

Appendix A.

Emissions Inventory, Baseline, and Projections Methodologies

Appendix A: Emissions Inventory, Baseline, and Projections Methodologies

This appendix summarizes the methodologies and assumptions used contained within the greenhouse gas (GHG) emission inventory, baseline, and projections.

Emissions Inventory

This section describes methods used by ICLEI – Local Governments for Sustainability (ICLEI) to develop Albany’s GHG emissions inventory. The methodology for each emission sector (i.e., energy, transportation, waste) is discussed below.

Methodology

ICLEI’s Clean Air Climate Protection (CACP) Software is an emissions inventory computer program that uses activity data (e.g., energy consumption, vehicle miles traveled [VMT]) to calculate GHG emissions associated with each emission sector. ICLEI used California-, Alameda County-, and/or Albany-specific activity data and emissions factors when possible, which generated a more accurate estimation of GHG emissions for the City. The methods and assumptions used for each sector are summarized as follows.

Energy Consumption

The emissions inventory used natural gas and electricity consumption data for residential, commercial, and industrial land uses for the year 2004 from Pacific Gas and Electric (PG&E). The energy consumption data separated private from City-operated facilities. Due to PG&E’s 15/15 Rule, discussed below in the GHG Emissions Baseline section, energy consumption data for commercial and industrial land uses were combined together for both natural gas and electricity.

To calculate GHG emissions from natural gas and electricity consumption, ICLEI obtained California-specific emission coefficients from PG&E. For natural gas consumption, a 2005 PG&E-specific emission factor (kilograms of CO₂ per million British thermal units [kg CO₂/MMBtu]) for natural gas delivery was used within CACP for both community-wide and government-related natural gas consumption. A 2005 natural gas delivery coefficient was used because no verified 2004 coefficients were available. The PG&E-specific natural gas coefficient was verified by California Climate Action Registry (CCAR) and the California Energy Commission (CEC). Similar to natural gas consumption, a 2005 PG&E-specific emission coefficient (pound of CO₂ per kilowatt [lb CO₂/kWh]) was used for electricity delivery, which is also verified by CCAR. The 2005 electricity coefficient was used because no verified coefficients were available for operational year 2004. The PG&E-specific electricity emission coefficient accounts for the cleaner (i.e., less carbon intensive) electricity portfolio used by PG&E relative to the nation-wide average.

Transportation

Metropolitan Transportation Commission (MTC) and the California Department of Transportation (Caltrans) provided VMT data for local roadways within the City limits. Public transit activity data (i.e., Bay Area Rapid Transit [BART] and Alameda and Contra Costa [AC] Transit) were embedded within the community-wide data.

Caltrans also provided VMT data for state highways located within the City limits. Lastly, the City provided detailed vehicle and VMT data for the government (i.e., City) vehicle fleet.

ICLEI used the California Air Resources Board's (ARB) Emission Factors model (EMFAC2007) to obtain Alameda County-specific emission coefficients for vehicle fuel distribution, vehicle fuel efficiencies, and emission factors. Alameda County-specific EMFAC2007 data were only used for community-wide transportation data. The City provided municipal vehicle fleet data with specific information regarding fuel and vehicle types. ICLEI also used EMFAC2007 to generate emission factors for the City vehicle fleet.

Solid Waste

The California Integrated Waste Management Board (CIWMB) provided solid waste disposal data. Alameda County-specific waste categorization percentages were obtained from the *Alameda County Waste Characterization Study 2000*. Due to the differences in the *Alameda County Waste Characterization Study's* waste categories and the categories contained within CACP, the *Waste Characterization Study* categories were combined to better match CACP categories. For example, waste categories from the *Alameda County Waste Characterization Study* such as plastic, glass, metals, and other waste were combined together to account for an "all other waste" category within CACP. For Government-related waste categories, standard state waste percentages from CIWMB were used.

CACP provides GHG emission factors for various solid waste categories. These factors, which are based on national emission data, were used to calculate GHG emissions associated with solid waste disposal. The only alteration of the factors was to remove credit for carbon captured in landfilled solid waste, because the method does not include responsibility for carbon emissions from production and consumption of materials that later become solid waste.

Emissions Baseline

To refine the 2004 emissions inventory to establish an effective baseline for the Climate Action Plan (CAP), the City requested that EDAW conduct a peer review of the inventory. This effort resulted in modifications to the 2004 GHG emissions inventory to remove GHG emissions associated with travel on state highways and add GHG emissions associated with water consumption. Table A-1 identifies the City's GHG emissions baseline for the year 2004 for purposes of the CAP. Albany's reduction target of 25% below baseline emissions by 2020 applies to these baseline emissions, which include the government-related emissions presented in Table A-1.

Methodology

Transportation

Albany's community-wide transportation sector includes emissions generated from VMT on local streets and state highways. State highway traffic is responsible for 79% of the GHG inventory's total transportation emissions. The City has no control over the vehicles passing through Albany on state highways and their associated GHG emissions. Thus, the 2004 GHG emissions baseline does not include these emissions. The community-wide transportation sector contains only VMT on local roadways, which can be directly influenced by City policy and action.

**Table A-1.
Albany Baseline GHG Emissions and Percent Contributions**

Community Sector	Final Inventory Emissions	
	Metric Tons CO ₂ e	Percent
Residential Energy Use	20,495	29%
Commercial/ Industrial Energy Use	20,788	30%
Transportation ¹		
Local travel	23,703	34%
Waste	3,652	5%
Water Consumption	1,190	2%
Total	69,830	100%

Source: Data compiled by EDAW 2008 from ICLEI's CACP inventories.

Notes: Totals may not appear to add exactly due to rounding.

¹ Transportation emissions occurring in the City's limits also include state highway VMT, which accounts for 89,049 metric tons CO₂e per year. These emissions are not included in the calculation of the City's baseline emissions due to the inability of City policies to control or affect state highway VMT patterns.

Water Consumption

Energy use associated with water consumption accounts for approximately 20% of California's total energy use (CEC 2006). However, the 2004 GHG inventory did not include emissions associated with water consumption. In order to more accurately portray existing conditions, water-related GHG emissions in Albany were added to the 2004 baseline. The East Bay Municipal Utility District (EBMUD) provided historical water consumption data (1976-2008) for Albany. The 2004 water consumption data were used to calculate the City's GHG emissions associated with water consumption.

CEC has estimated the level of electricity use associated with water supply and conveyance, water pre-treatment, water distribution, and wastewater treatment in both Northern and Southern California (CEC 2006). Assumptions used to estimate water-related electricity consumption for Albany are specific to Northern California. CCAR's *General Reporting Protocol* Version 3.1 GHG emission factors for electricity use were then used to calculate MTCO₂e associated with water-related electricity use. As discussed above, residential and commercial/industrial GHG emissions associated with energy consumption were calculated using PG&E-specific assumptions. However, due to range of utility providers potentially engaged in the water delivery process, California statewide-average GHG emission assumptions were used to project emissions associated with water-related energy consumption in Albany.

Energy Consumption

As mentioned above, PG&E provided energy use (i.e., natural gas and electricity) data for both community-wide and government-related operations. Based on PG&E's 15/15 Rule, any aggregated information provided by the utilities must be made up of at least 15 customers and a single customer's load must be less than 15% of an assigned category. If the number of customers is below 15, or if a single customer's load is more than 15%, PG&E must combine certain data categories (e.g., commercial and industrial energy consumption) prior to

release to protect the privacy of individual users. The 15/15 Rule was triggered for both electricity and natural gas consumption data provided to the City. Thus, PG&E aggregated both commercial and industrial energy consumption as a single sector.

The lack of detailed information resulting from the 15/15 Rule limits the ability of planners and decision-makers to target major energy use sector contributors. Various methods were employed to attempt to separate the commercial and industrial energy consumption data, including using CEC average energy consumption rates with existing land use quantities, extracting information from the Bay Area Air Quality Management District's (BAAQMD) GHG inventory, and examining criteria air pollutant emission inventories. None of these methods provided sufficient information to accurately separate commercial and industrial energy use data. Therefore, the energy use portion of the GHG inventory with aggregated commercial and industrial energy consumption is used as the basis for baseline conditions.

Projections

To determine the GHG emission reductions necessary to achieve Albany's target (i.e., a 25% reduction in emissions relative to 2004 emission levels by 2020), the City's GHG emissions were projected for the years 2020 and 2050 under a trend scenario. The trend scenario assumes that historical data and trends would be representative of future year consumption rates for energy, water, and waste. It should be noted that the purpose of this CAP is to address the City's 2020 target. The City recognizes the 2050 goal (i.e., 80% below 1990 levels) established by Executive Order S-03-05. However, due to the uncertainty of projecting 2050 activity and emission levels, this CAP focuses on the 2020 goal. As 2020 approaches, the City will reevaluate its GHG reduction target to better represent progress towards the 2050 goal.

Assuming that the same type of current emissions-generating practices continue to occur within Albany, the City's GHG emissions would be anticipated to increase from 69,830 MTCO₂e in 2004 to about 71,995 MTCO₂e in 2020, and about 85,106 MTCO₂e in 2050. This represents a 3% and 22% increase over the 2004 baseline level in 2020 and 2050, respectively. In comparison, the City's projected population is expected to increase 4% by 2020 and 16% by 2050 from 2004 (ABAG 2002). Therefore, if current practices continue, Albany's GHG emissions are expected to increase at a higher rate than its population by 2050. This trend can be explained by increases in per capita activity levels (i.e., energy consumption, waste disposal, water consumption, and vehicle miles traveled).

A description of the methods and sources of information used to project the City's 2020 and 2050 GHG emissions for each end-use sector (e.g., energy, transportation, waste, water) is provided below. All GHG emissions have been calculated in MTCO₂e, which accounts for the global warming potential of nitrous oxide and methane. A summary of Albany's GHG emissions for the baseline year (2004), 2020, and 2050 is shown below in Table A-2.

Methodology

Energy Consumption

As shown above in Table A-2, GHG emissions associated with residential energy consumption in Albany are projected to increase by 3,070 MTCO₂e in 2020 and 8,050 MTCO₂e in 2050, a 15% and 39% net increase from baseline (2004) levels, respectively. GHG emissions associated with commercial/industrial energy consumption in Albany are projected to increase by 822 MTCO₂e in 2020 and 4,825 MTCO₂e in 2050; a 4% and 23% net increase from baseline levels.

Table A-2.
Albany GHG Baseline (2004) and Projected 2020 and 2050 Emissions

Emissions Sector	2004 Baseline MTCO ₂ e (Percent of Total Emissions)	2020 Projected MTCO ₂ e (Percent of Total Emissions)	2050 Projected MTCO ₂ e (Percent of Total Emissions)
Residential – Natural Gas	14,567 (20.9%)	17,079 (23.7%)	20,794 (24.4%)
Residential – Electricity	5,929 (8.5%)	6,487 (9.0%)	7,752 (9.1%)
<i>Subtotal Residential</i>	<i>20,496 (29.4%)</i>	<i>23,566 (32.7%)</i>	<i>28,546 (33.5%)</i>
Commercial – Natural Gas	8,139 (11.7%)	8,299 (11.5%)	8,883 (10.4%)
Industrial – Natural Gas	4,009 (5.7%)	3,660 (5.1%)	4,261 (5.0%)
Commercial/Industrial – Electricity	8,641 (12.4%)	9,651 (13.4%)	12,470 (14.7%)
<i>Subtotal Commercial/Industrial</i>	<i>20,789 (29.8%)</i>	<i>21,610 (30.0%)</i>	<i>25,614 (30.1%)</i>
Transportation	23,703 (33.9%)	23,028 (32.0%)	29,975 (35.2%)
Waste	3,652 (5.2%)	2,813 (3.9%)	– ¹
Water Consumption	1,190 (1.7%)	977 (1.4%)	971 (1.1%)
Total	69,830	71,995	85,106

Sources: ICLEI 2008; EDAW 2009.

Notes: Totals may not appear to add exactly due to rounding.

¹ The 2050 solid waste sector has been omitted due to uncertainty inherent in future-year data.

In order to estimate GHG emissions associated with energy consumption in Albany in 2020 and 2050, an annual average growth rate was applied to baseline (2004) electricity and natural gas consumption rates. The U.S. Department of Energy (DOE) Energy Information Administration (EIA) publishes an annual Energy Outlook Report that forecasts electricity and natural gas consumption by land use type (i.e., residential, commercial, and industrial) for regions throughout the U.S. For Albany's 2020 and 2050 energy projections, the Pacific region forecasts from the 2009 Annual Energy Outlook were used to calculate the annual average growth rate in electricity and natural gas consumption for residential, commercial, and industrial land uses (EIA 2009). The Pacific region includes California, Oregon, Washington, Alaska, and Hawaii. Although this data includes a large geographical area, EIA data represents an accurate source of data for forecasted energy consumption in Albany.

As a result of PG&E's 15/15 Rule, the baseline inventory included aggregated commercial and industrial electricity consumption. Therefore, commercial and industrial electricity consumption was projected using the average of the commercial and industrial annual average growth rates from EIA. The 15/15 Rule also affected the commercial and industrial natural gas consumption rates. However, natural gas consumption for commercial and industrial uses can be separated using information provided in the BAAQMD regional emissions inventory (Tholen, pers. comm., 2009). For 2020 projections, annual average growth rates were developed from EIA forecasts from 2007 to 2020. For 2050 projections, annual average growth rates were developed from EIA forecasts from 2007 to 2030, which is the farthest year for which EIA forecasts energy consumption. These growth rates were applied to the baseline 2004 energy consumption levels to project 2020 and 2050 electricity

and natural gas consumption for residential and commercial/industrial land uses. Table A-3 presents the annual average growth rates for land uses and energy sources between 2007–2020 and 2007–2030 provided by EIA.

Baseline (2004) emissions calculations were based on PG&E-specific emission factors for both electricity and natural gas consumption. Although electricity, and to a lesser extent, natural gas delivery emission factors would be anticipated to decrease with time and improved technology, these factors represent the most accurate emission factors available describing Albany’s future energy consumption trends.

Transportation

As shown in previous Table A-2, Albany’s transportation-related GHG emissions are expected to decrease by 675 MTCO₂e by 2020, and increase by 6,272 MTCO₂e by 2050, a 3% net decrease and 27% net increase relative to the 2004 baseline, respectively. The projected decrease in 2020 transportation-related emissions can be attributed to lower emission rates of GHGs from newer vehicles. In 2020, decreased emissions from individual vehicles would likely to outweigh expected increases in VMT. However, in 2050, the projected increase in transportation-related emissions occurs largely because projected increases in VMT outweigh decreased vehicle emissions resulting from improved fuel efficiency.

Table A-3. Summary of Emission Sector Growth Rates		
Emission Sector	Average Annual Growth Rate (2007–2020) ¹	Average Annual Growth Rate (2007–2030) ²
Residential Energy Consumption – Natural Gas	1.05%	0.79%
Residential Energy Consumption – Electricity	0.60%	0.60%
Commercial Energy Consumption – Natural Gas	0.17%	0.21%
Industrial Energy Consumption – Natural Gas	-0.52% ³	0.15%
Commercial Energy Consumption – Electricity	0.92%	0.91%
Industrial Energy Consumption – Electricity	0.54%	0.72%
Average Commercial/Industrial Energy Consumption – Electricity ⁴	0.73%	0.82%
Transportation – Vehicle Miles Traveled ⁵	0.73%	0.73%
Water Consumption – Gallons Consumed ⁵	-0.02%	-0.02%

Source: EIA 2009.

¹ 2007-2020 average annual growth rates are used within the 2020 GHG projections.

² 2007-2030 average annual growth rates are used within the 2050 GHG projections.

³ The negative average annual growth rate indicates a decrease in natural gas consumption for industrial land uses.

⁴ Average commercial/industrial electricity growth rates are used to project commercial and industrial electricity use to account for limitations in the 2004 baseline due to the 15/15 Rule.

⁵ The same annual average growth was used to project 2020 and 2050 activities.

Albany's mobile source transportation activity for 2020 and 2050 was projected using historical Albany-specific VMT data from the Federal Highway Administration's (FHWA) High Performance Monitoring System (HPMS) published by Caltrans (Caltrans 2007). Based on historical VMT data on local public roads for Albany from 2001 to 2007, an annual average VMT growth rate of 0.7% (shown above in Table A-3) was applied to baseline 2004 VMT data to project Albany's 2020 and 2050 VMT.

An Alameda County-specific emission factor for gasoline and diesel fuel from EMFAC 2007 was used to calculate projected CO₂ emissions associated with projected VMT in Albany. Forecasted Alameda County population, VMT, and fuel consumption data for 2020 and 2050 by vehicle class were used to calculate weighted-average fuel efficiencies (i.e., miles per gallon) for both gasoline- and diesel-fueled vehicles. The 2020 and 2050 projected VMT data for both gasoline- and diesel-fueled vehicles was then divided by the weighted-average fuel efficiencies to calculate gallons of gasoline and diesel fuel consumed. The total gallons of gasoline and diesel fuel consumed were multiplied by the EMFAC2007 emission factors to calculate CO₂ emissions.

CCAR's *General Reporting Protocol* Version 3.1 provides N₂O and CH₄ emission factors for gasoline- and diesel-fueled vehicles by vehicle class (CCAR 2009). These factors were weighted using Alameda County-specific vehicle class population and distribution information, then multiplied by projected 2020 and 2050 VMT, respectively, to calculate projected N₂O and CH₄ emissions. The N₂O and CH₄ emissions were then weighted by their GWP and added to CO₂ emissions to obtain MTCO₂e.

Waste

As shown in Table A-2, Albany's waste-related GHG emissions are expected to decrease by 839 MTCO₂e by 2020, a 23% net decrease relative to the 2004 baseline. City waste disposal data was used to project Albany's 2020 solid waste disposal needs. The City has established a goal to reduce the amount of solid waste disposed from 1990 levels by 90% by 2030. The Alameda County Waste Management Authority and Source Reduction and Recycling Board (operating together as StopWaste.org) provided solid waste disposal data (i.e., tons of solid waste entering landfills) for multiple benchmark years, which were used to interpolate the City's 2020 solid waste disposal assuming a linear path to the 2030 90% reduction goal. This projection does not include 2050 waste-related GHG emissions, due to the uncertainty of solid waste disposal following achievement of the 2030 goal.

CACP was used to quantify GHG emissions associated with 2020 solid waste disposal levels of using nationally-averaged emission factors for various types of waste. The projected GHG emissions were calculated assuming the same percent distributions for solid waste disposal categories as used in the baseline inventory.

Water Consumption

As discussed above, EBMUD provided historical water consumption data (1976-2008) for Albany. Given the variability of annual water consumption growth rates during this period, water consumption for 2020 and 2050 was projected using the annual average water consumption growth rate from 1990-2008 in Albany. Table A-3 shows the annual average growth rate used to project Albany's 2020 and 2050 water consumption.

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Appendix B.

Measure Greenhouse Gas Reduction Estimates

Appendix B: Climate Action Plan Strategies Calculations Detail and Assumptions

This appendix summarizes the assumptions and parameters used to calculate greenhouse gas (GHG) emission reduction performance of CAP measures.

Summary Table		
Measure Number and Title	Scaled % GHG Emission Reduction	GHG Emission Reduction (MT CO ₂ e/year)
BE-1.1: Zero-Emission City Buildings by 2015	0.96%	150
BE 2.1: Energy Efficiency and Renewable Energy Investments	18.74%	2,935
BE-2.3: Residential and Commercial Energy Efficiency Retrofit	8.37%	1,310
BE-2.4: Empowerment Districts	14.02%	2,195
BE-3.1: Meet Green Building Code in New Construction	9.90%	1,550
BE-4.1: Smart Grid	1.02%	160
BE-4.2: LED Street Lights	1.09%	170
BE-4.3: Community Choice Aggregation	- ¹	- ¹
BE-4.4: Comparative Energy Billing	0.83%	130
TL-1.1: Expand and Enhance Bicycle Infrastructure (Stage 1)	- ²	110
TL-1.1: Expand and Enhance Bicycle Infrastructure (Stage 2)	1.95%	305
TL-1.2: Bike Parking	1.47%	230
TL-1.3: Walking Infrastructure	3.90%	610
TL-1.5: Commercial Use Diversity	7.34%	1,150
TL-2.2: Transit Stops and Safety Infrastructure	0.73%	115
TL-2.3: Free Transit Passes and Shuttles for City Employees	0.07%	11
TL-3.1: Public Education	0.45%	70
TL-3.2: Design and Density	5.04%	790
TL-4.1: Jobs/Housing Balance	1.44%	225
TL-4.2: Improve Fuel Efficiency of City Vehicle Fleet	0.12%	19
TL-4.4: TDM Program	7.28%	1,140
WR-1.1: Waste Reduction Ordinance	14.11%	2,210
GI-1.1: Street Trees	0.83%	130
WC-1.1: Residential and Commercial EBMUD Water Audit	0.03%	5
WC-1.2: Residential and Commercial Outdoor Water Conservation	0.03%	5

Summary Table

Measure Number and Title	Scaled % GHG Emission Reduction	GHG Emission Reduction (MT CO ₂ e/year)
WC-2.1: New Construction and Remodel Indoor Water Efficiency	0.16%	25
WC-2.2: New Landscape Project Outdoor Water Efficiency	0.13%	20
Total GHG Emission Reductions	–	15,660

¹ Community Choice Aggregation is not included in the summary because different ranges of GHG-free electricity portfolios would also affect the GHG reduction potential of other electricity efficiency-related reduction measures. See Chapter III or Measure BE-4.3 below for detailed descriptions of the measure and its reduction potential.

² Stage 1 of Measure TL-1.1 is noted included in the summary because Stage 2 includes the cumulative GHG reduction potential of Stage 1 and 2. Therefore, if Stage 1 was included, Measure TL-1.1 would be double counted.

Municipal Building Measures

Measure BE-1.1: Install cost-effective renewable energy systems on all City buildings and install building performance data displays to demonstrate savings.

This measure is based on a three-tier approach to reducing energy consumption from the City's buildings. The first tier includes implementation of energy efficiency measures to reduce the amount of energy used by City buildings. The second tier includes the installation of renewable energy systems on City buildings to serve energy demands. The third tier includes purchasing all remaining energy demands from renewable sources (i.e., solar, wind, and hydroelectric sources). To demonstrate energy savings to the public, the City would install building performance data displays. Implementation of this measure would reduce the total GHG emissions associated with all City buildings. The City was able to provide their current building energy consumption, which was used to calculate the GHG emission reduction using the same PG&E-specific emission factor used to calculate the City's GHG emissions associated with electricity consumption.

Measure value = 150 MT/year

Residential and Commercial Energy Efficiency Retrofit Measures

Measure BE-2.1: Develop comprehensive outreach programs to encourage energy efficiency and renewable energy investments in the community.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
6%	8.49% (Electricity)	4%	0.02%	10
14%	20.86% (Natural gas)	4%	0.13%	90
Total			0.15%	100

Sources of information:

California Energy Commission [CEC] 2003. *Impact Analysis 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings*;

California Energy Commission [CEC] 2007. *Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings*

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
6%	12.37% (electricity)	8%	0.06%	45
9%	11.66% (natural gas)	8%	0.08%	60
Total			0.14%	105

Sources of information:

California Energy Commission [CEC] 2003. *Impact Analysis 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings*;

California Energy Commission [CEC] 2007. *Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings*

It was assumed that 100% of electricity would be generated by renewable energy for all participating (assumed 20%) units from solar panels and a 70% reduction in natural gas would occur for solar water heating.

Strategy	Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector	Sub Sector	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
Solar panels	100%	9.01% (electricity, residential)	-	20%	1.80%	1,300
Solar water heaters	70%	23.72% (natural gas, residential)	60%	20%	1.99%	1,430
Total					3.79%	2,730

Measure BE-2.3: Develop and implement residential and commercial energy efficiency upgrades.

These measures assume a performance standard of a 20% increase in energy efficiency in existing residential units.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
6%	8.49% (Electricity)	43%	0.21%	150
14%	20.86% (Natural gas)	43%	1.29%	895
Total			1.50%	1,045

Sources of information:

California Energy Commission [CEC] 2003. *Impact Analysis 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings*;

California Energy Commission [CEC] 2007. *Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings*



These measures would improve energy efficiency of commercial buildings by 15% for both natural gas and electricity consumption.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
6%	12.37% (electricity)	21%	0.16%	115
9%	11.66% (natural gas)	21%	0.21%	150
Total			0.38%	265

Sources of information:

California Energy Commission [CEC] 2003. *Impact Analysis 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings*;

California Energy Commission [CEC] 2007. *Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings*

Nonresidential Energy Efficiency Retrofit Measures

Measure BE-2.4: Identify and facilitate solar energy EmPowerment districts in commercial, industrial, and mixed-use portions of the City. This measure is based on the availability of commercial, industrial, and mixed-use roof space for the installation of solar panels. Available commercial, industrial, and mixed-use roof square footage was determined using ArcGIS software. The amount of feasible solar panel square footage was calculated assuming 65% of the total roof space could be used for solar panels. A participation rate of 40% was applied to the total square footage.

The solar potential of the feasible roof space was calculated using assumptions regarding the wattage potential and hours of operation. Solar panels were assumed to generate 10 watts per square foot and operate for at this capacity for 4 hours per day. These assumptions were used to calculate the total kilowatt-hours generated from implementation of the measure. The GHG reduction potential of this measure was calculated using the same PG&E-specific electricity consumption emission factor used to calculate the City's GHG emissions associated with electricity consumption.

Solar Photovoltaic:

Percent of Feasible Solar Roof	Participation Rate	Solar Potential (watts/square foot)	Operational Time (hours/year)	GHG Emissions Reduction (MT/year)
65%	40%	10	1,460	1,730

Solar Hot Water:

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector	Sub Sector	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
70%	11.53% (natural gas, non-residential)	40%	20%	0.65%	465

Total Measure performance = 2,195 MT/yr

Sources of information:

California Energy Commission [CEC] 2005. *Electricity Usage During Peak Periods*. Available: http://www.energy.ca.gov/electricity/peak_loads.html

Measure BE-3.1: Require new construction to comply with Tier 2 energy efficiency standards contained within section 503.1.2 of the California Green Building Code.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Inventory (MT GHG/year from new growth)	GHG Emissions Reduction (MT/year)
44.84% (residential electricity)	558	250
35.95% (residential natural gas)	2,512	900
33.43% (non-residential electricity)	1,010	340
36.58% (non-residential natural gas)	160	60
Total		1,550

Sources of information:

California Energy Commission [CEC] 2007. *Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings*

Measure BE-4.1: Partner with other neighboring cities and PG&E to fast-track "Smart Grid" technology in Albany.

This measure would catalyze the City’s integration into the “Smart Grid” system. The “Smart Grid” system would help the City manage and serve its electricity demand more efficiently in every demand scenario (e.g., peak, off-peak). The City’s integration into the “Smart Grid” system is anticipated to reduce total electricity consumption from both the residential and non-residential sector by 4%.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (Electricity)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
4%	9.01% (residential)	25%	0.09%	65
4%	13.40% (non-residential)	25%	0.13%	95
Total			0.22%	165

Measure BE-4.2: Work with Alameda County to convert all street lights to LED bulbs or LED-solar systems.

This measure is based on the energy efficiency of LED bulbs or LED-solar systems with respect to the existing street light system. The GHG emission reduction potential of this measure was calculated conservatively assuming that all street lights would be converted to LED bulbs and not LED-solar systems. The energy savings associated with this measure were calculated assuming LED bulbs are 70% more energy efficient than the existing street lights. The City was able to provide total kilowatt-hours used for the existing streetlight system, to which the 70% reduction was applied. The GHG emission reduction associated with this measure was calculated using the same PG&E-specific electricity consumption emission factor used to calculate the City’s GHG emissions associated with electricity consumption. In reality, this measure may have a greater GHG emission reduction potential due to the installation of solar systems in addition to the LED bulbs.

Measure performance = 170 MT/year



Measure BE-4.3: Research the feasibility of joining Community Choice Aggregation efforts of Berkeley, Oakland, Emeryville, and other neighboring cities.

The benefits of a CCA are directly relevant to GHG reduction efforts, as communities are able to proactively determine the amount of GHG-free energy (e.g., renewable, hydro-electric, nuclear) they purchase. Joining the CCA would allow the City to independently select electricity providers. The City would be able to reduce their electricity-related GHG emissions by selecting an electricity-supply portfolio that utilizes more GHG-free energy sources than the current Pacific Gas and Electric (PG&E) portfolio. The current PG&E electricity portfolio is comprised of 55% GHG-free sources; therefore, in order for the CCA to provide a net benefit in GHG reductions, it is assumed that the City’s CCA portfolio would range from 60–100% GHG-free electricity generation sources. The range of GHG-free portfolio mixes (i.e., 60 to 100%) was used to adjust the current PG&E-specific electricity emission factor assuming the same ratio of GHG-producing sources (i.e., natural gas and coal) would continue with the CCA.

An issue with implementation of the CCA is that the CCA would reduce the GHG emissions reduction potential of other Building Energy measures because less GHG emissions would be generated by electricity consumption. If the CCA purchased 100% of its electricity from GHG-free sources, the reduction potential of other electricity conservation or renewable electricity generation measures would be nullified. If the CCA purchased 60% of its electricity from GHG-free sources, the impact to the reduction potential would be minimal. For this reason, the potential CCA is stated independently below, but is not included in the Summary Table above.

Measure performance with 60% GHG-free sources = 1,800 MT/year
 Measure performance with 100% GHG-free sources = 16,140 MT/year

Measure BE-4.4: Encourage PG&E and EBMUD to provide comparative energy and water conservation metrics on utility bills.

As part of this measure, PG&E would provide comparative energy consumption data for neighborhoods within individual energy bills. The energy bills will include both energy and water efficiency measures that customers can implement and other ways to reduce energy and water consumption. This type of comparative energy billing was found to reduce energy consumption by 2% over the course of a year.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (Residential Electricity)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
2%	9.01%	100%	0.18%	130

Transportation and Land Use

Measure TL-1.1: Expand and enhance bicycle infrastructure throughout the City.

Complete streets include bike lanes and pedestrian sidewalks on both sides of streets, traffic calming features such as pedestrian bulb-outs, cross-walks, traffic circles, and elimination of physical and psychological barriers (e.g., sound walls and large arterial roadways, respectively). Depending on the level of implementation of this measure, the performance in vehicle trip and vehicle miles traveled reduction can range from 1–5%. It was assumed that nearly all of the listed criteria for a complete street would be met, and the performance of this measure would correspond to the upper end of the range (i.e., 4%). Bicycle infrastructure would account for 1/3rd of the reduction associated with this measure while pedestrian infrastructure (Measure TL-1.3 discussed below) would account for the remaining reduction potential (2/3rd).

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (Transportation)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
4%	31.99%	100% ^a	1.28%	305

^a 100% participation indicates that this measure would be applicable community-wide.

Sources of information:

Dierkers, G., E. Silsbe, S. Stott, S. Winkelman, and M. Wubben. 2007. *CCAP Transportation Emissions Guidebook*. Center for Clean Air Policy. Washington, D.C. Available: <<http://www.ccap.org/safe/guidebook.php>>. as cited in California Air Pollution Control Officers Association (CAPCOA) 2008. *CEQA and Climate Change*.

Measure TL-1.2: Install bicycle racks in commercial and civic areas of City where racks do not currently exist.

This measure was expected to reduce vehicle trips, and associated GHG emissions by 1%.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (Transportation)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
1%	31.99%	100%	0.32%	230

Sources of information:

Victoria Transport Policy Institute. 2009. *Online TDM Encyclopedia (Bicycle Parking)*. Available: <<http://www.vtpi.org/tdm/tdm85.htm>>. Accessed 2009.

Measure TL-1.3: Evaluate the community's walking infrastructure, identify potential barriers, and implement improvements.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (Transportation)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
4%	31.99%	100%	1.28%	610

Sources of information:

Dierkers, G., E. Silsbe, S. Stott, S. Winkelman, and M. Wubben. 2007. *CCAP Transportation Emissions Guidebook*. Center for Clean Air Policy. Washington, D.C. Available: <<http://www.ccap.org/safe/guidebook.php>>. as cited in California Air Pollution Control Officers Association (CAPCOA) 2008. *CEQA and Climate Change*.

Measure TL-1.5: Encourage additional neighborhood serving commercial uses and mixed-use development within City's existing commercial districts. Strive to provide access to daily goods and services within 1/4 mile of residences.

The performance of this measure is related to the elasticity of increased diversity of uses. The literature supports a 5% reduction in vehicle miles traveled for every 100% increase in land use diversity. For the City, it was assumed that this measure would result in a 100% community-wide increase in diversity by dispersing commercial uses in residential neighborhoods that currently do not have access to neighborhood serving retail.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (Transportation)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
5%	31.99%	100%	1.60%	1,150

Sources of information:

Ewing, Reid, et al. 2001. *Travel and the Built Environment: A Synthesis*. Transportation Research Record 1780. Paper No. 01-3515 as cited in Urban Land Institute. 2008. *Growing Cooler*. ISBN: 978-0-87420-082-2. Washington, DC



Measure TL-2.2: Work with AC transit to provide transit stops with safe and convenient bicycle and pedestrian access and essential improvements such as shelters, route information, benches and lighting.

This measure was assumed to reduce vehicle trips and associated emissions by 0.5%.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (Transportation)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
0.50%	31.99%	100%	0.16%	115

Sources of information:

Dierkers, G., E. Silsbe, S. Stott, S. Winkelman, and M. Wubben. 2007. *CCAP Transportation Emissions Guidebook*. Center for Clean Air Policy. Washington, D.C. Available: <<http://www.ccap.org/safe/guidebook.php>>. as cited in California Air Pollution Control Officers Association (CAPCOA) 2008. *CEQA and Climate Change*.

Measure TL-2.3: Provide passes and shuttles to transit to encourage use of alternative transportation by City employees.

This measure was assumed to reduce City worker commute trips based on a survey conducted by the City's Transportation Department and average commute distances within the City.

Unscaled Measure Performance (% employees to use pass)	Total City Employees	Miles Per Commute Trip (miles/day)	Work Days Per Year	GHG Emissions Reduction (MT/year)
40%	130	2	240	11

Measure TL-3.1: Provide public education about benefits of well-designed, higher-density housing and relationship between land use and transportation.

This measure is related to the implementation of a comprehensive community-wide public education campaign to inform residents, businesses, and consumers about the incentive programs that would be implemented as part of the CAP designed to reduce GHG emissions. This measure is based on empirical data from a public education campaign designed to reduce emissions of criteria air pollutants in the Sacramento region (i.e., the Spare the Air program). The Sacramento region conducted an analysis of the effectiveness of the Spare the Air program as it relates to emission reduction. The analysis confirmed that approximately 1% of people changed their behavior (e.g., took fewer vehicle trips on Spare the Air days) as a result of the Spare the Air campaign.

For the City's public education campaign, it was assumed that approximately 1% of people would reduce their emissions from all sectors (e.g., transportation, electricity, natural gas, waste, water) by about 10%.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (all)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
10%	100%	1%	0.10%	70

Sources of information:

Based on SMAQMD 2009. *Spare the Air Control Measure Program; Revision to State Implementation Plan Staff Report*.

Measure TL-3.2: Update planning documents to promote high-quality, mixed-use, pedestrian- and transit-oriented development in the San Pablo/Solano Avenue commercial districts.

The performance of this measure is related to the elasticity of design. The literature supports a 3% reduction in vehicle miles traveled for every 100% improvement in design. For the City, it was assumed that this measure would result in a 100% community-wide increase in design.

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (Transportation)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
3%	31.99%	100%	0.96%	690

Sources of information:

Ewing, Reid, et al. 2001. *Travel and the Built Environment: A Synthesis*. Transportation Research Record 1780. Paper No. 01-3515 as cited in Urban Land Institute. 2008. *Growing Cooler*. ISBN: 978-0-87420-082-2. Washington, DC

The performance of this measure is related to net population density. The performance of this measure is based on the following formula:

Step 1. 2005 Density = 16,800 Population year 2005
 + 4,840 Employees year 2005 =
 21,640 persons ÷ 1.5 square miles = 14,427 persons/sq.mile in year 2005

Step 2. 2020 Density = 18,043 Population year 2020
 + 5,493 Employees year 2020 =
 23,536 persons ÷ 1.5 square miles = 15,691 persons/sq.mile in year 2020

Step 3. Density Change = 15,691 persons/sq.mile
 - 14,427 persons/sq.mile =
 1,264 persons/sq.mile ÷ 14,427 persons/sq.mile = 0.0876 = **8.76% increase in density between 2005 and 2020**

The performance of this measure is related to the elasticity of increased density. The literature supports a 5% reduction in vehicle miles traveled for every 100% increase in density. For the City, it was assumed that this measure would result in approximately 8.76% community-wide increase in density by 2020, per the calculation above.

8.76% (increase in density) * 5% (reduction in VMT) = **0.438% reduction in VMT**

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (Transportation)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
0.44%	31.99%	100%	0.14%	100

Sources of information:

Criterion Planners. 2008. *Appendix A - 5D Method Technical Memorandum, INDEX Planbuilder Manual*. Portland, OR.

Ewing, Reid, et al. 2001. *Travel and the Built Environment: A Synthesis*. Transportation Research Record 1780. Paper No. 01-3515 as cited in Urban Land Institute. 2008. *Growing Cooler*. ISBN: 978-0-87420-082-2. Washington, DC



Measure TL-4.1: Work with ABAG and neighboring cities to improve jobs-housing balance within the City and regional transit corridors.

This measure’s performance is based on the formula:

$$\text{Trip reduction} = (1 - (\text{ABS} (1.5 * h - e) / (1.5 * h + e)) - 0.25) / 0.25 * 0.03$$

Where: h = study area households (or housing units)
 e = study area employment

Under existing conditions (2005), Albany had 7,130 households and 4,840 jobs, with a jobs/housing ratio of 0.68.

According to ABAG 2020 projections under the Focused Future growth scenario, Albany would accommodate approximately 7,619 housing units and 5,493 jobs (jobs/housing = 0.72).

$$\text{Trip reduction (existing 2005)} = (1 - (\text{ABS} (1.5 * 7,130 - 4,840) / (1.5 * 7,130 + 4,840)) - 0.25) / 0.25 * 0.03 = 0.0448 = 4.48\%$$

If Albany were to improve jobs/housing balance by 20% from existing conditions (i.e., jobs/housing = 0.68), the jobs/housing ratio would be 0.81. If housing were expected to remain constant at the projected 7,619 households in the year 2020, the number of jobs needed to achieve a jobs/housing balance of 0.81 would be 6,206 jobs. Substituting HH = 7,619 and jobs = 6,206 into the formula below:

$$\text{Trip reduction (20% above 2005)} = (1 - (\text{ABS} (1.5 * 7,619 - 6,206) / (1.5 * 7,619 + 6,206)) - 0.25) / 0.25 * 0.03 = 0.0545 = 5.45\%$$

$$\text{Trip reduction (existing 2005)} - \text{Trip reduction (20% above 2005)} = 0.0448 - 0.0545 = -0.00973 = -0.973\%$$

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (Transportation)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
0.97%	31.99%	100%	0.31%	225

Sources of information:

Nelson/Nygaard Consultants. 2005. *Crediting Low-Traffic Developments: Adjusting Site-Level Vehicle Trip Generation Using URBEMIS*. Pg 12, (adapted from Criterion and Fehr & Peers, 2001)

Measure TL-4.2: Improve the fuel efficiency of the City vehicle fleet by purchasing low or zero-emissions vehicles when vehicles are retired from service.

Although some vehicles would be replaced with zero-emissions vehicles (i.e., electric vehicles), this measure assumes at a minimum, all City-owned, non-emergency light-duty automobiles and light-duty trucks would meet the fuel efficiency requirements of AB 1493.

Measure performance = 19 MT/year

Measure TL-4.4: Create and implement a voluntary transportation demand management (TDM) program to reduce weekday peak period single car occupancy commute and school trips.

The performance of this measure is a function of the performance standard set for the TDM program. The measure applies to commute trips only, which compose approximately 33% of trips in Alameda County (according to URBEMIS 2007).

Unscaled Measure Performance (% reduction in GHG emissions)	Emissions Sector (Transportation)	Participation Rate	Scaled Measure Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
15%	31.99%	33%	1.58%	1,140

Sources of information:

Rimpo and Associates. 2008. URBEMIS 2007 v.9.2.4. Urban Emissions Model. Available: <http://www.urbemis.com>.

Waste Reduction

Measure WR-1.1: Establish a citywide zero-waste stream target for 2030.

This measure originates from the StopWaste.org goal to achieve a 90% reduction from 1990 waste disposal levels by 2030. The GHG emissions reduction associated with this measure were calculated using the ICLEI CACP software. The CACP software contains nation-wide emission factors for various categories of waste. As discussed in Chapter IV Baseline, the percent distributions of waste categories from the *Alameda County Waste Categorization Study* were used to calculate GHG emissions using the CACP software. Waste categories from the *Alameda County Waste Categorization Study* were combined to better match the CACP software categories. The reduction in waste disposal (tons) from 2004 levels to projected 2020 levels (i.e., 80% below 1990 baseline) was used to calculate total GHG emission reductions. Waste categorization percentages were assumed to remain constant from 2004 to 2020.

Measure performance = 2,210 MT/yr

Green Infrastructure

Measure GI-1.1: Enhance the Urban Forestry/Urban Plants Program to maximize carbon sequestration on all public and private lands, including rooftops. Prepare a Green Albany Plan to evaluate all potential “growing areas”, including parks, streets, rights-of-way, parking lots, and rooftops, for carbon sequestration.

This measure is based on the CO₂ sequestration rates of 500 trees planted in the City each year from 2010 to 2019. Carbon sequestration rates specific to the species and age of the planted trees were used calculate the annual sequestration potential of the trees from 2009 to 2020. The City’s forester stated that with additional funding, Albany could plant 500 street trees per year over the next ten years.

Total value of measure: 130 MT/year

Sources of information:

The Center for Urban Forest Research Tree Carbon Calculator. Available: <<http://www.fs.fed.us/ccrc/topics/urban-forests/>>

USDA Forest Service, Pacific Northwest Research Station. "California Study Shows Shade Trees Reduce Summertime Electricity Use." Science Daily 7 January 2009. 20 February 2009 <<http://www.sciencedaily.com/releases/2009/01/090105150831.htm>>.

California Energy Commission [CEC] 2005. Electricity Usage During Peak Periods. Available: <http://www.energy.ca.gov/electricity/peak_loads.html>

California Energy Commission [CEC] 2007. Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings



Water Conservation

Measure WC-1.1: Encourage residential and commercial users to participate in EBMUD's free water audit program.

This measure is based on residential water consumption data provided by EBMUD. EBMUD was able to provide percentage of water consumed for single-family (SFR) and multi-family (MFR) residential units, the percent of indoor and outdoor water use for both SFR and MFR, and the percent of indoor water use associated with faucets and leaks. This measure's water efficiency actions would reduce indoor water faucet efficiency by 40% and eliminate all indoor leaks. It was assumed that 3% of the residential homes within the City would participate in this water efficiency measure.

Percent of Total Water Consumption	Percent Indoor Water Consumption	Percent Indoor Water Consumption to Faucets	Percent Indoor Water Consumption to Leaks	Participation Rate	Total GHG Emissions Reduction (MT/year)
46% (SFR)	62% (SFR)	69%	8%	3%	5
17% (MFR)	86% (MFR)	69%	8%	3%	

Measure WC-1.2: Encourage 50% reduction in outdoor potable water usage for existing residential and commercial properties.

Percent of Total Water Consumption	Percent Outdoor Water Consumption	Percent Reduction of Outdoor Water Consumption	Participation Rate	Total GHG Emissions Reduction (MT/year)
46% (SFR)	38% (SFR)	50%	4%	5
17% (MFR)	14% (MFR)	50%	4%	

Measure WC-2.1: Require new construction and major remodels to achieve indoor water efficiency 20% above the California Building Standards Code.

Percent of Total Water Consumption	Percent Indoor Water Consumption	Percent Indoor Water Consumption to Faucets	Percent Indoor Water Consumption to Leaks	Participation Rate	Total GHG Emissions Reduction (MT/year)
46% (SFR)	62% (SFR)	69%	8%	18%	25
17% (MFR)	86% (MFR)	69%	8%	18%	

Measure WC-2.2: Require new landscape projects to reduce outdoor potable water use by 50%.

Percent of Total Water Consumption	Percent Indoor Water Consumption	Percent Indoor Water Consumption to Leaks	Participation Rate	Total GHG Emissions Reduction (MT/year)
46% (SFR)	62% (SFR)	8%	53%	20
17% (MFR)	86% (MFR)	8%	53%	

Senate Bill 107

SB 107 requires utilities to establish renewable energy portfolios of 20% by 2010, which would result in reduction of GHG emission factors associated with electricity generation and consumption. It was assumed that GHG emissions associated with electricity consumption in Albany would be reduced by 20% between the base year (2004) and 2020 associated with the implementation of this legislation. When SB 107 was taken into account in 2020 GHG emissions projections, growth in population and associated emissions in Albany would be outpaced by the reduction in emission factors associated with renewable energy portfolio standard.

Unscaled Regulation Performance	Emissions Sector (electricity)	Scaled Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
6%	22%	1.34%	968

Assembly Bill 1493 (Pavley)

AB 1493, California's mobile-source GHG emissions regulations for passenger vehicles, was signed into law in 2002. AB 1493 has not been implemented at the time of writing, because California has not received federal approvals to implement these emissions standards. This authorization to implement more stringent standards in California was requested in the form of a CAA Section 209, subsection (b) waiver in 2005. Since that time, EPA failed to act on granting California authorization to implement the standards. It appears likely that AB 1493 will be implemented in the near future, as the new presidential administration has directed EPA to reexamine its position for denial of CCAA's waiver and for its past opposition to GHG emissions regulation. California received the waiver on June 30, 2009.

The CO₂ reduction associated with the foreseeable implementation of AB 1493 is currently unknown. The ARB's AB 32 Scoping Plan (the State's plan for implementing AB 32) expects approximately a 19.7% reduction in on-road mobile-source GHG emissions (ARB 2008¹). The AB 32 Scoping Plan also notes that "AB 32 specifically states that if the Pavley regulations do not remain in effect, ARB shall implement alternative regulations to control mobile sources to achieve equivalent or greater reductions of greenhouse gas emissions (HSC §38590)." Thus, it is reasonable to assume implementation of AB 1493 standards, or equivalent programs that would be implemented by ARB.

Because AB 1493 allows automakers two years lead time prior to the first model year of regulation, if AB 1493 were implemented in 2009, the earliest model year that would reasonably be expected to be regulated would be model year 2012.

It was assumed that AB 1493 would be 80% implemented by the year 2020 (allowing for two years of delay). Thus, the likely effect of AB 1493 on mobile-source GHG emissions in Albany was assumed to be approximately 15.76%.

Unscaled Emission Reduction	Sector (Transportation)	Scaled Performance (% reduction in GHG emissions)	GHG Emissions Reduction (MT/year)
15.76%	31.99%	5.04%	3,629

¹ California Air Resources Board. 2008 (December). *Climate Change Proposed Scoping Plan*. Sacramento, CA. Available: <<http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>>. Last updated December 2008. Accessed May 18, 2009.

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Appendix C.

Measure Cost Analysis

Albany Climate Action Plan - Draft GHG Reduction Strategies 5/17/09

Buildings and Energy Strategy - Minimize energy consumption, create high performance buildings, and transition to clean renewable energy sources

Objective BE-1: Lead by example with zero-emission City buildings by 2015

Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes
BE-1.1	Install cost-effective renewable energy systems on all city buildings, and install building performance data displays to demonstrate savings.	See below	See below	See below	See below	See below	See below
A	Renewable energy systems	SolarCity	No Cost (Leasing)	No Cost (Leasing)	No Cost (Leasing)	N	Assume City will participate in a Power Purchase Agreement (PPA) with solar company to lease panels at no cost to City.
B	Building performance data displays	Lucid Design Group	\$61,000	\$81,000	\$71,000	N	Dashboard starter (electricity only): \$10,000 - \$30,000 + \$950 for each additional resource (assume city will monitor electricity and water). Annual service fee + data hosting: \$3,000 per year. Free for first year. City has 5 main public buildings. Touch screen available + installation: \$9,950 (32 inch screen + preconfigured). Grand Total: \$61,000 - \$81,000
C	Feasibility study for wind generation on Albany Bulb	-	-	-	\$1,316	-	Possible increase in energy costs assuming higher costs for more renewable energy versus cheaper fossil fuel alternatives. Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)

Objective BE-2: Retrofit existing residential and commercial buildings to increase energy efficiency and maximize use of renewable energy

Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
BE-2.1	Develop comprehensive outreach programs to encourage energy efficiency and renewable energy investments in the community.	EDAW	-	-	\$107,140	\$13,395	N	We are assuming many marketing/education-related strategies could be addressed concurrently. EDAW community-outreach professionals recommend a high tech approach consisting of a video clip, newsletter, and website activity. \$75,000 per campaign (3-4 strategies per campaign) for strategies-related to marketing. Assume 4 advertising campaigns would take place for the CAP = \$300,000 for all 14 strategies
BE-2.2	Identify and develop low-cost financing products and programs that encourage investment in energy efficiency and renewable energy within existing residential units and commercial buildings.	See below	See below	See below	See below	See below	See below	
A	On-bill Financing	Cascadia Consulting Group, Inc. Existing Building Energy Policy Analysis	-	-	-	\$1,316	-	City could coordinate with PG&E to facilitate the repayment of loans for efficiency upgrades on utility bills. Upgrades would be selected by the building owner (in coordination with the City) such that the efficiency savings would pay for the investment over a fixed period of time. Customers would "share" monthly energy efficiency savings with the utility until the loan is paid back, at which point all savings would be reflected in lower monthly bills. The goal is to simplify loan repayment and (in combination with a funding source) reduce upfront cash outlay by property owners. In addition, some models of on-bill financing would allow for the loan to remain with the property (even if sold by the current owner), thereby sharing the cost of upgrades over time with future beneficiaries of those upgrades. Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)
B	Low Interest Loans	Cascadia Consulting Group, Inc. Existing Building Energy Policy Analysis	\$140,000	\$1,150,000	\$645,000	\$80,625	-	The City, utilities, or private lenders could offer loans to property owners for pre-approved energy efficiency upgrades. Low interest rates could be guaranteed through volume or by City buy-down. The goal is to provide capital for energy efficiency upgrades at a discounted rate. Initial Costs: Policy assessment: \$20,000 - \$50,000. The City would need to assess strategies for maximizing the effectiveness of a low interest loan program, educating a contractor/auditor network and addressing the split incentives between investors and energy end-users (e.g., between a landlord and tenant). Development of billing and collection process: \$20,000 - \$100,000. If the City manages the loan program in-house and intends to affix the loan to the property, then a repayment system would have to be arranged. Initial or Annual Costs (depending on structure of financing): City investment: \$100,000-\$1,000,000. This investment is wholly dependent on how much the City intends to subsidize interest rates.
C	Energy Efficiency Mortgages	Cascadia Consulting Group, Inc. Existing Building Energy Policy Analysis	\$20,000	\$150,000	\$85,000	\$20,000	N	Energy Efficiency Mortgages can provide owners additional financing (whether at time-of-sale or upon refinancing) for energy efficiency improvements at discounted interest rates. Energy efficiency upgrades could be chosen that would allow owners to realize a net monthly savings. The goal is to provide capital for energy efficiency upgrades at a discounted interest rate. Initial Costs: Partner development: \$20,000 - \$50,000. Costs to the City would generally be low because these products would be administered through private lenders, but the City would need to devote some financial resources to assisting with partner recruiting. Technology upgrades: \$0 - \$100,000. Depending on the City's role in administration, there may be costs incurred in development of a database to track and verify energy efficiency upgrades in participating properties.
D	Revolving Loan from Bond Sale	Cascadia Consulting Group, Inc. Existing Building Energy Policy Analysis	\$60,000	\$150,000	\$105,000	\$13,125	-	Energy savings could be financed through a (potentially tax-exempt) municipal bond issue. The City would administer a revolving loan fund with the bond proceeds. The goal is to provide capital for energy efficiency upgrades at the lowest cost of capital possible. Initial Costs: Policy assessment: \$40,000 - \$100,000. Further research would be needed to consider whether the City's interest funds would be a better (less expensive, more flexible) option than bonds. Technology upgrades: \$20,000 - \$50,000. Depending on the repayment mechanism and administrative system chosen by the City, some costs would be incurred for establishing a tracking system to manage the loan fund that resu from the revenue bond issue.
E	Energy Efficient Local Improvement District	Cascadia Consulting Group, Inc. Existing Building Energy Policy Analysis	\$150,000	\$500,000	\$325,000	\$40,625	-	Monitoring and enforcement cost: Implementation costs to the City are largely dependent on the capacity of the City for policy administration and enforcement. Additional staff training would need to take place to ensure officials fully understand the code requirements. Additional staff may also be required in order to meet the increased administration and implementation workload, particularly in the period immediately prior to and following the code's implementation. While implementation costs are likely to be high, once introduced, ongoing policy development costs to the City are likely to be manageable as updates would be conducted in line with the City's existing code review process. Initial Costs: Cost of Adopting an Ordinance + Training City Staff to administer program/process applications: ~\$10,000 - possible additional education and outreach related expenses. Annual Costs: Monitoring and enforcement cost: ~\$10,000 + possible additional staff
BE-2.3	Develop and implement residential and commercial energy efficiency upgrade requirements.	See below	See below	See below	See below	See below	See below	
A	Residential	-	-	-	-	\$1,316	-	Possible increased capital costs that could be off set by increased energy efficient home. Cost of developing ordinance: ENERGY STAR for Homes, BOMA Energy Performance Contract. Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)
B	Commercial	-	-	-	-	\$1,316	-	Possible increased capital costs that could be off set by long-term energy bill savings and increased property value as an energy efficient building. Amend City of Albany Green Building Standards of Compliance to require 12% increase in energy efficiency at point-of-sale of commercial buildings. Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)
BE-2.4	Identify and facilitate solar energy EmPowerment districts in commercial, industrial, and mixed-use portions of City.	-	-	-	-	\$1,316	-	Possible increase in energy costs assuming higher costs for more renewable energy versus cheaper fossil fuel alternatives. Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)
BE-2.5	Join Bay Area efforts to ensure green public transit energy sourcing.	-	-	-	-	\$1,316	-	Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)

Objective BE-3: Require energy performance in new construction

Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
BE-3.1	Require new construction to comply with Tier 2 energy efficiency standards contained within section 503.1.2 of the California Green Building Code.	EDAW Seattle Green Building Policy Analysis	-	-	-	\$1,316	-	Possible increased capital costs that could be off set by long-term energy bill savings and increased property value as an energy efficient building. Monitoring and enforcement cost: Implementation costs to the City are largely dependent on the capacity of the City for policy administration and enforcement. Additional staff training would need to take place to ensure officials fully understand the code requirements. Additional staff may also be required in order to meet the increased administration and implementation workload, particularly in the period immediately prior to and following the code's implementation. While implementation costs are likely to be high, once introduced, ongoing policy development costs to the City are likely to be manageable as updates would be conducted in line with the City's existing code review process. Initial Costs: Cost of Adopting an Ordinance + Training City Staff to administer program/process applications: ~\$10,000 - possible additional education and outreach related expenses. Annual Costs: Administrative, monitoring, and enforcement cost low to none, depending on availability of existing staff. Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)
BE-3.2	Require that all new multi-tenant buildings be sub-metered to allow each tenant the ability to monitor their own energy and water consumption.	-	-	-	-	\$1,316	-	Possible marginal increased costs to tenants. Possible marginal increase in revenue from savings to property owner. Initial Costs: Cost of Adopting an Ordinance + Training City Staff to administer program/process applications. Possible additional education and outreach related expenses. Annual Costs: Administrative, monitoring, and enforcement cost low to none, depending on availability of existing staff. Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)

Objective BE-4: Community energy management

Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
BE-4.1	Partner with other neighboring cities and PG&E to fast-track smart grid technology in Albany.	-	-	-	-	\$1,316	-	California Public Utility Commission agreed to allow PG&E to charge ratepayers for an additional \$467 million to bring 10 million gas and electric meters with two-way communications capabilities to its customers by 2011. Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)
BE-4.2	Work with Alameda County to convert all street lights to LED bulbs or LED-solar systems.	Report by Energy Solutions (Dec. 2008). "LED Street Lighting, Host Site: San Francisco, California." http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/gateway_sl-streetslighting.pdf	Assume cost is to County	-	\$336,300	\$33,629	-	Based on Clinton Climate Foundation calculations, City of Albany, 2010
BE-4.3	Research the feasibility of joining the Community Choice Aggregation efforts of Berkeley, Oakland, Emeryville, and other neighboring cities.	-	-	-	-	\$1,316	-	Possible increase in energy costs assuming higher costs for more renewable energy versus cheaper fossil fuel alternatives. Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)
BE-4.4	Encourage PG&E and EBMUD to provide comparative energy and water conservation metrics on utility bills.	-	-	-	-	\$1,316	-	Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)

Transportation and Land Use Strategy - Create an interconnected transportation system and land use pattern that shifts travel from auto to walking, biking and public transit

Objective TL-1: Facilitate walking and biking in the community

Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
TL-1.1	Expand and enhance bicycle infrastructure throughout the city.	See below	See below	See below	See below	See below	See below	
A	Improve/expand bicycle/pedestrian infrastructure network	Alta Planning, City of Albany, AECOM	\$7,900,000	\$46,000,000	\$26,950,000	\$2,695,000	-	Huge variations in cost depending on project needs. Alta Planning cost estimates: Bike Path - \$500K - \$3M per mile (high end indicates grade-separated crossings every 1-2 miles); Bike Lanes - \$25-\$50K per mile (could be more if it requires road widening and ROW acquisition); Bike Routes - \$5K-\$50K per mile (depends on level of treatment - route signage only would be low end, signage + shoulder striping, pavement markings, signal actuation would be higher end). Separated cycle track + street re-design estimated to be \$500,000 - \$3M per mile.
B	Incorporate bicycle-friendly intersections into street design	City of Portland Bureau of Transportation, AECOM	\$88,000	\$143,000	\$115,500	\$11,550	-	\$8,000 - \$13,000 per box. Assume City will install bike boxes at 11 intersections. \$88,000 - \$143,000
TL-1.2	Install bicycle racks in commercial and civic areas of City where racks do not currently exist.	Alta Planning, Creative Pipe, SFMTA	\$20,000	\$20,000	\$20,000	\$2,000	-	\$200 per 2-bike rack (\$150 per rack + \$50 for installation). Assumes 100 new racks will be needed in the city.
TL-1.3	Evaluate the community's walking infrastructure, identify potential barriers, and implement improvements.	Fehr & Peers	\$1,418,250	\$2,569,000	\$1,993,625	\$249,000	-	Source: Fehr and Peers, 2010; http://www.walkinginfo.org/engineering/crossings.cfm
TL-1.4	Strictly enforce pedestrian rights laws on City streets.	EDAW	\$20,000	\$20,000	\$20,000	\$20,000	-	Enforcement cost: Implementation costs to the City are largely dependent on the capacity of the police to enforce existing laws with current staff. Additional training would need to take place to ensure officers fully understand the pedestrian rights laws. Additional hours may also be required in order to conduct enforcement operations. Initial Costs: Cost of training officers about pedestrian rights laws. Annual Costs: Administrative, monitoring, and enforcement cost low to none, depending on availability of existing officers.
TL-1.5	Encourage additional neighborhood-serving commercial uses and mixed-use development within the City's existing commercial districts. Strive to provide access to daily goods and services within 1/4-mile of residences.	EDAW	\$800,000	\$800,000	\$266,667	\$33,333	-	EDAW estimate of consultant fee for General Plan Update: \$800,000

Objective TL-2: Make public transit more accessible and user-friendly

Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
TL-2.1	Conduct public transit gap study that analyzes strategies for increasing transit use within the City and identifies funding sources for transit improvements.	Nelson Nygaard	\$45,000	\$55,000	\$50,000	\$6,250	-	It is assumed this study will require some data collection.
TL-2.2	Work with AC transit to provide bus stops with safe and convenient bicycle and pedestrian access and essential improvements such as shelters, route information, benches, and lighting.	See below	See below	See below	See below	See below	See below	
A	Bus stop improvements	City of Bishop 2008 Capital Improvement Plan, City of Albany	\$150,000	\$150,000	\$150,000	\$18,750	-	Assumed that City will provide bus shelters, benches and existing street lights will provide lighting. AC Transit will pay for maintenance. Estimated that 5 stops need enhancement + 5 new stops = 10 stops total. \$15,000 per transit stop = \$150,000
B	Extend Bus Line 18 to commercial retail on Eastshore Highway	EDAW	-	-	-	\$1,316	-	Assume City will hire one green building/sustainability professional at (\$80K + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)
TL-2.3	Provide passes and shuttles to transit to encourage use of alternative transportation by City employees.	City of Berkeley	-	-	\$9,000 per year	\$9,000	-	City is too small to qualify for the AC Transit EasyPass Program. Assume City will be able to partner with the City of Berkeley to obtain passes for employees. The City of Berkeley pays \$91,837 to provide passes to the 1,374 eligible employees (\$67/employee). City of Albany has 130 employees. -\$9,000 for passes per year + staff time to coordinate with Berkeley and setup program.

Albany Climate Action Plan - Draft GHG Reduction Strategies 5/17/09

Objective TL-3: Promote pedestrian- and transit-oriented development								
Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
TL-3.1	Provide public education about benefits of well-designed, higher-density housing and relationship between land use and transportation.	EDAW	\$300,000	\$300,000	\$300,000 (for 14 strategies)	\$2,679	N	We are assuming many marketing/education-related strategies could be addressed concurrently. EDAW community-outreach professionals recommend a high tech approach consisting of a video clip, newsletter, and website activity. \$75,000 per campaign (3-4 strategies per campaign) for strategies-related to marketing. Assume 4 advertising campaigns would take place for the CAP = \$300,000 for all 14 strategies
TL-3.2	Update planning documents to promote high-quality, mixed-use, pedestrian- and transit-oriented development in the San Pablo/Solano Avenue commercial districts.	EDAW	\$30,000	\$30,000	\$30,000	\$3,750	N	Consultant fee estimate: \$30,000
TL-3.3	Evaluate GHG emissions associated with development proposals and work with applicants to reduce emissions during project review, and incentivize projects that generate low levels of GHG emissions.	EDAW	-	-	-	\$1,316	N	Assume City will hire one green building/sustainability professional at (\$80k + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)
A	Prescriptive Approach - strategy based on compliance with standard. GHG emissions are estimated based on typical building performance (GHG/ft) for specified design strategies	Cascadia Consulting Group, Inc. Existing Building Energy Policy Analysis	\$145,000	\$350,000	\$247,500	\$30,938	Y	Prescriptive approach: Commercial: LEED NC 2.2 EA Credit 1: Optimize Energy Performance Prescriptive Compliance Option, Residential - ENERGY STAR for Homes (Home Performance or Earth Advantage Energy Performance Certificate). Initial Costs: Assessment of required upgrades: \$75,000 - \$150,000. Although sample checklists from other jurisdictions are available, assessing and establishing what upgrades are needed in each sector to meet city-wide energy efficiency goals, while also assessing the cost-effectiveness of those measures, is likely to be a significant task. -Development of a database: \$20,000-\$100,000. A database would be needed to track what properties are in compliance with the mandate. Alternatively, existing databases could potentially be leveraged for cost savings. -Legislative Development: \$50,000 - \$100,000. City staff and legal council would need to develop the policy specifics and legislation. Much of this work could be done within existing staffing levels, meaning few to moderate new resources would be needed.
B	Performance Based Approach	Cascadia Consulting Group, Inc. Existing Building Energy Policy Analysis	\$225,000	\$500,000	\$362,500	\$45,313	Y	Performance based approach: energy modeling ordinance (possibly tied to LEED NC 2.2 EA Credit 1: Optimize Energy Performance + EA Credit 5: Measurement and Verification) or equivalent for LEED Homes. Possible synergy with expedited permitting/tracking policy strategies. Initial Costs: Assessment of existing rating systems: \$75,000 - \$200,000. Experience to date has indicated that existing rating systems must be vetted in the marketplace before making them mandatory. In addition to selecting a rating system, the City would need to assess and select appropriate performance requirements. -Development of database: \$100,000 - \$200,000. A database could be developed to house and provide ability for property owners or City program managers to access the ratings. Alternatively, existing databases (such as the Multiple Listing Service or EPA's Portfolio Manager) could potentially be leveraged for residential and commercial ratings, respectively. -Legislative Development: \$50,000 - \$100,000. City staff and legal council would need to develop the policy specifics and legislation. Much of this work could be done within existing staffing levels, meaning few to moderate new resources would be needed.
C	Develop GHG Reduction Development Impact Fee based on a clear nexus of new development's negative contribution to increases in GHG. Performance based development impact fee.	EDAW	\$70,000	\$100,000	\$85,000	\$8,000	N - Possible costs to local developers	Cost would be to develop the nexus study to determine the relationship between new development and its negative contribution to GHG. The study would require 5-year updates for an accounting of mitigation measures paid through the impact fee.
Objective TL-4: Reduce vehicle emissions and trips								
Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
TL-4.1	Work with ABAG and neighboring cities to improve the jobs-housing balance within the City and regional transit corridors.	-	-	-	\$1,316	N	Assume City will hire one green building/sustainability professional at (\$80k + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)	
TL-4.2	Improve fuel efficiency of the City vehicle fleet by purchasing low- or zero-emission vehicles when vehicles are retired from service.	City of Albany	-	-	\$728,000	\$72,800	N	Estimated cost per hybrid vehicle: \$26,000. City has 28 vehicles
TL-4.3	Incentivize electric and plug-in hybrid vehicles through development of automobile charging infrastructure and preferential street parking spaces.	See below	See below	See below	See below	See below	See below	
A	Charging station infrastructure	-	-	-	\$1,316	N	If City partners with Better Place or Coulomb Technology, this infrastructure could have no additional cost to the City. Some cities (SF, Oakland, San Jose) are offering incentives to promote electric vehicles, such as expedited permitting and installation of electric vehicle charging outlets. Cost assumes private company will install infrastructure. Assume City will hire one green building/sustainability professional at (\$80k + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)	
B	Preferential street parking for electric and plug-in electric hybrid vehicles	-	-	-	-	N	Low cost. Loss of revenue associated with reduced parking fees	
TL-4.4	Create and implement a voluntary transportation demand management (TDM) program to reduce weekday peak period single occupancy commute and school trips.	Nelson Nygaard	\$25,000	\$75,000	\$50,000	\$6,250	N	Comprehensive TDM study tailored to local conditions (including some data collection as needed): \$75,000. Basic TDM study: \$25,000
A	Facilitate ride-share programs.	-	-	-	\$1,316	N	Assume City will hire one green building/sustainability professional at (\$80k + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)	
B	Public outreach	EDAW	\$300,000	\$300,000	\$300,000 (for 14 strategies)	\$2,679	N	Assume many marketing/education-related strategies could be addressed concurrently. EDAW community-outreach professionals recommend a high tech approach consisting of a video clip, newsletter, and website activity. \$75,000 per campaign (3-4 strategies per campaign) for strategies-related to marketing. Assume 4 advertising campaigns would take place for the CAP = \$300,000 for all 14 strategies
TL-4.5	Evaluate and consider implementation of community parking management strategies.	EDAW	\$45,000	\$55,000	\$50,000	\$6,250	N	It is assumed this study will require some data collection.
Objective TL-5: Prepare for peak oil								
Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
TL-5.1	Conduct a study of the potential effects of peak oil on the community and develop a peak oil adaptation plan.	-	-	-	\$1,316	N	Assume City will hire one green building/sustainability professional at (\$80k + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)	
Waste Reduction Strategy - Minimize waste								
Objective WR1: Become a zero-waste community								
Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
WR-1.1	Establish a citywide zero waste target for 2030.	-	-	-	\$1,316	N	Assume City will hire one green building/sustainability professional at (\$80k + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)	
Water Conservation Strategy - Celebrate water as an essential community resource								
Objective WC-1: Conserve water in existing buildings/landscapes								
Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
WC-1.1	Encourage residential and commercial users to participate in EBMUD's free water audit program.	EDAW	\$300,000	\$300,000	\$300,000 (for 14 strategies)	\$2,679	N	Assume many marketing/education-related strategies could be addressed concurrently. EDAW community-outreach professionals recommend a high tech approach consisting of a video clip, newsletter, and website activity. \$75,000 per campaign (3-4 strategies per campaign) for strategies-related to marketing. Assume 4 advertising campaigns would take place for the CAP = \$300,000 for all 14 strategies
WC-1.2	Encourage 50% reduction in outdoor potable water usage for existing residential and commercial properties.	-	\$300,000	\$300,000 (for 14 strategies)	\$2,679	N	Assume many marketing/education-related strategies could be addressed concurrently. EDAW community-outreach professionals recommend a high tech approach consisting of a video clip, newsletter, and website activity. \$75,000 per campaign (3-4 strategies per campaign) for strategies-related to marketing. Assume 4 advertising campaigns would take place for the CAP = \$300,000 for all 14 strategies	
Objective WC-2: Conserve water in new construction/landscapes								
Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
WC-2.1	Require new construction and major remodels to achieve indoor water efficiency 20% above the California Building Standards Code.	-	-	-	\$1,316	N	Possible increased capital costs that could be off set by long-term water bill savings and increased property value as an water efficient building. Amend City of Albany Green Building Standards of Compliance to require residential remodels and renovations improve plumbing fixture and fixture-fitting water efficiency by 20% above the California Building Standards Code water efficiency standards. Initial Costs: Cost of Adopting an Ordinance + Training City Staff to administer program/process applications. Possible additional education and outreach related expenses. Annual Costs: Administrative, monitoring, and enforcement cost low to none, depending on availability of existing staff. Assume City will hire one green building/sustainability professional at (\$80k + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)	
WC-2.2	Require new landscape projects to reduce outdoor potable water use by 50%.	See Measure WC-2.1	See Measure WC-2.1	See Measure WC-2.1	See Measure WC-2.1	See Measure WC-2.1	See Measure WC-2.1	
Green Infrastructure Strategy - Conserve, create, and enhance natural assets that improve community quality of life.								
Objective GI-1: Expand and enhance urban forestry								
Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
GI-1.1	Enhance the community's urban forest and other landscapes to maximize carbon sequestration, reduce stormwater runoff, and augment neighborhood aesthetics.	See below	See below	See below	See below	See below	See below	
A	Tree planting	City of Albany	-	-	\$200,000	\$20,000	N	Urban Forest Department stated that the City would approach planting capacity in approx. 10 years with an additional 5,000 trees. Estimated that this would require an additional \$20,000 per year to purchase/plant trees/expand urban forest program.
B	Undergrounding utilities	-	-	-	\$1,316	N	Assume City will hire one green building/sustainability professional at (\$80k + benefits/overhead = \$200,000) who will be responsible for implementing all strategies related to the CAP. (\$200,000 / 19 strategies / 8 years = \$1,316 avg annual cost)	
Food and Agriculture Strategy - Create a sustainable and climate-friendly food system.								
Objective FA-1: Strengthen the regional food system								
Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
FA-1.1	Establish a permanent farmer's market site within the City and work to expand the market as a community resource.	-	-	-	\$20,000	N	Assumes farmer market site study and consultation with local farmers markets organizations.	
FA-1.2	Facilitate and promote Community-Supported Agriculture organizations and services.	EDAW	\$300,000	\$300,000	\$300,000 (for 14 strategies)	\$2,679	N	Assume many marketing/education-related strategies could be addressed concurrently. EDAW community-outreach professionals recommend a high tech approach consisting of a video clip, newsletter, and website activity. \$75,000 per campaign (3-4 strategies per campaign) for strategies-related to marketing. Assume 4 advertising campaigns would take place for the CAP = \$300,000 for all 14 strategies
FA-1.3	Procure regionally produced food for City events and encourage vendors at City-sponsored events to procure food regionally.	EDAW	\$300,000	\$300,000	\$300,000 (for 14 strategies)	\$2,679	N	Assume many marketing/education-related strategies could be addressed concurrently. EDAW community-outreach professionals recommend a high tech approach consisting of a video clip, newsletter, and website activity. \$75,000 per campaign (3-4 strategies per campaign) for strategies-related to marketing. Assume 4 advertising campaigns would take place for the CAP = \$300,000 for all 14 strategies
Objective FA-2: Promote awareness of sustainable food choices								
Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
FA-2.1	Encourage low-carbon meals through public education.	EDAW	\$300,000	\$300,000	\$300,000 (for 14 strategies)	\$2,679	N	Assume many marketing/education-related strategies could be addressed concurrently. EDAW community-outreach professionals recommend a high tech approach consisting of a video clip, newsletter, and website activity. \$75,000 per campaign (3-4 strategies per campaign) for strategies-related to marketing. Assume 4 advertising campaigns would take place for the CAP = \$300,000 for all 14 strategies
Objective FA-3: Increase and enhance urban agriculture								
Measure	Data Source	Low Cost	High Cost	Average Cost	Avg Annual Cost (assume 2012 start date for most activities)	Direct Costs to Local Residents and Businesses	Cost Notes	
FA-3.1	Establish a local community garden program to increase local food security and provide local recreation amenities.	Urban Harvest	\$2,600	\$20,000	\$11,300	\$1,413	N	Assuming land is dedicated, new garden could be built for \$1,000 - \$4,000 + annual maintenance costs with volunteer labor. Potential additional cost higher depending on on-site facilities (assumed \$20,000)

Legend for Origin of Policies:
 ACGT Albany Clean and Green Task Force
 CAP SRV CAP Online Survey
 ASR Albany Strollers and Rollers
 BMP Best Management Practices
 AG Attorney General
 CAPCOA 2007 CAPCOA Report

Appendix D.

Outreach Materials



**SUSTAINABILITY COMMITTEE
REGULAR MEETING
MINUTES**

**City of Albany Community Development Department
Large Conference Room
979 San Pablo Avenue, Albany
September 17, 2008 – 7:30 p.m.**

1. CALL TO ORDER

The meeting was called to order at 7:35 p.m.

2. ROLL CALL

Members Present:

Thomas Cooper	Caryl O’Keefe
Miya Kitahara	Janet Smith-Heimer
Dan Lieberman	April Yang

Members Absent: Suzanne Schrift

Staff Present: Nicole Almaguer

Others Present: EDAW

3. APPROVAL OF MINUTES

3-1. Approve minutes from July 16 meeting (attached)

Minutes approved unanimously, motion by O’Keefe, seconded by Lieberman.

4. PUBLIC COMMENT

Francesco Papalia: expressed interest in pursuing wind turbine at the bulb.

5. ANNOUNCEMENTS/COMMUNICATIONS

None.

6. PRESENTATION

6-1. Climate Action Plan (CAP) Project Kick-off Meeting with EDAW, Inc.

(Attachment 1)

EDAW, Inc. provided a presentation regarding the CAP. EDAW identified the City’s current baseline greenhouse gas emissions, key areas of a CAP, and the public planning process that would be taken to develop the CAP.

The Clean and Green Task Force Recommendations were discussed, and the Committee suggested new measures to consider within the CAP.

EDAW will be developing a survey for the public within the next couple of weeks. The survey will be widely promoted to encourage participation. EDAW will return to the Committee in December with survey results and to discuss greenhouse gas reduction measures identified within the survey results.

Public Comment:

Nick Pilch, Strollers & Rollers: encourages the CAP be connected to the City’s Bicycle Master Plan, and promotes completion of a Pedestrian Master Plan. Supports transportation safety education. Strollers & Rollers is interested in working with the Committee.

7. REPORTS

7-1. Long Range Planning/Sustainable Development Subcommittee – update

The subcommittee is researching the potential for wind energy at the Albany bulb. The subcommittee has also drafted a project review policy for review by the Committee.

7-2. Urban Landscape Subcommittee – update

O’Keefe reported that the subcommittee sent in a list of questions to the Public Works Manager regarding the City’s maintenance practices. Maintenance practices all seem to be quite environmentally friendly.

7-3. Education Subcommittee – update

The subcommittee discussed the AHS connect program.

7-4. Green Albany Event & Green Corridor Update (Almaguer)

Almaguer reported that both items will be going to City Council for review within the month of October.

8. DISCUSSIONS AND POSSIBLE ACTION ON MATTERS RELATED TO THE FOLLOWING ITEMS:

8-1. Education Subcommittee Recommendation: Albany High School “Connect” Program – determine Committee’s interest in this program and compile a list of potential projects (Kitahara – Attachment 2)

Kitahara provided an introduction to this item. AHS Connect program is a newly created program by the high school to encourage students to get involved in the community. Kitahara asked if the Committee had any ideas for potential projects for students, and if the Committee was in favor of supporting the program.

The Committee identified a number of potential projects for students.

Cooper motioned the Committee become a community partner to the AHS Connect program, seconded by Smith-Heimer, unanimously approved.

8-2. Long Range Planning Subcommittee Recommendation: “Project Review Policy” (Smith-Heimer – Attachment 3)

Smith-Heimer provided an introduction to this item. It is intended to provide guidelines in terms of what the Committee’s focus will be for reviewing projects. The Committee agreed to discuss this item in more detail at the October meeting. The subcommittee will try to meet with Jeff Bond, the City’s Planning Manager, prior to the next meeting.

9. FUTURE AGENDA ITEMS

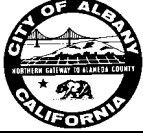
(Commission/Committee/Board Member announcement of requests for future agenda items. No public comment

will be taken on announcement of future agenda items).

9-1. Next meeting October 15, 2008 – Fern Tiger Associates Waterfront Planning (Attachment 4)

ADJOURNMENT

The meeting was adjourned at 9:50 pm.



**SUSTAINABILITY COMMITTEE
REGULAR MEETING
Minutes**

**City of Albany Community Development Department
Large Conference Room
979 San Pablo Avenue, Albany
December 17, 2008 – 7:30 p.m.**

1. CALL TO ORDER

2. ROLL CALL

Thomas Cooper Dan Lieberman
Miya Kitahara
Caryl O'Keefe

Members Absent: Janet Smith-Heimer, Suzanne Schrift, April Yang
Staff Present: Nicole Almaguer
Others Present: Beth Pollard, City Administrator, EDAW, INC.

3. APPROVAL OF MINUTES

3-1. Approve minutes from November 19 meeting (attached)

Minutes approved unanimously, motion by O'Keefe, second by Kitahara.

4. PUBLIC COMMENT

None.

5. ANNOUNCEMENTS/COMMUNICATIONS

Cooper announced he and Lieberman will be meeting with Council Member Wile regarding an upcoming meeting she will be attending with Barbara Lee to discuss sustainability opportunities and projects for the city in preparation for federal funding.

6. PRESENTATION

6-1. Albany Climate Action Plan Update – EDAW, Inc.

EDAW, INC provided a presentation regarding the climate action survey. To date 100 responses to the survey have been received. Input from both seniors and youth are still needed.

The survey will be further promoted within the community, and public workshops will be held at the Green Albany Day event in May.

Amy Smolens, representing Albany Strollers & Rollers expressed interest in pursuing the City's Pedestrian Plan and updating the Bicycle Master Plan. Strollers & Rollers would like to coordinate and work collaboratively on the Climate Action Plan.

7. REPORTS

7-1. Long Range Planning/Sustainable Development Subcommittee – update

Cooper provided an update, including reading an email provided by Smith-Heimer. The subcommittee continues to research the possibility of placing an anemometer on the bulb, and have been trying to inquire with PG&E. The item will also be brought up with Barbara Lee. Lieberman also noted that PG&E may receive the credits associated with the wind energy project, and it would be important that the City receive some sort of percent of the credit.

Almaguer asked what installation of an anemometer entailed. Lieberman replied that it is a 150-foot pole, which would be up for approximately one year.

Almaguer recommended this item be discussed with the Waterfront Committee to gauge interest.

Cooper agreed and noted that the subcommittee determined that more dialogue with the Waterfront Committee is necessary on this item as well as on development issues in general.

Cooper asked what the typical procedure is for corresponding with another Committee.

Almaguer suggested representatives from the Committee visit the Waterfront Committee to present and discuss the idea.

Cooper asked how the Committee could learn about what the Waterfront Committee is pursuing, and when it is related to sustainability.

O'Keefe suggested reviewing the minutes, watching the meetings on television, or contacting them directly to discuss overarching areas of interest.

Meeting Agenda

Cooper reported the subcommittee also discussed the Fern Tiger presentation.

7-2. Urban Landscape Subcommittee – update

O’Keefe noted that she received a proposal regarding urban farming, and would like to allow for a presentation on this subject at a future meeting. They are also researching the amount of water conservation at Golden Gate Fields, and would like to recognize them for conservation.

7-3. Education Subcommittee – update

Kitahara reported they are working on Green Albany Day, and are developing criteria for how vendors and participants are allowed to host a table at the event. Additionally they are working on a survey that would be sent community wide.

7-4. Green Albany Day - update

This item was discussed as part of 7-3.

8. DISCUSSIONS AND POSSIBLE ACTION ON MATTERS RELATED TO THE FOLLOWING ITEMS:

8-1. Long Range Planning Subcommittee Recommendation: “Project Review Policy” (Smith-Heimer)

Smith-Heimer will present a revised draft policy at the next meeting.

8-2. Sustainable Food Policy – Review and provide comments (Kitahara)

Kitahara asked for additional comments from the Committee, and plans to make the policy a purchasing policy, taking out the land use portion within the policy. The resolution will include charging the Committee with conducting a land use study.

8-3. Reorganizing the Social and Economic Justice Commission and Sustainability Committee into one commission

City Administrator Beth Pollard provided background on this item, and noted that the reasoning behind this recommendation is to do some economizing of staff capacity, and that the Social and Economic Justice Commission (SEJC) has not been that active recently. Additionally, social and economic justice has a connection to sustainability. City Council would like input from the two bodies. The item will be taken back to City Council in January or February.

O’Keefe stated she sees advantages to combining the groups, and feels economics should be considered within sustainability. She attended some of the SEJC meetings, a quorum was not met at two recent meetings.

Kitahara expressed concern over the potential size of the new body, and feels that SEJC issues would require additional people.

Lieberman suggested SEJC act as an ad-hoc group that met as issues were identified. The Sustainability Committee is currently comprised of professionals in the environmental field, and increasing the scope of this group could have a negative impact on the Committee.

Cooper agreed the Committee should keep social and economic justice issues in mind when considering items. The Committee has a very full plate, and addition of SEJC items could create distraction and overwhelm the group. Cooper also expressed concern regarding the potential size of the body.

The Committee agreed to discuss this item further at the January meeting.

9. FUTURE AGENDA ITEMS

9-1. Next meeting January 21, 2008 – Green Building Ordinance & Implementation, Site Drainage Update (Planning Staff)

10. ADJOURNMENT

The meeting was adjourned at 10:00 p.m.



**SUSTAINABILITY COMMITTEE
REGULAR MEETING
DRAFT MINUTES**

**City of Albany Community Development Department
Large Conference Room
979 San Pablo Avenue, Albany
March 18, 2009 – 7:30 p.m.**

1. CALL TO ORDER

The meeting was called to order by Chair Cooper at 7:40 p.m.

2. ROLL CALL

Thomas Cooper	Caryl O'Keefe	Janet Smith-Heimer
Miya Kitahara	Suzanne Schrift	April Yang
Dan Lieberman		

Staff Present: Nicole Almaguer

Others Present: EDAW, Inc.

3. APPROVAL OF MINUTES

3-1. Approve minutes from February 18 meeting (attached)

Minutes approved unanimously, motion by O'Keefe, seconded by Schrift.

4. PUBLIC COMMENT

None.

5. ANNOUNCEMENTS/COMMUNICATIONS

Almaguer announced the city will be participating in the "Renewable Funding" program, allowing cities and counties to join a statewide clean energy financing program. The first workshop is scheduled for the end of April. Schrift announced that the Richmond Plunge is a current example of how a pool can be built with sustainable practices.

6. PRESENTATION

6-1. Climate Action Plan Draft Greenhouse Gas Emissions Reduction Strategies (EDAW, Inc.)

EDAW, Inc. provided an overview of the current planning process and the draft greenhouse gas emissions reduction strategies. A number of strategies were presented including transportation/land use, buildings/energy, waste and water, green infrastructure, sea level rise, and economic development.

Smith-Heimer requested detail on EDAW's peer review of the ICLEI baseline inventory.

Cooper requested a focused meeting to review the draft measures, and requested EDAW provide cost estimations and time considerations for implementation of each measure.

EDAW will provide the updated information the week prior to the Committee's meeting in order to have time for review. A meeting will also be held with city staff to review the draft measures.

The Committee agreed two hours of the next regular meeting would be dedicated to review of the draft measures.

7. REPORTS

7-1. Long Range Planning/Sustainable Development Subcommittee – update

Smith-Heimer provided an update. The subcommittee spoke with Dan Kammen at UC Berkeley regarding the potential for wind energy at the waterfront. Kammen provided some suggestions that the subcommittee will research further. The subcommittee would like to research funding opportunities to conduct a feasibility study. The subcommittee also discussed developing an ordinance requiring solar hot water for pools. Lieberman will follow up with Planning Manager Bond regarding this item.

Smith-Heimer provided a draft process for the Committee's input to major projects and programs. The process allows for liaisons to the Waterfront Committee, Park & Recreation Commission and the Planning and Zoning Commission to encourage interaction between the Committee and these groups on major projects and programs. This item will be put on the April agenda for approval by the Committee.

7-2. Urban Landscape Subcommittee – update

Schrift provided an update. The subcommittee is researching examples of stormwater design educational materials that could be provided at the planning counter. Schrift will also be discussing the item further with planning staff to identify how stormwater design can be further encouraged in development projects. The subcommittee also provided a summary of items within the urban farming proposal that they would like to pursue. This item will be on the May agenda for discussion/action.

7-3. Education Subcommittee – update

The Education Subcommittee update is included within item 8-1.

8. DISCUSSIONS AND POSSIBLE ACTION ON MATTERS RELATED TO THE FOLLOWING ITEMS:

8-1. Green Albany Day Event Planning

Kitahara provided an update. Over 160 surveys were received from the community, resulting in a number of volunteers to assist with the event. Workshop topics have been identified based on preferences selected on the surveys. Workshop providers are now being confirmed, and posters are being developed by a high school student for the event. Further discussion of Green Albany Day will continue at the April Committee meeting.

Amy Smolens, Strollers and Rollers reported Jelly Belly offered to sponsor the bike valet for the event. Jelly Belly will be included as a sponsor on printed material for the event.

8-2. Environmentally Preferable Purchasing Policy /Food Policy – Review draft (Kitahara)

Kitahara provided an overview of the updated purchasing policy and the resolution.

The item was approved unanimously, motion by Smith-Heimer, seconded by Cooper. The policy and resolution will be taken to City Council for approval.

9. FUTURE AGENDA ITEMS

9-1. Next meeting April 15, 2009 – EDAW – draft CAP measures

The April agenda will also include review of the Long-range planning subcommittee recommended process for input to major projects and programs, and Green Albany Day. The urban landscape subcommittee will prepare recommendations on projects related to the Green Albany urban farming proposal at the May meeting.

10. ADJOURNMENT

The meeting was adjourned at 10 p.m.

The Committee packet is available for public inspection at the Albany Library, Fire Department and City Hall. The agenda and supporting staff reports, if available, can be found on our web page at www.albanyca.org.

Please note that if you provide your name and address when speaking before the Committee it will become part of the official public record, which will be posted on the Internet. Agenda related writings or documents provided to a majority of the Sustainability Committee regarding any item on this agenda will be made available for public inspection in the Community Development Department, 979 San Pablo Avenue, Albany CA.



**SUSTAINABILITY COMMITTEE
REGULAR MEETING
MINUTES**

**REVISED MEETING LOCATION:
VETERAN'S MEMORIAL BUILDING
1325 PORTLAND AVE – (MEMORIAL PARK)
April 15, 2009 – 7:00 p.m.**

1. CALL TO ORDER

The meeting was called to order by Chair Cooper at 7:05 p.m.

2. ROLL CALL

Thomas Cooper	Caryl O'Keefe	Janet Smith-Heimer
Miya Kitahara	Suzanne Schrift	April Yang

Members Absent: Dan Lieberman
Staff Present: Nicole Almaguer
Others Present: EDAW, Inc.

3. APPROVAL OF MINUTES

3-1. Approve minutes from March 18 meeting (attached)

Minutes approved unanimously as amended. Motion by Kitahara, seconded by O'Keefe.

4. PUBLIC COMMENT

Preston Jordan announced that Buchanan Street is being considered for redesign, and a public meeting is scheduled. Jordan has been encouraging the concept of complete streets.

5. ANNOUNCEMENTS/COMMUNICATIONS

Preston Jordan announced that Transform's annual summit will be held on 5/16.
Ed Fields announced the UC educational series in process regarding SB 375.

6. DISCUSSIONS AND POSSIBLE ACTION ON MATTERS RELATED TO THE FOLLOWING ITEMS:

6-1. Process for Sustainability Committee Input to Major Projects and Programs – Review proposal from long range planning subcommittee

Smith-Heimer presented the proposal to create liaisons to Traffic & Safety, Planning & Zoning, and the Waterfront Committee. This will provide an opportunity for the Committee to introduce itself and to identify mutual goals between various groups. Designees from the Committee may not be able to attend each meeting, but will monitor agendas and minutes. If designees are unable to attend, other members from the Committee would be encouraged to attend if the agenda seemed relevant.

O'Keefe suggested including additional city commissions, and encouraged regular attendance at the meetings. O'Keefe regularly attends the Waterfront Committee meetings, and they recently had a discussion about the Albany Bulb as related to Measure WW funds. They discussed transfer of the Bulb to the Park District, and a member of the public stated that wind energy at the waterfront was being discussed by the Sustainability Committee. This is an example of how the agenda does not always reflect what will be discussed and why regular attendance should be attempted.

Jordan asked why the other city groups and the school board were not included.

Smith-Heimer replied that the Committee is aiming to start with key groups, expanding as schedules allow, and potentially involve the schools in the future.

Cooper noted the amendment to the policy to attempt inclusion of other city commissions as schedule allows. Policy unanimously approved as amended.

6-2. Continued review of Climate Action Plan Draft Greenhouse Gas Emissions Reduction Strategies

EDAW provided a number of measures for discussion based on measures that quantitatively seem to be those that are the most feasible, provide the biggest ghg reductions, and are affordable.

Smith-Heimer requested additional data related to the peer review of the ICLEI inventory.

Smith-Heimer also requested that EDAW develop measures unique to Albany, and that Albany already has density. Kitahara requested EDAW provide detail on how the estimated greenhouse gas emissions reductions were calculated.

Jordan provided comments from the Carbon Neutral Albany group, and requested additional information regarding cost detail.

EDAW will be revising the draft measures and supplying additional information as requested.

6-3. Green Albany Day Event Planning

The event is well planned and a number of organizations will have information booths at the event. Public outreach, posters, and media will be conducted to encourage attendance.

6-4. Select liaison for AUSD Pool Sustainability Committee

This item was not discussed.

7. FUTURE AGENDA ITEMS

(Commission/Committee/Board Member announcement of requests for future agenda items. No public comment will be taken on announcement of future agenda items).

7-1. Next meeting May 20, 2009

8. ADJOURNMENT

The meeting was adjourned at 10:45 p.m.

The Committee packet is available for public inspection at the Albany Library, Fire Department and City Hall. The agenda and supporting staff reports, if available, can be found on our web page at www.albanyca.org.

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**SUSTAINABILITY COMMITTEE
REGULAR MEETING
DRAFT MINUTES**

**City of Albany Community Development Department
Large Conference Room
979 San Pablo Avenue, Albany
June 17, 2009 – 7:30 p.m.**

1. CALL TO ORDER

The meeting was called to order by Chair Cooper at 7:35 p.m.

2. ROLL CALL

Thomas Cooper	Caryl O’Keefe	Dan Lieberman
Miya Kitahara	Suzanne Schrift	April Yang

Members Absent: Janet Smith-Heimer
Staff Present: Nicole Almaguer, Ann Chaney

3. APPROVAL OF MINUTES

3-1. Approve minutes from April 15 meeting (attached)

Minutes approved as amended – motion by O’Keefe, seconded by Schrift.

4. PUBLIC COMMENT

Mari Gilmore – interested in connecting El Cerrito’s Environmental Quality Committee with the Sustainability Committee.

Kitahara announced International day of climate action is scheduled for October 24. Visit 350.org for more information.

Chaney announced that the Voices to Visions waterfront visioning sessions have been extended, and encouraged Committee members to promote the visioning sessions.

5. ANNOUNCEMENTS/COMMUNICATIONS

5-1. Update regarding City participation in the Stopwaste.org “Green Packages” program, energy efficiency stimulus funding, and regional energy efficiency/solar financing opportunities – Attachment 1

Almaguer provided a summary of the various energy programs and financing opportunities the city is engaging in. Cooper and Lieberman asked about the Green Packages program, and what the benefits were for Albany. Almaguer noted the deliverables that will be provided by the program, and that the program will enable the county to be competitive for additional funding opportunities to further expand the concepts outlined in the program. Almaguer will provide updates as available.

5-2. Update regarding Climate Action Plan – Attachment 2

Almaguer provided a status update regarding the CAP. EDAW will provide an administrative draft in late June for review by the Committee. The Committee will review and comment on the draft administrative CAP at both the July and September meetings. Per EDAW’s summary of Green Albany Day, the CAP public workshops were not well attended.

Cooper expressed concern regarding the limited public input at Green Albany Day, and asked about other opportunities to gain additional public input.

O’Keefe noted that the public workshops at Green Albany Day were publicized.

Almaguer suggested additional public input be sought at upcoming events such as the 4th of July or the Solano Stroll, with a preference for the 4th of July as it involves more local residents. Additionally, a citywide survey can be developed to gain additional input during the draft CAP stage.

The measures outlined in the CAP will all need to go through their own review process prior to being implemented, which will allow for public review of detailed project descriptions as projects/programs are developed.

The Committee agreed a survey would be worthwhile.

6. PRESENTATION

6-1. Albany Waterfront Park Status & Wind Energy Concept (Ann Chaney)

Chaney provided background information regarding the waterfront. The bulb is currently owned by the City. Transfer of the bulb to be included as part of the Eastshore State Park has been intended for several years. The City's Waterfront Committee is preparing a recommendation for City Council to encourage the State to take action and purchase the bulb property.

Chaney also gave a summary of the Measure WW funding available for park acquisition and recreation enhancements. There is \$771,000 available as a local non-competitive grant to the City, \$27 million for Eastshore State Park, and \$12.3 million for Bay trail expansion. The City Council asked the Park & Recreation Commission to identify projects for the \$771,000, and asked the Waterfront Committee to identify projects at the waterfront for grant funding. The item will go to the City Council in September.

Chaney raised questions regarding the wind energy concept including habitat concerns, threat to birds/other animals, impact on recreation, impacts on closed landfill soil, amount of energy that could be produced, and energy recipient.

Lieberman replied that the majority of these questions are all questions that would need to be answered as part of a feasibility study.

Lieberman and Cooper expressed concern that if the bulb property is purchased by the State there may not be an opportunity to identify the feasibility of introducing wind energy.

Chaney suggested the Committee submit a letter to the City Council regarding the wind energy concept and attend the September meeting.

Lieberman will draft a letter for Committee review at the July meeting.

7. REPORTS

7-1. Long Range Planning/Sustainable Development Subcommittee – update

a. Liaison meetings

Cooper provided an update – the Subcommittee attended Waterfront Committee, Planning & Zoning Commission, and Transportation & Safety Commission. Planning & Zoning were interested in the liaison opportunity and suggested a potential subcommittee meeting of P&Z/Sustainability Committee representatives.

Lieberman attended the Traffic & Safety Commission meeting and found that Albany Strollers & Rollers actively attends the meetings and provides good input. Lieberman will review agendas to see when items of interest may come up.

Cooper attended the Waterfront Committee meeting and brought up the example of the wind energy project as a potential project of mutual interest.

The Subcommittee is also interested in having a representative of the Committee attend the School Board meetings. Yang offered to attend the School Board meetings. Cooper noted he would provide assistance to Yang.

7-2. Urban Landscape Subcommittee – update

Schrift provided an update – and suggested postponing the Green Albany proposal as the author was unable to attend the meeting. O'Keefe agreed it would be important to have the author attend the meeting and provide a brief presentation regarding her ideas. The Committee agreed to postpone the meeting until September.

7-3. Education Subcommittee – update

Kitahara stated the Subcommittee has not met since Green Albany Day.

8. DISCUSSIONS AND POSSIBLE ACTION ON MATTERS RELATED TO THE FOLLOWING ITEMS:

8-1. Green Albany Day – review 2009 event and determine if Committee supports an event in 2010

Kitahara provided a report and distributed a summary provided by the staff working on Green Albany day. O'Keefe stated she would like to find a way to reach out to others that do not typically attend green events. Schrift agreed.

Cooper stated that some of the outreach plans were not conducted, and that the poster print was small.

Lieberman asked if it was possible to combine it with another city event.

Kitahara stated that the Ecofest in Fairfax is an example of a combined event.

The Committee agreed to pursue combining the event with the Art & Music Festival.

Almaguer will discuss the item with the staff liaison for the Arts Committee to identify their interest in combining the events.

8-2. Urban Landscape Subcommittee – Green Albany Proposal – Attachment 3 (Schrift)

The Committee agreed to postpone this item until September.

8-3. Attendance at an upcoming City of El Cerrito Environmental Quality Committee meeting

Kitahara and Lieberman will attend an upcoming meeting.

Almaguer noted there was also an interest in potentially having a joint meeting in the future.

8-4. Public events – determine if Committee would like to have a booth at the 4th of July Festival and/or Solano Stroll event

4th of July: Almaguer noted that the event runs from 11-4pm, and that the table will include poster boards to obtain input on the climate action plan. Almaguer will email a sign up list to the Committee.

Solano Stroll: O’Keefe recommended the Committee not have a table as it is a busy event, with many not local residents. The Committee agreed not to have a table at the Stroll.

9. FUTURE AGENDA ITEMS

(Commission/Committee/Board Member announcement of requests for future agenda items. No public comment will be taken on announcement of future agenda items).

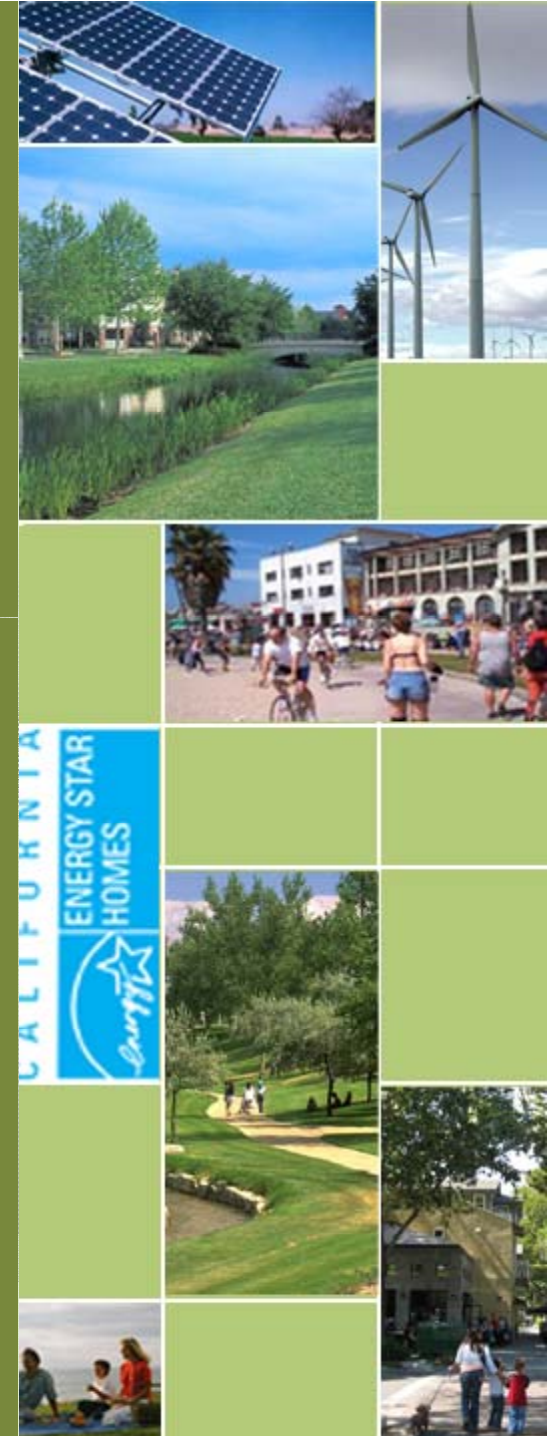
**9-1. Next meeting July 15, 2009 – Comments on Draft Administrative CAP (EDAW, Inc.)
Presentation by P&Z Commission Members – Green Building Standards**

10. ADJOURNMENT

The meeting was adjourned at 9:40p.m.

Climate Change: How can Albany be part of the solution?

City of Albany Climate Action Plan



What does climate action mean for Albany?

Challenges

- Albany will need to:
 - Reduce greenhouse gas (GHG) emissions to stabilize climate change
 - Adapt to the unavoidable effects of climate change
 - Reduce fossil fuel use, change transportation choices, retrofit buildings



Opportunities

- GHG reduction strategies provide many co-benefits:
 - Improve air quality
 - Lower energy bills
 - Reduce fossil fuel reliance
 - Decrease traffic congestion
 - Improve pedestrian network
 - Improve public health



Why it matters locally – climate disruption

- If GHG emissions are not reduced globally, the effects of climate change on Albany are likely to be:
 - Worse air quality and an increase in the number of smoggy days
 - A 30% to 90% decrease in water supply
 - Increased number of heat waves
 - Up to 2.5 times more critical dry years
 - Increased wildfires
 - Spreading of climate-sensitive diseases
 - Loss of habitat for sensitive species
 - Up to 30% higher energy use
 - Sea level rise inundation of shoreline areas



Increase in number of smoggy days



Decrease in water supply



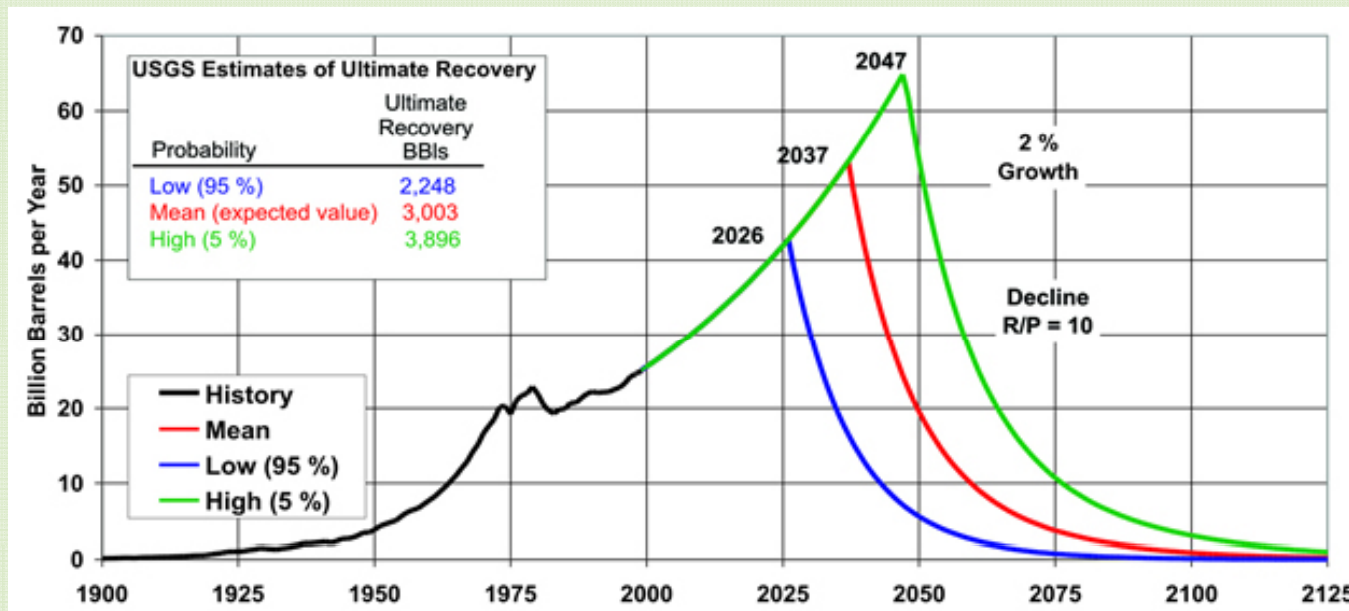
Increase in Wildfires

Why it matters locally – energy security

- Implementing the Climate Action Plan will reduce GHG emissions
- It can also reduce Albany's reliance on fossil fuels and exposure to unpredictable energy prices/supplies



Annual Oil Production Scenarios with 2% Growth



Source: US Department of Energy – Energy Information Administration 2000 – Based on US Geological Survey (USGS) Data

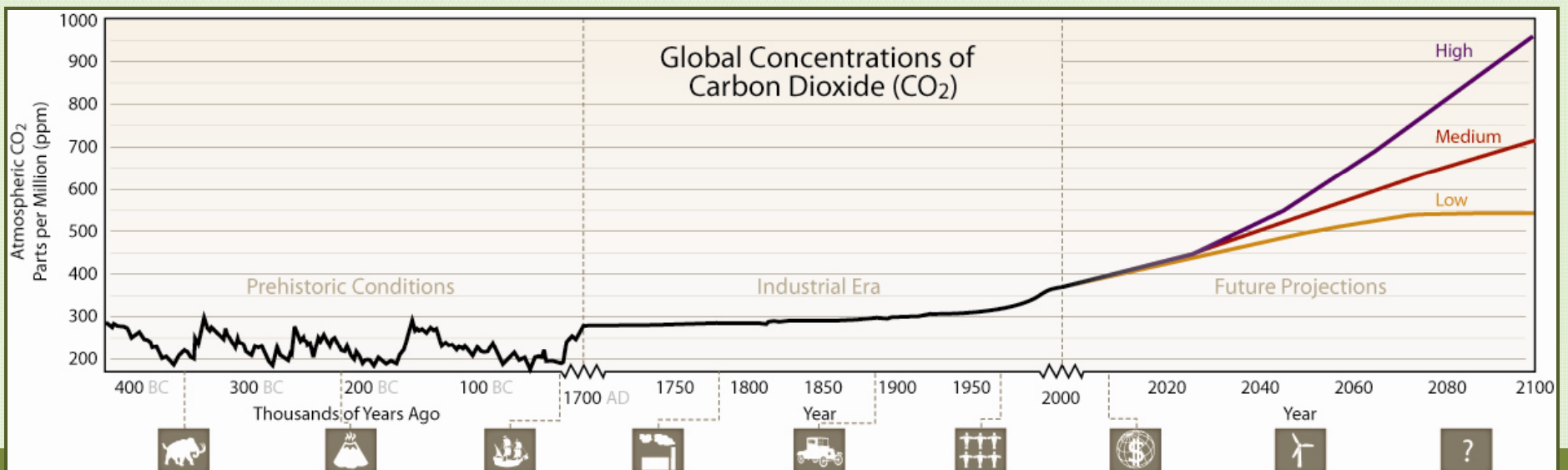
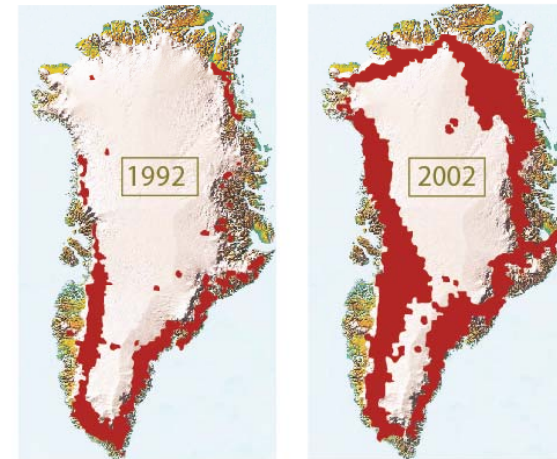
Why it matters globally

Indicators – Destabilization of Climate

- Rising temperatures
- Melting snow caps
- Sea level rise
- Extreme weather events
- Acidification of oceans (loss of coral reefs)

Global GHG emissions need to be reduced to avoid economic, ecological and political instability

Rapid Greenland Ice Sheet Melting



California's plan to combat GHG emissions

Timeline of State Legislation

Assembly Bill 32 - August 2006

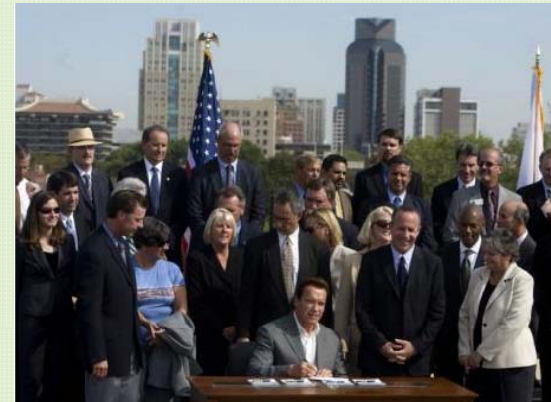
Decrease GHG emissions to 1990 levels by 2020

Executive Order- 03- 05 - June 2007

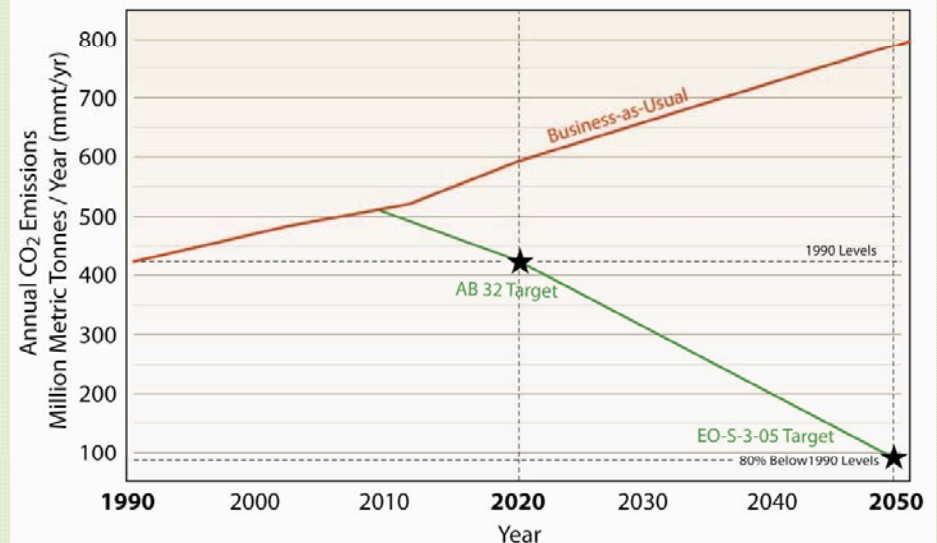
*Decrease GHG emissions to 80% below
1990 levels by 2050*

Senate Bill 375 - September 2008

*Requires metropolitan planning organizations
to include sustainable communities strategies
in regional transportation plans for the purpose
of reducing GHG emissions*



Projected California CO₂ Emissions



Albany's Climate Action Plan

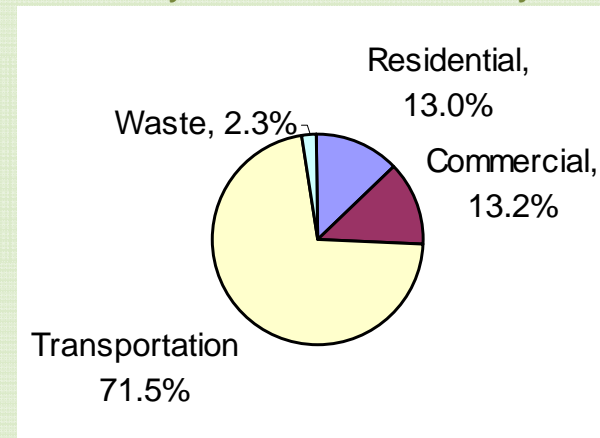
- Purpose
 - Describe innovative steps for City departments and agencies to reduce GHG emissions
 - Identify steps that will reduce emissions within the community (businesses & residents)
 - Propose strategies and actions designed to achieve target GHG reduction goal
 - Create a framework for monitoring progress towards goals



Preparing the Climate Action Plan

- Key Steps
 - Propose a GHG reduction goal to be achieved by target year
 - Inventory GHG emissions from private and public activities to create base case scenario
 - Establish effective GHG reduction measures for major sources of emissions

2004 Albany GHG Emissions by Sector



Source: ICLEI, 2004



Considerations when selecting GHG reduction measures

- What types of emissions can the City actually control, and which are better addressed at the State level?
- What is the emission reduction potential of the measure?
- What is the total cost and related effectiveness?
- Choose the low-hanging fruit (first go after quick wins and then address longer timescale measures)
- Build on Albany Clean & Green Task Force Recommended Action Plan
- Make sure progress indicators and regular reporting procedures are established when emissions reduction targets are created



GHG reduction best practices

- Land Use
 - Focus development in transit corridors
 - Mixed residential and commercial uses
 - Walkable full-service neighborhoods
- Transportation
 - Pedestrian/bicycle infrastructure
 - Expanded public transit systems
 - Removal of minimum parking standards
- Green Building
 - Zero-energy buildings
 - LEED certification for all new buildings
 - Construction waste recycling centers



GHG reduction best practices

- Energy Efficiency
 - District heating and cooling
 - Retrofit and remodel requirements
 - Urban heat island reduction
- Renewable Energy
 - Municipal low-interest loans to homeowners
 - Green power purchase
 - Solar hot water heaters
- Water Conservation
 - Water sensitive urban design techniques
 - ‘Purple pipe’ water recycling
 - Water-efficient technologies










GHG reduction best practices

- Recycling and Waste
 - Zero-waste communities
 - Food waste and organics collection
 - Alternative fuel waste collection vehicles
- Public Outreach
 - Commercial and residential energy audits
 - ‘20% challenge’ citizen certificate program
 - Green business certification program



What can I do right now?

	Voluntary reduction steps	Emission reduction potential (tonnes/yr)
	<i>Walk or Bike to Work and Shopping</i>	11
	<i>Ride Public Transit to Work</i>	9
	<i>Shut off Lights and Appliances When Not in Use</i>	.3 to .5
	<i>Install Solar Photovoltaic Panels + Water Heater</i>	1.5 to 6.5
	<i>Purchase 100% Renewable Electricity</i>	4
	<i>Install a High Efficiency Furnace + Insulation</i>	.5 to 4.0
	<i>Buy Efficient Hybrid Cars (40+ MPG)</i>	1.3 to 8

How Can I Get Involved?

- Albany Sustainability Committee
 - Meets monthly
 - Oversight for Climate Action Plan
 - Meetings open to the public
- Take our online survey
 - www.albanyca.org
- Calculate your carbon footprint
 - www.coolcalifornia.org
- Contact City staff
 - nalmaguer@albanyca.org



Questions and Answers



Climate Action Survey

The City of Albany is currently preparing a Climate Action Plan aimed at reducing the city's GHG emissions. In preparing the plan, the City would like input from its residents, employees and businesses, in order to understand the level of support for different types of reduction strategies. Thank you for participating in the following survey.

Background:

Greenhouse gas (GHG) emissions are changing the earth's climate and pose a serious threat to our economic well-being, public health, and the environment. In 2007, the California Legislature passed an Assembly Bill requiring the State to reduce GHG emissions to 1990 levels by the year 2020. To achieve this goal in Albany, a 25 % reduction in emissions is required.

Intro Question:

- Which of the following describes you:
 - Resident of Albany
 - Owner of a business in Albany
 - Employee of a business that operates in Albany
 - Other [*Text Input Box*]

Transportation

Background: Transportation generates 71% of the GHG emissions in Albany. Private automobile trips create a substantial part of these emissions.

- How do you typically commute to work? (select one that represents your normal travel mode)
 - Private car (alone)
 - Carpool
 - BART
 - Ferry
 - Amtrak
 - Bus
 - Bicycle
 - Walk
 - Work from home
 - Other [*Text Input Box*]

- How often do you ride public transit (other than to commute)? (select one)
 - Every day
 - Multiple times per week
 - Once a week
 - Every month
 - Only a few times a year
 - Never

- Which of the following would make you consider riding transit more often? (select all that apply)
 - More convenient transit stops closer to home, work, shopping, and recreation
 - More expensive gas
 - More expensive tolls
 - Cleaner and safer transit
 - A free shuttle from public transit stations to work
 - If using transit was faster than driving
 - Other [*Text Input Box*]

- Which of the following would make you consider riding a bicycle more often (select all that apply)
 - Traffic calming measures
 - More cycle storage facilities at stations
 - More secure parking in retail areas
 - More bike lanes
 - Safer bike lanes
 - Bike avenues where only bikes and local auto traffic is allowed

Buildings:

Background: Energy use in residential and commercial buildings accounts for approximately 26% of Albany’s GHG emissions. Most greenhouse gas reduction strategies for buildings involve energy efficiency improvements.

- Which of the following would you be willing to do in your home to reduce your energy usage? (select all that apply)
 - Change light bulbs to more energy efficient alternatives (\$5 per bulb)
 - Replace refrigerator with more energy efficient model (\$900)
 - Insulate home (\$4,000)
 - Install solar hot water heater (\$5,000)
 - Install Photovoltaic Solar Panels on the roof (\$18,000)
 - Others [*Text Input Box*]
 - Please list all improvements you have already made [*Text Input Box*]

- Should the City require that buildings be retrofitted to a higher level of energy efficiency at the time of resale, or major additions and remodels?
 - Yes
 - No
 - Other Comments [*Text Input Box*]

- Should the City provide low interest loans to property owners who want to retrofit their homes or businesses to be more energy-efficient?
 - Yes
 - No
 - Other Comments [*Text Input Box*]

- Would you participate in a no-cost home or business energy audit that could demonstrate easy ways to reduce your energy consumption?
 - o Yes
 - o No
 - o Other Comments [*Text Input Box*]

Neighborhood:

Background: Numerous studies show that, on average, people who live in pedestrian-oriented mixed-use neighborhoods make fewer vehicle trips than those who live in typical single-family neighborhoods.

- Which of the following stores and services do you regularly walk to rather than drive?
 - o Grocery store
 - o Restaurant
 - o Bar
 - o Bakery
 - o Post office
 - o Hair dressers
 - o Gym
 - o Hardware store
 - o Day care
 - o Elementary school
 - o None of the above
 - o Other [*Text Input Box*]

Effective pedestrian/bicycle networks are also critical to reduce vehicle trips and related emissions.

- From your home or office, how long would it take to safely walk to purchase daily goods and services (grocery store, café, post office, bakery, gym, restaurants)?
 - o 5 minutes
 - o 10 minutes
 - o 15 minutes
 - o Greater than 15 minutes
 - o Not possible

- Do safe routes exist for children to walk or bike to school in your neighborhood?
 - o Yes
 - o They are okay, but not great. (How would you improve this?) [*Text Input Box*]
 - o No (How would you improve this?)

Renewable Energy:

Background: Renewable energy (such as wind, solar, hydroelectric, and geothermal energy) has the potential to greatly reduce emissions. Many utilities are investing in renewable energy to reduce emissions and to offer customers greener energy options.

- The average Bay Area household spends \$150 a month on home energy bills. Would you be willing to spend an additional \$6 a month on your energy bill to offset all GHG emissions associated with the energy used in your home?
 - o Yes
 - o No
 - o Other Comments [*Text Input Box*]

- Should the City install renewable energy facilities (such as photovoltaic panels or wind turbines) on City buildings and properties?
 - o Yes
 - o No
 - o Other Comments [*Text Input Box*]

Water:

Providing, transporting and purifying water in California consumes large amounts of energy and creates substantial GHG emissions.

- Which of the following water saving strategies should the City and the Utility District implement?
 - o Provide credits on water bills if a household uses less than an established number of gallons per month
 - o Provide no-cost voluntary home and business water audits to identify ways to reduce both consumption and water bills
 - o Charge high water users progressively higher rates
 - o Require new construction and major remodels/additions to use the lowest water consuming appliances available
 - o Other Comments [*Text Input Box*]

Support for Emission Reductions:

To what extent would you support City-led efforts to meet mandated greenhouse gas emissions targets?

- o I would not support the efforts at all.
- o I would support voluntary incentive-based measures, but that is all.
- o I would support the City in creating mandatory requirements in order to meet the targets.
- o I would support mandatory requirements and increased taxes in order to meet the targets.

Adaptation:

Climate change experts predict that the sea level in the San Francisco Bay could rise considerably by the year 2100. Such increases in sea level could threaten property, infrastructure, habitat, and recreational areas within the City.

- How should the City respond to this threat?
 - o Not much we can do about it
 - o Build levees to protect property
 - o Ensure that land uses in shoreline areas of the City are compatible with rising sea levels (such as park and recreation uses).

Participant Information:

Please provide a little information about yourself. Please note that all answers are anonymous and optional.

- What is your age?
 - o 18 or under
 - o 18-34
 - o 35-65
 - o 65 or over

- Do you own or rent property in the City?
 - o Property Owner
 - o Renter/Tenant

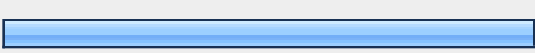


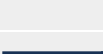
- What is your household's annual income?
 - o 0 to 20,000
 - o \$20,000 to \$40,000
 - o \$40,000 to \$70,000
 - o \$70,000 to \$100,000
 - o \$100,000 to \$250,000
 - o \$250,000+

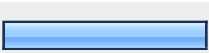





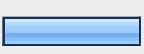
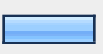
Thank you for completing our survey. If you would like more information regarding the City's Climate Action Plan, please contact Nicole Almaguer, Environmental Specialist, at (510) 528-5754.




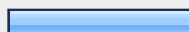
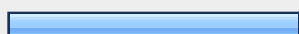

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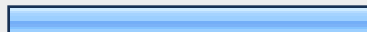
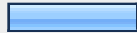

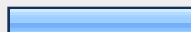
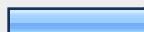
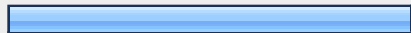
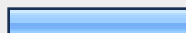
- **American Council for an Energy Efficient Economy** – solar water heater price
(<http://www.aceee.org/consumerguide/waterheating.htm>)
- **City of Albany and ICLEI** – 2006 greenhouse gas inventory
- **Costhelper.com** – home insulation costs (<http://www.costhelper.com/cost/home-garden/insulation.html>)
- **Nevada Power** – Price of solar PV panels and installation –
(<http://www.nevadapower.com/renewablesenvironment/renewablegenerations/faqs.cfm>)
- **Pacific Gas and Electric** – CFL bulb data and monthly household energy costs –
(<http://www.pge-cfl.com/>) and (<http://www.pge.com/microsite/calculator/calc1.jsp>)
- **State of Hawaii** – Department of Business, Economic Development and Tourism –
home insulation data – (<http://hawaii.gov/dbedt/info/energy/publications/roofinsulation.pdf>)
- **US EPA – Energy Star Program** – efficient refrigerator data –
(http://www.energystar.gov/index.cfm?fuseaction=refrig.display_products_html)




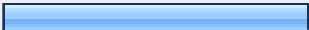
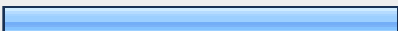
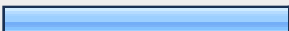
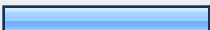
Albany Climate Action Plan Survey

1. Which of the following describes you: (select all that apply)			
		Response Percent	Response Count
Resident of Albany		82.0%	132
Owner of a business in Albany		8.1%	13
Employee of a business that operates in Albany		10.6%	17
Other (please specify)		14.9%	24
		answered question	161
		skipped question	1

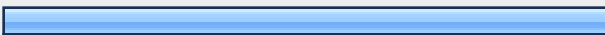

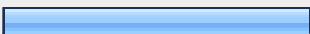
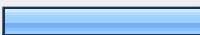
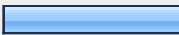
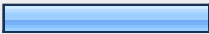
2. How do you typically commute to work? (select one that represents your normal travel mode)			
		Response Percent	Response Count
Private car (alone)		30.8%	45
Carpool		3.4%	5
BART		9.6%	14
Ferry		0.0%	0
Amtrak		0.0%	0
Bus		7.5%	11
Bicycle		10.3%	15
Walk		4.1%	6
Work from home		20.5%	30
Other (please specify)		13.7%	20
		answered question	146
		skipped question	16

3. How often do you ride public transit (other than to commute)? (select one)			
		Response Percent	Response Count
Every day		3.4%	5
Multiple times per week		6.2%	9
Once a week		9.0%	13
Every month		27.6%	40
Only a few times a year		44.8%	65
Never		9.0%	13
		answered question	145
		skipped question	17

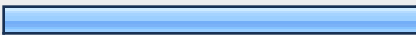
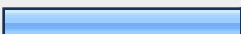
4. Which of the following would make you consider riding transit more often? (select all that apply)			
		Response Percent	Response Count
More convenient transit stops closer to home, work, shopping, and recreation		55.4%	77
More expensive gas		19.4%	27
More expensive tolls		7.2%	10
Cleaner and safer transit		28.1%	39
A free shuttle from public transit stations to work		20.9%	29
If using transit was faster than driving		61.9%	86
Other (please specify)		27.3%	38
		answered question	139
		skipped question	23

5. Which of the following would make you consider riding a bicycle more often? (select all that apply)			
		Response Percent	Response Count
Traffic calming measures		39.1%	52
More cycle storage facilities at stations		27.1%	36
More secure parking in retail areas		36.1%	48
More bike lanes		46.6%	62
Safer bike lanes		60.9%	81
Bike avenues where only bikes and local auto traffic is allowed		43.6%	58
Other (please specify)		31.6%	42
		<i>answered question</i>	133
		<i>skipped question</i>	29

6. Which of the following would you be willing to do (or have already done) in your home to reduce your energy usage? (select all that apply)

		Response Percent	Response Count
Change light bulbs to more energy efficient alternatives (\$5 per bulb)		93.2%	136
Replace refrigerator with more energy efficient model (\$900)		56.8%	83
Insulate home (\$4,000)		47.3%	69
Install solar hot water heater (\$5,000)		30.1%	44
Install photovoltaic solar panels on the roof (\$18,000)		26.7%	39
Other (please specify)		31.5%	46
		<i>answered question</i>	146
		<i>skipped question</i>	16

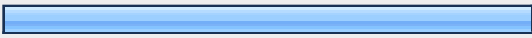
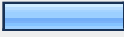
7. Should the City require that buildings be retrofitted to a higher level of energy efficiency at the time of resale, or major additions and remodels? (select one)

		Response Percent	Response Count
Yes		63.5%	87
No		36.5%	50
		Comments	36
		<i>answered question</i>	137
		<i>skipped question</i>	25


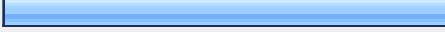
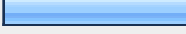
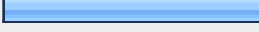
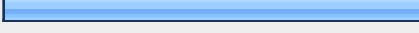
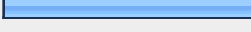
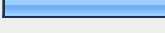


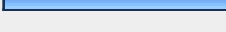

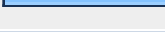
8. Should the City provide low interest loans to property owners who want to retrofit their homes or businesses to be more energy-efficient? (select one)

		Response Percent	Response Count
Yes		84.7%	116
No		15.3%	21
		Comments	20
		<i>answered question</i>	137
		<i>skipped question</i>	25


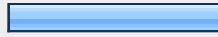
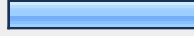


9. Would you participate in a no-cost home or business energy audit that could demonstrate easy ways to reduce your energy consumption? (select one)

		Response Percent	Response Count
Yes		81.6%	111
No		18.4%	25
		Comments	20
		<i>answered question</i>	136
		<i>skipped question</i>	26

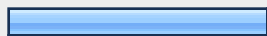


10. Which of the following stores and services do you regularly walk to rather than drive? (select all that apply)

		Response Percent	Response Count
Grocery store		57.0%	81
Restaurant		68.3%	97
Bar		28.2%	40
Bakery		39.4%	56
Post office		64.1%	91
Hair dressers		38.0%	54
Gym		24.6%	35
Hardware store		12.7%	18
Day care		8.5%	12
Elementary school		34.5%	49
None of the above		12.7%	18
Other (please specify)		24.6%	35
		<i>answered question</i>	142
		<i>skipped question</i>	20

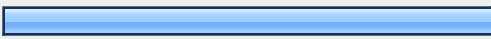
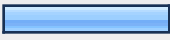
11. From your home or office, how long would it take to safely walk to purchase daily goods and services (grocery store, café, post office, bakery, gym, restaurants)? (select one)

		Response Percent	Response Count
5 minutes		16.4%	23
10 minutes		32.1%	45
15 minutes		28.6%	40
Greater than 15 minutes		18.6%	26
Not possible		4.3%	6
		Comments	24
		<i>answered question</i>	140
		<i>skipped question</i>	22

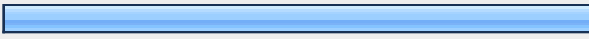

12. Do safe routes exist for children to walk or bike to school in your neighborhood? (select one)

		Response Percent	Response Count
Yes		39.7%	54
They are okay, but not great. (How would you improve this?)		50.0%	68
No (How would you improve this?)		10.3%	14
		Comments	78
		<i>answered question</i>	136
		<i>skipped question</i>	26

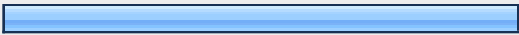
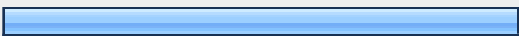
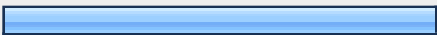
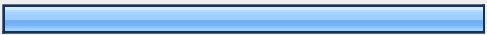
13. The average Bay Area household spends \$150 a month on home energy bills. Would you be willing to spend an additional \$6 a month on your energy bill to offset all GHG emissions associated with the energy used in your home? (select one)




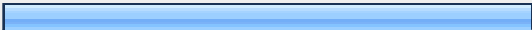
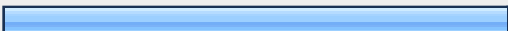
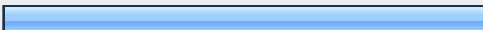
		Response Percent	Response Count
Yes		75.0%	102
No		25.0%	34
		Comments	39
		answered question	136
		skipped question	26


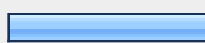
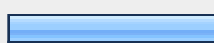
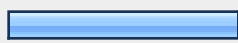
14. Should the City install renewable energy facilities (such as photovoltaic panels or wind turbines) on City buildings and properties? (select one)



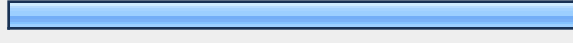
		Response Percent	Response Count
Yes		90.6%	126
No		9.4%	13
		Comments	38
		answered question	139
		skipped question	23


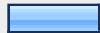
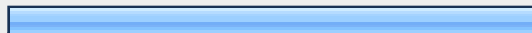

15. Which of the following water saving strategies should the City and the Utility District implement? (select all that apply)



		Response Percent	Response Count
Provide credits on water bills if a household uses less than an established number of gallons per month		79.3%	107
Provide no-cost voluntary home and business water audits to identify ways to reduce both consumption and water bills		79.3%	107
Charge high water users progressively higher rates		66.7%	90
Require new construction and major remodels/additions to use the lowest water consuming appliances available		74.1%	100
		Comments	24
		answered question	135
		skipped question	27

16. Which of the following waste reduction strategies should the City implement? (select all that apply)			
		Response Percent	Response Count
Establish a City goal to become a 'Zero Waste' community.		73.3%	99
Adopt a City goal that no compostable organics (food scraps, yard trimmings, etc) go to landfills or incinerators by 2015.		81.5%	110
Provide incentives to encourage on-site composting at homes, schools, and businesses with sufficient space.		80.0%	108
Require construction waste minimization and recycling standards for all new construction, major addition and remodel projects.		81.5%	110
Explore the creation of a resource recovery district within the City to facilitate recycling, composting, and reuse of materials.		77.8%	105
Work with other cities and agencies to create 'Extended Producer Responsibility' legislation that would require companies to take back designated products at the end of the product life cycle.		74.1%	100
		Comments	24
		answered question	135
		skipped question	27

17. To what extent would you support City-led efforts to meet mandated greenhouse gas emissions targets? (select one)			
		Response Percent	Response Count
I would not support the efforts at all.		2.9%	4
I would support voluntary incentive-based measures, but that is all.		30.2%	42
I would support the City in creating mandatory requirements in order to meet the targets.		31.7%	44
I would support mandatory requirements and increased taxes in order to meet the targets.		35.3%	49
		<i>answered question</i>	139
		<i>skipped question</i>	23

18. How should the City respond to this threat? (select one)			
		Response Percent	Response Count
Not much we can do about it		8.7%	11
Build levees to protect property		4.0%	5
Ensure that land uses in shoreline areas of the City are compatible with rising sea levels (such as park and recreation uses).		87.3%	110
		Comments	26
		<i>answered question</i>	126
		<i>skipped question</i>	36

19. What is your age? (select one)			
		Response Percent	Response Count
18 or under		2.9%	4
18-34		13.8%	19
35-65		81.2%	112
65 or over		2.2%	3
		<i>answered question</i>	138
		<i>skipped question</i>	24

20. Do you own or rent property in the City? (select one)			
		Response Percent	Response Count
Property Owner		73.8%	93
Renter/Tenant		26.2%	33
		<i>answered question</i>	126
		<i>skipped question</i>	36

21. What is your household's annual income? (select one)			Response Percent	Response Count
0 to \$20,000	<input type="checkbox"/>		2.4%	3
\$20,000 to \$40,000	<input type="checkbox"/>		3.9%	5
\$40,000 to \$70,000	<input type="checkbox"/>		20.5%	26
\$70,000 to \$100,000	<input type="checkbox"/>		23.6%	30
\$100,000 to \$250,000	<input type="checkbox"/>		44.9%	57
\$250,000+	<input type="checkbox"/>		4.7%	6
		<i>answered question</i>		127
		<i>skipped question</i>		35

Appendix E.

References and Personal Communications

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- Irvine Ranch Water District. 2006. Commercial ET-Based Irrigation Controller Water Savings Study. Available at: <http://www.irwd.com/Conservation/water_conservation_research.php>. Accessed July 15, 2009.

Personal Communications

- Strunin, Jonathan. Program Officer. ICLEI Local Governments for Sustainability U.S.A. Oakland, CA. September 4, 2008—email sent to George Lu of EDAW containing the final Albany GHG inventory.
- Tholen, Greg. Senior Environmental Planner. Bay Area Air Quality Management District, San Francisco, CA. December 15, 2008—e-mail to Heather Phillips of EDAW regarding relative proportion of Commercial/Industrial sector natural gas emissions from BAAQMD’s GHG Emissions Inventory.

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