

# ATTACHMENT A

## Municipal Climate Action Plan Discussion and Financial Analysis (REF120044)

### Background

In 2006 the California Legislature passed Assembly Bill 32 (AB32), known as the California Global Warming Solutions Act. AB32 required the State to reduce Greenhouse Gas Emissions (GHG) to 1990 levels by 2020. Since AB32 was adopted, the California Air Resources Board (CARB), the California Energy Commission (CEC), the California Public Utilities Commission (CPUC) and the Building Standards Commission have been developing regulations to help meet the goals of AB 32. The Governor's Office of Planning and Research has prepared and adopted a scoping plan that identifies specific measures to reduce GHG emissions to 1990 levels. The scoping plan recognizes that local governments play a key role in reducing GHG emissions.

In 2010, Monterey County adopted the 2010 General Plan that applies to the non-coastal areas of the County. An Environmental Impact Report (EIR) on the General Plan was prepared and certified. Complying with the California Environmental Quality Act (CEQA) and the direction of the State (through AB32, the scoping plan, and other relevant legislation), the General Plan EIR considered the impacts of GHG emissions that could potentially result from development anticipated within the General Plan and identified mitigation measures which were added as policies to the General Plan. These policies include OS-10.15 which requires the County to adopt a Greenhouse Gas Reduction Plan for County Operations, identifying how the County will reduce GHG emissions associated with County operations by at least 15% from 2005 levels by 2020 (15% reductions from 2005 levels are generally considered to be equivalent to 1990 levels).

The Monterey County Municipal Climate Action Plan; Greenhouse Gas Reduction Plan for County Operations (MCAP) implements Policy OS-10.15 of the 2010 General Plan. More specifically, the MCAP provides information specific to County Government operations including 2005 GHG emissions (baseline emissions), a 2020 "Business As Usual Forecast" (assumes no action is taken to reduce emissions), and a plan containing specific measures outlining how Monterey County will reduce GHG emissions to target levels.

### Overview

Financial concerns and feasibility of implementation of GHG reduction measures played a key role in preparing the draft MCAP. Fortunately, Monterey County has been active in pursuing upgrades and programs that reduce GHG emissions since 2005 (the baseline year) in advance of formal guidance in the form of an adopted MCAP. Programs and upgrades already implemented since 2005 were identified in the draft plan and quantified so that the County can take credit for these upgrades and quantify the current status

related to meeting the 15% reduction target. Measures already implemented prior to the preparation of this report and 2005 are not analyzed in terms of financial impacts because those upgrades, products, programs, and labor costs have already been budgeted and accounted for. The following is a brief description of some of the key measures implemented between 2005 and October of 2013:

1. Implementation of the Association of Monterey Bay Area Governments (AMBAG) Energy Watch measures including lighting retrofits at County facilities. This measure was funded through the AMBAG Energy Watch program, a program funded by Pacific Gas & Electric Company grants;
2. Preparation of Energy Efficiency Audits and implementation of select measures including mechanical retrofits and installation of solar panels at the Laurel Yard funded through an Energy Efficiency and Conservation Block Grant (EECBG) administered by the Department of Energy; and
3. Preparation of an Energy Efficiency Audit of the Natividad Medical Center funded by Pacific Gas & Electric Company grants. Several of the recommended upgrades have been installed at Natividad through their Engineering and Safety division.
4. Installation of electric vehicle charging stations at the Agricultural Commissioner's Office and at the County Government Center. Partially funded by Air District Grants.

Several other programs have been implemented that have resulted in GHG reductions but can not be specifically quantified due to lack of data or variability in participation. These include, among other things, a Climate Friendly Purchasing Policy and Green Building requirements. While not quantifiable these measures are expected to provide GHG reductions in the future.

The quantified reduction measures implemented by the County to date have been added to State-wide programs that will have local GHG benefits. State-wide programs include the Renewable Portfolio Standards which will make energy production for local consumption cleaner and Pavley I and II, the Clean Cars standards and the Low Carbon Fuel standards, which will result in more fuel efficient vehicles and fuel with less carbon content reducing GHGs from employee commutes and County fleet emissions.

The reduction measures completed by the County since 2005, together with the State-wide measures, have accounted for approximately half of the reductions needed to achieve the 15% reduction target. The draft MCAP identifies several key upgrades and programs that the County could implement between now and 2020 to fully achieve the 15% goal. These measures were selected in consultation with key County Departments based on projects already being considered that have GHG benefits, existing staffing levels, feasibility of implementation of the measures, and projects that will have substantial benefits in comparison to fast returns on the investments. The measures are described in further detail below. The MCAP is intended to guide financing and Capital improvement projects over the next seven years (through 2020) and the measures within the Plan are intended to be options that the County could implement to achieve the 15%

reduction target. Through tracking and reporting mechanisms within the MCAP, the County could pursue and implement other measures not identified in the plan, identify those projects GHG benefits, and apply them to the ultimate 15% reduction target.

### **Reduction Measure Costs**

The Municipal Climate Action Plan (MCAP) contains three (3) scenarios that the County could follow to achieve the desired Greenhouse Gas (GHG) reduction goals. The three (3) scenarios contain some combination of five (5) key measures that, if implemented, would help the County reach the 15% reduction goal. Some of the measures contain multiple subsets or projects within them like the EECBG audit measures and the Natividad audit measures. The MCAP assumes that the County will seek grant funding opportunities and other forms of revenue generation to help finance the proposed reduction measures. The following is a summary of the projects or measures contained in the MCAP and the approximate costs associated with them, excluding any grants or other funding sources and excluding staff time and costs associated with project management:

1. Public Works Audit measures not already completed as part of the EECBG Grant.
  - Total estimated cost of all measures is approximately \$2.5 million.
2. Purchase two electric vehicles for the County fleet and installation of charging stations.
  - Total estimated cost including two level II charging stations is approximately \$150,000
3. Installation of Building Energy Management Systems in major County facilities.
  - Costs vary based on facility size and use but generally range from \$30,000 to \$80,000 per facility with a total estimated cost of \$1,560,000
4. Implementation of measures from the PG & E audits for Natividad, which have not already been implemented.
  - Total estimated cost of all measures is approximately \$800,000.
5. Retrofitting existing public street lights and park lights.
  - Total estimated cost \$120,000 (based on a 1,000 fixture estimate)

The total costs of all recommended measures is approximately \$5,000,000. Funding is not expected to be entirely provided by the County General Fund, although that is one option. It is anticipated that the County will seek grant funding to offset some or all of the costs of implementing the measures. Additionally, the County has been exploring the possibility of revenue sharing agreements. Under a revenue sharing agreement, a contractor would implement the measures in exchange for payments in the form of utility payments at the pre-project level. This would mean that the contractor would be paid in the difference between pre-project utility costs and post-project utility costs over the course of a defined period or the life of the project. The County would benefit from more efficient buildings, reduced GHG, and no cost implementation but would continue to pay for utilities at existing levels.

As can be gleaned from the revenue sharing discussion, each measure contains some form of long-term financial savings from reduced energy bills or reduced fuel consumption that, when combined with rebates (if available), can often pay for the initial

cost of the measure. This cost recovery is often measured in terms of the initial costs of the project divided by the estimated monthly cost savings that the project will have providing a time period over which the initial investment is recuperated from monthly savings (“Simple Payback”).

Estimated costs and simple payback periods were contained within the Public Works Audits and the Natividad Medical Center Audits, although these estimates may be out-of-date. The Public Work Audits included cost estimates and simple payback periods for the installation of building energy management systems in seven different County facilities which has provided the data for the larger Building Energy Management System measure. The electric vehicle costs were estimated using data gathered during past efforts and current efforts to seek funding for installation of electrical vehicle charging stations and a general internet search for suggested retail prices of current electrical vehicle models. The lighting retrofit estimates are based on the difference in costs between a standard light and an energy efficient light. When it comes to programs such as the lighting upgrades or “greening the fleet” it is anticipated that the County will replace lights and vehicles on the normal maintenance schedule without undertaking an expensive one-time overhaul.

The following tables provide a break down of the estimated costs for each measure, simple payback period, and anticipated GHG reductions. Grants or other funding opportunities and staff time associated with contract management are not factored in. All figures are estimates based on available data.

1. *Public Works Audit measures* contained 48 specific projects 11 of which were completed as part of the Energy Efficiency Conservation Block Grant (EECBG) awarded by the Department of Energy (DOE) grant activities leaving 37 remaining projects. The audits covered 14 major County facilities.

**Table 1 - Public Works Audit Measures (2013-2020)**

Measure Number	Measure Description	GHG Reductions (MTCO <sub>2</sub> E)	Cost Estimate	Simple Payback (years)
BE-2	Building Energy Management System at Correctional Facility	28	\$54,000	4.5
BE-4	Replace heating unit – recirculating at Correctional Facility	9	\$111,000	29.2
BE-6	Replace Heating unit –women’s dayroom at Correctional Facility	11	\$37,000	9.1
BE-7	Building Energy Management System at New Jail	16	\$72,000	13.7
BE-11	ACU-1 replacement at New Jail	3	\$30,000	5.7
BE-12	Expand Building Energy Management System at Public Safety Building	60	\$47,000	3.4
BE-14	Replace AC-1 through AC-5 at Public Safety Building	57	\$360,000	9.0
BE-15	Replace 5-ton, single zone units at Public Safety Building	2	\$64,000	21.5

BE-16	Building Energy Management System at Probation Headquarters	9	\$80,000	32.3
BE-18	Building Energy Management System at Juvenile Intake	4	\$80,000	92.0
BE-20	Replace baseboard heating valve – Secretary’s office at Probation Juvenile Intake	1	\$2,500	4.4
BE-23	Replace 15-yearold packaged AC units at Probation Youth Center	2	\$77,500	72.8
BE-24	Heating, ventilation, and air conditioning (HVAC) Duct Work at DSES Seaside Office	-	\$57,000	29.5
BE-25	Replace units AC-1, 3, 5, & 6 at DSES Seaside Office	2	\$101,000	28.1
BE-26	Replace older HVAC units at Agricultural Commission Facility	3	\$170,000	59.2
BE-27	Replace hot water heaters at Animal Shelter	13	\$54,000	5.7
BE-28	Building Energy Management System at Animal Shelter	32	\$43,000	1.8
BE-29	Building Energy Management System at Marina Coastal Office	4	\$44,500	7.8
BE-31	Interior lighting retrofits at Adult Rehab Facility	8	\$57,000	14.1
BE-32	Interior lighting controls at Adult Rehab Facility	1	\$6,000	14.9
BE-33	Interior lighting retrofits at Correctional Facility	34	\$194,000	10.7
BE-34	Interior lighting controls at New Jail	2	\$31,500	35.0
BE-35	Interior lighting retrofits at New Jail	41	\$174,500	7.9
BE-36	Outdoor lighting improvements at Adult Rehab Facility	17	\$83,500	8.1
BE-37	Outdoor lighting improvements at Correctional Facility	13	\$74,000	9.0
BE-38	Outdoor lighting improvements at New Jail	8	\$68,500	11.2
BE-39	Outdoor lighting improvements at Public Safety Building	3	\$19,500	6.8
BE-40	Outdoor lighting improvements at Probation Facility	3	\$15,000	6.7
BE-41	Outdoor lighting improvements at Probation Juvenile Intake Facility	2	\$12,000	7.7
BE-42	Outdoor lighting improvements at Probation Juvenile Detention Facility	0.4	\$3,500	7.5
BE-43	Outdoor lighting improvements at Probation Youth Center	5	\$18,500	4.5
BE-44	Outdoor lighting improvements at DSES Seaside Office	5	\$22,000	5.1
BE-45	Outdoor lighting improvements at Agricultural Commission Facility	8	\$51,000	7.0

BE-46	Outdoor lighting improvements at Animal Shelter	6	\$48,000	8.4
BE-47	Outdoor lighting improvements at Marina Coastal Offices	3	\$14,000	5.3
BE-48	Outdoor lighting improvements at Laurel Yard Facility	16	\$73,500	5.7
Total		491	\$2,451,000	-

\* Data submitted by the Resource Management Agency – Public Works

2. Purchase *two electric vehicles* to replace existing combustion engine vehicles in the County fleet. In order to operate electric vehicles, charging stations must be provided. Two level II charging stations are included. Also, since the vehicles will be purchased instead of a combustion engine vehicle rather than in addition to them, the cost of the electric vehicle is shown as the additional amount of cost over the cost of an average combustion engine fleet vehicle. There is not simple payback data available for electric vehicles.

**Table 2 – Electric Vehicles**

Type	GHG Reductions (MTCO <sub>2</sub> E)	Estimated Cost	Cost without measure	Total Estimated Cost
Electric Vehicle	2 each	\$50,000 each	-\$20,000 each	\$30,000 each
Level II Charging Stations	*	\$15,000 each plus electric power costs	(-\$ gas alternative)*	*
Total for two	4	\$130,000	-\$40,000*	\$90,000*

\* Installation of charging stations will result in the release of minor amounts of GHGs from construction activities and additional electrical consumption; however, these charging stations ultimately allow for reductions in GHGs as a more efficient and less expensive alternative to gasoline fuel.

3. *Building Energy Management Systems (BEMS)* are an electronic based system that allows for the optimization of gas and energy consumption through specific controls and it provides detailed data for use in targeting future projects. This measure calls for installation of BEMS in major County facilities. A total of 28 major facilities are listed in the 2005 Baseline Report prepared by AMBAG. Seven (7) BEMS are included within the Public Works Audit Measures (see Table 1) but not all of the facilities audited match the major facilities list. References to Table 1 are made where appropriate to avoid double counting.

**Table 3 – Building Energy Management Systems**

Facility Name	GHG Reductions (MTCO <sub>2</sub> E)	
Natividad Medical Center	93.8	The Average estimated cost for each BEMS is \$60,000 The Average estimate return on investment is approximately 20 years
Seaside Library	3.8	
Salinas Road Dept	4.1	
Laguna Seca Facilities	109.0	
Public Safety Building	See Table 1, BE-12	
Public Defender	6.5	
Printing and Mail OPS OFC	0.1	

Marina Office	See Table 1, BE-29	
Parks Department Office	19.5	
OFC	1.4	
NMC Office building	18.3	
Monterey Courthouse	65.9	
Marina Court Building	6	
King City Library	1.6	
KCCH	6	
Health Department Headquarter	33.4	
DSSS	8.3	
DSS Building 1	3.1	
DSS Office Buildings	13.3	
DSS OFC Building	4.3	
Detention Center	26.9	
DA Office	8.9	
Communication Network Facility	40.5	
Children Services	1.8	
Agricultural Services	10.5	
Adult Detention Facilities	See Table 1, BE-2	
911 Call Center	13.6	
Minor Facilities	79.1	

4. *Natividad Medical Center audit* report recommends upgrades including 12 building energy efficiency projects. Two (2) of those projects have already been completed. Natividad is the single largest source of County operations related Greenhouse Gas Emissions due its size and 24-hour intensive use.

**Table 4 – Natividad Medical Center Audit measures**

Measure Number	Measure Description	GHG Reductions (MTCO <sub>2</sub> E)	Cost Estimate	Simple Payback (years)
NMC-1	Install Direction Expansion Units for Common Room, Lab and Building 300. Chiller off at night	57	\$360,000	8.7
NMC-2	Air Handling Unit Schedule, and boilers off at night	756	\$50,000	0.1
NMC-3	Install Boiler Isolation Valves	96	\$18,500	0.5
NMC-5	Replace the Heating Hot Water Condensing Boilers	369	\$80,500	0.6
NMC-7	Implement Condenser Water Temperature Reset	0.4	\$500	1.5
NMC-8	Air Balance	7	\$10,000	1.3
NMC-9	Schedule the Building 151 Packaged Unit to Operate Only During Occupied Hour	36	\$30,000	0.6
NMC-10	Install Controls for the Kitchen Hood Exhaust	11	\$10,000	0.8
NMC-11	Exhaust fan Timers (2% Horse	7	\$600	0.1

	Power Fans)			
NMC-12	Lighting Upgrade	106	\$250,000	3.9
<b>Totals</b>		<b>1,445</b>	<b>\$810,000</b>	-

5. Public lighting retrofits include replacing street lights, traffic lights, park lights, and other public lighting fixtures with more energy efficient bulbs or units. According to the baseline inventory in 2005 public lighting in the County consumed a total of 333,009 kilowatt hours per year of electricity resulting in approximately 74 MTCO<sub>2</sub>E and costing the County over \$40,000 in utility bills for the year. The MCAP identifies replacement of streetlights with Metal Halide cobra-head streetlights which cost approximately \$300 each in comparison the cost of approximately \$180 for sodium lights. Low-Emitting Diode (LED) lights can cost over \$700 each. This measure assumes that all lights will be replaced with Metal Halide cobra-head lights and the GHG reductions and payback are based on reductions in total kilowatt hours of electricity. At the time this report was prepared, accurate counts on the number of fixtures was not available so this cost is estimated based on 1000 fixtures being upgraded by 2020.

**Table 5 – Public Lighting Retrofits**

Fixture Type	GHG Reductions (MTCO <sub>2</sub> E)	Cost Estimate	Simple Payback (years)
Sodium	-	- \$180 each	-
Metal Halide	20.38 total	\$120 each	0.9
LED	24	\$520 each	1.4
Totals: 1000 lights	-	\$120,000 or \$520,000	-

**Totals**

Total costs and Greenhouse Gas Emissions (GHG) are provided according to the three (3) different scenarios presented in the Climate Action Plan. The three scenarios were provided to demonstrate the flexibility in accomplishing the 15% reduction goal. Some combination of the five (5) projects listed above will help the County achieve the goal; however, the Municipal Climate Action Plan (MCAP) is intended to be flexible to the extent that some, not all, of the measures may be implemented or replaced with similar projects without requiring revisions to the plan. Again, these project totals are based on available data and do not factor in grant funds, rebates (except some of the simple payback calculations), other funding mechanisms that the County intends to pursue, or staff costs. The ultimate goal is to have at least 4,441 fewer Metric Tons of Carbon Equivalents (MTCO<sub>2</sub>E) than there were in 2005. All the scenarios described below include state level measures and measures already implemented since 2005.

**Scenario 1** includes the upgrades at Natividad and installation of Building Energy Management Systems at major county facilities.

**Table 6 – Scenario 1**

Reduction measure	GHG reductions (MTCO <sub>2</sub> E)	Cost Estimates
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Natividad Medical Center	1,445	\$810,000
Building Energy Management Systems	1,013	\$1,560,000
<b>Totals</b>	<b>2,458</b>	<b>\$2,370,000</b>

**Scenario 2** includes upgrades at Natividad and completion of the Public works audit measures.

**Table 7 – Scenario 2**

Reduction measure	GHG reductions (MTCO <sub>2</sub> E)	Cost Estimates
Natividad Medical Center	1,445	\$810,000
Public Works Audit Measures	491	\$2,451,000
<b>Totals</b>	<b>1,936</b>	<b>\$3,261,000</b>

**Scenario 3** includes all five measures and is considered the preferred option from a GHG reduction standpoint.

**Table 8 – Scenario 3**

Reduction measure	GHG reductions (MTCO <sub>2</sub> E)	Cost Estimates
Natividad Medical Center	1,445	\$810,000
Building Energy Management Systems	1,013	\$1,560,000
Public Works Audit Measures	491	\$2,451,000
Two Electric Vehicles	4	\$90,000*
Public Lighting Retrofits	20.38	\$120,000
<b>Totals</b>	<b>2,973</b>	<b>\$5,031,000</b>

**Staff Resources**

Implementation of the Municipal Climate Action Plan will require oversight, monitoring, and reporting on GHG reduction measures. The Monterey County Resource Management Agency (RMA) has been assigned these administrative functions. The RMA includes Planning, Building, Public Works, Fleet, County Facilities, and Capital Projects. The duties associated with MCAP implementation will result in a new area of responsibility for the RMA and will require an estimated 0.25 Full Time Equivalent (FTE) new staff resource. The administrative functions required to implement the MCAP include:

Monthly

- Monitor grant funding and other funding opportunities;
- Monitor, track, and perform data entry of Greenhouse Gas Emissions;
- Monitoring and tracking State level GHG measures;
- Monitor progress for implementation and consider the need for corrections or new opportunities; and
- Provide outreach and education to County employees.

Annually

- Report to the Alternative Energy and Environment Committee on MCAP implementation progress.

2016 and 2020

- Update GHG emissions inventory; and
- Report to the Board of Supervisors on overall progress.

An update to the plan will also need to begin prior to 2020.

It is anticipated that the new duties will be absorbed within the RMA by existing staff. Ideally, some or all of the staff hours spent on implementation of the MCAP measures could be billed against grant funding or be used as “matching funds” required by some grants.

**Conclusion**

Implementation of the preferred scenario (scenario 3) could cost an estimated \$5,000,000 and result in the need for additional staff within the RMA equivalent to 0.25 full time positions. It is the intent of the RMA, as described in the Municipal Climate Action Plan (MCAP), to seek grant funds and other funding mechanisms that would minimize the cost to the County of implementing the plan and minimize impacts on the General Fund.