve quantifiable GHG reductions, while others are listed as supporting measures because they cannot be accurately quantified. To ensure proper implementation, each measure is accompanied by a description providing policy background and implementation details that articulate necessary actions; City departments with primary action responsibility; and progress indicator timelines to track implementation. The City will evaluate effectiveness of CAP measures and actions every three years and propose program modifications if necessary to achieve reduction targets.

Summary of Reductions

Table 3.1 summarizes GHG emission reductions anticipated from implementation of the measures and actions presented in this chapter, and the statewide reductions described in Chapter 2.

Table 3.1: Measures and Quantified Reductions

Energy Strategy		2020 (MT CO_2e/yr)	2035 (MT CO_2e/yr)
E-1. Existing Buildings			
E-1.2	Energy Efficiency Retrofit Outreach	1,469	4,057
E-2. New Construction			
E-2.1	New Construction Energy Efficiency	80	80
E-4. Building Appliances			
E-4.1	ENERGY STAR Appliances	296	515
E-4.2	Smart Grid	1,147	2,809
E-5. Building Cooling			
E-5.1	Building Shade Trees	173	384
E-7. Renewable Energy			
E-7.1	Solar Photovoltaic Systems	7,070	15,338
E-7.2	Solar Water Heaters	584	1,659
E-7.4	Community Choice Aggregation	TBD	TBD
E-8. Street and Area Lighting			
E-8.1	Street Light Upgrade	453	453
E-8.2	Traffic Light Upgrade	41	41
E-8.3	Parking Lot Lighting Upgrade	85	244
E-9. Municipal Actions			
E-9.1	Municipal Renewable Energy Development	146	584
E-9.2	Municipal Building Energy Efficiency	624	722
E-9.3	Wastewater Treatment Plant Process Energy Optimization	220	220
Energy Subtotal		**12,388**	**27,106**

Solid Waste Strategy		
Subtotal	**XX**	**XX**
Water Strategy		
Subtotal	**XX**	**XX**
Transportation Strategy		
Subtotal	**XX**	**XX**
Green Infrastructure Strategy		
Subtotal	**XX**	**XX**
SUBTOTAL CAP MEASURES	**XX**	**XX**
Statewide Reductions		
Renewable Portfolio Standard	36,014	41,655
2013 California Title 24 Standard	XX	XX
AB 1109 – Lighting Efficiency Program	7,990	8,640
AB 1493 – Pavley I and II	XX	XX
Low Carbon Fuel Standard	XX	XX
Vehicle Efficiency Regulations	XX	XX
SB-7X	XX	XX
Subtotal	**XX**	**XX**
TOTAL REDUCTIONS	**XX**	**XX**

Note: Subtotals and totals may not appear to add correctly due to rounding.

Emissions Reductions

PROGRESS TOWARD 2020 TARGET

The reduction measures, together with the communitywide effects of State and federal legislation in Fairfield, have the potential to reduce communitywide emissions by XX MT CO_2e/yr from projected 2020 levels. This progress achieves the City's 2020 reduction target (597,706 MT CO_2e/yr), and represents a X.X% reduction in emissions below 2005 conditions.

PROGRESS TOWARD 2035 TARGET

The reduction measures, together with the communitywide effects of State and federal legislation in Fairfield, have the potential to reduce communitywide emissions by XX MT CO_2e/yr from projected 2035 levels. This progress falls short of the City's 2035 reduction goal (365,656 MT CO_2e/yr), representing a X.X % reduction in emissions below 2005 conditions.

Measure Structure

This section of the CAP is organized according to four strategy areas: energy, transportation, water, and waste. These strategies represent the primary avenues by which to reduce communitywide GHG emissions in Fairfield. Each strategy area section begins with an introduction to the overarching concepts that tie that particular strategy to GHG emission generation and potential reductions. This strategy overview is followed by the specific measures and actions that translate the City's vision into on-the-ground implementation.

Reduction Measures

Measures define the programs, policies, and projects that the City will undertake to accomplish its GHG emission reduction goals. Each measure includes information related to GHG reduction potential, opportunities for regional implementation, sustainability co-benefits, and relative magnitude of cost.

Reduction Potential

The estimated annual emissions reduction potential of each quantifiable measure is provided for 2020 and 2035 in MT CO_2e/yr. Some measures have the same reduction potential for both horizon years because the underlying participation assumptions are held constant. Measures identified as "Supporting Measures" contribute to GHG reductions and are an important component of this CAP, but currently lack a methodology to quantify their emissions reduction potential. For example, the proposed sustainability coordinator position described in Measure E-9.4 is critical to the full implementation of other CAP measures, but it is not possible to accurately calculate the emissions reductions specifically related to that new staff position. Appendix B describes the methodology used to quantify emissions reductions.

Icons

Various icons are used to indicate measures that have regional implementation opportunities, sustainability co-benefits associated with the measures, and simple cost estimates for mandatory components of measures.

Regional Efforts

Measures that would benefit from a regional implementation strategy are denoted as Regional Efforts. The four participating cities (i.e., Fairfield, Dixon, Rio Vista, and Suisun City) could collaborate on implementing these measures to reduce overhead costs associated with new program development, or could partner with other regional agencies to create a sustainability coordinator position to oversee CAP implementation.

Co-Benefits

As described in Chapter 1, implementation of these measures will provide additional community benefits beyond their GHG reductions. The icons listed with each measure represent only a sample of the numerous co-benefits related to individual measures.

Cost Analysis

Some CAP measures require residents and local businesses to take action or direct the City government to develop and implement additional programs. Simple cost estimates (i.e., Low, Medium, High) for these mandatory actions are provided for informational

purposes to help weigh the potential costs and benefits of certain measures. Cost analysis was not performed for measures that describe current and on-going City programs and actions, or voluntary measures that rely on residents and businesses to make personal decisions regarding the importance and value of certain actions. Appendix C provides assumptions use to calculate these simple cost estimates.

Measure Background

The measure background section provides information about the specifics of a measure, including descriptions of various technologies or financing mechanisms. This section also provides information on currently available rebates and other financial incentives related to the measure, and describes any actions the City has taken to date towards implementation of that measure. Additionally, some descriptions provide guidance that will be used in program implementation, such as components of the outreach plan and which segments of the community should be targeted for inclusion.

Actions and Progress Indicators

Action steps and progress indicators are provided in a table following each measure description. Actions identify specific steps that the City will take to implement the measure. The table also identifies responsible departments that would be best positioned to lead or provide input for implementation of certain tasks. Measures that could be implemented by a regional Sustainability Coordinator, as described in Measure E-9.4, are identified should the participating cities secure funding for such a position. In most cases, an alternative responsible department is also listed in the event that a sustainability coordinator position cannot be established.

Progress indicators describe the specific action that is being quantified to estimate the reduction potential. These indicators enable City staff, the City Council, and the public to track implementation and monitor overall CAP progress. Progress indicators are provided for both 2020 and 2035, and are specifically described when possible (e.g., 500 single family homes will install a solar hot water heater). Progress indicators are not provided for supporting measures, which do not have quantifiable emissions reductions.

Reduction Strategies

The strategies identified in this Chapter affect issues within the City's direct influence. Each strategy is subdivided into various sub-strategy headings to help organize the reduction measures. Measures were developed by (a) evaluating existing community conditions, (b) identifying emission reduction opportunities within the community, (c) reviewing best practices from other jurisdictions and organizations, and (d) incorporating State and regional laws, guidelines, and recommendations. Fairfield's measures were also developed as part of a regional conversation between the cities of Dixon, Rio Vista, and Suisun City to provide as much consistency between the four cities CAPs as possible. The adopted CAPs for Solano County and the City of Benicia were also reviewed as part of the measure development process to lay the foundation for regional implementation efforts.

The emission reduction strategies are as follows:

- **Energy:** The Energy Strategy recommends ways to increase energy efficiency in existing buildings, enhance energy performance for new construction, and increase use of renewable energy.
- **Transportation:** The Transportation Strategy encourages transit, carpooling, walking, and bicycling as viable transportation modes to decrease the need to drive.
- **Water:** The Water Strategy promotes the efficient use and conservation of water in buildings and landscapes.
- **Waste:** The Waste Strategy increases waste diversion and recycling, reducing consumption of materials that otherwise end up in landfills.

Energy Strategy

The consumption of electricity for appliances, lighting, and cooling, and combustion of natural gas for heating, cooking, and other processes within residential, commercial, and industrial buildings generated nearly one half of Fairfield's communitywide GHG emissions in 2005. These emissions can be reduced by improving energy efficiency in new and existing buildings and increasing the amount of electricity and heat generated from renewable energy sources.

In Fairfield, approximately 46%[i] of the housing stock was built before California's energy code, Title 24 Part 6, was first adopted in 1978. Consequently, the building stock offers considerable opportunity for cost-effective energy efficiency retrofits to decrease the use of both electricity and natural gas. The City plans to achieve building energy efficiency improvements in both existing and new buildings through a combination of community outreach and education, incentives, and regulations.

Pacific Gas and Electric Company (PG&E) is Fairfield's energy utility, providing both natural gas and electricity for residential, commercial, industrial, and municipal uses. PG&E provides electricity generated at hydroelectric, nuclear, renewable, natural gas, and coal facilities. As of 2011, natural gas facilities provided 25%; nuclear plants provided 22% of the total electricity supply; renewable energy facilities including solar, geothermal, and biomass provided 19%; large hydroelectric operations provided 18%; and unspecified sources provided the remainder[ii].

Under the provisions of SB 107 (2006), investor-owned utilities were required to generate 20% of their retail electricity using qualified renewable energy technologies by the end of 2010. In compliance with this mandate, PG&E will expand its renewable generation portfolio, making additional GHG-free electricity available to customers in Suisun City. In 2011, PG&E delivered 19% of total electricity from eligible renewable sources.

The City will encourage communitywide installation of rooftop solar photovoltaic (PV) and solar hot water systems to increase the portion of Fairfield's energy portfolio provided from renewable sources. The City will also explore installation of renewable energy facilities on municipal property to increase the generation of renewable energy in the community.

The total GHG emission reduction potential of the Energy Strategy is 12,388 MT CO_2e/yr in 2020 and 27,106 in 2035. This represents about X.X% percent of total 2020 reductions and X.X% of total 2035 reductions anticipated from CAP implementation.

E-1: Existing Buildings

MEASURE E-1.1: ENERGY EFFICIENCY AUDITS

Supporting Measure – Not Quantified

Encourage voluntary energy audits for residential and nonresidential buildings to identify cost-effective improvements.

Measure Background

Approximately 46%[iii] of houses in Fairfield were built before 1980, and therefore prior to or about the time of first adoption of California's Title 24 energy efficiency requirements. These homes are excellent candidates for energy-saving retrofits, which could be identified through energy audits.

Building energy audits can help identify and prioritize energy efficiency improvements by providing a building-specific list of retrofit options and their cost-effectiveness. Additionally, the California Energy Commission (CEC) developed the Statewide Home Energy Rating System (HERS) program to allow comparisons of the efficiency levels between California homes. A home's HERS rating is calculated as part of an energy audit, and informs homeowners and renters about energy efficiency much like the MPG metric allows comparisons of vehicles. This type of rating assists in estimating the relative utility costs associated with a home so that renters and buyers can factor those costs into their decision.

The City will partner with the Solano Center for Business Innovation to develop a comprehensive outreach campaign that describes the benefit of energy audits and available rebates, incentives, and financing options, such as PG&E's no- or low-cost energy audit programs for nonresidential customers and residential energy audit rebates available through Energy Upgrade California. Residential audits should be performed per the Whole House Energy Rating required by Energy Upgrade California. To help residents finance home energy audits, the City should pursue grant funding to provide a partial rebate for residents that voluntarily perform energy audits. Previous sources of funding have included Energy Efficiency Conservation Block Grants (EECBG) and the CEC.

As part of this outreach campaign, the City will identify neighborhoods with concentrations of older homes to help focus the outreach toward buildings that will receive the greatest energy savings. The City will also work with PG&E to identify large-energy users that would benefit from energy audits and could be eligible for PG&E's on-bill financing to install retrofit packages identified in the audit. For these larger energy customers, PG&E offers low- or no-cost energy audit services that include on-site analysis of energy consuming systems and customized calculations to help create a strategic plan for implementing projects. The City should also partner with local real estate professionals to help educate home buyers about the value of energy audits at the point of sale. Realtors should also be encouraged to include a home's HERS rating in the MLS listing.

	Action	Responsibility
A	Develop a comprehensive outreach campaign that describes the benefit of energy audits and available rebates, incentives, and financing options.	Solano Center for Business Innovation; Sustainability Coordinator
B	Pursue grant funding to provide a partial rebate for residents and businesses that voluntarily perform energy audits.	Solano Center for Business Innovation; Sustainability Coordinator
C	Identify neighborhoods with concentrations of older building stock to focus outreach campaign.	Community Development; Sustainability Coordinator
D	Work with PG&E to identify large-energy users that would benefit from energy audits. Leverage PG&E's on-bill financing option for nonresidential and municipal customers.	Community Development; Sustainability Coordinator
E	Partner with real estate professional groups to help educate home buyers and business owners about the benefits of energy audits at the point of sale.	Solano Center for Business Innovation; Sustainability Coordinator
F	Provide links on the City website to PG&E's do-it-yourself online energy audit program. (This information could be placed on a new Solano County Sustainability Webpage to leverage regional efforts.)	Community Development; Sustainability Coordinator

MEASURE E-1.2: ENERGY EFFICIENCY RETROFIT OUTREACH

2020 GHG Reduction Potential: **1,469 MT CO2e/yr**
2035 GHG Reduction Potential: **4,057 MT CO2e/yr**

Encourage voluntary energy efficiency retrofits in residential and nonresidential buildings through promotion of local efforts.

Measure Background

Energy efficiency improvements to residential and nonresidential structures can reduce both energy bills and GHG emissions. Many residences (approximately 56 percent[iv]) in Fairfield are owner–occupied, and thus the financial savings of home energy efficiency retrofits are in the long term economic interest of the homeowner. As such, the City will emphasize voluntary participation in energy efficiency retrofit programs, in lieu of mandatory programs. As part of the outreach program, the City will enhance its website by linking to information on existing energy efficiency rebates and other financial incentives, including PG&E incentives to businesses for energy efficiency improvements. The website could also contain local case studies of businesses that have completed cost effective energy efficiency improvements.

To encourage participation from residential homeowners, the City will partner with the Solano Center for Business Innovation to leverage Energy Upgrade California's educational materials and online platform that provides access to incentives, technical assistance, and qualified contractors. Typical rebates and incentives available to Solano County residents through Energy Upgrade California include PG&E's Basic and Advanced Retrofit Packages, pool pumps and motor rebates, efficient water heaters/blankets, HVAC upgrades, furnace upgrades, and wall insulation installation. The City will also promote resources such as California Flex Alert, the Department of Energy's (DOE) Weatherization Assistance Program for low-income households, and PG&E's SmartEnergy Analyzer™ program, all of which link residential property owners to

educational and financial resources. In addition, PG&E is working to a fulfill Goal 2.2 of the CPUC *Long-Term Energy Efficiency Strategic Plan*, which states, "By 2020, 100 percent of eligible and willing customers will have received all cost-effective Low Income Energy Efficiency measures."

Financing is critical to the success of the energy efficiency retrofit program. The City will continue to support the development of a Property Assessed Clean Energy program (see Measure E-1.3) to further promote energy efficiency retrofits. The City will also partner with local real estate professionals to inform homebuyers about the benefits of home energy audits and the availability of energy efficiency mortgages to finance installation of retrofit packages.

Action		Responsibility
A	Develop and maintain a Solano County Sustainability Website with information about current energy efficiency rebates and incentives (including links to PG&E and Energy Upgrade California rebate pages) and local energy efficiency improvement case studies. Leverage Energy Upgrade California outreach and educational materials.	Sustainability Coordinator
B	Provide training to Building and Fire Safety Department counter staff regarding available sources of rebates/incentives and printed pamphlets or FAQ sheets.	Building and Fire Safety; Sustainability Coordinator
C	Provide targeted outreach to low-income and elderly households with information about the federal weatherization program and statewide Energy Savings Assistance Program, and how improvements can increase occupant comfort levels and reduce utility bills.	Community Development; Sustainability Coordinator

Progress Indicators	Year
900 single-family houses install a comprehensive retrofit package; 2,500 single-family houses install a basic retrofit package; 325 multi-family units are upgraded with comprehensive retrofit; 825 multi-family units are upgraded with basic retrofit package; 750,000 sqft of nonresidential area installs a comprehensive retrofit package; 2.2 million sqft of nonresidential area installs a basic retrofit package	2020
2,500 single-family houses install a comprehensive retrofit package; 7,750 single-family houses install a basic retrofit package; 900 multi-family units are upgraded with comprehensive retrofit; 2,500 multi-family units are upgraded with basic retrofit package; 2.2 million sqft of nonresidential area installs a comprehensive retrofit package; 6.5 million sqft of nonresidential area installs a basic retrofit package	2035

MEASURE E-1.3: PACE FINANCING PROGRAM

Supporting Measure – Not Quantified

Partner with the County in its pursuit to establish the Clean Energy Solano PACE program that would provide financing options for residential and nonresidential energy efficiency upgrades to existing buildings. Work with other Solano County jurisdictions to jointly pursue bond funding for a commercial PACE program through California FIRST.

Measure Background

A property-assessed clean energy (PACE) finance program is enabled through the AB 811 legislation. This bill allows land-secured loans for homeowners and businesses who install energy efficiency projects and clean-energy generation systems. Senate Bill 555 reinforced implementation opportunities for PACE programs by expanding the scope of activities allowed within a community facilities district, as defined by the Mello-Roos Community Facilities Act of 1982. A PACE program permits property owners within participating districts to finance the installation of energy- and water-efficiency improvements in their home or business through a lien against their property that is repaid through their property tax bill. If the property is sold, payment responsibility transfers to the new owners, allowing building owners to avoid up-front installation costs while at the same time requiring little or no investment of local government general funds. In some instances, the new lender may require repayment of the existing lien, in which case the remaining PACE loan is repaid from the proceeds of the property sale.

Fairfield is a participating member of the California FIRST program which allows PACE funding for commercial and multi-family residential projects. Fairfield would also be within the boundaries of the proposed Clean Energy Solano PACE program, which would make financing available to both residential and nonresidential projects.

An initial market analysis for the proposed Clean Energy Solano program estimated 3.5% participation in the first five years from both the residential and nonresidential sectors, which would lead to local economic benefits including approximately $19 million in state and local tax revenue, the creation of 2,700 new jobs, and the generation of 37 MW of local renewable energy. Furthermore, building owners who participate in the PACE program are not required to front the initial capital costs.

	Action	Responsibility
A	Opt into the County's PACE program as a participating member.	Community Development; Sustainability Coordinator; Solano EDC
B	Develop an outreach program describing available PACE financing options. Work with PG&E to identify large energy users to help focus outreach efforts.	Community Development; Sustainability Coordinator
C	Continue to participate in California FIRST to make PACE financing available to commercial, industrial, multi-family residential (5+ units), and nonprofit-owned buildings.	Community Development; Sustainability Coordinator

E-2: New Construction

MEASURE E-2.1: NEW CONSTRUCTION ENERGY EFFICIENCY

2020 GHG Reduction Potential: **80 MT CO_2e/yr**
2035 GHG Reduction Potential: **See Statewide Reduction**
2013 California Title 24 Standard

Encourage energy-efficient new construction through promotion of energy-efficient mortgages and technical assistance programs for developers.

Measure Background

California Building Energy Efficiency Standards (Title 24, Part 6, 2008) serve as the basis for mandatory building energy efficiency standards. The California Green Building Standards Code (CALGreen), effective in 2011, also provides the City with the option of adopting an energy efficiency standard that surpasses the State's basic requirements. CALGreen outlines two options: Tier I requires a building's energy performance to exceed Title 24 requirements by 15 percent, while Tier II increases this standard to 30 percent. Revisions to the Title 24 Standards will be adopted in 2013 and will go into effect in 2015.

Although a mandatory ordinance to exceed Title 24 Standards through adoption of the Tier I or II standards will not be established at this time, the City will promote energy efficient new construction through its technical assistance program that provides local builders with information on green building practices, specifically those which relate to energy- and water-efficient design and construction practices. PG&E also developed the Savings by Design program to encourage energy-efficient construction in new commercial buildings. The program offers a range of services to building owners and their design teams, such as design assistance, design team incentives, owner incentives, and educational resources for customized new construction projects that exceed California's Title 24 energy efficiency standards.

To further encourage new construction to participate in this program, the City will provide several green-building incentives described throughout this CAP, such as permit streamlining for installation of various technologies. The City will also consider developing a local green building recognition program to commend building owners that voluntarily exceed Title 24 Standards. The City will work with local real estate professional groups and area developers to provide information to home buyers about the benefits of energy efficiency mortgages, which allow homebuyers to finance the installation of energy efficient systems, such as solar photovoltaics or high-efficiency windows.

Action		Responsibility
A	Provide plan-check for energy-efficient new commercial construction projects; define "energy-efficient" for plan-check purposes.	Building and Fire Safety
B	Partner with local developers and realtors to distribute informational brochures about energy efficient mortgages to potential new home buyers.	Building and Fire Safety; Sustainability Coordinator
C	Provide outreach to local developers, architects, and builders on PG&E's Savings by Design program.	Building and Fire Safety
D	Consider establishing a local green-building recognition award for exemplary projects.	Building and Fire Safety; Sustainability Coordinator

Progress Indicators	Year
90 new single-family residential buildings exceed 2008 Title-24 by 30%; 30 new multi-family residential units exceed 2008 Title-24 by 30%	2020

MEASURE E-2.2: SOLAR READY CONSTRUCTION

Supporting Measure – Not Quantified

Encourage builders to incorporate solar-ready design into new construction, including building orientation for maximum solar exposure, pre-wiring and pre-plumbing for solar PV and solar hot water, and roof system construction that can handle additional loads of future solar installations.

Measure Background

Increasing the use of distributed renewable energy systems (e.g., rooftop solar photovoltaic) prevents the combustion of fossil fuels to generate electricity, thereby reducing GHG emissions. Fairfield's location and geography result in a high solar insolation rating, which makes it an excellent candidate for effective adoption of solar technologies. The City can facilitate future installation of solar technologies by encouraging new construction to be oriented for maximum solar access, pre-wired and pre-plumbed to support PV systems and solar hot water systems, and constructed to support roof loads of solar installations. These front-end additions can reduce the cost of post-construction solar installations for homeowners. The City's technical assistance program described in Measure E-2.1 will provide information on solar-ready construction techniques.

	Action	Responsibility
A	Promote the City's technical assistance program for developers to help implement this measure (see Measure E-2.1).	Building and Fire Safety

MEASURE E-2.3: CAP PROJECT COMPLIANCE CHECKLIST

Supporting Measure – Not Quantified

Clearly state the City's sustainability requirements for new entitlements in a checklist for use by production builders and developers to demonstrate compliance with the CAP.

Measure Background

One barrier to land development can be a lack of transparency or clear understanding of how to comply with various planning documents. The City will create a CAP compliance checklist to remove uncertainty for developers. The checklist will include features that could be incorporated into a plan prior to entitlement. The City could either identify mandatory features for inclusion that would guarantee entitlement, or could develop a point-based checklist that rates each feature relative to its GHG reduction potential and set a minimum score for entitlement. Checklist items could address a variety of topic areas, including community design and layout, building features, landscaping, and public infrastructure. The checklist should refer builders and developers to the City's technical assistance program for additional information on green design. The City should also meet with local production builders to discuss the City's GHG emissions targets and explain how to use the new checklist.

	Action	Responsibility
A	Develop a checklist of new construction requirements per the CAP's measure list. Identify additional, non-mandatory building and design aspects the City would like to encourage.	Community Development; Building and Fire Safety
B	Consider developing a point-based checklist system whereby a project would receive expedited permitting if it achieved a certain score.	Community Development; Building and Fire Safety
C	Facilitate group meeting with production builders to discuss GHG emissions targets.	Community Development; Building and Fire Safety

E-3: Financing

MEASURE E-3.1: ENERGY EFFICIENCY REBATE PROGRAM

Supporting Measure – Not Quantified

Consider establishing a City or County rebate program to encourage implementation of energy efficiency retrofits.

Measure Background

PG&E currently offers rebates for various home energy efficiency improvements. In addition to PG&E rebates, numerous programs funded by state agencies and local governments are available to Solano County residents through the Energy Upgrade California program. The City will partner with other Solano County governments and agencies to identify gaps in existing rebate and incentive programs and jointly pursue funding to establish a local (e.g., Solano County) rebate program.

New rebates could be structured to encourage residents to buy goods or services from local businesses. For example, the City could develop an ENERGY STAR-rated appliance rebate program to supplement those currently offered through PG&E, by providing an additional $50 rebate for appliances purchased from local vendors. Alternatively, the new rebate program could be structured to address the building improvement needs of a specific building type, such as small commercial properties or multi-family residential buildings.

	Action	Responsibility
A	Identify rebate/incentive gaps in PG&E- and Energy Upgrade California-sponsored programs to identify local financing needs.	Community Development; Sustainability Coordinator
B	Identify an outside funding source to finance rebate program (e.g., EECBG, ARRA).	Community Development; Sustainability Coordinator

E-4: Building Appliances

MEASURE E-4.1: ENERGY STAR APPLIANCES

2020 GHG Reduction Potential: 296 MT CO_2e/yr
2035 GHG Reduction Potential: 515 MT CO_2e/yr

Promote voluntary installation of ENERGY STAR and other high-efficiency appliances.

Measure Background

As Title 24 Standards require building shells and systems to become even more efficient, energy consumption from appliances and electronics will become an increasingly important source for reducing building energy use and residents' utility bills. In 2009, approximately 28% of statewide residential electricity use was dedicated to appliances. Televisions, computers, and home office equipment accounted for an additional 20% of electricity use[v]. As big-screen televisions, smart phones, tablets, and other electricity-consuming devices become more commonplace in homes, their proportional share of home electricity use will likely increase as well. Installing ENERGY STAR appliances is one way to reduce energy use in this sector.

This measure is designed to encourage voluntary community participation to upgrade home appliances and lighting to ENERGY STAR or other energy efficient models. Successful implementation of this measure relies on leveraging the Energy Upgrade California program materials through a public outreach campaign to increase community awareness regarding energy efficient appliance choices. The ENERGY STAR rating is an internationally recognized standard for energy efficient consumer products. According to the EPA, devices that have an ENERGY STAR certification, such as office equipment, home appliances, and lighting products, generally use 20 to 30 percent less energy than required by federal standards. By promoting ENERGY STAR-rated home and business appliances, the City can help to reduce GHG emissions related to the use of lighting, refrigerators, dishwashers, clothes washers, wall air conditioning units, computers, photocopiers, lights, and other appliances.

Through Energy Upgrade California, PG&E currently offers rebates to customers who purchase ENERGY STAR dishwashers, clothes washers, refrigerators/freezers, ceiling fans, pool pumps, and room air conditioners. The City will partner with PG&E, Solano County Water District, local developers, and other relevant organizations to promote existing financial incentives and rebates for energy-efficient appliance upgrades and replacements.

Action		Responsibility
A	Collaborate with PG&E, Solano County Water District, and other local organizations to promote existing financial incentive programs to encourage voluntary replacement of inefficient appliances with new ENERGY STAR appliances.	Community Development; Sustainability Coordinator
B	Provide outreach to local developers regarding sources of available rebates to encourage installation of ENERGY STAR-rated major appliances in new residential construction.	Building and Fire Safety; Sustainability Coordinator

Progress Indicators	Year
New residential construction installs energy-efficient appliances: 2,500 refrigerators; 3,000 clothes washers; 3,500 dishwashers; Existing residential units replace expired appliances with energy-efficient appliances: 9,300 refrigerators; 15,250 clothes washers; 23,000 dishwashers	2020
New residential construction installs energy-efficient appliances at the following rates: 4,800 refrigerators; 5,800 clothes washers; 6,800 dishwashers; Existing residential units replace expired appliances with energy-efficient appliances: 15,700 refrigerators; 23,000 clothes washers; 33,000 dishwashers	2035

MEASURE E-4.2: SMART GRID

2020 GHG Reduction Potential: **1,147 MT CO_2e/yr**
2035 GHG Reduction Potential: **2,809 MT CO_2e/yr**

Encourage adoption of smart grid-compatible appliances and energy management systems to shift peak-load energy use.

Measure Background

The 'smart grid' is an emerging energy management system which uses information technology to significantly improve how electricity is managed and controlled. Smart meters, which use a technology that enables users to take full advantage of the smart grid, will eventually provide utility customers with access to detailed energy use and cost information, new time-of-use pricing programs based on peak-energy demand, and the ability to program home appliances and devices to respond to energy use preferences based on cost, comfort, and convenience.

Current smart meters allow for frequent remote reading of energy usage by PG&E. However, the true value of the smart meter program will be fully realized when community residents and businesses begin making more informed energy use decisions based on the two-way communication enabled by smart meters, such as when a homeowner is able to program their washing machine to run when energy prices are lowest.

All investor-owned utilities are rolling out time-of-use pricing, which offers lower utility rates to customers that switch discretionary energy use to off-peak times. Time-of-use pricing is mandatory for all commercial customers, and will eventually be offered to residential customers as well. PG&E currently offers the SmartRate pricing plan to residential customers, which offers lower prices per kWh to customers that agree to reduce electricity use on "SmartDays" when intense heat drives up air conditioning use and therefore, electricity prices. PG&E has also joined OPower, a social media technology provider that helps customers using smart grid technology to compare their energy use with neighbors. To support use of their various pricing programs, PG&E created the Green Button Connect program to allow customers to share their energy usage data with third-party app developers that already have products to help customers track and manage their energy use. The assumption is that customer access to their own energy use trends will support behavioral changes to energy consumption, which will lower customers' utility bills and lower PG&E's costs to provide energy.

When estimating the potential GHG emission reductions associated with implementation of the smart grid, the City included the energy efficiency improvements gained from integrating smart grid energy management systems for control lighting, heating, ventilation, and air conditioning and other major appliances in residential and commercial buildings. According to CISCO, a world-wide leader in network technology, full integration of the smart grid will take time to realize, but energy analysts estimate it will ultimately be capable of reducing electricity-related GHG emissions by 30 percent below current levels.

Through public outreach efforts and targeted outreach to the development community, the City will promote voluntary adoption of smart-grid technology for homes and businesses. The City will train Building and Fire Safety Department staff on the benefits of smart-grid integration and provide informational materials on existing rebate programs.

Action		Responsibility
A	Develop an outreach program that leverages existing PG&E materials, including description of the O-Power Program. Make information available at Building and Fire Safety Department counter.	Building and Fire Safety; Sustainability Coordinator
B	Identify and advertise available rebates for smart-grid compatible appliances and systems on the County's Sustainability Website.	Building and Fire Safety; Sustainability Coordinator

Progress Indicators	Year
5,000 residential units install smart-grid compatible appliances and systems; 3.0 million sqft of commercial area installs smart-grid compatible appliances and systems	2020
12,700 residential units install smart-grid compatible appliances and systems; 7.7 million sqft of commercial area installs smart-grid compatible appliances and systems	2035

MEASURE E-4.3: PERMANENT LOAD SHIFT

Supporting Measure – Not Quantified

Encourage participation in PG&E's Permanent Load Shift program to shift thermal cooling loads to off-peak and/or partial-peak hours.

Measure Background

PG&E's Permanent Load Shift program, often referred to as "Shift & Save," is to store thermal cooling capacity during off-peak hours and/or partial-peak hours in order to meet thermal cooling load in subsequent on-peak hours. The goal of this program is to shift 3.9 megawatts of load. The program's targeted customers are bundled service, commercial, industrial, agricultural, and large residential customers in PG&E's electric service territory. PG&E is working with Cypress Ltd. and Trane USA to implement this program.

The City will partner with PG&E to identify and provide outreach to local large-energy users that could financially benefit from participation in the program. The City will partner with the Solano Center for Business Innovation and the Solano Economic

Development Corporation in its outreach activities to find regional efficiencies in program expansion and application in other Solano County cities. A statewide Permanent Load Shift technology incentive program is currently under development; the City should monitor its progress to identify opportunities for local application.

	Action	Responsibility
A	Work with PG&E to identify large-energy users that would benefit from peak-load shifting technologies and/or strategies. Targeted customers are bundled service, commercial, industrial, agricultural, and large residential customers.	Building and Fire Safety; Sustainability Coordinator
B	Monitor development of the statewide Permanent Load Shift program to identify opportunities for local application.	Building and Fire Safety; Sustainability Coordinator

E-5: Building Cooling

MEASURE E-5.1: BUILDING SHADE TREES

2020 GHG Reduction Potential: **173 MT CO_2e/yr**
2035 GHG Reduction Potential: **384 MT CO_2e/yr**

Adopt a shade tree ordinance for new construction and develop a shade tree outreach campaign to encourage existing property owners to voluntarily plant shade trees.

Measure Background

Properly located trees can provide shading for residential and commercial buildings, and thereby reduce the need for air conditioning. The capacity of a tree to reduce GHG emissions is dependent on its age and species. As trees mature, their canopies increase in size and provide higher levels of shade and greater levels of building cooling in hot weather. Large, deciduous species are ideal for reducing building energy use as they provide shade in summer, but allow winter sunlight into buildings for passive solar gain in cooler weather. Additionally, trees gain carbon-capturing biomass in their trunks and roots as they absorb carbon from the air to grow.

The City will adopt a shade tree ordinance that requires new single-family residential units to plant two shade trees, and new multi-family residential buildings and new nonresidential buildings to plant one shade tree per 1,000 sq ft of air conditioned floor space. The ordinance will allow the installation of building-integrated vegetation in lieu of shade trees. The City will also work with local organizations to promote voluntary shade tree planting at existing buildings. To facilitate proper implementation of this measure, the City will develop a shade tree planting guide to instruct home builders, developers, landscapers, building managers, and property owners on proper shade tree selection and placement to maximize building cooling opportunities while preserving solar access on the roof. Planting guidance should describe the selection of climate-appropriate species and proper siting specifications (i.e., S, SW, or W side of buildings; no more than 20' from the building). The City will continue to enforce street tree and parking lot tree requirements in all commercial and residential development.

	Action	Responsibility
A	Amend the City's Development Standards per the new shade tree ordinance; the ordinance would be applicable where appropriate per site plan review.	Planning Division
B	Work with local environmental and conservation groups to advertise the various benefits of planting shade trees near existing buildings.	Building and Fire Safety
C	Develop a shade tree planting guide to facilitate proper tree selection and installation.	Building and Fire Safety; Public Works

Progress Indicators	Year
12,500 new shade trees properly installed (does not include replacement trees for existing shade trees)	2020
27,000 new shade trees properly installed (does not include replacement trees for existing shade trees)	2035

MEASURE E-5.2: PARKING LOT SHADE TREES

Supporting Measure – Not Quantified

Develop a parking lot shade ordinance to reduce the urban heat island effect.

Measure Background

Heat islands can affect communities by increasing summertime peak energy demand, air conditioning costs, air pollution and greenhouse gas emissions, and heat-related illness and mortality. A primary contributor to urban heat islands is unshaded asphalt pavement, including streets and parking lots. These types of surfaces absorb heat from the sun during the day and radiate that heat back to the surrounding environment throughout the day and into the night, raising local air temperatures.

The City will replace its current parking lot landscaping requirements with a parking lot shade ordinance that requires shade tree or shade structure installation at multi-family and commercial properties such that 50% of the parking lot is shaded within 10 years.

	Action	Responsibility
A	Replace parking lot landscaping requirements with a parking lot shade ordinance for multi-family and commercial properties.	Building and Fire Safety

E-6: Building Lighting

MEASURE E-6.1: INDOOR LIGHTING EFFICIENCY

2020 and 2035 GHG Reduction Potential:
See Statewide Reduction AB 1109

Encourage voluntary adoption of efficient indoor and outdoor lighting technologies in residential and nonresidential buildings.

Measure Background

According to the 2009 California Residential Appliance Saturation Study, approximately 20% of residential electricity consumption is attributed to lighting[vi]. In nonresidential buildings, conventional commercial lighting, including T12 fluorescent bulbs and old exit sign lights, consume more energy than new T8 lights and light-emitting diode (LED) technologies. Lighting upgrades typically provide a short payback period for their investment, and are a good source of GHG emissions reductions.

The City will provide outreach and technical assistance to nonresidential property owners to encourage participation in PG&E's lighting upgrade program, which includes rebates for fixtures, lamps, accent/directional lighting, controls, and signage. The City will also provide outreach to multi-family property managers regarding lighting rebates through PG&E, including CFL replacement bulbs, activity sensors and timers, and replacing T-12 lamps with magnetic ballasts. Informational materials should demonstrate the simple-payback period associated with lighting improvements (typically 2-4 years). The City will also advertise PG&E's CFL rebate, or other lighting rebate programs, on the new sustainability website.

	Action	Responsibility
A	Develop lighting-efficiency informational materials that demonstrate the simple-payback period associated with lighting improvements and existing rebates. Post information on the Solano County Sustainability Webpage. Provided targeted outreach to large nonresidential building managers and multi-family property managers.	Building and Fire Safety; Sustainability Coordinator
B	Leverage existing energy-efficient lighting rebate programs offered through Energy Upgrade California, including fixture and lamp replacements/installation, accent and directional lighting, security lighting, lighting control systems, and PG&E's residential CFL rebate program.	Solano Center for Business Innovation; Sustainability Coordinator
C	Encourage small businesses to participate in PG&E programs that provide technical assistance and access to incentives for energy efficiency upgrades (e.g., lighting).	Solano EDC

E-7: Renewable Energy

MEASURE E-7.1: SOLAR PHOTOVOLTAIC SYSTEMS

2020 GHG Reduction Potential: **7,070 MT CO_2e/yr**
2035 GHG Reduction Potential: **15,338 MT CO_2e/yr**

Facilitate the voluntary installation of solar PV systems on residential and nonresidential buildings.

Measure Background

Solar photovoltaic (PV) systems generate electrical power by converting solar radiation into direct current electricity using semiconductors. PV power generation employs solar panels composed of cells containing photovoltaic material. PV systems can be retrofitted into existing buildings, usually by mounting them on an existing roof structure or walls. Fairfield's solar potential is approximately 5.1 kWh/m^2/yr, which is sufficient to support a solar PV installation that would cover a large percentage of an

average home's electricity demand[vii]. In addition to residential rooftops, commercial and industrial rooftops tend to have large, flat roofs that are often well-suited for solar photovoltaic (PV). Parking lots also provide excellent opportunities for additional solar energy generation. According to PG&E data, Fairfield contains approximately 240 residential solar PV systems installed since 2005, with a total capacity of approximately 875 kW. The City also contains nonresidential solar PV systems totaling an additional 3.1 MW[viii]. However, numerous barriers may prevent widespread adoption of solar PV technology, including City regulations, up-front costs, misinformation or lack of information.

Financing is critical to the success of the solar PV program. Property owners will be able to finance their PV systems through various financing programs and rebates. As described in Measure E-1.3, the City will support the development of and participation in two PACE programs to further promote renewable energy systems for residential and nonresidential buildings. Other financing models, such as power purchase agreements (PPAs), can be used to offset the initial capital cost of installing a solar PV system. Solar PV rebates are available through the California Solar Initiative and its related programs: New Solar Homes Partnerships, Multifamily Affordable Solar Housing Program, and Single-Family Affordable Solar Housing Program. Rebate amounts vary, and are typically based on the installed system size and expected performance. Some rebate programs have variable rebate steps, which decline as PV installed capacity increases.

The City will develop a comprehensive solar PV program that encourages homeowners to install PV systems through outreach advertising available rebate and incentive programs. Outreach efforts will aim to maximize community participation from homeowners, builders, and businesses by leveraging existing educational materials and links to technical assistance and rebates and financing programs. The City will encourage homeowners to request free solar PV audits provided by private solar financing and installation companies. The City will also review and revise its zoning and building codes and other applicable ordinances to identify and remove regulatory barriers to solar installations (i.e., PV and solar hot water) on residential and nonresidential properties. The City will offer priority permitting for new solar PV systems to further reduce implementation barriers.

	Action	Responsibility
A	Review/revise all applicable building, zoning, and other codes and ordinances to identify and remove potential regulatory barriers to the installation of solar PV or solar hot water systems in residential and nonresidential construction.	Building and Fire Safety
B	Provide priority permitting for building-scale renewable energy projects.	Building and Fire Safety; Sustainability Coordinator
C	Develop a comprehensive outreach campaign to increase voluntary participation in solar PV installation programs, including a directory of existing rebates/incentive programs, explanation of simple-payback calculations for solar PV systems, and technical assistance. Leverage existing solar PV informational materials from Energy Upgrade California, the California Solar Initiative, and PG&E.	Building and Fire Safety; Sustainability Coordinator
D	Develop informational materials about the benefits of PPAs offered through independent solar service providers. Post on the Solano County Sustainability Website, and make printed copies available at the Planning Department and Building Division counters.	Building and Fire Safety; Sustainability Coordinator

Progress Indicators	Year
2,600 single-family units install 4.5kW PV system 12.1 MW capacity installed on nonresidential and multi-family buildings	2020
4,500 single-family units install 4.5kW PV system 32.5 MW capacity installed on nonresidential and multi-family buildings	2035

MEASURE E-7.2: SOLAR WATER HEATERS

2020 GHG Reduction Potential: **584 MT CO_2e/yr**
2035 GHG Reduction Potential: **1,659 MT CO_2e/yr**

Promote voluntary installation of solar water heaters in new construction and building retrofits through outreach campaign.

Measure Background

The effectiveness of a solar installation is described, in part, by its solar savings fraction (solar fraction). This measurement describes the percentage of a building's total energy demand that can be met through installation of a solar energy system. A 0% solar fraction indicates that no solar energy utilization is possible, while 100% would indicate full utilization of solar energy to meet building energy demand. Dixon has a 65% solar fraction for low-rise buildings (i.e., 1-2 stories) and a 44% solar fraction for multistory structures (i.e., 3 or more stories), indicating good potential for solar water heater applications[ix].

Solar water heating systems are a simple, reliable, and cost-effective method for harnessing the sun's energy to provide for hot water needs. Solar collectors, usually placed on the roof, absorb the sun's energy to heat water that is stored in a water tank. The State of California has recognized the value of solar hot water heaters. The California Solar Water Heating and Efficiency Act of 2007 (AB 1470), created a 10-year program aimed at installing solar water heaters in homes and businesses. AB 1470 was designed to lower the initial costs of purchasing a system, which averages around $3,000-$6,000.

Solar hot water systems can also be a cost-effective replacement for inefficient water heaters. According to the California Solar Initiative (CSI), solar hot water systems can lower energy bills by meeting 50 to 80 percent of hot water needs over a year. Though the high capital cost of solar water heater upgrades can pose a financial burden to homeowners, there are a range of financing and rebate options to offset these initial investment costs.

There are a number of financing options that may be used to reduce upfront costs, such as the PACE programs mentioned in Measure E-1.4, federal tax incentives through the Energy Policy Act of 2005, and financial incentives through the CSI-Thermal Program. Similar to the CSI solar rebate programs, the CSI-Thermal Program provides rebates for solar water heaters that decline in value as installation increases.

The Solar Water Heating Pilot Program, operated through San Diego Gas and Electric from 2007-2010, identified numerous barriers to the widespread adoption of solar water heating systems. In particular, participating contractors named permitting and

inspection costs and delays as a primary obstacle to widespread adoption for single-family residential buildings because non-material costs represented approximately 65% of total system costs. That means, only 35% of total costs were related to the actual system price. To help address this problem, the City will work to streamline the solar water heater permitting process.

The City will also work with PG&E to create outreach opportunities that provide information about the financial benefits of solar hot water heaters, describe existing financing options and rebate programs, and explain the City's efforts to encourage participation.

Action		Responsibility
A	Collaborate with PG&E and the California Solar Initiative - Thermal Program to develop an outreach program to maximize installation of solar hot water systems and leverage existing funding opportunities.	Community Development; Sustainability Coordinator
B	Streamline permitting process (e.g., building, electric, plumbing) for solar hot water system installation.	Building and Fire Safety

Progress Indicators	Year
300 single-family residential units install solar hot water system; 100 multi-family units are served by solar hot water system	2020
1,700 single-family residential units install solar hot water system; 600 multi-family units are served by solar hot water system	2035

MEASURE E-7.3: DISTRICT ENERGY SYSTEMS

Supporting Measure – Not Quantified

Encourage incorporation of district energy systems in new industrial growth areas that include on-site, or are located near, waste heat generation facilities.

Measure Background

District energy systems can provide a platform for utilizing waste heat and renewable energy sources and moving these resources around in a system to where and when they are most needed. Waste heat is generated through a variety of industrial processes, and can be captured and used as a heat source for buildings or to power other industrial processes.

District energy systems constructed to offset building heating loads require extensive infrastructure to capture heat from its waste source and deliver it to end users (e.g., residences, office buildings). In colder regions, the proportion of energy costs dedicated to space heating can be very high, which makes this type of system economically viable. Given the relatively low space heating demands in Fairfield, an extensive district energy system is not financially feasible. However, the City could identify its waste heat generators and attempt to attract compatible waste heat users that would benefit from the free use of process heat.

The City will work with the Solano Economic Development Corporation (EDC) to identify the thermal capacity of waste heat generators in Fairfield, and identify the types of industries that could beneficially use that type of heat in their processes. Should district

energy systems prove to be a viable tool for local economic development, the City will work to remove any regulatory barriers to system installation.

Action		Responsibility
A	Inventory and assess existing sources of waste heat in the city.	Solano EDC; Sustainability Coordinator
B	Remove regulatory barriers to the installation/evolution of district energy networks.	Public Works; Building and Fire Safety
C	Prepare educational and outreach materials with which to communicate Fairfield's district energy opportunities to potential developers or other stakeholders.	Community Development; Solano EDC
D	Work with Solano EDC to attract waste heat users (e.g., agricultural drying facilities) that can be co-located near waste heat generators.	Community Development; Solano EDC

MEASURE E-7.4: COMMUNITY CHOICE AGGREGATION

2020 GHG Reduction Potential: **Quantification Pending**
2035 GHG Reduction Potential: **Quantification Pending**

Support the County in its efforts to develop a community choice aggregation program to provide Solano County residents with a choice in their energy provider.

Measure Background

Solano County included a measure in its CAP to investigate the potential for a countywide community choice aggregation program (CCA). Assembly Bill 117, which was signed into law in 2002, enables California cities and counties, either individually or collectively, to supply electricity to customers within their borders through the establishment of a CCA. Unlike a municipal utility, a CCA does not own the transmission and delivery systems, but is responsible for providing electricity to its constituent residents and businesses. The CCA may own electric generating facilities, but more often, it purchases electricity from private electricity generators.

A key benefit of a CCA is that the participating jurisdictions can determine the amount of renewable energy contained within the generation portfolio. For example, a Solano County CCA could decide to provide 50% of its electricity from renewable sources, which would exceed State requirements directing California's utilities to provide 33% of their electricity from renewable sources by 2020.

Developing a CCA will require a detailed analysis of energy demand, efficiency opportunities, and renewable generation opportunities in Solano County. Using existing models from other counties (e.g., Marin County) is likely to reduce the initial program design costs. The program would be most effective if the City partnered with other Solano County cities and the County government to jointly pursue a CCA program.

The City will work with the County and other interested participants in the preparation of feasibility studies, outreach campaigns, and other efforts to develop a countywide CCA.

	Action	Responsibility
A	Work with the County to prepare necessary study reports, informational materials, and any other supporting research and/or documents to help pursue a CCA program.	Sustainability Coordinator

Progress Indicators	Year
X% of residential units use CCA Green Level (50% RPS); X% of residential units use CCA Deep Green Level (100% RPS); X% of nonresidential area uses CCA Green Level (50% RPS); X% of nonresidential area uses CCA Deep Green Level (100% RPS)	2020
X% of residential units use CCA Green Level (50% RPS); X% of residential units use CCA Deep Green Level (100% RPS); X% of nonresidential area uses CCA Green Level (50% RPS); X% of nonresidential area uses CCA Deep Green Level (100% RPS)	2035

E-8: Street and Area Lighting

MEASURE E-8.1: STREET LIGHT UPGRADE

2020 GHG Reduction Potential: **453 MT CO_2e/yr**
2035 GHG Reduction Potential: **453 MT CO_2e/yr**

Continue the City's street light upgrade program.

Measure Background

Streetlights account for approximately 13% of the City's municipal electricity use[x]. High-pressure sodium bulbs, commonly used in streetlights, require more energy and have a shorter lifespan than new induction and/or light-emitting diode (LED) lights. The short simple-payback period associated with lighting upgrades makes this an easy measure to implement.

The City has already started a program to upgrade its streetlights to LED technology, and will continue implementation of that program until all streetlights have been upgraded citywide.

	Action	Responsibility
A	Complete implementation of streetlight upgrade program.	Public Works

Progress Indicators	Year
100% of HPS bulbs are replaced with energy-efficient technology	2020 and 2035

MEASURE E-8.2: TRAFFIC SIGNAL UPGRADE

2020 GHG Reduction Potential: **41 MT CO_2e/yr**
2035 GHG Reduction Potential: **41 MT CO_2e/yr**

Reduce energy consumption in the City's traffic signals through installation of energy-efficient lighting technology.

Measure Background

The City has already begun to replace the incandescent bulbs in traffic signals with LED bulbs. The City will finish implementation of its traffic signal upgrade program, and continue to use LED bulbs or similar technology in new and existing traffic signals.

Action		Responsibility
A	Maintain current traffic signal upgrade program implementation.	Public Works

Progress Indicators	Year
100% of incandescent bulbs in traffic signals are replaced with energy-efficient technology	2020 and 2035

MEASURE E-8.3: PARKING LOT LIGHTING UPGRADE

2020 GHG Reduction Potential: **85 MT CO_2e/yr**
2035 GHG Reduction Potential: **244 MT CO_2e/yr**

Continue ongoing parking lot upgrade program, building on progress at the City Hall complex and public parks, and promote lighting efficiency upgrades at private parking lots.

Measure Background

High-quality parking lot lighting is necessary to provide personal safety and deter theft and vandalism. However, conventional parking lot lighting, including high-wattage metal halide and high-pressure sodium lights, consumes more energy than new light-emitting diode (LED) technologies, which provide comparable lighting quality at a fraction of the energy consumption.

The City will continue to make parking lot lighting upgrades to reduce electricity use at municipal parking lots. To finance the program, the City could contract with an Energy Service Company (ESCO) to perform parking lot lighting energy audits and identify best available retrofit improvements. In most cases, the ESCO pays up-front costs associated with retrofit installation, further reducing financial risk to the City.

The City will also work with the Solano Center for Business Innovation to provide outreach to local businesses about the simple-payback period associated with parking lot lighting upgrades. Informational materials could include financial characteristics of the City's previously installed upgrades and potential resources for financing or rebates. PG&E's *Lighting Rebate Catalog* provides a comprehensive source for exterior lighting rebates, including fixtures and bulbs.

	Action	Responsibility
A	Maintain program implementation through CIP funding.	Public Works
B	Develop outreach materials explaining simple payback period for pilot project, and available funding sources (e.g., PG&E, energy performance contracts).	Solano Center for Business Innovation; Sustainability Coordinator
C	Develop outreach campaign to encourage private parking lot owners to voluntarily upgrade their lighting technology by explaining the simple pay-back period for investments and providing a list of available rebates/incentives.	Solano Center for Business Innovation; Sustainability Coordinator

Progress Indicators	Year
10% of parking lot lights are upgraded from HPS to energy-efficient technology	2020
25% of parking lot lights are upgraded from HPS to energy-efficient technology	2035

E-9: Municipal Actions

MEASURE E-9.1: MUNICIPAL RENEWABLE ENERGY DEVELOPMENT

2020 GHG Reduction Potential: **146 MT CO_2e/yr**
2035 GHG Reduction Potential: **584 MT CO_2e/yr**

Explore opportunities for installation of renewable energy facilities on municipal properties (e.g., landfills, wastewater treatment facilities, building rooftops).

Measure Background

Transitioning to clean energy sources will allow Fairfield to reduce communitywide emissions, and the installation of renewable energy systems on municipal buildings will show the City's leadership in the area of renewable energy generation.

The City will conduct a feasibility study to identify potential locations for renewable energy facilities on municipal properties, and perform a financial analysis for projects with the greatest energy generation potential. The City will also continue to monitor the availability of funding for small-scale wind turbine projects, and collaborate with other regional governments and agencies to share information on best practices for developing renewable energy systems in Solano County.

	Action	Responsibility
A	Identify additional small-scale wind turbine funding sources to replace retired PG&E program.	Public Works; Sustainability Coordinator;
B	Conduct study to identify potential municipal sites for renewable energy generation and associated costs.	Public Works
C	Collaborate with other Solano County jurisdictions to identify best practices and funding strategies.	Public Works; Solano EDC; Sustainability Coordinator

Progress Indicators	Year
Develop 500 kW capacity of municipal renewable energy	2020
Develop 2 MW capacity of municipal renewable energy	2035

MEASURE E-9.2: MUNICIPAL BUILDING ENERGY EFFICIENCY

2020 GHG Reduction Potential: **624 MT CO_2e/yr**
2035 GHG Reduction Potential: **722 MT CO_2e/yr**

Establish a goal to reduce business-as-usual electricity use in municipal buildings by 15%.

Measure Background

Reducing municipal energy use will reduce communitywide GHG emissions, save taxpayer dollars, and set an example for the successful implementation of energy-saving technology.

To achieve 15% reductions in energy use the City will perform energy audits on select municipal buildings to identify future potential for energy efficiency improvements. As described throughout this chapter, numerous financing options and rebate programs are available to fund energy-efficiency improvements. The City could also explore energy saving performance contracts to finance improvements. Under this type of agreement, an Energy Services Company (ESCO) completes building energy audits to identify the most cost-effective retrofit options. The ESCO guarantees the amount of energy that will be saved under a defined retrofit package, and further guarantees that the value of energy savings would be sufficient to cover efficiency upgrade costs as long as the price of energy does not fall below a stipulated floor price. In most cases, the ESCO pays up-front costs associated with retrofit installation, further reducing financial risk to the City.

In addition to addressing building performance, the City could provide information and training to City employees on how to reduce energy consumption in the workplace. The City could conduct one campaign per year, ideally during National Energy Awareness Month in October, to educate employees about their energy consumption at work and ways to reduce consumption (e.g., turning off computers and monitors, turning off lights, using power strips). To incentivize participation, the City could consider advertising energy consumption trends during the campaign period and provide prizes for quantifiable reductions.

Action		Responsibility
A	Perform energy audits on select City buildings to identify future potential for energy efficiency improvements.	Building and Fire Safety; Public Works
B	Consider using an energy performance contract to finance efficiency retrofits.	Public Works
C	Conduct City employee energy use reduction campaign and incentivize participation.	Public Works; Sustainability Coordinator

Progress Indicators	Year
Municipal building energy use is reduced by 3.7 million kWh/yr	2020
Municipal building energy use is reduced by 4.3 million kWh/yr	2035

MEASURE E-9.3: WASTEWATER TREATMENT PLANT PROCESS OPTIMIZATION

2020 GHG Reduction Potential: **220 MT CO_2e/yr**
2035 GHG Reduction Potential: **220 MT CO_2e/yr**

Continue to perform energy optimization audits at FSSD and implement audit results.

Measure Background

PG&E performs Integrated Energy Audits of wastewater treatment facilities to identify the most critical efficiency improvements and help sewer districts to select energy-saving projects and identify available financial incentives. PG&E helped the Fairfield Suisun Sewer District (FSSD) to save 1.3 million kWh/yr and install wind turbines with a 200 kW capacity. FSSD received $350,000 in incentives from PG&E, contributing to a simple-payback of 2.7 years for its energy efficiency projects[xi]. FSSD now budgets for regular energy audits to ensure their facility is operating efficiently.

Action		Responsibility
A	Continue to budget for regular Integrated Energy Audits on wastewater treatment plant operations.	FSSD

Progress Indicators	Year
Reduce energy use at FSSD by 1.3 million kWh from 2005 business-as-usual	2020 and 2035

MEASURE E-9.4: SUSTAINABILITY COORDINATOR

Supporting Measure – Not Quantified

Establish a full-time regional sustainability coordinator to monitor CAP implementation and promote regional sustainability efforts. Explore opportunities to partner with other Solano County governments on this effort (e.g., City of Benicia, Solano County).

Measure Background

Implementation of the measures described in this CAP will likely require an effort that surpasses the available capacity of existing City staff. Further, numerous measures are identified as "Regional Opportunities" that would benefit from collaboration among the different Solano County governments. Therefore, the City recommends creation of a regional sustainability coordinator position, which could oversee implementation of CAP measures that rely on regional collaboration.

The sustainability coordinator would act as a liaison between local governments, residents, and businesses in Solano County to implement and track progress of CAP measures and actions. A regional approach would provide implementation efficiencies on certain measures, and would also help to disseminate best practices information to

the local governments regarding other measures. The sustainability coordinator could also act as the point of contact for various regional agencies, including STA, PG&E, the Solano EDC, and the Solano Center for Business Innovation. This would allow one person to gain experience in facilitating implementation of the various programs described throughout this CAP, as opposed to multiple employees of each local government having to coordinate their efforts.

In recent years, several city and county governments have been able to sponsor a full-time sustainability coordinator position through American Reinvestment and Recovery Act (ARRA) grant funding or similar programs. The City will collaborate with other local governments to identify and pursue grant funding to establish a regional sustainability coordinator position.

Action		Responsibility
A	Secure funding for regional Sustainability Coordinator position.	Community Development; Solano EDC
B	Coordinate with other Solano cities and the County to prioritize regional sustainability issues and programs for joint implementation.	Community Development; Solano EDC

E-10: Outreach

MEASURE E-10.1: PUBLIC OUTREACH

Supporting Measure – Not Quantified

Develop coordinated outreach campaign to fulfill the public outreach components recommended throughout this CAP.

Measure Background

Community engagement and effective participation are essential to the successful implementation of this CAP. During the CAP implementation period, the City will conduct outreach programs that involve residents and businesses in various activities, assessments, and actions.

Effective public participation will increase the likelihood that the measures recommended in this plan achieve estimated participation rates. Furthermore, Fairfield will see higher participation rates if outreach and education programs are adapted over time to meet the changing needs of the community. Increased participation rates will result in increased emissions reductions.

At the start of each fiscal year, the City will work with local stakeholders to determine the outreach priorities of the community, which could be a certain segment of the community (e.g., a group of neighborhoods, the agricultural community, the retail sector) or a specific action (e.g., carpooling, biking, lighting). Outreach priorities should be related to measures described in the CAP. The City will strive to designate at least one outreach event per quarter to address the chosen priority areas. The City could also designate one week per year to conduct a high-profile energy efficiency outreach campaign targeting a specific group. The campaign week could also be used to recognize community members that have implemented major improvements.

Numerous measures described in this chapter would benefit from a website that could serve as a central source of information on resource conservation strategies, technical assistance for a variety of topics, and a clearinghouse for rebates and other financial incentives to help implement CAP strategies. The City will partner with other local governments to develop a Solano County Sustainability Website that will be a resource for all residents and businesses in the county.

	Action	Responsibility
A	Work with local stakeholders to determine the CAP outreach priorities for the year.	Community Development
B	Designate at least one outreach event per quarter to address the priority areas.	Community Development
C	Conduct a high-profile energy efficiency outreach campaign; recognize community members that have implemented major improvements.	Sustainability Coordinator
D	Partner with other Solano County governments to develop a county sustainability website.	Sustainability Coordinator

Transportation Strategy

To be developed following receipt of SGC grant funding

Water Strategy

To be developed following receipt of SGC grant funding

Waste Strategy

To be developed following receipt of SGC grant funding

Notes

[i] US Census, 2010.
[ii] PG&E, 2012. Available at: <http://www.pgecorp.com/sustainability/en03_clean_energy.jsp>
[iii] US Census, 2010.
[iv] US Census, 2010.
[v] California Energy Commission. *2009 California Residential Appliance Saturation Study.* Prepared by KEMA, October 2010.
[vi] California Energy Commission. *2009 California Residential Appliance Saturation Study.* Prepared by KEMA, October 2010.
[vii] National Renewable Energy Laboratory Renewable Resource Data Center, 2011.
[viii] PG&E. *PG&E Generation Interconnection Services Progress Report for Fairfield.* October 2012.
[ix] California Energy Commission. *Solar Water Heating CEC 2013 Title 24 Pre-rulemaking Workshop.* June 9, 2011.
[x] PG&E, October 2012.
[xi] PG&E. *Case Study: Fairfield Suisun Sewer District Integrated Energy Management.* August 2009.

CHAPTER 4

BENCHMARKS + IMPLEMENTATION

4

This chapter describes how the City will implement CAP emissions reduction measures and actions in the following sections:

- Implementation and Monitoring: Describes how City staff will implement CAP measures and related actions, and track the performance metrics identified for each measure.
- Program Evaluation and Evolution: Discusses the need to evaluate, update, and amend the CAP over time, so the plan remains effective and current.

Implementation and Monitoring

Ensuring that the CAP measures translate from policy language into on-the-ground results is critical to the success of the plan. To facilitate this, each measure described in Chapter 3 contains a table that identifies specific actions which the City will carry out, and the departments responsible for each action. The table also provides performance metrics to enable City staff, the City Council, and the public to track measure implementation and monitor overall CAP progress.

The tables provide both interim (2020) and final (2035) performance metrics. Interim performance metrics are especially important, as they provide checkpoints to evaluate if a measure is on the right path to achieving its GHG reductions.

The performance metrics are directly related to the estimated GHG emissions reductions. Therefore, they are written to provide a quantifiable measurement to accurately track progress toward the reduction target. For example, Measure E-7.3 requires all new residential construction to include solar water heaters, to the fullest extent possible, and requires all new single-family residential construction to include a 3 kW solar PV system. The measure's estimated GHG emissions reductions are based on numerous assumptions, including the amount of new residential buildings that will be built between 2005 and the 2020 target year. The performance metric assumes that 10% of the building stock in 2020 will be newly constructed and will include a solar hot water system as well as a 3.0 kW solar PV system installed. If any of the newly built homes install solar PV systems greater than 3.0 kW or install more efficient solar hot water systems by 2020, then additional emissions reductions will occur. Likewise, if solar hot water and solar PV systems are not installed on all of the homes, or systems that are less efficient or less than 3.0 kW are installed, then this measure will achieve less than its estimated reductions.

Upon adoption of the CAP, the City departments identified for each measure in Chapter 3 will become responsible for implementing assigned actions. Key staff in each department will facilitate and oversee this work, working in tandem with the proposed regional Sustainability Coordinator. To assess the status of City efforts, CAP plan implementation meetings should take place several times a year. Some actions will require inter-departmental or inter-agency cooperation, and appropriate partnerships will need to be established.

Program Evaluation and Evolution

The CAP represents the City's initial attempt to create an organized, communitywide plan to reduce GHG emissions. Staff will need to evaluate the program's performance over time and be ready to alter or amend the plan if it is not achieving its reduction target.

PROGRAM EVALUATION

Two types of performance evaluation are important: (a) evaluation of the community's overall ability to reduce GHG emissions, and (b) evaluation of the performance of individual CAP measures. Communitywide GHG emission inventories will provide the best indication of CAP effectiveness. It will be important to reconcile actual growth in the City versus the growth projected when the CAP was developed. Conducting these inventories periodically will enable direct comparison to the 2005 baseline inventory and will demonstrate the CAP's ability to achieve the adopted reduction target. The Community Development Department will prepare communitywide inventories every three to five years following adoption of the CAP to assess progress toward the GHG emissions reduction target.

While communitywide inventories provide information about overall emission reductions, it will also be important to understand the effectiveness of each measure. Evaluation of the emissions reduction capacity of individual measures will improve staff and decision makers' ability to manage and implement the CAP. The City can reinforce successful measures and reevaluate or replace under-performing ones. Evaluating measure performance will require data regarding actual community participation.

The proposed regional Sustainability Coordinator, in coordination with the Community Development Department, PG&E and Solano Water Agency, will evaluate measure performance on the same schedule as the communitywide inventories following adoption of the CAP, and summarize progress toward the GHG reduction target in a report that describes estimated annual GHG reductions in 2020, achievement of performance metrics, participation rates (where applicable), and remaining barriers to implementation.

The proposed Sustainability Coordinator (or Community Development Department staff) will report progress on the CAP action items to decision-makers on an annual basis. Staff will deliver this report in conjunction with the State-required annual report to the City Council regarding implementation of the City's General Plan. The progress report will include a cursory assessment of progress and implementation of individual CAP measures, including how new development projects have incorporated relevant measures. The progress report will identify measure gaps and recommend corrections on a more regular basis, through the addition of new CAP measures.

PROGRAM EVOLUTION

To remain relevant, the City must be prepared to adapt and transform the CAP over time. It is likely that new information about climate change science and risk will emerge, new GHG reduction technologies and innovative municipal strategies will be developed, new financing will be available, and State and federal legislation will change. It is also

possible that future inventories will indicate that the community is not achieving its adopted target. As part of the evaluations identified above, the City will assess the implications of new scientific findings and technology, explore new opportunities for GHG reduction, respond to changes in climate policy, and incorporate these changes in future updates to the CAP to ensure an effective and efficient program.

Project Consistency with the CAP

The CAP identifies both mandatory and voluntary GHG reduction measures that would apply to different types of future projects.

Mandatory Measures

For each of the following mandatory measures, the CAP either reinforces the implementation of current codes and ordinances, or directs changes to the City's codes and ordinances that would result in GHG reductions:

- Measure E-5.1: Building Shade Trees
- Measure E-5.3: Parking Lot Shade Trees

All new projects would be required to comply with these codes and ordinances, as applicable.

Voluntary Measures

The remaining measures are essentially voluntary, relying on assumed levels of community participation to create communitywide GHG reductions. These measures will be tracked to ensure participation rates are reached and that the voluntary measures are being adequately applied to new and existing projects. If not, then additional, more aggressive actions will be necessary to correct shortfalls.

City of Rio Vista
Climate Action Plan

Administrative Draft
Energy Efficiency Plan
November 2012

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Prepared for:

City of Rio Vista

Consultant to the City:

AECOM

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CHAPTER 1
INTRODUCTION: PLANNING FOR CLIMATE CHANGE

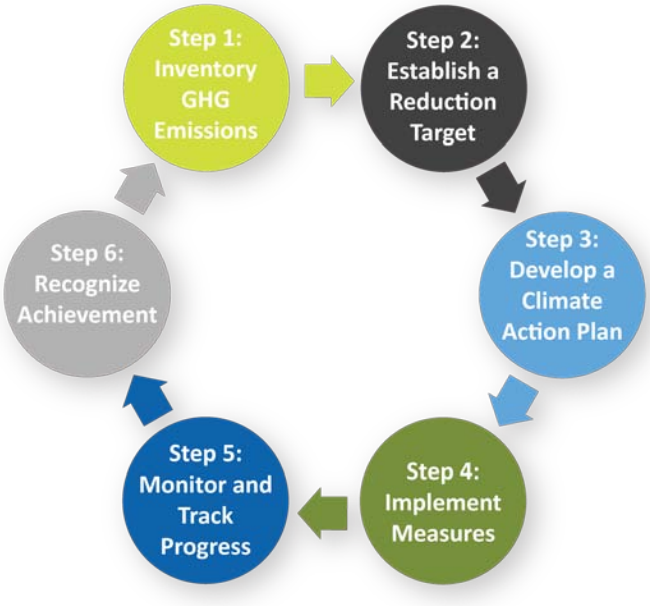
Greenhouse gas (GHG) emissions and resulting climate change impacts are considered by the state of California as a major global challenge for the 21st century. According to most climatologists the planet is starting to experience shifts in climate patterns and increased frequency of extreme weather events at both the global and local levels. At a statewide level, these impacts include reduced snow pack in the Sierra Nevada affecting California water supplies; rising sea levels threatening cities along the coast, San Francisco Bay, and Sacramento River; decreasing air quality affecting public health, particularly in the Central Valley; and, rising temperatures impacting the state's agricultural industry, including Solano County farmers and agricultural businesses.

This plan seeks to address these impacts by increasing local energy independence, improving building energy and water efficiency, and establishing a regional framework for collaboration. This framework would address energy use issues to impact climate change and reduce energy use in a manner that provides cost efficiencies in program implementation. For example, energy costs impact both household and business budgets on a daily basis. Increases in the efficiency of energy use can quickly pay for themselves, helping families stay in their homes and businesses stay in their communities. The emphasis will be on GHG emission reductions, with the understanding that steps taken to reduce GHG emissions will also improve energy efficiency while saving money.

What is a CAP?

A CAP (Climate Action Plan) is a tool that many cities in California are using to quantify their share of statewide GHG emissions and establish action steps toward achieving a local emissions reduction target. A CAP provides a set of strategies intended to guide community efforts to reduce GHG emissions, typically through a combination of statewide and local actions. Figure 1.1 shows the typical steps included in the CAP process.

Figure 1.1 – Steps in the CAP Process



A CAP contains community-specific GHG emission inventories and forecasts to establish a starting point and probable future emissions levels if no action is taken (Step 1). A reduction target is then defined to provide an aspirational goal for improvement (Step 2). Emission reduction measures and implementation programs are then written to help the city meets its goal by achieving the reduction target (Step 3). Upon adoption of the CAP, the jurisdiction takes action to implement the reduction measures (Step 4), monitor their progress towards achievement of the reduction target (Step 5), then evaluate effectiveness, celebrate their successes, and use the monitoring results to make adjustments to CAP measures to improve performance (Step 6). This CAP represents the City's progress on Steps 1-3.

Purpose

The climate action planning process seeks to identify measures which are informed by the goals, values and priorities of the community, while at the same time contributing to the State's climate protection efforts and complying with the local Air Quality District's efficiency standards for GHG emissions. In addition, the climate action plan measures are intended to enhance community resilience by increasing local energy independence,

improving building energy and water efficiency, and establishing a regional framework for collaboration on climate change issues. It is anticipated there will be California Environmental Quality Act (CEQA) review streamlining benefits for development projects occurring within a jurisdiction that has an adopted CAP.

Process

The City of Rio Vista prepared this CAP as part of a Solano County regional-effort, involving the cities of Dixon, Fairfield, and Suisun City. The cities of Benicia, Vallejo, Vacaville, and the County of Solano have adopted CAPs. The intent of preparing this CAP through a regional collaborative process was to establish a common list of reduction measures so that no one jurisdiction would become economically disadvantaged through its CAP actions, and to find collaborative opportunities for plan implementation. This CAP describes how the City of Rio Vista (Rio Vista) will achieve GHG reductions through local actions that contribute to the statewide GHG emissions reduction target defined in Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, CEQA guidelines, and other State guidance.

PG&E Green Communities Program

The four participating cities named above, along with the City of Vacaville, received funding through the Pacific Gas & Electric Company's (PG&E's) Green Communities Program to prepare energy efficiency climate action plans. These plans included many components of a full CAP, including evaluation of baseline emissions, future energy use forecasts, target setting, and the development of energy efficiency measures. The resulting information prepared during that effort has been included throughout this CAP.

Strategic Growth Council Planning Grant

The cities of Rio Vista, Dixon, Fairfield, and Suisun City also received funding from the Strategic Growth Council (SGC) to develop the remaining non energy-related components of a CAP. This included preparing emissions forecasts for the transportation, solid waste, wastewater, water, and off-road mobile sources sectors, as well as development of reduction measures targeting these sectors. This work has been combined with the energy efficiency work mentioned above to create a comprehensive CAP.

The participating cities each developed a customized CAP, relevant to their community's specific context, and have reached out to residents and businesses for public feedback and participation.

Context

Many cities in California are using CAPs to quantify their share of statewide GHG emissions and establish action steps toward achieving a local emissions reduction target. CAPs typically address emissions targets through reduced dependency on fossil fuels and nonrenewable energy sources, and through increases in the efficient use of

the energy that is consumed. CAPs also provide a way to connect climate change mitigation (GHG reduction) to climate adaptation, community resilience, and broader community goals.

In Rio Vista, most GHG emissions come from energy used in buildings and gasoline burned in motor vehicles, with water and waste related emissions contributing relatively smaller proportions. Rio Vista's CAP examines the communitywide activities that result in GHG emissions and establishes strategies that help reduce those emissions in future and existing development through both voluntary and mandatory actions.

Many of the strategies included in this plan, in addition to reducing GHGs, will also help make Rio Vista a more attractive place to live – lowering energy and water bills through conservation, improving bike and pedestrian facilities, improving air quality, and reducing waste generation to extend the lifetime of local landfills. See the section on Benefits of Addressing GHG Emissions below.

Scope and Content of the Climate Action Plan

The CAP comprises four chapters: 1) Introduction: Planning for Climate Change; 2) Baseline Emissions Inventory, Forecasts, and Targets; 3) Emissions Reduction Measures; and 4) Benchmarks and Implementation. Appendices A through B provide additional detail on topics covered within the plan. The contents of each chapter and appendix are briefly described below:

- **Chapter 1, Introduction: Planning for Climate Change,** describes the City's rationale for reducing GHG emissions, as well as the goals of the CAP to comply with local Air Quality Management District guidelines, as applicable. This chapter provides an overview of the topics covered in the CAP, presents conventional climate change science findings, and describes statewide actions to address climate change. This chapter also introduces the CAP's relationship to General Plan Environmental Impact Reports (EIRs), and its ability to enable a CEQA tool known as "tiering" to allow consistent future discretionary development projects to skip certain steps in the traditional CEQA process.
- **Chapter 2, Baseline Emissions Inventory and Forecast-Inventories, Projections and Targets**, outlines key steps taken to develop the CAP, including the 2005 baseline GHG inventory, projecting future emissions in 2020 and 2035, setting a communitywide GHG reduction target for 2020 and a long-range target for 2035. This chapter also describes the emissions gap between the reduction target and statewide reductions, as well as the local reductions attributable to implementation of statewide climate change policy.
- **Chapter 3, Emissions Reduction Measures,** addresses five main reduction strategies: energy, land use and transportation, water conservation, waste reduction, and municipal operations. The CAP provides a summary of projected reductions and a description of the reduction strategy development process. The CAP identifies the following for each reduction strategy: key elements, existing programs and accomplishments, implementation actions,

performance metrics against which to measure success; and estimated GHG reductions in 2020 and 2030.

- **Chapter 4, Benchmarks and Implementation**, describes the process to monitor the City's progress toward achieving their GHG reduction target. This chapter identifies monitoring procedures, plan update processes and other steps to ensure successful implementation.
- **Appendix A - Emissions Inventory Methodology** provides technical description of methods for the 2005 emission inventories and 2020 and 2030 projections.
- **Appendix B - Emissions Reduction Quantification Methodology** provides assumptions used to determine GHG emission reductions associated with primary CAP measures.

Climate Change Science

The United Nations International Panel on Climate Change (IPCC), defines "climate change" as "a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer." [i] The properties of GHGs are such that they retain heat in the atmosphere, which would otherwise escape to space. GHGs accumulate in the atmosphere when they are emitted faster than they can be naturally removed, and that accumulation prompts changes in the climate system. Once emitted into the atmosphere, GHGs influence the Earth's energy balance for a period of decades to centuries.[ii] [iii]

Trend projections indicate that atmospheric concentrations of GHG emissions will continue to increase throughout this century. If these projections become reality, climate change will threaten our economic well-being, public health, and environment.

California has an advantage in its scientific understanding of climate change. A solid body of vital data is available to assist state and local leaders to better understand how climate change is affecting us now, what is in store ahead and what we can do about it. State-sponsored research has played a major role in recent advances in our understanding of the potential impacts of climate change on California. A first assessment, published in 2006, made clear that the level of impacts is a function of global emissions of greenhouse gases and that lower emissions can significantly reduce those impacts.[iv] The third and most recent publication, The 2012 Vulnerability and Adaptation Study, explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts.[v]

The California legislature passed legislation (addressed below) based upon the findings of the IPCC, the U.S. Global Change Research Program, and the National Research Council of the U.S. National Academy of Sciences, together representing the most comprehensive, advanced, and thoroughly reviewed documents on the science of climate change. The development of CAPs in California in general, and in Solano County specifically, are based upon the actions of the California legislature and its reliance on these findings. For further information on Climate Science, please visit the California Climate Change Portal at http://www.climatechange.ca.gov/.

BENEFITS OF ADDRESSING GHG EMISSIONS

Planning efforts intended to reduce GHG emissions through resource efficiency and conservation measures often have multiple co-benefits as well that will improve the local quality of life. While some co-benefits are qualitative, others are quantifiable improvements over current conditions.

Although the following list is in no way exhaustive of the myriad co-benefits related to climate action planning, this plan references them to illustrate the overlapping benefits of various CAP measures. Overall, these co-benefits:

- Strengthen local economic development (e.g., CEQA streamlining/tiering, transparent development requirements)
- Demonstrate regional sustainability leadership
- Improve neighborhood experience
- Support climate change adaptation strategies

Co-benefits that are applicable to specific measures are listed. The following list uses icons that will be shown with their related CAP measures in Chapter 3:


Improves air quality


Reduces energy use


Promotes regional smart growth


Reduces water use; thus extending community supply


Improves water quality; reduces storm water run-off


Improves local energy independence


Increases natural habitat


Reduces heat island effect


Improves public health


Creates jobs


Reduces waste


Provides long-term savings to residents

California Climate Change Actions

Rio Vista's strategy for climate protection, as one of eight local plans in the Solano County regional climate action planning effort, must be set within the context of the Bay Area and the State, where much of the momentum for local action in the United States originates.

California has long been a sustainability leader, as illustrated by Governor Schwarzenegger signing Executive Order (EO) S-3-05 in 2005. EO S-3-05 recognizes California's vulnerability to a reduced snowpack, exacerbation of air quality problems, and potential sea-level rise due to a changing climate. To address these concerns, the governor established targets to reduce statewide GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050.

In 2006, California became the first State in the country to adopt a statewide GHG reduction target through AB 32. This law codifies the EO S-3-05 requirement to reduce statewide emissions to 1990 levels by 2020. AB 32 resulted in the 2008 adoption by the California Air Resources Board (ARB) of a *Climate Change Scoping Plan* (Scoping Plan), outlining the State's plan to achieve emission reductions through a mixture of direct regulations, alternative compliance mechanisms, different types of incentives, voluntary actions, market based mechanisms, and funding. The Scoping Plan addresses similar areas to those contained in this CAP, including transportation, building energy efficiency, water conservation, waste reduction, and green infrastructure.

AB 32 engendered several companion laws that can assist Rio Vista in reducing communitywide GHG emissions. These legislative actions and regulations are referred to as statewide actions throughout this plan, and represent a significant source of estimated GHG reductions. Rio Vista estimated the GHG emission reductions associated with:

- the Renewable Portfolio Standard (RPS),
- AB 1109,
- 2013 California Title 24,
- AB 1493,
- EO-S-1-07, and
- Vehicle efficiency regulations.

As the regulatory framework surrounding AB 32 grows, it may be possible to evaluate a wider range of statewide reductions.

RENEWABLE PORTFOLIO STANDARD

SB 1078, SB 107, EO-S-14-08, and SB X1-2 have established increasingly stringent Renewable Portfolio Standard (RPS) requirements for California utilities. RPS-eligible energy sources include wind, solar, geothermal, biomass, and small-scale hydro.

- **SB 1078** required investor-owned utilities to provide at least 20% of their electricity from renewable resources by 2020.
- **SB 107** accelerated the SB 1078 timeframe to take effect in 2010.

- **EO-S-14-08** increased the RPS further to 33% by 2020. PG&E, Rio Vista's electricity provider, delivered 12.1% of its electricity from renewable sources in 2005 and 19% in 2011.
- **SB X1-2** codified the 33% RPS by 2020 requirement established by EO-S-14-08.

AB 1109 – Lighting Efficiency

AB 1109 was signed into law in 2007. The California Lighting Efficiency and Toxics Reduction Act requires the California Energy Commission to adopt energy efficiency standards for all general purpose lights, reducing lighting energy usage in indoor residences and state facilities by no less than 50%, by 2018, as well as require a 25% reduction in commercial facilities by that same date. To achieve these efficiency levels, the California Energy Commission applied its existing appliance efficiency standards to include lighting products, as well as require minimum lumen/watt standards for different categories of lighting products. In addition, the bill prohibits the manufacturing for sale or the sale of certain general purpose lights that contain hazardous substances.

California Title 24

Title 24 of the California Code of Regulations dictates how new buildings and major remodels are constructed in California. Title 24, Part 6 is a component of Title 24 that details energy efficiency standards for residential and non-residential development. It is updated on approximately a three-year cycle. The State will be increasing building energy conservation requirements through adoption of the 2013 Title 24 standards, which will go into effect beginning in 2014. It is estimated that these revisions to the current 2008 Title 24 standards will result in energy consumption reductions of 25% over the current standards.

AB 1493 – Pavley I and II

AB 1493, California's mobile-source GHG emissions regulations for passenger vehicles, or California Clean Car Standards, was signed into law in 2002. AB 1493 requires ARB to develop and adopt regulations that reduce GHG emissions from passenger vehicles, light-duty trucks, and other non-commercial vehicles for personal transportation. In 2004, ARB approved amendments to the California Code of Regulations adding GHG emissions standards to California's existing standards for motor vehicle emissions.

EO-S-1-07 – The Low Carbon Fuel Standard

EO-S-01-07 reduces the carbon intensity of California's transportation fuels by at least 10% by 2020. The Low Carbon Fuel Standard (LCFS) is a performance standard with flexible compliance mechanisms that incentivizes the development of a diverse set of clean, low-carbon transportation fuel options to reduce GHG emissions.

Vehicle Efficiency Regulations

ARB has adopted several regulations to reduce emissions through improved vehicle efficiency that will have local GHG emission reduction benefits in Rio Vista. The following two regulations were quantified and included in as part of this CAP.

Tire Inflation Regulation

On September 1, 2010, ARB's Tire Pressure Regulation took effect. The purpose of this regulation is to reduce GHG emissions from vehicles operating with under-inflated tires by inflating them to the recommended tire pressure rating. The regulation applies to

vehicles with a gross vehicle weight rating (GVWR) of 10,000 pounds or less. Under this regulation, automotive service providers must meet the following requirements:

Check and inflate each vehicle's tires to the recommended tire pressure rating, with air or nitrogen, as appropriate, at the time of performing any automotive maintenance or repair service.

- Indicate on the vehicle service invoice that a tire inflation service was completed and the tire pressure measurements after the service were performed.
- Perform the tire pressure service using a tire pressure gauge with a total permissible error no greater than + two (2) pounds per square inch (psi).
- Have access to a tire inflation reference that is current within three years of publication.
- Keep a copy of the service invoice for a minimum of three years, and make the vehicle service invoice available to the ARB, or its authorized representative upon request.

Heavy-Duty Vehicle GHG Emission Reduction (Aerodynamic Efficiency)

This regulation requires existing trucks/trailers to be retrofitted with the best available technology and/or ARB-approved technology to increase vehicle aerodynamics and fuel efficiency that will result in GHG reductions. This measure has been identified as a Discrete Early Action in the Scoping Plan, which means it must be enforceable beginning in 2010. Technologies that reduce GHG emissions and improve the fuel efficiency of trucks may include devices that reduce aerodynamic drag and rolling resistance. These requirements apply to both California-registered trucks and out-of-state registered trucks that travel to California.

SB 7x

SB 7x requires the state to achieve a 20% reduction in urban per capita water use by December 31, 2020. The state is required to make incremental progress toward this goal by reducing per capita water use by at least 10% on or before December 31, 2015. SB 7x requires each urban retail water supplier to develop both long-term urban water use targets and an interim urban water use target. SB 7x also creates a framework for future planning and actions for urban and agricultural users to reduce per capita water consumption 20% by 2020.

Relationship to the General Plan

Whether by local desire, guidance from the State of California, or both, more and more cities and counties are addressing climate change in their general plans and including policies and programs that have a co-benefit of reducing GHG emissions. The City's policy commitment includes encouraging higher density, mixed-use and infill development in appropriate locations, energy efficiency, and renewable energy development that contribute to GHG reduction strategies contained in the CAP. Since GHG emissions are a cross-cutting issue addressed by many General Plan elements, the CAP as a whole is generally considered an implementation measure for the General

Plan. This structure allows the City to update the CAP on an ongoing, as-needed basis to ensure that the City's climate protection efforts reflect both current legislation and emerging best practices.

In addition, several state agencies have provided guidance and case studies for local governments to address climate change in their general plans. For example:

- Since 2008, the California Attorney General's office has provided guidance to local government on addressing climate change and greenhouse gas reduction through general plan policies.
- The California Office of Planning and Research (OPR) is preparing a 2013 update to the state's *General Plan Guidelines* that will include guidance for GHG emissions reduction and climate adaptation.
- The California Natural Resources Agency has released a Climate Adaptation Policy Guide for local governments.
- The California Department of Housing and Community Development has released a guidance document on general plan housing elements policies and programs addressing climate change with case study examples.
- The Office of Planning and Research prepared a guidance documents for addressing complete streets in general plans as required by AB 1358.

Relationship to the California Environmental Quality Act

Local governments may prepare a Plan for Reduction of Greenhouse Gases that is consistent with AB 32 goals. By preparing such a plan, the city can streamline CEQA review of subsequent plans and projects consistent with the GHG reduction strategies and target in the plan. To meet the standards of a qualified GHG reduction plan, Suisun City's CAP must achieve the following criteria (which parallel and elaborate upon criteria established in State CEQA Guidelines Section 15183.5[b][1]):

- Completing a baseline emissions inventory and projecting future emissions
- Identifying a community-wide reduction target
- Preparing a CAP to identify strategies and measures to meet the reduction target
- Identifying targets and reduction strategies in the General Plan and evaluating the environmental impacts of the CAP in the General Plan EIR
- Monitoring effectiveness of reduction measures and adapting the plan to changing conditions
- Adopting the CAP in a public process following environmental review

This approach allows jurisdictions to analyze and mitigate the significant effects of GHGs at a programmatic level, by adopting a plan for the reduction of GHG emissions. Later,

as individual projects are proposed, project-specific environmental documents may tier from and/or incorporate by reference that existing programmatic review in their cumulative impacts analysis. Project-specific environmental documents prepared for projects consistent with the General Plan and CAP may rely on the programmatic analysis of GHGs contained in an EIR that would be certified for the City's future General Plan and CAP. Chapter 4 provides a discussion of the criteria and process the City will use to determine if a future project is consistent with the CAP.

A project-specific environmental document that relies on this CAP for its cumulative impacts analysis must identify specific CAP measures applicable to the project, and how the project incorporates the measures. If the measures are not otherwise binding and enforceable, they must be incorporated as mitigation measures applicable to the project. If substantial evidence indicates that the GHG emissions of a proposed project may be cumulatively considerable, notwithstanding the project's compliance with specific measures in this CAP, an EIR must be prepared for the project.

Notes

[i] Intergovernmental Panel on Climate Change. (2007). Climate Change 2007: Synthesis Report. Retrieved from: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

[ii] 74 Fed. Reg. 66514

[iii] Section retrieved from https://en.wikipedia.org/wiki/Regulation_of_greenhouse_gases_under_the_Clean_Air_Act; October 2012

[iv] Our Changing Climate 2012. Vulnerability & Adaptation to the Increasing Risks from Climate Change in California. A Summary Report on the Third Assessment from the Climate Change Center. July 2012. Page 1. Retrieved from: http://www.energy.ca.gov/2012publications/CEC-500-2012-007/CEC-500-2012-007.pdf

[v] Retrieved from http://www.climatechange.ca.gov/; October 2012

CHAPTER 2

EMISSIONS INVENTORY, FORECASTS + TARGETS

2

This chapter examines current and projected communitywide greenhouse gas (GHG) emissions for the City of Rio Vista. It outlines key steps taken to develop the CAP, including preparing the 2005 baseline GHG inventory, forecasting future emissions for 2020 and 2035, and setting a communitywide GHG reduction target for 2020 and a long-range target for 2035. Future emissions are forecast assuming no action is taken to reduce emission levels. These future emissions are based on projected activity data for each sector of the emissions inventory. This chapter also describes the emissions gap between the reduction targets and statewide reductions.

Baseline Inventory (2005)

The purpose of a baseline inventory is to provide a snapshot of communitywide GHG emissions in a given year. Even though AB 32 refers to 1990 levels as baseline, the State has determined 2005 as a viable baseline year, as long as it is on the same trajectory. The City developed a baseline emissions inventory for the 2005 operational year as part of a Countywide climate action planning effort in 2011. The City of Rio Vista's inventory was calculated to be consistent with BAAQMD's GHG Plan Level Quantification Guidance and discussions with BAAQMD and Yolo-Solano Air Quality Management District (YSAQMD). Although the City is located within the YSAQMD's jurisdictional boundary, at the time of this analysis, YSAQMD had not developed specific GHG inventory guidance.

The inventory addresses the following emission sectors: energy, transportation, solid waste, off-road equipment, wastewater, and potable water.

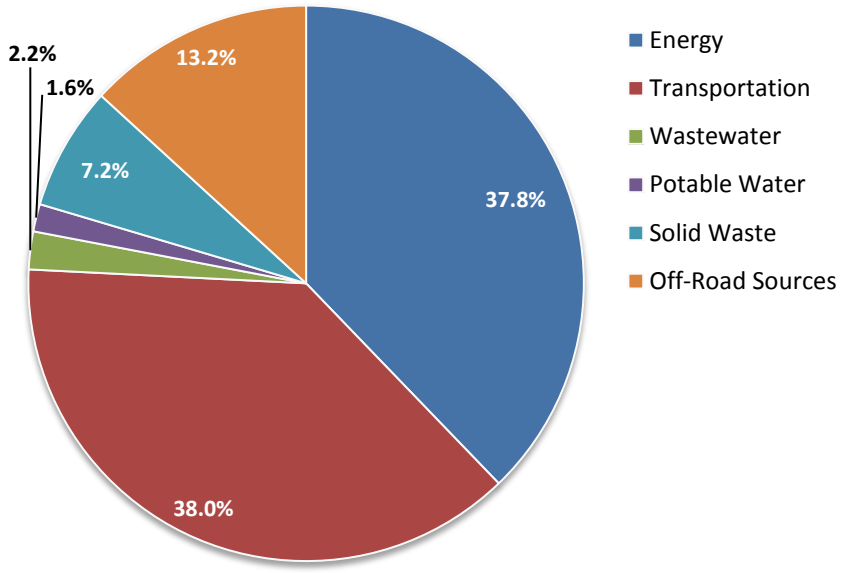
The baseline emissions inventory was prepared using energy consumption data from Pacific Gas and Electric Company (PG&E), solid waste data from city staff and local landfills, and vehicle travel data from the new Metropolitan Transportation Commission activity-based travel model. This empirical data was used along with emission factors to estimate Rio Vista's communitywide emissions. See Appendix A for the emissions inventory methodology.

The baseline emissions inventory identified a communitywide emissions total of 47,743 metric tons of carbon dioxide equivalent emissions (MT CO_2e) in 2005. As shown in Figure 2.1 and Table 2.1, the energy and transportation sectors are the largest contributors of GHG emissions in the city, comprising approximately 76% of total emissions. Off-road sources contribute approximately 13% of GHG emissions to the inventory, and solid waste emissions provide another 7%. Wastewater treatment and potable water use are both small contributors in comparison, making up the remaining 4% of the inventory.

Table 2.1 2005 Communitywide Emissions			
Emission Sector	**Subsector**	**Emissions (MT CO_2e/year)**	**Communitywide Total (%)**
Energy		**18,034**	**37.8%**
Electricity Subtotal		*8,229*	*17.2%*
	Residential	4,501	9.4%
	Commercial	3,706	7.8%
	Industrial	22	*0.0%*
Natural Gas Subtotal		*9,805*	*20.5%*
	Residential	7,165	15.0%
	Commercial	2,640	5.5%
	Industrial	-	-
Transportation		**18,156**	**38.0%**
	Passenger Vehicles	15,160	31.8%
	Commercial Vehicles	2,996	6.3%
Solid Waste		**3,429**	**7.2%**
Off-Road Sources		**6,298**	**13.2%**
Wastewater	Wastewater Treatment	**1,047**	**2.2%**
Potable Water	Water Demand	**779**	**1.6%**
Total		**47,743**	**100.0%**

Source: AECOM 2012
Note: Columns may not total 100% due to rounding

Figure 2.1 – 2005 Baseline Emissions by Sector



Emissions Forecasts (2020 and 2035)

The baseline inventory was used to project the communitywide GHG emissions in 2020 and 2035 under a business-as-usual (BAU) scenario. Rio Vista's GHG emissions were forecast for the years 2020 and 2035, assuming that historic trends describing energy and water consumption, travel, and solid waste generation will remain the same in the future. Therefore, emissions forecasts demonstrate what emissions levels are likely to be under a scenario in which no statewide or local actions are taken to curtail emissions growth.

BAU emission forecasts provide insight regarding the scale of reductions necessary to achieve an emissions target. GHG reduction measures developed for the CAP are applied to the 2020 and 2035 emissions levels to determine if the City will achieve its GHG reduction targets.

The BAU forecasts use applicable and appropriate indicators for each sector, as well as population and employment growth assumptions established by the Bay Area Association of Governments (ABAG). The 2020 forecast year aligns with the AB 32 target year, while the 2035 forecast year aligns with the SB 375 planning horizon. These projections have been developed for planning purposes, and due to the complexity of each emissions sector, are subject to change. As 2020 approaches, the City will reevaluate its emissions projections and reduction targets to incorporate progress toward long-term GHG reductions, and will repeat this process as 2035 approaches as well. See Appendix A for the emissions forecast methodology.

Table 2.2 identifies projected communitywide emissions by sector for 2020 and 2035. Transportation and energy remain the largest emissions sectors in 2020 and 2035 (XX% and XX%, respectively), followed by off-road mobile sources, solid waste, wastewater, and potable water. Energy use accounts for the largest proportional emissions increase for both projection years (8.9% increase in 2020 and 15.4% increase in 2035).

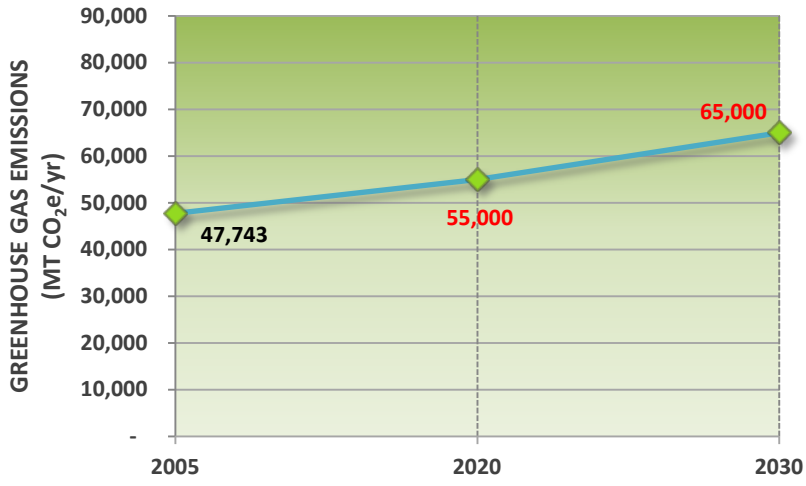
As illustrated in Figure 2.2, communitywide emissions would increase by approximately XX MT CO_2e/yr (XX%) between 2005 and 2020, and by approximately XX MT CO_2e/yr (XX%) between 2005 and 2035. The magnitude of communitywide GHG emissions increases from 2005 to 2020 and 2035 is due primarily to anticipated future population and employment growth (and related consumption activity) in Rio Vista.

Table 2.2
Communitywide Emissions 2005-2035

Emission Sector	2005 Emissions (MT CO_2e/yr)	2020 Emissions (MT CO_2e/yr)	Increase from 2005 (%)	2035 Emissions (MT CO_2e/yr)	Increase from 2005 (%)
Energy	**18,034**	**19,804**	**8.9%**	**21,312**	**15.4%**
Electricity Subtotal	*8,229*	*9,037*	*8.9%*	*9,725*	*15.4%*
Residential	4,501	4,943	8.9%	5,319	15.4%
Commercial	3,706	4,070	8.9%	4,380	15.4%
Industrial	22	24	8.3%	26	15.4%
Natural Gas Subtotal	*9,805*	*10,821*	*8.9%*	*11,587*	*15.4%*
Residential	7,165	7,868	8.9%	8,467	15.4%
Commercial	2,640	2,899	8.9%	3,120	15.4%
Industrial	-	-	-	-	-
Transportation	**18,156**	**XX**	**XX**	**XX**	**XX**
Passenger Vehicles	15,160	XX	XX	XX	XX
Commercial Vehicles	2,996	XX	XX	XX	XX
Solid Waste	**3,429**	**XX**	**XX**	**XX**	**XX**
Off-Road Sources	**6,298**	**XX**	**XX**	**XX**	**XX**
Wastewater	**1,047**	**XX**	**XX**	**XX**	**XX**
Potable Water	**779**	**XX**	**XX**	**XX**	**XX**
Total	**47,743**	**XX**	**XX%**	**XX**	**XX%**

Source: AECOM 2012
Note: Columns may not total 100% due to rounding

Figure 2.2 – Rio Vista Baseline and Projected Emissions



GHG Emission Reductions from Statewide Actions

Most of Rio Vista's anticipated emission reductions will likely come from statewide actions. This CAP assumes that emissions within the energy, transportation, and water sectors will be reduced through statewide efforts described in Chapter 1. This includes regulations addressing the use of renewable energy sources, energy and water efficiency, and GHG emissions from passenger cars and trucks. These actions provide important reductions that are applied toward Rio Vista's communitywide emissions targets, reducing the total amount of emissions to be addressed through community actions. The City will monitor the effectiveness of state legislation to ensure that the anticipated level of reductions is achieved locally, and to ensure that all applicable statewide reductions are accounted.

The City considers locally-realized emissions reductions from:

- SB 1078 (Renewable Portfolio Standard)
- AB 1109 (Lighting Efficiency)
- California Title 24
- AB 1493 (Pavley I and II)
- EO-S-1-07 (Low Carbon Fuel Standard)
- Vehicle efficiency regulations
- SB-7X

Including only these statewide initiatives towards the GHG reduction targets is considered a conservative approach because the Scoping Plan describes numerous other actions that will result in statewide emissions reductions. The actions included herein represent those for which a methodology is available to calculate Rio Vista's likely share of these reductions. Other actions will provide statewide benefits, but cannot be accurately attributed to Rio Vista.

Table 2.3 summarizes the anticipated reductions associated with these statewide actions in years 2020 and 2035.

Table 2.3
2020 and 2035 Emission Reductions from Statewide Actions

State or Federal Action	2020 Reduction (MT CO_2e/year)	2035 Reduction (MT CO_2e/year)
Renewable portfolio standard (33% by 2020)	2,157	2,321
AB 1109 lighting efficiency	XX	XX
2008 and 2013 California Title-24 standards	XX	XX
Pavley 1 and II	XX	XX
Low carbon fuel standard	XX	XX
Vehicle efficiency regulations	XX	XX
SB-7X	XX	XX
Total	**XX**	**XX**

GHG Emission Reduction Targets

Rio Vista has established the following GHG emissions reduction targets for 2020 and 2035:

- **2020:** 15% below 2005 emissions levels
- **2035:** 48% below 2005 emissions levels

The targets will allow the City to contribute to State climate protection efforts described in Chapter 1, and are purposefully set at levels that are likely to provide CEQA streamlining benefits to new development projects in the community. Table 2.4 summarizes the emissions reduction targets, contributions from statewide actions, and the remaining gap for local action.

2020 Emissions Reduction Target

Based on the 2005 emissions inventory and 2020 forecasts presented in this chapter, the 2020 communitywide emissions reduction target is 40,582 MT CO_2e/yr (i.e., 15% below 2005 emissions levels). Reductions totaling XX MT CO_2e/yr in 2020 are required to achieve this target. The 2020 statewide reductions identified in Table 2.3 would contribute emissions reductions of XX MT CO_2e/yr. The remaining gap of XX MT CO_2e/yr must be addressed through local actions described in Chapter 3.

2035 Long-Range Emissions Reduction Target

Achieving the 2035 communitywide emissions reduction target of 24,826 MT CO_2e/yr (i.e., 48% below 2005 emissions levels) would require reductions totaling XX MT CO_2e/yr. Statewide reductions identified in Table 2.3 would contribute XX MT CO_2e/yr, leaving a reductions gap of XX MT CO_2e/yr to be addressed through local actions.

Chapter 3 presents proposed local actions, associated emission reductions, and progress toward the 2020 reduction and 2035 reduction targets.

Table 2.4
2020 and 2035 Emissions Reduction Targets

	2005 (MT CO_2e/yr)	2020 (MT CO_2e/yr)	2035 (MT CO_2e/yr)
Jurisdictional Inventory and Projections	47,743	XX	XX
Reduction Target (2020 and 2035)		40,582	24,826
Reductions Needed to Achieve Target		XX	XX
Assumed Statewide Reductions		-XX	-XX
Local Action Reductions Needed to Achieve Target and Goal		**XX**	**XX**

Source: AECOM 2012

CHAPTER 3
EMISSIONS REDUCTION MEASURES

3

This chapter describes measures and actions necessary to reduce communitywide greenhouse gas (GHG) emissions, and achieve the City's 2020 and 2035 reduction targets. Most measures are designed to achieve quantifiable GHG reductions, while others are listed as supporting measures because they cannot be accurately quantified. To ensure proper implementation, each measure is accompanied by a description providing policy background and implementation details that articulate necessary actions; City departments with primary action responsibility; and progress indicator timelines to track implementation. The City will evaluate effectiveness of CAP measures and actions every three years and propose program modifications if necessary to achieve reduction targets.

Summary of Reductions

Table 3.1 summarizes GHG emission reductions anticipated from implementation of the measures and actions presented in this chapter, and the statewide reductions described in Chapter 2.

Table 3.1: Measures and Quantified Reductions

Energy Strategy		2020 (MT CO_2e/yr)	2035 (MT CO_2e/yr)
E-1. Existing Buildings			
E-1.2	Energy Efficiency Retrofit Outreach	130	357
E-2. New Construction			
E-2.1	New Construction Energy Efficiency	14	14
E-4. Building Appliances			
E-4.1	ENERGY STAR Appliances	33	49
E-4.2	Smart Grid	63	142
E-5. Building Cooling			
E-5.1	Building Shade Trees	34	45
E-7. Renewable Energy			
E-7.1	Solar Photovoltaic Systems	460	865
E-7.2	Solar Water Heaters	32	165
E-7.4	Community Choice Aggregation	TBD	TBD
E-8. Street and Area Lighting			
E-8.1	Street Light Upgrade	27	27
E-9. Municipal Actions			
E-9.1	Municipal Renewable Energy Development	44	146
E-9.2	Municipal Building Energy Efficiency	53	57
E-9.3	Wastewater Treatment Plant Process Energy Optimization	220	220
Energy Subtotal		**1,110**	**2,087**

Solid Waste Strategy		
Subtotal	**XX**	**XX**
Water Strategy		
Subtotal	**XX**	**XX**
Transportation Strategy		
Subtotal	**XX**	**XX**
Green Infrastructure Strategy		
Subtotal	**XX**	**XX**
SUBTOTAL CAP MEASURES	**XX**	**XX**
Statewide Reductions		
Renewable Portfolio Standard	2,157	2,321
2013 California Title-24 Standard	XX	XX
AB 1109 – Lighting Efficiency Program	769	793
AB 1493 – Pavley I and II	XX	XX
Low Carbon Fuel Standard	XX	XX
Vehicle Efficiency Regulations	XX	XX
SB-7X	XX	XX
Subtotal	**XX**	**XX**
TOTAL REDUCTIONS	**XX**	**XX**

Note: Subtotals and totals may not appear to add correctly due to rounding.

Emissions Reductions

PROGRESS TOWARD 2020 TARGET

The reduction measures, together with the communitywide effects of State and federal legislation in Rio Vista, have the potential to reduce communitywide emissions by XX MT CO_2e/yr from projected 2020 levels. This progress achieves the City's 2020 reduction target (40,582 MT CO_2e/yr), and represents a X.X% reduction in emissions below 2005 conditions.

PROGRESS TOWARD 2035 TARGET

The reduction measures, together with the communitywide effects of State and federal legislation in Rio Vista, have the potential to reduce communitywide emissions by XX MT CO_2e/yr from projected 2035 levels. This progress falls short of the City's 2035 reduction goal (24,826 MT CO_2e/yr), representing a X.X % reduction in emissions below 2005 conditions.

Measure Structure

This section of the CAP is organized according to four strategy areas: energy, transportation, water, and waste. These strategies represent the primary avenues by which to reduce communitywide GHG emissions in Rio Vista. Each strategy area section begins with an introduction to the overarching concepts that tie that particular strategy to GHG emission generation and potential reductions. This strategy overview is followed by the specific measures and actions that translate the City's vision into on-the-ground implementation.

Reduction Measures

Measures define the programs, policies, and projects that the City will undertake to accomplish its GHG emission reduction goals. Each measure includes information related to GHG reduction potential, opportunities for regional implementation, sustainability co-benefits, and relative magnitude of cost.

Reduction Potential

The estimated annual emissions reduction potential of each quantifiable measure is provided for 2020 and 2035 in MT CO_2e/yr. Some measures have the same reduction potential for both horizon years because the underlying participation assumptions are held constant. Measures identified as "Supporting Measures" contribute to GHG reductions and are an important component of this CAP, but currently lack a methodology to quantify their emissions reduction potential. For example, the proposed sustainability coordinator position described in Measure E-9.4 is critical to the full implementation of other CAP measures, but it is not possible to accurately calculate the emissions reductions specifically related to that new staff position. Appendix B describes the methodology used to quantify emissions reductions.

Icons

Various icons are used to indicate measures that have regional implementation opportunities, sustainability co-benefits associated with the measures, and simple cost estimates for mandatory components of measures.

Regional Efforts

Measures that would benefit from a regional implementation strategy are denoted as Regional Efforts. The four participating cities (i.e., Rio Vista, Dixon, Fairfield, and Suisun City) could collaborate on implementing these measures to reduce overhead costs associated with new program development, or could partner with other regional agencies to create a sustainability coordinator position to oversee CAP implementation.

Co-Benefits

As described in Chapter 1, implementation of these measures will provide additional community benefits beyond their GHG reductions. The icons listed with each measure represent only a sample of the numerous co-benefits related to individual measures.

Cost Analysis

Some CAP measures require residents and local businesses to take action or direct the City government to develop and implement additional programs. Simple cost estimates (i.e., Low, Medium, High) for these mandatory actions are provided for informational

purposes to help weigh the potential costs and benefits of certain measures. Cost analysis was not performed for measures that describe current and on-going City programs and actions, or voluntary measures that rely on residents and businesses to make personal decisions regarding the importance and value of certain actions. Appendix C provides assumptions use to calculate these simple cost estimates.

Measure Background

The measure background section provides information about the specifics of a measure, including descriptions of various technologies or financing mechanisms. This section also provides information on currently available rebates and other financial incentives related to the measure, and describes any actions the City has taken to date towards implementation of that measure. Additionally, some descriptions provide guidance that will be used in program implementation, such as components of the outreach plan and which segments of the community should be targeted for inclusion.

Actions and Progress Indicators

Action steps and progress indicators are provided in a table following each measure description. Actions identify specific steps that the City will take to implement the measure. The table also identifies responsible departments that would be best positioned to lead or provide input for implementation of certain tasks. Measures that could be implemented by a regional Sustainability Coordinator, as described in Measure E-9.4, are identified should the participating cities secure funding for such a position. In most cases, an alternative responsible department is also listed in the event that a sustainability coordinator position cannot be established.

Progress indicators describe the specific action that is being quantified to estimate the reduction potential. These indicators enable City staff, the City Council, and the public to track implementation and monitor overall CAP progress. Progress indicators are provided for both 2020 and 2035, and are specifically described when possible (e.g., 500 single family homes will install a solar hot water heater). Progress indicators are not provided for supporting measures, which do not have quantifiable emissions reductions.

Reduction Strategies

The strategies identified in this Chapter affect issues within the City's direct influence. Each strategy is subdivided into various sub-strategy headings to help organize the reduction measures. Measures were developed by (a) evaluating existing community conditions, (b) identifying emission reduction opportunities within the community, (c) reviewing best practices from other jurisdictions and organizations, and (d) incorporating State and regional laws, guidelines, and recommendations. Rio Vista's measures were also developed as part of a regional conversation between the cities of Dixon, Fairfield, and Suisun City to provide as much consistency between the four cities CAPs as possible. The adopted CAPs for Solano County and the City of Benicia were also reviewed as part of the measure development process to lay the foundation for regional implementation efforts.

The emission reduction strategies are as follows:

- **Energy:** The Energy Strategy recommends ways to increase energy efficiency in existing buildings, enhance energy performance for new construction, and increase use of renewable energy.
- **Transportation:** The Transportation Strategy encourages transit, carpooling, walking, and bicycling as viable transportation modes to decrease the need to drive.
- **Water:** The Water Strategy promotes the efficient use and conservation of water in buildings and landscapes.
- **Waste:** The Waste Strategy increases waste diversion and recycling, reducing consumption of materials that otherwise end up in landfills.

Energy Strategy

The consumption of electricity for appliances, lighting, and cooling, and combustion of natural gas for heating, cooking, and other processes within residential, commercial, and industrial buildings generated nearly forty percent of Rio Vista's communitywide GHG emissions in 2005. These emissions can be reduced by improving energy efficiency in new and existing buildings and increasing the amount of electricity and heat generated from renewable energy sources.

In Rio Vista, approximately 40%[i] of the housing stock was built before California's energy code, Title 24 Part 6, was first adopted in 1978. Consequently, the building stock offers considerable opportunity for cost-effective energy efficiency retrofits to decrease the use of both electricity and natural gas. The City plans to achieve building energy efficiency improvements in both existing and new buildings through a combination of community outreach and education, incentives, and regulations.

Pacific Gas and Electric Company (PG&E) is Suisun City's energy utility, providing both natural gas and electricity for residential, commercial, industrial, and municipal uses. PG&E provides electricity generated at hydroelectric, nuclear, renewable, natural gas, and coal facilities. As of 2011, natural gas facilities provided 25%; nuclear plants provided 22% of the total electricity supply; renewable energy facilities including solar, geothermal, and biomass provided 19%; large hydroelectric operations provided 18%; and unspecified sources provided the remainder.[ii]

Under the provisions of SB 107 (2006), investor-owned utilities were required to generate 20% of their retail electricity using qualified renewable energy technologies by the end of 2010. In compliance with this mandate, PG&E will expand its renewable generation portfolio, making additional GHG-free electricity available to customers in Suisun City. In 2011, PG&E delivered 19% of total electricity from eligible renewable sources.

The City will encourage communitywide installation of rooftop solar photovoltaic (PV) and solar hot water systems to increase the portion of Rio Vista's energy portfolio provided from renewable sources. The City will also explore installation of renewable energy facilities on municipal property to increase the generation of renewable energy in the community.

The total GHG emission reduction potential of the Energy Strategy is 1,110 MT CO_2e/yr in 2020 and 2,087 in 2035. This represents about X.X% percent of total 2020 reductions and X.X% of total 2035 reductions anticipated from CAP implementation.

E-1: Existing Buildings

MEASURE E-1.1: ENERGY EFFICIENCY AUDITS

Supporting Measure – Not Quantified

Encourage voluntary energy audits for residential and nonresidential buildings to identify cost-effective improvements.

Measure Background

Approximately 40%[iii] of houses in Rio Vista were built before 1980, and therefore prior to or about the time of first adoption of California's Title 24 energy efficiency requirements. These homes are excellent candidates for energy-saving retrofits, which could be identified through energy audits.

Building energy audits can help identify and prioritize energy efficiency improvements by providing a building-specific list of retrofit options and their cost-effectiveness. Additionally, the California Energy Commission (CEC) developed the Statewide Home Energy Rating System (HERS) program to allow comparisons of the efficiency levels between California homes. A home's HERS rating is calculated as part of an energy audit, and informs homeowners and renters about energy efficiency much like the MPG metric allows comparisons of vehicles. This type of rating assists in estimating the relative utility costs associated with a home so that renters and buyers can factor those costs into their decision.

The City will partner with the Solano Center for Business Innovation to develop a comprehensive outreach campaign that describes the benefit of energy audits and available rebates, incentives, and financing options, such as PG&E's no- or low-cost energy audit programs for nonresidential customers and residential energy audit rebates available through Energy Upgrade California. Residential audits should be performed per the Whole House Energy Rating required by Energy Upgrade California. To help residents finance home energy audits, the City should pursue grant funding to provide a partial rebate for residents that voluntarily perform energy audits. Previous sources of funding have included Energy Efficiency Conservation Block Grants (EECBG) and the CEC.

As part of this outreach campaign, the City will identify neighborhoods with concentrations of older homes to help focus the outreach toward buildings that will receive the greatest energy savings. The City will also work with PG&E to identify large-energy users that would benefit from energy audits and could be eligible for PG&E's on-bill financing to install retrofit packages identified in the audit. For these larger energy customers, PG&E offers low- or no-cost energy audit services that include on-site analysis of energy consuming systems and customized calculations to help create a strategic plan for implementing projects. The City should also partner with local real estate professionals to help educate home buyers about the value of energy audits at the point of sale. Realtors should also be encouraged to include a home's HERS rating in the MLS listing.

	Action	Responsibility
A	Develop a comprehensive outreach campaign that describes the benefit of energy audits and available rebates, incentives, and financing options.	Solano Center for Business Innovation; Sustainability Coordinator
B	Pursue grant funding to provide a partial rebate for residents and businesses that voluntarily perform energy audits.	Solano Center for Business Innovation; Sustainability Coordinator
C	Identify neighborhoods with concentrations of older building stock to focus outreach campaign.	Community Development; Sustainability Coordinator
D	Work with PG&E to identify large-energy users that would benefit from energy audits. Leverage PG&E's on-bill financing option for nonresidential and municipal customers.	Community Development; Sustainability Coordinator
E	Partner with real estate professional groups to help educate home buyers and business owners about the benefits of energy audits at the point of sale.	Solano Center for Business Innovation; Sustainability Coordinator
F	Provide links on the City website to PG&E's do-it-yourself online energy audit program. (This information could be placed on a new Solano County Sustainability Webpage to leverage regional efforts.)	Community Development; Sustainability Coordinator

MEASURE E-1.2: ENERGY EFFICIENCY RETROFIT OUTREACH

2020 GHG Reduction Potential: **130 MT CO2e/yr**
2035 GHG Reduction Potential: **357 MT CO2e/yr**

Encourage voluntary energy efficiency retrofits in residential and nonresidential buildings through promotion of local efforts.

Measure Background

Energy efficiency improvements to residential and nonresidential structures can reduce both energy bills and GHG emissions. Many residences (approximately 69 percent[iv]) in Rio Vista are owner–occupied, and thus the financial savings of home energy efficiency retrofits are in the long term economic interest of the homeowner. As such, the City will emphasize voluntary participation in energy efficiency retrofit programs, in lieu of mandatory programs. As part of the outreach program, the City will enhance its website by linking to information on existing energy efficiency rebates and other financial incentives, including PG&E incentives to businesses for energy efficiency improvements. The website could also contain local case studies of businesses that have completed cost effective energy efficiency improvements.

To encourage participation from residential homeowners, the City will partner with the Solano Center for Business Innovation to leverage Energy Upgrade California's educational materials and online platform that provides access to incentives, technical assistance, and qualified contractors. Typical rebates and incentives available to Solano County residents through Energy Upgrade California include PG&E's Basic and Advanced Retrofit Packages, pool pumps and motor rebates, efficient water heaters/blankets, HVAC upgrades, furnace upgrades, and wall insulation installation. The City will also promote resources such as California Flex Alert, the Department of Energy's (DOE) Weatherization Assistance Program for low-income households, and PG&E's SmartEnergy Analyzer™ program, all of which link residential property owners to

educational and financial resources. In addition, PG&E is working to a fulfill Goal 2.2 of the CPUC *Long-Term Energy Efficiency Strategic Plan*, which states, "By 2020, 100 percent of eligible and willing customers will have received all cost-effective Low Income Energy Efficiency measures."

Financing is critical to the success of the energy efficiency retrofit program. The City will continue to support the development of a Property Assessed Clean Energy program (see Measure E-1.3) to further promote energy efficiency retrofits. The City will also partner with local real estate professionals to inform homebuyers about the benefits of home energy audits and the availability of energy efficiency mortgages to finance installation of retrofit packages.

Action		Responsibility
A	Develop and maintain a Solano County Sustainability Website with information about current energy efficiency rebates and incentives (including links to PG&E and Energy Upgrade California rebate pages) and local energy efficiency improvement case studies. Leverage Energy Upgrade California outreach and educational materials.	Sustainability Coordinator
B	Provide training to Building Division counter staff regarding available sources of rebates/incentives and printed pamphlets or FAQ sheets.	Building Division; Sustainability Coordinator
C	Provide targeted outreach to low-income and elderly households with information about the federal weatherization program and statewide Energy Savings Assistance Program, and how improvements can increase occupant comfort levels and reduce utility bills.	Community Development; Sustainability Coordinator

Progress Indicators	Year
100 single-family houses install a comprehensive retrofit package; 275 single-family houses install a basic retrofit package; 15 multi-family units are upgraded with comprehensive retrofit; 30 multi-family units are upgraded with basic retrofit package; 70,000 sqft of nonresidential area installs a comprehensive retrofit package; 200,000 sqft of nonresidential area installs a comprehensive retrofit package	2020
275 single-family houses install a comprehensive retrofit package; 800 single-family houses install a basic retrofit package; 40 multi-family units are upgraded with comprehensive retrofit; 85 multi-family units are upgraded with basic retrofit package; 200,000 sqft of nonresidential area installs a comprehensive retrofit package; 600,000 sqft of nonresidential area installs a comprehensive retrofit package	2035

MEASURE E-1.3: PACE FINANCING PROGRAM

Supporting Measure – Not Quantified

Partner with the County in its pursuit to establish the Clean Energy Solano PACE program that would provide financing options for residential and nonresidential energy efficiency upgrades to existing buildings. Work with other Solano County jurisdictions to jointly pursue bond funding for a commercial PACE program through California FIRST.

Measure Background

A property-assessed clean energy (PACE) finance program is enabled through the AB 811 legislation. This bill allows land-secured loans for homeowners and businesses who install energy efficiency projects and clean-energy generation systems. Senate Bill 555 reinforced implementation opportunities for PACE programs by expanding the scope of activities allowed within a community facilities district, as defined by the Mello-Roos Community Facilities Act of 1982. A PACE program permits property owners within participating districts to finance the installation of energy- and water-efficiency improvements in their home or business through a lien against their property that is repaid through their property tax bill. If the property is sold, payment responsibility transfers to the new owners, allowing building owners to avoid up-front installation costs while at the same time requiring little or no investment of local government general funds. In some instances, the new lender may require repayment of the existing lien, in which case the remaining PACE loan is repaid from the proceeds of the property sale.

Rio Vista is a participating member of the California FIRST program which allows PACE funding for commercial and multi-family residential projects. Rio Vista would also be within the boundaries of the proposed Clean Energy Solano PACE program, which would make financing available to both residential and nonresidential projects.

An initial market analysis for the proposed Clean Energy Solano program estimated 3.5% participation in the first five years from both the residential and nonresidential sectors, which would lead to local economic benefits including approximately $19 million in state and local tax revenue, the creation of 2,700 new jobs, and the generation of 37 MW of local renewable energy. Furthermore, building owners who participate in the PACE program are not required to front the initial capital costs.

	Action	Responsibility
A	Opt into the County's PACE program as a participating member.	Community Development; Sustainability Coordinator; Solano EDC
B	Develop an outreach program describing available PACE financing options. Work with PG&E to identify large energy users to help focus outreach efforts.	Community Development; Sustainability Coordinator
C	Continue to participate in California FIRST to make PACE financing available to commercial, industrial, multi-family residential (5+ units), and nonprofit-owned buildings.	Community Development; Sustainability Coordinator

E-2: New Construction

MEASURE E-2.1: NEW CONSTRUCTION ENERGY EFFICIENCY

2020 GHG Reduction Potential: **14 MT CO_2e/yr**
2035 GHG Reduction Potential: **See Statewide Reduction**
2013 California Title 24 Standard

Encourage energy-efficient new construction through promotion of energy-efficient mortgages and technical assistance programs for developers.

Measure Background

California Building Energy Efficiency Standards (Title 24, Part 6, 2008) serve as the basis for mandatory building energy efficiency standards. The California Green Building Standards Code (CALGreen), effective in 2011, also provides the City with the option of adopting an energy efficiency standard that surpasses the State's basic requirements. CALGreen outlines two options: Tier I requires a building's energy performance to exceed Title 24 requirements by 15 percent, while Tier II increases this standard to 30 percent. Revisions to the Title 24 Standards will be adopted in 2013 and will go into effect in 2015.

Although a mandatory ordinance to exceed Title 24 Standards through adoption of the Tier I or II standards will not be established at this time, the City will promote energy efficient new construction through its technical assistance program that provides local builders with information on green building practices, specifically those which relate to energy- and water-efficient design and construction practices. PG&E also developed the Savings by Design program to encourage energy-efficient construction in new commercial buildings. The program offers a range of services to building owners and their design teams, such as design assistance, design team incentives, owner incentives, and educational resources for customized new construction projects that exceed California's Title 24 energy efficiency standards.

To further encourage new construction to participate in this program, the City will provide several green-building incentives described throughout this CAP, such as permit streamlining for installation of various technologies. The City will also consider developing a local green building recognition program to commend building owners that voluntarily exceed Title 24 Standards. The City will work with local real estate professional groups and area developers to provide information to home buyers about the benefits of energy efficiency mortgages, which allow homebuyers to finance the installation of energy efficient systems, such as solar photovoltaics or high-efficiency windows.

Action		Responsibility
A	Partner with local developers and realtors to distribute informational brochures about energy efficient mortgages to potential new home buyers.	Building Division; Sustainability Coordinator
B	Provide outreach to local developers, architects, and builders on PG&E's Savings by Design program.	Building Division
C	Consider establishing a local green-building recognition award for exemplary projects.	Building Division; Sustainability Coordinator

Progress Indicators	Year
15new single-family residential buildings exceed 2008 Title-24 by 30%	2020

MEASURE E-2.2: SOLAR READY CONSTRUCTION

Supporting Measure – Not Quantified

Require pre-plumbing for solar hot water in all new large-scale residential construction.

Measure Background

Increasing the use of distributed renewable energy systems (e.g., rooftop solar photovoltaic) prevents the combustion of fossil fuels to generate electricity, thereby reducing GHG emissions. Rio Vista's location and geography result in a high solar insolation rating, which makes it an excellent candidate for effective adoption of solar technologies. The City can facilitate future installation of solar technologies by encouraging new construction to be pre-plumbed to support solar hot water systems. This type of front-end addition can reduce the cost of post-construction solar installations for homeowners. The City's technical assistance program described in Measure E-2.1 will provide information on solar-ready construction techniques.

	Action	Responsibility
A	Update the building code to require pre-plumbing for solar hot water systems in large residential construction projects. Define what types of projects are covered by this measure.	Building Division
B	Promote the City's technical assistance program for developers to help implement this measure (see Measure E-2.1).	Building Division

MEASURE E-2.3: CAP PROJECT COMPLIANCE CHECKLIST

Supporting Measure – Not Quantified

Clearly state the City's sustainability requirements for new entitlements in a checklist for use by production builders and developers to demonstrate compliance with the CAP.

Measure Background

One barrier to land development can be a lack of transparency or clear understanding of how to comply with various planning documents. The City will create a CAP compliance checklist to remove uncertainty for developers. The checklist will include features that could be incorporated into a plan prior to entitlement. The City could either identify mandatory features for inclusion that would guarantee entitlement, or could develop a point-based checklist that rates each feature relative to its GHG reduction potential and set a minimum score for entitlement. Checklist items could address a variety of topic areas, including community design and layout, building features, landscaping, and public infrastructure. The checklist should refer builders and developers to the City's technical assistance program for additional information on green design. The City should also meet with local production builders to discuss the City's GHG emissions targets and explain how to use the new checklist.

	Action	Responsibility
A	Develop a checklist of new construction requirements per the CAP's measure list. Identify additional, nonmandatory building and design aspects the City would like to encourage.	Community Development; Building Division
B	Consider developing a point-based checklist system whereby a project would receive expedited permitting if it achieved a certain score.	Community Development; Building Division
C	Facilitate group meeting with production builders to discuss GHG emissions targets.	Community Development; Building Division

E-3: Financing

MEASURE E-3.1: ENERGY EFFICIENCY REBATE PROGRAM

Supporting Measure – Not Quantified

Consider establishing a City or County rebate program to encourage implementation of energy efficiency retrofits.

Measure Background

PG&E currently offers rebates for various home energy efficiency improvements. In addition to PG&E rebates, numerous programs funded by state agencies and local governments are available to Solano County residents through the Energy Upgrade California program. The City will partner with other Solano County governments and agencies to identify gaps in existing rebate and incentive programs and jointly pursue funding to establish a local (e.g., Solano County) rebate program.

New rebates could be structured to encourage residents to buy goods or services from local businesses. For example, the City could develop an ENERGY STAR-rated appliance rebate program to supplement those currently offered through PG&E, by providing an additional $50 rebate for appliances purchased from local vendors. Alternatively, the new rebate program could be structured to address the building improvement needs of a specific building type, such as small commercial properties or multi-family residential buildings.

Action		Responsibility
A	Identify rebate/incentive gaps in PG&E- and Energy Upgrade California-sponsored programs to identify local financing needs.	Community Development; Sustainability Coordinator
B	Identify an outside funding source to finance rebate program (e.g., EECBG, ARRA).	Community Development; Sustainability Coordinator

E-4: Building Appliances

MEASURE E-4.1: ENERGY STAR APPLIANCES

2020 GHG Reduction Potential: **33 MT CO_2e/yr**
2035 GHG Reduction Potential: **49 MT CO_2e/yr**

Promote voluntary installation of ENERGY STAR and other high-efficiency appliances.

Measure Background

As Title 24 Standards require building shells and systems to become even more efficient, energy consumption from appliances and electronics will become an increasingly important source for reducing building energy use and residents' utility bills. In 2009, approximately 28% of statewide residential electricity use was dedicated to appliances. Televisions, computers, and home office equipment accounted for an additional 20% of electricity use[v]. As big-screen televisions, smart phones, tablets, and other electricity-

consuming devices become more commonplace in homes, their proportional share of home electricity use will likely increase as well. Installing ENERGY STAR appliances is one way to reduce energy use in this sector.

This measure is designed to encourage voluntary community participation to upgrade home appliances and lighting to ENERGY STAR or other energy efficient models. Successful implementation of this measure relies on leveraging the Energy Upgrade California program materials through a public outreach campaign to increase community awareness regarding energy efficient appliance choices. The ENERGY STAR rating is an internationally recognized standard for energy efficient consumer products. According to the EPA, devices that have an ENERGY STAR certification, such as office equipment, home appliances, and lighting products, generally use 20 to 30 percent less energy than required by federal standards. By promoting ENERGY STAR-rated home and business appliances, the City can help to reduce GHG emissions related to the use of lighting, refrigerators, dishwashers, clothes washers, wall air conditioning units, computers, photocopiers, lights, and other appliances.

Through Energy Upgrade California, PG&E currently offers rebates to customers who purchase ENERGY STAR dishwashers, clothes washers, refrigerators/freezers, ceiling fans, pool pumps, and room air conditioners. The City will partner with PG&E, Solano County Water District, local developers, and other relevant organizations to promote existing financial incentives and rebates for energy-efficient appliance upgrades and replacements.

Action		Responsibility
A	Collaborate with PG&E, Solano County Water District, and other local organizations to promote existing financial incentive programs to encourage voluntary replacement of inefficient appliances with new ENERGY STAR appliances.	Community Development; Sustainability Coordinator
B	Provide outreach to local developers regarding sources of available rebates to encourage installation of ENERGY STAR-rated major appliances in new residential construction.	Building Division; Sustainability Coordinator

Progress Indicators	Year
New residential construction installs energy-efficient appliances: 375 refrigerators; 500 clothes washers; 550 dishwashers; Existing residential units replace expired appliances with energy-efficient appliances: 825 refrigerators; 1,500 clothes washers; 2,100 dishwashers	2020
New residential construction installs energy-efficient appliances: 450 refrigerators; 600 clothes washers; 675 dishwashers; Existing residential units replace expired appliances with energy-efficient appliances: 1,400 refrigerators; 2,200 clothes washers; 2,750 dishwashers	2035

MEASURE E-4.2: SMART GRID

2020 GHG Reduction Potential: **63 MT CO_2e/yr**
2035 GHG Reduction Potential: **142 MT CO_2e/yr**

Encourage adoption of smart grid-compatible appliances and energy management systems to shift peak-load energy use.

Measure Background

The 'smart grid' is an emerging energy management system which uses information technology to significantly improve how electricity is managed and controlled. Smart meters, which use a technology that enables users to take full advantage of the smart grid, will eventually provide utility customers with access to detailed energy use and cost information, new time-of-use pricing programs based on peak-energy demand, and the ability to program home appliances and devices to respond to energy use preferences based on cost, comfort, and convenience.

Current smart meters allow for frequent remote reading of energy usage by PG&E. However, the true value of the smart meter program will be fully realized when community residents and businesses begin making more informed energy use decisions based on the two-way communication enabled by smart meters, such as when a homeowner is able to program their washing machine to run when energy prices are lowest.

All investor-owned utilities are rolling out time-of-use pricing, which offers lower utility rates to customers that switch discretionary energy use to off-peak times. Time-of-use pricing is mandatory for all commercial customers, and will eventually be offered to residential customers as well. PG&E currently offers the SmartRate pricing plan to residential customers, which offers lower prices per kWh to customers that agree to reduce electricity use on "SmartDays" when intense heat drives up air conditioning use and therefore, electricity prices. PG&E has also joined OPower, a social media technology provider that helps customers using smart grid technology to compare their energy use with neighbors. To support use of their various pricing programs, PG&E created the Green Button Connect program to allow customers to share their energy usage data with third-party app developers that already have products to help customers track and manage their energy use. The assumption is that customer access to their own energy use trends will support behavioral changes to energy consumption, which will lower customers' utility bills and lower PG&E's costs to provide energy.

When estimating the potential GHG emission reductions associated with implementation of the smart grid, the City included the energy efficiency improvements gained from integrating smart grid energy management systems for control lighting, heating, ventilation, and air conditioning and other major appliances in residential and commercial buildings. According to CISCO, a world-wide leader in network technology, full integration of the smart grid will take time to realize, but energy analysts estimate it will ultimately be capable of reducing electricity-related GHG emissions by 30 percent below current levels.

Through public outreach efforts and targeted outreach to the development community, the City will promote voluntary adoption of smart-grid technology for homes and businesses. The City will train Building Division staff on the benefits of smart-grid integration and provide informational materials on existing rebate programs.

	Action	Responsibility
A	Develop an outreach program that leverages existing PG&E materials, including description of the O-Power Program. Make information available at Building Division counter.	Building Division; Sustainability Coordinator
B	Identify and advertise available rebates for smart-grid compatible appliances and systems on the County's Sustainability Website.	Building Division; Sustainability Coordinator

Progress Indicators	Year
530 residential units install smart-grid compatible appliances and systems; 435,000 sqft of commercial area installs smart-grid compatible appliances and systems	2020
1,200 residential units install smart-grid compatible appliances and systems; 965,000 sqft of commercial area installs smart-grid compatible appliances and systems	2035

MEASURE E-4.3: ENERGY EFFICIENT WATER SOFTENERS

Supporting Measure – Not Quantified

Promote energy-efficient water softener technologies, such as canister systems, through public outreach and/or incentives.

Measure Background

The City is researching water softener technologies that could reduce the costs associated with salt removal at the City's wastewater treatment plants. The City will provide information on alternatives to the traditional regenerating salt-based water softeners used in many homes. In regenerating systems, salt is added directly to the water supply, where it is carried away in wastewater that requires an energy-intensive removal process at the treatment plant. New water softener systems can provide the same result without the direct application of salt to the water supply. For example, canister exchange systems contain the salt within replaceable canisters, keeping it out of the wastewater system.

The City will explore opportunities to incentivize the installation of alternative water softener systems through partnerships with its wastewater treatment plants. The City could also explore partnerships with water service companies, in which new customers would receive a credit towards their new canister exchange account.

	Action	Responsibility
A	Provide information on energy-efficient water softener systems at the Building Division counter. Target local homebuilders with this information.	Building Division
B	Partner with the local wastewater treatment plant to develop an incentive program to encourage customers to replace regenerating water softeners with exchange canister softeners or similar systems.	Building Division
C	Contact local water service companies to explore the possibility for a new customer incentive program to further promote adoption of these technologies.	Building Division; Sustainability Coordinator

MEASURE E-4.4: PERMANENT LOAD SHIFT

Supporting Measure – Not Quantified

Encourage participation in PG&E's Permanent Load Shift program to shift thermal cooling loads to off-peak and/or partial-peak hours.

Measure Background

PG&E's Permanent Load Shift program, often referred to as "Shift & Save," is to store thermal cooling capacity during off-peak hours and/or partial-peak hours in order to meet thermal cooling load in subsequent on-peak hours. The goal of this program is to shift 3.9 megawatts of load. The program's targeted customers are bundled service, commercial, industrial, agricultural, and large residential customers in PG&E's electric service territory. PG&E is working with Cypress Ltd. and Trane USA to implement this program.

The City will partner with PG&E to identify and provide outreach to local large-energy users that could financially benefit from participation in the program. The City will partner with the Solano Center for Business Innovation and the Solano Economic Development Corporation in its outreach activities to find regional efficiencies in program expansion and application in other Solano County cities. A statewide Permanent Load Shift technology incentive program is currently under development; the City should monitor its progress to identify opportunities for local application.

	Action	Responsibility
A	Work with PG&E to identify large-energy users that would benefit from peak-load shifting technologies and/or strategies. Targeted customers are bundled service, commercial, industrial, agricultural, and large residential customers.	Building Division; Sustainability Coordinator
B	Monitor development of the statewide Permanent Load Shift program to identify opportunities for local application.	Building Division; Sustainability Coordinator

E-5: Building Cooling

MEASURE E-5.1: BUILDING SHADE TREES

2020 GHG Reduction Potential: **34 MT CO_2e/yr**
2035 GHG Reduction Potential: **45 MT CO_2e/yr**

Adopt a shade tree ordinance for new construction and develop a shade tree outreach campaign to encourage existing property owners to voluntarily plant shade trees.

Measure Background

Properly located trees can provide shading for residential and commercial buildings, and thereby reduce the need for air conditioning. The capacity of a tree to reduce GHG emissions is dependent on its age and species. As trees mature, their canopies increase in size and provide higher levels of shade and greater levels of building cooling in hot weather. Large, deciduous species are ideal for reducing building energy use as they provide shade in summer, but allow winter sunlight into buildings for passive solar gain in cooler weather. Additionally, trees gain carbon-capturing biomass in their trunks and roots as they absorb carbon from the air to grow.

The City will adopt a shade tree ordinance that requires new single-family residential units to plant two shade trees, and new multi-family residential buildings and new nonresidential buildings to plant one shade tree per 1,000 sq ft of air conditioned floor space. The ordinance will allow the installation of building-integrated vegetation in lieu

of shade trees. The City will also work with local organizations to promote voluntary shade tree planting at existing buildings. To facilitate proper implementation of this measure, the City will develop a shade tree planting guide to instruct home builders, developers, landscapers, building managers, and property owners on proper shade tree selection and placement to maximize building cooling opportunities while preserving solar access on the roof. Planting guidance should describe the selection of climate-appropriate species and proper siting specifications (i.e., S, SW, or W side of buildings; no more than 20' from the building).

Action		Responsibility
A	Amend the City's Development Standards per the new shade tree ordinance.	Planning Division
B	Work with local environmental and conservation groups to advertise the various benefits of planting shade trees near existing buildings.	Building Division
C	Develop a shade tree planting guide to facilitate proper tree selection and installation.	Building Division; Public Works

Progress Indicators	Year
2,400 new shade trees properly installed (does not include replacement trees for existing shade trees)	2020
3,200 new shade trees properly installed (does not include replacement trees for existing shade trees)	2035

E-6: Building Lighting

MEASURE E-6.1: INDOOR LIGHTING EFFICIENCY

2020 and 2035 GHG Reduction Potential: See Statewide Reduction AB 1109

Encourage voluntary adoption of efficient indoor and outdoor lighting technologies in residential and nonresidential buildings.

Measure Background

According to the 2009 California Residential Appliance Saturation Study, approximately 20% of residential electricity consumption is attributed to lighting[vi]. In nonresidential buildings, conventional commercial lighting, including T12 fluorescent bulbs and old exit sign lights, consume more energy than new T8 lights and light-emitting diode (LED) technologies. Lighting upgrades typically provide a short payback period for their investment, and are a good source of GHG emissions reductions.

The City will provide outreach and technical assistance to nonresidential property owners to encourage participation in PG&E's lighting upgrade program, which includes rebates for fixtures, lamps, accent/directional lighting, controls, and signage. The City will also provide outreach to multi-family property managers regarding lighting rebates through PG&E, including CFL replacement bulbs, activity sensors and timers, and replacing T-12 lamps with magnetic ballasts. Informational materials should demonstrate the simple-payback period associated with lighting improvements

(typically 2-4 years). The City will also advertise PG&E's CFL rebate, or other lighting rebate programs, on the new sustainability website.

	Action	Responsibility
A	Develop lighting-efficiency informational materials that demonstrate the simple-payback period associated with lighting improvements and existing rebates. Post information on the Solano County Sustainability Webpage. Provided targeted outreach to large nonresidential building managers and multi-family property managers.	Building Division; Sustainability Coordinator
B	Leverage existing energy-efficient lighting rebate programs offered through Energy Upgrade California, including fixture and lamp replacements/installation, accent and directional lighting, security lighting, lighting control systems, and PG&E's residential CFL rebate program.	Solano Center for Business Innovation; Sustainability Coordinator
C	Encourage small businesses to participate in PG&E programs that provide technical assistance and access to incentives for energy efficiency upgrades (e.g., lighting).	Solano EDC

E-7: Renewable Energy

MEASURE E-7.1: SOLAR PHOTOVOLTAIC SYSTEMS

2020 GHG Reduction Potential: **460 MT CO_2e/yr**
2035 GHG Reduction Potential: **865 MT CO_2e/yr**

Facilitate the voluntary installation of solar PV systems on residential and nonresidential buildings.

Measure Background

Solar photovoltaic (PV) systems generate electrical power by converting solar radiation into direct current electricity using semiconductors. PV power generation employs solar panels composed of cells containing photovoltaic material. PV systems can be retrofitted into existing buildings, usually by mounting them on an existing roof structure or walls. Rio Vista's solar potential is approximately 5.1 kWh/m^2/yr, which is sufficient to support a solar PV installation that would cover a large percentage of an average home's electricity demand[vii]. In addition to residential rooftops, commercial and industrial rooftops tend to have large, flat roofs that are often well-suited for solar photovoltaic (PV). Parking lots also provide excellent opportunities for additional solar energy generation. According to PG&E data, Rio Vista contains nearly 70 residential solar PV systems installed since 2005, with a total capacity of approximately 200 kW[viii]. However, numerous barriers may prevent widespread adoption of solar PV technology, including City regulations, up-front costs, misinformation or lack of information.

Financing is critical to the success of the solar PV program. Property owners will be able to finance their PV systems through various financing programs and rebates. As described in Measure E-1.3, the City will support the development of and participation in Solano County's PACE program to further promote renewable energy systems for residential and nonresidential buildings. Other financing models, such as power purchase agreements (PPAs), can be used to offset the initial capital cost of installing a solar PV system. Solar PV rebates are available through the California Solar Initiative and

its related programs: New Solar Homes Partnerships, Multifamily Affordable Solar Housing Program, and Single-Family Affordable Solar Housing Program. Rebate amounts vary, and are typically based on the installed system size and expected performance. Some rebate programs have variable rebate steps, which decline as PV installed capacity increases.

The City will develop a comprehensive solar PV program that encourages homeowners to install PV systems through outreach advertising available rebate and incentive programs. Outreach efforts will aim to maximize community participation from homeowners, builders, and businesses by leveraging existing educational materials and links to technical assistance and rebates and financing programs. The City will encourage homeowners to request free solar PV audits provided by private solar financing and installation companies. The City will also offer priority permitting for new solar PV systems to further reduce implementation barriers. The City has already reviewed its zoning and building codes and other applicable ordinances to identify and remove regulatory barriers to solar installations (i.e., PV and solar hot water) on residential and nonresidential properties.

Action		Responsibility
A	Provide priority permitting for building-scale renewable energy projects.	Building Division; Sustainability Coordinator
B	Develop a comprehensive outreach campaign to increase voluntary participation in solar PV installation programs, including a directory of existing rebates/incentive programs, explanation of simple-payback calculations for solar PV systems, and technical assistance. Leverage existing solar PV informational materials from Energy Upgrade California, the California Solar Initiative, and PG&E.	Building Division; Sustainability Coordinator
C	Develop informational materials about the benefits of PPAs offered through independent solar service providers. Post on the Solano County Sustainability Website, and make printed copies available at the Planning Department and Building Division counters.	Building Division; Sustainability Coordinator

Progress Indicators	Year
340 single-family units install 4.5kW PV system	2020
675 single-family units install 4.5kW PV system	2035

MEASURE E-7.2: SOLAR WATER HEATERS

2020 GHG Reduction Potential: **32 MT CO_2e/yr**
2035 GHG Reduction Potential: **165 MT CO_2e/yr**

Promote voluntary installation of solar water heaters in new construction and building retrofits through outreach campaign.

Measure Background

The effectiveness of a solar installation is described, in part, by its solar savings fraction (solar fraction). This measurement describes the percentage of a building's total energy demand that can be met through installation of a solar energy system. A 0% solar fraction indicates that no solar energy utilization is possible, while 100% would indicate full utilization of solar energy to meet building energy demand. Dixon has a 65% solar

fraction for low-rise buildings (i.e., 1-2 stories) and a 44% solar fraction for multistory structures (i.e., 3 or more stories), indicating good potential for solar water heater applications[ix].

Solar water heating systems are a simple, reliable, and cost-effective method for harnessing the sun's energy to provide for hot water needs. Solar collectors, usually placed on the roof, absorb the sun's energy to heat water that is stored in a water tank. The State of California has recognized the value of solar hot water heaters. The California Solar Water Heating and Efficiency Act of 2007 (AB 1470), created a 10-year program aimed at installing solar water heaters in homes and businesses. AB 1470 was designed to lower the initial costs of purchasing a system, which averages around $3,000-$6,000.

Solar hot water systems can also be a cost-effective replacement for inefficient water heaters. According to the California Solar Initiative (CSI), solar hot water systems can lower energy bills by meeting 50 to 80 percent of hot water needs over a year. Though the high capital cost of solar water heater upgrades can pose a financial burden to homeowners, there are a range of financing and rebate options to offset these initial investment costs.

There are a number of financing options that may be used to reduce upfront costs, such as the PACE programs mentioned in Measure E-1.4, federal tax incentives through the Energy Policy Act of 2005, and financial incentives through the CSI-Thermal Program. Similar to the CSI solar rebate programs, the CSI-Thermal Program provides rebates for solar water heaters that decline in value as installation increases.

The Solar Water Heating Pilot Program, operated through San Diego Gas and Electric from 2007-2010, identified numerous barriers to the widespread adoption of solar water heating systems. In particular, participating contractors named permitting and inspection costs and delays as a primary obstacle to widespread adoption for single-family residential buildings because non-material costs represented approximately 65% of total system costs. That means, only 35% of total costs were related to the actual system price. To help address this problem, the City will reduce permitting fees for solar hot water heater systems and will work to streamline the permitting process.

The City will also work with PG&E to create outreach opportunities that provide information about the financial benefits of solar hot water heaters, describe existing financing options and rebate programs, and explain the City's efforts to encourage participation.

	Action	Responsibility
A	Collaborate with PG&E and the California Solar Initiative - Thermal Program to develop an outreach program to maximize installation of solar hot water systems and leverage existing funding opportunities.	Community Development; Sustainability Coordinator
B	Streamline permitting process (e.g., building, electric, plumbing) for solar hot water system installation.	Building Division
C	Provide priority permitting for building-scale renewable energy projects.	Building Division
D	Reduce solar hot water heater permitting fees.	Building Division

Progress Indicators	Year
35 single-family residential units install solar hot water system; 5 multi-family units are served by solar hot water system	2020
180 single-family residential units install solar hot water system; 25 multi-family units are served by solar hot water system	2035

MEASURE E-7.3: DISTRICT ENERGY SYSTEMS

Supporting Measure – Not Quantified

Encourage incorporation of district energy systems in new industrial growth areas that include on-site, or are located near, waste heat generation facilities.

Measure Background

District energy systems can provide a platform for utilizing waste heat and renewable energy sources and moving these resources around in a system to where and when they are most needed. Waste heat is generated through a variety of industrial processes, and can be captured and used as a heat source for buildings or to power other industrial processes.

District energy systems constructed to offset building heating loads require extensive infrastructure to capture heat from its waste source and deliver it to end users (e.g., residences, office buildings). In colder regions, the proportion of energy costs dedicated to space heating can be very high, which makes this type of system economically viable. Given the relatively low space heating demands in Rio Vista, an extensive district energy system is not financially feasible. However, the City could identify its waste heat generators and attempt to attract compatible waste heat users that would benefit from the free use of process heat.

The City will work with the Solano Economic Development Corporation (EDC) to identify the thermal capacity of waste heat generators in Rio Vista, and identify the types of industries that could beneficially use that type of heat in their processes. Should district energy systems prove to be a viable tool for local economic development, the City will work to remove any regulatory barriers to system installation.

Action		Responsibility
A	Inventory and assess existing sources of waste heat in the city.	Solano EDC; Sustainability Coordinator
B	Remove regulatory barriers to the installation/evolution of district energy networks.	Public Works; Building Division
C	Prepare educational and outreach materials with which to communicate Rio Vista's district energy opportunities to potential developers or other stakeholders.	Community Development; Solano EDC
D	Work with Solano EDC to attract waste heat users (e.g., agricultural drying facilities) that can be co-located near waste heat generators.	Community Development; Solano EDC

MEASURE E-7.4: COMMUNITY CHOICE AGGREGATION

2020 GHG Reduction Potential: **Quantification Pending**
2035 GHG Reduction Potential: **Quantification Pending**

Support the County in its efforts to develop a community choice aggregation program to provide Solano County residents with a choice in their energy provider.

Measure Background

Solano County included a measure in its CAP to investigate the potential for a countywide community choice aggregation program (CCA). Assembly Bill 117, which was signed into law in 2002, enables California cities and counties, either individually or collectively, to supply electricity to customers within their borders through the establishment of a CCA. Unlike a municipal utility, a CCA does not own the transmission and delivery systems, but is responsible for providing electricity to its constituent residents and businesses. The CCA may own electric generating facilities, but more often, it purchases electricity from private electricity generators.

A key benefit of a CCA is that the participating jurisdictions can determine the amount of renewable energy contained within the generation portfolio. For example, a Solano County CCA could decide to provide 50% of its electricity from renewable sources, which would exceed State requirements directing California's utilities to provide 33% of their electricity from renewable sources by 2020.

Developing a CCA will require a detailed analysis of energy demand, efficiency opportunities, and renewable generation opportunities in Solano County. Using existing models from other counties (e.g., Marin County) is likely to reduce the initial program design costs. The program would be most effective if the City partnered with other Solano County cities and the County government to jointly pursue a CCA program.

The City will work with the County and other interested participants in the preparation of feasibility studies, outreach campaigns, and other efforts to develop a countywide CCA.

Action		Responsibility
A	Work with the County to prepare necessary study reports, informational materials, and any other supporting research and/or documents to help pursue a CCA program.	Sustainability Coordinator

Progress Indicators	Year
X% of residential units use CCA Green Level (50% RPS); X% of residential units use CCA Deep Green Level (100% RPS); X% of nonresidential area uses CCA Green Level (50% RPS); X% of nonresidential area uses CCA Deep Green Level (100% RPS)	2020
X% of residential units use CCA Green Level (50% RPS); X% of residential units use CCA Deep Green Level (100% RPS); X% of nonresidential area uses CCA Green Level (50% RPS); X% of nonresidential area uses CCA Deep Green Level (100% RPS)	2035

E-8: Street and Area Lighting

MEASURE E-8.1: STREET LIGHT UPGRADE

2020 GHG Reduction Potential: **27 MT CO_2e/yr**
2035 GHG Reduction Potential: **27 MT CO_2e/yr**

Continue the City's street light upgrade program.

Measure Background

Streetlights account for approximately 9% of the City's municipal electricity use[x]. High-pressure sodium bulbs, commonly used in streetlights, require more energy and have a shorter lifespan than new induction and/or light-emitting diode (LED) lights. The short simple-payback period associated with lighting upgrades makes this an easy measure to implement.

The City has already started a program to upgrade its streetlights to LED technology, and will continue implementation of that program until all streetlights have been upgraded citywide.

Action		Responsibility
A	Complete implementation of streetlight upgrade program.	Public Works

Progress Indicators	Year
100% of HPS bulbs are replaced with energy-efficient technology	2020 and 2035

E-9: Municipal Actions

MEASURE E-9.1: MUNICIPAL RENEWABLE ENERGY DEVELOPMENT

2020 GHG Reduction Potential: **44 MT CO_2e/yr**
2035 GHG Reduction Potential: **146 MT CO_2e/yr**

Explore opportunities for installation of renewable energy facilities at the City swimming pool, waste water treatment plant, and municipally-owned wells.

Measure Background

Transitioning to clean energy sources will allow Rio Vista to reduce communitywide emissions, and the installation of renewable energy systems on municipal buildings will show the City's leadership in the area of renewable energy generation.

The City will continue to pursue funding for municipal renewable energy projects that are already in the development pipeline. The City will work with other Solano County jurisdictions to identify best practices in selecting and financing municipal renewable energy systems. The City will also conduct a feasibility study to determine the potential costs and benefits of an inflow turbine energy system on municipally-owned wells, which could generate hydroelectric energy through existing pumping activities.

Action		Responsibility
A	Continue to pursue funding for municipal renewable energy projects currently in the pipeline.	Public Works; Sustainability Coordinator;
B	Collaborate with other Solano County jurisdictions to identify best practices and funding strategies.	Public Works; Sustainability Coordinator;
C	Prepare a cost-benefit analysis of inflow turbine systems for municipally owned wells to generate hydroelectric energy. Research available funding sources to help defray implementation costs.	Public Works; Solano EDC; Sustainability Coordinator

Progress Indicators	Year
Develop 150 kW capacity of municipal renewable energy	2020
Develop 500 MW capacity of municipal renewable energy	2035

MEASURE E-9.2: MUNICIPAL BUILDING ENERGY EFFICIENCY

2020 GHG Reduction Potential: **53 MT CO_2e/yr**
2035 GHG Reduction Potential: **57 MT CO_2e/yr**

Establish a goal to reduce business-as-usual electricity use in municipal buildings by 15%.

Measure Background

Reducing municipal energy use will reduce communitywide GHG emissions, save taxpayer dollars, and set an example for the successful implementation of energy-saving technology.

To achieve 15% reductions in energy use the City will perform energy audits on select municipal buildings to identify future potential for energy efficiency improvements. As described throughout this chapter, numerous financing options and rebate programs are available to fund energy-efficiency improvements. The City could also explore energy saving performance contracts to finance improvements. Under this type of agreement, an Energy Services Company (ESCO) completes building energy audits to identify the most cost-effective retrofit options. The ESCO guarantees the amount of energy that will be saved under a defined retrofit package, and further guarantees that the value of energy savings would be sufficient to cover efficiency upgrade costs as long as the price of energy does not fall below a stipulated floor price. In most cases, the ESCO pays up-front costs associated with retrofit installation, further reducing financial risk to the City.

In addition to addressing building performance, the City could provide information and training to City employees on how to reduce energy consumption in the workplace. The City could conduct one campaign per year, ideally during National Energy Awareness Month in October, to educate employees about their energy consumption at work and ways to reduce consumption (e.g., turning off computers and monitors, turning off lights, using power strips). To incentivize participation, the City could consider advertising energy consumption trends during the campaign period and provide prizes for quantifiable reductions.

Action		Responsibility
A	Perform energy audits on select City buildings to identify future potential for energy efficiency improvements.	Building Division; Public Works
B	Consider using an energy performance contract to finance efficiency retrofits.	Public Works
C	Conduct City employee energy use reduction campaign and incentivize participation.	Public Works; Sustainability Coordinator

Progress Indicators	Year
Municipal building energy use is reduced by 315,000 kWh/yr	2020
Municipal building energy use is reduced by 340,000 kWh/yr	2035

MEASURE E-9.3: WASTEWATER TREATMENT PLANT PROCESS OPTIMIZATION

2020 GHG Reduction Potential: **220 MT CO_2e/yr**
2035 GHG Reduction Potential: **220 MT CO_2e/yr**

Continue to perform energy optimization audits at FSSD and implement audit results.

Measure Background

The City can improve the efficiency of wastewater pumping and treatment facilities by identifying and implementing energy-saving retrofits at the Beach and Northwest Wastewater Treatment Plants.

PG&E performs Integrated Energy Audits of wastewater treatment facilities to identify the most critical efficiency improvements and help sewer districts to select energy-saving projects and identify available financial incentives. PG&E helped the Fairfield Suisun Sewer District (FSSD) to save 1.3 million kWh/yr and install wind turbines with a 200 kW capacity. FSSD received $350,000 in incentives from PG&E, contributing to a simple-payback of 2.7 years for its energy efficiency projects[xi]. FSSD now budgets for regular energy audits to ensure their facility is operating efficiently.

The City should work with PG&E and Veolia Water to complete energy audits of its wastewater treatment plants, and identify cost-saving energy efficiency upgrades and financial incentives. Upon successful completion of its first energy audits, the City should budget for regular energy audits to ensure the plants are operating efficiently.

Action		Responsibility
A	Continue to budget for regular Integrated Energy Audits on Beach and Northwest Wastewater Treatment Plant operations.	Veolia Water
B	Update the Wastewater Facilities Plans to include regular energy audits and progress monitoring for implemented improvements.	Veolia Water

Progress Indicators	Year
Reduce energy use at Beach and Northwest Wastewater Treatment Plants by a combined 1.3 million kWh/yr	2020 and 2035

MEASURE E-9.4: SUSTAINABILITY COORDINATOR

Supporting Measure – Not Quantified

Establish a full-time regional sustainability coordinator to monitor CAP implementation and promote regional sustainability efforts. Explore opportunities to partner with other Solano County governments on this effort (e.g., City of Benicia, Solano County).

Measure Background

Implementation of the measures described in this CAP will likely require an effort that surpasses the available capacity of existing City staff. Further, numerous measures are identified as "Regional Opportunities" that would benefit from collaboration among the different Solano County governments. Therefore, the City recommends creation of a regional sustainability coordinator position, which could oversee implementation of CAP measures that rely on regional collaboration.

The sustainability coordinator would act as a liaison between local governments, residents, and businesses in Solano County to implement and track progress of CAP measures and actions. A regional approach would provide implementation efficiencies on certain measures, and would also help to disseminate best practices information to the local governments regarding other measures. The sustainability coordinator could also act as the point of contact for various regional agencies, including STA, PG&E, the Solano EDC, and the Solano Center for Business Innovation. This would allow one person to gain experience in facilitating implementation of the various programs described throughout this CAP, as opposed to multiple employees of each local government having to coordinate their efforts.

In recent years, several city and county governments have been able to sponsor a full-time sustainability coordinator position through American Reinvestment and Recovery Act (ARRA) grant funding or similar programs. The City will collaborate with other local governments to identify and pursue grant funding to establish a regional sustainability coordinator position.

Action		Responsibility
A	Secure funding for regional Sustainability Coordinator position.	Community Development; Solano EDC
B	Coordinate with other Solano cities and the County to prioritize regional sustainability issues and programs for joint implementation.	Community Development; Solano EDC

E-10: Outreach

MEASURE E-10.1: PUBLIC OUTREACH

Supporting Measure – Not Quantified

Develop coordinated outreach campaign to fulfill the public outreach components recommended throughout this CAP.

Measure Background

Community engagement and effective participation are essential to the successful implementation of this CAP. During the CAP implementation period, the City will conduct outreach programs that involve residents and businesses in various activities, assessments, and actions.

Effective public participation will increase the likelihood that the measures recommended in this plan achieve estimated participation rates. Furthermore, Rio Vista will see higher participation rates if outreach and education programs are adapted over time to meet the changing needs of the community. Increased participation rates will result in increased emissions reductions.

At the start of each fiscal year, the City will work with local stakeholders to determine the outreach priorities of the community, which could be a certain segment of the community (e.g., a group of neighborhoods, the agricultural community, the retail sector) or a specific action (e.g., carpooling, biking, lighting). Outreach priorities should be related to measures described in the CAP. The City will strive to designate at least one outreach event per quarter to address the chosen priority areas. The City could also designate one week per year to conduct a high-profile energy efficiency outreach campaign targeting a specific group. The campaign week could also be used to recognize community members that have implemented major improvements.

Numerous measures described in this chapter would benefit from a website that could serve as a central source of information on resource conservation strategies, technical assistance for a variety of topics, and a clearinghouse for rebates and other financial incentives to help implement CAP strategies. The City will partner with other local governments to develop a Solano County Sustainability Website that will be a resource for all residents and businesses in the county.

	Action	Responsibility
A	Work with local stakeholders to determine the CAP outreach priorities for the year.	Community Development
B	Designate at least one outreach event per quarter to address the priority areas.	Community Development
C	Conduct a high-profile energy efficiency outreach campaign; recognize community members that have implemented major improvements.	Sustainability Coordinator
D	Partner with other Solano County governments to develop a county sustainability website.	Sustainability Coordinator

Transportation Strategy

To be developed following receipt of SGC grant funding

Water Strategy

To be developed following receipt of SGC grant funding

Waste Strategy

To be developed following receipt of SGC grant funding

Notes

[i] US Census, 2010.

[ii] PG&E, 2012. Available at: <http://www.pgecorp.com/sustainability/en03_clean_energy.jsp>

[iii] US Census, 2010.

[iv] US Census, 2010.

[v] California Energy Commission. *2009 California Residential Appliance Saturation Study.* Prepared by KEMA, October 2010.

[vi] California Energy Commission. *2009 California Residential Appliance Saturation Study.* Prepared by KEMA, October 2010.

[vii] National Renewable Energy Laboratory Renewable Resource Data Center, 2011.

[viii] PG&E. *PG&E Generation Interconnection Services Progress Report for Rio Vista.* October 2012.

[ix] California Energy Commission. *Solar Water Heating CEC 2013 Title 24 Pre-rulemaking Workshop.* June 9, 2011.

[x] PG&E, October 2012.

[xi] PG&E. *Case Study: Fairfield Suisun Sewer District Integrated Energy Management.* August 2009.

CHAPTER 4

BENCHMARKS + IMPLEMENTATION

4

This chapter describes how the City will implement CAP emissions reduction measures and actions in the following sections:

- Implementation and Monitoring: Describes how City staff will implement CAP measures and related actions, and track the performance metrics identified for each measure.
- Program Evaluation and Evolution: Discusses the need to evaluate, update, and amend the CAP over time, so the plan remains effective and current.

Implementation and Monitoring

Ensuring that the CAP measures translate from policy language into on-the-ground results is critical to the success of the plan. To facilitate this, each measure described in Chapter 3 contains a table that identifies specific actions which the City will carry out, and the departments responsible for each action. The table also provides performance metrics to enable City staff, the City Council, and the public to track measure implementation and monitor overall CAP progress.

The tables provide both interim (2020) and final (2035) performance metrics. Interim performance metrics are especially important, as they provide checkpoints to evaluate if a measure is on the right path to achieving its GHG reductions.

The performance metrics are directly related to the estimated GHG emissions reductions. Therefore, they are written to provide a quantifiable measurement to accurately track progress toward the reduction target. For example, Measure E-7.3 requires all new residential construction to include solar water heaters, to the fullest extent possible, and requires all new single-family residential construction to include a 3 kW solar PV system. The measure's estimated GHG emissions reductions are based on numerous assumptions, including the amount of new residential buildings that will be built between 2005 and the 2020 target year. The performance metric assumes that 10% of the building stock in 2020 will be newly constructed and will include a solar hot water system as well as a 3.0 kW solar PV system installed. If any of the newly built homes install solar PV systems greater than 3.0 kW or install more efficient solar hot water systems by 2020, then additional emissions reductions will occur. Likewise, if solar hot water and solar PV systems are not installed on all of the homes, or systems that are less efficient or less than 3.0 kW are installed, then this measure will achieve less than its estimated reductions.

Upon adoption of the CAP, the City departments identified for each measure in Chapter 3 will become responsible for implementing assigned actions. Key staff in each department will facilitate and oversee this work, working in tandem with the proposed regional Sustainability Coordinator. To assess the status of City efforts, CAP plan implementation meetings should take place several times a year. Some actions will require inter-departmental or inter-agency cooperation, and appropriate partnerships will need to be established.

Program Evaluation and Evolution

The CAP represents the City's initial attempt to create an organized, communitywide plan to reduce GHG emissions. Staff will need to evaluate the program's performance over time and be ready to alter or amend the plan if it is not achieving its reduction target.

PROGRAM EVALUATION

Two types of performance evaluation are important: (a) evaluation of the community's overall ability to reduce GHG emissions, and (b) evaluation of the performance of individual CAP measures. Communitywide GHG emission inventories will provide the best indication of CAP effectiveness. It will be important to reconcile actual growth in the City versus the growth projected when the CAP was developed. Conducting these inventories periodically will enable direct comparison to the 2005 baseline inventory and will demonstrate the CAP's ability to achieve the adopted reduction target. The Community Development Department will prepare communitywide inventories every three to five years following adoption of the CAP to assess progress toward the GHG emissions reduction target.

While communitywide inventories provide information about overall emission reductions, it will also be important to understand the effectiveness of each measure. Evaluation of the emissions reduction capacity of individual measures will improve staff and decision makers' ability to manage and implement the CAP. The City can reinforce successful measures and reevaluate or replace under-performing ones. Evaluating measure performance will require data regarding actual community participation.

The proposed regional Sustainability Coordinator, in coordination with the Community Development Department, PG&E and Solano Water Agency, will evaluate measure performance on the same schedule as the communitywide inventories following adoption of the CAP, and summarize progress toward the GHG reduction target in a report that describes estimated annual GHG reductions in 2020, achievement of performance metrics, participation rates (where applicable), and remaining barriers to implementation.

The proposed Sustainability Coordinator (or Community Development Department staff) will report progress on the CAP action items to decision-makers on an annual basis. Staff will deliver this report in conjunction with the State-required annual report to the City Council regarding implementation of the City's General Plan. The progress report will include a cursory assessment of progress and implementation of individual CAP measures, including how new development projects have incorporated relevant measures. The progress report will identify measure gaps and recommend corrections on a more regular basis, through the addition of new CAP measures.

PROGRAM EVOLUTION

To remain relevant, the City must be prepared to adapt and transform the CAP over time. It is likely that new information about climate change science and risk will emerge, new GHG reduction technologies and innovative municipal strategies will be developed, new financing will be available, and State and federal legislation will change. It is also possible that future inventories will indicate that the community is not achieving its adopted target. As part of the evaluations identified above, the City will assess the implications of new scientific findings and technology, explore new opportunities for GHG reduction, respond to changes in climate policy, and incorporate these changes in future updates to the CAP to ensure an effective and efficient program.

Project Consistency with the CAP

The CAP identifies both mandatory and voluntary GHG reduction measures that would apply to different types of future projects.

Mandatory Measures

For each of the following mandatory measures, the CAP either reinforces the implementation of current codes and ordinances, or directs changes to the City's codes and ordinances that would result in GHG reductions:

- Measure E-2.2: Solar-Ready Construction
- Measure E-5.1: Building Shade Trees

All new projects would be required to comply with these codes and ordinances, as applicable.

Voluntary Measures

The remaining measures are essentially voluntary, relying on assumed levels of community participation to create communitywide GHG reductions. These measures will be tracked to ensure participation rates are reached and that the voluntary measures are being adequately applied to new and existing projects. If not, then additional, more aggressive actions will be necessary to correct shortfalls.

City of Suisun City
Climate Action Plan

Administrative Draft
Energy Efficiency Plan
November 2012

City of Suisun City
Climate Action Plan

Administrative Draft
Energy Efficiency Plan
November 2012

Prepared for:

City of Suisun City

Consultant to the City:

AECOM

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CHAPTER 1
INTRODUCTION: PLANNING FOR CLIMATE CHANGE

Greenhouse gas (GHG) emissions and resulting climate change impacts are considered by the state of California as a major global challenge for the 21st century. According to most climatologists the planet is starting to experience shifts in climate patterns and increased frequency of extreme weather events at both the global and local levels. At a statewide level, these impacts include reduced snow pack in the Sierra Nevada affecting California water supplies; rising sea levels threatening cities along the coast, San Francisco Bay, and Sacramento River; decreasing air quality affecting public health, particularly in the Central Valley; and, rising temperatures impacting the state's agricultural industry, including Solano County farmers and agricultural businesses.

This plan seeks to address these impacts by increasing local energy independence, improving building energy and water efficiency, and establishing a regional framework for collaboration. This framework would address energy use issues to impact climate change and reduce energy use in a manner that provides cost efficiencies in program implementation. For example, energy costs impact both household and business budgets on a daily basis. Increases in the efficiency of energy use can quickly pay for themselves, helping families stay in their homes and businesses stay in their communities. The emphasis will be on GHG emission reductions, with the understanding that steps taken to reduce GHG emissions will also improve energy efficiency while saving money.

What is a CAP?

A CAP (Climate Action Plan) is a tool that many cities in California are using to quantify their share of statewide GHG emissions and establish action steps toward achieving a local emissions reduction target. A CAP provides a set of strategies intended to guide community efforts to reduce GHG emissions, typically through a combination of statewide and local actions. Figure 1.1 shows the typical steps included in the CAP process.

Figure 1.1 – Steps in the CAP Process

A CAP contains community-specific GHG emission inventories and forecasts to establish a starting point and probable future emissions levels if no action is taken (Step 1). A reduction target is then defined to provide an aspirational goal for improvement (Step 2). Emission reduction measures and implementation programs are then written to help the city meets its goal by achieving the reduction target (Step 3). Upon adoption of the CAP, the jurisdiction takes action to implement the reduction measures (Step 4), monitor their progress towards achievement of the reduction target (Step 5), then evaluate effectiveness, celebrate their successes, and use the monitoring results to make adjustments to CAP measures to improve performance (Step 6). This CAP represents the City's progress on Steps 1-3.

Purpose

The climate action planning process seeks to identify measures which are informed by the goals, values and priorities of the community, while at the same time contributing to the State's climate protection efforts and complying with the local Air Quality District's efficiency standards for GHG emissions. In addition, the climate action plan measures are intended to enhance community resilience by increasing local energy independence,

improving building energy and water efficiency, and establishing a regional framework for collaboration on climate change issues. It is anticipated there will be California Environmental Quality Act (CEQA) review streamlining benefits for development projects occurring within a jurisdiction that has an adopted CAP.

Process

The City of Suisun City prepared this CAP as part of a Solano County regional-effort, involving the cities of Dixon, Rio Vista, and Fairfield. The cities of Benicia, Vallejo, Vacaville, and the County of Solano have adopted CAPs. The intent of preparing this CAP through a regional collaborative process was to establish a common list of reduction measures so that no one jurisdiction would become economically disadvantaged through its CAP actions, and to find collaborative opportunities for plan implementation. This CAP describes how the City of Suisun City (Suisun City) will achieve GHG reductions through local actions that contribute to the statewide GHG emissions reduction target defined in Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, CEQA guidelines, and other State guidance.

PG&E Green Communities Program

The four participating cities named above, along with the City of Vacaville, received funding through the Pacific Gas & Electric Company's (PG&E's) Green Communities Program to prepare energy efficiency climate action plans. These plans included many components of a full CAP, including evaluation of baseline emissions, future energy use forecasts, target setting, and the development of energy efficiency measures. The resulting information prepared during that effort has been included throughout this CAP.

Strategic Growth Council Planning Grant

The cities of Suisun City, Rio Vista, and Fairfield also received funding from the Strategic Growth Council (SGC) to develop the remaining non energy-related components of a CAP. This included preparing emissions forecasts for the transportation, solid waste, wastewater, water, and off-road mobile sources sectors, as well as development of reduction measures targeting these sectors. This work has been combined with the energy efficiency work mentioned above to create a comprehensive CAP.

The participating cities each developed a customized CAP, relevant to their community's specific context, and have reached out to residents and businesses for public feedback and participation.

Context

Many cities in California are using CAPs to quantify their share of statewide GHG emissions and establish action steps toward achieving a local emissions reduction target. CAPs typically address emissions targets through reduced dependency on fossil fuels and nonrenewable energy sources, and through increases in the efficient use of the energy that is consumed. CAPs also provide a way to connect climate change

mitigation (GHG reduction) to climate adaptation, community resilience, and broader community goals.

In Suisun City, most GHG emissions come from energy used in buildings and gasoline burned in motor vehicles, with water and waste related emissions contributing relatively smaller proportions. Suisun City's CAP examines the communitywide activities that result in GHG emissions and establishes strategies that help reduce those emissions in future and existing development through both voluntary and mandatory actions.

Many of the strategies included in this plan, in addition to reducing GHGs, will also help make Suisun City a more attractive place to live – lowering energy and water bills through conservation, improving bike and pedestrian facilities, improving air quality, and reducing waste generation to extend the lifetime of local landfills. See the section on Benefits of Addressing GHG Emissions below.

Scope and Content of the Climate Action Plan

The CAP comprises four chapters: 1) Introduction: Planning for Climate Change; 2) Baseline Emissions Inventory, Forecasts, and Targets; 3) Emissions Reduction Measures; and 4) Benchmarks and Implementation. Appendices A through C provide additional detail on topics covered within the plan. The contents of each chapter and appendix are briefly described below:

- **Chapter 1, Introduction: Planning for Climate Change,** describes the City's rationale for reducing GHG emissions, as well as the goals of the CAP to comply with local Air Quality Management District guidelines, as applicable. This chapter provides an overview of the topics covered in the CAP, presents conventional climate change science findings, and describes statewide actions to address climate change. This chapter also introduces the CAP's relationship to General Plan Environmental Impact Reports (EIRs), and its ability to enable a CEQA tool known as "tiering" to allow consistent future discretionary development projects to skip certain steps in the traditional CEQA process.
- **Chapter 2, Baseline Emissions Inventory and Forecast-Inventories, Projections and Targets**, outlines key steps taken to develop the CAP, including the 2005 baseline GHG inventory, projecting future emissions in 2020 and 2035, setting a communitywide GHG reduction target for 2020 and a long-range target for 2035. This chapter also describes the emissions gap between the reduction target and statewide reductions, as well as the local reductions attributable to implementation of statewide climate change policy.
- **Chapter 3, Emissions Reduction Measures,** addresses five main reduction strategies: energy, land use and transportation, water conservation, waste reduction, and municipal operations. The CAP provides a summary of projected reductions and a description of the reduction strategy development process. The CAP identifies the following for each reduction strategy: key elements, existing programs and accomplishments, implementation actions, performance metrics against which to measure success, and estimated GHG reductions in 2020 and 2030.

- **Chapter 4, Benchmarks and Implementation**, describes the process to monitor the City's progress toward achieving their GHG reduction target. This chapter identifies monitoring procedures, plan update processes and other steps to ensure successful implementation.
- **Appendix A - Emissions Inventory Methodology** provides technical description of methods for the 2005 emission inventories and 2020 and 2030 projections.
- **Appendix B - Emissions Reduction Quantification Methodology** provides assumptions used to determine GHG emission reductions associated with primary CAP measures.
- **Appendix C - BAAQMD Qualification Standards** describes how the CAP conforms to BAAQMD guidelines.

Climate Change Science

The United Nations International Panel on Climate Change (IPCC), defines "climate change" as "a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer." [i] The properties of GHGs are such that they retain heat in the atmosphere, which would otherwise escape to space. GHGs accumulate in the atmosphere when they are emitted faster than they can be naturally removed, and that accumulation prompts changes in the climate system. Once emitted into the atmosphere, GHGs influence the Earth's energy balance for a period of decades to centuries.[ii] [iii]

Trend projections indicate that atmospheric concentrations of GHG emissions will continue to increase throughout this century. If these projections become reality, climate change will threaten our economic well-being, public health, and environment.

California has an advantage in its scientific understanding of climate change. A solid body of vital data is available to assist state and local leaders to better understand how climate change is affecting us now, what is in store ahead and what we can do about it. State-sponsored research has played a major role in recent advances in our understanding of the potential impacts of climate change on California. A first assessment, published in 2006, made clear that the level of impacts is a function of global emissions of greenhouse gases and that lower emissions can significantly reduce those impacts.[iv] The third and most recent publication, The 2012 Vulnerability and Adaptation Study, explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts.[v]

The California legislature passed legislation (addressed below) based upon the findings of the IPCC, the U.S. Global Change Research Program, and the National Research Council of the U.S. National Academy of Sciences, together representing the most comprehensive, advanced, and thoroughly reviewed documents on the science of climate change. The development of CAPs in California in general, and in Solano County specifically, are based upon the actions of the California legislature and its reliance on these findings. For further information on Climate Science, please visit the California Climate Change Portal at http://www.climatechange.ca.gov/.

BENEFITS OF ADDRESSING GHG EMISSIONS

Planning efforts intended to reduce GHG emissions through resource efficiency and conservation measures often have multiple co-benefits as well that will improve the local quality of life. While some co-benefits are qualitative, others are quantifiable improvements over current conditions.

Although the following list is in no way exhaustive of the myriad co-benefits related to climate action planning, this plan references them to illustrate the overlapping benefits of various CAP measures. Overall, these co-benefits:

- Strengthen local economic development (e.g., CEQA streamlining/tiering, transparent development requirements)
- Demonstrate regional sustainability leadership
- Improve neighborhood experience
- Support climate change adaptation strategies

Co-benefits that are applicable to specific measures are listed. The following list uses icons that will be shown with their related CAP measures in Chapter 3:


Improves air quality


Reduces energy use


Promotes regional smart growth


Reduces water use; thus extending community supply


Improves water quality; reduces storm water run-off


Improves local energy independence


Increases natural habitat


Reduces heat island effect


Improves public health


Creates jobs


Reduces waste


Provides long-term savings to residents

California Climate Change Actions

Suisun City's strategy for climate protection, as one of eight local plans in the Solano County regional climate action planning effort, must be set within the context of the Bay Area and the State, where much of the momentum for local action in the United States originates.

California has long been a sustainability leader, as illustrated by Governor Schwarzenegger signing Executive Order (EO) S-3-05 in 2005. EO S-3-05 recognizes California's vulnerability to a reduced snowpack, exacerbation of air quality problems, and potential sea-level rise due to a changing climate. To address these concerns, the governor established targets to reduce statewide GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050.

In 2006, California became the first State in the country to adopt a statewide GHG reduction target through AB 32. This law codifies the EO S-3-05 requirement to reduce statewide emissions to 1990 levels by 2020. AB 32 resulted in the 2008 adoption by the California Air Resources Board (ARB) of a *Climate Change Scoping Plan* (Scoping Plan), outlining the State's plan to achieve emission reductions through a mixture of direct regulations, alternative compliance mechanisms, different types of incentives, voluntary actions, market based mechanisms, and funding. The Scoping Plan addresses similar areas to those contained in this CAP, including transportation, building energy efficiency, water conservation, waste reduction, and green infrastructure.

AB 32 engendered several companion laws that can assist Suisun City in reducing communitywide GHG emissions. These legislative actions and regulations are referred to as statewide actions throughout this plan, and represent a significant source of estimated GHG reductions. Suisun City estimated the GHG emission reductions associated with:

- the Renewable Portfolio Standard (RPS),
- AB 1109,
- 2013 California Title 24,
- AB 1493,
- EO-S-1-07, and
- Vehicle efficiency regulations.

As the regulatory framework surrounding AB 32 grows, it may be possible to evaluate a wider range of statewide reductions.

RENEWABLE PORTFOLIO STANDARD

SB 1078, SB 107, EO-S-14-08, and SB X1-2 have established increasingly stringent Renewable Portfolio Standard (RPS) requirements for California utilities. RPS-eligible energy sources include wind, solar, geothermal, biomass, and small-scale hydro.

- **SB 1078** required investor-owned utilities to provide at least 20% of their electricity from renewable resources by 2020.
- **SB 107** accelerated the SB 1078 timeframe to take effect in 2010.

- **EO-S-14-08** increased the RPS further to 33% by 2020. PG&E, Suisun City's electricity provider, delivered 12.1% of its electricity from eligible renewable sources in 2005 and 19% in 2011.
- **SB X1-2** codified the 33% RPS by 2020 requirement established by EO-S-14-08.

AB 1109 – Lighting Efficiency

AB 1109 was signed into law in 2007. The California Lighting Efficiency and Toxics Reduction Act requires the California Energy Commission to adopt energy efficiency standards for all general purpose lights, reducing lighting energy usage in indoor residences and state facilities by no less than 50%, by 2018, as well as require a 25% reduction in commercial facilities by that same date. To achieve these efficiency levels, the California Energy Commission applied its existing appliance efficiency standards to include lighting products, as well as require minimum lumen/watt standards for different categories of lighting products. In addition, the bill prohibits the manufacturing for sale or the sale of certain general purpose lights that contain hazardous substances.

California Title 24

Title 24 of the California Code of Regulations dictates how new buildings and major remodels are constructed in California. Title 24, Part 6 is a component of Title 24 that details energy efficiency standards for residential and non-residential development. It is updated on approximately a three-year cycle. The State will be increasing building energy conservation requirements through adoption of the 2013 Title 24 standards, which will go into effect beginning in 2014. It is estimated that these revisions to the current 2008 Title 24 standards will result in energy consumption reductions of 25% over the current standards.

AB 1493 – Pavley I and II

AB 1493, California's mobile-source GHG emissions regulations for passenger vehicles, or California Clean Car Standards, was signed into law in 2002. AB 1493 requires ARB to develop and adopt regulations that reduce GHG emissions from passenger vehicles, light-duty trucks, and other non-commercial vehicles for personal transportation. In 2004, ARB approved amendments to the California Code of Regulations adding GHG emissions standards to California's existing standards for motor vehicle emissions.

EO-S-1-07 – The Low Carbon Fuel Standard

EO-S-01-07 reduces the carbon intensity of California's transportation fuels by at least 10% by 2020. The Low Carbon Fuel Standard (LCFS) is a performance standard with flexible compliance mechanisms that incentivizes the development of a diverse set of clean, low-carbon transportation fuel options to reduce GHG emissions.

Vehicle Efficiency Regulations

ARB has adopted several regulations to reduce emissions through improved vehicle efficiency that will have local GHG emission reduction benefits in Suisun City. The following two regulations were quantified and included in as part of this CAP.

Tire Inflation Regulation

On September 1, 2010, ARB's Tire Pressure Regulation took effect. The purpose of this regulation is to reduce GHG emissions from vehicles operating with under-inflated tires by inflating them to the recommended tire pressure rating. The regulation applies to

vehicles with a gross vehicle weight rating (GVWR) of 10,000 pounds or less. Under this regulation, automotive service providers must meet the following requirements:

Check and inflate each vehicle's tires to the recommended tire pressure rating, with air or nitrogen, as appropriate, at the time of performing any automotive maintenance or repair service.

- Indicate on the vehicle service invoice that a tire inflation service was completed and the tire pressure measurements after the service were performed.
- Perform the tire pressure service using a tire pressure gauge with a total permissible error no greater than + two (2) pounds per square inch (psi).
- Have access to a tire inflation reference that is current within three years of publication.
- Keep a copy of the service invoice for a minimum of three years, and make the vehicle service invoice available to the ARB, or its authorized representative upon request.

Heavy-Duty Vehicle GHG Emission Reduction (Aerodynamic Efficiency)

This regulation requires existing trucks/trailers to be retrofitted with the best available technology and/or ARB-approved technology to increase vehicle aerodynamics and fuel efficiency that will result in GHG reductions. This measure has been identified as a Discrete Early Action in the Scoping Plan, which means it must be enforceable beginning in 2010. Technologies that reduce GHG emissions and improve the fuel efficiency of trucks may include devices that reduce aerodynamic drag and rolling resistance. These requirements apply to both California-registered trucks and out-of-state registered trucks that travel to California.

SB 7x

SB 7x requires the state to achieve a 20% reduction in urban per capita water use by December 31, 2020. The state is required to make incremental progress toward this goal by reducing per capita water use by at least 10% on or before December 31, 2015. SB 7x requires each urban retail water supplier to develop both long-term urban water use targets and an interim urban water use target. SB 7x also creates a framework for future planning and actions for urban and agricultural users to reduce per capita water consumption 20% by 2020.

Relationship to the General Plan

Whether by local desire, guidance from the State of California, or both, more and more cities and counties are addressing climate change in their general plans and including policies and programs that have a co-benefit of reducing GHG emissions. The City's policy commitment includes encouraging higher density, mixed-use and infill development in appropriate locations, energy efficiency, and renewable energy development that contribute to GHG reduction strategies contained in the CAP. Since GHG emissions are a cross-cutting issue addressed by many General Plan elements, the CAP as a whole is generally considered an implementation measure for the General

Plan. This structure allows the City to update the CAP on an ongoing, as-needed basis to ensure that the City's climate protection efforts reflect both current legislation and emerging best practices.

In addition, several state agencies have provided guidance and case studies for local governments to address climate change in their general plans. For example:

- Since 2008, the California Attorney General's office has provided guidance to local government on addressing climate change and greenhouse gas reduction through general plan policies.
- The California Office of Planning and Research (OPR) is preparing a 2013 update to the state's *General Plan Guidelines* that will include guidance for GHG emissions reduction and climate adaptation.
- The California Natural Resources Agency has released a Climate Adaptation Policy Guide for local governments.
- The California Department of Housing and Community Development has released a guidance document on general plan housing elements policies and programs addressing climate change with case study examples.
- The Office of Planning and Research prepared a guidance documents for addressing complete streets in general plans as required by AB 1358.

Relationship to the California Environmental Quality Act

Local governments may prepare a Plan for Reduction of Greenhouse Gases that is consistent with AB 32 goals. By preparing such a plan, the city can streamline CEQA review of subsequent plans and projects consistent with the GHG reduction strategies and target in the plan. To meet the standards of a qualified GHG reduction plan, Suisun City's CAP must achieve the following criteria (which parallel and elaborate upon criteria established in State CEQA Guidelines Section 15183.5[b][1]):

- Completing a baseline emissions inventory and projecting future emissions
- Identifying a community-wide reduction target
- Preparing a CAP to identify strategies and measures to meet the reduction target
- Identifying targets and reduction strategies in the General Plan and evaluating the environmental impacts of the CAP in the General Plan EIR
- Monitoring effectiveness of reduction measures and adapting the plan to changing conditions
- Adopting the CAP in a public process following environmental review

This approach allows jurisdictions to analyze and mitigate the significant effects of GHGs at a programmatic level, by adopting a plan for the reduction of GHG emissions. Later, as individual projects are proposed, project-specific environmental documents may tier from and/or incorporate by reference that existing programmatic review in their cumulative impacts analysis. Project-specific environmental documents prepared for projects consistent with the General Plan and CAP may rely on the programmatic analysis of GHGs contained in an EIR that would be certified for the City's future General Plan and CAP. Chapter 4 provides a discussion of the criteria and process the City will use to determine if a future project is consistent with the CAP.

A project-specific environmental document that relies on this CAP for its cumulative impacts analysis must identify specific CAP measures applicable to the project, and how the project incorporates the measures. If the measures are not otherwise binding and enforceable, they must be incorporated as mitigation measures applicable to the project. If substantial evidence indicates that the GHG emissions of a proposed project may be cumulatively considerable, notwithstanding the project's compliance with specific measures in this CAP, an EIR must be prepared for the project.

QUALIFIED GREENHOUSE GAS REDUCTION STRATEGY

BAAQMD encourages such planning efforts and recognizes that careful early planning by local agencies is invaluable to achieving the state's GHG reduction goals. If a project is consistent with an adopted qualified GHG Reduction Strategy that addresses the project's GHG emissions, it can be presumed that the project will not have significant GHG emissions under CEQA. This CAP meets the definition of a Plan for Reduction of Greenhouse Gases under CEQA. Appendix C provides a discussion regarding how the CAP also meets BAAQMD's Plan Level Guidance (Section 4.3 of the Air District's CEQA Guidelines) for the content of a "Qualified GHG Reduction Strategy" that consistent with AB 32 goals and CEQA Guidelines relating to GHGs. This guidance is important if a city or county desires to use a climate action plan to support tiering of future development projects for purposes of CEQA review of GHG impacts.

Notes

[i] Intergovernmental Panel on Climate Change. (2007). Climate Change 2007: Synthesis Report. Retrieved from: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

[ii] 74 Fed. Reg. 66514

[iii] Section retrieved from https://en.wikipedia.org/wiki/Regulation_of_greenhouse_gases_under_the_Clean_Air_Act; October 2012

[iv] Our Changing Climate 2012. Vulnerability & Adaptation to the Increasing Risks from Climate Change in California. A Summary Report on the Third Assessment from the Climate Change Center. July 2012. Page 1. Retrieved from: http://www.energy.ca.gov/2012publications/CEC-500-2012-007/CEC-500-2012-007.pdf

[v] Retrieved from http://www.climatechange.ca.gov/; October 2012

CHAPTER 2

EMISSIONS INVENTORY, FORECASTS + TARGETS

2

This chapter examines current and projected communitywide greenhouse gas (GHG) emissions for the City of Suisun City. It outlines key steps taken to develop the CAP, including preparing the 2005 baseline GHG inventory, forecasting future emissions for 2020 and 2035, and setting a communitywide GHG reduction target for 2020 and a long-range target for 2035. Future emissions are forecast assuming no action is taken to reduce emission levels. These future emissions are based on projected activity data for each sector of the emissions inventory. This chapter also describes the emissions gap between the reduction targets and statewide reductions.

Baseline Inventory (2005)

The purpose of a baseline inventory is to provide a snapshot of communitywide GHG emissions in a given year. Even though AB 32 refers to 1990 levels as baseline, the State has determined 2005 as a viable baseline year, as long as it is on the same trajectory. The City developed a baseline emissions inventory for the 2005 operational year as part of a Countywide climate action planning effort in 2011. The City of Suisun City's inventory was calculated to be consistent with BAAQMD's GHG Plan Level Quantification Guidance and discussions with BAAQMD and Yolo-Solano Air Quality Management District (YSAQMD). Although the City is located within the YSAQMD's jurisdictional boundary, at the time of this analysis, YSAQMD had not developed specific GHG inventory guidance.

The inventory addresses the following emission sectors: energy, transportation, solid waste, off-road equipment, wastewater, and potable water.

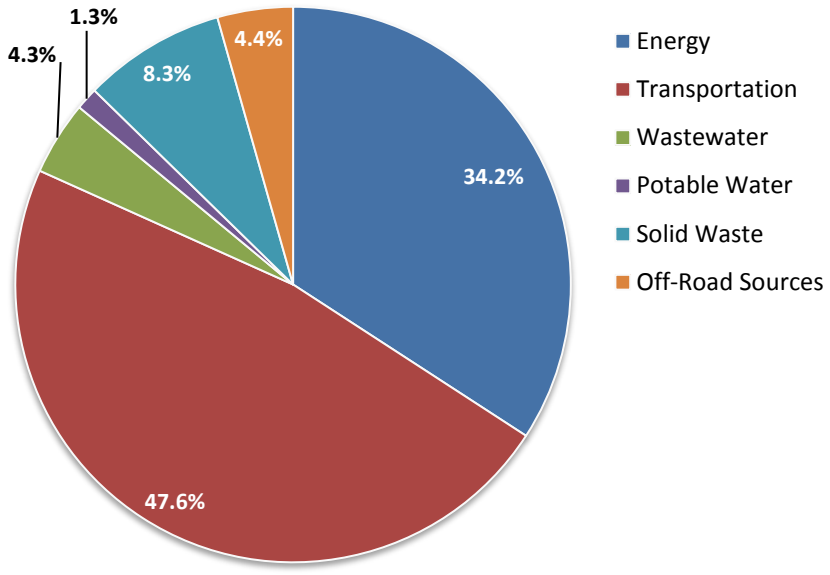
The baseline emissions inventory was prepared using energy consumption data from Pacific Gas and Electric Company (PG&E), solid waste data from city staff and local landfills, and vehicle travel data from the new Metropolitan Transportation Commission activity-based travel model. This empirical data was used along with emission factors to estimate Suisun City's communitywide emissions. See Appendix A for the emissions inventory methodology.

The baseline emissions inventory identified a communitywide emissions total of 120,286 metric tons of carbon dioxide equivalent emissions (MT CO_2e) in 2005. As shown in Figure 2.1 and Table 2.1, transportation is the largest contributor of GHG emissions in the city, with energy use contributing a majority of the remainder. The energy and transportation sectors account for approximately 82% of total emissions. Solid waste emissions provide around 8% of the inventory, while off-road sources and wastewater treatment provide around 9%. Potable water is the smallest contributor, making up the remaining 1% of the inventory.

Table 2.1 2005 Communitywide Emissions			
Emission Sector	**Subsector**	**Emissions ($MT CO_2e$/year)**	**Communitywide Total (%)**
Energy		**41,086**	**34.2%**
Electricity Subtotal		*18,850*	*15.7%*
	Residential	13,891	11.5%
	Commercial	4,959	4.1%
Natural Gas Subtotal		*22,236*	*18.5%*
	Residential	20,155	16.8%
	Commercial	2,081	1.7%
Transportation		**57,203**	**47.6%**
	Passenger Vehicles	52,400	43.6%
	Commercial Vehicles	4,803	4.0%
Solid Waste		**9,999**	**8.3%**
Off-Road Sources		**5,268**	**4.4%**
Wastewater	Wastewater Treatment	**5,180**	**4.3%**
Potable Water	Water Demand	**1,550**	**1.3%**
Total		**120,286**	**100.0%**

Source: AECOM 2012
Note: Columns may not total 100% due to rounding

Figure 2.1 – 2005 Baseline Emissions by Sector



Emissions Forecasts (2020 and 2035)

The baseline inventory was used to project the communitywide GHG emissions in 2020 and 2035 under a business-as-usual (BAU) scenario. Suisun City's GHG emissions were forecast for the years 2020 and 2035, assuming that historic trends describing energy and water consumption, travel, and solid waste generation will remain the same in the future. Therefore, emissions forecasts demonstrate what emissions levels are likely to be under a scenario in which no statewide or local actions are taken to curtail emissions growth.

BAU emission forecasts provide insight regarding the scale of reductions necessary to achieve an emissions target. GHG reduction measures developed for the CAP are applied to the 2020 and 2035 emissions levels to determine if the City will achieve its GHG reduction targets.

The BAU forecasts use applicable and appropriate indicators for each sector, as well as population and employment growth assumptions established by the Bay Area Association of Governments (ABAG). The 2020 forecast year aligns with the AB 32 target year, while the 2035 forecast year aligns with the SB 375 planning horizon. These projections have been developed for planning purposes, and due to the complexity of each emissions sector, are subject to change. As 2020 approaches, the City will reevaluate its emissions projections and reduction targets to incorporate progress toward long-term GHG reductions, and will repeat this process as 2035 approaches as well. See Appendix A for the emissions forecast methodology.

Table 2.2 identifies projected communitywide emissions by sector for 2020 and 2035. Transportation and energy remain the largest emissions sectors in 2020 and 2035 (XX% and XX%, respectively), followed by solid waste, off-road mobile sources, wastewater, and potable water. Energy use accounts for the largest proportional emissions increase for both projection years (11.3% increase in 2020 and 19.5% increase in 2035).

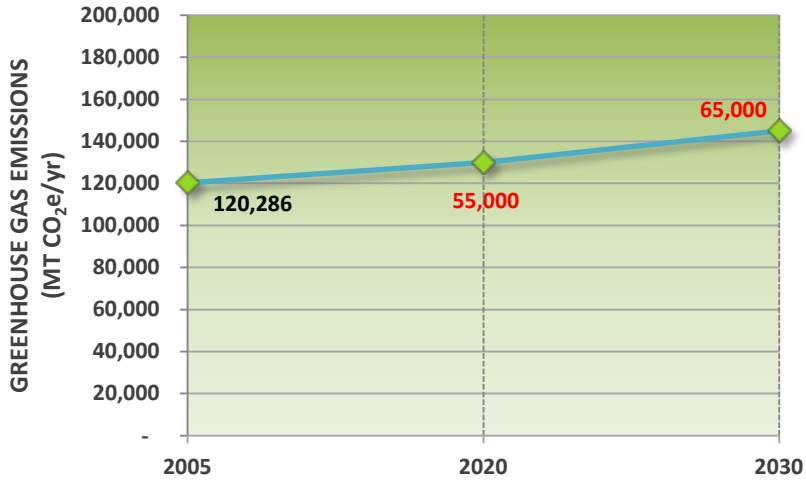
As illustrated in Figure 2.2, communitywide emissions would increase by approximately XX MT CO2e/yr (XX%) between 2005 and 2020, and by approximately XX MT CO_2e/yr (XX%) between 2005 and 2035. The magnitude of communitywide GHG emissions increases from 2005 to 2020 and 2035 is due primarily to anticipated future population and employment growth (and related consumption activity) in Suisun City.

Table 2.2
Communitywide Emissions 2005-2035

Emission Sector	2005 Emissions (MT CO_2e/yr)	2020 Emissions (MT CO_2e/yr)	Increase from 2005 (%)	2035 Emissions (MT CO_2e/yr)	Increase from 2005 (%)
Energy	**41,086**	**46,321**	**11.3%**	**51,022**	**19.5%**
Electricity Subtotal	*18,850*	*21,251*	*11.3%*	*23,408*	*19.5%*
Residential	13,891	15,661	11.3%	17,250	19.5%
Commercial	4,959	5,590	11.3%	6,158	19.5%
Natural Gas Subtotal	*22,236*	*25,070*	*11.3%*	*27,614*	*19.5%*
Residential	20,155	22,723	11.3%	25,029	19.5%
Commercial	2,081	2,347	11.3%	2,585	19.5%
Transportation	**57,203**	**XX**	**XX**	**XX**	**XX**
Passenger Vehicles	52,400	XX	XX	XX	XX
Commercial Vehicles	4,803	XX	XX	XX	XX
Solid Waste	**9,999**	**XX**	**XX**	**XX**	**XX**
Off-Road Sources	**5,268**	**XX**	**XX**	**XX**	**XX**
Wastewater	**5,180**	**XX**	**XX**	**XX**	**XX**
Potable Water	**1,550**	**XX**	**XX**	**XX**	**XX**
Total	**120,286**	**XX**	**XX%**	**XX**	**XX%**

Source: AECOM 2012
Note: Columns may not total 100% due to rounding

Figure 2.2 – Suisun City Baseline and Projected Emissions



GHG Emission Reductions from Statewide Actions

Most of Suisun City's anticipated emission reductions will likely come from statewide actions. This CAP assumes that emissions within the energy, transportation, and water sectors will be reduced through statewide efforts described in Chapter 1. This includes regulations addressing the use of renewable energy sources, energy and water efficiency, and GHG emissions from passenger cars and trucks. These actions provide important reductions that are applied toward Suisun City's communitywide emissions targets, reducing the total amount of emissions to be addressed through community actions. The City will monitor the effectiveness of state legislation to ensure that the anticipated level of reductions is achieved locally, and to ensure that all applicable statewide reductions are accounted.

The City considers locally-realized emissions reductions from:

- SB 1078 (Renewable Portfolio Standard)
- AB 1109 (Lighting Efficiency)
- California Title 24
- AB 1493 (Pavley I and II)
- EO-S-1-07 (Low Carbon Fuel Standard)
- Vehicle efficiency regulations
- SB-7X

Including only these statewide initiatives towards the GHG reduction targets is considered a conservative approach because the Scoping Plan describes numerous other actions that will result in statewide emissions reductions. The actions included herein represent those for which a methodology is available to calculate Suisun City's likely share of these reductions. Other actions will provide statewide benefits, but cannot be accurately attributed to Suisun City.

Table 2.3 summarizes the anticipated reductions associated with these statewide actions in years 2020 and 2035.

Table 2.3
2020 and 2035 Emission Reductions from Statewide Actions

State or Federal Action	2020 Reduction (MT CO_2e/year)	2035 Reduction (MT CO_2e/year)
Renewable portfolio standard (33% by 2020)	5,713	7,041
AB 1109 lighting efficiency	XX	XX
2008 and 2013 California Title-24 standards	XX	XX
Pavley 1 and II	XX	XX
Low carbon fuel standard	XX	XX
Vehicle efficiency regulations	XX	XX
SB-7X	XX	XX
Total	**XX**	**XX**

GHG Emission Reduction Targets

Suisun City has established the following GHG emissions reduction targets for 2020 and 2035:

- **2020:** 15% below 2005 emissions levels
- **2035:** 48% below 2005 emissions levels

The targets will allow the City to contribute to State climate protection efforts described in Chapter 1, and are purposefully set at levels that are likely to provide CEQA streamlining benefits to new development projects in the community. Table 2.4 summarizes the emissions reduction targets, contributions from statewide actions, and the remaining gap for local action.

2020 Emissions Reduction Target

Based on the 2005 emissions inventory and 2020 forecasts presented in this chapter, the 2020 communitywide emissions reduction target is 102,243 MT CO_2e/yr (i.e., 15% below 2005 emissions levels). Reductions totaling XX MT CO_2e/yr in 2020 are required to achieve this target. The 2020 statewide reductions identified in Table 2.3 would contribute emissions reductions of XX MT CO_2e/yr. The remaining gap of XX MT CO_2e/yr must be addressed through local actions described in Chapter 3.

2035 Long-Range Emissions Reduction Target

Achieving the 2035 communitywide emissions reduction target of 62,549 MT CO_2e/yr (i.e., 48% below 2005 emissions levels) would require reductions totaling XX MT CO_2e/yr. Statewide reductions identified in Table 2.3 would contribute XX MT CO_2e/yr, leaving a reductions gap of XX MT CO_2e/yr to be addressed through local actions.

Chapter 3 presents proposed local actions, associated emission reductions, and progress toward the 2020 reduction and 2035 reduction targets.

Table 2.4
2020 and 2035 Emissions Reduction Targets

	2005 (MT CO_2e/yr)	2020 (MT CO_2e/yr)	2035 (MT CO_2e/yr)
Jurisdictional Inventory and Projections	120,286	XX	XX
Reduction Target (2020 and 2035)		102,243	62,549
Reductions Needed to Achieve Target		XX	XX
Assumed Statewide Reductions		-XX	-XX
Local Action Reductions Needed to Achieve Target and Goal		**XX**	**XX**

Source: AECOM 2012

CHAPTER 3
EMISSIONS REDUCTION MEASURES

3

This chapter describes measures and actions necessary to reduce communitywide greenhouse gas (GHG) emissions, and achieve the City's 2020 and 2035 reduction targets. Most measures are designed to achieve quantifiable GHG reductions, while others are listed as supporting measures because they cannot be accurately quantified. To ensure proper implementation, each measure is accompanied by a description providing policy background and implementation details that articulate necessary actions; City departments with primary action responsibility; and progress indicator timelines to track implementation. The City will evaluate effectiveness of CAP measures and actions every three years and propose program modifications if necessary to achieve reduction targets.

Summary of Reductions

Table 3.1 summarizes GHG emission reductions anticipated from implementation of the measures and actions presented in this chapter, and the statewide reductions described in Chapter 2.

Table 3.1: Measures and Quantified Reductions

Energy Strategy		2020 (MT CO_2e/yr)	2035 (MT CO_2e/yr)
E-1. Existing Buildings			
E-1.2	Energy Efficiency Retrofit Outreach	324	889
E-2. New Construction			
E-2.1	New Construction Energy Efficiency	18	18
E-4. Building Appliances			
E-4.1	ENERGY STAR Appliances	73	120
E-4.2	Smart Grid	167	332
E-5. Building Cooling			
E-5.1	Building Shade Trees	37	63
E-7. Renewable Energy			
E-7.1	Solar Photovoltaic Systems	1,779	4,318
E-7.2	Solar Water Heaters	77	413
E-7.4	Community Choice Aggregation	TBD	TBD
E-8. Street and Area Lighting			
E-8.1	Street Light Upgrade	76	76
E-8.2	Traffic Light Upgrade	2	2
E-8.3	Parking Lot Lighting Upgrade	8	23
E-9. Municipal Actions			
E-9.1	Municipal Building Energy Efficiency	41	50
E-9.2	Wastewater Treatment Plant Process Energy Optimization	220	220
Energy Subtotal		**2,822**	**6,524**

Solid Waste Strategy		
Subtotal	**XX**	**XX**
Water Strategy		
Subtotal	**XX**	**XX**
Transportation Strategy		
Subtotal	**XX**	**XX**
Green Infrastructure Strategy		
Subtotal	**XX**	**XX**
SUBTOTAL CAP MEASURES	**XX**	**XX**
Statewide Reductions		
Renewable Portfolio Standard	5,713	7,041
2013 California Title 24 Standard	XX	XX
AB 1109 – Lighting Efficiency Program	1,499	1,592
AB 1493 – Pavley I and II	XX	XX
Low Carbon Fuel Standard	XX	XX
Vehicle Efficiency Regulations	XX	XX
SB-7X	XX	XX
Subtotal	**XX**	**XX**
TOTAL REDUCTIONS	**XX**	**XX**

Note: Subtotals and totals may not appear to add correctly due to rounding.

Emissions Reductions

PROGRESS TOWARD 2020 TARGET

The reduction measures, together with the communitywide effects of State and federal legislation in Suisun City, have the potential to reduce communitywide emissions by XX MT CO_2e/yr from projected 2020 levels. This progress achieves the City's 2020 reduction target (102,243 MT CO_2e/yr), and represents a X.X% reduction in emissions below 2005 conditions.

PROGRESS TOWARD 2035 TARGET

The reduction measures, together with the communitywide effects of State and federal legislation in Suisun City, have the potential to reduce communitywide emissions by XX MT CO_2e/yr from projected 2035 levels. This progress falls short of the City's 2035 reduction goal (62,549 MT CO_2e/yr), representing a X.X % reduction in emissions below 2005 conditions.

Measure Structure

This section of the CAP is organized according to four strategy areas: energy, transportation, water, and waste. These strategies represent the primary avenues by which to reduce communitywide GHG emissions in Suisun City. Each strategy area section begins with an introduction to the overarching concepts that tie that particular strategy to GHG emission generation and potential reductions. This strategy overview is followed by the specific measures and actions that translate the City's vision into on-the-ground implementation.

Reduction Measures

Measures define the programs, policies, and projects that the City will undertake to accomplish its GHG emission reduction goals. Each measure includes information related to GHG reduction potential, opportunities for regional implementation, sustainability co-benefits, and relative magnitude of cost.

Reduction Potential

The estimated annual emissions reduction potential of each quantifiable measure is provided for 2020 and 2035 in MT CO_2e/yr. Some measures have the same reduction potential for both horizon years because the underlying participation assumptions are held constant. Measures identified as "Supporting Measures" contribute to GHG reductions and are an important component of this CAP, but currently lack a methodology to quantify their emissions reduction potential. For example, the proposed sustainability coordinator position described in Measure E-9.3 is critical to the full implementation of other CAP measures, but it is not possible to accurately calculate the emissions reductions specifically related to that new staff position. Appendix B describes the methodology used to quantify emissions reductions.

Icons

Various icons are used to indicate measures that have regional implementation opportunities, sustainability co-benefits associated with the measures, and simple cost estimates for mandatory components of measures.

Regional Efforts

Measures that would benefit from a regional implementation strategy are denoted as Regional Efforts. The four participating cities (i.e., Suisun City, Dixon, Fairfield, and Rio Vista) could collaborate on implementing these measures to reduce overhead costs associated with new program development, or could partner with other regional agencies to create a sustainability coordinator position to oversee CAP implementation.

Co-Benefits

As described in Chapter 1, implementation of these measures will provide additional community benefits beyond their GHG reductions. The icons listed with each measure represent only a sample of the numerous co-benefits related to individual measures.

Cost Analysis

Some CAP measures require residents and local businesses to take action or direct the City government to develop and implement additional programs. Simple cost estimates (i.e., Low, Medium, High) for these mandatory actions are provided for informational

purposes to help weigh the potential costs and benefits of certain measures. Cost analysis was not performed for measures that describe current and on-going City programs and actions, or voluntary measures that rely on residents and businesses to make personal decisions regarding the importance and value of certain actions. Appendix C provides assumptions use to calculate these simple cost estimates.

Measure Background

The measure background section provides information about the specifics of a measure, including descriptions of various technologies or financing mechanisms. This section also provides information on currently available rebates and other financial incentives related to the measure, and describes any actions the City has taken to date towards implementation of that measure. Additionally, some descriptions provide guidance that will be used in program implementation, such as components of the outreach plan and which segments of the community should be targeted for inclusion.

Actions and Progress Indicators

Action steps and progress indicators are provided in a table following each measure description. Actions identify specific steps that the City will take to implement the measure. The table also identifies responsible departments that would be best positioned to lead or provide input for implementation of certain tasks. Measures that could be implemented by a regional Sustainability Coordinator, as described in Measure E-9.3, are identified should the participating cities secure funding for such a position. In most cases, an alternative responsible department is also listed in the event that a sustainability coordinator position cannot be established.

Progress indicators describe the specific action that is being quantified to estimate the reduction potential. These indicators enable City staff, the City Council, and the public to track implementation and monitor overall CAP progress. Progress indicators are provided for both 2020 and 2035, and are specifically described when possible (e.g., 500 single family homes will install a solar hot water heater). Progress indicators are not provided for supporting measures, which do not have quantifiable emissions reductions.

Reduction Strategies

The strategies identified in this Chapter affect issues within the City's direct influence. Each strategy is subdivided into various sub-strategy headings to help organize the reduction measures. Measures were developed by (a) evaluating existing community conditions, (b) identifying emission reduction opportunities within the community, (c) reviewing best practices from other jurisdictions and organizations, and (d) incorporating State and regional laws, guidelines, and recommendations. Suisun City's measures were also developed as part of a regional conversation between the cities of Dixon, Fairfield, and Rio Vista to provide as much consistency between the four cities CAPs as possible. The adopted CAPs for Solano County and the City of Benicia were also reviewed as part of the measure development process to lay the foundation for regional implementation efforts.

The emission reduction strategies are as follows:

- **Energy:** The Energy Strategy recommends ways to increase energy efficiency in existing buildings, enhance energy performance for new construction, and increase use of renewable energy.
- **Transportation:** The Transportation Strategy encourages transit, carpooling, walking, and bicycling as viable transportation modes to decrease the need to drive.
- **Water:** The Water Strategy promotes the efficient use and conservation of water in buildings and landscapes.
- **Waste:** The Waste Strategy increases waste diversion and recycling, reducing consumption of materials that otherwise end up in landfills.

Energy Strategy

The consumption of electricity for appliances, lighting, and cooling, and combustion of natural gas for heating, cooking, and other processes within residential, commercial, and industrial buildings generated approximately 34 percent of Suisun City's communitywide GHG emissions in 2005. These emissions can be reduced by improving energy efficiency in new and existing buildings and increasing the amount of electricity and heat generated from renewable energy sources.

In Suisun City, approximately 42%[i] of the housing stock was built before California's energy code, Title 24 Part 6, was first adopted in 1978. Consequently, the building stock offers considerable opportunity for cost-effective energy efficiency retrofits to decrease the use of both electricity and natural gas. The City plans to achieve building energy efficiency improvements in both existing and new buildings through a combination of community outreach and education, incentives, and regulations.

Pacific Gas and Electric Company (PG&E) is Suisun City's energy utility, providing both natural gas and electricity for residential, commercial, industrial, and municipal uses. PG&E provides electricity generated at hydroelectric, nuclear, renewable, natural gas, and coal facilities. As of 2011, natural gas facilities provided 25%; nuclear plants provided 22% of the total electricity supply; renewable energy facilities including solar, geothermal, and biomass provided 19%; large hydroelectric operations provided 18%; and unspecified sources provided the remainder[ii].

Under the provisions of SB 107 (2006), investor-owned utilities were required to generate 20% of their retail electricity using qualified renewable energy technologies by the end of 2010. In compliance with this mandate, PG&E will expand its renewable generation portfolio, making additional GHG-free electricity available to customers in Suisun City. In 2011, PG&E delivered 19% of total electricity from eligible renewable sources.

The City will encourage communitywide installation of rooftop solar photovoltaic (PV) and solar hot water systems to increase the portion of Suisun City's energy portfolio provided from renewable sources. The City will also explore installation of renewable energy facilities on municipal property to increase the generation of renewable energy in the community.

The total GHG emission reduction potential of the Energy Strategy is 2,822 MT CO_2e/yr in 2020 and 6,524 in 2035. This represents about X.X% percent of total 2020 reductions and X.X% of total 2035 reductions anticipated from CAP implementation.

E-1: Existing Buildings

MEASURE E-1.1: ENERGY EFFICIENCY AUDITS

Supporting Measure – Not Quantified

Encourage voluntary energy audits for residential and nonresidential buildings to identify cost-effective improvements.

Measure Background

Approximately 42%[iii] of houses in Suisun City were built before 1980, and therefore prior to or about the time of first adoption of California's Title 24 energy efficiency requirements. These homes are excellent candidates for energy-saving retrofits, which could be identified through energy audits.

Building energy audits can help identify and prioritize energy efficiency improvements by providing a building-specific list of retrofit options and their cost-effectiveness. Additionally, the California Energy Commission (CEC) developed the Statewide Home Energy Rating System (HERS) program to allow comparisons of the efficiency levels between California homes. A home's HERS rating is calculated as part of an energy audit, and informs homeowners and renters about energy efficiency much like the MPG metric allows comparisons of vehicles. This type of rating assists in estimating the relative utility costs associated with a home so that renters and buyers can factor those costs into their decision.

The City will partner with the Solano Center for Business Innovation to develop a comprehensive outreach campaign that describes the benefit of energy audits and available rebates, incentives, and financing options, such as PG&E's no- or low-cost energy audit programs for nonresidential customers and residential energy audit rebates available through Energy Upgrade California. Residential audits should be performed per the Whole House Energy Rating required by Energy Upgrade California. To help residents finance home energy audits, the City should pursue grant funding to provide a partial rebate for residents that voluntarily perform energy audits. Previous sources of funding have included Energy Efficiency Conservation Block Grants (EECBG) and the CEC.

As part of this outreach campaign, the City will identify neighborhoods with concentrations of older homes to help focus the outreach toward buildings that will receive the greatest energy savings. The City will also work with PG&E to identify large-energy users that would benefit from energy audits and could be eligible for PG&E's on-bill financing to install retrofit packages identified in the audit. For these larger energy customers, PG&E offers low- or no-cost energy audit services that include on-site analysis of energy consuming systems and customized calculations to help create a strategic plan for implementing projects. The City should also partner with local real estate professionals to help educate home buyers about the value of energy audits at the point of sale. Realtors should also be encouraged to include a home's HERS rating in the MLS listing.

	Action	Responsibility
A	Develop a comprehensive outreach campaign that describes the benefit of energy audits and available rebates, incentives, and financing options.	Solano Center for Business Innovation; Sustainability Coordinator
B	Pursue grant funding to provide a partial rebate for residents and businesses that voluntarily perform energy audits.	Solano Center for Business Innovation; Sustainability Coordinator
C	Identify neighborhoods with concentrations of older building stock to focus outreach campaign.	Community Development; Sustainability Coordinator
D	Work with PG&E to identify large-energy users that would benefit from energy audits. Leverage PG&E's on-bill financing option for nonresidential and municipal customers.	Community Development; Sustainability Coordinator
E	Partner with real estate professional groups to help educate home buyers and business owners about the benefits of energy audits at the point of sale.	Solano Center for Business Innovation; Sustainability Coordinator
F	Provide links on the City website to PG&E's do-it-yourself online energy audit program. (This information could be placed on a new Solano County Sustainability Webpage to leverage regional efforts.)	Community Development; Sustainability Coordinator

MEASURE E-1.2: ENERGY EFFICIENCY RETROFIT OUTREACH

2020 GHG Reduction Potential: **324 MT CO2e/yr**
2035 GHG Reduction Potential: **889 MT CO2e/yr**

Encourage voluntary energy efficiency retrofits in residential and nonresidential buildings through promotion of local efforts.

Measure Background

Energy efficiency improvements to residential and nonresidential structures can reduce both energy bills and GHG emissions. Many residences (approximately 65 percent[iv]) in Suisun City are owner–occupied, and thus the financial savings of home energy efficiency retrofits are in the long term economic interest of the homeowner. As such, the City will emphasize voluntary participation in energy efficiency retrofit programs, in lieu of mandatory programs. As part of the outreach program, the City will enhance its website by linking to information on existing energy efficiency rebates and other financial incentives, including PG&E incentives to businesses for energy efficiency improvements. The website could also contain local case studies of businesses that have completed cost effective energy efficiency improvements.

To encourage participation from residential homeowners, the City will partner with the Solano Center for Business Innovation to leverage Energy Upgrade California's educational materials and online platform that provides access to incentives, technical assistance, and qualified contractors. Typical rebates and incentives available to Solano County residents through Energy Upgrade California include PG&E's Basic and Advanced Retrofit Packages, pool pumps and motor rebates, efficient water heaters/blankets, HVAC upgrades, furnace upgrades, and wall insulation installation. The City will also promote resources such as California Flex Alert, the Department of Energy's (DOE) Weatherization Assistance Program for low-income households, and PG&E's SmartEnergy Analyzer™ program, all of which link residential property owners to

educational and financial resources. In addition, PG&E is working to a fulfill Goal 2.2 of the CPUC *Long-Term Energy Efficiency Strategic Plan*, which states, "By 2020, 100 percent of eligible and willing customers will have received all cost-effective Low Income Energy Efficiency measures."

Financing is critical to the success of the energy efficiency retrofit program. The City will continue to support the development of a Property Assessed Clean Energy program (see Measure E-1.3) to further promote energy efficiency retrofits. The City will also partner with local real estate professionals to inform homebuyers about the benefits of home energy audits and the availability of energy efficiency mortgages to finance installation of retrofit packages.

Action		Responsibility
A	Develop and maintain a Solano County Sustainability Website with information about current energy efficiency rebates and incentives (including links to PG&E and Energy Upgrade California rebate pages) and local energy efficiency improvement case studies. Leverage Energy Upgrade California outreach and educational materials.	Sustainability Coordinator
B	Provide training to Building Division counter staff regarding available sources of rebates/incentives and printed pamphlets or FAQ sheets.	Building Division; Sustainability Coordinator
C	Provide targeted outreach to low-income and elderly households with information about the federal weatherization program and statewide Energy Savings Assistance Program, and how improvements can increase occupant comfort levels and reduce utility bills.	Community Development; Sustainability Coordinator

Progress Indicators	Year
250 single-family houses install a comprehensive retrofit package; 750 single-family houses install a basic retrofit package; 40 multi-family units are upgraded with comprehensive retrofit; 100 multi-family units are upgraded with basic retrofit package; 58,000 sqft of nonresidential area installs a comprehensive retrofit package; 166,000 sqft of nonresidential area installs a basic retrofit package	2020
750 single-family houses install a comprehensive retrofit package; 2,300 single-family houses install a basic retrofit package; 125 multi-family units are upgraded with comprehensive retrofit; 325 multi-family units are upgraded with basic retrofit package; 166,000 sqft of nonresidential area installs a comprehensive retrofit package; 500,000 sqft of nonresidential area installs a basic retrofit package	2035

MEASURE E-1.3: PACE FINANCING PROGRAM

Supporting Measure – Not Quantified

Partner with the County in its pursuit to establish the Clean Energy Solano PACE program that would provide financing options for residential and nonresidential energy efficiency upgrades to existing buildings. Work with other Solano County jurisdictions to jointly pursue bond funding for a commercial PACE program through California FIRST.

Measure Background

A property-assessed clean energy (PACE) finance program is enabled through the AB 811 legislation. This bill allows land-secured loans for homeowners and businesses who install energy efficiency projects and clean-energy generation systems. Senate Bill 555 reinforced implementation opportunities for PACE programs by expanding the scope of activities allowed within a community facilities district, as defined by the Mello-Roos Community Facilities Act of 1982. A PACE program permits property owners within participating districts to finance the installation of energy- and water-efficiency improvements in their home or business through a lien against their property that is repaid through their property tax bill. If the property is sold, payment responsibility transfers to the new owners, allowing building owners to avoid up-front installation costs while at the same time requiring little or no investment of local government general funds. In some instances, the new lender may require repayment of the existing lien, in which case the remaining PACE loan is repaid from the proceeds of the property sale.

Suisun City is a participating member of the California FIRST program which allows PACE funding for commercial and multi-family residential projects. Suisun City would also be within the boundaries of the proposed Clean Energy Solano PACE program, which would make financing available to both residential and nonresidential projects.

An initial market analysis for the proposed Clean Energy Solano program estimated 3.5% participation in the first five years from both the residential and nonresidential sectors, which would lead to local economic benefits including approximately $19 million in state and local tax revenue, the creation of 2,700 new jobs, and the generation of 37 MW of local renewable energy. Furthermore, building owners who participate in the PACE program are not required to front the initial capital costs.

	Action	Responsibility
A	Opt into the County's PACE program as a participating member.	Community Development; Sustainability Coordinator; Solano EDC
B	Develop an outreach program describing available PACE financing options. Work with PG&E to identify large energy users to help focus outreach efforts.	Community Development; Sustainability Coordinator
C	Continue to participate in California FIRST to make PACE financing available to commercial, industrial, multi-family residential (5+ units), and nonprofit-owned buildings.	Community Development; Sustainability Coordinator

E-2: New Construction

MEASURE E-2.1: NEW CONSTRUCTION ENERGY EFFICIENCY

2020 GHG Reduction Potential: **18 MT CO_2e/yr**
2035 GHG Reduction Potential: **See Statewide Reduction**
2013 California Title 24 Standard

Encourage energy-efficient new construction through promotion of energy-efficient mortgages and technical assistance programs for developers.

Measure Background

California Building Energy Efficiency Standards (Title 24, Part 6, 2008) serve as the basis for mandatory building energy efficiency standards. The California Green Building Standards Code (CALGreen), effective in 2011, also provides the City with the option of adopting an energy efficiency standard that surpasses the State's basic requirements. CALGreen outlines two options: Tier I requires a building's energy performance to exceed Title 24 requirements by 15 percent, while Tier II increases this standard to 30 percent. Revisions to the Title 24 Standards will be adopted in 2013 and will go into effect in 2015.

Although a mandatory ordinance to exceed Title 24 Standards through adoption of the Tier I or II standards will not be established at this time, the City will promote energy efficient new construction through its technical assistance program that provides local builders with information on green building practices, specifically those which relate to energy- and water-efficient design and construction practices. PG&E also developed the Savings by Design program to encourage energy-efficient construction in new commercial buildings. The program offers a range of services to building owners and their design teams, such as design assistance, design team incentives, owner incentives, and educational resources for customized new construction projects that exceed California's Title 24 energy efficiency standards.

To further encourage new construction to participate in this program, the City will provide several green-building incentives described throughout this CAP, such as permit streamlining for installation of various technologies. The City will also consider developing a local green building recognition program to commend building owners that voluntarily exceed Title 24 Standards. The City will work with local real estate professional groups and area developers to provide information to home buyers about the benefits of energy efficiency mortgages, which allow homebuyers to finance the installation of energy efficient systems, such as solar photovoltaics or high-efficiency windows.

Action		Responsibility
A	Provide expedited plan-check for energy-efficient new commercial construction projects; define "energy-efficient" for plan-check purposes.	Building Division
B	Partner with local developers and realtors to distribute informational brochures about energy efficient mortgages to potential new home buyers.	Building Division; Sustainability Coordinator
C	Provide outreach to local developers, architects, and builders on PG&E's Savings by Design program.	Building Division
D	Consider establishing a local green-building recognition award for exemplary projects.	Building Division; Sustainability Coordinator

Progress Indicators	Year
25 new single-family residential buildings exceed 2008 Title-24 by 30%	2020

MEASURE E-2.2: SOLAR READY CONSTRUCTION

Supporting Measure – Not Quantified

Encourage builders to incorporate solar-ready design into new construction, including building orientation for maximum solar exposure, pre-wiring and pre-plumbing for solar PV and solar hot water, and roof system construction that can handle additional loads of future solar installations.

Measure Background

Increasing the use of distributed renewable energy systems (e.g., rooftop solar photovoltaic) prevents the combustion of fossil fuels to generate electricity, thereby reducing GHG emissions. Suisun City's location and geography result in a high solar insolation rating, which makes it an excellent candidate for effective adoption of solar technologies. The City can facilitate future installation of solar technologies by encouraging new construction to be oriented for maximum solar access, pre-wired and pre-plumbed to support PV systems and solar hot water systems, and constructed to support roof loads of solar installations. These front-end additions can reduce the cost of post-construction solar installations for homeowners. The City's technical assistance program described in Measure E-2.1 will provide information on solar-ready construction techniques.

	Action	Responsibility
A	Promote the City's technical assistance program for developers to help implement this measure (see Measure E-2.1).	Building Division

MEASURE E-2.3: CAP PROJECT COMPLIANCE CHECKLIST

Supporting Measure – Not Quantified

Clearly state the City's sustainability requirements for new entitlements in a checklist for use by production builders and developers to demonstrate compliance with the CAP.

Measure Background

One barrier to land development can be a lack of transparency or clear understanding of how to comply with various planning documents. The City will create a CAP compliance checklist to remove uncertainty for developers. The checklist will include features that could be incorporated into a plan prior to entitlement. The City could either identify mandatory features for inclusion that would guarantee entitlement, or could develop a point-based checklist that rates each feature relative to its GHG reduction potential and set a minimum score for entitlement. Checklist items could address a variety of topic areas, including community design and layout, building features, landscaping, and public infrastructure. The checklist should refer builders and developers to the City's technical assistance program for additional information on green design. The City should also meet with local production builders to discuss the City's GHG emissions targets and explain how to use the new checklist.

	Action	Responsibility
A	Develop a checklist of new construction requirements per the CAP's measure list. Identify additional, nonmandatory building and design aspects the City would like to encourage.	Community Development; Building Division
B	Consider developing a point-based checklist system whereby a project would receive expedited permitting if it achieved a certain score.	Community Development; Building Division
C	Facilitate group meeting with production builders to discuss GHG emissions targets.	Community Development; Building Division

E-3: Financing

MEASURE E-3.1: ENERGY EFFICIENCY REBATE PROGRAM

Supporting Measure – Not Quantified

Consider establishing a City or County rebate program to encourage implementation of energy efficiency retrofits.

Measure Background

PG&E currently offers rebates for various home energy efficiency improvements. In addition to PG&E rebates, numerous programs funded by state agencies and local governments are available to Solano County residents through the Energy Upgrade California program. The City will partner with other Solano County governments and agencies to identify gaps in existing rebate and incentive programs and jointly pursue funding to establish a local (e.g., Solano County) rebate program.

New rebates could be structured to encourage residents to buy goods or services from local businesses. For example, the City could develop an ENERGY STAR-rated appliance rebate program to supplement those currently offered through PG&E, by providing an additional $50 rebate for appliances purchased from local vendors. Alternatively, the new rebate program could be structured to address the building improvement needs of a specific building type, such as small commercial properties or multi-family residential buildings.

	Action	Responsibility
A	Identify rebate/incentive gaps in PG&E- and Energy Upgrade California-sponsored programs to identify local financing needs.	Community Development; Sustainability Coordinator
B	Identify an outside funding source to finance rebate program (e.g., EECBG, ARRA).	Community Development; Sustainability Coordinator

E-4: Building Appliances

MEASURE E-4.1: ENERGY STAR APPLIANCES

2020 GHG Reduction Potential: 73 MT CO_2e/yr
2035 GHG Reduction Potential: 120 MT CO_2e/yr

Promote voluntary installation of ENERGY STAR and other high-efficiency appliances.

Measure Background

As Title 24 Standards require building shells and systems to become even more efficient, energy consumption from appliances and electronics will become an increasingly important source for reducing building energy use and residents' utility bills. In 2009, approximately 28% of statewide residential electricity use was dedicated to appliances. Televisions, computers, and home office equipment accounted for an additional 20% of electricity use[v]. As big-screen televisions, smart phones, tablets, and other electricity-consuming devices become more commonplace in homes, their proportional share of home electricity use will likely increase as well. Installing ENERGY STAR appliances is one way to reduce energy use in this sector.

This measure is designed to encourage voluntary community participation to upgrade home appliances and lighting to ENERGY STAR or other energy efficient models. Successful implementation of this measure relies on leveraging the Energy Upgrade California program materials through a public outreach campaign to increase community awareness regarding energy efficient appliance choices. The ENERGY STAR rating is an internationally recognized standard for energy efficient consumer products. According to the EPA, devices that have an ENERGY STAR certification, such as office equipment, home appliances, and lighting products, generally use 20 to 30 percent less energy than required by federal standards. By promoting ENERGY STAR-rated home and business appliances, the City can help to reduce GHG emissions related to the use of lighting, refrigerators, dishwashers, clothes washers, wall air conditioning units, computers, photocopiers, lights, and other appliances.

Through Energy Upgrade California, PG&E currently offers rebates to customers who purchase ENERGY STAR dishwashers, clothes washers, refrigerators/freezers, ceiling fans, pool pumps, and room air conditioners. The City will partner with PG&E, Solano County Water District, local developers, and other relevant organizations to promote existing financial incentives and rebates for energy-efficient appliance upgrades and replacements.

Action		Responsibility
A	Collaborate with PG&E, Solano County Water District, and other local organizations to promote existing financial incentive programs to encourage voluntary replacement of inefficient appliances with new ENERGY STAR appliances.	Community Development; Sustainability Coordinator
B	Provide outreach to local developers regarding sources of available rebates to encourage installation of ENERGY STAR-rated major appliances in new residential construction.	Building Division; Sustainability Coordinator

Progress Indicators	Year
New residential construction installs energy-efficient appliances: 475 refrigerators; 625 clothes washers; 725 dishwashers; Existing residential units replace expired appliances with energy-efficient appliances: 2,300 refrigerators; 4,000 clothes washers; 6,000 dishwashers	2020
New residential construction installs energy-efficient appliances: 750 refrigerators; 1,000 clothes washers; 1,150 dishwashers; Existing residential units replace expired appliances with energy-efficient appliances: 4,000 refrigerators; 6,100 clothes washers; 7,750 dishwashers	2035

MEASURE E-4.2: SMART GRID

2020 GHG Reduction Potential: **167 MT CO_2e/yr**
2035 GHG Reduction Potential: **332 MT CO_2e/yr**

Encourage adoption of smart grid-compatible appliances and energy management systems to shift peak-load energy use.

Measure Background

The 'smart grid' is an emerging energy management system which uses information technology to significantly improve how electricity is managed and controlled. Smart meters, which use a technology that enables users to take full advantage of the smart grid, will eventually provide utility customers with access to detailed energy use and cost information, new time-of-use pricing programs based on peak-energy demand, and the ability to program home appliances and devices to respond to energy use preferences based on cost, comfort, and convenience.

Current smart meters allow for frequent remote reading of energy usage by PG&E. However, the true value of the smart meter program will be fully realized when community residents and businesses begin making more informed energy use decisions based on the two-way communication enabled by smart meters, such as when a homeowner is able to program their washing machine to run when energy prices are lowest.

All investor-owned utilities are rolling out time-of-use pricing, which offers lower utility rates to customers that switch discretionary energy use to off-peak times. Time-of-use pricing is mandatory for all commercial customers, and will eventually be offered to residential customers as well. PG&E currently offers the SmartRate pricing plan to residential customers, which offers lower prices per kWh to customers that agree to reduce electricity use on "SmartDays" when intense heat drives up air conditioning use and therefore, electricity prices. PG&E has also joined OPower, a social media technology provider that helps customers using smart grid technology to compare their energy use with neighbors. To support use of their various pricing programs, PG&E created the Green Button Connect program to allow customers to share their energy usage data with third-party app developers that already have products to help customers track and manage their energy use. The assumption is that customer access to their own energy use trends will support behavioral changes to energy consumption, which will lower customers' utility bills and lower PG&E's costs to provide energy.

When estimating the potential GHG emission reductions associated with implementation of the smart grid, the City included the energy efficiency improvements gained from integrating smart grid energy management systems for control lighting, heating, ventilation, and air conditioning and other major appliances in residential and commercial buildings. According to CISCO, a world-wide leader in network technology, full integration of the smart grid will take time to realize, but energy analysts estimate it will ultimately be capable of reducing electricity-related GHG emissions by 30 percent below current levels.

Through public outreach efforts and targeted outreach to the development community, the City will promote voluntary adoption of smart-grid technology for homes and businesses. The City will train Building Division staff on the benefits of smart-grid integration and provide informational materials on existing rebate programs.

Action		Responsibility
A	Develop an outreach program that leverages existing PG&E materials, including description of the O-Power Program. Make information available at Building Division counter.	Building Division; Sustainability Coordinator
B	Identify and advertise available rebates for smart-grid compatible appliances and systems on the County's Sustainability Website.	Building Division; Sustainability Coordinator

Progress Indicators	Year
1,150 residential units install smart-grid compatible appliances and systems; 215,000 sqft of commercial area installs smart-grid compatible appliances and systems	2020
2,700 residential units install smart-grid compatible appliances and systems; 500,000 sqft of commercial area installs smart-grid compatible appliances and systems	2035

MEASURE E-4.3: PERMANENT LOAD SHIFT

Supporting Measure – Not Quantified

Encourage participation in PG&E's Permanent Load Shift program to shift thermal cooling loads to off-peak and/or partial-peak hours.

Measure Background

PG&E's Permanent Load Shift program, often referred to as "Shift & Save," is to store thermal cooling capacity during off-peak hours and/or partial-peak hours in order to meet thermal cooling load in subsequent on-peak hours. The goal of this program is to shift 3.9 megawatts of load. The program's targeted customers are bundled service, commercial, industrial, agricultural, and large residential customers in PG&E's electric service territory. PG&E is working with Cypress Ltd. and Trane USA to implement this program.

The City will partner with PG&E to identify and provide outreach to local large-energy users that could financially benefit from participation in the program. The City will partner with the Solano Center for Business Innovation and the Solano Economic Development Corporation in its outreach activities to find regional efficiencies in

program expansion and application in other Solano County cities. A statewide Permanent Load Shift technology incentive program is currently under development; the City should monitor its progress to identify opportunities for local application.

	Action	Responsibility
A	Work with PG&E to identify large-energy users that would benefit from peak-load shifting technologies and/or strategies. Targeted customers are bundled service, commercial, industrial, agricultural, and large residential customers.	Building Division; Sustainability Coordinator
B	Monitor development of the statewide Permanent Load Shift program to identify opportunities for local application.	Building Division; Sustainability Coordinator

E-5: Building Cooling

MEASURE E-5.1: BUILDING SHADE TREES

2020 GHG Reduction Potential: **37 MT CO_2e/yr**
2035 GHG Reduction Potential: **63 MT CO_2e/yr**

Adopt a shade tree ordinance for new construction and develop a shade tree outreach campaign to encourage existing property owners to voluntarily plant shade trees.

Measure Background

Properly located trees can provide shading for residential and commercial buildings, and thereby reduce the need for air conditioning. The capacity of a tree to reduce GHG emissions is dependent on its age and species. As trees mature, their canopies increase in size and provide higher levels of shade and greater levels of building cooling in hot weather. Large, deciduous species are ideal for reducing building energy use as they provide shade in summer, but allow winter sunlight into buildings for passive solar gain in cooler weather. Additionally, trees gain carbon-capturing biomass in their trunks and roots as they absorb carbon from the air to grow.

The City will adopt a shade tree ordinance requiring new construction to plant trees to beneficially shade air conditioned buildings. The ordinance will allow the installation of building-integrated vegetation in lieu of shade trees. The City will also work with local organizations to promote voluntary shade tree planting at existing buildings. To facilitate proper implementation of this measure, the City will develop a shade tree planting guide to instruct home builders, developers, landscapers, building managers, and property owners on proper shade tree selection and placement to maximize building cooling opportunities while preserving solar access on the roof. Planting guidance should describe the selection of climate-appropriate species and proper siting specifications (i.e., S, SW, or W side of buildings; no more than 20’ from the building).

	Action	Responsibility
A	Amend the City's Development Standards per the new shade tree ordinance.	Planning Division
B	Work with local environmental and conservation groups to advertise the various benefits of planting shade trees near existing buildings.	Building Division
C	Develop a shade tree planting guide to facilitate proper tree selection and installation.	Building Division; Public Works

Progress Indicators	Year
2,600 new shade trees properly installed (does not include replacement trees for existing shade trees)	2020
4,400 new shade trees properly installed (does not include replacement trees for existing shade trees)	2035

MEASURE E-5.2: PARKING LOT SHADE TREES

Supporting Measure – Not Quantified

Develop a parking lot shade ordinance to reduce the urban heat island effect.

Measure Background

Heat islands can affect communities by increasing summertime peak energy demand, air conditioning costs, air pollution and greenhouse gas emissions, and heat-related illness and mortality. A primary contributor to urban heat islands is unshaded asphalt pavement, including streets and parking lots. These types of surfaces absorb heat from the sun during the day and radiate that heat back to the surrounding environment throughout the day and into the night, raising local air temperatures.

The City will replace its current parking lot landscaping requirements with a parking lot shade ordinance that requires shade tree or shade structure installation at multi-family and commercial properties such that 50% of the parking lot is shaded within 10 years.

	Action	Responsibility
A	Adopt a parking lot shade ordinance requiring shade tree or shade structure installation at multi-family and commercial properties; establish threshold for minimum percentage of the parking lot that will be shaded within 10 years.	Building Division

E-6: Building Lighting

MEASURE E-6.1: INDOOR LIGHTING EFFICIENCY

2020 and 2035 GHG Reduction Potential:
See Statewide Reduction AB 1109

Encourage voluntary adoption of efficient indoor and outdoor lighting technologies in residential and nonresidential buildings.

Measure Background

According to the 2009 California Residential Appliance Saturation Study, approximately 20% of residential electricity consumption is attributed to lighting[vi]. In nonresidential buildings, conventional commercial lighting, including T12 fluorescent bulbs and old exit sign lights, consume more energy than new T8 lights and light-emitting diode (LED) technologies. Lighting upgrades typically provide a short payback period for their investment, and are a good source of GHG emissions reductions.

The City will provide outreach and technical assistance to nonresidential property owners to encourage participation in PG&E's lighting upgrade program, which includes rebates for fixtures, lamps, accent/directional lighting, controls, and signage. The City will also provide outreach to multi-family property managers regarding lighting rebates through PG&E, including CFL replacement bulbs, activity sensors and timers, and replacing T-12 lamps with magnetic ballasts. Informational materials should demonstrate the simple-payback period associated with lighting improvements (typically 2-4 years). The City will also advertise PG&E's CFL rebate, or other lighting rebate programs, on the new sustainability website.

	Action	Responsibility
A	Develop lighting-efficiency informational materials that demonstrate the simple-payback period associated with lighting improvements and existing rebates. Post information on the Solano County Sustainability Webpage. Provided targeted outreach to large nonresidential building managers and multi-family property managers.	Building Division; Sustainability Coordinator
B	Leverage existing energy-efficient lighting rebate programs offered through Energy Upgrade California, including fixture and lamp replacements/installation, accent and directional lighting, security lighting, lighting control systems, and PG&E's residential CFL rebate program.	Solano Center for Business Innovation; Sustainability Coordinator
C	Encourage small businesses to participate in PG&E programs that provide technical assistance and access to incentives for energy efficiency upgrades (e.g., lighting).	Solano EDC

E-7: Renewable Energy

MEASURE E-7.1: SOLAR PHOTOVOLTAIC SYSTEMS

2020 GHG Reduction Potential: **1,779 MT CO_2e/yr**
2035 GHG Reduction Potential: **4,318 MT CO_2e/yr**

Facilitate the voluntary installation of solar PV systems on residential and nonresidential buildings.

Measure Background

Solar photovoltaic (PV) systems generate electrical power by converting solar radiation into direct current electricity using semiconductors. PV power generation employs solar panels composed of cells containing photovoltaic material. PV systems can be retrofitted into existing buildings, usually by mounting them on an existing roof structure or walls. Suisun City's solar potential is approximately 5.1 kWh/m^2/yr, which is sufficient to support a solar PV installation that would cover a large percentage of an

average home's electricity demand[vii]. In addition to residential rooftops, commercial and industrial rooftops tend to have large, flat roofs that are often well-suited for solar photovoltaic (PV). Parking lots also provide excellent opportunities for additional solar energy generation. According to PG&E data, Suisun City contains nearly 50 residential solar PV systems installed since 2005, with a total capacity of approximately 250 kW. The City also contains nonresidential solar PV systems totaling an additional 900 kW[viii]. However, numerous barriers may prevent widespread adoption of solar PV technology, including City regulations, up-front costs, misinformation or lack of information.

Financing is critical to the success of the solar PV program. Property owners will be able to finance their PV systems through various financing programs and rebates. As described in Measure E-1.3, the City will support the development of and participation in two PACE programs to further promote renewable energy systems for residential and nonresidential buildings. Other financing models, such as power purchase agreements (PPAs), can be used to offset the initial capital cost of installing a solar PV system. Solar PV rebates are available through the California Solar Initiative and its related programs: New Solar Homes Partnerships, Multifamily Affordable Solar Housing Program, and Single-Family Affordable Solar Housing Program. Rebate amounts vary, and are typically based on the installed system size and expected performance. Some rebate programs have variable rebate steps, which decline as PV installed capacity increases.

The City will develop a comprehensive solar PV program that encourages homeowners to install PV systems through outreach advertising available rebate and incentive programs. Outreach efforts will aim to maximize community participation from homeowners, builders, and businesses by leveraging existing educational materials and links to technical assistance and rebates and financing programs. The City will encourage homeowners to request free solar PV audits provided by private solar financing and installation companies. The City will also review and revise its zoning and building codes and other applicable ordinances to identify and remove regulatory barriers to solar installations (i.e., PV and solar hot water) on residential and nonresidential properties. The City will offer priority permitting for new solar PV systems to further reduce implementation barriers.

	Action	Responsibility
A	Review/revise all applicable building, zoning, and other codes and ordinances to identify and remove potential regulatory barriers to the installation of solar PV or solar hot water systems in residential and nonresidential construction.	Building Division
B	Provide priority permitting for building-scale renewable energy projects.	Building Division; Sustainability Coordinator
C	Develop a comprehensive outreach campaign to increase voluntary participation in solar PV installation programs, including a directory of existing rebates/incentive programs, explanation of simple-payback calculations for solar PV systems, and technical assistance. Leverage existing solar PV informational materials from Energy Upgrade California, the California Solar Initiative, and PG&E.	Building Division; Sustainability Coordinator
D	Develop informational materials about the benefits of PPAs offered through independent solar service providers. Post on the Solano County Sustainability Website, and make printed copies available at the Planning Department and Building Division counters.	Building Division; Sustainability Coordinator

Progress Indicators	Year
700 single-family units install 4.5kW PV system 3.0 MW capacity installed on nonresidential and multi-family buildings	2020
1,300 single-family units install 4.5kW PV system 9.2 MW capacity installed on nonresidential and multi-family buildings	2035

MEASURE E-7.2: SOLAR WATER HEATERS

2020 GHG Reduction Potential: **77 MT CO_2e/yr**
2035 GHG Reduction Potential: **413 MT CO_2e/yr**

Promote voluntary installation of solar water heaters in new construction and building retrofits through outreach campaign.

Measure Background

The effectiveness of a solar installation is described, in part, by its solar savings fraction (solar fraction). This measurement describes the percentage of a building's total energy demand that can be met through installation of a solar energy system. A 0% solar fraction indicates that no solar energy utilization is possible, while 100% would indicate full utilization of solar energy to meet building energy demand. Dixon has a 65% solar fraction for low-rise buildings (i.e., 1-2 stories) and a 44% solar fraction for multistory structures (i.e., 3 or more stories), indicating good potential for solar water heater applications[ix].

Solar water heating systems are a simple, reliable, and cost-effective method for harnessing the sun's energy to provide for hot water needs. Solar collectors, usually placed on the roof, absorb the sun's energy to heat water that is stored in a water tank. The State of California has recognized the value of solar hot water heaters. The California Solar Water Heating and Efficiency Act of 2007 (AB 1470), created a 10-year program aimed at installing solar water heaters in homes and businesses. AB 1470 was designed to lower the initial costs of purchasing a system, which averages around $3,000-$6,000.

Solar hot water systems can also be a cost-effective replacement for inefficient water heaters. According to the California Solar Initiative (CSI), solar hot water systems can lower energy bills by meeting 50 to 80 percent of hot water needs over a year. Though the high capital cost of solar water heater upgrades can pose a financial burden to homeowners, there are a range of financing and rebate options to offset these initial investment costs.

There are a number of financing options that may be used to reduce upfront costs, such as the PACE programs mentioned in Measure E-1.4, federal tax incentives through the Energy Policy Act of 2005, and financial incentives through the CSI-Thermal Program. Similar to the CSI solar rebate programs, the CSI-Thermal Program provides rebates for solar water heaters that decline in value as installation increases.

The Solar Water Heating Pilot Program, operated through San Diego Gas and Electric from 2007-2010, identified numerous barriers to the widespread adoption of solar water heating systems. In particular, participating contractors named permitting and

inspection costs and delays as a primary obstacle to widespread adoption for single-family residential buildings because non-material costs represented approximately 65% of total system costs. That means, only 35% of total costs were related to the actual system price. To help address this problem, the City will work to streamline the solar water heater permitting process.

The City will also work with PG&E to create outreach opportunities that provide information about the financial benefits of solar hot water heaters, describe existing financing options and rebate programs, and explain the City's efforts to encourage participation.

Action		Responsibility
A	Collaborate with PG&E and the California Solar Initiative - Thermal Program to develop an outreach program to maximize installation of solar hot water systems and leverage existing funding opportunities.	Community Development; Sustainability Coordinator
B	Streamline permitting process (e.g., building, electric, plumbing) for solar hot water system installation.	Building Division

Progress Indicators	Year
85 single-family residential units install solar hot water system; 15 multi-family units are served by solar hot water system;	2020
450 single-family residential units install solar hot water system; 75 multi-family units are served by solar hot water system	2035

MEASURE E-7.3: COMMUNITY CHOICE AGGREGATION

2020 GHG Reduction Potential: **Quantification Pending**
2035 GHG Reduction Potential: **Quantification Pending**

Support the County in its efforts to develop a community choice aggregation program to provide Solano County residents with a choice in their energy provider.

Measure Background

Solano County included a measure in its CAP to investigate the potential for a countywide community choice aggregation program (CCA). Assembly Bill 117, which was signed into law in 2002, enables California cities and counties, either individually or collectively, to supply electricity to customers within their borders through the establishment of a CCA. Unlike a municipal utility, a CCA does not own the transmission and delivery systems, but is responsible for providing electricity to its constituent residents and businesses. The CCA may own electric generating facilities, but more often, it purchases electricity from private electricity generators.

A key benefit of a CCA is that the participating jurisdictions can determine the amount of renewable energy contained within the generation portfolio. For example, a Solano County CCA could decide to provide 50% of its electricity from renewable sources, which would exceed State requirements directing California's utilities to provide 33% of their electricity from renewable sources by 2020.

Developing a CCA will require a detailed analysis of energy demand, efficiency opportunities, and renewable generation opportunities in Solano County. Using existing

models from other counties (e.g., Marin County) is likely to reduce the initial program design costs. The program would be most effective if the City partnered with other Solano County cities and the County government to jointly pursue a CCA program.

The City will work with the County and other interested participants in the preparation of feasibility studies, outreach campaigns, and other efforts to develop a countywide CCA.

Action		Responsibility
A	Work with the County to prepare necessary study reports, informational materials, and any other supporting research and/or documents to help pursue a CCA program.	Sustainability Coordinator

Progress Indicators	Year
X% of residential units use CCA Green Level (50% RPS); X% of residential units use CCA Deep Green Level (100% RPS); X% of nonresidential area uses CCA Green Level (50% RPS); X% of nonresidential area uses CCA Deep Green Level (100% RPS)	2020
X% of residential units use CCA Green Level (50% RPS); X% of residential units use CCA Deep Green Level (100% RPS); X% of nonresidential area uses CCA Green Level (50% RPS); X% of nonresidential area uses CCA Deep Green Level (100% RPS)	2035

E-8: Street and Area Lighting

MEASURE E-8.1: STREET LIGHT UPGRADE

2020 GHG Reduction Potential: **76 MT CO_2e/yr**
2035 GHG Reduction Potential: **76 MT CO_2e/yr**

Partner with PG&E to upgrade existing street lights to LED, induction, or other energy-efficient technology. Require new street lights to use energy-efficient technology.

Measure Background

Streetlights account for approximately 35% of the City's municipal electricity use[x]. High-pressure sodium bulbs, commonly used in streetlights, require more energy and have a shorter lifespan than new induction and/or light-emitting diode (LED) lights. The short simple-payback period associated with lighting upgrades makes this an easy measure to implement.

The City will develop a pilot program to upgrade streetlights to LED, similar to programs underway in the Cities of Dixon and Fairfield. The City will explore funding options through PG&E and the California Energy Commission to upgrade streetlights citywide. The City will also update its streetlight standards to require energy-efficient streetlights for new and replacement installations.

	Action	Responsibility
A	Develop a street light upgrade program that identifies funding sources and an implementation phasing schedule.	Public Works
B	Revise the City's street lights standards to include requirements for energy-efficient technology in new and replacement lamps.	Public Works

Progress Indicators	Year
100% of HPS bulbs are replaced with energy-efficient technology	2020 and 2035

MEASURE E-8.2: TRAFFIC SIGNAL UPGRADE

2020 GHG Reduction Potential: **2 MT CO_2e/yr**
2035 GHG Reduction Potential: **2 MT CO_2e/yr**

Develop a traffic signal upgrade pilot program to test available energy-efficient lighting technologies.

Measure Background

The City will develop a pilot program to replace the incandescent bulbs in traffic signals with LED bulbs. The City will consult with the Cities of Dixon and Fairfield on their traffic signal upgrade programs to identify best practices in technologies and financing options. Following a successful pilot program, the City will upgrade all traffic signals citywide with energy-efficient technology.

	Action	Responsibility
A	Consult with the Cities of Dixon and Fairfield regarding their traffic light upgrade programs for best management practice ideas.	Public Works
B	Implement pilot program at selected intersections to test results of available technology. Expand program citywide following pilot program.	Public Works

Progress Indicators	Year
100% of incandescent bulbs in traffic signals are replaced with energy-efficient technology	2020 and 2035

MEASURE E-8.3: PARKING LOT LIGHTING UPGRADE

2020 GHG Reduction Potential: **8 MT CO_2e/yr**
2035 GHG Reduction Potential: **23 MT CO_2e/yr**

Consider additional parking lot lighting upgrade projects in the future.

Measure Background

High-quality parking lot lighting is necessary to provide personal safety and deter theft and vandalism. However, conventional parking lot lighting, including high-wattage metal halide and high-pressure sodium lights, consumes more energy than new light-emitting

diode (LED) technologies, which provide comparable lighting quality at a fraction of the energy consumption.

The City will build upon its previous experience in parking lot lighting upgrades at municipal parking lots, and explore opportunities for additional upgrade projects. To finance future projects, the City could contract with an Energy Service Company (ESCO) to perform parking lot lighting energy audits and identify best available retrofit improvements. In most cases, the ESCO pays up-front costs associated with retrofit installation, further reducing financial risk to the City.

The City will also work with the Solano Center for Business Innovation to provide outreach to local businesses about the simple-payback period associated with parking lot lighting upgrades. Informational materials could include financial characteristics of the City's previously installed upgrades and potential resources for financing or rebates. PG&E's *Lighting Rebate Catalog* provides a comprehensive source for exterior lighting rebates, including fixtures and bulbs.

Action		Responsibility
A	Build upon the City's experience with their first parking lot lighting upgrade.	Public Works

Progress Indicators	Year
10% of parking lot lights are upgraded from HPS to energy-efficient technology	2020
25% of parking lot lights are upgraded from HPS to energy-efficient technology	2035

E-9: Municipal Actions

MEASURE E-9.1: MUNICIPAL BUILDING ENERGY EFFICIENCY

2020 GHG Reduction Potential**: 41 MT CO_2e/yr**
2035 GHG Reduction Potential: **50 MT CO_2e/yr**

Establish a goal to reduce business-as-usual electricity use in municipal buildings by 15%.

Measure Background

Reducing municipal energy use will reduce communitywide GHG emissions, save taxpayer dollars, and set an example for the successful implementation of energy-saving technology.

The City has already completed building energy audits to identify future potential for energy efficiency improvements. As described throughout this chapter, numerous financing options and rebate programs are available to fund energy-efficiency improvements. The City could also explore energy saving performance contracts to finance improvements. Under this type of agreement, an Energy Services Company (ESCO) completes building energy audits to identify the most cost-effective retrofit options. The ESCO guarantees the amount of energy that will be saved under a defined retrofit package, and further guarantees that the value of energy savings would be

sufficient to cover efficiency upgrade costs as long as the price of energy does not fall below a stipulated floor price. In most cases, the ESCO pays up-front costs associated with retrofit installation, further reducing financial risk to the City.

In addition to addressing building performance, the City could provide information and training to City employees on how to reduce energy consumption in the workplace. The City could conduct one campaign per year, ideally during National Energy Awareness Month in October, to educate employees about their energy consumption at work and ways to reduce consumption (e.g., turning off computers and monitors, turning off lights, using power strips). To incentivize participation, the City could consider advertising energy consumption trends during the campaign period and provide prizes for quantifiable reductions.

Action		Responsibility
A	Perform energy audits on select City buildings to identify future potential for energy efficiency improvements.	Building Division; Public Works
B	Consider hiring an ESCO to implement findings from previously completed building energy audits.	Public Works
C	Conduct City employee energy use reduction campaign and incentivize participation.	Public Works; Sustainability Coordinator

Progress Indicators	Year
Municipal building energy use is reduced by 240,000 kWh/yr from 2005 business-as-usual projections	2020
Municipal building energy use is reduced by 300,000 kWh/yr from 2005 business-as-usual projections	2035

MEASURE E-9.2: WASTEWATER TREATMENT PLANT PROCESS OPTIMIZATION

2020 GHG Reduction Potential: **220 MT CO_2e/yr**
2035 GHG Reduction Potential: **220 MT CO_2e/yr**

Continue to perform energy optimization audits at FSSD and implement audit results.

Measure Background

PG&E performs Integrated Energy Audits of wastewater treatment facilities to identify the most critical efficiency improvements and help sewer districts to select energy-saving projects and identify available financial incentives. PG&E helped the Fairfield Suisun Sewer District (FSSD) to save 1.3 million kWh/yr and install wind turbines with a 200 kW capacity. FSSD received $350,000 in incentives from PG&E, contributing to a simple-payback of 2.7 years for its energy efficiency projects[xi]. FSSD now budgets for regular energy audits to ensure their facility is operating efficiently.

Action		Responsibility
A	Continue to budget for regular Integrated Energy Audits on wastewater treatment plant operations.	FSSD

Progress Indicators	Year
Reduce energy use at FSSD by 1.3 million kWh from 2005 business-as-usual	2020 and 2035

MEASURE E-9.3: SUSTAINABILITY COORDINATOR

Supporting Measure – Not Quantified

Establish a full-time regional sustainability coordinator to monitor CAP implementation and promote regional sustainability efforts. Explore opportunities to partner with other Solano County governments on this effort (e.g., City of Benicia, Solano County).

Measure Background

Implementation of the measures described in this CAP will likely require an effort that surpasses the available capacity of existing City staff. Further, numerous measures are identified as "Regional Opportunities" that would benefit from collaboration among the different Solano County governments. Therefore, the City recommends creation of a regional sustainability coordinator position, which could oversee implementation of CAP measures that rely on regional collaboration.

The sustainability coordinator would act as a liaison between local governments, residents, and businesses in Solano County to implement and track progress of CAP measures and actions. A regional approach would provide implementation efficiencies on certain measures, and would also help to disseminate best practices information to the local governments regarding other measures. The sustainability coordinator could also act as the point of contact for various regional agencies, including STA, PG&E, the Solano EDC, and the Solano Center for Business Innovation. This would allow one person to gain experience in facilitating implementation of the various programs described throughout this CAP, as opposed to multiple employees of each local government having to coordinate their efforts.

In recent years, several city and county governments have been able to sponsor a full-time sustainability coordinator position through American Reinvestment and Recovery Act (ARRA) grant funding or similar programs. The City will collaborate with other local governments to identify and pursue grant funding to establish a regional sustainability coordinator position.

Action		Responsibility
A	Secure funding for regional Sustainability Coordinator position.	Community Development; Solano EDC
B	Coordinate with other Solano cities and the County to prioritize regional sustainability issues and programs for joint implementation.	Community Development; Solano EDC

E-10: Outreach

MEASURE E-10.1: PUBLIC OUTREACH

Supporting Measure – Not Quantified

Develop coordinated outreach campaign to fulfill the public outreach components recommended throughout this CAP.

Measure Background

Community engagement and effective participation are essential to the successful implementation of this CAP. During the CAP implementation period, the City will conduct outreach programs that involve residents and businesses in various activities, assessments, and actions.

Effective public participation will increase the likelihood that the measures recommended in this plan achieve estimated participation rates. Furthermore, Suisun City will see higher participation rates if outreach and education programs are adapted over time to meet the changing needs of the community. Increased participation rates will result in increased emissions reductions.

At the start of each fiscal year, the City will work with local stakeholders to determine the outreach priorities of the community, which could be a certain segment of the community (e.g., a group of neighborhoods, the agricultural community, the retail sector) or a specific action (e.g., carpooling, biking, lighting). Outreach priorities should be related to measures described in the CAP. The City will strive to designate at least one outreach event per quarter to address the chosen priority areas. The City could also designate one week per year to conduct a high-profile energy efficiency outreach campaign targeting a specific group. The campaign week could also be used to recognize community members that have implemented major improvements.

Numerous measures described in this chapter would benefit from a website that could serve as a central source of information on resource conservation strategies, technical assistance for a variety of topics, and a clearinghouse for rebates and other financial incentives to help implement CAP strategies. The City will partner with other local governments to develop a Solano County Sustainability Website that will be a resource for all residents and businesses in the county.

Action		Responsibility
A	Work with local stakeholders to determine the CAP outreach priorities for the year.	Community Development
B	Designate at least one outreach event per quarter to address the priority areas.	Community Development
C	Conduct a high-profile energy efficiency outreach campaign; recognize community members that have implemented major improvements.	Sustainability Coordinator
D	Partner with other Solano County governments to develop a county sustainability website.	Sustainability Coordinator

Transportation Strategy

To be developed following receipt of SGC grant funding

Water Strategy

To be developed following receipt of SGC grant funding

Waste Strategy

To be developed following receipt of SGC grant funding

Notes

[i] US Census, 2010.

[ii] PG&E, 2012. Available at: <http://www.pgecorp.com/sustainability/en03_clean_energy.jsp>

[iii] US Census, 2010.

[iv] US Census, 2010.

[v] California Energy Commission. *2009 California Residential Appliance Saturation Study.* Prepared by KEMA, October 2010.

[vi] California Energy Commission. *2009 California Residential Appliance Saturation Study.* Prepared by KEMA, October 2010.

[vii] National Renewable Energy Laboratory Renewable Resource Data Center, 2011.

[viii] PG&E. *PG&E Generation Interconnection Services Progress Report for Suisun City.* October 2012.

[ix] California Energy Commission. *Solar Water Heating CEC 2013 Title 24 Pre-rulemaking Workshop.* June 9, 2011.

[x] PG&E, October 2012.

[xi] PG&E. *Case Study: Fairfield Suisun Sewer District Integrated Energy Management.* August 2009.

CHAPTER 4

BENCHMARKS + IMPLEMENTATION

4

This chapter describes how the City will implement CAP emissions reduction measures and actions in the following sections:

- Implementation and Monitoring: Describes how City staff will implement CAP measures and related actions, and track the performance metrics identified for each measure.
- Program Evaluation and Evolution: Discusses the need to evaluate, update, and amend the CAP over time, so the plan remains effective and current.

Implementation and Monitoring

Ensuring that the CAP measures translate from policy language into on-the-ground results is critical to the success of the plan. To facilitate this, each measure described in Chapter 3 contains a table that identifies specific actions which the City will carry out, and the departments responsible for each action. The table also provides performance metrics to enable City staff, the City Council, and the public to track measure implementation and monitor overall CAP progress.

The tables provide both interim (2020) and final (2035) performance metrics. Interim performance metrics are especially important, as they provide checkpoints to evaluate if a measure is on the right path to achieving its GHG reductions.

The performance metrics are directly related to the estimated GHG emissions reductions. Therefore, they are written to provide a quantifiable measurement to accurately track progress toward the reduction target. For example, Measure E-7.3 requires all new residential construction to include solar water heaters, to the fullest extent possible, and requires all new single-family residential construction to include a 3 kW solar PV system. The measure's estimated GHG emissions reductions are based on numerous assumptions, including the amount of new residential buildings that will be built between 2005 and the 2020 target year. The performance metric assumes that 10% of the building stock in 2020 will be newly constructed and will include a solar hot water system as well as a 3.0 kW solar PV system installed. If any of the newly built homes install solar PV systems greater than 3.0 kW or install more efficient solar hot water systems by 2020, then additional emissions reductions will occur. Likewise, if solar hot water and solar PV systems are not installed on all of the homes, or systems that are less efficient or less than 3.0 kW are installed, then this measure will achieve less than its estimated reductions.

Upon adoption of the CAP, the City departments identified for each measure in Chapter 3 will become responsible for implementing assigned actions. Key staff in each department will facilitate and oversee this work, working in tandem with the proposed regional Sustainability Coordinator. To assess the status of City efforts, CAP plan implementation meetings should take place several times a year. Some actions will require inter-departmental or inter-agency cooperation, and appropriate partnerships will need to be established.

Program Evaluation and Evolution

The CAP represents the City's initial attempt to create an organized, communitywide plan to reduce GHG emissions. Staff will need to evaluate the program's performance over time and be ready to alter or amend the plan if it is not achieving its reduction target.

PROGRAM EVALUATION

Two types of performance evaluation are important: (a) evaluation of the community's overall ability to reduce GHG emissions, and (b) evaluation of the performance of individual CAP measures. Communitywide GHG emission inventories will provide the best indication of CAP effectiveness. It will be important to reconcile actual growth in the City versus the growth projected when the CAP was developed. Conducting these inventories periodically will enable direct comparison to the 2005 baseline inventory and will demonstrate the CAP's ability to achieve the adopted reduction target. The Community Development Department will prepare communitywide inventories every three to five years following adoption of the CAP to assess progress toward the GHG emissions reduction target.

While communitywide inventories provide information about overall emission reductions, it will also be important to understand the effectiveness of each measure. Evaluation of the emissions reduction capacity of individual measures will improve staff and decision makers' ability to manage and implement the CAP. The City can reinforce successful measures and reevaluate or replace under-performing ones. Evaluating measure performance will require data regarding actual community participation.

The proposed regional Sustainability Coordinator, in coordination with the Community Development Department, PG&E and Solano Water Agency, will evaluate measure performance on the same schedule as the communitywide inventories following adoption of the CAP, and summarize progress toward the GHG reduction target in a report that describes estimated annual GHG reductions in 2020, achievement of performance metrics, participation rates (where applicable), and remaining barriers to implementation.

The proposed Sustainability Coordinator (or Community Development Department staff) will report progress on the CAP action items to decision-makers on an annual basis. Staff will deliver this report in conjunction with the State-required annual report to the City Council regarding implementation of the City's General Plan. The progress report will include a cursory assessment of progress and implementation of individual CAP measures, including how new development projects have incorporated relevant measures. The progress report will identify measure gaps and recommend corrections on a more regular basis, through the addition of new CAP measures.

PROGRAM EVOLUTION

To remain relevant, the City must be prepared to adapt and transform the CAP over time. It is likely that new information about climate change science and risk will emerge, new GHG reduction technologies and innovative municipal strategies will be developed, new financing will be available, and State and federal legislation will change. It is also possible that future inventories will indicate that the community is not achieving its adopted target. As part of the evaluations identified above, the City will assess the implications of new scientific findings and technology, explore new opportunities for GHG reduction, respond to changes in climate policy, and incorporate these changes in future updates to the CAP to ensure an effective and efficient program.

Project Consistency with the CAP

The CAP identifies both mandatory and voluntary GHG reduction measures that would apply to different types of future projects.

Mandatory Measures

For each of the following mandatory measures, the CAP either reinforces the implementation of current codes and ordinances, or directs changes to the City's codes and ordinances that would result in GHG reductions:

- Measure E-5.1: Building Shade Trees
- Measure E-5.3: Parking Lot Shade Trees

All new projects would be required to comply with these codes and ordinances, as applicable.

Voluntary Measures

The remaining measures are essentially voluntary, relying on assumed levels of community participation to create communitywide GHG reductions. These measures will be tracked to ensure participation rates are reached and that the voluntary measures are being adequately applied to new and existing projects. If not, then additional, more aggressive actions will be necessary to correct shortfalls.

SOLANO
City-County Coordinating Council
Staff Report

Meeting of: November 8, 2012 **Agency/Staff:** Michelle Heppner, Solano County
Agenda Item No: VI.5.

Title /Subject: Approve CCCC Revised 2012-2013 Meeting Schedule and discuss the CCCC Work Plan for 2013

Background/Discussion:

The CCCC is asked to approve the DRAFT Revised 2012-2013 Meeting Schedule (Attachment A).

The Draft 2012 CCCC Work Plan (*Attachment B*) focuses on presentations and discussions on three general topic areas: state and federal budget and legislative impacts; Healthcare reform; and a workshop on Economic Development and Job Creation. Other topics that may be of interest include regional collaboration and Realignment Phase II. The CCCC is asked to review and comment on the Draft 2012 Work Plan. Staff will seek approval of the 2012 Work Plan at the next regularly scheduled CCCC meeting, proposed for January 11, 2013.

Recommendation: Approve the DRAFT CCCC Meeting Schedule; and receive and review the Draft 2012 CCCC Work Plan and provide feedback on the proposed focus and potential topics.

Attachment A: CCCC Revised 2012-2013 Meeting Schedule
Attachment B: CCCC 2013 Work Plan

Attachment A

SOLANO
City-County Coordinating Council

Revised Meeting Schedule

Meeting Location & time (unless otherwise scheduled):

Solano County Water Agency
810 Vaca Valley Parkway, Suite 203
Vacaville, CA 95688

2012 Meeting Dates

December 13	Special Meeting (Delta/Water Discussion)

Proposed 2013 Meeting Dates

January 10 (*Replaces February 14*)	Regular Meeting (RHNA Approval for ABAG February 1 deadline)
May 16	Regular Meeting
August 8	Regular Meeting
November 14	Regular Meeting

Attachment B

SOLANO
City-County Coordinating Council
2013 Work Plan – Draft 1

January 11, 2013

Proposed meeting topics:

- Adoption of the RHNA Resolution (ABAG)
- Adoption of 2013 CCCC State and Federal Legislative Platform
- Adoption of 2013 CCCC Meeting Work Plan
- Report on Governor's January State Budget Plan

Include informational items on agenda:

- CCCC 2013 Roster

March 14, 2013

Workshop on Economic Development / Job Creation (EDC / County)

May 16, 2013

Proposed meeting topics:

- Report on Governor May State Budget Revisions

August 8, 2013

Proposed meeting topics:

- Healthcare Reform

November 14, 2013

Proposed meeting topics:

- State and Federal Budget and Legislative Update
- Discussion of 2014 CCCC State and Federal Legislative Platform

Other Suggestions/Meeting Topics

Proposed meeting topics:

- Opportunities for Regional Collaboration
- Public Safety Realignment 2
- WRDA Dredging