Draft Climate Action Plan Errata

In responding to input from the staff at the Bay Area Air Quality Management District (BAAQMD) and the City of Vallejo, PMC is recommending several changes to the reduction measures. Some of the modifications that respond to agency comments result in fewer emission reductions and created the need for the City identify additional reductions to achieve by 2020. To compensate, we have proposed an approach that includes revised measures and additional measures to exceed the reduction target. The actual text changes are shown in Attachment 1 using revision marks that ~~overstrike~~ deleted text and underline new text. As summarized in **Table 1**, the recommended changes will allow the City to exceed the 15% reduction target by 2020. The updated GHG emissions reductions totals are presented in **Table 2**.

Table 1: Estimated GHG Adjustments:

Additional Reductions by 2020 ($MTCO_2e$)			
Measure	**Description**	**Increase**	**Decrease**
E-2	Tier 1 Building Standards (optional)	470	
E-3	Energy Monitors		2,600
E-4	Cool Roofs		90
RE-2	Community Choice Aggregation	21,950	
RE-2	RECO/CECO (optional)	14,790	
OT-1	Low Carbon Fuel Standard	16,620	
W-2	Rainfall treatment		n/a
TOTAL Potential Additional Reductions by 2020		**53,830**	

Table 2: Updated Overall GHG Emissions

Sector	2020 GHG Reductions (MTCO2e/yr)	2035 GHG Reductions (MTCO2e/yr)
City Government Operations	-4,200	-8,090
Community Engagement	0	0
Energy	-26,020	-42,280
Renewable Energy	-32,380	-60,030
Transportation Demand Management	-13,400	-19,220
Optimized Travel	-19,920	-22,540
Water, Wastewater, and Solid Waste	-8,920	-15,140
Off-Road Equipment	-388	-480
Total Reductions	**-105,228**	**-167,780**
Emissions Forecast	**650,340**	**728,170**
State Reductions	**-79,480**	**-143,540**
Local Reductions	**-105,228**	**-167,780**
Net Emissions	**465,632**	**416,850**
Percentage Change from 2008 Levels	**-21%**	**-29%**

E-1. Building Stock: Existing

Facilitate energy efficiency upgrades and retrofits in existing commercial, residential, and industrial buildings by connecting residents and businesses with technical and financial assistance.

2020 Greenhouse Gas Reduction:

-21,160 $MTCO_2e/yr$

2035 Greenhouse Gas Reduction:

-33,720 $MTCO_2e/yr$

City Cost:

Medium

City Savings:

Low

Co-Benefits:

Increasing the energy efficiency of buildings is the most cost-effective approach for reducing greenhouse gas emissions. Energy efficiency upgrades such as lighting retrofits, insulation, and heating and air conditioning replacements have demonstrated substantial energy savings and as little as a one- to five-year return on investment. The American Recovery and Reinvestment Act (ARRA) of 2009 allowed California to make great strides to the amount of financing, rebates, and incentives for energy efficiency upgrades. The new Energy Upgrade California program, debuted in early 2011, provides a "one-stop shop" for home and business owners to receive financial and technical assistance to upgrade properties.

Under this measure, the City will work with PG&E, Island Energy, and neighboring jurisdictions to connect residents and businesses with assistance for energy efficiency improvements. The City will also work to establish a Property Assessed Clean Energy (PACE) program. The PACE model is a financing mechanism that enables local governments to raise funds for energy efficiency and renewable energy projects in homes and businesses. Property owners apply for an energy upgrade or renewable energy installation. The cost of the upgrade is secured by a property lien and repaid as an addition to the property tax bill. The mechanism allows for energy efficiency upgrades at a low interest rate with no money down.

Existing Efforts in Support of E-1:

- Island Energy and PG&E currently offer rebates and incentives including those for Energy Star appliances like dishwashers, clothes washers, and air conditioners.
- Island Energy automatically enrolls Mare Island residential customers in the residential retail lighting program in which customers receive up to five compact fluorescent light (CFL) and two light-emitting diode (LED) light bulbs per household per year.

Implementation Actions:

- E-1.1. Connect businesses and residents with voluntary programs that provide free or low-cost energy efficiency audits and retrofit installations.
- E-1.2. Develop an outreach program to encourage participation in low-income weatherization programs.
- E-1.3. Work collaboratively with Solano County, other municipalities in the region, and the Association of Bay Area Governments (ABAG), and participate in regional energy efficiency

financing programs such as low-interest revolving loan funds, the California Comprehensive Residential Building Retrofit Program, or a Property Assessed Clean Energy (PACE) program that enables Vallejo property owners to obtain low-interest financing for energy improvements.

- E-1.4. Consider creating a Residential Energy Conservation Ordinance (RECO) and Commercial Energy Conservation Ordinance (CECO) to require point-of-sale energy audits and retrofits for all buildings that do not meet minimum energy efficiency requirements.

Potential Implementation Resources and Partners:

California Energy Commission, California Air Resources Board, California Public Utilities Commission, PG&E, ABAG

E-2. Building Standards

Require all new development to meet the minimum California Title 24 and California Green Building Standards Code requirements, as amended, and encourage new development to exceed the minimum requirements.

2020 Greenhouse Gas Reduction:

Supportive

2035 Greenhouse Gas Reduction:

Supportive

City Cost:

Low

City Savings:

N/A

Co-Benefits:

As described in CG-6, CALGreen is the California residential and commercial green building code. It includes requirements for the structural, plumbing, electrical, and mechanical systems of buildings and for fire and life safety, energy conservation, green design, and accessibility in and about buildings. The CALGreen Code includes a mandatory minimum code for green building and two tiers of voluntary measures to achieve greater energy efficiencies and other benefits. Tier 1 is a 15% improvement and Tier 2 is a 30% improvement over minimum energy efficiency requirements.

Under this measure, the City would require that new construction and specified remodels meet the minimum requirements of CALGreen and would encourage new development to meet the Tier 1 standards of CALGreen. PG&E completed a cost effectiveness study of CALGreen Tier 1 in 2010 and concluded that, regardless of the building design, occupancy, and number of stories, the incremental improvement in overall annual energy performance in Tier 1 buildings is cost effective. The additional cost of conforming with Tier 1 standards was determined to be paid back through energy savings in anywhere from 3 to 15 years, depending on the building type[1].

Existing Efforts in Support of E-2:

- None at this time.

[1] Pacific Gas and Electric Company, 2010.

Implementation Actions:

- E-2.1. Adopt the California Title 24 minimum requirements and encourage new construction and major remodels to adhere to a Tier 1 or Tier 2 standard of the CALGreen Code.

- E-2.2. Require newly constructedion buildings, and recommend that remodels over 50%, and tenant improvements to demonstrate compliance with the mandatory CALGreen Code requirements by completing a green building checklist when submitting a request for building permits.

- E-2.3.. Consider requiring new development to comply with the Tier 1 requirements of CALGreen, Part 11 of the California Building Standards Code. This optional measure may be necessary to address any shortfall in attaining reduction objectives.

Potential Implementation Resources and Partners:

California Energy Commission, California Association of Local Building Officials, US Green Building Council

E-3. Smart Meters

Increase the community's awareness and utilization of real-time energy consumption data available through PG&E's SmartMeter program.

Smart meters allow energy customers to discern their real-time energy consumption and use that information to save energy and money. The SmartMeter system relies on two-way communication between energy meters and the utility provider. The Smart Meter records hourly energy consumption and transmits it to PG&E. PG&E, in turn, can upgrade and read the SmartMeter remotely, which cuts down on administrative costs. PG&E's SmartMeter program is part of a statewide effort to upgrade California energy infrastructure and automate the process of energy metering. SmartMeters have already been installed in Vallejo homes and businesses.[2]

Smart grid integration will reduce energy demand through continuous feedback of real-time energy use. Research has shown that when building users are reminded of their energy use more frequently, higher energy savings will be achieved. Additional energy savings will be achieved through the installation of smart grid appliances that can be pre-programmed to run at off-peak energy times.

2020 Greenhouse Gas Reduction:

-~~5,650~~2,960 $MTCO_2e/yr$

2035 Greenhouse Gas Reduction:

-~~8,730~~5,220 $MTCO_2e/yr$

City Cost:

None

City Savings:

N/A

Co-Benefits:

Existing Efforts in Support of E-3:

- PG&E completed their installation of SmartMeters in Vallejo in early 2011.

Implementation Actions:

- E-3.1. Support PG&E's installation of SmartMeters on commercial and residential properties by informing the community of the GHG and energy cost-saving potential of the devices.
- E-3.2. Require newly construct~~edion~~ buildings and recommend that major remodels ~~to~~ install indoor real-time energy monitors.
- E-3.3. Inform the community of metering options, such as online applications and in-home monitors.
- E-3.4. Connect businesses and residents with rebate programs that give priority to appliances with smart grid technology.

Potential Implementation Resources and Partners:

PG&E, Island Energy, California Air Pollution Control Officers Association (CAPCOA), CPUC, CEC

[2] PG&E 2011.

E-4. Cool Roofs and Pavements

Increase tree planting and the use of cool roofs and cool pavement materials to reduce the urban heat island effect and corresponding energy consumption. Implement tree replacement policy for projects where tree removal is necessary.

Dark materials like asphalt absorb and retain more heat from the sun than white or reflective materials. In urban areas like Vallejo with a large amount of pavement, this can cause temperatures to increase dramatically during hot summer and fall days, which causes increased energy consumption for air conditioning. "Albedo" is a measurement of the solar reflectivity of a material. High albedo pavements, or "cool pavements," have high solar reflectivity and result in cooler urban temperatures.[3]

This measure requires the use of high albedo paving materials whenever possible in parking lots, street medians, sidewalks, and roadway improvements. According to a report by the U.S. Environmental Protection Agency (EPA), high albedo materials can be comparable in cost and durability to traditional asphalt, depending upon the technology used.[4] California has required white-colored material for flat roofs since 2005. Surfaces eligible for replacement with high albedo materials can include parking lots, sidewalks, driveways, and roads.

2020 Greenhouse Gas Reduction:

-220~~310~~ $MTCO_2e/yr$

2035 Greenhouse Gas Reduction:

-390~~580~~ $MTCO_2e/yr$

City Cost:

Low

City Savings:

None

Co-Benefits:

Existing Efforts in Support of E-4:

- The City implements the California Green Building Standards Code, which requires white roofs for most new development.

Implementation Actions:

- E-4.1. Actively inspect and enforce state requirements for cool roofs on residential and nonresidential roofing projects. Require new buildings to meet Title 24 and recommend new buildings meet CALGreen Tier 1~~minimum~~ requirements for cool roofs, which require a minimum solar reflectance index (SRI) of 10 for steep slope roofs and 64 for low slope roofs.

- E-4.2. Establish standards for new development and major remodels (to be defined) to reduce exterior heat gain for 50% of non-roof impervious site surfaces (roads, sidewalks, courtyards, parking lots, driveways) through one or more of the following mechanisms:

    - Achieve 50% paved surface shading within five to ten years by planting trees and other vegetation and/or installing solar panels or shading structures above parking.

[3] Akbari 2009.

[4] EPA 2005.

    - Use paving materials with an SRI of at least 29 for all surfaces.

- E-4.3. Maintain and expand Vallejo's urban forest, including street trees and trees on private property.

- E-4.4. For public improvements and public projects, require the use of high albedo paving material for sidewalks, roads, crosswalks, parking lots, and driveways

Potential Implementation Resources and Partners:

University of California Pavement Research Group, California Department of Transportation (Caltrans), CEC

RE-2. Renewable Energy Financing

Connect residents and businesses with renewable energy incentives and low-interest financing mechanisms.

Many local governments, including the County of Solano, elected to participate along with the Association of Bay Area Governments (ABAG) in the California FIRST program, which allows qualified residential and commercial property owners to repay the cost of solar energy systems through a voluntary increase on their property tax bill. Equipment and installation costs of a renewable energy system are provided for approved applicants. In turn, the property owner's property tax bill is increased to repay the cost of the energy project plus interest. If the property is sold, both the renewable energy system and the remaining debt stay with the property.

However, major mortgage lenders closely associated with the federal government are currently preventing the use of PACE programs on federally backed mortgages. Nonetheless, the State of California is pursuing legal action in support of PACE programs, and some local jurisdictions including nearby Sonoma County continue to successfully operate this type of program for commercial properties. It is assumed that the federal barriers to PACE financing will be overcome in the next few years, or that an alternative financing mechanism with be made available.

2020 Greenhouse Gas Reduction:

-3210,860910 $MTCO_2e/yr$

2035 Greenhouse Gas Reduction:

-1960,9300 $MTCO_2e/yr$

City Cost:

Low

City Savings:

Mid-Term

Co-Benefits:

Existing Efforts in Support of RE-2:

- Vallejo has attempted to participate in current retrofit financing programs, but has been delayed.
- Support for the PACE program remains high at state, regional, and local levels.

Proposed Efforts in Support of RE-2:

- Connect property owners with low-interest financing opportunities for renewable energy installations.
- Establish a comprehensive renewable energy program that would allow the community of Vallejo to increase the community's use of locally produced renewable energy through community choice aggregation or other measures.

Implementation Actions:

- RE-2.1. Participate in a regional financing program such as the Property Assessed Clean Energy (PACE) program or equivalent that achieves similar results to provide low-interest financing for renewable energy installations.
- RE-2.2. Designate a City staff person to coordinate local inquiries regarding the regional financing program.

- RE-2.3. Train Planning and Building staff members on available state, regional, and utility-led financing mechanisms and incentives/rebates.

- ~~Action~~RE-~~-~~2.~~45~~. Collaborate with neighboring jurisdictions and Solano County to explore the feasibility and cost of a Community Choice Aggregation program.

- ~~Action~~ RE-2.~~56~~. Set a renewable power generation goal for the City to increse community-wide energy generation.

- RE-2.6. Work with Solano County to identify the benefits and costs of a community choice aggregation program and establish a stakeholder advisory group.

Potential Implementation Resources and Partners:

Solano County, California Solar Initiative rebate program, CEC, CARB, Yolo-Solano Air Quality Management District

OT-1. Efficient and Alternative Fuel Vehicles

Support the expanded use of efficient and alternative fuel vehicles.

Alternative fuels include hybrid electric, plug-in hybrids, compressed natural gas, biodiesel, hydrogen fuel cell, and all electric. Depending on their fuel source and design features, the cleanest burning of these vehicles are classified as zero emission vehicles (zev) or partial zero emission vehicles (pzev).

2020 Greenhouse Gas Reduction:

-169,62890 $MTCO_2e/yr$

2035 Greenhouse Gas Reduction:

-1741,83700 $MTCO_2e/yr$

City Cost:

Low-Mid

City Savings:

None

Co-Benefits:

N/A

Existing Efforts in Support of OT-1:

- The City of Vallejo has purchased hybrids for the City fleet and efficient diesel buses.

Additional Efforts in Support of OT-1:

- Support the State's implementation of the Low Carbon Fuel Standard and facilitate the use of alternative fuels in Vallejo.

Implementation Actions:

- OT-1.1. Support use of high-occupancy vehicle (HOV) lanes by fuel-efficient and alternative fuel vehicles designated as zero or partial zero emission vehicles by CARB through adoption of Climate Action Plan policies and participation on the Metropolitan Transportation Commission and other regional agency committees.

- OT-1.2. Revise parking requirements for public and newly constructed commercial developments to include designated stalls for low-emitting, fuel-efficient vehicles and carpool/vanpool vehicles for a minimum of 8% of total parking capacity and develop pre-wire stalls for future electric vehicle charging for 2% of total parking capacity.

- OT-1.3. Encourage new gas stations and automotive uses to include biodiesel facilities and/or offer biodiesel retrofits to diesel vehicles.

- OT-1.4. Consider creating refueling stations to provide biodiesel fuel, compressed natural gas, or liquefied natural gas.

Potential Implementation Resources and Partners:

CEC, CARB, Bay Area Air Quality Management District, Yolo-Solano Air Quality Management District, ABAG

W-2. Development Standards for Water Conservation

Require water conservation in all new buildings and landscapes.

CALGreen has established conservation standards through the Building Code. This measure calls for the City to adopt the minimum requirements of CALGreen for water conservation, which will achieve 20% water savings.

2020 Greenhouse Gas Reduction:

-40 $MTCO_2e/yr$

2035 Greenhouse Gas Reduction:

-90 $MTCO_2e/yr$

City Cost:

Low

City Savings:

Medium

Co-Benefits:

Existing Efforts in Support of W-2:

- Water districts have recommended action be taken in the face of drought. The City of Vallejo has been engaged in water conservation practices in the city.

Implementation Actions:

- W-2.1. Per the minimum requirements of the 2010 CALGreen Code, ensure that all new non-residential buildings larger than 50,000 square feet install individual water meters for each tenant space projected to consume more than 100 gallons per day.

- W-2.2. Per the minimum requirements of the 2010 CALGreen Code, ensure that new non-residential facilities with 1,000 to 5,000 square feet of irrigated landscaped space provide an additional water meter or submeter for landscaping uses.

- W-2.4. Revise development standards to ensure the use of greywater, recycled water, and rainwater catchment systems are allowed in all zones.

- W-2.5. Per the voluntary~~minimum~~ requirements of the 2010 CALGreen Code, ~~require~~ encourage newly constructed development to treat at least 40% of the average annual rainfall on-site through low impact development strategies.

- W-2.6. Per the minimum requirements of the 2010 CALGreen Code, require a minimum of 20% of the total parking, walkway, and porch area surfaces serving single-family and multi-family residential buildings under 4 units to be permeable to facilitate on-site retention of water and reduce water run-off.

Potential Implementation Resources and Partners:

Department of Water Resources, CALGreen, VSFCD