

2006-2007 Civil Grand Jury  
City and County of San Francisco

CAN SAN FRANCISCO KEEP ITS PROMISE  
TO REDUCE GREENHOUSE GAS EMISSIONS?

Report released: June 2007

## Purpose of the Civil Grand Jury

The purpose of the Civil Grand Jury is to investigate the operations of the various departments, agencies, and officers of the government of the City and County of San Francisco to develop constructive recommendations for improving their operations, as required by law.

Each Civil Grand Jury has the opportunity and responsibility to determine which departments, agencies and officers it will investigate during its one-year term of office. To accomplish this task, the Civil Grand Jury divides into committees. Each committee conducts its research by visiting government facilities, meeting with public officials and reviewing appropriate documents.

The nineteen members of the Civil Grand Jury are selected at random from a pool of thirty prospective jurors. San Francisco residents are invited to apply. More information can be found at: [http://www.sfgov.org/site/courts\\_page.asp?id=3680](http://www.sfgov.org/site/courts_page.asp?id=3680), or by contacting Civil Grand Jury, 400 McAllister Street, Room 008, San Francisco, CA 94102; (415) 551-3605.

## State Law Requirement

Pursuant to state law, reports of the Civil Grand Jury do not identify the names or provide identifying information about individuals who spoke to the Civil Grand Jury.

Departments and agencies identified in the report must respond to the Presiding Judge of the Superior Court within the number of days specified, with a copy sent to the Board of Supervisors. For each finding of the Civil Grand Jury, the response must either (1) agree with the finding, or (2) disagree with it, wholly or partially, and explain why. Further, as to each recommendation made by the Civil Grand Jury, the responding party must report either (1) that the recommendation has been implemented, with a summary explanation of how it was implemented; (2) the recommendation has not been implemented, but will be implemented in the future, with a time frame for the implementation; (3) the recommendation requires further analysis, with an explanation of the scope of that analysis and a time frame for the officer or agency head to be prepared to discuss it (less than six months from the release of the report); or (4) that recommendation will not be implemented because it is not warranted or reasonable, with an explanation of why that is. (California Penal Code, sections 933, 933.05).

## TABLE OF CONTENTS

	Page Number
ACRONYMS	ii
I. SUMMARY	1
II. BACKGROUND	
A. SAN FRANCISCO'S EFFORTS	2
B. GLOBAL PERSPECTIVE ON CLIMATE CHANGE	4
C. WHAT CITIES ARE DOING	5
D. ACTION BY THE STATE	6
E. THE SAN FRANCISCO CLIMATE ACTION PLAN	7
III. FINDINGS AND RECOMMENDATIONS	
A. GENERAL	8
B. TRANSPORTATION	9
C. ENERGY EFFICIENCY	24
D. RENEWABLE SOURCES	30
E. SOLID WASTE	34
IV. REQUIRED RESPONSES BY DEPARTMENT	36
V. INVESTIGATIVE PROCEDURE	37
VI. TABLES	
Table 1: Reductions from Transportation	38
Table 2: Reductions from Energy Efficiency	38
Table 3: Reductions from Renewable Energy	39
Table 4: Reductions from Solid Waste	39
Table 5: SFPUC Energy Efficiency Projects completed	40
VII. APPENDICES AND FIGURES	
Appendix #1. Sea Levels	41
Figure 1. 420,000 Year Variation in Atmospheric CO <sub>2</sub> and Temperature	42
Figure 2. The Keeling Curve. CO <sub>2</sub> measurements from 1958 to 2005	43
Figure 3. Trends in Earth temperature from AD 1000 to 2000	44
Appendix #2 San Francisco Environment Code, Relevant Chapters	45
Appendix #3 IPCC Fourth Assessment Report: Summary Statements	46
Appendix #4 Congestion Pricing	47
Appendix #5 PHEV Fleet Order Form	48
VIII. BIBLIOGRAPHY	49

## ACRONYMS

AAAS	American Association for the Advancement of Science
AB117	California's 2002 Community Choice law (2002)
AB32	California's Global Warming Solutions Act (2006)
AB493	California's Clean Car Discount Plan
AFV	alternative fuel vehicle
BART	Bay Area Rapid Transit
BC3	Business Council on Climate Change
BOMA	Building Owners and Managers Assoc. of San Francisco
BRT	Bus Rapid Transit
CARB	California Air Resources Board
CAV	clean air vehicle
CCA	Community Choice Aggregation
CFL	compact fluorescent light
DBI	Department of Building Inspection
DPH	Department of Public Health
DPT	Department of Parking & Traffic
DPW	Department of Public Works
eCO <sub>2</sub>	equivalent CO <sub>2</sub> (carbon dioxide, methane, nitrous oxide)
GSA	General Services Agency
HVAC	Heating, ventilation, air conditioning
ICLEI	International Council for Local Environmental Initiatives
IPCC	United Nations Intergovernmental Panel on Climate Change
LAFC	Local Agency Formation Commission
LED	light emitting diode
LEED	Leadership in Energy and Environmental Design
MTA	Municipal Transportation Agency
Muni	San Francisco Municipal Railway
PG&E	Pacific Gas & Electric
PHEV	plug-in hybrid vehicle
RECO	Residential Energy Conservation Ordinance (1982)
SBN	Small Business Network
SFCTA	The San Francisco County Transportation Authority
SFGH	San Francisco General Hospital
SFPUC	San Francisco Public Utilities Commission
SFTEP	San Francisco Transit Effectiveness Project
SPUR	San Francisco Planning and Urban Research Association
SUV	sports utility vehicle
V2G	vehicle to grid

# CAN SAN FRANCISCO KEEP ITS PROMISE TO REDUCE GREENHOUSE GAS EMISSIONS?

## I. SUMMARY

The Civil Grand Jury has studied San Francisco's efforts to address the threat of climate change and recommends further aggressive actions to reduce greenhouse gas emissions.

In 2002 the San Francisco Board of Supervisors adopted a resolution setting a goal for the City and County of San Francisco to reduce annual greenhouse gas emissions to 20 percent below 1990 levels by the year 2012.<sup>1</sup> The Commission on the Environment tasked the Department of Environment to develop plans to address emissions-reduction in the City.<sup>2</sup>

The mission of the Department of Environment is to preserve the environment and to promote San Francisco's long-term well being by developing innovative, practical and wide-ranging programs in recycling, toxics reduction, energy efficiency, commute alternatives, and urban forest. The Department fosters groundbreaking legislation and educates the public by providing information on a variety of practices, which serve as models for other cities and countries.

As mandated by the Board of Supervisors, the Department of Environment and San Francisco Public Utilities Commission (SFPUC) developed and published the City's Climate Action Plan (2004), putting forth a list of specific actions to be set in motion in an attempt to reach the stated emission reduction goals. The Climate Action Plan covers energy efficiency and renewable power, waste reduction, cleaner vehicles and transportation alternatives. (Plan available at [www.sfenvironment.org](http://www.sfenvironment.org))

In introducing the plan, Mayor Gavin Newsom warned of the threat that climate change presents to San Francisco: rising sea levels could threaten low lying areas such as San Francisco International Airport, Treasure Island, Mission Bay, AT&T and Candlestick Parks, roads, railroad tracks, sewage treatment plants, and our marina and harbor facilities.

According to the Department of Environment, although the City has made progress in stopping the upward trend of emissions in the City, it is not on track to meeting the 2012 goal. The Civil Grand Jury investigated the City's efforts to determine what has been accomplished, what has not been done, and why San Francisco -- considered one of the world's most progressive and most environmentally-aware cities -- is not now on a sufficiently aggressive path to meet its emissions reduction target.

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<sup>1</sup> United Nations Intergovernmental Panel on Climate Change (IPCC) research suggests that a 60 percent reduction below 1990 levels is required to reverse global warming and stabilize the earth's climate (First Conference of Parties to the Climate Change Convention, 1995, chapter 3, p.7).

<sup>2</sup> The seven-member Commission on the Environment was created in 1992. Appointed by the mayor, it develops policies and programs, advises the Mayor and Board of Supervisors and sets policy for the Department of Environment, which prepares and recommends environmental codes and ordinances for the Board of Supervisors to review, approve and enact.

## II. BACKGROUND

### A. SAN FRANCISCO'S EFFORTS

Climate change is a global problem with local impacts. Rising temperatures, rising sea level, and more frequent and severe El Niño storms seriously threaten San Francisco's infrastructure, economy and public health, and could lead to loss of biodiversity and ecosystems. According to the Pacific Institute, an Oakland-based independent research firm, "A three-foot rise in sea level would cause a huge expansion of the San Francisco Bay, flooding property worth \$48 billion over about 100 square miles and turning the Sacramento-San Joaquin River Delta into a vast inland sea"<sup>3</sup> (San Francisco Chronicle, 2/18/07, p.W5).

The City committed to taking action to address climate change with a 1998 Board of Supervisors decision to join 566 cities around the world (including 26 in California among 141 in the U.S.) in the International Council for Local Environmental Initiatives (ICLEI) Cities for Climate Protection Campaign.<sup>4</sup> ICLEI believes that cities can play a large role in reducing emissions through planning and regional cooperation, and as a result receive benefits from reduced emissions (Burroughs 2007).

According to the Department of Environment, in 1990 San Francisco's annual emissions were about 9.1 million metric tons of eCO<sub>2</sub>, but had reached 9.7 million tons by the year 2000, an increase of about seven percent over a ten-year time span. As a result of the Climate Action Plan, the City is now attempting to bring its annual emissions down to 7.3 million tons by 2012 (20 percent below 1990 levels). Specific goals for eCO<sub>2</sub> reduction for the four categories from the City's Plan -- Transportation, Energy Efficiency, Renewable Energy, Solid Waste -- are shown in Tables 1-4 (pages 38-39).

The City has made some progress toward accomplishing these goals. The just-completed emissions inventory for the year 2005, conducted by the Department of Environment, showed a reduction of 500,000 metric tons, only half the amount hoped for by 2005. This means that to achieve the reduction to 7.3 million tons by 2012 will require a tripling of the reduction rate.

According to The Climate Group<sup>5</sup> (2007), "San Francisco has one of the most ambitious big-city reduction commitments and programs yet in the United States. . . . Plan programs and policies include investing in energy efficiency and renewable energy, transit improvements and increased transit ridership, greener alternative fuel and hybrid fleets, and increasing recycling."

As a result of a 2002 resolution by the voters, the San Francisco Environment Code has been enacted and is now law, with sixteen chapters. Those written specifically to promote reductions in energy use, emissions or solid waste are described in Appendix #2 (p.45). San Francisco has adopted other programs designed to reduce emissions. Programs recently initiated include:

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<sup>3</sup> See Appendix #1 for a discussion of sea levels.

<sup>4</sup> ICLEI (Local Governments for Sustainability) was founded in 1990 ([www.iclei.org](http://www.iclei.org)).

<sup>5</sup> The Climate Group is an independent, international, nonprofit organization dedicated to advancing business and government leadership on climate change, based in the UK, the USA and Australia. <http://www.theclimategroup.org/index.php?pid=614>.

- The “Energy Watch” program, started by the Department of Environment in partnership with Pacific Gas and Electric (PG&E) in February 2007, delivers energy savings and efficiency education to consumers.
- City code now requires LEED<sup>6</sup> silver standard in construction of new municipal buildings.
- Departments of Planning and Building Inspection give priority construction permitting and streamlined inspection services for any private projects that agree to achieve the higher LEED Gold standard (Planning Department).
- The Mayor’s Office of Economic and Workforce Development in November 2005 has created the Clean Technology Advisory Council to attract clean technology businesses and jobs to San Francisco (San Francisco Chronicle, 11/07/05).
- In February of 2007 the Mayor asked for legislation to ban the use of old-style fluorescent tubes in San Francisco's commercial buildings and replace them with the new, more energy-efficient, T-8s. Muni (San Francisco Municipal Railway) has already embarked on a program to replace older ballast with more efficient electronic ballast as well as relamping with the new T-8 energy efficient lamps. Muni has also formed a partnership with SFPUC in replacing lamps in several subway stations with energy-saving fixtures.
- “Community Choice Aggregation” (CCA): This San Francisco effort is based on the State program (California's 2002 Community Choice law AB 117, sponsored by State Senator Carole Migden) which allows local governments to procure renewable electric power and then sell that power to local residents and businesses. It has been proposed by the City but is not yet law.

Each of these actions is intended to reduce or at least slow the increase in energy use and the resulting buildup of greenhouse gases. The Department of Environment has been at the forefront of these efforts: pioneering sorted residential recycling, identifying likely roofs for solar arrays, assembling data for emissions inventories, and speaking to any serious small group that seeks the latest information on best practices. The general public has not been required to participate and may not be aware of many of the City’s green programs. Even the recycling program by its very nature is voluntary.

In addition to these San Francisco City programs, PG&E has aggressive incentives and rebates,<sup>7</sup> including a Residential Lighting Program, providing consumers with rebates on compact fluorescent lights (CFLs) which use only about 25% of the energy of incandescent lights, last

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<sup>6</sup> LEED, the Leadership in Energy and Environmental Design Green Building Rating System, is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings. (Case 2006). It is administered by the U. S. Green Building Council (USBC) which awards points in the following areas: sustainable site 14; water efficiency 5; energy and atmosphere 17; materials and resources 13; indoor environment 15, innovation and design 5, a total of 69 points. LEED levels are graded by points: Certified 26-32, Silver 33-38, Gold 39-51, Platinum 52-69. (www.usgbc.org)

<sup>7</sup> www.pge.com/rebates.

longer, and generate 70% less heat.

Despite efforts by the City, however, the latest emissions inventory by the Department of Environment shows that levels are still disappointingly high. The purpose of our investigation is to try to understand the reasons and to highlight actions the City might take to further reduce emissions, and to help put San Francisco on track toward a reduction of 20% below 1990 levels by the year 2012.

## **B. GLOBAL PERSPECTIVE ON CLIMATE CHANGE**

Atmospheric scientists from 142 countries around the world have been meeting in Brussels, Belgium, during 2007 for the United Nations Intergovernmental Panel on Climate Change (IPCC) to compile a document stating fundamental agreement that human-induced climate change is happening, is unequivocal, and requires immediate action.<sup>8</sup> See Appendix #3 (p. 46) for summary statements included in their February 2007 Fourth Assessment Report.

Jim Hansen, a leading climatologist,<sup>9</sup> states, “We have at most ten years -- not ten years to decide upon action, but ten years to alter fundamentally the trajectory of global greenhouse emissions” (Hansen 2006). Other scientists agree (Oreskes 2004). On a global perspective, annual per capita U.S. emissions, 22.2 tons of equivalent CO<sub>2</sub> (carbon dioxide, methane, nitrous oxide: called eCO<sub>2</sub>) in 2001, greatly outweigh the world average of 4.3 tons.<sup>10</sup> The level of emissions from sources in the U.S. is vastly disproportionate to our population. Considering our great wealth and prosperity relative to other nations, it is clear that we can afford to make a difference.

In April of 2007, eleven retired admirals and generals released a detailed 68-page report arguing that, “Climate change could be a threat multiplier in already fragile parts of the world. Rising sea levels could threaten the livelihoods of more than one billion people living within 45 miles of Asia’s coastlines. In Africa, recurring heat waves could cause widespread shortages of food and water, leading to large-scale migrations and escalating tensions.” Anthony Zinni, the retired Marine general, said, “We will pay for this one way or the other -- either now, to control the emission of greenhouse gases, or later, in military engagements and human lives” (Environment News Service, 04/20/07) (CNA Corp. 2007) (New York Times Editorial 2007).

A comprehensive review on the economics of climate change was published by Sir Nicholas Stern, Head of the United Kingdom (UK) Government Economic Service and former World Bank Chief Economist. Using the results from formal economic models, the Review estimates that if we do not act, the overall costs and risks of climate change will be equivalent to losing at least five percent of global domestic product (GDP) each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to twenty percent of GDP or more. In contrast, the costs of action -- reducing greenhouse gas emissions to avoid the worst impacts of climate change -- can be limited to around one percent of global GDP each year. (Stern 2006, 2007)

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<sup>8</sup> San Francisco Chronicle, 02/28/07.

<sup>9</sup> Hansen is Director of the National Aeronautics and Space Administration (NASA) Goddard Institute for Space Studies in New York. No relation to Civil Grand Jury members.

<sup>10</sup> Climate Action Plan, p 1-5, from US Census Bureau 2001.

The sophisticated economic analyses presented in the Stern Report indicate that the longer we wait to raise public consciousness and willingness to act, the costlier the solutions will likely become. By acting now, we preserve valuable response options and avoid the economic and social dislocation of drastic changes later.

### C. WHAT CITIES ARE DOING

In light of the vacuum in leadership at the federal level, initiating meaningful action to control emissions will have to come from the cities and states -- an endeavor which necessarily must build from the local level up. Cities must take a leadership role. Although the efforts of one city alone cannot solve anthropomorphic climate change, when joined with others these efforts can lead to an enlightened national policy.

In June of 2005, leaders of cities from around the globe signed the Urban Environmental Accords<sup>11</sup> in the rotunda of San Francisco City Hall in recognition of United Nations World Environment Day. This agreement sets out 21 specific actions for sustainable urban living, addressing seven environmental areas common to the world's large cities: Energy, Waste Reduction, Urban Design, Urban Nature, Transportation, Environmental Health and Water. (Sappenfield 2005)

The Mayor of San Francisco was among the 358 U.S. mayors (representing 55 million Americans) who have signed the U.S. Mayors Climate Protection Agreement pledging to meet or exceed Kyoto<sup>12</sup> goals in their communities (as noted in USA Today, 01/01/2007).<sup>13</sup>

San Francisco was also represented in May 2007 at the C40 Large Cities Climate Summit in New York City, where mayors of the world's largest and most polluted cities, from Berlin to Beijing and London to Los Angeles, met to formulate programs to fight climate change and promote the use of clean energy. Microsoft announced the ongoing creation of new software (free to cities) which would track carbon emissions, adding up various factors like commercial space, residential buildings and transportation usage to gauge how much carbon dioxide a city produces. (Yahoo News, 05/14/07)

Although cities have less power than states to create energy-saving and pollution-reduction legislation, according to the Los Angeles Times (Simon 2006), many communities have already begun to make some progress.

- Boulder, CO, now has a "climate tax," an extra fee for electricity with proceeds going to fight global warming. The Mayor of Boulder explained that, "Even if Boulder could somehow wish away all of its emissions, that wouldn't be a drop in the bucket," but argues that the city must try anyway to prove that they can reduce pollutants without spending huge sums or slowing economic growth.

<sup>11</sup> <http://www.urbanaccords.org/pdf/Accords.pdf>

<sup>12</sup> The Kyoto Protocol to the United Nations Framework Convention on Climate Change is an amendment to the international treaty on climate change, assigning mandatory targets for reduction of emissions to signatory nations.

<sup>13</sup> [www.seattle.gov/mayor/climate/](http://www.seattle.gov/mayor/climate/)

- Seattle, WA, has a parking tax and hopes to charge tolls on major roads to discourage driving.
- The Mayor of New York City has proposed “congestion pricing,” charging a fee for vehicles entering Manhattan, the funds to be used for environmental and mass transportation programs -- similar to successful programs in Singapore, London, Stockholm and other world cities. (See Appendix #4, p. 47, for details.)
- Fargo, ND, traps the methane from its landfill and sells it for use in commercial boilers.
- Boston, MA, became the first major city in the nation to require private developers to adhere to a strict set of green buildings standards.
- Austin, TX, is collecting “soft” orders for plug-in hybrids for government and commercial fleets, in anticipation of a time in the near future when these clean cars become commercially available (Boschert, 2006, p. 176). Marin County and also Palo Alto have recently announced that they have placed “soft” orders as well.<sup>14</sup>
- The City of St. Paul, MN, has instituted strong regulations prohibiting non-recyclable or environmentally unacceptable packaging of goods from food establishments,<sup>15</sup> and San Francisco has done the same.

#### **D. ACTION BY THE STATE**

On September 27, 2006, California Governor Schwarzenegger signed the most comprehensive emissions law in the country, the Global Warming Solutions Act, Assembly Bill 32 (AB32). This act is the first program in the United States to mandate an economy-wide emissions cap that includes enforceable penalties. It calls for a buildup of wind and solar energy sources and establishes a statewide target to reduce climate change emissions within California down to 1990 levels by the year 2020 (U.S. Department of Energy, 2006). By a prior Executive Order on June 1, 2005 (#S-3-05), the Governor had already pledged to reduce emissions by 80 percent below 1990 levels by 2050.

This State law emphasizes crucial long-range targets with plans to be completed by 2009 and final regulations by 2011. An ultimate solution requires a movement from carbon-based fuels for transportation and energy to emission-free methods of production. Carbon taxes<sup>16</sup> and cap-and-trade<sup>17</sup> systems, along with clean alternative fuels are being used or considered at many levels in this country and elsewhere to speed this necessary change. Putting a price on carbon creates incentives for people and businesses to use less.<sup>18</sup> Meanwhile, conservation is essential

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<sup>14</sup> [www.RAN.org](http://www.RAN.org)

<sup>15</sup> <http://www.stpaul.gov/code/lc236.html#sec236.01>.

<sup>16</sup> Lazarus 2007, McKibbin 2007, Rosenblum 2007.

<sup>17</sup> Nation 2007.

<sup>18</sup> Economists use the phrase, “price elasticity of energy demand” -- the amount that demand for energy increases or decreases with a given change in price -- indicating that the long-term value is roughly 0.5. For instance if gasoline prices increase 100 percent, then eventually, in ten or twenty years, consumption of gasoline will drop by 50

to limit the harmful gases being released into the atmosphere, while science and technology develop non-carbon energy alternatives and make them practical on a large scale.

Growing awareness of climate change has also increased support for high-speed rail. A bullet train from San Francisco to Los Angeles has been under consideration in California for more than a decade. The California High Speed Rail Impact Report, as quoted in the Oakland Tribune (1/28/04), estimates that to serve the same number of travelers as the high-speed train system, California would have to build nearly 3,000 miles of new freeways plus five airport runways and 90 departure gates in the next two decades. The trains use far less power than planes or cars and would get millions of cars off the road with a substantial reduction of greenhouse gas emissions.<sup>19</sup>

These State plans are all visionary and results will take time, political will and money. But there are short-term actions that can and should be taken now at the local level.

#### **E. THE SAN FRANCISCO CLIMATE ACTION PLAN**

The San Francisco Climate Action Plan of 2004 is broad and ambitious in scope. Emissions targets apply to municipal operations and to the community at large. Recommendations described as “next steps” in the Plan detail immediate actions that could be taken, advocating a balance between regulations and incentives. For the purposes of this Grand Jury report we will concentrate on specific goals of eCO<sub>2</sub> reduction for the four categories from the City’s Plan: Transportation, Energy Efficiency, Renewable Energy and Solid Waste.

The Department of Environment has just completed a community-wide greenhouse gas emissions inventory for the year 2005 and will publicly report on the City’s progress towards meeting the goals set out in the Climate Action Plan. Preliminary reports show that efforts to reverse the steep climb in emissions are beginning to succeed with emission levels heading downward. The rate of decrease, however, is not nearly what is needed to reach the City’s goal.

The targets set forth in the Climate Action Plan apply to both emissions from municipal operations and emissions from the community at large. The City, through policy, regulations and other actions has some direct control over emissions from municipal sources, but it has substantially less control over those generated by the larger community, which account for over 90% of San Francisco’s total emissions (Climate Action Plan p. 2-2).

This report is directed to various city departments and agencies and at commercial establishments and residents as well. It is directed especially to the Department of Environment, since this is the lead department or agency spearheading efforts by the City to stake out a strong position in emissions reduction, and it will need to promote an unprecedented combination of programs, new ordinances and public outreach campaigns to reach the City’s goal.

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percent. (Espey, 1998; Kayser, 2000; Puller & Greening, 1999).

<sup>19</sup> SPUR. 2007. High speed rail essential to keep California on track *SPUR* June Newsletter

### **III. FINDINGS AND RECOMMENDATIONS**

#### **A. GENERAL**

*To address the San Francisco Climate Action Plan goal of expanding education and outreach.*

The San Francisco Environment Code is law, and the Department of Environment makes recommendations which, if implemented throughout City government, could significantly reduce energy use. However, attention to these issues is often of low priority in daily operations.

The Department of Environment states that major impediments to reducing emissions include the public's failure to understand the sources of the problem and the role that each individual must play in contributing to the solution. This failed understanding results in peoples' unwillingness to change their behavior in order to reduce emissions. The general public may not be convinced or sufficiently concerned that climate change is real, is now, and will profoundly affect our lives and the lives of our children, grandchildren, and all future generations.

Until recently most people had no idea that their tailpipe emissions or lawn mowers would have an impact on future generations. John Lanchester writes in the March 22, 2007, *London Review of Books*, that even the people who feel most strongly about climate change on some level cannot quite bring themselves to believe in it, or have a strong degree of psychological resistance to the subject, or do not want to think about it.

But the Department of Environment is committed to dramatically reducing greenhouse gas emissions in the City, and is committed to convincing us of the role that each of us must play.

**Finding A1a.** Climate change caused by greenhouse gas emissions is an urgent problem calling for efforts by the public to reduce, individually and collectively, our carbon footprint.

**Finding A1b.** The Department of Environment has many basic education programs that could be expanded, with more outreach, to convince the public that each individual has a role in reducing the City's greenhouse gas emissions.

**Recommendation A1a.** The Department of Environment should take the lead in identifying resources necessary to foster the culture change in the City needed to fully address the issue of climate change; it should increase outreach and education activities. Posters should be placed in all public locations, including schools and buses. The Department should encourage City utilities and phone companies to include environmental brochures in regular mailings to consumers.

**Recommendation A1b.** The Department of Environment should have booths at street fairs and other events in the City to educate attendees about climate change, using student interns or other volunteers. The Mayor should declare a "Global Warming Heads Up Day" featuring free showings of Al Gore's documentary, "An Inconvenient Truth," in City parks and theatres. The Department of Environment should partner with PG&E to give

complementary fluorescent light bulbs to attendees. Copies of the film should also be provided to schools, churches and other organizations for fundraisers and other events.

<b>Responses required from</b>	<b>The Office of the Mayor, The Department of Environment (60 days).</b>
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## **B. TRANSPORTATION**

### **B1) Transit First Policy:**

*To address the San Francisco Climate Action Plan goal of increasing the use of public transit as an alternative to driving.*

According to statistics from San Francisco's Climate Action Plan, the transportation sector (public and private) accounts for approximately 50 percent of San Francisco's greenhouse gas emissions (p. ES-5). The best ways to reduce emissions are to increase the use of Clean Air Vehicles (CAVs), reduce use of polluting vehicles, and increase use of public transit (Table 1, page 38).

In November 1999, the City of San Francisco officially declared itself a "Transit First" City, adopting San Francisco Charter Article XVI: Section 16.102, with a goal to reduce emissions by getting people out of cars and onto less-polluting public transit (San Francisco Chronicle, 8/23/99). This policy includes the following statements of principles:

- Public transit must be an attractive alternative to travel by car.
- Parking policies must be designed to encourage use of public transit.
- Reducing congestion depends on the adequacy of regional public transportation.

In a March 2006 report,<sup>20</sup> the San Francisco Municipal Transportation Agency (MTA) states that, "Despite being a Transit First City for many years, the automobile is still the predominant mode of travel on San Francisco's transportation network. . . . As in many large urbanized areas in the U.S., traffic congestion is getting worse in San Francisco and the surrounding areas, threatening the mobility of the city and its overall quality of life and economic vitality."

In response to the 2006 report, the MTA embarked on an 18-month study called the San Francisco Transit Effectiveness Project (SFTEP 2006),<sup>21</sup> jointly undertaken with the Controller's Office, to review the existing Muni system, in order to evaluate how well the network serves riders today and why some do not use it at all. Through this study the MTA hopes to improve Muni's performance by developing a plan that clearly articulates strategies and resources, with the ultimate goal of making San Francisco a true Transit First city.

<sup>20</sup> San Francisco Congestion Pricing and Mobility Study. [www.sfcta.org/content/view/208/1/](http://www.sfcta.org/content/view/208/1/)

<sup>21</sup> [www.sftep.org](http://www.sftep.org)

The San Francisco County Transportation Authority (SFCTA) projects that “under current policies and practices, there will be approximately 269,000 *new* vehicle trips beginning or ending in San Francisco each day by the year 2025, a 9.6 percent increase in the number of cars traveling on existing city streets.” (2006 SPUR Report, Footnote 9, page 10)

SFTEP’s briefing binder states that Muni is more cost-effective per passenger trip than that of most world cities, but is still not able to successfully compete with the automobile, and highlights the problems impeding the goal of increased use of public transportation:

- Muni buses run a little more slowly each year as other vehicle traffic increases. Muni now averages about eight miles/hour (Highlights p. 8).
- Transit travel times are three times auto travel times (p.A28).
- Total trips to and within San Francisco now total about 4.5 million per day, with only 17% made on transit (p. 3).
- Since 1970, San Francisco households without a vehicle decreased from 38% to 28% (p. 6-3).
- Auto trips in the Bay Area have increased much faster than transit trips. The MTA expects this trend to continue (p. 3-5).
- Muni ridership declined steadily from 1985 to 1995 and since then has remained essentially flat. (p. 6-2).

**Finding B1a.** San Francisco is not meeting the Climate Action Plan goal of increasing the use of public transportation and discouraging use of private vehicles.

**Finding B1b.** Muni is more cost-effective per passenger trip than most transit systems.

**Finding B1c.** Muni does not presently provide the kind of service that encourages people to take public transit. Large segments of the driving public are yet to be convinced to leave their cars at home or to adopt an automobile-free lifestyle.

**Finding B1d.** Latest statistics show that little progress has been made in increasing Muni ridership. The total number of annual vehicle trips to and within San Francisco increases while Muni’s ridership stays essentially flat. Thus the goal to make San Francisco a Transit First City remains elusive.

**Recommendation B1a.** The MTA Board, while seeking short and long-term system-wide Muni improvements in speed and reliability, should establish periodic goals for increasing the percentage of ridership using public transit and detail steps to be taken to achieve these goals.

**Recommendation B1b.** The Department of Parking and Traffic (DPT) engineers should consider ways to speed up Muni buses, such as further restricting left turns on bus routes during rush hour, making major streets one-way, giving signal preemption to bus drivers to increase transit speed, and other transit-friendly steps.

<b>Responses required from</b>	<b>The Municipal Transportation Agency Board, The Department of Parking and Traffic, The Department of Environment (60 days).</b>
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B2) Muni Fleet

*To address the San Francisco Climate Action Plan goal of increasing the use of clean air vehicles and improve fleet efficiency.*

According to Board of Supervisors President Aaron Peskin, “Muni’s diesel exhaust-belching buses are responsible for half the carbon emissions produced in the City” (S.F. Chronicle 05/22/07).

A regulation passed in Feb 2000 by the California Air Resources Board (CARB), which sets air standards for the state, required public transit agencies to reduce emissions (Martin 2007), mandating that all cities phase out old diesel buses by 2006, and approving new hybrid-electric diesel buses as meeting the new standards (Hess 2005). Some agencies have used alternative fuels; some have bought new buses with cleaner-running engines or refitted old ones; and others have used a combination of measures. A San Francisco ballot initiative, Proposition I of 2004, required Muni to replace all of its pre-1991 polluting diesels with cleaner buses.

According to a Muni spokesperson, the agency is moving forward with a plan to reduce Muni’s emissions by:

- Replacing the oldest diesels with alternative fuel buses and moving toward fleet-wide use of electric drive vehicles;
- Reducing emissions from new and existing diesels through advanced emissions reduction technologies, cleaner fuel and revised service plans; and
- Moving toward a goal of 100% zero emission vehicles by 2020.

More than half of the 1,069 vehicles in Muni’s existing transit fleet are now powered by electricity -- including electric buses, trolleys, streetcars and cable cars. A decision has been made to replace the old diesel buses with the much cleaner hybrid-diesels costing almost \$500,000 each. The first two buses went into service in April 2007 and Muni expects 86 of these buses to be added to Muni’s fleet during the remainder of 2007, with more to follow (Gordon 2007a). Additional training will be required to qualify drivers to drive these new buses, and to educate workers for maintenance and repair of new technology.

San Francisco's Environment Code, Chapter 4, approved in 2003, also mandates the purchase of alternative fuel vehicles (AFVs)<sup>22</sup> for the City's automobile fleet. Muni has reduced its auto fleet by one-third and has initiated a pool car program for managers and supervisors.

**Finding B2a.** Muni's remaining non-electric diesel buses are highly polluting vehicles.

**Finding B2b.** Muni is now phasing out old polluting buses and cars and replacing them with cleaner vehicles, with plans to be emissions free by 2020.

**Finding B2c.** Because of the extensive use of electrically powered transit vehicles and the program to replace older diesel buses with diesel-hybrid powered buses, Muni is far more emissions efficient than many North American transit systems.

**Recommendation B2a.** Muni should report to the MTA Board on a quarterly basis the implementation status of the new diesel-electric hybrid buses. This report should include a schedule for the procurement, receipt, testing and acceptance, as well as the date that individual buses were placed in service. It should also include the number of older diesel buses that are retired from service. This information should be included in Muni's annual report

**Recommendation B2b.** The Municipal Transportation Agency Board, the Mayor and the Board of Supervisors should approve sufficient funds for maintenance and operations staffing needs, materials management requirements and training and code compliance activities.

<b>Responses required from</b>	<b>The Office of the Mayor, The Municipal Transportation Agency, The Municipal Railway, Department of Environment (60 days). The Board of Supervisors (90 days).</b>
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B3) Muni Funding

*To address the San Francisco Climate Action Plan goals of increasing the use of public transit as an alternative to driving and to increase the use of clean air vehicles.*

One of the principal barriers to being a transit first City is the high cost of transit, both to the City and to the rider. Options have been evaluated by the City to increase funding for transit without raising fares, but so far no economically and politically attractive options have been found. In the budget process for the coming year, the Governor of California has proposed reducing funds

<sup>22</sup> Low Emission Vehicles (LEVs) or Zero Emission Vehicles (ZEVs).

for public transit, moving more funds toward highway funding (Gordon 2007c). This would have a negative impact on Muni’s ability to meet Transit First requirements (Calpirg 2007).

As stated in a 2006 report issued by the San Francisco Planning and Urban Research Association (SPUR), a San Francisco civic think tank, “Muni’s expenses are outpacing revenue. The system has raised fares twice in the previous two years and cut back service. . . . Through 2015 Muni must find a total of between \$284 and \$929 million in new revenue.” The chart below shows these estimates for additional revenue for fiscal years through 2015, assuming best-case, mid-point and worst-case scenarios.

Initial targets for annual revenue Muni will need from 2007 to 2015  
stated in millions of dollars\*

Fiscal Year	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	Total
Best-Case Scenario	5	30	36	22	28	43	30	41	51	284
Mid-point Scenario	20	38	54	50	67	83	79	96	118	605
Worst-case Scenario	35	50	74	79	103	123	128	153	184	929

\*Source: These figures are based on Metropolitan Transit Commission projections for the region and mode splits calculated using the year 2000 Bay Area Travel Survey.

SPUR estimates that even if Muni drastically improves its productivity, it will still need an estimated \$284 million in additional revenue in the next ten years. Board of Supervisors President Aaron Peskin is quoted as saying that, “The agency needs at least \$100 million more a year than the \$668 million it now receives to meet the public’s demand for a first-rate transit system” (Peskin 2007). Mayor Gavin Newsom has asked a group of financial and transportation professionals to provide an assessment of San Francisco’s transit system with the goal of finding new revenue to improve service (Gordon 2007b).

It is clear that new sources of funding are needed. Specific taxes dedicated to Muni would have to be approved by a two-thirds vote of the electorate. Specific assessments dedicated to Muni must be approved by a majority vote. Fees dedicated to Muni (such as user fees and impact<sup>23</sup> mitigation fees) do not require voter approval (Spur 2006, p. 9). The additional funding needed for Muni is required to lessen the impact of the City’s current transportation system on eCO<sub>2</sub> emissions.

One funding option under consideration is congestion pricing. The San Francisco County Transportation Authority (SFCTA), in a May 2007 study called “Mobility, Access and Pricing,” assesses the technical merit and public perception of the benefits and impacts of charging a fee to drive on San Francisco’s most congested routes at the most congested times.<sup>24</sup> Congestion pricing is now in effect in Singapore, London, Stockholm and other world cities, and is being

<sup>23</sup> San Francisco Business Times, 05/05/06: Transit Chiefs threaten a tax on downtown (Young, 2006)

<sup>24</sup> San Francisco Mobility, Access & Pricing Study, [www.sfcta.org/mobility](http://www.sfcta.org/mobility)

proposed by Mayor Michael Bloomberg for New York City (see Appendix #4, p. 47). The underlying principle prices car travel for its true cost, factoring in such variables as emissions and use of infrastructure, while providing funds for and increasing use of public transit. The SFCTA, in its 2007 report (p. 2-11, exhibit 2-29), estimates the annual cost of delay in San Francisco (time lost by the traveler and fuel consumption costs) at \$2.3 billion.

**Finding B3a.** Transit First cannot be a realized goal for San Francisco given the present funding and systemic problems.

**Finding B3b.** The proposed reduction in funding for local transit by the Governor of California would significantly impact Muni's efforts to increase ridership.

**Finding B3c.** Any increase in Muni fares would be a disincentive for people to use public transit as an alternative to the automobile, the latter being more convenient but more polluting than transit. On the other hand, vehicle-related impact fees have the potential to do the opposite -- discourage the use of the automobile in favor of public transit.

**Finding B3d.** In order to maintain its transit-first policy and to increase transit efficiency, the City needs to find sources of additional funding for Muni, since present funding mechanisms will not cover the current or projected shortfalls. Potential funding could include congestion pricing (charging motorists to enter the central, more congested, parts of the City) or local motor vehicle-related impact fees.

**Recommendation B3a.** The San Francisco State Legislation Committee<sup>25</sup> should lobby State lawmakers to maintain a baseline level of funding for local transit.

**Recommendation B3b.** The San Francisco State Legislation Committee should lobby State lawmakers to pass legislation for a California Department of Motor Vehicle tiered tax based on vehicle emissions to provide additional revenues for transit rather than highways.

**Recommendation B3c.** The San Francisco State Legislation Committee should lobby State lawmakers for legislation enabling cities to assess a local motor vehicle tax based on vehicle emissions to provide additional revenues for transit.

**Recommendation B3d.** The Municipal Transportation Agency, with cooperation of the Board of Supervisors and Mayor, should continue to pursue additional funding for Muni operations; avoid, if possible, raising fares; and consider all other funding options such as congestion pricing.

**Recommendation B3e.** If actions planned by the City do not appear feasible or if those actions appear insufficient to meet San Francisco's emission-reduction goals, the City

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<sup>25</sup> The State Legislation Committee is directed by the San Francisco Administrative Code (Article III, sections 5.5 – 5.11) to make recommendations for endorsement, opposition, or neutrality with respect to legislation pending before the State Legislature that would affect the City and County.

should consider more radical solutions such as greatly-reduced transit fares combined with new sources of funding for transit, and a high-priority program to encourage clean vehicles for all uses, municipal, business and personal.

<b>Responses required from</b>	<b>The Office of the Mayor, The Municipal Transportation Agency, The S. F. State Legislation Committee, Department of Environment (60 days). The Board of Supervisors (90 days)</b>
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B4) Muni Speed

*To address the San Francisco Climate Action Plan goal of increasing the use of public transit as an alternative to driving.*

One of the principal barriers to being a Transit First City is the convenience inherent in driving one's own car as opposed to the inconvenience of walking some distance and accommodating oneself to the uncertain schedule of the transit system, sacrificing precious personal time.

On some routes, Muni stops too frequently. The popularity of the heavily-traveled Geary Limited, the stops of which are spaced farther apart, shows that riders will walk farther to or from the bus stop if their transit trip is faster.

Many proponents of rapid transit, including SPUR and Rescue Muni, have proposed several steps to increase Muni's speed and effectiveness.

- Improve stop spacing as the cheapest and easiest way to speed buses and increase ridership;
- Increase the speed of boarding passengers with increased use of prepaid fares;
- Expand proof-of-payment alternatives so that people can board through both doors of buses;
- Add bus bulbs so that buses do not have to pull in and out of stops;
- Install traffic signals that stay green for a few extra seconds when a bus approaches;
- Increase the number of transit vehicles on primary corridors;
- Restrict left turns along bus routes during rush hours;
- Add more transit-only lanes.

In 2003 voters approved a one-half cent transportation infrastructure sales tax, to be used for major projects such as Bus Rapid Transit (BRT). The Geary and Van Ness BRT studies, being led by the SFCTA,<sup>26</sup> with MTA, Planning, Public Works and Golden Gate Transit,<sup>27</sup> are

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<sup>26</sup> The SFCTA administers and oversees the delivery of the Prop K half-cent local transportation sales tax program

evaluating the benefits and impacts of improved transit designs on major traffic thoroughfares.<sup>28</sup> According to MTA, these are the most heavily used transit corridors in the northern part of San Francisco. Anticipated improvements, such as dedicated bus lanes and high-quality bus shelters, are being considered to improve service for existing riders, attract new transit riders, and prevent increased auto congestion. Initial results of the study predict an increase in speed of about 30% on these routes.

**Finding B4a.** Professional planners predict that the proposed BRT improvements on Geary and Van Ness Corridors, with bus-only lanes, signal preemption for transit, and other improvements, will increase transit vehicle speed, reliability and comfort and will increase the use of public transit servicing these areas.

**Finding B4b.** San Francisco public interest groups involved in public transit have proposed a number of improvements which would increase Muni’s speed and effectiveness and improve ridership.

**Recommendation B4a.** For high traffic transit corridors, such as Geary Boulevard and Van Ness Avenue, the Municipal Transportation Agency should complete environmental impact studies for the proposed Bus Rapid Transit system with the goal of putting these BRT improvements into operation as soon as possible to increase speed and ridership.

**Recommendation B4b.** The Municipal Transportation Agency should develop more ways to increase speed and effectiveness of Muni on all routes, such as: improved stop spacing; increased use of prepaid fares; other proof-of-payment alternatives; more bus bulbs; signal preemption; more buses on primary corridors; restricted left turns for non-transit vehicles; and additional transit-only lanes.

<b>Responses required from</b>	<b>Municipal Transportation Agency, Department of Environment (60 days).</b>
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B5) Commuter Options

*To address the San Francisco Climate Action Plan goal of supporting trip reduction through employee-based programs.*

Other Muni projects have been installed to attract more riders. For instance, NextMuni is a recently-implemented computerized system that uses Global Positional System (GPS) technology to track the movement of Muni vehicles to predict their arrival times, and posts that information on line or on electronic displays at Metro stations and some bus shelters. Schedule

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and New Expenditure Plan, which was passed by 75% of San Francisco voters in November 2003. The Authority was created in 1989 to administer Prop K's predecessor, the Prop B half-cent transportation sales tax program, which began in 1990 and continued until it was superseded by Prop K.

<sup>27</sup> Traffic Committee Interim Report, March 12, 2007.

<sup>28</sup> <http://www.sfcta.org/geary>, <http://www.sfcta.org/vanness>

information provided allows passengers to better plan their public transit travel routes. The NextMuni system will soon be available on all routes.<sup>29</sup>

Many incentives have been provided by Bay Area employers to encourage use of commuting options other than driving to work alone. These include: free transit passes; van and car pool; guaranteed ride home; free shuttle service to and from Bay Area Rapid Transit (BART); bicycle parking; showers and lockers for bicyclists; telecommuting; and compressed work week. The following “clean air” programs are already in effect.<sup>30</sup>

- Pre-tax Commuter Benefits Program: Enrollees save up to 40 percent on transit cost;
- Guaranteed Ride Home Program: In the event of an emergency, provides employees of the City a free and prompt ride to a suitable destination such as home, the hospital, the home of a relative or their child’s school;
- City Bicycle Fleet for on-the-job vehicles: over 300 bicycles have been procured for various City departments;
- The Department of Parking and Traffic is continuing to review and make recommendations to increase the number of bicycle lanes, routes and paths, parking facilities and access to transit;
- Most City departments and many private employers allow employees to work a compressed work week;
- The City’s first telecommuting program was launched in 2005.

**Finding B5.** The City has provided several commuter options for reducing automobile use and thus reducing emissions.

**Recommendation B5a.** The Municipal Transportation Agency, in cooperation with the Department of Environment, should improve informational campaigns to encourage all employees, whether public or private, to take public transportation to work, and should promote the Muni Fast Pass to increase ridership.

**Recommendation B5b.** The Municipal Transportation Agency, in cooperation with the Department of Environment, should improve incentive programs to encourage City employees to participate in transit-related, Pre-Tax Commuter Benefit Programs.

<b>Responses required from</b>	<b>The Municipal Transportation Agency, The Department of Environment (60 days).</b>
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<sup>29</sup> [www.nextmuni.com](http://www.nextmuni.com)

<sup>30</sup> [www.sfenvironment.org](http://www.sfenvironment.org)

B6) Private Vehicles

*To address the San Francisco Climate Action Plan goal of increasing the use of clean air vehicles and improving fleet efficiency.*

A new "Clean Car Discount Plan," Assembly Bill 493 (AB493), is working its way through the State Assembly and has won approval from the State Transportation Committee. This bill would give significant rebates to drivers who buy clean-running vehicles. Rebates would be funded with a one-time charge on the purchase of new high-emission autos. Starting in 2011, regulators would rank every new car and light truck model by how much carbon it emits and reward or penalize buyers depending on their choices (San Jose Mercury News editorials 2007).

In particular, commercial fleet vehicles are usually heavy vehicles with poor gas mileage characteristics and are significant contributors to greenhouse gases.

Hybrids are now available and becoming increasingly popular. While a gasoline-powered sports utility vehicle (SUV) gets about 17 miles per gallon and a compact sedan gets 32, a hybrid averages 50 miles per gallon, bringing about a substantial reduction in greenhouse gases.

**Finding B6a.** State AB493 would encourage consumers to buy clean vehicles and push manufacturers to make them. San Franciscans could ultimately benefit from State laws allowing rebates or tax credits for replacement of high emission with low emission vehicles.

**Finding B6b.** Commercial fleet vehicles in San Francisco, with poor gas mileage characteristics, constitute a significant source of greenhouse gas emissions.

**Recommendation B6a.** The San Francisco State Legislation Committee should lobby State lawmakers to pass AB493, which would give significant rebates to drivers who buy clean-running cars, to be funded with a one-time charge on purchase of new high-emission autos.

**Recommendation B6b.** The Mayor should urge commercial entities with fleets servicing the City to change to cleaner alternative fuels.

**Recommendation B6c.** The Board of Supervisors should establish regulations and fees for commercial fleets serving the City that do not convert to alternative fuels by 2012.

**Recommendation B6d.** The Board of Supervisors should consider a tax-reduction or fee-reduction alternative, such as rebate of part of the annual business license fee, for any business that demonstrates purchase of a low-emission vehicle.

<b>Responses required from</b>	<b>The Office of the Mayor, The S.F. State Legislation Committee, Department of Environment (60 days). The Board of Supervisors (90 days).</b>
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## B7) Plug-in Vehicles<sup>31</sup>

*To address the San Francisco Climate Action Plan goal of increasing the use of clean air vehicles and improving fleet efficiency.*

Electric vehicles, at one time abandoned by the American automobile companies as not sufficiently profitable, may soon become commercially available in the form of plug-in hybrid electric vehicles (PHEVs), hybrids with larger, rechargeable batteries that can be plugged in to use clean, cheap domestic electricity. The technology has been successfully developed, and kits are available to convert hybrid vehicles into PHEVs. A plug-in hybrid can get over 100 miles per gallon of gasoline plus a small amount of electricity (Litman 1999).

A California organization called CalCars describes it this way, "A PHEV is essentially a regular hybrid with an extension cord. You can fill it up at the gas station, and you can plug it in to any 120-volt outlet. It's like having a second fuel tank that you always use first -- only you fill it up at home at an equivalent cost of under \$1/gallon."<sup>32</sup>

As battery technology progresses, totally electric cars may come on the market as well. Electric cars emit less than plug-in hybrids, which emit less than hybrids, which emit less than conventional cars. Electric vehicles can provide substantial reduction of greenhouse gases, particularly in California, because of the relatively clean electric power mix in the State (Litman 1999).

Plug-in Bay Area is a chapter of Plug-in Partners, a national grassroots initiative that is demonstrating to automakers that a growing market is asking for the production of PHEVs. Plug-in Bay Area is working to familiarize Bay Area governments with this technology, so they can promote it by joining the Plug-in Partners' national campaign, placing "soft" fleet orders,<sup>33</sup> adopting supportive resolutions, putting in place demonstration projects, and creating incentives to support the development of this technology.<sup>34</sup>

With this commitment, AutoNation joins a national initiative intended to demonstrate to automakers the burgeoning demand for plug-in vehicles, which are capable of 100+ miles per gallon. The non-profit organization Plug-In Partners was formed in 2006 with the aim of procuring soft fleet orders around the country. To date, Plug-In Partners has formed partnerships with nearly 60 cities and counties – including Los Angeles, Dallas, Boston, Philadelphia, Chicago, San Francisco, Baltimore and Phoenix – as well.

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<sup>31</sup> [www.pluginamerica.com](http://www.pluginamerica.com)

<sup>32</sup> CalCars: The California Cars Initiative -- 100+ MPG Hybrids. All About Plug-In Hybrids (PHEVs).  
<http://www.calcars.org/vehicles.html>

<sup>33</sup> A soft order is a commitment from an individual, business, or unit of government to purchase a PHEV once the ultra-efficient vehicles become commercially available.

<sup>34</sup> [www.pluginbayarea.org](http://www.pluginbayarea.org)

Although cities will not be able to switch their fleets over until automakers commit to producing the cars, cities can sign a petition to automakers or can submit “soft” orders to demonstrate their preference for higher fuel-efficiency and cleaner vehicles (See Appendix #5 p. 48, PHEV Fleet Order Form). Marin County has placed a fleet order for these vehicles, as has Palo Alto.<sup>35</sup>

A new technology, called vehicle to grid (V2G), will permit plug-in vehicles to feed power back to the grid. Car batteries will be charged from solar panels or from the grid during off-peak hours<sup>36</sup> and then sent back to the grid during peak load. Wide use of cars and trucks with V2G technology could generate enough power to substantially reduce the need for central power generation capacity (Electric Power Research Institute 2004).

Plug-in vehicles will need charging bays. Through the San Francisco Environment Code, the City has been proactive in foreseeing the infrastructure necessary to accommodate low emission PHEVs.

Chapter 4, Sec. 405, of the San Francisco Environment Code (Ord. 171-03, App. 07/03/03) required the Department of Parking and Traffic (DPT) in consultation with the Department of Building Inspection (DBI) to implement a pilot program to install a total of fifty public access, dedicated electric charging bays in at least six City-owned garages, parking lots, and/or other sites accessible to the public. It also required the DPT, in cooperation with the Clean Air Program, to develop a plan for creating a comprehensive electric charging infrastructure for electric vehicles in the City, including:

- A market demand assessment of electric charging infrastructure
- An assessment of public and private funding options, and
- Tax-based or other incentive programs to encourage installation of electric charging bays in privately-owned parking facilities.

Twenty-seven electric charging bays were installed by DPT with the cooperation of the Department of Environment. Some are being used by City electric vehicles. But according to DPT, the parking bay program was not continued because of inadequate public demand.

**Finding B7a.** By placing “soft orders” for plug-in vehicles, communities and business organizations can create incentives for the commercial development of this technology, which can be effective in reducing demand for transportation energy and resulting greenhouse gases.

**Finding B7b.** As the technology improves and market demand increases for electric vehicles, especially for low-emission plug-in hybrids, the need for the supporting infrastructure in garages will once again become necessary.

**Recommendation B7a.** The General Services Agency (GSA) and the Office of the Mayor should collaborate to put in “soft” orders for plug-in vehicles for the City’s

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<sup>35</sup> Rainforest Action Network, Spring 2007, page 5.

<sup>36</sup> PG&E charges commercial entities a higher price per kilowatt hour during daytime peak hours. “Peak pricing” now applies to some residential consumers as well.

automobile fleet.

**Recommendation B7b.** The Department of Environment should encourage city businesses, working through Plug-in Bay Area, to put in “soft” orders for plug-in vehicles and join a city-by-city campaign to create incentives for the automotive companies to quickly put this technology into production (order form in Appendix #5, p. 48).

**Recommendation B7c.** The Departments of Planning, Parking and Traffic and the Parking Authority, consistent with the requirements legislated in the San Francisco Environment Code, should at regular intervals perform a market demand assessment for publicly accessible electric charging bays in City-owned garages and be ready to provide access to outlets for the plug-in hybrids and electric vehicles when they come on the market.

**Recommendation B7d.** The Departments of Planning and Building Inspection should develop regulations requiring electrical outlets for plug-in vehicles in the construction of new apartments and condominiums with garages.

**Recommendation B7e.** The Department of Environment should keep the public informed of the status of the development and availability of plug-in hybrids and electric vehicles as they become commercially available, and of the sources and availability of kits to convert hybrids into plug-in hybrids. They should also keep the public updated on the locations of charging bays in public garages.

<b>Responses required from</b>	<b>The General Services Agency, The Department of Environment, The Department of Planning, The Department of Building Inspection, The Department of Parking and Traffic, The Parking Authority (60 days).</b>
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B8) Taxis

*To address the San Francisco Climate Action Plan goal of increasing the use of clean air vehicles and improving fleet efficiency.*

The number of taxis legally sanctioned to drive in San Francisco is 1,431. These vehicles are largely Ford Crown Victorias, major users of fossil fuels, each on the road up to 24 hours per day. The Taxi Commission estimates that a normal taxi travels 75,000 miles per year and emits 50 tons of greenhouse gas, resulting in a total for the entire taxi fleet of between 40,000 and 70,000 tons per year.

On June 12, 2007, the Taxi Commission passed a resolution, urged by the Department of Environment and supported by Mayor Gavin Newsom, to reduce its total emissions by 50% from current levels and 20% from 1990 levels by 2011, and resolved further to offset the total

amount of greenhouse gas produced by the taxi fleet with an equal amount of renewable energy or energy efficiency. Starting in September 2007, the Taxi Commission will develop a green taxi vehicle guide, listing the cleanest vehicles available that are suitable for use as taxis. The resolution calls for a total switch to zero emission vehicles by 2020. This is similar to a program recently proposed by Mayor Michael Bloomberg of New York City.

Changing from traditional full size American automobiles will be a substantial change for the major cab fleets, which have been testing different models to determine which hybrids might best meet the needs of spaciousness, safety and accessibility for the disabled, while lowering gas mileage and harmful emissions.

Several cab companies in the City have already started using hybrids. A small new company called Green Cab will have four Prius hybrids by the time of release of this report, getting up to 40 miles per gallon, compared to as low as 10 to 12 miles per gallon by the Ford Crown Victoria. This company hopes to become 100% hybrid.<sup>37</sup> Several other cab companies have purchased the larger hybrid Ford Escape sports utility vehicles.

A cab owner holds a "medallion" which entitles the holder to own a taxi and use it for business. The cab day consists of two shifts, of which the owner will drive one. The medallion holder can then lease that vehicle out for the remaining shift, charging the lease/driver a fee called a "gate," which in San Francisco is currently \$91.50 per shift, with the driver paying for the fuel.

According to the Taxi Commission, hybrid vehicles save drivers thousands of dollars a year in fuel costs and reduce greenhouse gas emissions by half, but are more expensive to purchase initially. These costs could be offset by an increase in the gate paid by the lease/driver to the hybrid owner/driver. The Taxi Commission is urging the San Francisco Board of Supervisors to enact legislation to raise the per-shift gate fee to subsidize the purchase of high-efficiency vehicles.

**Finding B8a.** Taxis in San Francisco are major users of fossil fuels and producers of greenhouse gases because of the preponderance of high-polluting vehicles and the fact that they are constantly on the road.

**Finding B8b.** The San Francisco Taxi Commission is taking positive steps to put a clean air policy into effect for the taxi industry by requiring a move toward low or zero-emission vehicles and by initiating specific actions toward achieving this goal.

**Recommendation B8a.** The Board of Supervisors should enact legislation to raise the per-shift gate fee paid by a driver to the owner of a taxi, in order to create a monetary incentive for taxi owners to purchase low emission or zero emission vehicles.

**Recommendation B8b.** The Taxi Commission should formulate a plan which would allow group investments in hybrids to facilitate the fastest acquisition and lowest negotiated prices of these new vehicles.

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<sup>37</sup> <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2007/04/27/BAG2IPG4O135.DTL>

Responses required from	The Department of Environment, The Taxi Commission (60 days). The Board of Supervisors (90 days).
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B9) Bicycles

*To address the San Francisco Climate Action Plan goal of increasing bicycling as an alternative to driving.*

The Wall Street Journal compares San Francisco with bicycle-friendly cities in the U.S. and abroad, concluding that San Francisco could increase the percentage of bicycle commuters by improving access to bicycles on City streets. Presently only about 4% of arterial roads have bicycle lanes and slightly over 2% of commuters bike to work (Keates 2007).

San Francisco voters (2003) approved a half-cent sales tax estimated to total \$2.6 billion over thirty years with \$56 million (a little more than 2%) to go to bicycle-related projects. According to a spokesperson, the Municipal Transportation Agency has, as of early 2007, striped over 40 miles of bicycle lanes, created 23 miles of bicycle paths, posted 82 miles of signed bicycle routes, and painted 1250 shared lane markings. Garages are required to make bicycle parking available.

The San Francisco Bicycle Coalition claims to have over 5,000 members and has been politically active for nearly 20 years. It has been instrumental in obtaining the legislation that established, and continues to establish, bicycle lanes on so many city streets. A spokesperson states that technology has made strides in offering bicycles that are fast and easy to handle. Maps have been published inexpensively by the Coalition to show bicycle routes, lanes and paths.

**Finding B9a.** Bicycles are a non-polluting, inexpensive, and convenient means of travel in San Francisco. Modern bicycles are fast and easy to handle. Maps published by the San Francisco Bicycle Coalition show bicycle routes, lanes and paths.

**Finding B9b.** The Municipal Transportation Agency and Department of Parking and Traffic have made multiple efforts to facilitate bicycle travel in the City, by increasing bicycle lanes and convenient parking. In spite of recent emphasis on improving access for bicycles, the City can do more to promote bicycle commuting.

**Recommendation B9.** The Municipal Transportation Agency, Planning Department, Department of Public Works (DPW), and the General Services Agency, in coordination with bicycle advocacy groups, should increase and improve:

- The number of bicycle lanes, routes, and paths
- Bicycle parking facilities
- Dedicated bicycle storage in City buildings and

- A public service campaign to educate bicyclists and drivers on road safety and etiquette, with maps showing dedicated bicycle lanes.

<b>Responses required from</b>	<b>The Municipal Transportation Agency, The Planning Department, The Department of Public Works, The General Services Agency, The Department of Environment (60 days).</b>
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### C. ENERGY EFFICIENCY

The City is attempting to achieve major reductions in eCO<sub>2</sub> emissions through energy efficiency and conservation in buildings (Table 2, page 38). The Climate Action Plan anticipates that about 433,000 tons of the reduction would come from commercial buildings, with the rest from residential (325,000 tons) and municipal buildings (45,000 tons).

#### C1) Municipal Energy Use

*To address the San Francisco Climate Action Plan goal of increasing incentives, direct installation and technical assistance to improve energy efficiency in municipal buildings.*

San Francisco Public Utilities Commission (SFPUC) is the primary power provider for City departments. More than eighty percent of electrical power provided to City departments comes from clean Hetch Hetchy hydropower generation. SFPUC also conducts periodic energy use audits of governmental users, identifying energy loss through inefficient facilities design or deferred maintenance.

The SFPUC is also involved in planning, funding, auditing, designing and managing some energy efficiency projects for City buildings. Table 5 (page 40) shows municipal energy efficiency projects completed to date, promising annual emissions reductions of about 11,000 tons of eCO<sub>2</sub>, about one quarter of the 2012 goal of 45,000 from municipal buildings.

The Department of Environment leads a group called the Staff Technical Team on Climate Change consisting of members of any interested City department (Muni, SFPUC, SFO, the Port, Fire Department, Central Shops, SFUSD, Planning, and Health) who meet to share information, data and ideas on advancing the City's climate protection work. Members are key providers of data used to calculate emissions.

**Finding C1.** Energy use and emissions from municipal operations can be the most easily reduced, as they are controlled directly by the City. The San Francisco Public Utilities Commission conducts periodic energy use audits of governmental users, identifying energy loss through inefficient facilities design or deferred maintenance.

**Recommendation C1a.** The Department of Environment and Public Utility Commission should request plans from high energy users, such as Muni, SFPUC, San Francisco Airport, the Port, Fire Department, Central Shops, Unified School District, Planning, and Health Department, to reduce energy use based on energy audits.

**Recommendation C1b.** The high energy users, such as Muni, SFPUC, San Francisco Airport, the Port, Fire Department, Central Shops, Unified School District, Planning, and Health Department, with guidance from the Department of Environment and SFPUC, should budget for and implement facilities repair and upgrades where necessary to comply with the energy audit findings.

**Recommendation C1c.** The Mayor and Board of Supervisors should approve budgets from high energy users to include funds to implement facilities repair and upgrades to comply with the energy audit findings.

**Recommendation C1d.** The Department of Environment should develop programs that reward public employees for excellence in energy savings.

<p><b>Responses required from</b></p>	<p><b>The Office of the Mayor The Department of Environment, The Public Utilities Commission, Municipal Transportation Agency, San Francisco Airport, The Port of San Francisco, The Fire Department, The Central Shops, San Francisco Unified School District, Planning Department, Health Department (60 days). The Board of Supervisors (90 days).</b></p>
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C2) Municipal Building Standards

*To address the San Francisco Climate Action Plan goal of strengthening legislation, codes and standards in order to improve energy efficiency in municipal buildings.*

City codes now require construction of new municipal buildings to meet the LEED Silver Standard, requiring 33-38 of a possible total 69 environmental points. Points are attained in the following areas: sustainable site 14; water efficiency 5; energy & atmosphere 17; materials & resources 13; indoor environment 15; innovation & design 5 (Case 2006). With six additional points in green design, it would be possible for a builder to reach the LEED Gold standard which requires 39-51 points. As one example of San Francisco's commitment to building to LEED standards, the California Academy of Sciences in Golden Gate Park is being built to the LEED Platinum standard, requiring 52-69 points. According to the Museum Director, it is one of very few such buildings in the country (Kociolek 2005).

Each of these design and construction measures that is implemented, while meant to decrease energy use and pollution, may increase the initial cost to the builder. While at the outset more costly to build, a green building is designed to save energy and thus costs, as well as eCO<sub>2</sub> emissions, over the lifetime of the building (King 2007, Hoge 2007). More staff may be required by the City to inspect buildings and evaluate compliance to LEED standards and codes.

**Finding C2a.** Higher environmental construction standards are an important component of achieving the greenhouse gas reduction goal.

**Finding C2b.** San Francisco Environment Code 7 requires municipal buildings to be constructed to the LEED Silver standard.

**Recommendation C2a.** In order to reach the emission-reduction goals, the Planning Department should require design and construction of new City buildings to the higher LEED Gold standard.

**Recommendation C2b.** The Department of Building Inspection should accelerate the process of hiring and training building inspectors to evaluate compliance to LEED standards and codes.

<b>Responses required from</b>	<b>The Planning Department, The Department of Building Inspection, The Department of Environment (60 days).</b>
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C3) Commercial and Residential Buildings

*To address the San Francisco Climate Action Plan goal of strengthening legislation, codes and standards in order to increase energy efficiency in commercial and residential buildings.*

The Department of Environment anticipated that commercial and residential buildings could achieve reductions in energy use to reduce annual eCO<sub>2</sub> emissions by approximately 750,000 metric tons (Table 2, page 38).

The California Title 24 Energy Efficiency Standards for Residential and Nonresidential Buildings were established in 1978 in response to a legislative mandate to reduce the State’s energy consumption. Standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods, and were last updated in 2005.

The Department of Environment and Public Utilities Commission state in the City’s 2004 Climate Action Plan that, “Effective local legislation can reduce local energy use. The City can adopt codes and standards to improve the efficiency of existing residential, commercial and municipal buildings, and can require new construction to be more energy efficient than the current State standards.”

They envisioned, “rebates, financing, energy surveys, design, engineering, expedited approval processes, project management assistance, and turnkey energy retrofit projects” to achieve energy efficiency in all buildings. Actions would include various incentives, such as direct installation and technical assistance programs, and improved codes and standards to support energy efficient design and practices. Already, expedited approval for LEED gold buildings and energy surveys, as well as classes for contractors and installers offered by PG&E, have been enthusiastically received.

**Finding C3a.** California Title 24 sets energy efficiency standards for residential and nonresidential buildings. Local codes and standards which exceed these requirements would make buildings even more energy efficient and thus further reduce emissions.

**Finding C3b.** Various incentives were envisioned in the Climate Action Plan to improve energy efficiency in private buildings. Those in effect have proven successful.

**Recommendation C3a.** The Departments of Environment, Planning and Building Inspection should collaborate to review and develop new city building code requirements higher than those in the State Title 24 energy code for new construction, to take advantage of emerging green technology.

**Recommendation C3b.** The Departments of Planning and Building Inspection should develop or expand other incentives for builders to increase energy efficiency in new construction, such as direct installation, project management and technical assistance, rebates, financing, energy surveys, design, engineering, expedited approval processes, and turnkey energy retrofit projects, as envisioned in the City’s Climate Action Plan.

**Recommendation C3c.** The Departments of Planning and Building Inspection should mandate installation of energy-efficient HVAC systems.

**Recommendation C3d.** The Departments of Planning and Building Inspection should develop regulations to modernize lighting in new construction, both commercial and residential, to require energy-efficient fixtures and bulbs and phase out traditional incandescent lights.

<p><b>Responses required from</b></p>	<p><b>The Planning Department, The Department of Building Inspection, The Department of Environment (60 days).</b></p>
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C4) Energy Watch

*To address the San Francisco Climate Action Plan goal of expanding education and outreach and increasing incentives to conserve energy in commercial and large residential buildings, with direct installation and technical assistance.*

San Francisco's new "Energy Watch" program, initiated in February 2007 by the Department of Environment and PG&E, audits energy use and retrofitting of private buildings to improve energy efficiency. The program provides small businesses and large multi-family residential buildings with free assessments of energy savings plus direct installation of energy-efficient lighting, refrigeration, heating and air conditioning. The Energy Watch program is intended to achieve electric and gas energy savings over a three-year period with hopes of substantial reduction in eCO<sub>2</sub> emissions once the program is complete.

**Finding C4.** Emissions savings from replacing older, polluting appliances, lighting and HVAC systems in all private buildings in the City would have a significant effect in reducing energy usage, resulting in reduced greenhouse gas emissions.

**Recommendation C4.** The Department of Environment should make small businesses and owners of multi-family residential buildings more aware of free energy conservation programs through public service information campaigns.

<b>Responses required from</b>	<b>The Department of Environment (60 days).</b>
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C5) Commercial Building Standards

*To address the San Francisco Climate Action Plan goal of strengthening legislation, codes and standards in commercial buildings in order to improve energy efficiency.*

Boston has become the first city in the nation to require commercial building projects, those over 50,000 square feet, to adhere to a set of strict green building standards. These requirements include efficient heating and cooling systems, recycled building materials, careful separation and disposal of waste, energy-efficient walls and glass, cleaner diesel construction vehicles, and transportation plans for future building users (Boston Globe, 12/20/06). San Francisco applies strict green LEED Silver standards only to municipal buildings, not to private buildings.

**Finding C5.** From the example set in Boston, it is clear that cities can be more aggressive in requiring green building standards in the private commercial sector.

**Recommendation C5.** The Departments of Planning and Building Inspection should extend green building requirements to commercial buildings as Boston has done.

<b>Responses required from</b>	<b>The Department of Planning, The Department of Building Inspection. The Department of Environment (60 days).</b>
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C6) Energy Tax

*To address the San Francisco Climate Action Plan goal of strengthening legislation and increasing incentives, in order to improve energy efficiency in commercial and residential buildings.*

A new program called ClimateSmart provides PG&E customers the option to neutralize greenhouse gas emissions associated with their own energy use. Residential and business customers can sign up voluntarily and pay a small amount based on energy usage, which will fund environmental projects aimed at removing carbon dioxide from the air.<sup>38</sup> According to PG&E, the additional amount paid will remove an amount of eCO<sub>2</sub> from the air equivalent to that associated with a customer's "carbon footprint," thus making that customer "climate neutral."

This purely voluntary statewide program will raise funds to supplement local funding in San Francisco to carry out various programs envisioned in the City's Climate Action Plan.

In Boulder, CO, voters approved a Climate Action Plan Tax, making it the first city in the nation to impose an energy tax on its residents to directly combat global warming. The plan took effect on April 1, 2007, and is based on the amount of electricity used. The tax funds energy efficiency programs in the city. The average household will pay \$1.33 per month and an average business will pay \$3.80 per month. (Boulder Daily Camera 11/08/06).

**Finding C6.** Addressing climate change will require new sources of funds. New energy taxes should be considered because of the looming world crisis presented by climate change, and because of the direct relationship between energy use and greenhouse gas emissions.

**Recommendation C6.** The Mayor should propose and the Board of Supervisors should consider a local energy tax to reduce energy use and to raise funds needed by the Department of Environment to implement the actions required by the City's Climate Action Plan.

<b>Responses required from</b>	<b>The Office of the Mayor, The Department of Environment (60 days). The Board of Supervisors (90 days).</b>
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<sup>38</sup> [http://www.pge.com/news/news\\_releases/q4\\_2006/061214.html](http://www.pge.com/news/news_releases/q4_2006/061214.html)

C7) Residential Energy Conservation Ordinance

*To address the San Francisco Climate Action Plan goal of strengthening legislation, codes and standards, in order to achieve energy efficiency in residential buildings.*

In 1982, the Department of Building Inspection adopted the Residential Energy Conservation Ordinance (RECO) that requires all residential property owners to provide certain energy and water conservation measures for their buildings: attic insulation; weather-stripping all doors leading from heated to unheated areas; insulating hot water heaters and hot water pipes; installing low-flow showerheads; caulking and sealing any openings or cracks in the building's exterior; insulating accessible heating and cooling ducts; installing low-flow water-tap aerators; and installing or retrofitting toilets to make them low-flush. Apartment buildings and hotels are also required to insulate steam and hot water pipes and tanks, clean and tune their boilers and repair boiler leaks. The code is mandatory whenever a house, apartment or hotel is sold or whenever a property owner undertakes a major improvement on a single or two-family dwelling. (DBI, 2006)

**Finding C7.** RECO is designed to reduce energy use in a building after it changes ownership, thereby reducing the amount of energy consumed in the City.

**Recommendation C7a.** The Departments of Planning and Building Inspection should look into ways that RECO can be improved and more effectively enforced. Its reach should be extended, for instance, to require property owners to upgrade lighting and other electricity uses before a property changes ownership.

**Recommendation C7b.** The Departments of Planning and Building Inspection should recommend a RECO ordinance change to require replacement of incandescent light bulbs with energy-saving lamps before a property changes ownership.

<b>Responses required from</b>	<b>The Planning Department, The Department of Building Inspection, The Department of Environment (60 days).</b>
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**D. RENEWABLE SOURCES**

D1) Community Choice Aggregation.

*To address the San Francisco Climate Action Plan goal of developing renewable energy projects and increasing support and development of green power purchasing.*

“Community Choice Aggregation” (CCA) is based on California’s 2002 Assembly Bill 117 (AB117), which allows communities to procure electric power from sources such as solar, wind and other renewables. By giving control of the electricity mix back to communities, State law now allows cities to increase their use of clean energy. This City power would be distributed and

billed to consumers by PG&E. Although the City program is not yet law, in April 2007 legislation was introduced by the Board of Supervisors to put it into effect. (S.F. BOS 2007)

In order for San Francisco to participate in the opportunity provided by AB117, the Board of Supervisors must pass an ordinance to allow the City government to generate and/or procure electric power from renewable sources and to distribute it to residences and businesses in the City. Such an ordinance would require action by the San Francisco Local Agency Formation Commission (LAFCO), a body that was formed in August 2000 as a result of an initiative petition to create a municipal utility district for the City and County of San Francisco and the City of Brisbane. PG&E would retain the transmission infrastructure and provide billing services.

Under CCA, clean energy would make up one half of San Francisco's power use by 2017. The plan would use Prop B bond money, already approved by the voters in 2001, to contract for solar panel arrays, wind farms and/or geothermal facilities (S.F. Prop B 2001).

**Finding D1.** The San Francisco Community Choice Aggregation plan has the potential to provide clean, reliable and reasonably-priced energy locally. It would allow San Franciscans to choose between clean City-procured electricity or buying off the grid.

**Recommendation D1.** The City should move as quickly as possible, through regulations enacted or authorized by the Local Agency Formation Commission, Board of Supervisors and Mayor, to put the Community Choice Aggregation program into effect using Prop B funds made available by the voters in 2001. The process of contracting for renewable, clean energy sources by and for the citizens of San Francisco should begin.

<b>Responses required from</b>	<b>The Office of the Mayor, The Local Agency Formation Commission, The Department of Environment (60 days). The Board of Supervisors (90 days).</b>
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D2) Solar Rooftops

*To address the San Francisco Climate Action Plan goal of developing renewable solar energy projects.*

In 2001, voters in the City approved Proposition B, authorizing \$100 million in revenue bonds to be issued for the expansion of solar power in the City. The Department of Environment is engaged in a plan to calculate the solar potential for every residential and commercial rooftop in San Francisco, using aerial photography which analyzes geographical information to determine

each rooftop's solar potential.<sup>39</sup> They point out that, although the City has a number of different microclimates, even on an overcast day the solar panels will produce some electricity, because solar works with light, not heat.<sup>40</sup>

By April 2007 PG&E had interconnected over 500 solar systems in San Francisco, the most of any Northern California city. Installation is subsidized. However, excess power created by these rooftop solar panels is not reimbursed. It can only be used to offset usage. This policy can be a disincentive for property owners to invest in solar paneling. Tim Flannery writes in "The Weather Makers" (Flannery 2006, p. 271), "In Japan you can sell excess power to the grid for as much as \$50 per month, and similar schemes exist in many other countries."

In 2003, in northern hemisphere countries, solar power was around eight times more expensive than conventional power, and in Australia it was four times as expensive. But the cost of solar is falling so rapidly that electricity generated by this means is expected to be cost effective as early as 2010 (Flannery 2006, p. 271).

The S.F. Chronicle (Real Estate Section, April 15, 2007) reports that California is the third largest market in the world for solar power. The article quotes a government study as saying, "When compared with electricity produced by fossil fuels, each kilowatt of solar-produced electricity offsets up to 217,000 pounds of eCO<sub>2</sub> each year. The cost of a solar system for an average home is about \$29,000. Subtract rebates and the cost is reduced to \$20,000. Over the 25-30 year life span of the system, the home owner will save – based on current electrical rates and a conservative estimate of a six percent annual inflation rate for future costs -- about \$60,000 in electricity. After subtracting the system's cost, the bottom line is \$40,000 in savings."

In the meantime, solar energy development is rapidly improving. New technology is now being created to utilize a solar conductive film, little more than conductive saran wrap, that can be used in many more applications than current solar panels. It is anticipated that in the future an entire house or car can be wrapped in the film which will then provide electricity to batteries. We can expect greatly increased efficiencies from solar technology. (NASA 2005)

If, in the not too distant future, plug-in vehicles become available at reasonable prices to the average homeowner, solar home energy will become even more cost effective. The homeowner with rooftop solar energy, who also owns a plug-in automobile, could take advantage of the combination of his own free and clean solar energy, along with off-peak PG&E or the City's own Community Choice Aggregation, to power his home and car.

While we cannot predict the future -- new products are streaming into the marketplace, from solar collectors which are also roofing tiles, to backpacks which recharge i-pods – it is clear that this new technology will not languish.

Bay Area businesses and organizations have the expertise to provide incentives and technical help to further promote acceleration of solar installations in the City. The Business Council on Climate change (BC3), an external advisory group working with San Francisco and other cities,

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<sup>39</sup> As early as Fall of 2007, residents can click on [www.SolarSF.org](http://www.SolarSF.org) to find their electricity-producing potential.

<sup>40</sup> <http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2007/04/21/HOGAQPJBS1.DTL&ty>

is a group of businesses committed to climate leadership, currently with more than 42 member companies.

**Finding D2a.** Solar power in the City will provide a significant benefit in the long term in both cost savings for users as well as reducing reliance on fossil fuels for generating electricity.

**Finding D2b.** Solar power in the City is easy to acquire. Installation is subsidized and it should be an attractive proposition for users of energy with suitable rooftops.

**Finding D2c.** The Department of Environment is helping San Franciscans to determine which rooftops are most suitable for solar panels.

**Finding D2d.** The short term cost of purchasing solar panels and junction boxes, reinforcing roofs, rewiring, and bringing the remainder of electrical systems into code compliance may be a significant cost burden to the majority of residential and commercial building owners. Financial incentives such as subsidies, tax credits and low cost loans might be required.

**Finding D2e.** Consumers would be more likely to invest in solar if it is financially a better alternative. Requiring PG&E to reimburse for all excess solar energy returned to the grid would add to the attractiveness of investing in solar rooftop panels.

**Finding D2f.** Solar rooftop panels will be an even better proposition for homeowners with plug-in vehicles. As time goes on, such consumers will gradually approach an emissions-free life style.

**Finding D2g.** Solar power projects generate business for local firms that provide energy equipment and services and will create new jobs centered around green power.

**Recommendation D2a.** The Department of Environment, with the cooperation of the Mayor, Board of Supervisors, and Departments of Planning and Building Inspection, should explore more ways to create incentives for City residents and businesses with rooftops suitable for solar panels to act early to invest in these projects, considering financial incentives such as subsidies, rebates, property tax reduction, or low-cost loans.

**Recommendation D2b.** The San Francisco State Legislation Committee should lobby the California Public Utilities Commission and the State Legislature for regulations allowing homeowners and businesses to be compensated for all solar energy being returned to the grid.

**Recommendation D2c.** The Department of Environment should keep consumers informed of technological advances in solar technology.

**Recommendation D2d.** The Departments of Environment, Planning and Building Inspection should catalogue and publicize financing options for solar installations for residential consumers.

**Recommendation D2e.** The Department of Environment should partner with San Francisco Community College to establish training and certification programs for professional solar installers and for customer self-installations.

**Recommendation D2f.** The Departments of Environment, Planning and Building Inspection should work with business groups such as BC3, as well as hotel associations and local non-profit organizations to promote solar installations through community education, outreach and training.

<b>Responses required from</b>	<b>The Office of the Mayor,          The Planning Department,          The Department of Building Inspection,          San Francisco Community College,          The S.F. State Legislation Committee,          The Department of Environment (60 days).          The Board of Supervisors (90 days).</b>
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**E. SOLID WASTE**

*To address the San Francisco Climate Action Plan goal of increasing residential, commercial and municipal recycling and at the same time promoting source reduction.*

The world’s economic engine has promoted consumerism in order to promote growth -- in income, jobs and quality of life. Our discarded waste, unhappily, is overwhelming the capacity of our landfills, and plastic detritus threatens marine life as well. There is an upstream cost of producing these oil-based commodities, contributing to the load of greenhouse gases which bodes ill for our future.

In a San Francisco Chronicle article dated 2/18/07 and entitled, “The Real Cost of Bottled Water,” the Director of the San Francisco Department of Environment and the General Manager of the San Francisco Public Utilities Commission write that “San Franciscans and other Bay Area residents enjoy some of the nation's highest quality drinking water, with pristine Sierra snowmelt from the Hetch Hetchy reservoir as our primary source . . . and the federal standards for tap water are higher than those for bottled water.” Bottled water leaves behind millions of plastic bottles to be recycled, or possibly to end up in our waste stream, not to mention the upstream energy resources used for manufacture and transport.

San Francisco is at the forefront in attempts to reduce the use of plastic in the City, as well as recycling paper, glass, metals and compostable green waste. The new law restricting plastic bags will require supermarkets and large drug stores to offer customers only bags made of recyclable paper, “bio-plastic” (materials that can be turned into compost), sturdy cloth, or plastic that can be reused. Polystyrene take-out containers can no longer be provided by restaurants, shops or grocery stores; compostable alternatives are available (S.F. Department of Environment 2007).

**Finding E1.** Although California has a surcharge on purchases of plastic bottles and aluminum drink cans and some percent of cans and bottles are recycled every year, there is still much plastic, recyclable and non-recyclable, that ends up in landfills. NorCal Scavenger Services performs a good job of recycling metal cans and some plastics. Other plastic products do not meet requirements for recycling and are not accepted. These, along with some that could be recycled but are not segregated by the user, end up in landfills.

**Recommendation E1.** San Francisco businesses, residents and City departments should be encouraged through stepped-up educational programs by the Department of Environment to decrease their purchase and use of plastic goods and to increase recycling.

<b>Responses required from</b>	<b>The Department of Environment (60 days).</b>
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## REQUIRED RESPONSES BY DEPARTMENT

DEPARTMENT	A 1	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	C 1	C 2	C 3	C 4	C 5	C 6	C 7	D 1	D 2	E 1	
Board of Supervisors				X			X		X		X					X		X	X		
Central Shops											X										
DBI								X		X		X	X		X		X		X		
Environment	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GSA								X		X											
Health											X										
LAFCO																			X		
Mayor	X		X	X							X					X		X	X		
MTA		X	X	X	X	X				X											
Muni			X								X										
Parking and Traffic		X						X													
Parking Authority								X													
Planning								X		X	X	X	X		X		X		X		
Port											X										
Public Works										X											
SFCC												X									
SFFD											X										
SFO											X										
SFPUC											X										
SFUSD											X										
State Legislation				X			X													X	
Taxi Commission									X												

A1	General	page 8	C1	Municipal Energy Use	page 24
B1	Transit First Policy	9	C2	Municipal Building Standards	25
B2	Muni Fleet	11	C3	Commercial & Residential Bldgs.	26
B3	Muni Funding	12	C4	Energy Watch	28
B4	Muni Speed	15	C5	Commercial Building Standards	28
B5	Commuter Options	16	C6	Energy Tax	29
B6	Private Vehicles	18	C7	RECO	30
B7	Plug-in Vehicles	19	D1	Community Choice Aggregation	30
B8	Taxis	21	D2	Solar Rooftops	31
B9	Bicycles	23	E1	Solid Waste	34

## V. INVESTIGATIVE PROCEDURE

The San Francisco Civil Grand Jury interviewed staff from:

- San Francisco Department of the Environment
- San Francisco County Transportation Authority (CTA)
- San Francisco Public Utilities Commission (PUC)
- San Francisco Planning Department
- San Francisco Department of Parking & Traffic (DPT)
- San Francisco Board of Supervisors
- Pacific Gas & Electric (PG&E)

The Civil Grand Jury reviewed or consulted the following documents (see Bibliography)

- Sustainability Plan for the City of San Francisco (1996)
- United Nations Intergovernmental Panel on Climate Change report (IPCC 2007)
- San Francisco Climate Action Plan (Climate Action Plan, 2004)
- The Transit Effectiveness Briefing Binder for San Francisco (SFTEP, 2006)
- U.S. Census Bureau: Countries Ranked by Population (on eCO<sub>2</sub> emissions) (2001)
- Progress Incorporating Climate Change into Mgmt. of California Water Resources (2006)
- Short Range Transit Plan for San Francisco Municipal Railway 2006-2025 (2001)
- Municipal Transportation Agency (MTA) FY2007 Proposed Budget (2006)
- San Francisco County Transportation Authority, Mobility, Access & Pricing Study (2007)
- San Francisco Environmental Code (2003-2007)
- Our Changing Climate, Assessing the Risks to California; A Summary Report from the California Climate Change Center (2006)
- Western Public Utilities Commission Joint Action Framework on Climate Change (2006)
- Understanding and Responding to Climate Change; National Academies Reports (2005)
- Numerous published peer-reviewed Scientific articles
- Numerous news articles in local and national newspapers and the Internet

The Civil Grand Jury read the following books:

- Earth in the Balance (1992) by Al Gore
- An Inconvenient Truth (2006) by Al Gore
- The Weather makers (2005) by Tim Flannery
- Field Notes from a Catastrophe (2006) by Elizabeth Kolbert
- The Coming Storm (2001) by Bob Reiss
- Kicking the Carbon Habit (2006) by William Sweet
- Plug-in Hybrids: The Cars That Will Recharge America (2006) by Sherry Boschert

The Civil Grand Jury attended scientific meetings in San Francisco on Global Warming

- American Geophysical Union (AGU, Dec 2006)
- American Association for the Advancement of Science (AAAS, Feb 2007)
- Water Utility Climate Change Summit 2007, San Francisco
- Math Sciences Research Inst. (MSRI, April 2007) "From Global Predictions to Local Action"
- State Bar of California, Bar Assoc of SF, "Domestic Response to Global Climate Change"

## VI. TABLES

Tables 1-2. The eCO<sub>2</sub> reduction goals envisioned by the San Francisco Climate Action Plan, in thousand metric tons per year for: Transportation (top) and Energy Efficiency (bottom)

Table 1: Transportation

Transportation Action Categories	Estimated eCO <sub>2</sub> reduction in 1,000 tons/year
A. Increase the Use of Public Transit as an Alternative to Driving	87
B. Increase the Use of Ridesharing as an Alternative to Single Occupancy Driving	42
C. Increase Bicycling and Walking as an Alternative to Driving	10
D. Support Trip Reduction Through Employer-Based Programs	28
E. Discourage Driving	155
F. Increase the Use of Clean Air Vehicles and Improve Fleet Efficiency	641
Total	963

Table 2: Energy Efficiency

Energy Efficiency Action Categories	Estimated eCO <sub>2</sub> reduction in 1,000 tons/year
A. Increase Incentives, Direct Installation and Technical Assistance	
Residential Buildings	222
Commercial Buildings	433
Municipal Buildings	45
B. Expand Education and Outreach	36
C. Strengthen Legislation, Codes and Standards	65
Total	801

Tables 3-4. The eCO<sub>2</sub> reduction goals envisioned by the San Francisco Climate Action Plan, in thousand metric tons per year for: Renewable Sources (top) and Solid Waste (bottom)

Table 3: Renewable Sources

Renewable Sources Action Categories	Estimated eCO <sub>2</sub> reduction in 1,000 tons/year
A. Develop Renewable Energy Projects	
Solar Energy	35
Wind Energy	239
Biomass Energy	44
B. Conduct Pilot Projects for Emerging Technologies	-
C. Support and Develop Green Power Purchasing	230
Total	548

Table 4: Solid Waste

Solid Waste Action Categories	Estimated eCO <sub>2</sub> reduction in 1,000 tons/year
A. Increase Residential Recycling and Composting	70
B. Increase Commercial Recycling and Composting	109
C. Expand Construction and Demolition Debris Recycling	57
D. Support Alternate Collection Methods for Recyclable Materials	66
E. Promote Source Reduction, Reuse and Other Waste Reduction	-
F. Expand Municipal Programs	-
Total	302

Table 5

SFPUC Energy Efficiency Projects completed

San Francisco General Hospital -- Lighting	In 13 buildings at SFGH Medical Center, install energy efficient lighting.
San Francisco Housing Authority, housing developments	2000 energy-efficient refrigerators
Department of Public Health -- Clinics	Energy efficient lighting at 17 facilities.
Golden Gate Park	Rec. & Park Department energy efficiency (lighting)
2323 Cesar Chavez DPW/BBR shop	Lighting efficiency at DPW Corporation Yard and administrative offices.
West Portal Library	Install energy efficient fluorescent lighting.
Moscone Center West -- Expansion	Energy efficiency
City-wide traffic signals	LED traffic signals retrofit
Moscone Convention Center -- ECM	Lighting retrofit and control modification
DPT Garages	Lighting. Does not include St. Mary's Square.
DPH Clinics Energy Controls	Install energy management controls at 9 clinics
Waste Water Aeration Basin Mixer Efficiency	Design and install energy efficient mixers at Southeast Waste Treatment Plant
190 9th St Library Administration Building EMS	Energy management system upgrade to newly renovated administration building.
SFGH Chiller replacement	Chiller (natural gas savings)

Total annual emissions reduction from these projects is expected to be 10,904 tons eCO<sub>2</sub>, about one quarter of the 45,000 ton goal for Municipal Buildings by year 2012 (Table 2).

## VII. APPENDICES

### Appendix #1. Sea Levels

The following statistics on sea levels corresponding to levels of atmospheric CO<sub>2</sub> and temperature are from Section 2 of "The Threat to the Planet," an article by Jim Hansen,<sup>41</sup> Director of the NASA Goddard Institute for Space Studies and Adjunct Professor of Earth and Environmental Sciences at Columbia University's Earth Institute. (Hansen 2006)

The level of the sea around the globe is a reflection primarily of changes in the volume of ice sheets and thus of changes in global temperature. When the planet cools, (called glacial periods), ice sheets grow on continents and the sea level falls. When the Earth warms (called interglacial periods), ice melts and the sea level rises.

By drilling into glaciers to analyze air bubbles trapped under layers of snow, scientists can measure the levels of each gas in the atmosphere hundreds of thousands of years ago. By comparing the concentrations of different isotopes of oxygen in these air bubbles, they have measured the average levels of CO<sub>2</sub> and temperature over 420,000 years. Figure 1, next page, from Vostok, Antarctica ice cores, shows CO<sub>2</sub> and temperature rising and falling together over periods of roughly 100,000 years. (from page 130 of Elizabeth Kolbert's 2006 book)

During the coldest ice ages measured, atmospheric CO<sub>2</sub> descended to lows of 200 parts per million, while Earth's average temperature was about ten degrees Fahrenheit colder than today, and the sea level was 400 feet lower. The warmest interglacial periods were about two degrees warmer than today and the sea level as much as sixteen feet higher. During this 420,000 year period, atmospheric CO<sub>2</sub> reached a maximum of 299 parts per million around 325,000 years ago.

Measurements of CO<sub>2</sub> from 1958 onward, made at Mauna Loa, Hawaii, are known as the Keeling Curve (see Figure 2). The saw tooth effect results from the seasonal changes in northern forests, but the inexorable rise is due to the burning of fossil fuels (Flannery 2006, p. 25). Since the start of the industrial revolution, the level of CO<sub>2</sub> in the atmosphere has risen from 280 parts per million to the present 380, and with a business-as-usual scenario is expected to exceed 500 by the end of the century because of release of carbon into the atmosphere by humans.

This would result in an increase of about five degrees of global warming during this century, the warmest the earth has been in three million years. Figure 3 shows trends in the average surface temperature of Earth from 1860 to 2000 AD (top) and from 1000 to 2000 AD (bottom), taken from the Report of the Intergovernmental Panel on Climate Change Working Group One, showing a steady rise since the beginning of the industrial revolution. The last time that the Earth was five degrees warmer than today was three million years ago, well outside of this measured time period, when sea level was about eighty feet higher.

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<sup>41</sup> Jim Hansen is no relation to members of the CGJ.

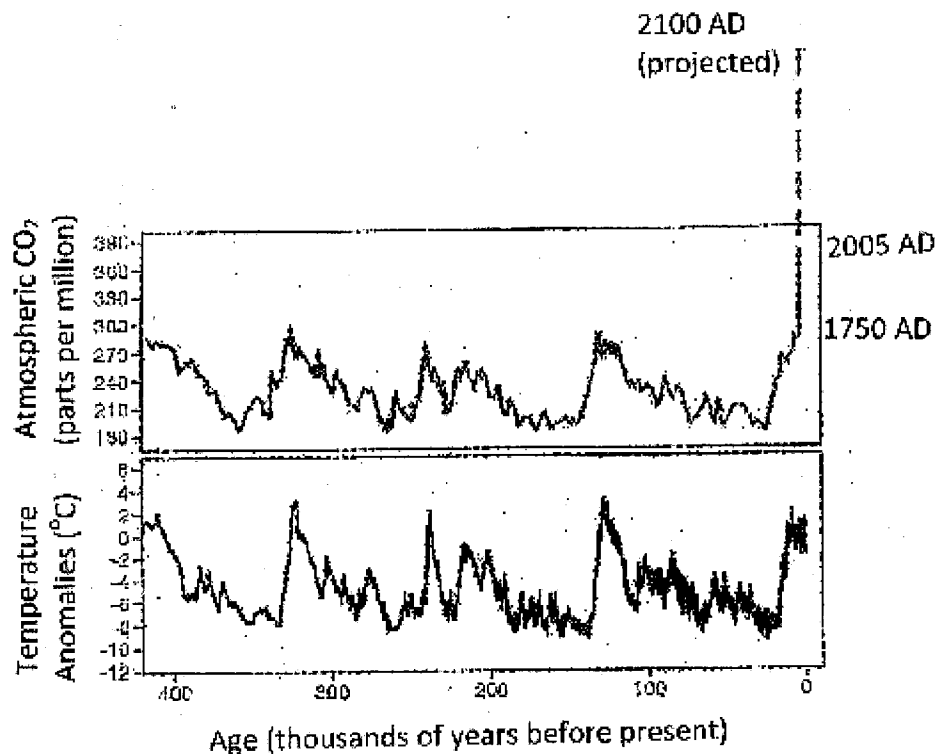


Figure 1. The record from the Vostok core shows that Atmospheric CO<sub>2</sub> levels and temperature have varied in tandem over hundreds of thousands of years, with very long periods of heating and cooling. But starting with the Industrial Revolution, the CO<sub>2</sub> rises very abruptly (1750 to 2005 AD) and is expected to continue rising, and with it a corresponding increase in the earth's temperature. Figure from Kolbert, crediting Petit et al (1999).

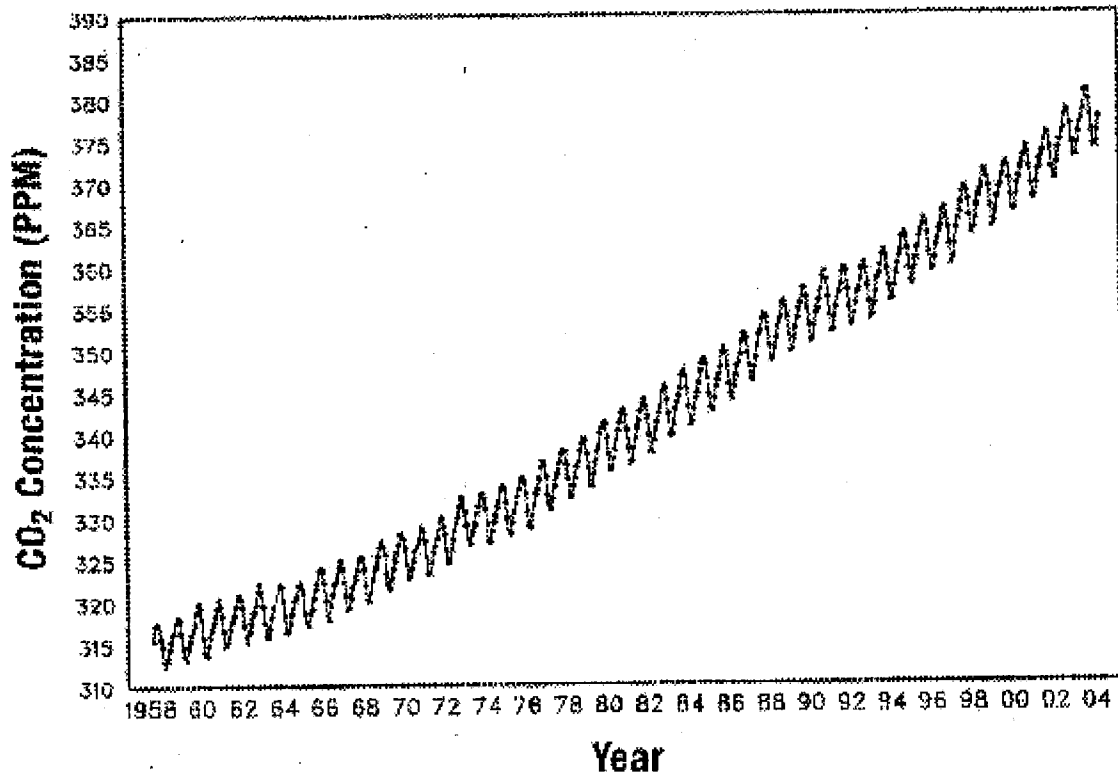
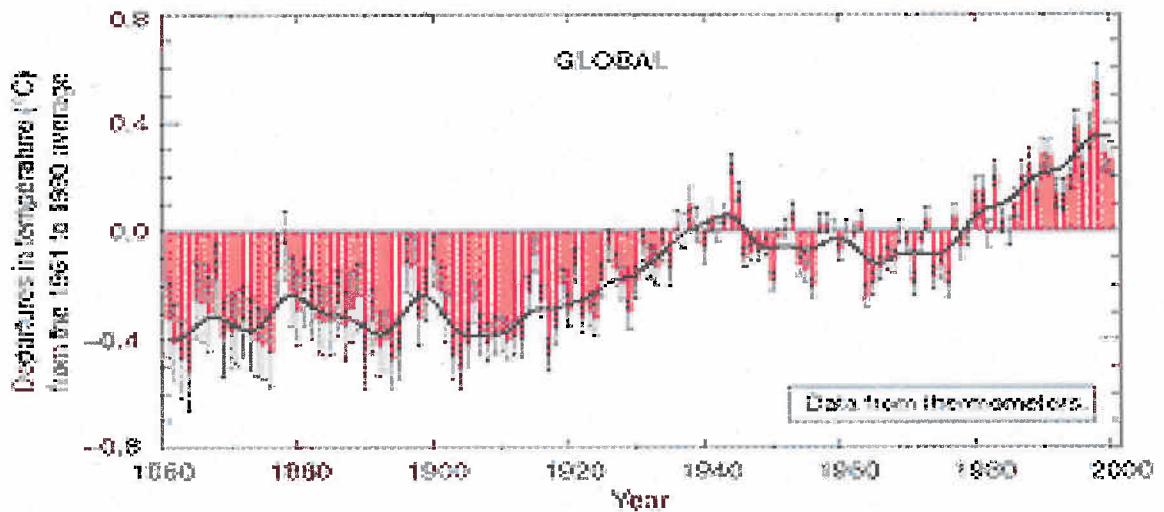


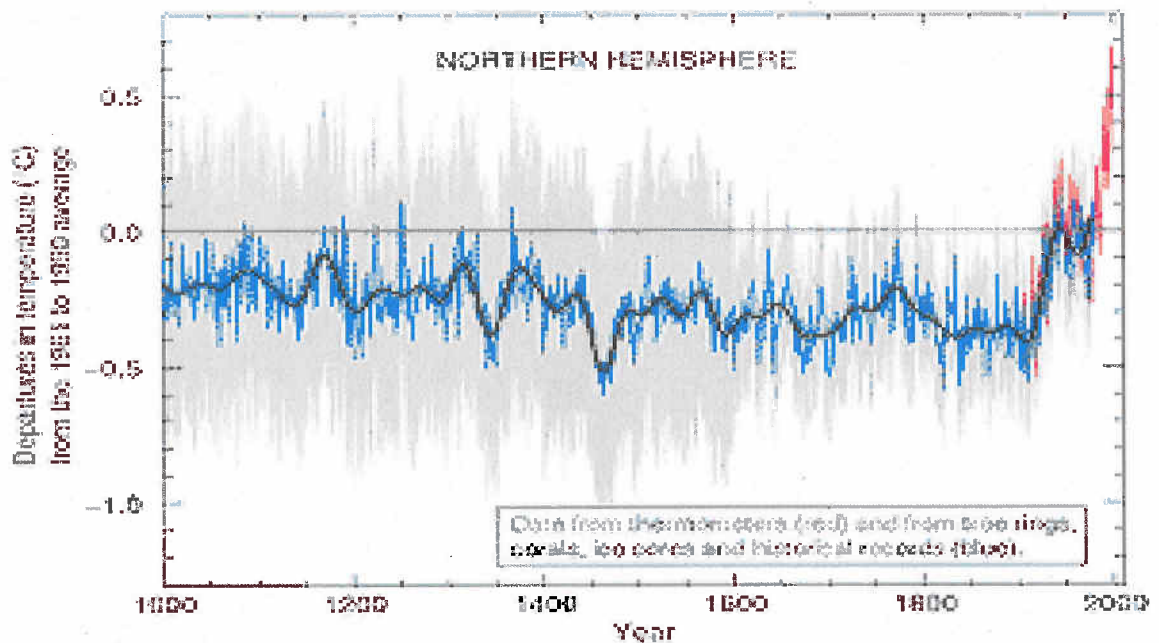
Figure 2. The Keeling Curve measuring atmospheric CO<sub>2</sub> levels atop Mauna Loa, Hawaii, from 1958 to the present. These measurements provide a detailed, expanded, look at the recent abrupt rise in CO<sub>2</sub> shown in Figure 1. The annual variation is due to sequestration of CO<sub>2</sub> during summer months when the northern hemisphere is green. Figure taken from "Progress on Incorporating Climate Change into Management of California's Water Resources," July 2006, CA Dept. of Water Resources.

## Variations of the Earth's surface temperature for:

(a) the past 140 years



(b) the past 1,000 years



**Figure 3:** Variations of the Earth's surface temperature from AD 1860 (a) and from AD1000 (b). Earlier data are from tree rings, corals, ice cores and historical records. Twentieth century data include measurements from thermometers. Uncertainties are shown as gray and diminish after thermometer came into use. Figure taken from IPCC Working Group One: The Scientific Basis.

## Appendix #2

### Summary of San Francisco Environment Code: Chapters Specifically Promoting Reductions in Energy Use or in Emissions or Solid Waste. (Ordinance 30906, File 061569)

1. The Precautionary Principle: Requires “the selection of the alternative that presents the least potential threat to human health and the City’s natural systems.” When science cannot fully establish a cause-and-effect relationship but can provide reasonable evidence of harm, this principle requires us to take precautionary measures to prevent environmental damage.
2. Environmentally Preferable Purchasing Ordinance: Requires the City to develop relevant environmental selection criteria for products used to maintain City buildings and vehicle fleets to reduce San Francisco’s contribution to global climate change.
3. Healthy Air and Smog Prevention. Promotes the replacement of polluting vehicles by less polluting vehicles. Among other things, this code requires the replacement of all old Muni polluting diesel buses with alternative non-polluting buses.
4. The Resource Conservation Ordinance: Applies the Precautionary Principle to the selection of commodities used in City operations that minimize impacts on natural resources by maximizing recycled content, recycling, and reuse.
5. Resource Efficiency Requirement: Establishes the Leadership in Energy and Environmental Design (LEED) Silver level as the standard for all City building projects. The LEED Green Building Rating System is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings, making optimum use of public transportation and requiring selection of products and procedures that minimize harm to natural resources.
6. The Construction and Demolition Debris Recovery Ordinance: Requires the recovery rather than landfill disposal of construction and demolition debris generated in San Francisco by prohibiting disposal of such debris with garbage. It imposes requirements and conditions in building permits, establishes a program to register debris transporters and processing facilities, and establishes enforcement mechanisms.
7. Green Business Program: Lists the environmental practices and processes that must be implemented in order to receive the Bay Area Green Business recognition, including Water and Energy Conservation, Recycling and Composting, and Pollution Prevention (wastewater and toxics). It provides checklists for restaurants, hotels/motels and offices/retail businesses in order to comply.
8. Prohibited Disposable Food Service Ware: After June 1, 2007, food vendors in San Francisco may not sell prepared food in disposable food service ware that contains polystyrene foam, but must instead use an affordable alternative biodegradable, compostible or recyclable product, unless there is no suitable product available. This includes restaurants, City facilities, shops, grocery stores (does not include raw meats or fish). Violation invokes monetary penalties.

### Appendix #3.

#### INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE: The Physical Science Basis

#### Excerpts from Summary for Policymakers. Fourth Assessment Report, February 2007<sup>42</sup>

Global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly as a result of human activities since 1750. Emissions of these gases now far exceed pre-industrial values determined from ice cores spanning many thousands of years. The global increases in carbon dioxide concentration are due primarily to fossil fuel use and land-use change, while those of methane and nitrous oxide are primarily due to agriculture. Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level

At continental, regional, and ocean basin scales, numerous long-term changes in climate have been observed. These include changes in Arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves and the intensity of tropical cyclones.

The last time the polar regions were significantly warmer than present for an extended period was about 125,000 years ago. Reductions in polar ice volume led to 4 to 6 meters (13 to 20 feet) of sea level rise. Discernible human influences now extend to other aspects of climate, including ocean warming, continental-average temperatures, temperature extremes and wind patterns.

For the next two decades a warming of about 0.2°C per decade is projected for a range of SRES<sup>43</sup> emission scenarios. Continued greenhouse gas emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would *very likely* be larger than those observed during the 20th century. Anthropogenic warming and sea level rise should continue for centuries due to the timescales associated with climate processes and feedback, even if greenhouse gas concentrations were to be stabilized.

The IPCC fourth Assessment Report, issued April 7, 2007, states that “given the current buildup of carbon dioxide and other long-lived greenhouse gases in the atmosphere, temperatures and seas would inevitably rise for decades. The worst effects would be felt in regions that are mainly poor and already facing dangers from existing climate and coastal hazards, including poor people in prosperous societies.”

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<sup>42</sup> Prepared by 600 scientists from 142 signatory nations

<sup>43</sup> SRES refers to the IPCC Special Report on Emission Scenarios (2000).

## Appendix #4.

### Congestion Pricing

As part of the City's Transit First policy, congestion pricing might be one way to increase public transit and discourage the use of the automobile in congested parts of the City, besides being a source of revenue for Muni.

Mayor Michael Bloomberg of New York City has proposed a plan for "congestion pricing" for his city, with revenue to be used to finance environmental and mass transportation projects. The plan calls for an \$8-a-day charge for cars and \$21 for commercial trucks that enter Manhattan. A lesser fee would be incurred for residents driving within the city. Cameras and other equipment placed at intersections would photograph a car's license plate and money would be deducted from a driver's account. Drivers would receive credit for bridge tolls paid during their trip. (Cardwell 2007) (Engquist 2007)

A similar system is already in place in densely populated parts of London, Singapore and Stockholm, lessening traffic congestion and reducing greenhouse gases. In these cities the idea gained support after strong initial opposition. Drivers can pay the daily fee over the internet or in stores. (Litman, 2006)

On May 16, 2006, the U.S. Department of Transportation announced its new \$1.2 billion *National Strategy to Reduce Congestion on America's Transportation Network*.<sup>44</sup> (Schaller 2007). San Francisco's Municipal Transportation Agency has acquired a grant from the Federal Highway Administration to study congestion pricing for this City.<sup>45</sup> Such a program was encouraged as one aspect of San Francisco's 2004 Climate Action Plan.

Compare the cost of buying, insuring, and parking a car with the fares that Muni charges for a monthly pass (\$45 for regular, \$10 for senior, child and disabled). For those who do use cars to commute, the added cost of congestion pricing might quickly add up. Thus, congestion pricing works to the extent that it makes mass transit and other alternatives more attractive. Meanwhile, of course, congestion itself is costly, in terms of time spent waiting in traffic, in fuel costs, and in harmful emissions added to the atmosphere.

Any meaningful effort to address the problem of global warming should include incentives for low-emitting activities (walking, biking, riding mass transportation) and costs for high-emitting ones.

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<sup>44</sup> [www.fhwa.dot.gov/congestion](http://www.fhwa.dot.gov/congestion)

<sup>45</sup> <http://www.fightgridlocknow.gov/upas.htm>

## Appendix #5

### PHEV Fleet Order Form

We urge automakers to go beyond popular hybrid vehicles and manufacture flexible fuel plug-in hybrids that run on electricity as well as gasoline or other fuels. Plug-in hybrids will provide the option of plugging vehicles into an ordinary electrical outlet in order to recharge the battery, allowing our staff to drive on "electric fuel" for significant periods of time, thus reducing the need for gasoline and increasing our fuel efficiency up to 100 mpg or more. Plug-in hybrids will also bring significant reductions in greenhouse gases and other pollutants, and reduce dependence on imported oil.

Because of these many benefits, we pledge to strongly consider purchasing the following plug-in electric hybrid vehicles once auto manufacturers make them available, even if it costs more than other vehicles.

*Please note, this petition will be passed on to automakers who commit to manufacture flexible fuel plug-in hybrid vehicles. E-mail addresses will remain confidential.*

#### Number of Vehicles by type

Sedan \_\_\_\_\_

Lt. Truck \_\_\_\_\_

SUV \_\_\_\_\_

Van \_\_\_\_\_

School Bus \_\_\_\_\_

Heavy Truck \_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

Mail completed form to: Plug-In Bay Area, c/o Jodie Van Horn, 221 Pine Street Suite 500,  
San Francisco, CA 94104 OR Fax to: 415-398-2732  
[www.pluginbayarea.org](http://www.pluginbayarea.org)

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