



Final Report

Mountain View Environmental Sustainability Task Force



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The most impressive thing about the work that the community has done to prepare these recommendations is the time and attention that have been devoted to the work. Some members of the team have given hundreds of hours to this effort. On behalf of the current and future residents of Mountain View, I would like to thank:

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I would also like to thank members of the public who are not listed above who attended one of our public input meetings or one of our sessions at City Hall.

Finally, I would like to acknowledge the **Mountain View City Council** for giving us the opportunity to make this contribution to the future welfare of Mountain View.

Sincerely,

Bruce Karney
Environmental Sustainability Task Force Steering Committee Chair

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Introduction

We do not inherit the Earth from our ancestors; we borrow it from our children.

- David Brower, First Executive Director of the Sierra Club

In January 2008, Mayor Tom Means and the City Council convened the Environmental Sustainability Task Force. The Task Force consisted of over 65 volunteers from the community interested in environmental and sustainability issues. The Council instructed the Task Force to recommend achievable short-term and long-term community-wide actions to reduce greenhouse gas emissions as required by California law AB32. The Task Force was also charged with developing a list of practical recommendations for the City Council to enhance the environmental sustainability of Mountain View's urban infrastructure. The Steering Committee immediately organized the Task Force into 11 working groups. The Task Force held meetings roughly once a week with occasional breaks. Two heavily advertised public input meetings were held at which comments were solicited and obtained from members of the community not involved in the Task Force. The bulk of the work generating recommendations was done by the individual working groups.

After eight months of working group meetings at private homes and coffee shops, email discussions, and Task Force meetings at City Hall the Task Force came up with the list of recommendations included in this report. While many of the recommendations are concerned with greenhouse gas emissions reduction, a surprisingly large number focus on sustainability with little emissions reduction impact or with reduction impact that is difficult to quantify. Perhaps the simplest explanation for the prevalence of sustainability recommendations is that the Task Force believed the goal of sustainability would be broadly shared within the community, even by people who are still skeptical that the evidence on climate change points to a human cause. In addition, the Task Force felt that increasing the sustainability of Mountain View would allow future residents to enjoy a similar quality of life to that of residents today without endangering the ability of the city's environment to sustain that quality of life indefinitely.

A community is sustainable if it can meet the needs of the present without compromising the ability of future generations to meet their own needs. The character of critical resource utilization in a sustainable Mountain View today should allow the residents of the future to live in an urban Mountain View similar to the beautiful setting current residents enjoy at a similar level of comfort. People living in Mountain View in the future should be able to experience the same green environment with open space containing naturally occurring birds and animals, and the same clean air and water that enhance the quality of life for Mountain View's current residents. Sustainability does not necessarily mean self-sufficiency, as long as the level of critical resources imported and goods and waste exported can be maintained indefinitely. A tradition of sustainability still exists in many places over the world, most especially in Europe. Mountain View can add to that tradition in the spirit of its acknowledged contributions in the realms of business, technology, and community development, supported by such internationally recognized technology firms as Google and Intuit, and by local government initiatives such as the Stevens Creek Trail. These strengths will be necessary to transform our current, largely unsustainable urban infrastructure into an infrastructure allowing Mountain View's future generations to thrive.

The recommendations in this report are not a blueprint for sustainability, but rather a first step on the long path of transforming Mountain View's urban infrastructure to a sustainable one. The transition necessary to completely transform Mountain View will require significant investment and take many years. But a transition of this scale is not one that the City has not seen before. Prior to the 1950's,

Mountain View was a small agricultural community with around 5,000 residents. During the 1950's, 1960's, and 1970's, through the decisions of previous City Councils and the support and hard work of residents, the City planned and built the urban infrastructure we see today. As a result, the City today can provide a high quality of life to a population of over 70,000. That transition was not accomplished in a few years, nor was it done without substantial public and private investment. The resulting urban infrastructure is based on the importation of cheap, carbon-based energy and fresh water from the Sierras, along with the export of large quantities of solid waste and climate-changing carbon gases into the atmosphere.

Though the details are still uncertain, the broad outlines of climate change due to greenhouse gas emissions from carbon-based energy utilization are now well known through the media. Climate change and the response to it will make carbon-based energy increasingly more expensive and less attractive as the 21st century evolves. The indirect effects of climate change will impact other services that support urban life in Mountain View as well. The rapidly approaching era of expensive carbon-based energy, and the direct and indirect impacts of climate change represent a significant threat to the quality of life enjoyed by Mountain View residents now and in the future. Because carbon-based energy is but one of the critical resources needed for supporting our current unsustainable infrastructure, the related limits we are approaching remind us that what the Earth provides to us is not unlimited. The Task Force feels that we should take this opportunity to examine the assumptions of unlimited resource use in general and embed sustainability deeply into our thinking about the ways we address land use planning, building, transportation and other aspects of providing infrastructure for satisfactory living.

While the citizens of some cities in our region have chosen to endorse visionary goals for sustainability, the Task Force was not asked to develop such a vision and did not invest any time in creating one. The following pages provide practical recommendations about how Mountain View can decrease carbon emissions and generally increase the sustainability of its urban infrastructure. The recommendations can be summarized by the following broad themes:

- Goals for carbon emissions reductions in line with AB32 and a methodology for tracking changes in emissions to see whether the goals are being met,
- Recommendations to counter the effects of climate change that internationally known scientists agree will occur due to past emissions from carbon-based energy consumption and other industrial activities,
- Suggested changes in how municipal services such as water and solid waste disposal are provided to increase sustainability in the face of climate change and other threats,
- Measures to encourage the City, school districts, businesses, and residents to deploy energy conservation and renewable energy technology to reduce dependence on carbon-based energy and increase the use of renewable, non-carbon based energy,
- Suggested changes in land use and building codes to decrease the need for carbon-based transportation modes for local transport and to increase the sustainability of Mountain View's building practices,
- Additional recommendations to address the heavy dependence on carbon-based personal transportation for the bulk of local transport in Mountain View,
- Measures to help preserve and enhance the natural environment of the city,
- Reflections on the changes needed to embed sustainability deeply into our culture and some measures that Mountain View can take to start that process,
- Communication and outreach activities to engage residents and businesses in understanding the need for reducing carbon emissions and increasing sustainability and to encourage participation in the various programs the City and other levels of government develop.

Increasingly, decision makers at the federal and state level and private sector business leaders are realizing the scope and seriousness of the changes that will be wrought by global climate change. The State of California, joined by private sector business leaders especially in the venture capital community, has already moved on measures to require and support more sustainability from governments, businesses and residents. While federal government attention to climate change has lagged, more action on the federal level is likely in the near future. But Mountain View cannot and should not wait for actions by others. In particular, many of the actions required to make Mountain View a more sustainable community and to reduce our carbon footprint involve the kind of municipal services provisioning, land use planning and built environment decision-making that are traditionally under the control of local governments in the United States. These are areas where the City Council can make decisions without having to wait for federal, state, or private action. The Task Force urges the Council to adopt the recommendations in this report and develop them into a plan of action for starting Mountain View's transformation to the post-carbon energy economy and for putting the City on the path to long-term sustainability.

Working Group List

Baseline and Measurements
Adaptation to Climate Change
Water Availability and Use
Waste, Waste Reduction and Recycling
Energy and Renewable Energy
Transit and Transportation
Land Use Planning
Built Environment
Suburban Natural Ecosystems and Biodiversity
Sustainable Quality of Life
Community Outreach and Green Business

Time Frame Categories

S Short Term (1-12 months)
M Medium Term (1-3 years)
L Long Term (more than 3 years)

Cost Categories

RG Revenue Generating
VL under \$10,000
L \$10,000 - \$30,000
M \$30,000 - \$100,000
H \$100,000 - \$300,000
VH over \$300,000
* means this is a recurring yearly cost (otherwise, interpret as a one-time cost)

CO₂e Reduction Notes in the Table on the Following Pages

Unk = Unknowable or unknown by the Task Force in the time available for this project

Recommendation List

Title	Priority	S	M	L	Cost	CO ₂ e Reduct'n (Metric tons)	\$ per Metric Ton
1. BASELINE AND MEASUREMENTS							
Adopt CO ₂ e Emissions Goals	1	✓			Unk	N/A	Unk
Utilize ICLEI CO ₂ e Measurement Methodology	2	✓	✓	✓	VL *	N/A	N/A
Include Emissions from Air Traffic at Moffett Field in the Mountain View Community GHG Inventory	3	✓	✓	✓	VL *	Unk	Unk
2. ADAPTATION TO CLIMATE CHANGE							
Plan for Sea Level Rise and Increased Flooding	1	✓	✓	✓	Unk	N/A	
Partner with Other Agencies to Restore the Bay Shoreline for Better Flood Control	2	✓			L	N/A	
Reduce Outdoor Water Usage with Drought-tolerant Landscaping	3	✓	✓	✓	M	Unk	
Address Health Issues Resulting from Extreme Heat	4	✓			M	N/A	
3. WATER USE AND AVAILABILITY							
Leverage Existing Water Conservation Programs	1	✓			L	N/A	
Redesign City Utility Bill Format to Encourage Water Conservation	2	✓	✓		L	N/A	
Make Residential Greywater Easy To Reuse In Mountain View	3	✓	✓	✓	Unk	Unk	
Add Staff to City Water Conservation Team	4	✓	✓		H *	N/A	
Replace Paved Surfaces with Permeable Surfaces	5	✓	✓		Unk	292/yr	
Recruit and Train Local Water Conservation Advocates	6		✓	✓	VL *	11,591/yr	
Install CIMIS Weather Station and Other Feedback Mechanisms	7	✓	✓		VL *	1,136/yr	
Implement Cost Sharing Agreement with Santa Clara Valley Water District for Water Conservation Incentives	8	✓	✓		Unk	Unk	
4. WASTE, WASTE REDUCTION, AND RECYCLING							
Create a Comprehensive Zero Waste Action Plan	1	✓	✓	✓	VH *	Unk	
Increase Diversion from Landfill by Increasing Utilization of the SMaRT Station	2	✓			VL *	Unk	
Divert Organic Waste From Landfill	3	✓			H *	Unk	
Ban Polystyrene Take-Out Food Containers	4	✓	✓	✓	VL *	Unk	
Educate the Public on Recyclable Material Processing and Eco-Conscious Purchasing	5	✓	✓	✓	M *	Unk	
Discourage Single-Use Bags within the City	6	✓	✓	✓	L *	Unk	
Increase Recycling and Improve Waste Management in Multi-Family Dwellings	7	✓	✓	✓	M *	Unk	
Provide Accessible Recycling Bins in Public Places and Businesses	8	✓	✓	✓	H *	Unk	
Partner with Local School Districts to Create Waste Reduction and Recycling Programs in Schools, Including a Zero Waste Lunch Program	9	✓			L *	Unk	
Provide Resources to Promote Free-Cycle and Re-Use Networks	10	✓	✓	✓	L *	Unk	

Title	Priority	S	M	L	Cost	CO ₂ e Reduct'n (Metric tons)	\$ per Metric Ton
5. ENERGY AND RENEWABLE ENERGY							
Set Renewable Energy Goals	1	✓			VL	Unk	
Install Solar Water Heaters and Solar PV Systems on City Buildings	2		✓	✓	L	Unk	
Enroll in the PG&E <i>ClimateSmart</i> Program for City Operations	3	✓	✓	✓	M *	2,724/yr	\$12
Strongly Promote Solar Water Heating	4	✓	✓	✓	Unk	Unk	< \$0
Promote Enrollment in PG&E's <i>ClimateSmart</i> Program by Residents	5	✓			H *	711,488	\$3
Encourage Property Owners to Undertake Energy-Efficiency Upgrades	6	✓			H	1,080	\$139
Implement a Pilot Program to Provide Solar PV for Affordable Apartments	7	✓	✓	✓	VH	12,000	\$542
Provide Free Energy Audits for Residents and Low-Cost Audits for Small Businesses and Promote PG&E's Energy Conservation Programs	8	✓			M *	66,780	\$3
Encourage Participation in PG&E's Demand Response and Permanent Load Shifting Program	9	✓	✓		VL	Unk	
Print Information about Energy Conservation and Renewable Energy Options on Utility Bills	10	✓	✓		H *	43,230	\$2
6. TRANSIT AND TRANSPORTATION							
Fully Implement Bicycle Boulevards	1		✓		Unk	Unk	
Provide Automated Bicycle Rental and Additional Bicycle Parking Facilities	2		✓		Unk	Unk	
Provide Community Shuttle Services	3		✓		VH *	100/yr	\$475-550
Adopt and Implement a Pedestrian Master Plan	4		✓	✓	Unk	Unk	
Provide Alternative Transportation for School Children	5		✓	✓	Unk	Unk	
Collaborate with Neighboring Cities To Develop a Regional Paid Parking Program	6	✓			Unk	Unk	
Fully Implement a Network of Four Grand Boulevards in Mountain View as Part of the General Plan Process	7			✓	Unk	Unk	
Establish a Green Parking Code in the General Plan and Zoning Ordinance	8		✓	✓	RG	Unk	
Increase VTA Bus Usage in Mountain View	9			✓	Unk	Unk	
Synchronize Signals to Calm Traffic and Reduce GHG Emissions	10		✓		Unk	Unk	
7. LAND USE PLANNING							
Implement a Connected System Of Healthy Villages	1	✓	✓	✓	L	TBD	
Encourage Livable, Higher-Density Housing	2	✓	✓	✓	RG	927,000 by 2030	
Increase Healthy Affordable Housing	3	✓	✓	✓	L	1,876/yr	
Establish Planning Incentives For Sustainable Development	4	✓	✓	✓	RG	TBD	
Diversify Land Uses In Underutilized Areas	5	✓	✓	✓	RG	267/yr	
Adopt LEED Neighborhoods Guidelines	6	✓	✓	✓	L	TBD	
Encourage Urban Agriculture And Preserve Open Space	7	✓	✓	✓	L	TBD	
Develop Castro Street As a Model Healthy Village	8	✓	✓	✓	RG	950/yr	
Provide Ongoing Staff Education in Sustainable City Management Practices	9	✓	✓	✓	L *	TBD	

Title	Priority	S	M	L	Cost	CO ₂ e Reduct'n (Metric tons)	\$ per Metric Ton
8. BUILT ENVIRONMENT							
Require Public Buildings to Achieve LEED Silver	1	✓		✓	RG	Unk	
Implement Green Building Standards for Private Buildings	2		✓		L	200-750/yr	
Establish a Revolving Loan Program to Fund Energy Efficiency Upgrades	3	✓	✓	✓	Unk	Unk	
Require an Online PG&E Energy Audit (or Equivalent) for Business License Renewal	4		✓		Unk	Unk	
Establish a Home Energy Efficiency Rating System	5		✓	✓	Unk	Unk	
Develop Energy Consumption Standards for All Buildings	6	✓			RG	800 to 4,400	
Enhance the Expertise of Planning and Building Department Staff Members in Green Building Processes and Practices	7	✓			VL *	Unk	
Establish a Green Building Incentive Program	8	✓			VL	Unk	
Require Diversion of 75% of Construction and Demolition Debris from Landfills	9	✓			RG	34,451	
9. SUBURBAN NATURAL ECOSYSTEMS AND BIODIVERSITY							
Increase Tree Coverage in Mountain View	1	✓	✓	✓	M	Unk	
Minimize Pesticides and Herbicides in Mountain View's Environment	2	✓	✓	✓	M	Unk	
Restore Mountain View's Natural Waterways and Wetlands	3	✓	✓	✓	M	Unk	
Preserve and Restore Natural Habitats	4	✓	✓	✓	M	Unk	
Reduce and Contain Invasive Species in Mountain View	5	✓	✓	✓	M	Unk	
Prioritize Mountain View's Urban Ecology in Local Planning Decisions	6	✓	✓	✓	M	Unk	
Establish a Green Collar Training Program, Initially Focused on Green Gardening	7	✓	✓	✓	M *	Unk	
10. SUSTAINABLE QUALITY OF LIFE							
Include a Sustainability Expert on the Environmental Planning Commission (EPC)	1	✓	✓	✓	VL *	Unk	
Ensure that All Residents Have Access to Family Planning	2	✓	✓		M *	3,000 in first 5 years	\$167 decreasing over time
Make the Environmental Sustainability Coordinator Position Permanent	3	✓	✓	✓	H *	Unk	
Tax Extraction of Non-Renewable Resources and Extraction of Renewable Resources at Unsustainable Rates	4	✓	✓	✓	RG	Unk	
Balance Jobs and Housing	5	✓	✓	✓	Unk	Unk	
Keep a Prudent Environmental Safety Margin to Mitigate the Impact of Disasters	6			✓	H	Unk	
Phase Out Use of Non-renewable Energy Sources	7	✓	✓	✓	Unk	Unk	
Use the Right Measuring Tools When Measuring Economic Progress	8	✓	✓	✓	L	Unk	
Encourage Work/Life Balance	9	✓	✓	✓	L *	Unk	

Title	Priority	S	M	L	Cost	CO ₂ e Reduct'n (Metric tons)	\$ per Metric Ton
11. COMMUNITY OUTREACH AND GREEN BUSINESS							
Commission and Implement a Comprehensive Outreach Campaign	1	✓	✓		M *	N/A	N/A
Form and Support an Ongoing Green Citizens Collaboration and Action Team	2	✓	✓	✓	L *	N/A	N/A
Support and Encourage Student and Youth Outreach Initiatives	3	✓			L *	N/A	N/A
Install Signs and Banners to Broadcast Environmental Gains and Metrics, and Place Public Art to Promote Environmentalism	4	✓			L *	N/A	N/A
Promote Green Business Certifications and Practices	5	✓			L *	N/A	N/A
Create and Maintain an Environmental Focus Section and Rotating Displays at Mountain View Public Library	6	✓			VL *	N/A	N/A
Sponsor Sustainability Tabling and Outreach at Local Events	7	✓	✓	✓	VL *	N/A	N/A
Explore Implementation of Regional and/or City Services and Sustainability #311 Call Center Line	8		✓	✓	H *	N/A	N/A
Create Awareness of the Impacts of Transportation and Alternatives to Traditional Methods and Fuels	9	✓			VL *	N/A	N/A
Provide Encouragement For the Use of Hybrids, Plug-in Hybrids and Alternative Fuel Vehicles	10	✓	✓	✓	VL *	N/A	N/A

Chapter 1. Baseline and Measurements

Introduction

In 2007, the Mountain View City Council signed the U.S. Mayor's Climate Protection Agreement and approved the funds for the City of Mountain View to join ICLEI, an international membership association of local governments dedicated to addressing environmental issues through local action. ICLEI provides programs, tools, software assistance and technical expertise to help local governments quantify and reduce their Greenhouse Gas (GHG) emissions.

One of the reasons for joining ICLEI was to obtain the tools and expertise necessary to estimate the amount of GHG emissions that the community of Mountain View is contributing to climate change. The method involves first selecting a baseline year and then estimating the amount of GHG emissions produced in Mountain View in that year using data available from electric and gas utilities, planning and transportations agencies and solid waste management departments.

City Staff selected the year 2005 as the baseline year, obtained the data necessary to estimate the GHG emissions for 2005 and made the calculations for the initial baseline year GHG emissions estimate.

When the Environmental Sustainability Task Force was formed in January 2008, the Baseline and Measurements Working Group was formed to evaluate the GHG emissions for the community of Mountain View and to recommend further action regarding periodic measurement. This working group used the City Staff baseline estimate of Mountain View's GHG emissions for the year 2005 as the starting point for its efforts.

Objectives

The beginning objectives of the working group were to:

- Recommend CO₂e reduction targets for the City, consistent with AB 32
- Recommend a mix of reductions, and possibly offsets, by major category
- Identify/evaluate a baseline measuring tool to verify or endorse the City's CO₂e calculations
- Recommend an interval and a measuring tool that the City should use to measure its progress and update its strategy for achieving the goals
- Recommend at least one "CO₂e footprint" calculator for each of the following: citizens, businesses, and government

Summary of Recommendations

The Baseline and Measurements Working Group has developed recommendations in seven basic areas, three of which were prioritized and are included in this chapter. Each recommendation has a section devoted to it and, for some, sub recommendations are included. The working group would like the City Council to consider the following three recommendations:

1. Adopt CO₂e Emissions Goals
2. Utilize ICLEI CO₂e Measurement Methodology
3. Include Emissions from Air Traffic at Moffett Field in the Mountain View Community GHG Inventory

In addition to the recommendations described in this chapter, the working group also makes the following three recommendations:

- Measure Emissions Due to Air Travel
- City Web Page on Individual/Business Action
- Representation of PG&E Consumer Energy Usage Over Time

To shorten this chapter, the working group describes these additional recommendations on the Environmental Sustainability Task Force Wiki. The document describing these recommendations is accessible on the Internet at:

<http://sustainablemountainview.pbwiki.com/f/BaselineMovedRecommendations-08-21-2008.doc>

Working Group

James Kempf (Chair)

Mark Gilkey (Secretary)

Twana Karney

Justine Fenwick

Mike Groethe

Greg Unangst

Title: Adopt CO₂e Emission Goals

Statement of Issue

The City of Mountain View and its community recognize that global warming is a serious threat to our well being, economic prosperity, and natural environment. California is the 12th largest emitter of greenhouse gases in the world due to its large and growing economy.¹ On August 31, 2006, the California Legislature passed The Global Warming Solutions Act of 2006, commonly known as AB 32. AB 32 calls for the state of California to reduce Greenhouse Gas (GHG) emissions to 1990 levels by the year 2020—approximately a 30 percent reduction over forecast levels and 10 percent below the 2006 level of 500 million metric tons a year.

To be responsible community members, the City of Mountain View and its citizens need to participate in personal, local and global efforts to reduce GHG emissions. Mountain View’s 2005 GHG inventory estimates that the community-wide GHG emissions totaled approximately 846,146 metric tons CO₂e, or 11.77 metric tons CO₂e per person.^{2 3}

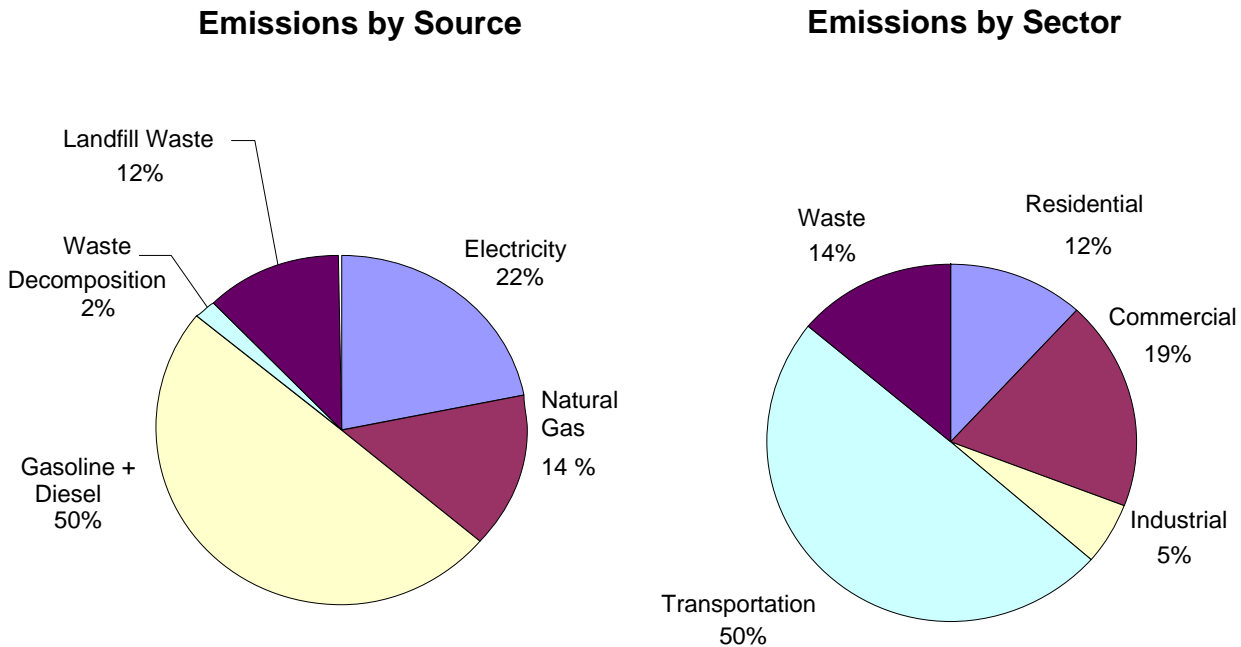
¹ <http://gov.ca.gov/index.php?/press-release/4111/>

² Per capita figure is determined by taking 2005 total emissions/Mountain View population.

³ Population numbers:

Population	1990	2000	2005	2008	2010	2012	2016	2020	2030	2050
City of Mountain View Dep. Of Finance	67500	70708	71890	73932	NA	NA	NA	NA	NA	NA
ABAG	67762	70877	71900	NA	75000	NA	NA	NA	88300	NA
General Plan	67460	70708	NA	NA	75200	NA	NA	NA	NA	NA
Extrapolated from ABAG 2010 and 2030 data = .82% growth rate						76234	78764	81378		103,966

The pie charts below show Mountain View’s 2005 GHG emissions by source and by sector.



Recommendation

The working group recommends adopting specific GHG reduction goals for Mountain View City government and the broader community. The recommended goals are discussed in the next section, Environmental Impact. Note that the reduction goals are specified with respect to a 2005 baseline even though the AB 32 is phrased in terms of California's 1990 emissions because the initial ICLEI carbon inventory for Mountain View was calculated in 2005 when 1990 inventory would have been difficult or impossible to obtain. The next section also provides some estimates for where these emissions goals would fall with respect to an estimated 1990 baseline.

Environmental Impact

- Set GHG emission reduction goals as follows:
 - A 5% reduction from 2005 baseline community levels by 2012. This would equal a reduction of 42,307 metric tons CO₂e. The expected 2012 GHG emissions would be 803,839 metric tons CO₂e or 10.54 metric tons CO₂e per capita.⁴
 - A 10% reduction from 2005 baseline community levels by 2016. This would equal a reduction of 84,615 metric tons CO₂e. The expected 2016 GHG emissions would be 761,531 metric tons CO₂e or 9.67 metric tons CO₂e per capita.⁵

⁴ This per capita number was calculated by taking 803,839 metric tons CO₂e divided by the 2012 anticipated population of 76,234 persons thus equaling 10.54 metric tons CO₂e per person.

⁵ This per capita number was calculated by taking 761,531 metric tons CO₂e divided by the 2016 anticipated population of 78,764 persons thus equaling 9.67 metric tons CO₂e per person. The overall California target for 2020 set by CARB based on an estimated state population of 45.5 million is a per capita emissions reduction from 14 metric tons per person down to 9.4 metric tons, so this would put Mountain View ahead of state targets.

- A 15% reduction from 2005 baseline community levels by 2020. This would equal a reduction of 126,922 metric tons CO₂e. The expected 2020 GHG emissions would be 719,224 metric tons CO₂e or 8.84 metric tons CO₂e per capita.⁶
- An 80% reduction from 2005 baseline community levels by 2050. This would equal a reduction of 676,917 metric tons CO₂e. The expected 2050 GHG emissions would be 169,229 metric tons of CO₂e or 1.63 metric tons CO₂e per capita.^{7 8}

The goals above were chosen for the following reasons. First and foremost, the working group recognizes that global warming is a serious threat to humankind and therefore believes it is necessary to set aggressive goals in combating it. Second, these reductions would meet and exceed California's AB 32 requirements. In fact, the City of Mountain View would exceed California's AB 32 requirement by 2016 if it met its second target of 10%. Third, these goals are in line with other cities' goals (see Table 1-1 below). Fourth, they embody a challenge commensurate with the environmental and entrepreneurial spirit of Mountain View residents.

These goals encompass emissions from city businesses, residents, and the city government. At the time the working group was active, the city government was in the process of performing a carbon inventory for city government alone, so the working group was unable to perform any analysis on city government emissions information alone. However, the working group expects that the city government will formulate emissions reductions that are equivalent to or even stronger than the community-wide emissions reductions goals that are recommended here, since the working group believes it is the responsibility for government to show leadership in this important area.

- Other Task Force working groups provide sector- or source-specific goals in their appropriate areas. To help start this process, the appendix at the end of this chapter shows two sets of numbers:
 - The projected GHG emissions by Sector and Source for 2008, 2012, 2016 and 2020 if these emissions were to grow at the current per capita rate of 11.77 metric tons and in the exact same proportions as the baseline 2005 emissions.
 - The projected GHG emissions if every sector or source reduced its emissions by 5%, 10% and 15% by 2012, 2016, and 2020, respectively, in line with the recommendations above.
- The City of Mountain View should measure the community's progress towards these goals in 2010, 2013, 2017, and 2021 by continuing to use ICLEI methodology so as to provide consistency with its 2005 baseline measurement, and that efforts prioritize reductions in CO₂e over offsets.

Further details on this are discussed under Recommendation 1-2.

⁶ This per capita number was calculated by taking 719,224 metric tons CO₂e divided by the 2020 anticipated population of 81,378 persons thus equaling 8.84 metric tons CO₂e per person. Again, based on a state population of 45.5 million in 2020, this would put Mountain View ahead of state targets.

⁷ This per capita number was calculated by taking 169,229 metric tons CO₂e divided by the 2050 anticipated population of 103,966 persons thus equaling 1.63 metric tons CO₂e per person. Based on an estimated state population of 59.5 million in 2050, the state target in 2050 would be 1.4 metric tons per capita, so this would put Mountain View slightly above the estimated target. No official target has been set by CARB for 2050 yet, however.

⁸ This goal is consistent with Gov. Schwarzenegger's goal for the State, and is somewhat more ambitious than the goal of a 50% reduction by 2050 below an unspecified baseline that was adopted by the leaders of the G8 countries at their 2008 summit in Hokkaido, Japan. See <http://www.nytimes.com/2008/07/10/science/earth/10climate.html?hp>.

If the Mountain View community continues with business as usual

According to the Association of Bay Area Governments (ABAG), the population of Mountain View is expected to be 88,300 by 2030 or grow at approximately 0.82% a year. This would be a 19% increase from Mountain View's current 2008 population (73,932) or an increase of approximately 15,000 people. If Mountain View's GHG emissions remain at 11.77 metric tons per person,⁹ Mountain View's GHG emissions will increase by 19%, as shown in Table 1-2 and Graph 1-1.¹⁰

Other considerations

It should also be noted that the Governor has set a target for 80% reduction of emissions from 1990 levels by 2050. If the Mountain View community chooses to meet the first three goals, the community will have to cut emissions much more after 2020 than before 2020. However, we hope that by 2020 there will be momentum at the community, state and federal level and this gap will be easier to close by then.

Fiscal Impact and Synergies

The exact fiscal impact of this recommendation depends on the specific measures undertaken to reduce carbon emissions and on the measures that are not undertaken and therefore contribute to accelerated climate change with its attendant fiscal risk. Well-chosen efficiency measures pay back and therefore have a negative cost, because they result in net reduction in energy use and therefore in expenditure for energy. Recommendations for emissions-reduction measures are the topic of the reports from other Task Force working groups, and therefore these reports should be consulted for more information on the fiscal impact of specific measures.

Obstacles

The City of Mountain View could fail to meet these emissions reduction goals, even if agreed to by the City Council, due to lack of follow-up action to introduce specific emissions-reduction measures. Lack of public support could also result in the failure to meet emissions-reduction goals even if measures are introduced. Finally, the sector contributing the largest amount of emissions, Transportation, is not easily influenced by City public policy decisions, since many trips through Mountain View are not by city residents. Regional organizations such as the Association of Bay Area Governments (ABAG) can also contribute to introducing policies that reduce emissions. Decisive action may require national and state initiatives.

Partnerships

There are many nonprofits that could act as potential partners for helping to reduce carbon emissions, including the Sierra Club's Cool Cities campaign, Mountain View Trees, Acterra, and so on. In addition, Mountain View can, and should, coordinate with other cities in our area, especially our neighbors in Palo Alto, Los Altos, and Sunnyvale. Finally, Mountain View City government should be active in various regional, state, and national local government organizations, such as ABAG, to

⁹ These calculations assume that energy intensity, i.e. amount of energy used per person per year, remains constant in the economy. With new CAFE standards making cars more efficient over this period, more efficient appliances, California conservation measures coming into effect, etc., per capita energy consumption may decline over this period.

¹⁰ The current 2008 GHG emissions are assumed to be higher than the 2005 GHG emissions, based on the increase in population of Mountain View by approximately 2500 people between 2005 and 2008 and the lack of focused community-wide effort to curb GHG emissions. The current 2008 emissions were calculated multiplying the 2005 value of 11.77 metric tons per capita by the 2008 population. Thus 2008 Mountain View's GHG emissions will be 30,215 metric tons more than 2005 GHG emissions or have increased by 4%.

keep the topic of emissions reductions at the top of local government agendas to ensure that real and meaningful reductions occur.

Table 1-1. Sustainability and GHG Emission Goals by City

City	Year	Stated Emission Goals
Portland, OR ¹¹	2010	10% below 1990 levels
	2030	40% below 1990 levels
	2050	80% below 1990 levels
San Mateo, CA ¹²	2009	below 2006 levels
	2020	below 1990 levels
	2050	80% below 1990 levels
Berkeley, CA ¹³	2009	2% annual reduction from previous year
	2020	33% below 2000 levels
	2050	80% below 2000 levels
Palo Alto, CA ¹⁴	2009	City operations reduce 5% below 2005 levels
	2012	City and community reduce 5% below 2005 levels
	2020	City and community reduce 15% below 2005 levels
San Jose, CA ¹⁵	2015	Reduce per capita energy use by 50%. Receive 100% of electrical power from clean renewable sources. Build or retrofit 50 million square feet of green buildings. Divert 100 % of waste from landfill and convert waste to energy. Recycle or beneficially reuse 100% of our wastewater (100 million gallons per day).

Table 1-2. Comparison of Business as Usual GHG Emissions with Recommended Target Reductions

Year	Population	Business as Usual (CO ₂ e metric tons)	Recommended Reductions (CO ₂ e metric tons)
1990	67,500	794,004	794,004
2005	71,890	846,146	846,146
2008	73,932	870,180	870,180
2012	76,234	897,275	803,839
2016	78,764	927,053	761,531
2020	81,378	957,820	719,224

¹¹ <http://www.portlandonline.com/shared/cfm/image.cfm?id=112118>

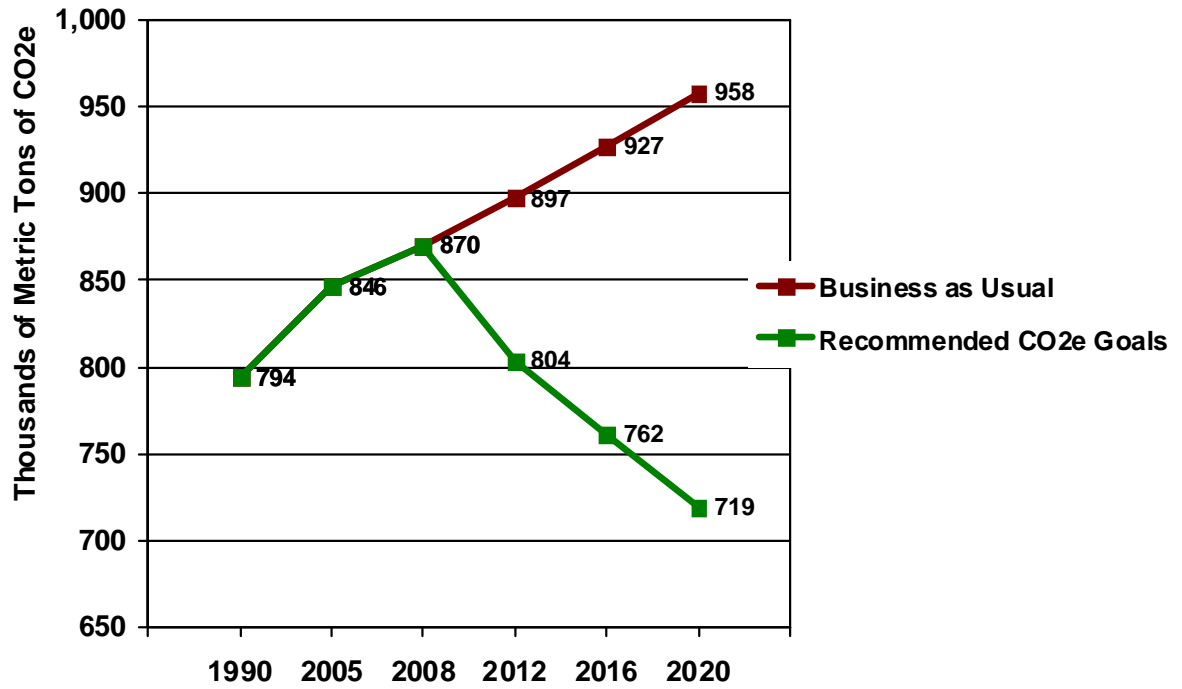
¹² City of San Mateo Sustainable Initiatives Plan, Dec 17, 2007

¹³ City of Berkeley Climate Action Plan, January 2008

¹⁴ Palo Alto Climate Protection Plan, December 3, 2007

¹⁵ <http://www.sanjoseca.gov/greenvision/Sustainability.asp>

Graph 1-1: Comparison of Business as Usual GHG Emissions with Recommended Target Reductions



Title: Utilize ICLEI CO₂e Measurement Methodology

Statement of Issue

Given that there are no precise measurements of past (or even current) CO₂ and CO₂e (CO₂ equivalent) emissions by the City, what methodology should we use? If we use ICLEI, how do we deal with the weaknesses in ICLEI's methodology?

How do we avoid overstating or understating progress? There are ways to reduce local emissions by moving emissions elsewhere. As an example, if an energy-intensive company moved from Mountain View to another location, its CO₂ emissions would no longer show up on our tally sheet, but emissions would not actually have been reduced. As another example, much of the trash in Mountain View's landfill is from San Francisco. Over time, emissions from this landfill will gradually shrink, because any material that has fully decomposed will no longer emit methane. The City could make its tally sheet look more favorable simply by doing nothing and waiting for methane emissions to shrink, but this would not represent any real solution to the problem.¹⁶

Recommendation

We must measure and reduce all significant factors that contribute to global warming. Because all GHG emissions matter as far as the planet is concerned, the City should measure and reduce CO₂e, not just CO₂, even if AB 32 specifies only CO₂.¹⁷

If non-GHG emissions contributors to global warming are found, (for example, changes in albedo—reflectivity of the surface of the earth due to changes in vegetation and structures), the City should also measure and reduce those.

Although we find at least one major omission in the ICLEI methodology (air travel), we have not found a better methodology and we do not believe that we part-time non-experts can produce a better methodology in a realistic amount of time.

We therefore recommend using ICLEI, with the following provisos:

- The City should keep open the possibility of using improved methodologies in the future.
- The City shall not deliberately “move” emissions outside the city boundary to meet the state requirements. (In the long run, the City should attempt to measure, and more importantly, reduce its emissions outside the city boundaries. For example, emissions from food and

¹⁶ Ideally, emissions from San Francisco's trash should show up on San Francisco's tally sheet and neither the original emissions nor the gradual tapering off of those emissions would affect Mountain View's tally sheet. Since the trash was dumped before the ICLEI measurements began, it is not counted like that. Emissions from Mountain View's trash dumped in Sunnyvale going forward from 2005 are counted as Mountain View emissions, though not those prior to 2005.

¹⁷ The Kyoto Protocol, the international agreement that seeks to address climate change, identifies six GHGs that contribute to the greenhouse gas effect: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), HFCs (hydrofluorocarbons), PFC (perfluorocarbons) and sulfur hexafluoride (SF₆). These gases differ in their ability to trap heat in the atmosphere, so each gas' Global Warming Potential (GWP) is used to compare these abilities relative to CO₂. Carbon dioxide, the most commonly emitted GHG, has a GWP of exactly 1 since it is the baseline unit to which all other greenhouse gases are compared. Methane, the second most commonly emitted GHG, has a GWP that is many, many times higher than CO₂.

industrial products that are made outside the city and then imported into the city. However, we do not yet have a reliable methodology for doing this.)

- The City shall not count “unearned” reductions, such as the natural tapering off of emissions from the landfill.
- When presenting emissions measurements, we recommend adding the following columns:
 - The input data, for example, kWh electricity
 - The ICLEI conversion factor, if the ICLEI method is used
 - The source of the input data, for example, PG&E 2005
 - Any assumptions in the collection of data or calculations

These recommendations apply to both the short term and the long term.

Environmental Impact

Although there is no significant direct environmental impact from merely choosing a methodology, there are indirect impacts; if we choose measurement methodologies that understate the problem or overstate progress, we probably reduce the problem by a smaller amount.

1. The real environmental impact is from all GHGs. We should measure and reduce the total “load” we are putting on the environment. This is the only way to reduce the real problem.
2. Failure to follow this recommendation will give the illusion of progress where there is none.

Fiscal Impact and Synergies

The cost of an ICLEI audit is currently between \$13,000 and \$14,000. This cost would be incurred every four years between 2008 and 2020 if Recommendation 1-1 is adopted and periodically until 2050 if auditing is continued after 2020. The annual cost for ICLEI membership and ongoing support is \$1200. The cost of staff time is probably much more, but not known at this time. The estimate is three months of part-time City Staff time to prepare a carbon audit using ICLEI. Other tools may be desirable to help communicate the results of the City's carbon emissions goals and come with associated costs if the City chooses to use them, but these are not strictly necessary. Sources are listed in the Partnerships section below.

Obstacles

- There is no practical technique for directly measuring each emission source in Mountain View. Any current method is an estimate.
- We do not yet know all the factors involved. Since indirect emissions are usually difficult to measure, it will be difficult to avoid occasional accidental violation of this recommendation. However, the City can avoid any deliberate effort to misrepresent its emissions.
- The more factors that we try to measure or estimate, the more the measurement process itself will cost.
- Even gathering data may be a non-trivial expense in terms of City Staff time. It needs to be integrated into City operations and this could take a certain amount of time for staff to become familiar with the process.
- Ultimately, our goal is not to measure precisely, but to reduce emissions, and every dollar spent on getting more precise measurements/estimates is a dollar not spent on actually reducing emissions.

Partnerships

The City will be working together with ICLEI on measuring emissions.

ICLEI has also partnered with the Carbon Disclosure Project (<http://www.cdproject.net>) to help 30 cities perform inventories and to publically disclose the inventories in a transparent fashion; Mountain View might want to join the partnership.

Visible Strategies (<http://www.visiblestrategies.com>) provides tools for city government leaders to communicate with staff and the community regarding progress toward goals. The City might want to subscribe to the service.

Title: Include Emissions from Air Traffic at Moffett Field in the Mountain View Community GHG Inventory

Statement of Issue

Carbon emissions from air traffic are one of the fastest growing sources of GHG emissions, and one of the hardest to avoid. Unlike other sources, there are often no good alternatives to air travel other than not flying. Measuring carbon emissions and counting them toward community inventories in those jurisdictions that have airports therefore becomes critical for maintaining accountability. San Jose and Oakland, both of which use the same ICLEI method that Mountain View uses, have decided to include emissions from their airports into their community inventories. Mountain View should do the same for our airport, Moffett Field.

Recommendation

We recommend that the City talk to the Moffett Field administration to find out exactly what they are doing with respect to measurements and offsets. Other information, such as whether they can distinguish between civilian and military fuel use, could also be obtained. If the Moffett Field administration has no plans for measuring and offsetting, the City should include emissions from air traffic that utilizes Moffett Field for refueling into Mountain View's community carbon inventory. Because Mountain View cannot influence military traffic usage, the inventory should only include nonmilitary traffic, unless it is impossible to differentiate military from nonmilitary fuel usage.

The emissions should be measured in the following manner:

- Fuel use data for the year in which the inventory is being calculated should be obtained from Moffett Field administration (currently NASA).
- The fuel use should be multiplied by an ICLEI carbon emissions conversion factor to convert from gallons of fuel to metric tons of carbon. If Moffett supplies more than one type of aviation fuel, then conversion factors should be obtained for all of them and each type should be listed as a separate line item in the inventory.
- The resulting carbon emissions should be listed in the ICLEI carbon inventory spreadsheet under the "Misc." category (miscellaneous).

If ICLEI modifies their measurement method to include carbon emissions from airports, Mountain View should also adopt that method.

The 2005 carbon inventory should be updated to include emissions from Moffett Field.

Finally, given the difficulty of reducing carbon emissions from air travel directly, Mountain View should encourage the Moffett Field administration to purchase carbon offsets or Renewable Energy Credits (RECs) to cover the carbon emitted by Moffett Field air traffic. If Moffett Field is ever repurposed for general aviation, the City should either ensure that the new administration buys carbon offsets, or consider buying carbon offsets for the additional traffic and passing the cost along in some fashion to the new users of the airport.

Environmental Impact

Measuring carbon emissions will have two effects:

- Periodically, proposals have been made in the past for expanding the role of Moffett Field (cargo, general aviation, etc.). When such proposals are made in the future, carbon emissions will be included into any environmental impact report involving expanded Moffett operations and will therefore be an important criterion in judging the advisability of a proposed expansion.
- Purchase of carbon offsets or RECs by Moffett will help to offset a difficult to reduce source of carbon emissions until such time as biofuels or other green technology becomes available for air vehicles.

Fiscal Impact and Synergies

- This recommendation will require some work by City Staff to obtain the data from Moffett Field administration and from ICLEI and to put it into the community inventory.
- The costs of any carbon offsets for Moffett Field bought by the City should be passed along to users of the airport in some fashion if Moffett Field is repurposed for general aviation. As long as the airport remains a federal government operation, this will probably not be possible, but the City should nevertheless try to persuade the current Moffett Field administration to purchase offsets if they aren't planning to do so now.

Obstacles

- If the Moffett Field administration decides to conduct its own carbon inventory, Mountain View should continue to include carbon emissions from Moffett Field as a consideration in any local land use planning decisions.
- A small portion of Moffett Field is located in Sunnyvale but since the runways are located in Mountain View, Mountain View should include the emissions, making sure to communicate with Sunnyvale on the topic to ensure that the emissions are not counted twice.

Partnerships

This will likely require working together with the Moffett Field administration to obtain fuel usage data, and briefly with the City of Sunnyvale.

Appendix: Projected Greenhouse Gas Emissions

The table below shows two sets of numbers:

1. The projected GHG emissions by Sector and Source for 2008, 2012, 2016 and 2020 if these emissions were to grow at the current per capita rate of 11.77 metric tons and in the exact same proportions as the baseline 2005 emissions.
2. The projected GHG emissions if every sector or source reduced its emissions by 5%, 10% and 15%.

Emissions by Sector: Business as Usual	Baseline Year				
	2005	2008	2012	2016	2020
Residential	100,431	103,284	106,500	110,034	113,686
Commercial	160,273	164,825	169,958	175,598	181,426
Industrial	46,234	47,547	49,028	50,655	52,336
Transportation	421,428	433,398	446,893	461,724	477,048
Waste	117,780	121,125	124,897	129,042	133,325
Total	846,146	870,180	897,275	927,053	957,820
Emissions by Source: Business as Usual					
Electricity	185,682	190,956	196,902	203,437	210,188
Natural Gas	121,256	124,700	128,583	132,850	137,259
Gasoline and Diesel	421,428	433,398	446,893	461,724	477,048
Waste Decomposition	14,923	15,347	15,825	16,350	16,893
Landfill Waste	102,857	105,779	109,072	112,692	116,432
Total	846,146	870,180	897,275	927,053	957,820
Emission Reduction Goals by Sector			5%	10%	15%
Residential	100,431		95,409	90,388	85,366
Commercial	160,273		152,259	144,246	136,232
Industrial	46,234		43,922	41,611	39,299
Transportation	421,428		400,357	379,285	358,214
Waste	117,780		111,891	106,002	100,113
Total	846,146		803,839	761,531	719,224
Emission Reduction Goals by Source			5%	10%	15%
Electricity	185,682		176,398	167,114	157,830
Natural Gas	121,256		115,193	109,130	103,068
Gasoline and Diesel	421,428		400,357	379,285	358,214
Waste Decomposition	14,923		14,177	13,431	12,685
Landfill Waste	102,857		97,714	92,571	87,428
Total	846,146		803,839	761,531	719,224

Chapter 2. Adaptation to Climate Change

Introduction

The Adaptation to Climate Change Working Group was created because climate change will begin to have significant negative impacts on Mountain View and its residents as the present century unfolds. While some of the more severe impacts on the City could be avoided if the global community responds expeditiously to the challenge of climate change, this rapid response is by no means a certainty. Moreover, some negative impacts appear to be inevitable, even in a “best case” scenario of rapid global response. Therefore, we believe it is prudent to begin planning now to for the effects of a changing climate on the City of Mountain View.

The three negative impacts that we believe will have the most significant effect on Mountain View during this century are 1) rising sea levels and an attendant increased risk and extent of flooding, 2) decreased water supply caused by a shrinking Sierra snowpack, and 3) health issues from an increase in the number of extreme heat days.

Summary of Recommendations

1. Plan for Sea Level Rise and Increased Flooding
2. Partner with Other Agencies to Restore the Bay Shoreline for Better Flood Control
3. Reduce Outdoor Water Usage with Drought-Tolerant Landscaping
4. Address Health Issues Resulting from Extreme Heat

Working Group

Sue Graham (Chair)
Jeff Segall

Title: Plan for Sea Level Rise and Increased Flooding

Statement of Issue

Sea levels are expected to rise significantly during the current century. Even under an optimistic scenario where human society begins to meaningfully address the emissions of greenhouse gases (GHGs), rising atmospheric levels of GHGs will cause rising temperatures, which in turn will cause sea levels to rise at accelerating rate. Forecasting the level of sea level rise with precision is not possible; however, given the serious consequences a major flood, prudence should dictate that long-term planning decisions be made in light of the most pessimistic credible forecast for sea level rise.¹

A major consequence of rising sea levels for the City of Mountain View is an increase in the risk of flooding. Under current conditions, a significant part of the City is subject to flooding. From the City’s website: “Twelve percent of the City of Mountain View is located within special flood hazard areas. Flooding in these areas is caused by tidal flooding from the Bay and flooding from Permanente Creek.”² Figure 1 shows the Federal Emergency Management Agency (FEMA) map of the North Bayshore and adjacent areas.

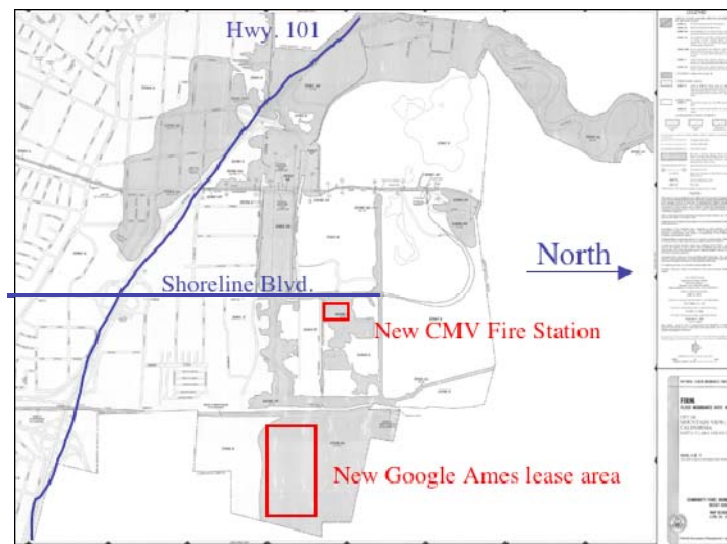


Figure 1. FEMA map showing 100-year flood areas in the North Bayshore area and areas south of US 101. Flood areas are shown in gray.

Sea level rise will make the existing risk of flooding worse because rising floodwaters in the creeks will encounter the higher bay level, causing the creek water to back up and overflow its banks. Studies in other low lying areas show that a one-foot sea level rise makes a 100-year flood occur every ten years. Other studies show the same 100 to ten year effect can be produced with as little as a six-inch rise in sea level.³ A one-foot rise in sea level is likely to occur by mid-century, well within the expected lifetime of buildings being constructed today.

¹ A more detailed account of these issues is presented in the appendix of this working group’s report.

² <http://www.ci.mtnview.ca.us/civica/press/display.asp?layout=1&Entry=142>

³ Peter Glicek, Pacific Institute, presented at “Preparing for Sea Level Rise in the Bay Area” forum, April 16, 2008, Oakland, California.

Recommendation

1. The City should place a moratorium on additional city infrastructure or other city investments in the existing flood zone and nearby areas likely to be in the flood zone during the useful life of the investment unless and until flood protection sufficient to protect the investment from a 100-year event during its lifetime has been designed and construction is fully funded.
2. Since recent history has dramatically shown that levees do not provide full protection against flooding, the City should continue to require that all buildings, whether commercial, multi-use, residential or city-owned, are elevated above anticipated flood levels in the event of a levee failure. In addition, as flood levels in areas near the bay will rise during the period of time when the building is in use, the City's requirements should reflect the flood level at the end of the expected life of the building. Existing City codes do not take into account anticipated sea level rise in determining the required base elevation for new buildings.
3. The City should require any new residential or mixed use incorporating residential buildings include an additional safety factor for any residential living space by locating that living space at least 6 feet above the anticipated flood level at the end of the building's life.

Environmental Impact

These recommendations would provide an enhanced level of protection to life and property in an area susceptible to flooding. Flooded buildings have negative consequences for both the human and natural environment.

Fiscal Impact

The temporary moratorium on City infrastructure would save the City money by protecting the City from flood losses. Enhanced building requirements to protect against flooding will raise construction costs, but will provide a benefit in lower insurance premiums, and will save both private and public funds when flooding occurs.

Obstacles

Businesses in North Bayshore may object to the temporary moratorium on City infrastructure in the area. Property owners, developers, and businesses may also object to the cost of enhanced flooding protection requirements. However, the longer term benefits to both their interests and to the public, noted above, may mitigate these objections.

Partnerships

The City will need to work with North Bayshore area businesses and landowners. In addition, since other cities in the Bay area, as well as other coastal cities in the state and across the US face similar issues, organizations such as the League of California Cities are possible partners. Other partners include groups such as the Planning and Conservation League.

Title: Partner with Other Agencies to Restore the Bay Shoreline for Better Flood Control

Statement of Issue

In Recommendation 2-1, we present evidence that with the rising sea level there will be significant increased flooding in the North Bayshore area. Currently, two projects are underway that will impact the effects of sea level rise and flooding in Mountain View. The first is the South Bay Salt Ponds Restoration project (Salt Pond Restoration), a massive effort to restore historic wetlands on 15,000 acres of former salt-harvesting ponds in the South Bay, and the other is the South San Francisco Bay Shoreline Study (Shoreline Study), which will look at tidal flooding protection of South Bay Cities, including Mountain View. The Shoreline Study is a cost-sharing collaboration among the Santa Clara Valley Water District, the Coastal Conservancy and the Army Corps of Engineers. An expected output from the joint study is a re-map of the South Bay Area, due to be released in the fall of 2008 showing flooding conditions now and flooding conditions 50 years from now.⁴

Recommendation

Councilmembers should stay informed and involved with the studies, which will produce more exact data on the risks of flooding in North Bayshore. The 2008 re-map can be used to highlight the expected increase in flooding and to inform the public of the risks of developing in this area. By staying closely involved, the councilmembers can help shape the implementation decisions resulting in a more cost effective, long-term (50 to 100 years) solution for Mountain View. The outcome of the Shoreline Study and the Salt Pond Restoration Project should be both effective as flood control while being as environmentally sensitive as possible. This adaptation of our coastal shore will help us cope better with future flooding.

Environmental Impact

The most environmentally positive solution to sea level rise would be to allow the shores of North Bayshore to return to marshland and wetlands, nature's natural flood control. We would hope that the outcome of the South San Francisco Bay Shoreline Study will promote the restoration of wetlands and riparian habitat, build floodwater storage, and build a way to move flood water safely out of the community. According to Peter Gleick of the Pacific Institute, "An unconstrained sea marsh will move landward and upward adjusting to the rising sea level. It has a natural ability to evolve. Levees prohibit the natural movement of the sea marsh landward."⁵

Fiscal Impact

The South San Francisco Bay Shoreline Study is a Congressionally-authorized study to identify and recommend for Federal funding one or more projects for flood damage reduction, ecosystem restoration and related purposes, such as public access (50% Federal funding; 50% local funding (Coastal Conservancy and Santa Clara Valley Water District)).⁶ Partnering with the Army Corps of Engineers, the Santa Clara Valley Water District, the Coastal Conservancy, and nearby cities should enable the City of Mountain View to develop good flood control while containing costs to the residents of Mountain View.

⁴ <http://www.southbayshoreline.org/about.html>

⁵ Peter Gleick of the Pacific Institute

⁶ <http://www.southbayrestoration.org/Events-AlvisoWG.html>

Obstacles

We see no obstacles for working with the two projects other than increased staff time needed for attending meetings and reporting back to council.

Partnerships

Work closely with the North Bayshore community, both businesses and residents, to assess the flooding risks and to create a plan that will protect people, houses and businesses.

Title: Reduce Outdoor Water Usage with Drought-Tolerant Landscaping

Statement of Issue

The effects of climate change on our water supply will be less snow, more rain, earlier snow run-off, more floods and less stored water. The water infrastructure system that we have today will not be adequate to serve our needs in the future. The Sierra snow pack, the source of virtually all our domestic water supply and the leading supply for the entire state of California, is expected to diminish sharply due to climate change. Under a business-as-usual scenario, where greenhouse gas emissions continue to grow unconstrained, the Sierra snow pack will be reduced by 80-90% of the current yearly average by the last decades of this century. If the world acts quickly and effectively on climate change, there might be only a 60% reduction.⁷ In either case, we need to begin adapting now so that when less water is available, we will have eliminated non-essential water usage. The best way to do this is to work towards the reduction or elimination of irrigation of ornamental and decorative vegetation.

Outdoor irrigation accounts for an estimated 35-40% of 4.3 billion gallons used in Mountain View annually.⁸ Lawns and some non-native plants are water intensive, particularly in the summer months. The average lawn uses up to 10,000 gallons of water over a summer. Native plants are by definition “Plants best adapted to the local climate and once established, seldom need watering, mulching, protection from frost or continuous mowing.”⁹ Native plants in the urban landscape also enhance biodiversity, by providing food and shelter for birds and other animals and require less fertilizers, herbicides and pesticides.

Recommendation

Replace lawns and other areas planted with high water use ornamental plants with native and drought tolerant plantings in order to reduce outdoor irrigation water usage by 60% by 2020. Specifically, reduce water usage by:

- Converting all public lawn areas by 2015, except where specific public activities require a non-native, water intensive grass surface (e.g. soccer or baseball fields).
- Converting 25% of current lawn area in homes and businesses by 2015.
- Converting 50% of lawn area in homes and businesses by 2020.
- Leading by example: Get residents familiar with California natives and drought tolerant landscaping by establishing native-plant demonstration gardens throughout the city.
- Educating: Provide information for residents and landscaping professionals online, over a hotline and in booklets that might be handed out at public events such as local farmers markets, etc. A landscaping book of tips may include information on plant profiles, starter tips, and drip irrigation strategies. Also coordinate water-wise landscaping continuing education courses with other groups.

Our recommendation is focused on native and drought-tolerant plants because it appears to be the most economical and straightforward way to achieve an estimated 25% reduction in overall water

⁷ Dan Cayan, Scripps Institution of Oceanography and USGS.

⁸ Gregg Hosfeldt, City of Mountain View Public Works Department, private email communication.

⁹ Gardening for Wildlife with Native Plants, Bay Nature Magazine, Jan-Mar 2003.

usage in Mountain View. However, we would endorse any set of water conservation efforts that would in aggregate result in an equivalent reduction in water usage.

Environmental Impact

- *Water Use*—Reducing outdoor irrigation by 60% will save roughly 1 billion gallons annually.
- *Carbon Emissions*—Reduce CO₂ emissions by 2,800 tons annually.
- *Biodiversity*—Less monoculture and more diverse landscapes to support a wide range of wildlife.

Fiscal Impact

Residents could save up to \$2.6 million annually (an average of \$37 per resident). In energy costs alone, the city has the potential to save \$28,000 annually.¹⁰ The City would also save considerably more money by reducing its water usage by converting its own facilities to California native gardens. The SCVWD provides financial incentives for residents to convert lawns to drought-tolerant plantings.

Obstacles

Converting to water-wise landscaping requires more involvement from the homeowner/businesses or similarly knowledgeable gardeners. There is a steep learning curve towards implementing native gardens compared to maintaining a lawn. It is imperative to provide training programs to bridge the gap.

Partnerships

Water wise landscaping doesn't have to mean cactus and rocks. Many California native plants are lush and beautiful. With educational outreach, the City can change this perception by promoting such gardens by example, through images, and how-to kits.

- Santa Clara Valley Water District
- California Native Plant Society, CNPS: <http://www.cnps.org/>. For information on Santa Clara Valley CNPS's annual native plant tour, see <http://www.gardeningwithnatives.com/>

Acknowledgement

This recommendation was co-written by Marn-Yee Lee and Steve Bishop of the Water Working Group and Cynthia Kappahn of the Suburban Natural Ecosystems Working Group.

¹⁰ Potential Energy Savings for city = 1 B gal * .0002 kwh per gal for City distribution* \$.14 per kwh.

Title: Address Health Issues Resulting from Extreme Heat

Statement of Issue

“Among the possible effects of global warming associated with increased atmospheric greenhouse gas concentrations is an increase in the frequency of extremely hot weather events. Because extremes of summertime heat are thought to have a greater impact on human health than any other form of severe weather in the U.S. (Changnon, et al., 1996), more frequent occurrences of extreme heat would have important public health implications. Heat waves can lead to heat stress, exacerbated illness, and death, and the elderly are at greatest risk.”¹¹ Mountain View currently identifies cooling centers which can be used by residents on extreme heat days, but many people are still not aware of the service and don’t know where to go or what to do. The program needs to be expanded and to involve more volunteers.

Recommendation

1. Develop a rapid response plan to public health problems resulting from extreme heat days.
2. Put together plan of action for extreme heat days involving local hospitals, the City’s Office of Emergency Services and the Red Cross.
3. Fold the plan into the CERT program and expand the program to include more volunteers in more neighborhoods.
4. Identify the groups that are socially isolated and will need help.
5. Develop a neighbor-to-neighbor outreach program to contact people who may need help.
6. Identify more cooling centers.
7. Identify shelters for overnight stays.
8. Arrange for transportation for people to reach the cooling centers.
9. Educate all residents about what to do during extreme heat days.

Environmental Impact

Some people will react to rising temperatures by installing air conditioners, a cooling device we have not historically needed. Unfortunately, more air conditioners running on hot days will have an adverse affect on the electrical grid and the environment. Having a community-wide plan to help people cope with extreme heat days will help those who cannot afford air conditioners and those who chose not to in consideration of the environment.

¹¹ National Oceanic and Atmospheric Administration, Trends in U.S. Extreme Heat Indices
<http://www.arl.noaa.gov/milestn/mile3.html>

Fiscal Impact

This recommendation will require staff time and publicity. The community volunteers will be free. Creating a plan and putting it in place is more cost effective than waiting for the crisis and then reacting to it. This should fall in the medium cost category of \$30,000 to \$100,000.

Obstacles

The current CERT plan has had more success in the single-family homes than in condos and apartments. Recruiting multi-family home dwellers into the CERT program will take a more concerted effort, which we envision to be done by a core of volunteers. New technology, such as a “reverse 911” calling mechanism, will still need to be augmented by people in the neighborhoods.

Another obstacle will be that the people who will need the help the most will be the hardest to reach – the low income, the transitory workers, and the non-English speaking population. Again, we believe volunteers will be our best resource to reach these people.

Partnerships

This is the perfect place to partner with local health care agencies and the Red Cross. Local groups such as Rotacare, CHAC and other should be asked to participate. They will be a good conduit to low income and non-English speaking populations.

Appendix: Additional Information and References

Recommendation 2-1:

According to the International Panel on Climate Change (IPCC) Scenarios for Emissions from 2000 to 2100, carbon dioxide levels in the atmosphere will rise markedly if we follow business as usual. But even in the best-case scenario, CO₂ concentrations will continue to rise. This is because emissions are expected to continue to rise as we transition to new sources of energy and the CO₂ already in the atmosphere will last for hundreds of years. The IPCC scenarios show that if we begin to take action on climate change, this will have a real impact on climate. With concerted reduction in Greenhouse Gases (GHG), global temperatures will increase 3.6 F (1.5 C), a total cessation in emissions of GHGs would yield a 0.9 F (0.5 C) increase while, if we continue growing emissions under a “business-as-usual” scenario, the temperature increase would be 7 F (3.6 C), as shown in Figure 2.

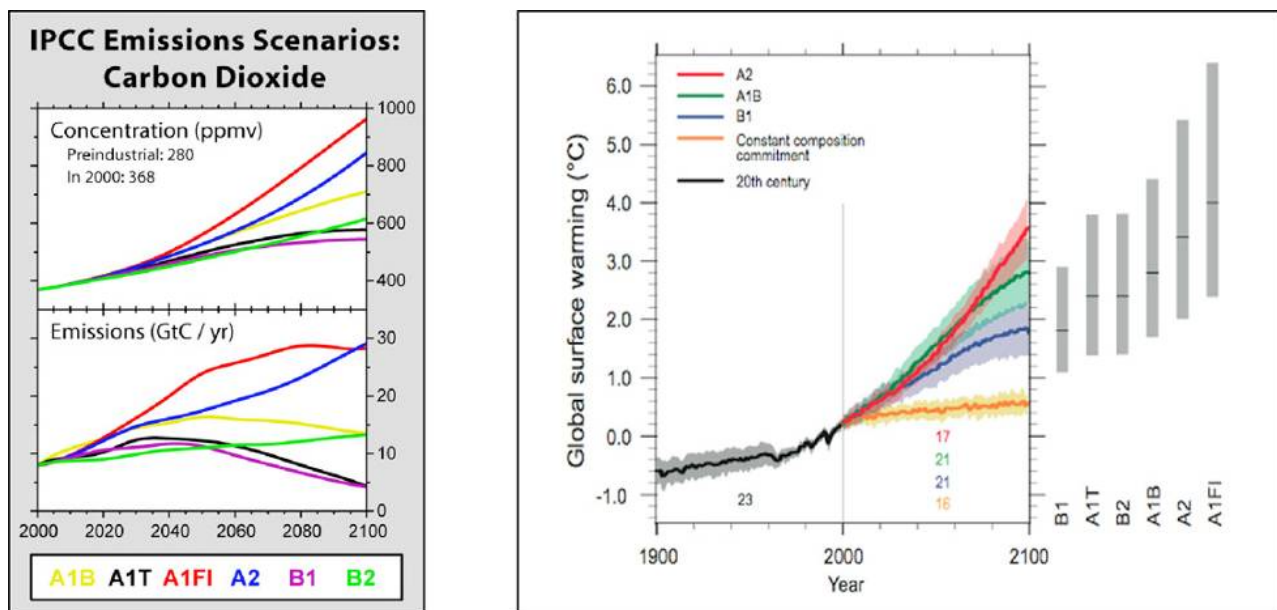


Figure 2. International Panel on Climate Change (IPCC) scenarios for global CO₂ emissions, CO₂ atmospheric concentrations, and surface temperatures.¹²

As temperatures rise, this will drive an increase in sea level. The IPCC has developed projections for sea level rise during this century under the different emissions scenarios. These are shown in Figure 3. Note that the sea level rise projections are much less sensitive to the different emissions scenarios than are global temperatures. This is because the IPCC sea level rise projections are dominated by the thermal expansion of the water in world’s oceans. Because the oceans are so vast, and because warming occurs first at the surface but much more slowly in deep waters, the ocean’s volume has a relatively slow response time to global temperature changes. This also means that the greenhouse gases we emit today will continue to drive sea level rise for many centuries and millennia in the future as the world’s vast ocean waters continue to re-equilibrate to a warmer world.

¹² <http://www.ipcc.ch/>

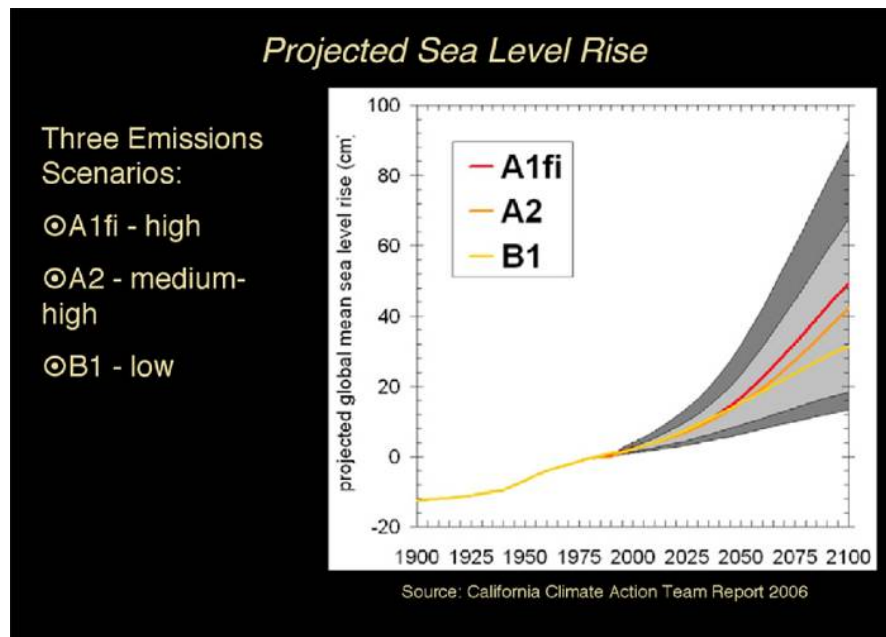


Figure 3. IPCC projections of sea level rise in the 21st century under the different emission scenarios shown in Figure 2.

Looking more carefully at the IPCC projections for 2060, we see a projected range of 10-45 cm with an essentially emission scenario-independent midpoint projection of about 30 cm, or approximately 1 foot of sea level rise.

It is important to note that these IPCC sea level rise projections do not include increased melting of the huge Greenland and Antarctic ice sheets. This is because the IPCC, which is a consensus-based research evaluation panel of experts, holds that dynamics of ice sheet melting are not currently well enough understood to include in their modeling.

Quoting from IPCC 4th Assessment (2007)

“The projections do not include uncertainties in climate-carbon cycle feedbacks, nor the full effects of changes in ice sheet flow, therefore the upper values of the ranges are not to be considered upper bounds for sea level rise. They include a contribution from increased Greenland and Antarctic ice flow at the rates observed for 1993-2003, but this could increase or decrease in the future.”¹³

We believe that it is reasonable to consider the possibility that a warming global climate may well lead to an increase in melting of the vast ice sheets in both Greenland and Antarctica. From a standpoint of assessing risk, it seems even more prudent to consider at least the possibility that melting from these ice sheets may well significantly contribute to sea level rise in this century.

Indeed, there is some recent evidence published in the peer-reviewed journal *Science* that indicates that sea levels are already rising faster than the IPCC projections, as shown in Figure 4. The study’s authors conclude: “Overall, these observational data underscore the concerns about global climate change. Previous projections, as summarized by IPCC, have not exaggerated but may in some respects even have underestimated the change, in particular for sea level.”¹⁴

¹³ <http://www.ipcc.ch/ipccreports/ar4-syr.htm>

¹⁴ Stefan Rahmstorf, Anny Cazenave, John A. Church, James E. Hansen, Ralph F. Keeling, David E. Parker, Richard C.J. Somerville, *Science*, 709, 2007.

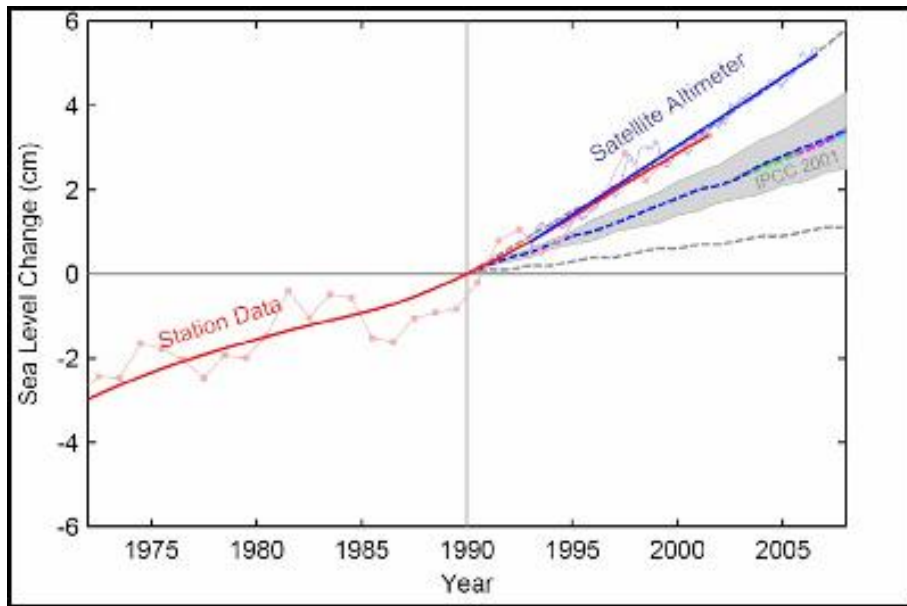


Figure 4. Graph showing IPCC forecast (blue dashes) and observed sea level rise (blue and red solid lines).

In summary, it appears that the IPCC projections, while providing some sort of baseline estimate of anticipated sea level rise in the current century, do not provide a worst-case scenario that a prudent planner may rely on. Furthermore, the farther forward in time you go, the greater the level of uncertainty.

Recommendation 2-3:

Supporting Evidence

From the Bay City News, 2008

SAN JOSE—The Santa Clara Valley Water District board members today agreed that more aggressive steps need to be taken to illustrate to the public the need to conserve water.

In December the board called for a voluntary 10 percent cut in water usage based on uncertainties of water supply conditions in 2008, court-ordered reductions and restrictions on water supply from the Delta, and a dry 2007 spring. An extremely dry spring this year has added to the district's concerns.

Rosemary Kamei, chair of the board, said in today's meeting that she wanted to see an aggressive outreach program to water retailers and the public to show them what will happen if people don't abide by the voluntary 10 percent cut. She says residents need to do their own personal water audit to see if they can reduce their water usage. "Looking at 'native' plants, changing the types of plants you have in your landscape also is very beneficial."

The water agency said the consequences of not complying with voluntary restrictions could require it to apply mandatory restrictions on water usage if consumption continues at the same rate. The water district plans to work on the program over the next couple weeks and will present a draft program to the board at its next meeting in August.

From the Santa Clara Valley Water District website

http://www.valleywater.org/Water/Where_Your_Water_Comes_From/Water%20Supply%20Sustainability%20Planning/Climate%20Change/index.shtm

Rising sea levels - not to mention a major earthquake or heavy seasonal flooding - threaten a catastrophic failure of the Sacramento - San Joaquin Delta levee system, through which, about half of our annual water supply passes. Another predicted result of climate change in California is the loss of 85% of the Sierra snowpack by 2100. Earlier snowmelts and increased springtime precipitation caused by climate change are predicted to produce unseasonable runoff that becomes less and less available for exports to, among other places, Santa Clara County. Unprecedented long-lasting droughts that leave our largest reservoirs dry are also anticipated.

Recommendation 2-4:

From the Centers for Disease Control and Prevention website

http://www.bt.cdc.gov/disasters/extremeheat/heat_guide.asp

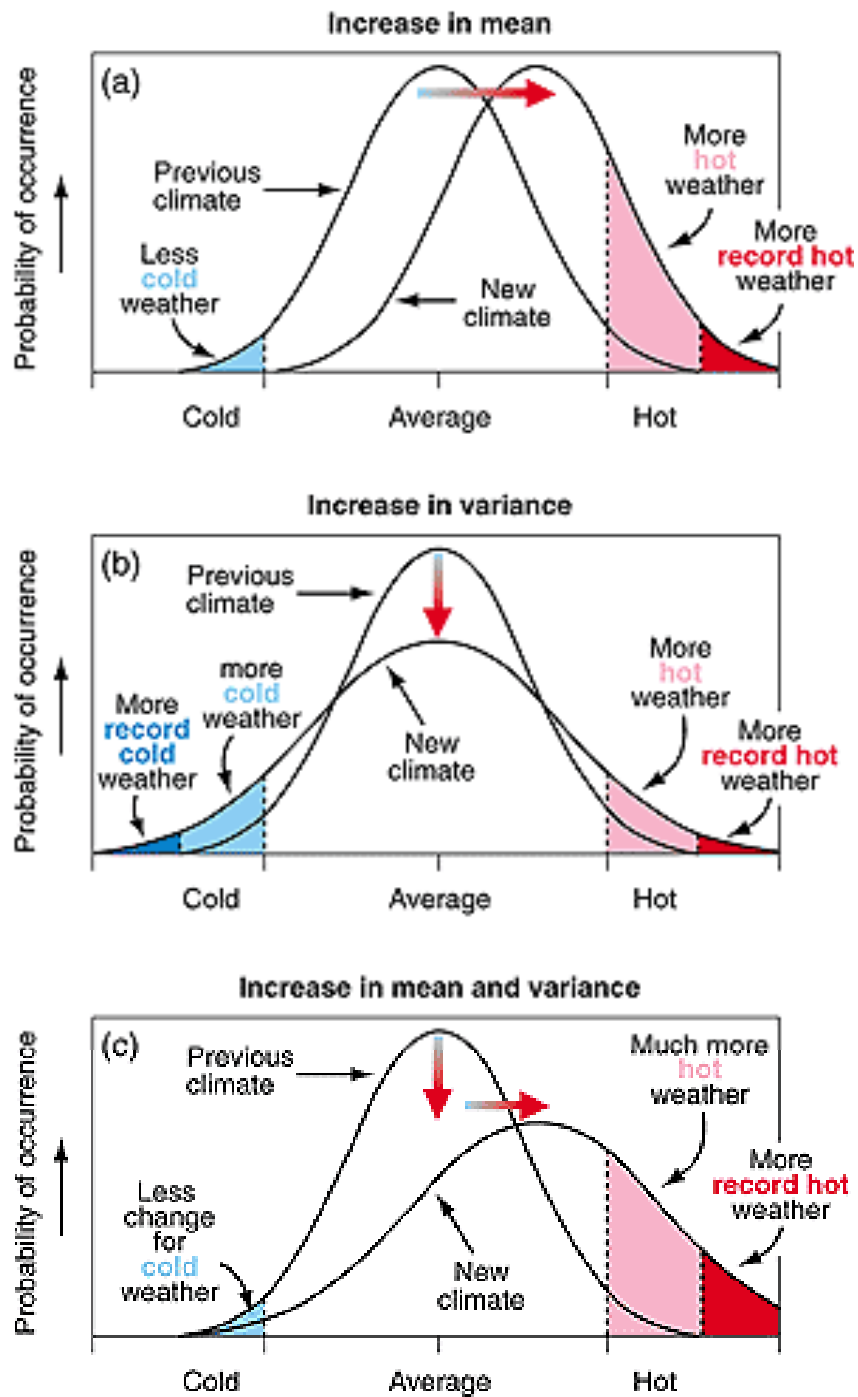
Heat-related deaths and illness are preventable yet annually many people succumb to extreme heat. Historically, from 1979-2003, excessive heat exposure caused 8,015 deaths in the United States. During this period, more people in this country died from extreme heat than from hurricanes, lightning, tornadoes, floods, and earthquakes combined. In 2001, 300 deaths were caused by excessive heat exposure.

From Tom Arnold, Terrapass – July 24, 2006

Extreme heat explains climate change principle

<http://www.terrapass.com/blog/posts/extreme-heat-il>

Californians used to seaside breezes got a rude shock this weekend, as even cool Palo Alto soared into the triple digits. While this is just one data point in the long term studies of global warming, it contains a useful lesson in the difference between mean temperature and temperature distribution. We often hear the quip “Hey, two degrees is no big deal” as a defensive reaction to the overwhelming evidence of climate change. Well, two degrees Celsius (3.6 F) doesn’t seem big, but the resulting shift in the overall distribution of temperatures can lead to extreme impacts. As the IPCC graph shows, with a normal or even Gaussian temperature distribution, shifting the mean to the right raises the likelihood of extreme weather events dramatically. Put simply, what used to be a once-in-a-hundred-years dog day of summer becomes a once-a-year heat wave like the one California is suffering through now.



In fact, the last scenario of both increasing mean and variance may be the most troubling. A January 2004 study in *Nature* (pdf) showed that a shift in mean alone was unlikely to explain an extremely improbable 2003 European heat wave. The paper gives some evidence that a local climate model with increased climate variability does a much better job explaining things.

Chapter 3. Water Availability and Use

Introduction

The recommendations proposed by the Water Availability and Use Working Group are based on primary research the working group conducted, including conversations with employees at the water treatment facility, the municipal operations center, the Sierra Club, the Santa Clara Valley Water District, Mountain View City government, citizens, and other concerned entities. Throughout our efforts, there was unanimous concern around climate change and enthusiasm for our work. We'd like to thank everyone who offered expertise and support.

Several important insights guided our thinking for these recommendations. Our top four are listed below:

Water is energy intensive: 19% of all electricity and 30% of all natural gas in the state of California is used to get water from source to tap. Mountain View consumes 8.83 million kWh annually to deliver, treat and pump water. The water we use generates significant CO₂ emissions.

Water is becoming scarce: Gov. Arnold Schwarzenegger has declared a statewide drought after two years of below-average rainfall and low snow-melt. 99% of Mountain View's water is sourced from the Sierra snowpack, where experts predict a 29-73% loss of snowmelt by end of century. Mountain View will face a 25% increase in demand over the next 20 years. Schwarzenegger warned that residents and water managers must immediately cut their water use or face the possibility of rationing next year.

Water is getting expensive: Infrastructure upgrades will also drive prices up. Hetch Hetchy Regional Water System is 150 years old. Significant upgrades will be required in the near to mid-term future.

Water is not very secure: Water from Hetch Hetchy crosses four major earthquake faults to get to Mountain View. 90% arrives through San Francisco, 9% through Santa Clara. Only 1% of water used in Mountain View is sourced by Mountain View wells. Without Hetch Hetchy water, wells alone only have capacity to meet 40% of our daily water needs.

Mountain View Water Facts:

Daily consumption: 12,500,000 gal
Embedded energy per gallon: 12 watts
Daily consumption by one golf course: 1,000,000 gal
Annual consumption: 4,562,500,000 gal
Annual energy costs of conveyance: \$1,242,000
Total embedded CO₂: 11362 metric tons
Largest use: irrigation (35-40%)
Largest indoor use: toilets (28%)
Percentage potable: 100%
Percentage ingested: 2%
Percentage lost to leaks: 2%
Population of Mountain View: 70900
One 'unit' of water: 748 gal
Units per resident Annually: 86
Price per unit: \$1.94 (lowest tier)

Summary of Recommendations

The working group makes the following recommendations for environmental sustainability:

1. Leverage Existing Water Conservation Programs
2. Redesign City Utility Bill Format to Encourage Water Conservation
3. Make Residential Greywater Easy to Reuse In Mountain View
4. Add Staff to City Water Conservation Team
5. Replace Paved Surfaces with Permeable Surfaces
6. Recruit and Train Local Water Conservation Advocates
7. Install CIMIS Weather Station and Other Feedback Mechanisms
8. Implement Cost Sharing Agreement with Santa Clara Valley Water District for Water Conservation Incentives

Working Group

Steven Bishop (Co-Chair)
Marn-Yee Lee (Co-Chair)
Elizabeth Sarmiento

Other Contributors

Laura Allen

Title: Leverage Existing Water Conservation Programs

Statement of Issue

Water Conservation is a systemic challenge. Ninety-nine percent of the City's water supply is from the Hetch Hetchy water system via San Francisco and Santa Clara water districts. No one agency or city alone can accomplish the efficiency goals we need for a more sustainable society.

The City does not have much control over its fresh water supply. However, it can influence the demand-side significantly through innovative incentive systems. According to the Santa Clara Valley Water District (SCVWD), water conservation is the most cost and energy-effective way of reducing water consumption.¹ Southern California Metropolitan Water District decreased water use by 16% from 1990 to 2003, despite a 14% increase in service area population.² This proves that service level growth can coexist with improved water usage efficiency.

SCVWD, the City's main water conservation partner, provides free audit, free outreach materials, and free irrigation technical assistance to both residents and businesses. Yet, we found a significant gap in awareness of such incentives by way of anecdotal evidence during the taskforce tenure. Other statewide and federal agencies exist and can help, but partnerships have not been pursued.

Recommendation

We recommend that the City set the following conservation outreach goals:

1. Require 100% of all commercial and city landscapes to undertake a free SCVWD irrigation technical assistance, implement the suggested improvements every two years by 2010.
2. Require 100% of all businesses to undertake a free SCVWD indoor water audit, implement the suggested improvements every two years by 2010.
3. Target 20% of existing homeowners and Homeowners' Associations (HOAs) to sign up for a free Water Wise House Call by 2009, 50% by end of 2010, and 80% by 2011.
4. Require all real estate transactions to disclose most recent one-year historical water usage.

Conservation outreach should focus on the City's biggest water usage, landscaping, which consumes 60% of our water.

Conservation outreach media should go beyond the current website and Water Quality report, expanding into media such as the water bill, The Voice, The View, and KMTV, and community events such as Arbor Day, Arts and Wine Festival, etc. to promote and sign up residents for free county-level water conservation programs.

This is a short term (1-12 mos.) solution.

¹ California Climate Change Portal, FAQ: What Are The Potential Impacts For California's Water?
<http://www.climatechange.ca.gov/publications/faqs.html>

² From Watts to Water, June 2007 (Santa Clara Valley Water District)

Environmental Impact

Mountain View is located in a semi-arid climate region where water is scarce. *Water conservation* reduces the demand side on scarce water resources and is *the only lever* the City of Mountain View has to manage its freshwater budget.

By making water conservation a priority throughout Mountain View, we immediately improve our ability to deal with water shortage events.

Water conservation will also reduce the City's GHG footprint, since every gallon of cold water takes .012 kWh of electricity to process.

Fiscal Impact

This is the easiest recommendation to implement. The only cost to the City is the administrative effort to refer people to these programs, as the incentives are funded by County and Regional agencies. Regional water agencies receive grants to incent water conservation. This recommendation will expand the City Water Conservation Coordinator's (CWCC) scope of work. We believe this is mostly a shift in the nature of the job. To accommodate the larger scope of work for this role, we recommend that the CWCC role be increased from 80% time to 100% time. We also recommend using Neighborhood Conservation Advocates to serve as additional volunteer forces to augment the City's conservation team.

Water conservation allows us to postpone further into the future our need for more expensive freshwater sources, such as desalination, reverse osmosis, or installing greywater systems. It allows the City to avoid having to make drastic rate increases due to rising water processing costs.

Obstacles

Implementing the many water conservation measures will require residents and business owners to invest some upfront time and money, since incentive programs do not fully cover the cost. Our "Incentive Program Cost Matching" recommendation (Recommendation 3-9) provides a way to work around the financial obstacle.

Partnerships

- Newly formed Neighborhood Conservation Advocate neighborhood network.
- Santa Clara Valley Water District (SCVWD): <http://www.valleywater.org/>
- Bay Area Water Supply and Conservation Agency (BAWSCA): <http://www.bawasca.org/>

Title: Redesign City Utility Bill Format to Encourage Water Conservation

Statement of Issue

Research at University of Delaware showed that, “beyond making monthly payment, customers most often use their utility bills to check for unusual consumption or to evaluate the effect of conservation measures.”³

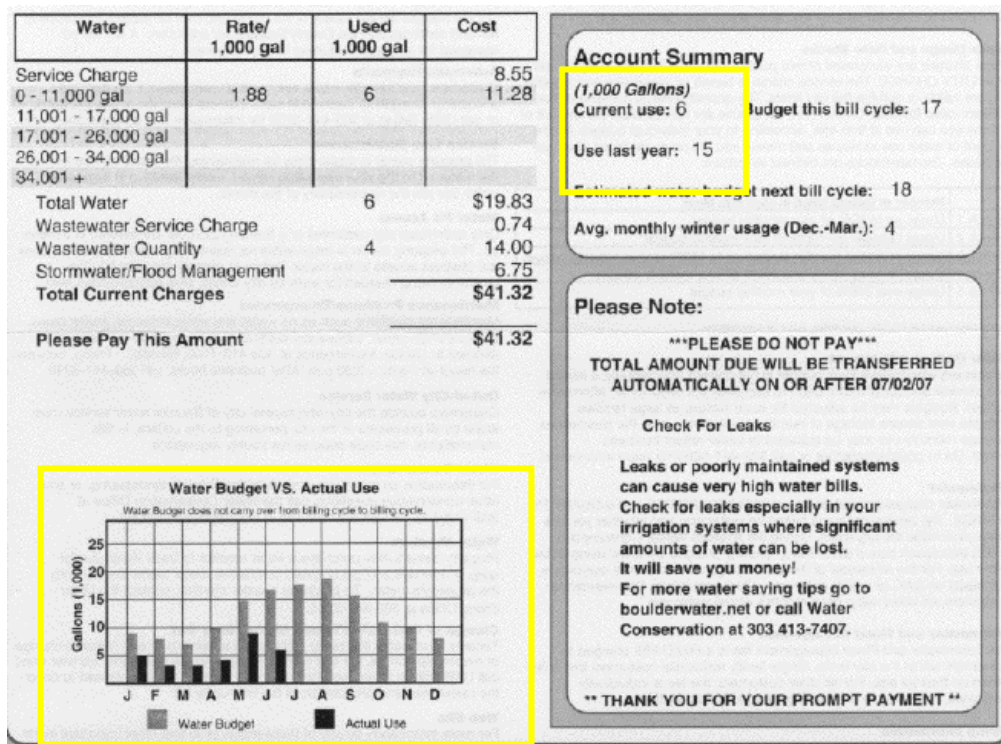
The Mountain View water bill today is included in the utility bill issued by the Finance Department every two months. In the current configuration, the Mountain View Utility bill exhibits several obstacles for residents to make this sort of evaluation:

- Water usage is billed in units residents do not understand (per “unit” of 748 gallons).
- The bill only includes current and past period usage, making usage trends difficult.
- The tiered water rates are not visible.
- The bill comes every other month, which delays feedback on conservation behavioral changes.

Certain parts of Mountain View are served by California Water Services, which has a more advanced bill that promotes conservation.

Recommendation

Redesign the bill to effectively communicate water conservation. Make important information available and easy to read. For illustration, see the example from Boulder, Colorado below:



³ “Can Better Utility Bills Save Money?”, Kevin Bengtson, Home Energy Magazine Online 1997 <http://www.homeenergy.org/archive/hem.dis.anl.gov/eehem/97/970510.html>

Features to note:

1. **Rate table included** to encourage users to reduce demand at higher rate tiers.
2. **Historical comparison** of usage in easy to read chart format. BetterBills.org believes that “comparison taps into people's competitive desire to do better. Comparison may also help people recognize abnormal usage due to water leaks or energy efficiency problems.”¹
3. A **“water budget”** to recommend water use per account type. The City could work with the SCVWD or the EPA Energy Star Billing Program to identify and develop this feature.⁷
4. **Average municipal usage.** Studies in Norway and Finland found that customers who receive neighborhood comparisons with their energy bill reduce their energy use by 5%-10%.⁷ To encourage such water-wise users to stay below average, the chart should include positive reinforcement for good behaviors. If a customer is in the top 10 % of their residential or business category, include a notification that he/she is a heavy user of water.
5. **Adjusting the terminology from “Sewer” to “Wastewater”** educates users that this category includes all indoor wastewater generated.
6. Water conservation tips are included in the bill. There are three approaches:
 - a) According to city staff, electronic version of the bill will be available in 2009. The online bill should prominently feature easy-to-read conservation tips and incentives links.
 - b) Print water conservation Tip-of-the-Month on the bill. For example, remind users in the Fall to turn off their sprinklers after the first winter rain begins.
 - c) Include paper inserts of existing SCVWD conservation outreach brochure.

Other possible features to consider:

7. **Include related CO₂e emissions.** Calculations show that cold water requires .012 kWh per gallon to process in Municipal Operation Center and the Palo Alto Regional Water Quality plant. This number should be verified by professionals and updated once a year.
8. To encourage water-wise users to stay below the average usage, some sort of incentive program should be developed. The incentive program could include small prizes to encourage water-wise users to keep conserving.

Environmental Impact

- Water conservation will reduce GHG emissions; for every gallon of unheated water processed, the City spends .012 kWh of electrical energy. Energy usage further increases for heated water. Encouraging conservation through billing will reduce both cold and hot water use.
- Every drop of water saved reduces the demand on the City’s backup water supply. This will increase our City’s resiliency against future water shortage events.

Fiscal Impact

We estimate that the low-hanging fruit recommendations will require 1-2 months of a Finance Department staff time, primarily to redesign and implement the changes with the City’s water bill provider. The proposed changes could be staggered. Items #1, #5, and #6c could be implemented immediately. Items #2, #3, #4, and #6b should be studied together as they involve more system changes. Item #6a should be included in the project of moving to electronic billing.

Additional computation logic may need to be programmed for showing historical usage and water budget graph. However, once redesigned, there should be little additional overhead needed to

maintain the changes, except for the “Tip of the Month”. We believe that such an investment is worth the conservation impact it will have on the City water usage.

Obstacles

We encourage City Council and the City Manager to require that the Finance Dept, which manages the bill, to adopt a water conservation mindset since the billing department holds a significant and cost-effective lever to encourage responsible water usage in the City.

Partnerships

- Vendor that creates the template for the City’s utility bill.
- Mountain View Finance Department
- Mountain View Municipal Operations, which reads the meter, manages city’s water conservation efforts, and meters the electrical components that processes and distributes water.
- Palo Alto Regional Water Quality plant, which meters the electrical components that processes our wastewater.

Title: Make Residential Greywater Easy To Reuse in Mountain View

Statement of Issue

In Mountain View, 60% of water is used for irrigation, while only 2% is used for drinking. Irrigation water should come from greywater instead of potable water that uses energy to process. Greywater is wastewater that doesn't contain human or organic waste. For example, water from tubs, showers, non-kitchen sinks, and laundry machines.

Permitting codes in Mountain View are prohibitively restrictive and complicated and thus most residents are unable to pursue greywater systems.

A centralized city-wide greywater system would be beneficial and should be pursued where possible. However, this is a solution that will take many years to implement.

We believe there is more immediate and effective potential in residential greywater systems. The City's Building Code needs to be changed to allow the legal installation of greywater systems, perhaps modeled after Arizona's greywater code⁴. These systems can address the immediate need for reduction of water use, and be used to test and monitor for future policy change.

Recommendation

We strongly encourage the City to implement a residential greywater demonstration project.

1. *Short term:* Install simple, low tech, permitted greywater systems for residents to reference. The City and health department can analyze these systems and if approved allow other residents to model their systems after the permitted ones, thus greatly decreasing cost, while maintaining the level of design needed to meet health and safety requirements.
2. *Medium term:* Once a few systems have been tested, these can be used as prototypes and other residents can follow the guidelines of the systems for themselves. If residents follow the guidelines, their system should be considered "permitted" without them having to go through the whole process. Greywater permitting code should be revised to make the process more streamlined. This would expedite the time and money involved for residents to install such systems.
3. *Long term:* All new developments plumbed for greywater stub-outs. City or water district offers rebates for residents who install greywater systems.

For **commercial users** with large landscaping areas, we strongly encourage the City to maximize the use of recycled water that will be made available via the purple pie project slated to complete by the end of 2008.

⁴ Layperson interpretation of the Arizona greywater code: <http://watercasa.org/graywaterguidelines.php>

Environmental Impact

Greywater reuse will lower Greenhouse Gas (GHG) emissions, as it reduces energy needed to treat waste water.

60% of Mountain View water is used for landscaping, 40% is used indoor. Greywater can reduce about 15-50% of outdoor irrigation needs, and negate toilet flushing water usage. When residents begin to use greywater they typically analyze the products and cleaners they are using and chose more environmentally friendly products since it will end up in their own back yards. This improves the health of rivers, health of receiving waters for sewer plant effluent, as well as health of residents.

Fiscal Impact

- Costs to homeowners.
- Cost for education and creating simple brochures/pamphlets for people.
- Water- savings to homeowners.
- Savings to water district.
- Savings in cost for sewer treatment.

Obstacles

The major obstacle is the rigid state plumbing code. This obstacle could be greatly diminished if a city was enthusiastic about supporting greywater reuse, the planning department was educated on a safe and effective code, and then the code was interpreted in a friendly, flexible, fashion.

In addition, other common barriers to greywater systems are:

- Confusion within City Staff as to whether such systems are even allowed by code.
- Concerns about health hazard.
- Lengthy permitting process is a major deterrent for homeowners.
- The CA plumbing code drives up the cost of systems and makes it cost prohibitive for most home owners.
- Education of inspectors and building department: Most people within the establishment are unfamiliar with greywater systems. With proper education they could help residents build safe and effective systems that are not costly.
- Public Education: Because of the code issues with greywater, and the vast amounts of misinformation, many people lack education on how to safely and efficiently reuse their greywater.
- Differentiation and separation of greywater from regular water pipes.
- Concern about over fertilization with nitrate residue from soap.

Partnerships

- Greywater Guerrillas: <http://www.greywaterguerrillas.com>
- Water District
- Building permitting department
- Health Department
- Greywater Alliance (a group of East Bay greywater groups)

Title: Add Staff to City Water Conservation Team

Statement of Issue

Currently the City has an 80%-time staff member for the role of “Water Conservation Coordinator”. This staff member has a water technology background and is in charge of outreach and ordinance enforcement. We believe water conservation should be viewed strategically, not just technically or tactically within the City’s organization structure.

Recommendation

Since Mountain View runs its own water utility, we recommend that the City employ at least two full-time water conservation staff members who are trained in community outreach approaches, and water conservation science. We also recommend that at least one of these staff member possess strategic management skills so as to coordinate a long-term strategic plan for water conservation.

During our tenure, we encountered both first hand and anecdotal evidence of resistance towards water conservation efforts in certain City departments. We would like City Council and the City Manager to require that all City departments adopt the water conservation mindset. For example, landscaping department should use drought-tolerant and native plants. The water billing department should investigate how they can leverage their function to encourage water conservation. By leveraging the innovation of individual employees and departments, we believe that innovative solutions to water conservation and water consumption will arise. We urge the City Council to not underestimate the contribution that City Staff can have on influencing over the direction of water usage in the City. The successful implementation of many of our recommendations will depend on how much Staff believes in the importance of water conservation.

This is a short term (1-12 mos.) to medium term (1-3 yrs.) solution.

Environmental Impact

The environmental impact of adopting a water conservation mindset and increasing water conservation staffing is very similar to that of increase water conservation. See the “Adopt Water Conservation Measures” recommendation for details.

Fiscal Impact

Between \$50,000 and \$120,000 for each additional staff member.

Requiring a water conservation mindset will cost the City nothing. In fact, it may even result in cost savings and GHG inventory reduction, as innovative approaches are percolated up the ranks of city employees, and implemented.

Obstacles

We are well aware of budget constraints making creating additional staff position a challenge.

To change the mindset means changing status quo. Cultural change is frequently resisted, unless there is mandate or leadership by example from top down.

Senior managers must first adopt a water conservation mindset in order to empower lower level employees to do the same.

Partnerships

City Council, along with City Manager and senior management from key departments.

Title: Replace Paved Surfaces with Permeable Surfaces

Statement of Issue

Storm drain water is often more toxic than sewage. And unlike sewage, which is extensively treated before being returned to the bay, urban surface runoff entering the storm drain receives no treatment before being pumped directly to the bay. Storm drains carry more than rain. Water from over irrigation, car washing, and power washing are all sources of storm drain water.

Recommendation

To reduce toxins and protect our bay, we propose a “Permeable not Pavement” program as a *starting point* to prevent urban runoff.

Encourage residents and contractors to use permeable surfaces such as paving stones for residential driveways, patios, walkways, parking lots, and other paved surfaces. Permeable surfaces allow water to pass through to soil level and prevent a significant portion of urban water runoff. They can be easier, less expensive and less resource intensive to maintain, unlike concrete and asphalt, which require demolition to repair or replace.

This program would consist of the following components:

1. *Lead by Example*— Particularly for future projects, use permeable surfaces instead of concrete or asphalt on public pedestrian pathways, City-owned driveways, etc.
2. *Educate*—Provide information for residents and contractors online, over a hotline and in booklets that might be handed out at public events such as local farmers markets, etc. A landscaping book of tips may include information on the benefits of paving stones, starter tips, and a list of certified contractors.

This is a short term (1-12 mos.) to medium term (1-3 yrs.) solution.

Environmental Impact

“Permeable not Pavement” could transform our City into a water-wise, yet aesthetically attractive destination. More specifically, it could positively impact:

- *Water Table*—For every square foot of concrete or asphalt converted to pavers, two to four times as much rain water is returned to the water table, filtered naturally, and not pumped out to the bay.
- *Carbon Emissions*—Potential to prevent 293.02 metric tons of CO₂ emitted annually to pump water.⁵
- *Health of the Bay*—Fewer toxins reach the bay, preventing further eutrofication and other forms of environmental damage.

⁵ Potential GHG emissions savings = 1.4M kWh * .459 lbs CO₂e per kWh

Fiscal Impact

Residents could save in maintenance of their driveways and additionally add value to their homes. *In energy costs alone*, the City has the potential to save \$180,000 annually.⁶ Investments in permeable surfaces will partially offset future investments needed to expand storm drains to handle the expected increase in wastewater runoff from population growth and increased flooding.

Obstacles

There have been several concerns with regards to permeable surfaces, some of which are addressed below:

- Permeable surfaces are hard for people with disabilities to navigate. Several kinds of interlocking pavers and permeable concrete offer a smooth surface that is no different than that offered by other forms of paving.
- Weeds grow through the gaps in pavers. When installed correctly with sand, aggregate, and permeable linings, plant growth is prevented while water is allowed to pass through. This does underscore the importance of proper installation
- Permeable surfaces cost more than concrete, but pavers are more easily maintained. Should the driveway need repair, pavers can be removed and reassembled. Concrete slabs, on the other hand, require demo and reinstallation. Paver installations can be 10 - 20% more expensive.
- Is it better to divert storm water or allow it into the soil? Soil acts as a natural filter. Microorganisms in the soil are able to breakdown compounds in small amounts.

Partnerships

- Santa Clara Valley Urban Runoff Pollution Prevention Program: <http://www.scvurppp-w2k.com/Default.htm>
- Santa Clara Valley Water District: <http://www.valleywater.org/>

⁶ Potential Energy Savings for city = 1.4M kWh * \$.14 kWh – 10% min

Title: Recruit and Train Local Water Conservation Advocates

Statement of Issue

Many people want to take action, but have no means to do so. In fact, the City has several water ordinances, which are enforced only on a complaint basis, including:

1. Hoses must have auto-shutoff valves
2. Prevent wasteful potable water runoff
3. Fix leaks and prevent over-watering
4. Water may be served only by request in restaurants
5. Single-pass cooling systems (“swamp coolers”) are not allowed on new construction

Many people do not know these ordinances exist. With the exception of #4, we recommend a more positive application of these ordinances. People in the community who see opportunities do not know what to do, have no constructive advice to provide, and in worst cases, do not know who to call for help.

Should they reach the proper person, that person has only 80% of their time to spend on water conversation issues—a true bottleneck in the system.

Recommendation

Create a volunteer Conservation Advocate program. To better enable community to take action and to relieve the bottleneck burden on City Staff, we propose this new volunteer program that empowers residents passionate about climate change to help others in their community.

As envisioned, the Conservation Advocates would:

- Receive special training and certification on water and conservation issues
- Perform audits as requested by members of their community
- Host informational session at their home or speaking venues to evangelize water conservation
- Have the authority to write citations for water pollution and other violations
- Be the ‘Go to’ person in their community when it comes to water conservation issues
- Be trained on the use of available water use and pollution hotlines

To launch this recommendation, we recommend setting up a volunteer committee to organize hotlines, create training curriculum for conservation advocates, and supplement coordinate other ordinance strengthening activities. We also recommend a pilot program to work out kinks in the system.

This is a medium term (1-3 yrs.) to long term solution.

Environmental Impact

The strength of this recommendation lies in how it engages the community to take on climate change. If we were able to achieve a 10% reduction in consumption as a result of this program, we would conserve 456 million gallons of water annually. The program would also prevent the emission of 11,600 metric tons of CO₂ annually.⁷

Fiscal Impact

There would be minor staffing costs to put this program in place and subsequently coordinate and train the volunteers. The City's water conservation efforts are increased at low cost by the use of volunteers. Annual cost: VL (under \$10,000)

The value of the water saved is unknown, but possibly large.

Obstacles

Starting up a conservation advocate training program will take some effort. We propose running volunteer neighborhood pilot programs.

Partnerships

- Santa Clara Valley Water District: <http://www.valleywater.org/>
- US EPA
- Sierra Club, Loma Prieta Chapter: <http://lomaprieta.sierraclub.org/conservation.asp>

⁷ Potential carbon emissions savings = (.456B gal * .012 kWh/gal * .489 lbs CO₂ per kWh) / 2205 lb per metric ton

Title: Install CIMIS Weather Station and Other Feedback Mechanisms

Statement of Issue

Residents simply do not know how much water they are using, or, if they are using too much. The only feedback they are provided is a bill once every two months, at which point, it is too late to make any changes. Leaks are undetectable, even though people drink the same amount of water that is lost through leaks every year. More timely feedback on water usage would help many residents spot leaks, provide information about other wasteful activities, and allow them to be more efficient with their water usage.

Irrigation is another activity that lacks proper feedback. Residents who are unaware of how much water they need to keep their gardens healthy frequently overwater. The City of Mountain View and Mountain View School District oversee large pieces of property that require irrigation and rely on the intuition of groundskeepers. Overwatering is common and water is simply wasted.

Electricity and gas companies around the country are upgrading their infrastructure to provide real-time feedback to their customers. Water is a resource that needs similar feedback.

Recommendation

This recommendation focuses on getting residents and city departments the feedback they need to use water in the most efficient way possible. We recommend a two-prong approach:

1. Work with the SCVWD to install a CIMIS weather station on City property.

The California Irrigation Management Information System (CIMIS) was developed in 1982 by the California Department of Water Resource and the University of California at Davis to assist California's irrigators in managing their water resources efficiently. The City of Mountain View, unlike other neighboring cities, has no such station. However, the SCVWD has offered to provide such a station at no expense.

The climate gradient suggests that two stations would be appropriate; one for the marine-influenced Bay Area, and one in the vicinity of Cuesta Park for the southern part of the City. SCVWD would gladly supply and maintain these stations, as well as supply soil moisture monitoring equipment and irrigation system testing.

These stations provide feedback and forecasting data to devices used to make irrigation decisions. Parks Department Officials and residents would both have access to this data. Enabled irrigation devices would read data and irrigate appropriately based on weather, soil moisture, temperature, and other collected data.

2. Complete retrofit of all 16,200 water meters in Mountain View with network-enabled meters.

After these recommendations are implemented, the City should provide each household with a simple device that provides real-time feedback on water consumption in the home, and provide information on how to obtain more sophisticated devices that will tap into CIMIS data and meter data for appropriate irrigation strategies and detailed usage trends.

Studies have shown that by simply closing the feedback loop on daily water use, residents conserve an average of 10% of their typical water usage.

Environmental Impact

There will be no negative environmental impacts resulting from the installation CIMIS stations. Assume a 10% decrease in residential water usage translates to 255 million gallons of water saved and 1,136 metric tons CO₂e saved annually.

Fiscal Impact

This technology and service will be free of charge to the City of Mountain View. The County will install and pay for it.

Obstacles

Although some sites for the installation of the stations have been identified, one obstacle could be that if the sites are not appropriate for the collection of data, relocating the station would require some flexibility by the City.

Partnerships

- The City of Mountain View and the Santa Clara Valley Water District will work in partnership.
- The California Irrigation Management Information System (CIMIS), <http://wwwcimis.water.ca.gov/cimis/welcome.jsp>

Title: Implement Cost Sharing Agreement with Santa Clara Valley Water District for Water Conservation Incentives

Statement of Issue

Old appliances and irrigation systems are vastly inefficient. New technology exists to improve efficiency, but residents either do not know about it or do not have the incentive to make changes that would save resources for themselves and the City.

Recommendation

Create a Cost Sharing Agreement (CSA) with the Santa Clara Valley Water District (SCVWD) and the City of Mountain View. CSAs offer incentives to residents to replace inefficient technologies with new, modern, efficient ones. The SCVWD would match any incentives offered by Mountain View with mutual various Santa Clara County cities such as Palo Alto, Santa Clara, San Jose, and Morgan Hill that have taken advantage of this opportunity to decrease their water use.

Under its Water Use Efficiency (WUE) unit, the SCVWD provides financial assistance to citizens and other entities for converting to more efficient appliances and systems. A CSA covers areas such as waste-water reduction, low flow toilets and urinals, high efficiency clothes washers for residential and commercial applications, and irrigation systems. In addition, the program may also cover areas such as community outreach, water-use surveys and educational materials.

The advantages of this type of cost sharing go beyond the simple financial arrangements. The City can learn from the experience of other participants, decrease its water usage, and make its citizens more aware of the environmental necessity of conserving resources.

Environmental Impact

By providing more efficient water usage technology, the City will be able to encourage its citizens, as well as private and public sector entities, to do the “right thing”.

Fiscal Impact

The City will need to allocate the funds needed for the CSA. However, on the plus side of the ledger it will be able to reduce its water usage and may be able to increase its tax base by allowing more residential and commercial projects without having to ask for extra allocation of water.

Obstacles

The two main obstacles are perceived to be:

- The City needs to allocate the funds for the CSA.
- The development of a comprehensive water conservation program at the City.

Partnerships

Santa Clara Valley Water District

Appendix: Citations, Web Sites, and Contacts

Recommendation 3-1:

Citations

1. California Climate Change Portal, FAQ: What Are The Potential Impacts For California's Water?
<http://www.climatechange.ca.gov/publications/faqs.html>
2. From Watts to Water, June 2007 (Santa Clara Valley Water District)
3. Improving Water Conservation: Opportunities for San Francisco Bay Area Water Supply Agencies, June 2007 (Sierra Club Loma Prieta Chapter's Water Sustainability Campaign report)
4. List of water conservation programs available to Mountain View Residents.
<http://www.ci.mtnview.ca.us/news/displaynews.asp?NewsID=154&TargetID=1#10%%20reduction>
5. SCVWD Baseline Study, Survey of Commercial, Inst, Industrial Users, Feb 2008

Contact Information

Please contact the water agencies listed in Partnership section for more information on existing conservation programs.

Recommendation 3-2:

Citations

1. "Can Better Utility Bills Save Money?"; Kevin Bengtson, Home Energy Magazine Online 1997
<http://www.homeenergy.org/archive/hem.dis.anl.gov/eehem/97/970510.html>
2. Better Bills: Promoting Conservation Through Bill Design
<http://www.betterbills.org/>
3. Sample Boulder, Colorado water bill:
<http://one.valeski.org/2007/06/efficient-water-use.html>
4. Sample Kauai, Hawaii water bill:
<http://www.kauaiwater.org/waterbill.jpg>
5. Mountain View rate table
http://www.mountainview.gov/city_hall/admin_services/utility_billing/utility.asp
6. NRDC Water Glossary
<http://www.nrdc.org/water/conservation/draw/glossary.asp>
7. EPA Energy Star Billing
<http://www.acca-ncc.org/enrgystr.htm>

Recommendation 3-3:

Resources

- Introduction to Greywater: <http://www.lowimpactliving.com/blog/2007/11/13/graywater-recycling-systems/>
- For specific code recommendations see Art Ludwig's greywater policy center or his testimony to New Mexico before they changed their code. Oasis Design consulting services to help define ordinances:
<http://oasisdesign.net/greywater/law/index.htm>
<http://oasisdesign.net/greywater/law/improve/nmtestimony.htm>

Web Sites

- <http://www.greywater.net>
- <http://www.watercasa.org> (Arizona's water conservation group)
- <http://www.friendsoftheriver.org/>

Recommendation 3-5:

Citations

1. Protect Water Resources with Higher Density Development (EPA)
2. Preliminary Toxicity Identification Evaluation (TIE) of Dry-Weather Urban Discharge
3. California Climate Change Portal, FAQ: What Are The Potential Impacts For California's Water?
<http://www.climatechange.ca.gov/publications/faqs.html>

Additional notes

Storm drain water carries significant amounts of toxins, such as copper, nickel, mercury, pesticides, PCBs, and dioxins. All of these pollutants enter the bay through urban surface runoff. The City also spends close to \$200,000 annually on energy required to pump water to the bay.

The large volume of urban surface runoff is a result of extensively paved urban areas. Impermeable surfaces, such as concrete and asphalt cover up to 40-80% of residential areas. Impermeable surfaces divert up to 55% of water to storm drains. Only 15% reaches soil levels; the rest evaporates. As a comparison, natural ground cover surfaces divert only 10% of water to storm drains.

Santa Clara Valley has been addressing runoff toxicity at a municipal scale through the Urban Runoff Pollution Prevention Program. This recommendation intends to support those efforts with a residential program aimed at preventing the amount of runoff.

Recommendation 3-6:

Citations

1. Utah Clean Energy Efficiency Program: <http://www.utahcleanenergy.org/EEProgram.htm>
2. Community Energy Challenge: <http://www.epa.gov/NE/eco/energy/energy-challenge.html>
3. US EPA Water Sense: <http://www.epa.gov/WaterSense/>
4. Missouri Department of Natural Resources, Water Quality Monitoring Workshops:
<http://www.dnr.mo.gov/env/wpp/vmqmp/vwqmp-workshops.htm>

Recommendation 3-7:

Reference

- <http://www.valleywater.org/>
- http://www.valleywater.org/Water/Water_in_agriculture/index.shtm
- <http://www.cimis.water.ca.gov/cimis/welcome.jsp>

Contact Information

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5750 Almaden Expressway
San José, CA 95118-3614

P.O. Box 20670
San José, CA 95160-0670
408 265 2607, x2969
Fax 408 979 5639
rsiegfried@valleywater.org

Recommendation 3-8:

Citations

SCVWD annual reports 2006 and 2007
<http://www.valleywater.org/pdf/SCVWD20annual20LR.pdf>

Web Sites

<http://www.valleywater.org>

Contact Information

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Chapter 4. Waste, Waste Reduction, and Recycling

Introduction

Trash is not a sexy topic. It does not conjure up visions of Grand Boulevards or sparkling arrays of photovoltaic panels. You will find very few citizens of Mountain View sitting in their favorite coffee shop debating biodegradable garbage bags or extolling the virtues of vermiculture while sipping free trade coffee from porcelain mugs. However, as described in the June 2008 report, “Stop Trashing the Climate”, waste directly impacts climate change in three core areas: lifecycle impacts, landfill impacts and waste incineration impacts.¹

The lifecycle impact of waste disposal has the most significant effect on climate change. Every time we destroy or bury a product in our waste system, finite natural resources are extracted to replace the item, precious energy is expended to produce a new item and pollution-causing transportation is used to convey the new product to the marketplace. In the manufacture of office paper, for example, production and disposal of one ton of virgin paper from tree harvest releases almost 20,000 lbs. of CO₂ into the atmosphere. When the same ton of office paper is produced using recycled paper materials, the CO₂ emission is reduced to 3,600 lbs., a significant reduction. This does not even take into account the carbon dioxide which will continue to be absorbed by the trees which do not need to be cut down, or the fact that paper can be recycled multiple times.²

In its 2005 inventory of U.S. Greenhouse Gases (GHG), the U.S. Environmental Protection Agency listed landfills as the fifth largest source of all greenhouse gases.³ Landfills release considerable amounts of both carbon dioxide and methane gas into the atmosphere, particularly in the first few years after disposal. Methane gas is 25 times more potent than carbon dioxide when calculated on a 100-year time horizon, but in the first 20 years, it can be up to 72 times more potent, which corresponds to much more serious global warming implications. Based on this analysis, landfill accounts for 5.2% of all U.S. GHG emissions.⁴ Current methane capture systems have not yet proven to be effective; many having recovery rates as low as 20% over the lifetime of the landfill.⁵ Thus, there is incentive to reduce the debris going to landfill, especially biodegradable materials which could be much more effectively used to enhance our soil productivity rather than contribute to global warming.

The final factor in the relationship of waste disposal to GHG production is the use of incineration. Since Mountain View does not currently use incinerators as part of our waste management system, they will not be addressed in this report.

What makes waste prevention, re-use, recycling, and composting so attractive is that they are relatively low-cost methods to affect GHG emissions in a short amount of time. There are strategies

¹ “Stop Trashing the Climate”, Brenda Platt, Institute for Local Self-Reliance, David Ciplet, Global Anti-Incinerator Alliance, Kate M. Bailey and Eric Lombardi, Eco-Cycle, June 2008

² The Environmental Defense Fund, “Paper Task Force Recommendations for Purchasing and Using Environmentally Friendly paper” (1995), p. 47. <http://www.edf.org>

³ U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005, Washington D.C., April 15, 2007, Table ES-2.

⁴ “Stop Trashing the Climate” p.27

⁵ Peter Anderson, Center for a Competitive Waste Industry, “Comments to the California Air Resources Board on Landfills’ Responsibility for Anthropogenic Greenhouse Gases and the Appropriate Response to Those Facts”, 2007.

that our local businesses, government, families, individuals, children, renters, and homeowners can employ today to set us on the path towards reducing waste and making an impact on climate change.

Currently, there is a plethora of pending actions regarding waste in the California legislature. Senate Bill 1625 will expand the current Bottle Bill, which now covers only beverage containers, to also include plastic food, cosmetic and cleaning-product bottles. Assembly Bill 2058 will expand the current plastic bag recycling laws. Assembly Bill 2505 will help prevent human and environmental exposure to toxins, as well as encourage the recycling of consumer packaging by phasing out the use of toxic, non-recyclable PVC plastic packaging.⁶ However, there is much that can be done on the local level.

The following recommendations range from simple suggestions, such as providing alternatives to the use of single-use shopping bags, to broader programs, such as the diversion of organic waste from landfill. We would like our City to set policies that encourage re-use and recycling rather than extraction of natural resources to make new products. We want to reach out to the diverse population of our communities; our young people, local businesses, and the multi-cultural residents to teach them why it is important to recycle, and make it easy for them to do so. We want people to think twice before they take that plastic bag or purchase the latest digital television. The overarching goal is to dramatically reduce the amount of un-reclaimed waste generated by our community.

Summary of Recommendations

1. Create a Comprehensive Zero Waste Action Plan
2. Increase Diversion from Landfill by Increasing Utilization of the SMaRT Station
3. Divert Organic Waste from Landfill
4. Ban Polystyrene Take-Out Food Containers
5. Educate the Public on Recyclable Material Processing and Eco-Conscious Purchasing
6. Discourage Single-Use Bags within the City
7. Increase Recycling and Improve Waste Management in Multi-Family Dwellings
8. Provide Accessible Recycling Bins in Public Places and Businesses
9. Partner with Local School Districts to Create Waste Reduction and Recycling Programs in the Schools, Including a Zero Waste Lunch Program
10. Provide Resources to Promote Free-Cycle and Re-Use Networks

Working Group

Janis Zinn (Chair)
Bruce England
Tracy Gibbons
Jane Horton
Beth Mezas
David Oliver
Esperanza Sanz-Escudero

⁶ Californians Against Waste, Sacramento CA, www.cawrecycles.org

Title: Create a Comprehensive Zero Waste Action Plan

Statement of Issue

As stated by the authors of the report *Stop Trashing the Climate*, “A zero waste approach is one of the fastest, cheapest, and most effective strategies we can use to protect the climate and the environment.”⁷ Of all of the recommendations put forth by the Waste, Waste Reduction and Recycling Working Group, this one is the most essential. The City must shift the way it deals with waste and develop strategies to drastically reduce the amount of debris going to landfill.

The goal of Zero Waste is to maximize recycling and re-use of products thereby avoiding wasting our natural resources in creating products which will end up in the waste stream. It encourages the design of products which have the potential to be repaired, reused or recycled. When materials can be re-used and recycled it also eliminates the discharge of potentially hazardous substances to our land, air and water. A Zero Waste plan promotes the investment of public money for waste reduction and recycling programs, such as composting of organic discards, which in turn will avoid methane gas emissions created if these products were sent to landfill. The ultimate vision is to design “waste” out of the system. This includes support for organizations such as the California Product Stewardship Council, who advocate producer responsibility for more thoughtful product design and disposal.

Recommendation

Mountain View should hire a qualified consultant to develop a comprehensive long term Zero Waste Plan for the City. The plan will serve as a map for a methodology to incorporate zero waste policies into long range planning. Policies must include a budget for waste reduction programs, incentives to residents and businesses to judiciously use, reuse and re-cycle materials. This includes incentives for local businesses to produce less toxic, more durable, recyclable products. The plan should encompass a detailed waste characterization study and identify opportunities for areas of development and improvement to reach the diversion goal.

The goal of the Zero Waste plan should be a plan for phased reduction of waste going to landfill. The long term goal of the plan is to attain a minimum of 90% diversion rate by the year 2021. 2021 is the year in which the current contracts terminate for processing of recyclables and disposal of the residual waste. We recommend creating a plan similar to the “City of Palo Alto Zero Waste Operational Plan of June 2007.”⁸ Creation of the plan is a short term project. Implementation of the solution is on-going, affecting City operations, residents and businesses from the point of adoption into the foreseeable future.

Environmental Impact

A Zero Waste plan has far reaching potential to decrease GHG production by diverting waste from landfill, thus reducing the methane and carbon dioxide emitted into the atmosphere when landfill decays. Further reduction is realized when products are recycled or re-used rather than being created by extraction of natural resources, manufactured using energy, and transported vast distances to the marketplace.

⁷ Platt, Brenda, Ciplet, David, Bailey, Kate M., Lombardi, Eric, “Stop Trashing the Climate”, Institute for Local Self-Reliance, June 2008

⁸ City of Palo Alto, “Zero Waste Operational Plan”, June 2007 prepared by HDR Brown, Vence & Assoc, Inc., Cascadia Consulting Group Inc. and Gary Liss & Assoc.

Fiscal Impact and Synergies

The estimated cost to hire a consultant to prepare a Zero Waste Plan is about \$40,000. The estimated cost to begin to implement the plan in the short term would be \$500,000 per year, with long term costs well over \$1,000,000, depending on the strategies adopted. These costs would support increased facilities for broader recycling, increased labor for collection and processing, outreach materials, increased staff and resources, collection infrastructure, increased processing costs, grants or loans to attract reuse and recycling businesses.

There are also potential benefits, including less frequent pick up of trash as less trash is generated, greater revenue from the sale of marketable recyclable materials, decreased fees for use of landfill (though current contracts will make this difficult in the short term), and fines from those who do not comply if re-use and recycling are made mandatory.

Synergies include a close alliance with the recommendations of other working groups, such as Community Outreach and Green Business to promote recycle and waste education, as well as the Built Environment in regards to the Construction and Demolition Debris Policy.

Obstacles

There are no significant obstacles to creating the initial plan. Successful implementation of the plan however will require financial commitment from the City, and modest lifestyle changes by the public, such as a willingness to collect compostable organic waste in their homes, or effort by businesses to separate recyclables from their trash.

Partnerships

Partnerships with other local municipalities, particularly Palo Alto and Sunnyvale, who share the Sunnyvale Materials Recovery and Transfer (SMaRT) Station with Mountain View, are critical to the success of an efficient waste plan. It is possible that expanding partnerships to other cities in the region would be advantageous to make full use of local facilities and reduce costs.

Title: Increase Diversion from Landfill by Increasing Utilization of the SMaRT Station

Statement of Issue

The SMaRT Station, opened in 1993, is the hub of waste-collection activity for the City of Mountain View. The station receives, sorts, and prepares for sale recyclable materials collected through curbside pickup programs. In addition, the station receives unsorted garbage from Mountain View, Sunnyvale, and Palo Alto, and recovers recyclable material from this garbage. It also receives, processes, and ships curbside-collected yard trimmings to composting facilities. Finally, it serves as a recycling center for residents to drop off recyclables for cash, electronic waste, and other forms of household hazardous waste.

The total amount of debris delivered to the SMaRT Station by Mountain View is close to 85,000 tons per year. Of this, almost 12,000 tons are pre-sorted recyclables (from curbside pickup) and 7,600 tons are yard trimmings. The remaining 65,000 tons is considered municipal solid waste which must be processed, with a goal to send as little as possible to landfill.⁹ The total diversion rate is based on the tonnage amount land filled in one calendar year compared to a base year and as adjusted for economic growth factors. The diversion rate for Mountain View, that is material sold to recyclers (as in paper, glass, metal) or diverted for composting (as in green yard waste) was 72% for 2006, the most current year for which data has been calculated¹⁰. Recently installed equipment at the SMaRT Station is expected to increase the diversion rate by more efficient extraction of recyclable materials from mixed waste. This is expected to increase this portion of diversion from the current 18% to 25%, thus increasing the overall diversion rate.

The City has recently approved a Construction and Demolition debris ordinance which will improve diversion rates, though stricter regulations should be encouraged. Future improvements can also be obtained with the development of programs to compost organic waste, increase recycling participation by commercial interests in the city, and multi-family housing units.

Since its opening, the SMaRT Station has had excess capacity and is therefore an underutilized resource in the region. With a permitted capacity of 1500 tons per day, the facility operates at an average of 1100 tons per day, occasionally peaking at 1200. There has been no significant fluctuation in these rates since 2001.¹¹

Until now it has been more cost effective for cities to send greater amounts of waste to landfill than to spend time and money on greater debris separation and processing. Current “put or pay” contracts with the landfill operators set minimum fees to be paid by the City, even when the amount of garbage sent to landfill decreases. The impact of such financially-driven decisions, however, is that waste that could be diverted is ending up in landfills unnecessarily. Spreading the operating costs beyond the current partner cities when there is excess capacity that could be utilized would make the best use of the facility and the opportunity to divert the maximum amount of waste from landfill.

⁹ “SMaRT Partnerships” Report to the Community by The SMaRT Station Cooperative Venture 2006-2007

¹⁰ Lori Topley, Solid Waste Manager, City of Mountain View

¹¹ Information about the SMaRT Station and its operation was obtained during a tour of the facility by the WWRR sub-group on 5/2/08 and in a telephone conversation with Mark Bowers, Manager, on 6/5/08.

Recommendation

Increase waste diversion by increasing utilization of the SMaRT Station capacity:

- In collaboration with the partner cities (Palo Alto and Sunnyvale) and the management of the SMaRT Station, explore an initiative to identify and actively seek additional users of the facility.
- Work with NASA/Moffett Field to become a partner in use of the SMaRT Station.
- Pass more stringent Construction and Demolition debris ordinances which will increase the required diversion rate beyond the current 50%.

Environmental Impact

Increased utilization of the SMaRT Station by other jurisdictions will result in the diversion of waste that is currently being taken to landfills¹². This will reduce the amount of GHG generated by landfill decay, new product production, and transportation of goods and waste.

Fiscal Impact

- Since the operating costs of SMaRT are apportioned among the users/partners, the City of Mountain View could expect a reduction in the fees it pays.
- Mounting an initiative to study the desirability and feasibility of seeking additional users and the subsequent recruiting and negotiation processes will require staff resources, possibly for an extended period of time. This may necessitate hiring additional staff.

Obstacles

- The primary obstacles are political. Successfully recruiting additional users of SMaRT requires engagement with other jurisdictions (possibly including the federal government), Councils, City departments, and so on.
- Contracts between municipalities and their haulers are typically long term and may have automatic renewal and “put or pay” clauses in them.
- The state’s requirements for waste diversion (50%) are no longer an incentive for jurisdictions to utilize the services of the SMaRT Station. Stricter state mandated diversion rates will influence future City actions. A City may set higher diversion rates, but they could also influence legislation at a state level.

Partnerships

- City of Palo Alto
- City of Sunnyvale
- Bay Counties Waste Services
- Moffett Field/NASA

¹² These are the potential benefits of successfully identifying and securing agreements with other jurisdictions to use SMaRT. These recommendations address a collaborative process with the other SMaRT partner cities and will not in themselves result in direct environmental or fiscal benefits and may, in fact, incur costs. It is known that because of the typical length of contracts between jurisdictions, haulers, and depositories, as well as these and other associated political considerations, such an initiative is a complex undertaking.

Title: Divert Organic Waste from Landfill

Statement of Issue

The diversion or recovery of organic waste from landfills to a Regional Composting facility can accomplish two important goals. This change in waste collection will reduce the amount of methane gas generated by anaerobic decomposition in the landfill and it will reduce the amount of waste going to the landfill. In addition, the methane generated by organic material decomposition may be re-claimed and used as an energy source.

Recommendation

1. Begin a pilot program for curbside pick-up of organic waste from residential customers. Divert food scraps, compostable paper, untreated wood and other organic compostables. The City can investigate use of the SMaRT Station facility to support the collection of the diverted material. We recommend adding food scraps and other compostables to the single-family yard trimmings collection program.
2. Provide information to local restaurants and caterers on “Good Samaritan” laws regarding liability which will encourage donation of edible food to food banks and hunger programs when possible.
3. Create composting workshops to train a new level of local expertise in composting, tailored to the commercial/industrial sector. Workshops can be targeted to landscapers, restaurant operators, caterers, and others. Include grass-cycling¹³ education and on-site composting programs for industrial parks, businesses and institutions.
4. Begin collection of yard trimmings from multi-family dwellings.
5. Partner with organics processors located in the region for sale of composted organic waste as a soil enhancement product.
6. Implement a mandatory organics/yard trimming recycling ordinances and addition of organic materials such as food waste to the commercial waste collection program to increase diversion. Begin with voluntary participation and phase in required participation.
7. Increase availability of used cooking grease for use by residents as bio-fuel.

Environmental Impact

According to the United States Environmental Protection Agency (U.S. EPA), landfills, which create landfill gas consisting principally of carbon dioxide and methane, are a large human-created source of methane in the United States, accounting for 25 percent of the country’s methane emissions. Methane has a more powerful greenhouse effect than carbon dioxide. Over a 100-year period, one ton of methane is estimated by the scientific community to make the same contribution to warming as 25

¹³ For example, returning clippings to the lawn when mowing can increase carbon sequestration in turf by as much as 59%.

tons of carbon dioxide. Therefore, by reducing the methane emissions of landfills, through waste prevention and recycling, the City can have a real impact on its overall greenhouse gas emissions.¹⁴ Methane is generated in landfills and open dumps as organic waste decomposes under anaerobic (without oxygen) conditions. The amount of methane created depends on the quantity and moisture content of the waste and the design and management practices at the site.¹⁵

Fiscal Impact

- One-half to one full time employee for organics technical assistance and workshop coordination
- Additional containers for organic waste, though this could potentially be included in current green yard waste containers for residential customers
- May result in increased pick-up costs, if organic waste is included with green waste, dependent on waste hauler contract
- Long term cost benefit if less waste is taken to landfill, and instead it is composted into soil enhancement material and sold for agricultural use

Obstacles

- The existing contract with Foothill Disposal does not provide for the collection of organic waste. The contract is scheduled to expire in April 2013. Revision of the contract may be possible with additional cost implications.
- Education and cooperation of residents and businesses is essential to the success of the program. See Chapter 11: Community Outreach and Green Business.

Partnerships

- Foothill Disposal—current waste hauler
- Google—example of corporate composting program
- California Integrated Waste Management Board
- California Environmental Protection Agency and the CA Climate Action Team
- The Center for Environmental Economic Development (CEED) in Humboldt
- The Organics Recycling Board under development by CEED

Resources for composting of organic material

- Grover Landscaping
- Jepson Prairie Organics
- Newby Island Compost
- Pacheco Pass Landfill
- West Contra Costa Sanitary Landfill Compost
- Z-Best Compost

¹⁴ City of Palo Alto, Zero Waste Operational Plan, June 2007, pg 50

¹⁵ <http://www.epa.gov/methane/sources.html>

Title: Ban Polystyrene Take-Out Food Containers

Statement of Issue

The City of Mountain View allows polystyrene take-out food containers; Mountain View should require that take-out containers be biodegradable and/or recyclable.

No municipality in the State of California accepts polystyrene take-out food containers for recycling; polystyrene disposed of in Mountain View ends up in the landfill after it is transported to the SMaRT Station. Polystyrene is designed for single-use and is the most difficult common plastic to recycle.¹⁶

Polystyrene is made from a bevy of petroleum-derived chemicals, many of which pose significant health risks to humans. Polystyrene is produced from styrene, a known human neurotoxin and a known animal carcinogen. Styrene has been shown to leech out from expanded polystyrene packaging (also known as EPS, which is the combination of polystyrene and a gaseous blowing agent, most commonly used in food packaging) under a variety of circumstances, most notably when in contact with an acidic solution or when food containing vitamin A is heated in a microwave.¹⁷

Recommendation

Ban the use of polystyrene take-out food containers in the City of Mountain View. Containers should be replaced by compostable, recyclable materials such as those made from bagasse (residual sugar cane pulp). There is statewide and nationwide precedent for banning polystyrene and requiring food-service take-out containers to be biodegradable and/or recyclable. (See appendix)

Mountain View should follow a similar process as has been done by other cities and counties by proposing the ban; scheduling public input; devising a timeline; determining if there will be assistance to small-businesses; and working with local suppliers to help the transition to become polystyrene-free.

In addition, the council should go on record with support of Assembly Bill 904 which requires take-out food distributors to utilize packaging that is compatible with the recycling and composting options available. This bill also creates incentives for packaging manufacturers to design for the environment and supports the development of infrastructure and markets for the recycling of their products.¹⁸

Environmental Impact

A California Integrated Waste Management Board (CIWMB) Report finds that “in the categories of energy consumption, greenhouse gas effect, and total environmental effect, polystyrene’s environmental impacts were second highest, behind aluminum.”¹⁹

Polystyrene containers are one of the most common forms of marine debris. Local governments pay for storm drain clean-up costs due to polystyrene litter. Polystyrene also breaks up into small pieces

¹⁶ http://www.cawrecycles.org/issues/eps_environmental_effects

¹⁷ http://www.cawrecycles.org/issues/eps_health

¹⁸ http://www.cawrecycles.org/issues/current_legislation/ab904_07

¹⁹ <http://en.wikipedia.org/wiki/Polystyrene>

and can be ingested by marine or bird life, killing them through starvation. The product does not biodegrade. It crumbles into fragments that have no expiration date.²⁰ The impact on Mountain View would be to replace polystyrene food containers with less-impactful take-out containers, and to promote the use of biodegradable containers.

Fiscal Impact

There is minimal cost to the City. Costs would be borne by local business to change container type.

Obstacles

Resistance by businesses to convert to non-polystyrene to other containers which may increase food service costs.

Partnerships

Potential to partner with a local eco-friendly vendor for city-wide lower cost acceptable containers.

²⁰ http://www.cawrecycles.org/issues/polystyrene_main

Title: Educate the Public on Recyclable Material Processing and Eco-Conscious Purchasing

Statement of Issue

For the residents of Mountain View to maximize recycling activities and to make environmentally conscientious purchasing decisions related to waste management issues, it is essential that resource information is comprehensive, easily accessible, and up to date. We would like the public to be more aware of all the recycling opportunities that are available here.

Recommendation

1. Expand the type of recyclable materials picked up curbside, and educate the public regarding disposal process for these items (for example, CFL bulbs).
2. Increase the number of locations in the city where recyclable materials not picked up by waste haulers can be taken for recycling by residents / businesses and broadly communicate these locations to the public.
3. Take any and all necessary steps to educate the public on processing recyclable materials and making environmentally conscious purchasing choices, such as:
 - Provide a comprehensive resource on the City web page for recycle locations for various items, similar to Palo Alto's Recyclopeda²¹
 - Set up recycling education booths at public events and festivals
 - Develop a list of green volunteers to promote recycle causes
4. Educate the public on the following recycling issues:
 - Reduce the amount of paper in the recycling stream by educating residents about how to remove their name on junk mail lists and delivery lists.
 - Use of paperless billing services such as those provided by their service providers, banks, PayPal (<http://www.paypal.com>), or PayItGreen (<http://www.electronicpayments.org/green/>)
 - The Digital TV transition scheduled for Feb. 2009, and what type of equipment will or will not become obsolete.
 - Reduce the amount of motor oil entering the recycling stream, by educating the public that oil changes are now recommended at 5000-mile intervals under normal operating conditions²².
 - Encourage use of commercial car wash services, as they reuse water and capture the sludge that comes off the cars in traps for proper waste disposal.
 - Provide increased information about correct recycling procedures for the following:
 - How clean containers and paper actually need to be for processing in the recycling stream
 - Electronic waste disposal—drop off locations
 - CFL and fluorescent tube—drop off locations, including participating retail outlets
 - Batteries—pick up at curbside
 - Household hazardous waste—drop off locations
 - Proper disposal of over-the-counter and prescribed medications.
 - Plastic type differences related to their processing in the recycling stream

²¹ <http://www.cityofpaloalto.org/depts/pwd/recycle/recyclopedia.asp>

²² <http://www.3000milemyth.org>

Environmental Impact

Increased recycling practices and eco-conscious purchasing will divert material from landfill, and therefore avoid the GHG emissions generated by landfill, the energy used to produce new products, and the transportation of products. There are also benefits to the environment when toxic materials are properly disposed of rather than contributing pollutants to our air, land and water.

Fiscal Impact and Synergies

Fiscal impact includes production of educational materials (can be incorporated into existing publications), staff time to augment City web pages, and creation and staffing of additional waste drop off locations.

Synergies with the Community Outreach and Green Business Working Group efforts should be noted.

Obstacles

Obstacles to the implementations are likely limited to City Staff limitations and partner agency resources.

Partnerships

- SMaRT Station (for assistance with educating Mountain View residents about responsible consumer electronics recycling), <http://www.sunnyvale.ca.gov/Departments/Public+Works/Solid+Waste+and+Recycling/SMaRT+Station/>
- Santa Clara County Integrated Waste Management, <http://www.reducewaste.org>

Title: Discourage Single-Use Bags Within the City

Statement of Issue

Single-use plastic bags were introduced in the United States in 1975, and became commonly used by grocery stores in 1977. They are popular because they are strong, lightweight and inexpensive to produce. California uses about 2 billion plastic bags per year (California Integrated Waste Management Board). Of these, less than 5% are currently recycled.

Plastic bags are made from petroleum-based products. They cause litter, harm to marine animals, release toxins and do not degrade in landfill. Paper bags are made from trees, create pollution during their manufacturing process and are heavy to transport. One reusable bag replaces hundreds of single use bags.

Recommendation

1. Educate the public to carry re-usable shopping bags through outreach programs.
2. Educate retail employees to ask if a bag is needed or “did you bring your bag today?”
3. Do not distribute plastic bags at City run operations, such as the Public Library. Use these venues as distribution points for reusable bags.
4. Develop a program to distribute reusable shopping bags to city residents at little or no cost, including partnerships with bag manufacturers for “logo” opportunities.
5. Ban use of plastic bags at the Farmers’ Markets.
6. Require local retailers to stock alternative compostable disposable bags.
7. Enforce compliance with current plastic bag recycling programs (Ca AB 2449).
8. Endorse new legislation for stronger plastic bag legislation (Ca AB 2058) which includes requirements for per bag charges when recycle goals are not met.

Environmental Impact

Environmental impact is potentially high. Reduced use of single-use bags would reduce risk to marine life and animals and reduce dependence on petroleum based products. It would also be beneficial for the diversion from landfill of millions of bags that not biodegrade. Even the production of paper bags uses natural resources and energy, and creates pollution. Recent statistics show that Americans throw out over 100 billion plastic bags a year, accounting for almost 2% of all landfill waste. In addition, making and transporting those bags requires more than 12 million barrels of oil. Each year, more than 14 million trees are cut down to make paper bags for US consumption alone.

This recommendation has synergies with the Community Outreach and Green Business Working Group, as they developing processes to promote green business within the city.

Fiscal Impact

The cost of managing and cleaning up the more than 95 percent of one-time use plastic bags that become litter or are sent to landfill is generally borne by local governments and ultimately the taxpayers. With a solid waste budget of \$9.0 million/year, a 2% reduction in the weight going to the landfill might save Mountain View as much as \$180,000 per year. In addition, fewer volunteer hours would be needed to clean streets and creek beds, etc. Fewer birds and fish would be killed by ingesting plastic bags.

Once reusable bags are commonly used, stores will save money of providing bags and gain a better reputation to be more sustainable by promoting reusable ones. There will be short term costs to stores who choose to provide incentives to customers who bring their own bags, such as is currently done locally by Safeway and Trader Joe's, because the incentives are greater than the per-bag cost to the store.

If the City provides bags, all or nearly all expenses associated with bag production may be offset if they allow local companies and organizations to include their logos and other information as artwork on the bags (think of this as a NASCAR logo effect). There are bag manufacturers who have confirmed that they can work with the City to accomplish this.

Obstacles

- Change habits of the store employees, including packing more into each bag.
- Potential increased costs for consumers if retail outlets switch to compostable bags, or charge for reusable bags
- Opposition from plastic bag producers and large retail chains argued that policy would increase costs to consumers.
- Change habits of the public who need to get accustomed to bringing reusable bags with them.

Partnerships

- Partner with business to supply reusable bags: <http://store.chicobag.com/html/co-branding.html>
- Barrett Green, customer representative/fundraiser specialist: barrett@chicobag.com
- Mountain View Public Library and Friends of the Library to educate patrons in bringing their own bag to the Library, or supply canvas as an initiative with the Library Logo.
- Mountain View Voice to avoid plastic bags when delivering the newspapers or prepare a mechanism to take them back and reuse them
- Chamber of Commerce Mountain View: <http://www.chambermv.org>
- Mountain View Farmers' Market: <http://www.cafarmersmks.com/mtnview.html>

Title: Increase Recycling and Improve Waste Management in Multi-Family Dwellings

Statement of Issue

Establishing recycling programs for residents of multi-family dwellings (MFDs) is a challenge.²³ MFD residents generate a large amount of a community's residential waste and want to recycle, but don't know how to participate. A survey cited by South Bayside Waste Management Authority of San Carlos state that local low-income housing groups cite recycling as one of the top three things people wanted in their community.²⁴

Issues that must be overcome include:

- Curbside programs for individual households are not suited to MFDs.
- Many MFD buildings were not designed with recycling in mind; they typically have little space in individual units or in common areas for the collection and storage of recyclables.
- Residents are ill informed about the need to recycle and how to do so.
- Language and cultural barriers and misunderstanding.
- MFD management may be hesitant to participate.

Recommendation

1. Communicate the value of increased recycling to MFD residents by:
 - Developing campaigns using posters/leaflets/direct mail, phone calls and on-site visits that are in the relevant language/ethnic/cultural context.
 - Making presentations to residents & relevant community groups. Describe environmental and cost benefits of recycling to both building residents and property owners.
2. Make recycling easy for MFD residents
 - Develop a specialized container to collect and transport their recyclables, for example, 'Recycling Buddy' (sponsored by local businesses & provided on an economic sliding scale) to centralized recycle locations.
 - Label all containers clearly in all the main languages (English, Spanish, Russian, and Chinese) in Mountain View.
 - Develop a program of visits by recycling advocates to audit each location and develop a plan of action for improvements if necessary.
3. Create a supportive recycling network at each MFD
 - Create a volunteer Corps. 'Recycling Rangers' (for example, Scouts, high school kids or recycling advocates) for bringing recyclables from individual units to collection points, circulating program information, informing people on recycling benefits, and so on.
 - Identify a complex 'point person' for the program.
 - Set up a virtual & real network to help these people stay connected, learn from each other and remain motivated, and so on.
 - Develop incentive competitions for complexes that meet recycle goals.

²³ <http://www.ciwmb.ca.gov/lglibrary/innovations/Multifamily/Summary.htm>

²⁴ http://www.rethinkwaste.org/mfd_recyccoords.php?id=mfdrecycpros

4. Involve MFD owners and property management
 - Provide professional support from recycling planners to assist property owner in designating appropriate space for centralized recycling containers. Include incentives of simplified permit process or fee reduction if necessary and assistance working with City Planning Dept. on code issues.
 - Work with property managers to encourage recycling of landscape waste (requires waste hauler support as well).
 - Implement programs with incentives to meet complex recycle goals.
 - Follow up with mandatory enforcement by fines when goals are not met.

Environmental Impact

Increasing MFD recycling can help divert significant quantities of materials from the solid waste stream. Curbside diversion rates for MFDs averages 14.6 percent compared to 16.0 percent for single family households. Also, each multi-family household set out an average of 0.14 tons of recyclable materials per year compared to 0.23 tons per single family household per year. If the MFDs rates are brought up to at least that of single family homes, it will help increase the environmental quality of life; reduce the amount of GHG emitted by landfills as well as the need areas required for landfill expansion.²⁵

Synergies exist with the Community Outreach and Green Business Working Group.

Fiscal impact

- Medium (\$30,000 - \$100,000) in the short term as the programs are being developed.
- Low (\$10,000 - \$30,000) after the start up phase.
- On-going extra cost for hauling and processing recycled materials picked up at MFDs could be offset by the benefit of increased marketable clean recycled goods.

Obstacles

- Space constraints in individual units and communal areas
- Uninformed tenants and language and cultural challenges
- Existing practices, requires change in habits and extra effort
- Landlord/management company resistance and lack of motivation
- Legislative resistance to compelling participation by mandating fines for non-compliance
- Increased cost for collection and processing of waste

Partnerships

- Coca-Cola/NRC Recycling Bin Grant Program (www.bingrant.org)
- Green Citizen (www.greencitizen.com)
- Californians Against Waste (www.cawrecycles.org)
- Relevant community organizations for promotion of programs, such as churches

²⁵ <http://www.epa.gov/epaoswer/non-hw/recycle/multi.txt>

Title: Provide Accessible Recycling Bins in Public Places and Businesses

Statement of Issue

There is a lack of recycling bins around the city, both in public places and in local businesses. If recycling bins were more easily available, more people would utilize them. This would increase the amount of trash diverted from landfill as well as raise public awareness for recycling. As sensitivity to environmental issues increases in our community, many people will want to “do the right thing” and recycle, especially if it does not take any extra effort on their part.

Recommendation

1. For every public location where there is a trash can, there should at least be a container recycling bin (glass/plastic/metal) and, ideally, one for mixed paper.
2. These bins should be clearly designated for recycled materials to alleviate contamination with garbage. Differentiation could be achieved by size and shape of openings for containers, consistent color of bins for different types of materials, and/or clear marking in several languages. We must make it just as easy for someone to dispose of recyclable material in the appropriate way as it is for someone to throw an item in the trash.
3. In food establishments which generate organic waste and utilize compostable cups and utensils, there should be a publicly accessible compost recycle collection area to avoid sending compostable material to landfill.
4. Recycling bins should be placed in city parks, along major streets, downtown, at transit centers, in the Civic Center area, near restaurants with take-out service, at stores and markets, at the Farmers’ Market, and at all major events and festivals.

Environmental Impact

- Increased recycling diminishes waste going to landfill and the resulting GHG.
- Using recycled material to generate new products conserves our natural resources and minimizes the pollution and ecosystem damage caused by the extraction of virgin resources, manufacturing and transportation.
- Using recycled materials to produce new products decreases energy use and GHG production.²⁶
- When establishments utilize compostable plates and utensils, they must be incorporated into organic composting systems since they will not decompose in standard landfill.

²⁶ Manufacturing one ton of aluminum cans from its virgin source, bauxite, uses 229 million BTUs. Producing the same ton of cans from recycled aluminum uses only 8 million BTUs., an energy savings of 96%. -Jeffrey Morris, “Recycling Versus Incineration: An Energy Conservation Analysis” Journal of Hazardous Materials 47 (1996) pp.227-293

Fiscal Impact

Medium-High Cost (\$100,000 - \$300,000) to purchase and place additional recycling bins.

There will be continuing annual cost to for recycling bin collection and processing from increased number of locations. Even though sorting technology at debris-processing facilities has improved, much higher diversion rates are possible with “clean” recyclable materials, so a higher percentage will be marketable.

Potential cost benefits could be realized from the sale of the additional recycled material to the marketplace. Also, increased diversion from landfill means cost savings in use of landfill facilities, extending the life-span of the facility.

Obstacles

- Resistance from businesses to devote more space to recycling bins
- Extra cost burden on disposal pick-up program which may need to be funded by fee increases.
- Effectiveness depends on public participation and cooperation.

Partnerships

- California Dept. of Conservation
- Local Businesses
- Chamber of Commerce
- Accenture Technology Labs. This lab has developed a technology with sensors in the recycling bins to indicate if a bin is full and ready for pick-up.
- Green Mary (<http://www.green-mary.com>). This company manages festivals and events in an environmentally conscious way.
- FRG Waste Resources, Inc. (<http://www.frgwaste.com>). This company makes solar powered outdoor trash compactors for streets that reduce the volume of garbage and recycling and the frequency with which containers need to be emptied.

Title: Partner with Local School Districts to Create Waste Reduction and Recycling Programs in the Schools, Including a Zero Waste Lunch Program

Statement of Issue

Since there is no correlation between city boundaries and school district boundaries in our area, the children of Mountain View attend school in one of several districts; the Mountain View Whisman School District (MVWSD), the Los Altos School District (LASD), the Mountain View Los Altos High School District (MVLA), as well as local private schools. Each of the schools in these districts presents a significant opportunity in the arena of waste reduction and recycling. In addition to the potential for further reducing and diverting the materials that are added to the waste stream by the schools, they are also an important resource for community education and behavior change in how households manage their conservation and recycling practices.

In Mountain View, where a vast array of languages is spoken, many residents don't develop mastery of English. While children have long been a source of education and behavior change for their families, this is especially important when the adults have little opportunity to learn about specific issues and practices that are of significance to the larger community.

Educating students about the importance of environmental sustainability by incorporating related topics into the curriculum and teaching them how to make wise and practical choices about purchase, packaging, consumption, and disposal of food as well as other materials that they routinely use (for example, paper, natural gas, and electricity), results in several notable outcomes:

- Increase in properly sorted and diverted material at their schools
- Increased awareness and knowledge about sustainability related issues
- Development of personal practices and behaviors that are environmentally beneficial and will have life-long impact
- Diffusion of learning and practices to their families; reduced consumption and increased diversion over time

Recommendation

Partner with all of the local school districts to create waste reduction and recycling programs in the schools by doing the following:

1. Sponsor and form a joint task force representing the City and the schools to develop detailed feasibility and implementation recommendations for a waste reduction and recycling pilot program at least one school, and then extend it to the rest of the district.
2. Explore the creation of partnerships between local businesses and schools to supplement the resources available to schools to become “green,” and maximize the opportunities for intra-community collaboration, education, and involvement.²⁷

²⁷ Other partnerships and pilots currently being explored by the city, e.g. with Google, suggest opportunities for collaboration that will benefit the schools and the community in the area of waste reduction and diversion.

3. Utilize the research and recommendations contained in the extensive report prepared by Stanford students for their Public Policy seminar (Puerta, O., Rubino, R., Sepe, C., Whinery, T., & Woolley, J. (2008, March). “Greening” Mountain View Elementary Schools: An Analysis of Options for the Mountain View Whisman School District to Reduce Greenhouse Gas Emissions and Preserve Natural Resources. Report prepared for the City of Mountain View and the MVWSD.).
4. Implement a Zero Waste Lunch program at all schools.²⁸

Environmental Impact²⁹

- Reduction of waste created³⁰
- Increase in waste diversion rates
- Increased community awareness of waste issues

Fiscal Impact

- Sponsorship and eventual implementation of school greening programs may require additional City (and school district) Staff.
- Reduction in waste results in reduced hauling and disposal costs to schools
- Increased adoption of conservation activities, such as recycling handouts, double-sided printing, and turning off electronics on standby may offset some of the cost of supplies, electricity, and heat to schools.

Obstacles

Because the schools are not under the jurisdiction of the City, the City will not have a direct role in driving the activities that could result in environmental and financial benefits. The City will need to establish a partnership with the school districts, including identifying roles and responsibilities, and determine the other investments it is willing to make in the school systems to increase its environmental sustainability. This will require support of City Staff and potentially additional school staff, a large challenge in this economic environment.

²⁸ For more information on Zero Waste Lunch programs see the California Integrated Waste Management Board web site at <http://www.ciwmb.ca.gov/schools/wastereduce/Food/ZeroWaste.htm> and <http://www.wastefreelunches.org/>

²⁹ These are the potential benefits of actual implementation of a “greening” program in schools. These recommendations address a partnership with the MVWSD and will not in themselves result in direct environmental or fiscal benefits; rather, they may require an investment by the City.

³⁰ It is estimated that each child who consumes a lunch packed in disposable containers, and who does not compost waste, creates approximately 67 lbs. of waste per year (which is about 6 oz. per day per child). (<http://www.wastefreelunches.org/>).

Title: Provide Resources to Promote Free-Cycle and Re-Use Networks

Statement of Issue

As established in this chapter, it is essential that the City and its residents do everything they can to reduce output to the waste stream. Reuse of materials and products is a key component of any such effort.

Recommendation

1. Establish more frequent Annual City-Wide Garage Sales, Community Yard Sales, or Flea Markets (currently, city-wide garage sales take place only once a year) and promote reuse of materials and products by public education, and by establishing, enhancing, and promoting these sales.
2. Identify existing web-based tools for recycling and free-cycling materials and products to new owners. Centralize reference to these web sites through the City web pages. Create customized search tools which would allow residents to search across multiple recycled and free-cycled product sites at one time.
3. Support a regular Used Goods Market to which residents can bring used items that they wish to exchange with or sell or donate to others in the community. This market should be held at least once a month and could take place alongside the Farmers' Market on Sundays, or at another public venue such as Rengstorff Park. The types of items sold or traded could include any household or personal item (excluding food items).

Environmental Impact

- Reduced purchase of new goods will result in reduced manufacture and transport of such items and hence in reduced production of GHGs
- Reductions in the quantity of discarded items will delay their contribution to landfills.
- Greater interaction between residents from all over Mountain View will strengthen the community, and lead to more ideas on reducing the production of GHGs.

Fiscal Impact and Synergies

There are some low administrative costs associated with sponsoring more frequent Community-wide sales.

The cost to set up and support web site access will be ongoing but will require a minor amount of staff time, and will be low cost. The cost for setting up/facilitating the Market should be small, while the gain should come from reduced landfill tipping fees.

Synergies exist with the Community Outreach and Green Business Working Group.

Obstacles

- Existing second-hand stores may object to the plan, but on the other hand, they could find the Used Goods Market to be a good place to augment inventory for resale.
- Limited City Staff resources.
- The availability of parking near the Farmers' Market would be reduced, but the establishment of a goods drop-off and pick-up area for very short duration stopping would ameliorate this.

Partnerships

Ideal partnerships would be with those able and willing to create customized search tools that would allow Mountain View residents to search across multiple recycled and free-cycled materials and products sites at one time.

- California Farmers' Market Association
- Goodwill
- Green Citizen

Appendix A: Secondary Recommendations

Recommendations considered by this working group but not selected for the Top 10 (in no particular order):

- Council to support Extended Producer Responsibility legislation
- Encourage landscapers who work in the city, and for the City, to compost green waste (City Operations)
- Programs to reduce use of pesticides on private property (Biodiversity)
- Programs to reduce use of pesticides on city property (Biodiversity)
- Ban plastic water bottles at City events and venues
- Add more water fountains in public locations
- Green purchasing guidelines for City operations (City Operations)
- Green purchasing guidelines for businesses (Outreach)
- Recycle options for used mattresses
- City to supply compostable pet refuse bags at parks
- Encourage use of compostable diaper service
- Collection and re-use of newspaper rubber bands
- Reduced use of plastic bags for delivery of local newspapers
- Resources for sharing excess worm bin compost material
- Recycling of plastic plant containers from nurseries
- Participate in the National Recycling Coalition/Nike Reuse-A-Shoe Program (<http://www.nrc-recycle.org/reuseashoe.aspx>)

Appendix B: Citations, Web Sites, and Contacts

Recommendation 4-1:

Citations

1. Use the “City of Palo Alto Zero Waste Operational Plan of June 2007” prepared by HDR/Brown, Vence & Assoc. Inc., Cascadia Consulting Group, Inc. and Gary Liss & Assoc. as a template to create a Zero Waste plan for Mountain View.
2. For information on the minimum waste diversion mandate in California, AB 939 “The Integrated Waste Management Act of 1989” from the California Waste Management Board, see: <http://www.ciwmb.ca.gov/Statutes/Legislation/CalHist/1985to1989.htm>

Web Sites

- “Stop Trashing the Climate”, <http://www.stoptrashingtheclimate.org>
- The GrassRoots Recycling Network, <http://www.grrn.org>
- Eco-Cycle Inc, <http://www.ecocycle.org>
- Zero Waste International Alliance, <http://www.zwia.org>
- Zero Waste California, <http://www.ca.gov>
- Oakland Public Works, <http://www.zerowasteoakland.com>
- Institute for Local Self-Reliance, <http://www.ilsr.org/recycling>
- Northern California Recycling Association <http://www.ncrarecycles.org>
- California Product Stewardship Council <http://www.caproductstewardship.org>

Contact Information

- Ann Schneider Chair, Zero Waste Committee, Sierra Club: Ann.Schneider@sierraclub.org
- Lori Topley, Solid Waste Program Manager, City of Mountain View:
Lori.topley@mountainview.gov

Recommendation 4-2:

Web Sites

SMaRT Station

<http://sunnyvale.ca.gov/Departments/Public+Works/Solid+Waste+and+Recycling/SMaRT+Station/>

Contact Information

Mark Bowers, SMaRT Station Manager
City of Sunnyvale
408-703-7421

Bay Counties Waste Services (SMaRT Station Operators)
3355 Thomas Road
Santa Clara, CA 95054
Phone: 408-565-9900

Recommendation 4-3:

Some figures from Palo Alto's recent waste composition study document the current conditions. Notable findings about the composition of SMaRT Station residuals include:

- Over three-quarters (77%, 30,700 tons) of the SMaRT Station's residuals are reusable, recyclable, or compostable.
- Compostable material categories account for about 36% (14,500 tons) of the SMaRT Station's residuals (this does not include green waste diverted prior to delivery)
- Recyclable paper accounts for about 17% (7,000 tons) of the residual stream.
- In all of the five business sectors identified in the study (multi-family residential, city departments, schools, restaurants, and hospitals) the highest percentage of recoverable material found in the waste stream was compostable material.

Compostable materials account for about 36% (14,500 tons) of the SMaRT Station's residuals. These material categories included the following:

- Food (6,061 tons)
- Leaves and Grass (4,186 tons)
- Compostable Paper (3,590 tons)
- Compostable Organics (332 tons)
- Pruning and Trimmings (161 tons)
- Manure (38 tons)
- Branches and Stumps (88 tons)

(City of Palo Alto, Zero Waste Operational Plan, June 2007, section 4.6.1, Waste Composition study)

Recommendation 4-4:

References

Information on hazardous effects of polystyrene:

- <http://www.cawrecycles.org>
- <http://www.verdant.net/nofoam.htm>
- http://www.cawrecycles.org/issues/polystyrene_main
- http://www.cawrecycles.org/issues/eps_recycling
- <http://media.www.thehilltoponline.com/media/storage/paper590/news/2003/03/07/NationWorld/styrofoam.Versus.Paper.Debate-388550.shtml>
- <http://www.grist.org/advice/ask/2003/02/06/umbra-styrofoam/>
- http://www.americanchemistry.com/s_plastics/doc.asp?CID=1422&DID=5645
- <http://www2.sfenvironment.org/foodservice/>
- EPA Site on Styrene
- OSHA Web Resource on Styrene Exposure
- CDC Agency for Toxic Substances and Disease Registry Styrene Fact Sheet Plastics and Human Health

Sources for bagasse products:

- <http://www.apacbiopaperplastic.com>
- <http://www.ecoproducts.com>
- <http://greenearthofficesupply.stores.yahoo.net/furniture.html>

Other California community's regulations on Polystyrene:

- Berkeley—Type: EPS Ban. Requirement that 50%, by volume, of takeout food packaging be recyclable or compostable. Enacted 1988.
- Calabasas—Type: EPS Ban. Requirement that all takeout food packaging be recyclable/compostable. Effective July 2007.
- Capitola—After a challenge from the Restaurant Association, Capitola's food packaging ordinance was reinforced June 2007. Type: EPS Ban. Requirement that all takeout-food packaging be compostable. Enacted December 2006.
- Emeryville—Emeryville's ordinance requires restaurants to switch to more environmentally-friendly packaging. Type: EPS Ban. Requires that all takeout-food packaging be compostable/recyclable. Enacted March 2006.
- Fairfax—Type: EPS Ban. Restaurants & retail food vendors banned from using EPS food packaging.
- Malibu—EPS Ban. Enacted September 2005.
- Millbrae—Type: Polystyrene Ban (ALL polystyrene.) Requirement that all plastic takeout food packaging be recyclable or compostable. Effective January 2008.
- Oakland—Type: EPS Ban. Requires all takeout-food packaging be compostable. Effective June 2006.
- Orange County municipalities of Aliso Viejo, Huntington Beach, Laguna Hills, Laguna Beach, Laguna Woods, San Clemente, San Juan Capistrano and the Santa Margarita Water District - banned EPS food packaging in certain municipal facilities. Enacted 1991.
- San Francisco—Type: EPS Ban. Requirement that all takeout-food packaging be recyclable/compostable. Effective June, 2007.
- Santa Monica—Type: Polystyrene Ban (ALL.) Takeout-food packaging be compatible with the City's recycling infrastructure; all takeout-food packaging be recyclable. Effective Dec. 2006.
- Sonoma County—Anyone in a county facility cannot possess, sell or buy EPS.
- Ventura County has a ban on the use of foamed polystyrene in county franchises.

Recommendation 4-5:

Web Sites

- City of Mountain View Resource Newsletter: (http://www.ci.mtnview.ca.us/services/city_publications/the_resource_newsletter.asp)
- City of Mountain View Garbage & Recycling Programs (<http://www.mvrecycle.org>)
- RecycleStuff.org, provided by the Center for the Development of Recycling (CDR), Santa Clara County (<http://www.recyclestuff.org>)
- Materials and Waste Types, California Integrated Waste Management Board (<http://www.ciwmb.ca.gov/Index/default.asp?VW=3>)
- 21 Things You Didn't Know You Could Recycle, Coop America Quarterly, Fall 2007(<http://www.coopamerica.org/pubs/caq/articles/21Things.cfm>)

Contact Information

- Lori Topley, Solid Waste Program Manager, City of Mountain View, lori.topley@mountainview.gov
- Rob D'Arcy, program manager with the Santa Clara County Department of Environmental Health, Household Hazardous Waste Program

Recommendation 4-6:

Citations

California Legislation (from Californians Against Waste: <http://www.cawrecycles.org>)
AB 2449, enacted in 2006, requires all California grocery stores and large retail store (over 10,000 sq. ft.) take back and recycle plastic grocery bags. The bill also requires retailers to print a message provide consumers with a bag reuse opportunity. Retailers and manufactures are required to implement a public education program, and all bags must be labeled “Please Return to a Participating Store for Recycling.”

The program includes:

- Labeling bags to return to the store for recycling.
- Placing recycling bins in visible and accessible locations for customers.
- The provision of reusable bags for customers to potentially purchase and use in lieu of disposable ones.

AB 2058 would require large grocery stores and pharmacies that distribute free plastic bags to ensure that at least 70% of those bags are kept out of the landfill by July 2011. If this goal is not met, retailers will be required to charge a 25-cent per bag ‘advance disposal fee’, the proceeds of which would be used to institute the toughest in the nation litter clean-up law for carryout bags. California uses about 19 billion plastic and 3.8 billion paper bags annually. The cost to retailers of providing these 'free' bags to consumers is about \$680 million annually.

With the inclusion of the cost to manage litter clean up and landfill issues, the 'free' one-time use bag is actually costing in excess of \$300 per household annually in higher costs and taxes. Even the moderately successful goal of 70 percent reduction and employing a 15 cent per bag fee for consumer who forget their bag, California would experience a nearly 50 percent reduction in bag related costs—or \$1.7 billion annually.

<http://www.cawrecycles.org/> Testimony from a vendor at the Farmers’ Market:

"Well I wasn't sure what to expect this year regarding plastic bags (we do have to buy those ourselves) but I'm pleasantly surprised at how many people bring their own bags. We do over 30 Bay area markets a week during our 6-7 week season and I usually go through several thousand bags a year. This year we have seen at least a 60-70% drop in usage and the last order of bags I purchased were bio-degradable plastic. You'll be happy to hear that most people in general have their own baskets or cloth bags that they bring along to the markets. It seems that the trend is catching on!"

Web Sites

Californians Against Waste:

http://www.cawrecycles.org/issues/current_legislation/ab2449_06

http://www.cawrecycles.org/living_green/bags/tips

Taxes on plastic bags proposed by Assembly:

- <http://news.sympatico.msn.ca/Plastic+Bags+Tax+Proposed+in+CA+Assembly/GloballyMind/d/ContentPosting.aspx?isfa=1&newsitemid=d7d311e4-dd51-4f6c-81c8-55472a033e4b&feedname=RETHOS&show=False&number=0&showbyline=True&subtitle=&detect=&abc=abc&date=True>
- Pacific Protection Initiative: http://www.healthebay.org/currentissues/ppi/theneed_bags.asp

Contact Information

Californians Against Waste
Mark Murray
Executive Director

Reusable bag suppliers:

- Chico bags: <http://store.chicobag.com/> Barrett Green, Customer Rep., barrett@chicobag.com
- <http://www.1BagAtATime.com>
- <http://www.BagMakers.com>
- <http://www.GreenSak.com>
- Bags on the run: <http://www.bagsontherun.com/>

Recommendation 4-8:

Citations

- Accenture Technology Labs
http://www.accenture.com/Global/Services/Accenture_Technology_Labs/default.htm
- Live Earth Farm: <http://www.liveearthfarm.com/>
"What else should I bring? We encourage you to bring your own picnic plates and utensils in order to minimize unrecyclable garbage. We will have a washing station, where you can rinse them when you are through eating. "
- Tzu Chi: <http://www.tzuchi.org>

Web Sites

- http://www.conservation.ca.gov/index/news/2003%20News%20Releases/Pages/NR2002-Op-Ed_02-25.aspx
- <http://www.conservation.ca.gov/index/news/2002%20News%20Releases/Pages/nr2002-23%20recycling%20grants.aspx>
- http://www.conservation.ca.gov/index/news/2005%20News%20Releases/Pages/nr2005-28_recycling_grants.aspx
- Main site: <http://www.conservation.ca.gov/dor/Pages/Index.aspx>
- Opinion on recycling:
http://www.healinghq.com/index.php?option=com_content&task=view&id=54
- How to start a program: <http://www.bottlesandcans.com/start.php>
- Grants from the Department of Conservation:
http://www.conservation.ca.gov/index/news/2004%20news%20releases/Pages/nr2004-04_doc_recycling_grants.aspx

Contact Information

Lori Topley, Solid Waste Program Manager, City of Mountain View
Heidi Melander, Northern California Recycling Association
Dan Sharoni, Accenture Technology Labs (dan.sharoni@accenture.com)

Recommendation 4-9:

Web Sites

- Resources for school programs:
Go Green Initiative, Kate Jupina, Operations Manager, 925-484-1851
Pleasanton, CA 94556
www.gogreeninitiative.org
See especially their Planning Guide, <http://gogreeninitiative.org/PDF/PlanningGuide.pdf>
- Green Schools Initiative
Deborah Moore, 510-525-1026
<http://www.greenschools.net>
- California Integrated Waste Management Board
<http://www.ciwmb.ca.gov/schools/wastereduce/Food/ZeroWaste.htm>
- Zero Waste Alliance
<http://www.zerowaste.org>
- Community Outreach Program that includes providing information about city programs and services in several languages
http://www.mountainview.gov/city_hall/city_managers_office/community_outreach.asp
- The Foundation for Environmental Education
<http://the-environment.org/index.html>
- Zero-Waste Lunch Programs
- Obentec, Inc.: <http://www.obentec.com>

Recommendation 4-10:

Web Sites

Re-use and Free-cycle web sites include:

- Craigslist: <http://sfbay.craigslist.org/sby/sss/>
- Freecycle.org: <http://www.freecycle.org/group/United%20States/California/Mountain%20View>
- Google Groups: Mountain View Freeshare:
http://groups.google.com/group/mv_ar_freeshare?lnk=
- Resource Area for Teaching (RAFT): <http://www.raft.net>
- Yahoo Groups: Mountain View Free Recycling Group:
<http://groups.yahoo.com/group/mvfree/?yguid=20944555>
- TechSoup.org: Computer Recycling and Reuse (for non-profit group use)
http://www.techsoup.org/recycle/index.cfm?cg=nav&sg=content_topicrecycle³¹
- Eco-friendly products made from re-used materials: TerraCycle Inc.: <http://www.terracycle.net>

³¹ This web site is better suited for informational purposes rather than for listings.

Chapter 5. Energy and Renewable Energy

Introduction

The Energy and Renewable Energy Working Group developed four recommendations related to promoting renewable energy (1, 2, 4, 7), four recommendations related to reducing the demand for energy (6, 8, 9, 10) and two recommendations related to carbon offsets (3, 5).

Of the five primary forms of renewable energy (solar, wind, hydro, biomass, and geothermal), solar is most abundant in our area. We see great potential, both immediately and over the coming decades, for solar energy to provide a very significant share of Mountain View's electricity and hot water heating needs. Solar also has an important role to play in providing space heating for new buildings.

Energy conservation, demand response and load shifting (which changes the time of day when electricity is used) aren't particularly glamorous, but they have outstanding environmental and financial paybacks. PG&E has pioneered the use of cash incentives to get businesses and residential consumers to conserve and we advocate amplifying their efforts in Mountain View.

Carbon offset programs are a very important new development in the fight against global warming. Unfortunately, they are not yet well understood even by the small fraction of residents who are aware that they exist. Nevertheless, we consider them a vital part of our recommendations because they have three distinct advantages: they require no ongoing behavioral change, they can produce a massive positive impact, and their cost per metric ton of CO₂e is exceptionally low. We are fortunate that PG&E has already set up a carbon offset program called *ClimateSmart* that all of its customers can participate in. We recommend that the City throw its full support behind *ClimateSmart*.

Definitions

- *CFL*—Compact fluorescent lamp
- *Demand Response*—A program in which utility customers sign a contract agreeing that they will curtail use of electricity when requested to do so in exchange for lower year-round electric rates. Contracts typically limit curtailment requests to no more than 10 incidents per year. Curtailment requests usually go out on very hot summer weekday afternoons.
- *PPA (Power Purchase Agreement)*—An arrangement whereby a business or homeowner buys electrical energy from renewable sources (often solar located on the customer's premises) from a non-utility company at a pre-determined price per kWh. Prices for long term PPAs are similar to utility rates, but with contractual protection against rapid escalation in future years.

Assumptions about the Cost of Energy

The Mountain View Environmental Sustainability Task Force developed a forecast of the price of key energy sources for the next 20 years, as well as inflation. These numbers are presented below. Our general line of thinking was that rising demand for fossil fuels – all of which are substitutes for each other in an economic sense – will continue to boost the prices of these fuels 6%/year, after adjusting for inflation. This is higher than the 5-year average, but much lower than the experience of the past year. Electricity is a bit of a bright spot due to the existence of significant hydro and nuclear resources in PG&E's mix, which insulate us from fossil fuel price increases, and also the expectation

that renewable energy will become cheaper than electricity generated by burning natural gas or coal within 10 years.

Expected Annual Rate of Change	10%	10%	8%	10%	-4%	6%	6%	4%	6%
Year	Nominal Price of Gasoline Per Gal.	Nominal Price of Diesel Per Gal.	Nominal Price of Electricity Per kWh	Nominal Price of Nat. Gas Per Therm	Value of a Dollar (2008=\$1)	Inflation Adjusted Price of Gasoline Per Gal.	Inflation Adjusted Price of Diesel Per Gal.	Inflation Adjusted Price of Electricity Per kWh	Inflation Adjusted Price of Nat. Gas Per Therm
2003	\$ 1.80	\$ 1.66	\$ 0.14	\$ 0.97	\$ 1.17				
2004	\$ 2.24	\$ 2.10	\$ 0.13	\$ 0.92	\$ 1.14				
2005	\$ 2.41	\$ 2.46	\$ 0.14	\$ 1.10	\$ 1.10				
2006	\$ 3.19	\$ 2.92	\$ 0.16	\$ 1.06	\$ 1.07				
2007	\$ 3.16	\$ 2.30	\$ 0.16	\$ 1.49	\$ 1.04				
2008	\$ 4.20	\$ 4.90	\$ 0.16	\$ 1.50	\$ 1.00	\$ 4.20	\$ 4.90	\$ 0.16	\$ 1.50
2009	\$ 4.62	\$ 5.39	\$ 0.17	\$ 1.65	\$ 0.96	\$ 4.44	\$ 5.17	\$ 0.17	\$ 1.58
2010	\$ 5.08	\$ 5.93	\$ 0.19	\$ 1.82	\$ 0.92	\$ 4.68	\$ 5.46	\$ 0.17	\$ 1.67
2011	\$ 5.59	\$ 6.52	\$ 0.20	\$ 2.00	\$ 0.88	\$ 4.95	\$ 5.77	\$ 0.18	\$ 1.77
2012	\$ 6.15	\$ 7.17	\$ 0.22	\$ 2.20	\$ 0.85	\$ 5.22	\$ 6.09	\$ 0.18	\$ 1.87
2013	\$ 6.76	\$ 7.89	\$ 0.24	\$ 2.42	\$ 0.82	\$ 5.52	\$ 6.43	\$ 0.19	\$ 1.97
2014	\$ 7.44	\$ 8.68	\$ 0.25	\$ 2.66	\$ 0.78	\$ 5.82	\$ 6.79	\$ 0.20	\$ 2.08
2015	\$ 8.18	\$ 9.55	\$ 0.27	\$ 2.92	\$ 0.75	\$ 6.15	\$ 7.18	\$ 0.21	\$ 2.20
2016	\$ 9.00	\$ 10.50	\$ 0.30	\$ 3.22	\$ 0.72	\$ 6.49	\$ 7.58	\$ 0.21	\$ 2.32
2017	\$ 9.90	\$ 11.55	\$ 0.32	\$ 3.54	\$ 0.69	\$ 6.86	\$ 8.00	\$ 0.22	\$ 2.45
2018	\$ 10.89	\$ 12.71	\$ 0.35	\$ 3.89	\$ 0.66	\$ 7.24	\$ 8.45	\$ 0.23	\$ 2.59
2019	\$ 11.98	\$ 13.98	\$ 0.37	\$ 4.28	\$ 0.64	\$ 7.65	\$ 8.92	\$ 0.24	\$ 2.73
2020	\$ 13.18	\$ 15.38	\$ 0.40	\$ 4.71	\$ 0.61	\$ 8.08	\$ 9.42	\$ 0.25	\$ 2.88
2021	\$ 14.50	\$ 16.92	\$ 0.44	\$ 5.18	\$ 0.59	\$ 8.53	\$ 9.95	\$ 0.26	\$ 3.05
2022	\$ 15.95	\$ 18.61	\$ 0.47	\$ 5.70	\$ 0.56	\$ 9.01	\$ 10.51	\$ 0.27	\$ 3.22
2023	\$ 17.54	\$ 20.47	\$ 0.51	\$ 6.27	\$ 0.54	\$ 9.51	\$ 11.10	\$ 0.28	\$ 3.40
2024	\$ 19.30	\$ 22.52	\$ 0.55	\$ 6.89	\$ 0.52	\$ 10.04	\$ 11.72	\$ 0.29	\$ 3.59
2025	\$ 21.23	\$ 24.77	\$ 0.59	\$ 7.58	\$ 0.50	\$ 10.61	\$ 12.37	\$ 0.30	\$ 3.79
2026	\$ 23.35	\$ 27.24	\$ 0.64	\$ 8.34	\$ 0.48	\$ 11.20	\$ 13.07	\$ 0.31	\$ 4.00
2027	\$ 25.69	\$ 29.97	\$ 0.69	\$ 9.17	\$ 0.46	\$ 11.83	\$ 13.80	\$ 0.32	\$ 4.22

Assumptions about the CO₂e Produced by Common Energy Sources

The table below shows the amount of carbon dioxide equivalents (CO₂e) produced by consuming common energy sources.

Consuming...	Produces this many pounds of CO ₂ e	Produces this many metric tons of CO ₂ e
1 gallon of gasoline	19.56	.00887
1 gallon of diesel fuel	21.03	.00954
1 kWh of electricity from PG&E	0.489 (see note)	.00022
1 therm of natural gas	11.7	.00531

Note: as PG&E increases share of its energy from renewable sources, we expect this figure to decline by approximately 2%/year. If this occurs, it will be .00015 metric tons (0.333 pounds) by 2027.

Reductions in Natural Gas Use are Important and Overlooked

Carbon Dioxide Content of \$1 of Natural Gas and \$1 of Electricity

When natural gas is priced at \$1.50/therm, \$1 buys .667 therms. Each therm burned produces 11.7 pounds of CO₂e. Therefore, \$1 worth of natural gas produces **7.8** pounds of CO₂e.

When electricity is priced at \$.16/kWh, \$1 buys 6.25 kWh. Each kWh from PG&E creates .489 pounds of CO₂e. Therefore, \$1 worth of electricity produces **3.1** pounds of CO₂e.

From these two ratios we conclude that the most cost-effective Greenhouse Gas reduction will come from using conservation and renewable energy to displace *natural gas* usage rather than electricity usage.

Some electricity saving techniques, such as CFLs, have a remarkably high return on investment. However, we think that too little emphasis has been given in the public discussion of climate change to the importance of reducing natural gas usage, compared to the amount of attention paid to electricity conservation and solar PV.

Summary of Recommendations

1. Set Renewable Energy Goals.
2. Install Solar Water Heaters and Solar PV Systems on City Buildings
3. Enroll in the PG&E *ClimateSmart* Program for City Operations
4. Strongly Promote Solar Water Heating
5. Promote Enrollment in PG&E's *ClimateSmart* Program by Residents
6. Encourage Property Owners to Undertake Energy-Efficiency Upgrades
7. Implement a Pilot Program to Provide Solar PV for Affordable Apartments
8. Provide Free Energy Audits for Residents and Low-Cost Audits for Small Businesses and Promote PG&E's Energy Conservation Programs
9. Encourage Participation in PG&E's Demand Response and Permanent Load Shifting Program
10. Print Information about Energy Conservation and Renewable Energy Options on Utility Bills

Working Group

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Title: Set Renewable-Energy Goals

Statement of Issue

To decrease our use of non-renewable energy sources, we need to do all of the following:

- Use less energy (conservation).
- Use energy more efficiently.
- Use an increasing proportion of renewable energy sources to take care of our remaining needs.
- In relation to this third option, "local" is often better, and we need a good selection of it. Local energy production is less subject to the disruption risks of long-distance energy transmission. It can contribute to the overall greening of our energy supply.

Recommendation

The Council should establish a 20-year set of goals for increasing the share of energy used in Mountain View that is produced renewably, and, ideally, locally as well. (This is a Short term recommendation, because the action should be taken soon even though the period covered by the goals is very long term.) We hope these goals will be challenging “stretch” goals. They should align with AB 32 goals and the Greenhouse Gas (GHG) reduction targets recommended by the Baseline and Measurements Working Group.

Following establishment of the goals, we hope the City Council will direct Staff to set up a process for determining the installed base of alternative energy sources and to track newly-installed systems. We believe that the actual contribution of these renewable energy systems should be calculated and published annually, along with Mountain View's overall energy consumption, so that we can see if the share of renewable energy is increasing.

Environmental Impacts

Depending on the goals set, and our ability to attain them, shifting to a higher proportion of renewable energy will reduce the per capita production of CO₂e production per capita by a significant amount.

For example, if we can increase our use of renewably generated electricity by a mere 100 kWh per person per year – the amount of energy used to run a 100-watt light bulb for one hour – we would prevent 1520 metric tons of CO₂e from entering the atmosphere each year. Over 20 years, steady growth of clean, green electricity at this pace would prevent the emission 319,114 metric tons of CO₂e compared to the “do nothing” option. At the end of 20 years, we would derive 2,000 kWh per person per year from local renewable sources.

Fiscal Impact and Synergies

Because solar and wind energy are subsidized by the state and federal governments, and because innovative leases and PPAs are now available, for many residents and businesses the switch to solar energy is already cash flow positive. (See, for example, the no money down financing packages offered by SolarCity¹ and other companies.)

¹ <http://www.solarcity.com/solarlease>

As solar and wind prices decrease due to technical innovation and expanded production capacity, and as the price of conventionally generated power rises due to fuel costs and carbon taxes, it is likely that renewable energy will be less costly than conventional energy well before 2020. (See the graph on the next page.)

Having goals will lend urgency to the implementation of all other GHG-reducing projects in the city. We believe this will create an indirect positive fiscal impact.

Obstacles

The Mountain View City Council will need to develop goals that are aggressive enough to make a significant impact, but not so aggressive as to create a backlash within a framework of significant uncertainty about future costs for renewable and non-renewable energy. We recommend the National Renewable Energy Laboratory's "Models and Tools" web site as one good resource for City Council and Staff, http://www.nrel.gov/applying_technologies/modeling_tools.html

Partnerships

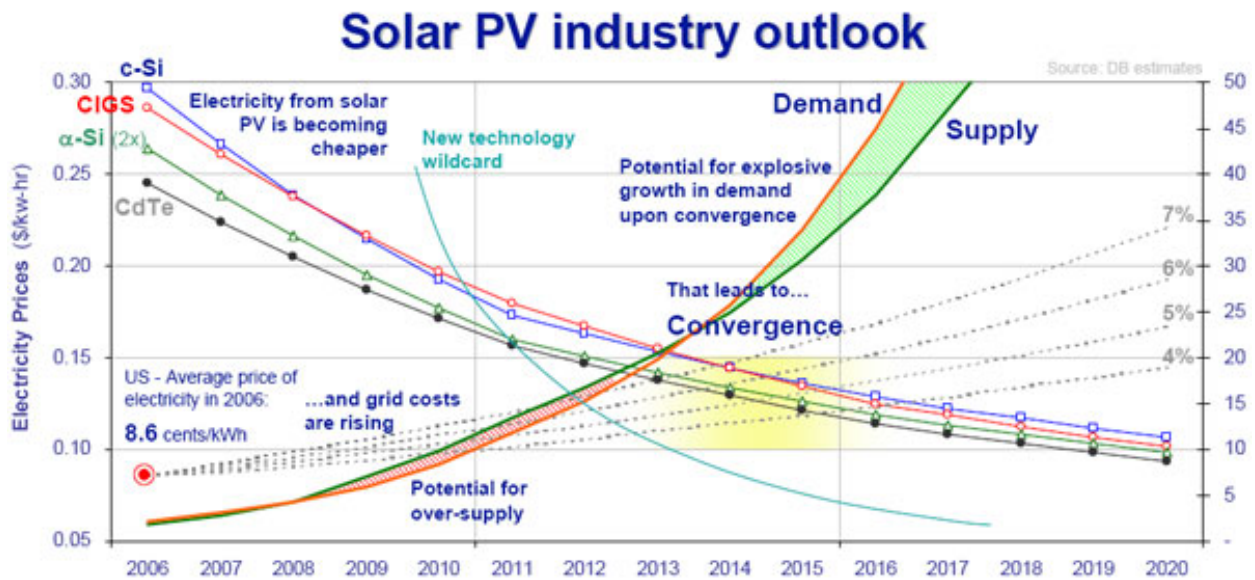
Solar energy companies and volunteer groups, such as Mountain View Cool Cities and PG&E.

Title: Install Solar Water Heaters and Solar PV Systems on City Buildings

Statement of Issue

The cost of electricity and natural gas are on a steep upward trend; solar photovoltaic (PV) and solar hot water heating systems provide a predictable cost for energy that competes well with current costs and will be even more of a bargain over the 20-30 year life spans of the systems. (The complex graph below basically predicts that unsubsidized solar PV will be as cheap as the average price of U.S. grid power between 2013 (5 years from now) and 2016. The crossover will occur first in places with high electricity prices, such as California. c-Si, CIGS, α -Si(2x) and CdTe are all different technologies for turning sunshine into electricity.)

In addition, we believe it is important for the City to take a visible leadership role in the adoption of renewable energy.



Synopsis of the solar PV industry over the next 10 years. (Source: Deutsche Bank Securities)

Recommendation

By 2016, the City should install renewable energy systems, primarily solar PV, to generate 100 percent of the electricity that City Operations consume. (This is a Medium and Long term recommendation.) It should install solar water heating on all City buildings where the NPV of the project is positive, using the City’s standard financial models and the costs of fuels provided in the introduction of this chapter.

Environmental Impact

Solar PV reduces carbon emissions, creates jobs, and potentially saves money. Simply put, going green means saving green. Installing solar PV on city buildings and public land has high visibility to

the community and sends the message that it is practical. Installing solar educates and inspires the community to learn more about renewable energy.

If AB 2466 (passed in mid-August) is signed by the Governor, local governments like the City of Mountain View will be able to aggregate electrical consumption across all their facilities and offset it with solar PV installed at any or all facilities. (This would allow solar PV to come from sunny, open spaces like closed landfills and be net metered against the high energy demands of City Hall or a water treatment plant.). We recommend installing some of the City's future solar resources in high traffic, high-visibility buildings and parks such as the Library and Shoreline Park.

Installing solar water heaters on city buildings offsets the financial and environmental cost of heating water by natural gas or electricity. It is roughly three times more efficient at capturing sunlight energy than solar PV.

Installing solar PV and hot water heaters broadcasts a message to our community that it works. PG&E offers a solar educational program that schools can leverage to educate students about the benefits of renewable energy.

Fiscal Impact

In 2005, City operations consumed 7,456,637 kWh. It would take approximately 5,000 kW of solar panels to produce this much electricity. This is about 3 times larger than the Google solar PV installation completed in 2007. If the City is able to reduce its energy consumption through conservation, the amount of solar panels required would be smaller.

The most economical way for cities to "go solar" is to enter into Power Purchase Agreements with for-profit companies that have a "tax appetite" to take advantage of the Federal Tax Credits and accelerated depreciation that are currently available. (The tax credits are likely to lapse briefly in early 2009, but we anticipate they will be renewed and possibly even enhanced in early 2009.)

As an example of what a government agency can achieve, San Jose Unified School District signed a PPA with Chevron in 2007 to install solar PV systems in all of their K-12 schools. Over the 25-year lifespan of the project, the District expects to save \$25 million in energy costs and reduce its utility power demand by 25 percent. Overall, the district estimates it will cut the equivalent of 37,500 metric tons of carbon dioxide emissions.

Obstacles

If AB 2466 is not signed, the City will need to expend significant amounts of effort identifying the buildings where the cost of solar is lowest and output and payback are highest. At present, a solar PV system can only offset the usage from a single electric meter. Solar hot water does not have this constraint.

Partnerships

The City would likely wish to solicit bids from several PPA providers through an RFP process. After the City has installed its first one or two solar projects, it can offer guidance to local school districts and El Camino Hospital District about how to manage the RFQ/PPA process effectively. This can save them time and trouble if they decide to install solar projects of their own.

Title: Enroll in the PG&E *ClimateSmart* Program for City Operations

Statement of Issue

Energy consumed by City operations generates large amounts of GHG. The City should become carbon neutral with respect to its purchases from PG&E. PG&E’s *ClimateSmart* program offers an easy and inexpensive way to do this.² PG&E uses voluntary payments by *ClimateSmart* participants to capture methane from dairy cow wastes and turn it into useful natural gas using bio-digesters. By keeping the methane out of the atmosphere, and the using bio-gas rather than natural gas (a fossil fuel), the program reduces emissions of GHG in two ways at once.

Recommendation

The City of Mountain View should enroll in PG&E's *ClimateSmart* program to offset 100% of the GHG from the electricity and natural gas that city operations consume. Millbrae, Menlo Park, and Rocklin are northern California cities that are already enrolled in *ClimateSmart*.

If PG&E ever offers an option to purchase electricity generated from only renewable sources, the City should sign up for it. (Such programs are called “green energy” programs and typically cost about 5-15% more than standard rates.)³ The City should remain enrolled in *ClimateSmart* to offset the GHG produced by its use of natural gas.

Environmental Impact

In 2005, the City consumed 7,456,637 kWh of electricity and 201,772 Therms of natural gas. Assuming .489 lbs of CO₂e per kWh, the electricity we bought produced 1,653 metric tons of CO₂e. Assuming 11.7 lbs of CO₂e per therm, burning natural gas produced 1,071 metric tons of CO₂e. Total: 2,724 metric tons.

Fiscal Impact

Enrolling in *ClimateSmart* adds an additional fixed rate of \$0.00254 per kWh (for electricity) and \$0.06528 per therm (for natural gas). The annual cost of *ClimateSmart* participation, based on 2005 usage, would be \$32,112 (\$18,940 for electricity and \$13,172 for natural gas).

Cost per Metric Ton of CO₂e Eliminated or Avoided

\$32,112 / 2,724 metric tons = \$12/metric ton.

Obstacles

This is an inexpensive step with a very low cost per ton of CO₂e offset. We do not anticipate that it will be controversial. Several other cities have already done it.

² *ClimateSmart*: <http://www.pge.com/climatesmart/>

³ Greenergy: <http://www.smud.org/community-environment/greenergy/index.html>

Title: Strongly Promote Solar Water Heating

Statement of Issue

Reducing Mountain View's usage of natural gas can be accomplished most quickly and least expensively through the widespread adoption of modern solar water heating systems. Solar water heating is a mature and proven technology that uses the sun's free energy to help heat water for homes and businesses. Modern solar water heating systems are robust and will continue operating for decades with minimal maintenance. As natural gas costs rise, the cost of heating water with free, dependable solar energy will remain unchanged for as long as the sun shines on Mountain View.

Recommendation

There are a variety of options that the City can choose for promoting solar water heating. (This is a Short, Medium and Long term recommendation.)

We feel the most promising approaches are:

1. The City could task Staff, assisted as appropriate by volunteers, to determine the best options for promoting and facilitating the adoption of residential and commercial solar water heating. Areas to investigate include: speeding permitting, reducing fees, and providing information through multiple channels about the benefits of solar water heating.
2. The City could require solar water heating in all new buildings unless closely-surrounding trees, site-specific issues or design factors make it uneconomic. (The economics of solar water heating are so compelling that this exception is unlikely to be invoked.)
3. The City could also investigate offering low-cost loans to building owners who install solar water heating systems on existing structures. Santa Clara has had a program like this since 1975. (In the Santa Clara program, the City leases installed solar water-heating systems to "industrial process" applications, multi-family housing, and owners of swimming pools, with the user paying an installation fee and monthly gas bill deductions. Several hundred buildings have signed up over the past 33 years.) Palo Alto has just started a similar program. Berkeley is developing a similar program that will initially focus on solar PV.

Environmental Impact

Every solar water heating system installed in Mountain View reduces the city's carbon footprint and dependence on fossil fuels. For example, we have learned that "the carbon dioxide saved by using a solar water heater for a family of four is the same as that produced by driving a car (at an average fuel efficiency of 22 mi. per gallon) 12,000 mi. each year".⁴

⁴ Solar Energy Resource Guide, especially the section "An Introduction to Solar Hot Water", compiled and edited by Diana Young and Liz Merry; September 2005. An updated version of this publication is available in hardcopy or for download, for a small fee, at www.norcalsolar.org. It is cited here as an usually lucid introduction to current solar hot water heating options and its financial and environmental implications. There are additional authoritative references given at the end of the article.

Fiscal Impact and Synergies

Here is a typical small-business example from a local Laundromat. It uses the owner's utility bills and the owner's intelligent guesses about other variables:

- Hot water usage: 121 gallons/day, or 44,165 gallons/year
- Amount of gas used for water heating: 2,637 therms/year
- Using our average inflation-adjusted \$/therm rate for the next 20 years (\$2.45/therm), 2,637 therms saved will reduce natural gas purchases by \$6,461/year, or \$129,213. (This assumes that no natural gas will be needed, even on cloudy winter days, which probably overstates the savings by 10-20 %.)
- 2,637 therms/yr * 11.7 lbs. CO₂e per therm = 30,853 lbs. CO₂e (or 14 metric tons) avoided per year

Cost per Metric Ton of CO₂e Eliminated or Avoided

Continuing the Laundromat example, assume a system cost of \$20,000, federal tax credits of \$6,000 and State rebate of \$4,000, leaving a net cost of \$10,000.

- Over the 20 year life of the system, 280 metric tons of CO₂e would be eliminated.
- The one-time investment \$10,000 will result in operational savings of \$129,123. Thus, the Laundromat owner will save \$119,213 over 20 years by replacing gas water heating with solar. He will actually **save** \$426 per metric ton of CO₂e he eliminates.
- If the City created a loan program, the fiscal impact to the City would vary depending on how much it contributed to help finance the conversion to solar thermal. Given the short payback period, the cost is essentially that of the initial cash disbursement for the loan.
- A small amount of staff time would be needed, depending on the options selected.

Obstacles

Probably the biggest obstacle is a general lack of understanding of this mature, very beneficial technology for home or business.

Partnerships

Work with volunteer corps on outreach; encourage local solar water heating system installers to help Mountain View get hundreds of these systems.

Title: Promote Enrollment in PG&E’s *ClimateSmart* Program by Residents

Statement of Issue

PG&E’s *ClimateSmart* carbon-offset program is a very easy and inexpensive way to offset the GHG released by the use of electricity and natural gas. Once local households are signed up for it, they are likely to stay enrolled. The City can encourage initial enrollment by making *ClimateSmart* free in 2009 for all residential customers.

Recommendation

The City adopt a policy to write checks in early 2010 equal to the amount of the residents’ payment to *ClimateSmart*. Documentation of enrollment and the amount can be found in the letter that PG&E mails to each enrollee for tax purposes. (This is a Short term recommendation.)

Environmental Impact

PG&E says a typical residential customer uses 540 kWh / month and 45 therms/month, resulting in a bill of \$140/month. 540 kWh / month produce 1.43 metric tons of CO₂e/year and 45 therms / month produce 2.84 metric tons of CO₂e/year. This adds up to 4.27 metric tons per residence/year.

If all 33,475 residences were enrolled in *ClimateSmart* the CO₂e reduction would be 144,026 metric tons of CO₂e in the first year.

Assume 20% of the initial enrollees drop out every year after the first year. If so, the average customer will participate in *ClimateSmart* for 4.94 years based on a 20-year exponential decay curve. $4.94 \times 144,026 = 711,488$ metric tons of CO₂e.

Fiscal Impact and Synergies

PG&E says the typical residential customer enrolled in *ClimateSmart* will pay less than \$5 per month. (This amount is tax deductible for taxpayers who itemize.) The exact amount varies with actual energy use, with a cost of \$0.00254 per kWh (for electricity) and \$0.06528 per therm (for natural gas).

Cost per Metric Ton of CO₂e Eliminated or Avoided

$\$2,088,840 / 711,488$ metric tons = \$2.94 / metric ton. This is an *extremely* low cost compared to other recommendations contained in this report. The total amount of GHG offset will vary with the level of participation, but the cost per metric ton is the same no matter how high or low participation is.

Obstacles

The size of the expenditure could be quite high, but the cost per metric ton is extremely low.

One way to mitigate this would be to have a one year utility tax increase of 1-3% for residents who do NOT enroll in *ClimateSmart*. However, we do not recommend this approach.

Other potential obstacles:

- There may be legal barriers or legal challenges
- As with any program that requires action by thousands of individuals, communication of the benefits in such a way as to inspire action will be a challenge.

Partnerships

According to PG&E Government Relations Representative Papia Gambelin, PG&E would be eager to partner with the City on this program and could probably provide several thousand dollars worth of marketing assistance.

Grant funding may also be available if we are the first city to initiate a program of this kind. Subsequent award funding may be available from DOE or government other agencies in recognition of this innovative approach.

Title: Encourage Property Owners to Undertake Energy-Efficiency Upgrades

Statement of Issue

A majority of Mountain View residents live in rented housing. Many rental units have substandard insulation, old and poorly maintained furnaces or wall heaters, leaky windows, and lack awnings or window films that would keep them cooler in summer. Innovative incentives are needed to improve the energy efficiency of apartment units.

Recommendation

For one year, the City should double-match PG&E's energy rebates for apartment owners and occupants. The following year the City should match PG&E's rebates. These rebates generally apply to ceiling insulation, wall insulation, window film, water heaters, clothes washers, dishwashers and air conditioners. (This is a Short term recommendation.)

Environmental Impact

Suppose that 1,000 apartments were upgraded over the two year period, and that each reduces its energy use by 15% as a result. Based on the averages described in Recommendation 5-5, this would result in a savings of 81,000 kWh/year and 6,750 therms/year. The GHG impact would be 54 metric tons per year. Savings would last for perhaps 20 years, resulting in a cumulative impact of 1,080 metric tons. One way to increase apartment owner interest in this program would be for the City to certify energy efficient rental buildings. The intention is not to have a complex rating process, but simply to make it easy for tenants to know whether the building they live in (or are thinking of moving into) has ceiling insulation, wall insulation, and so on.

Fiscal Impact and Synergies

Assume 500 apartments participate in Year 1 and another 500 in Year 2. Assume \$1,000 is invested in each apartment by the tenant or landlord, and that the PG&E rebate is \$100/apartment. Then the City's contribution is \$200/apartment in Year 1 and \$100/apartment in Year 2. The total cost to the City would be \$150,000 to leverage \$1,000,000 of private investment. PG&E would contribute \$100,000 over the two-year period through their existing rebate program.

Cost per Metric Ton of CO₂e Eliminated or Avoided

Using the assumptions above, \$150,000 of City funds would result in a reduction of 1,080 metric tons. The cost would be \$139/metric ton.

Obstacles

Building owners need to be communicated with and convinced to make needed improvements.

Partnerships

PG&E could help the City publicize and manage this program. Grant funding might also be available for some parts of the program. Local news media, including non-profits and schools, could be partners in publicizing the new rebate program.

Title: Implement a Pilot Program to Provide Solar PV for Affordable Apartments

Statement of Issue

A majority of Mountain View residents live in rented housing. Many rental units have outstanding solar exposure. Innovative incentives are needed to get solar installed on apartment buildings, because neither landlords nor tenants currently have a financial incentive to invest in it.

Recommendation

The City should investigate the possibility of giving solar systems to certain apartment owners who agree to not raise rents by more than 1%/year for 5 years as a way to preserve affordable housing and reduce GHGs. This program would only be available to units that rent for less than the average rent (measured in dollars per square foot) of Mountain View apartments – in other words, only to the more affordable half of Mountain View’s rental housing stock. (This is a Short, Medium and Long term recommendation.)

Environmental Impact

PG&E says a typical residential customer uses 540 kWh/month. Let’s assume the average apartment uses only 400 kWh. Offsetting 75% of this with solar would displace 300 kWh/month of PG&E-supplied electricity. That amount produces .8 metric tons CO₂e/year. Over the 30 year life of the solar PV system 24 metric tons would be avoided per apartment. If 500 systems are purchased in this program, the impact would be 12,000 metric tons.

Fiscal Impact and Synergies

A 2.4 DC kW solar system can produce 300 kWh/month, and such a system can be purchased and installed for a net cost of about \$13,000/system in a bulk purchase by a City Government. Let’s assume that 500 systems were purchased initially, for a total investment of \$6,500,000.

(A financial structure called a Power Purchase Agreement (PPA) might allow the City to roll out a program like this with no capital outlay. A PPA would make the tax credit and accelerated depreciation benefits available to for-profit companies available to this program. This would not be the case with direct City ownership of the solar equipment.)

Assume the average rent on a participating unit is \$1400/month. With the voluntary temporary rent stabilization aspect of the program, each renter will avoid about \$13,580 in rent payments over 5 years (assuming that rent would have gone up by 8.5%/year without the program.) Their electricity bill will also be reduced by about \$500/year or \$2,500 over 5 years.

Thus, though this appears to be a transfer of city funds to landlords, it is actually a transfer to the renters during the first five years. After the rent stabilization period expires, landlords will be able to charge market rents again, and these will be higher than on non-solar apartments because the solarized units will have lower electricity bills (by about \$50/month). The solar system will last 25 years beyond the initial 5 year period, giving the landlord ample time to share in the financial benefits.

A transition from voluntarily constrained rents to full market rate rents should be designed into this system. For example, perhaps rent increases should be limited to 3% per quarter for years 6-8.

Cost per Metric Ton of CO₂e Eliminated or Avoided

\$6,500,000 / 12,000 metric tons = \$542 / metric ton

The attractiveness of this recommendation is not based solely or even primarily on the cost per metric ton of CO₂e reduction. There are strong synergies with the maintenance of affordable housing and with extending the benefits of renewable energy to renters.

Obstacles

A great deal of education would be involved. Education and outreach would have to be done in multiple languages. Because of the relatively high cost of solar PV, this effort may need to be done in conjunction with energy efficiency improvements aimed at the same housing stock.

- Informing and educating landlords
- Informing and educating tenants

Partnerships

The goal would be to develop an approach that was endorsed by landlord groups like Tri-County Apartment Association and also by tenant groups.

Because this program is innovative and appealing to foundations that support affordable housing and renewable energy, significant amounts of grant funding may well be available to support it.

Title: Provide Free Energy Audits for Residents and Low-Cost Audits for Small Businesses and Promote PG&E’s Energy Conservation Programs

Statement of Issue

From 2005 baseline data: Commercial and Industrial sectors together account for 24% of annual CO₂e emissions in Mountain View. Except for the largest firms, businesses have little time or expertise to focus on reducing energy consumption. This is particularly true for small business. Residential customers account for 12% of the CO₂e emission and have somewhat greater motivation to reduce energy consumption because they pay their own bills. However, many residential customers may feel overwhelmed by the amount of information and the large number of options. Taking concrete action sometimes takes a helping hand.

Recommendation

We recommend that the City offer free energy audits to residences and low cost (~\$50) audit for small businesses by contracting with energy services companies or non-profits. These audits would include recommendations primarily focused on conservation (“low-hanging fruit”), but can include renewable energy options such as solar PV and solar water heating if appropriate. The small business audit should have a high degree of expertise and therefore a small fee should be charged to recoup the cost and ensure a focus on the more highly motivated customer.

In addition, the City should promote PG&E’s energy audit programs for small, medium and large customers. PG&E programs are robust for medium and large business. However for small businesses they offer only phone and online consultations plus various incentive programs.

The residential program should be neighborhood-based to promote a culture with neighbors for supporting sustainability going beyond technology upgrades to change behaviors for long term reduction of the carbon footprint in the home and in the neighborhood.

Environmental Impact

In its residential energy audits, Acterra has documented CO₂e reductions of up to 5 metric tons per household per year due to energy conservation measures. Acterra believes these savings are likely to be permanent (or at least as permanent as the building in which they are implemented). Over 30 years, this would be 150 metric tons of CO₂e reduced per home. Let’s assume that an **average** single-family home (including condos) would achieve a much more modest 5 metric tons over 30 years. If 20% of Mountain View’s 13,356 single family homes were able to save 5 metric tons, the total impact would be 66,780 metric tons over 30 years (or 2,226 metric tons per year)

The positive impact for small business has yet to be estimated, however we can use the experience of that the City of Cambridge has had with a similar program in conjunction with a nonprofit called Cambridge Energy Alliance.

Fiscal Impact and Synergies

We believe the City could hire a full time volunteer coordinator for \$70,000 per year for 3 years. Using the Acterra volunteer based approach, the rest of the labor would be free. The program could be paid for through an increase in the City's utility tax or by support from PG&E, government agencies like the Air Resources Board, or non-profit organizations.

Cost per Metric Ton of CO₂e Eliminated or Avoided

\$210,000 / 66,780 metric tons = only \$3.10 per metric ton.

Promotion of PG&E audit services for commercial and industrial customers would have minimal cost to the City. (By the way, restaurants have an extremely high energy usage per square foot. Given the large number of restaurants in Mountain View, special outreach programs targeted to restaurant owners should be a priority.)

Obstacles

For small businesses, identifying an energy service company that can meet a broad range of needs may be a challenge, so focus on the highest return opportunities is suggested.

Partnerships

Acterra is a local non-profit that has contracts with Redwood City, Menlo Park, Palo Alto and Sunnyvale to provide basic energy audit services for residents. Their Green@Home service includes changing several light bulbs to CFLs, changing shower heads and installing a retractable clothes line. An energy conservation plan is created with the resident and a follow-up call several months later helps track the steps that are implemented. Acterra manages local volunteers to implement the program in a low cost way.

PG&E would be a key partner to promote their energy audit services to businesses. These programs are targeted at medium and large size commercial and industrial customers. They offer three main programs including an on-site audit, an integrated audit for customers over 200kW and a targeted technology consultation.

An organization that can be a model for this program is the Cambridge Energy Alliance (CAE) in Cambridge, MA. They provide free energy audits to small business, commercial and residential customers through a similar program. CAE has also streamlined the loan process for implementing the audit recommendations.

Title: Encourage Participation in PG&E’s Demand Response and Permanent Load Shifting Programs

Statement of Issue

From 2005 baseline data: Commercial and Industrial sectors together account for 80% of annual CO₂e emissions from electricity use. (Most CO₂e comes from transportation uses, but when we focus strictly on CO₂e due to electricity, the commercial and industrial sectors are four times more important than the residential sector.)

Energy curtailment is the least expensive way to avoid construction and operation of infrequently used “peaker” power plants. Peaker plants are powered by natural gas, are highly polluting when in use – and yet, they may only be used for a few dozen hours per year.

The City can encourage participation in demand response programs using economic means – with an increase in utility (electricity) user tax receipts with PG&E and aggregator partnerships.

Recommendation

Provide a time-limited utility tax reduction to Commercial and Industrial customers that participate in Demand Response (DR) and Permanent Load Shifting (PLS) programs. For others, raise the utility tax rate for the same duration thereby providing time-limited economic impetus for participation. Our assumption is that once a customer is on DR or PLS and recognizes the benefits, the utility tax rate stimulus will no longer be required and the CO₂e emissions will decrease with increased participation. Increased participation rates would reduce demand for future construction of peaker power plants and thereby reduce CO₂e emissions.

- *Next steps:* Develop financial model to study and determine optimal tax reduction duration and utility tax rate incentive. Proposed benefits start accruing soon after implementation – so this is both a short- and long-term recommendation.

Environmental Impact

Increase awareness and participation in DR programs will reduce need for bringing online expensive power plants during peak summer months.

- Fewer low-utilization, natural gas-fired power plants, operating in peak summer months with fewer GHG and CO₂e emissions. Base-load plants are about 40% more efficient than peaker plants, so this program would reduce the CO₂e for each kilowatt avoided or shifted.
- Serve as trigger to examine daily/seasonal consumption and launch programs to optimize them. Incentive: Annual participation payment and actual reduction in load payment.
- Reduce future energy demand and decrease future CO₂e emissions.

Fiscal Impact and Synergies

This recommendation will not reduce utility tax revenue to the City. The recommendation will increase utility tax receipts at first when customer participation in demand response is low. Later, tax collections will return to approximately current level after the agreed-upon participation rate is met or after the tax reduction program ends.

Obstacles

Perceived obstacles:

- Time limited increase in utility tax required. Will need political will to promote it and gain agreement.
- Increased tax rate may make city appear business unfriendly. Can be overcome by building awareness, education and business/public outreach.

Actual obstacle:

- Informing commercial and industrial customers about program and its benefits with the desired goal of convincing them to adopt and implement DR.

Partnerships

PG&E already collects utility taxes for the City. Extend this to adjust utility tax rate for commercial and industrial DR and PLS participants. *Note: PG&E's program for PLS is called Shift and Save.*

Benefit to City:

- Reduced GHG in a sustainable manner, time limited increased utility tax receipts.

Benefit to PG&E:

- Increased participation in DR program.
- Estimate no major change in systems to support implementation of recommendation.
- Reduced operation and management expense for high-cost peaker plants.

Permanent Load Shifting (PLS) technologies are particularly useful for shifting the load for air conditioning. Technologies for PLS include phase change, flywheels and cold energy storage. Cold energy storage for refrigerant-based AC is being implemented today and is more efficient at night than during the day. This technology is very efficient and should be promoted. An example can be found at: <http://www.ice-energy.com/pages/2008NewsReservoir/Apr7/tabid/241>

Title: Print Information About Energy Conservation and Renewable Energy Options on Utility Bills

Statement of Issue

The City sends six utility bills per year to every water and garbage customer. Each of these is an opportunity to communicate about energy conservation, renewable energy and sustainability.

Recommendation

Utilize the Mountain View utility billing system to communicate sustainability messages to customers. The utility bills would communicate Mountain Views goals and provide suggestions on how customers can help meet those goals. (This is a short, medium, and long term recommendation.)

In addition, investigate tailoring messages based on how much the customer consumes. Special messages could be tailored for the top and bottom consumers of energy to support sustainability goals. The lowest consumers of energy could receive positive statements of support. The highest consumers would get statements indicating that they are in the top 1%, 5% or 10% of customers using natural/electricity and then suggest options for reducing their bills and environmental impact.

Environmental Impact

If the average household reduced its energy use by only 1% as a result of these messages, it would be equivalent to completely eliminating the energy use (and environmental impact) of 335 homes (based on 33,475 residences in Mountain View). As described in Recommendation 5-5, the average residence produces 4.27 metric tons of CO₂e/year from electricity and natural gas. 335 homes produce 1,441 metric tons per year, or 43,230 metric tons over a 30 year period.

Fiscal Impact and Synergies

As long as the weight of the utility bill doesn't increase (and require more postage), costs are truly minimal. Assume that a 2nd page is added to the bill, costing \$.60/year per residence (\$20,085/year) and that this program continues for 5 years (5 x \$20,085 = \$100,425).

Cost per Metric Ton of CO₂e Eliminated or Avoided

\$100,425 / 43,230 metric tons = \$2.32 per metric ton.

Obstacles

The flexibility of the billing system needs to be investigated. Privacy concerns for tailored messages using data from PG&E may be insuperable unless laws are changed.

Partnerships

PG&E would be a key partner, especially if they can share household-specific data with the City.

Appendix A: Secondary Recommendations

Recommendations considered by this working group but not selected for the Top 10 (in no particular order):

- The City should conduct a study to learn whether land owned by the City has the potential to be used to generate electricity from wind at a reasonable cost.
- The City should develop a geothermal prototype project.
- The City should encourage restaurants to use yellow grease for biodiesel.
- The City should enter the Solar America Cities contest in 2009 to win a grant to pay for implementation of some of these ideas.
- The City should have a goal to create a sizeable number of solar roofs in MV and a program for achieving that.
- The City should investigate programs like SMUD's *SolarShares* as a way to enable apartment and condominium residents to own their own solar energy systems.
- The City should make ClimateSmart "opt-out" for new PG&E customers in Mountain View.
- The City should maximize the amount of Shoreline methane used to heat nearby buildings or produce electricity.
- The City should offer a solar financing plan like the one being developed in Berkeley.
- The City should offer underutilized vacant land as test-beds for solar and wind energy pilot sites.
- The City should put a solar cooker in each Mountain View park.
- The City should raise the utility users' tax for electricity and natural gas.
- The City should require solar PV on new buildings.
- The City should require that new pools and spas be heated by renewable energy sources.
- The City should send energy conservation messages via SMS text messages.
- The City should turn garbage into energy.
- We should use solar on City buildings and City-owned land to feed the grid.

Appendix B: Citations, Web Sites, and Contacts

Recommendation 5-2:

Web Sites

- Solar Hot Water: <http://www.homepower.com/basics/hotwater/>
- Solar PV facts: <http://www.solarbuzz.com/Consumer/FastFacts.htm>
- Google 1.6 MW solar PV array: <http://www.google.com/corporate/green/energy/reducing.html>
- San Jose Unified School District Solar agreement:
<http://www.schoollibraryjournal.com/article/CA6464645.html>
- *Making solar hot water count: Generating green tags with solar hot water:*
<http://www.renewableenergyworld.com/rea/news/reworld/story?id=52695>
- Assembly Bill 2466: <http://www.assembly.ca.gov/acs/acsframeset2text.htm>

Recommendation 5-4:

Citations

- Solar Energy Resource Guide, especially the section "An Introduction to Solar Hot Water", compiled and edited by Diana Young and Liz Merry; September 2005. An updated version of this publication is available in hardcopy or for download, for a small fee, at <http://www.norcal solar.org>. It is cited here as an unusually lucid introduction to current solar hot water heating options and its financial and environmental implications. There are additional authoritative references given at the end of the article.

Web Sites

- For information about the City of Santa Clara's solar water heating program,
<http://www.santaclaraca.gov>

Recommendation 5-8:

Web Sites

- Acterra: www.acterra.org/greenathome/index.html
- PG&E audit program: www.pge.com/mybusiness/energysavingsrebates/analyzer/onsite
- PG&E small business programs:
<http://www.pge.com/mybusiness/energysavingsrebates/incentivesbyindustry/smallbusiness/energymanagement/>
- Cambridge Energy Alliance: www.cambridgeenergyalliance.org/

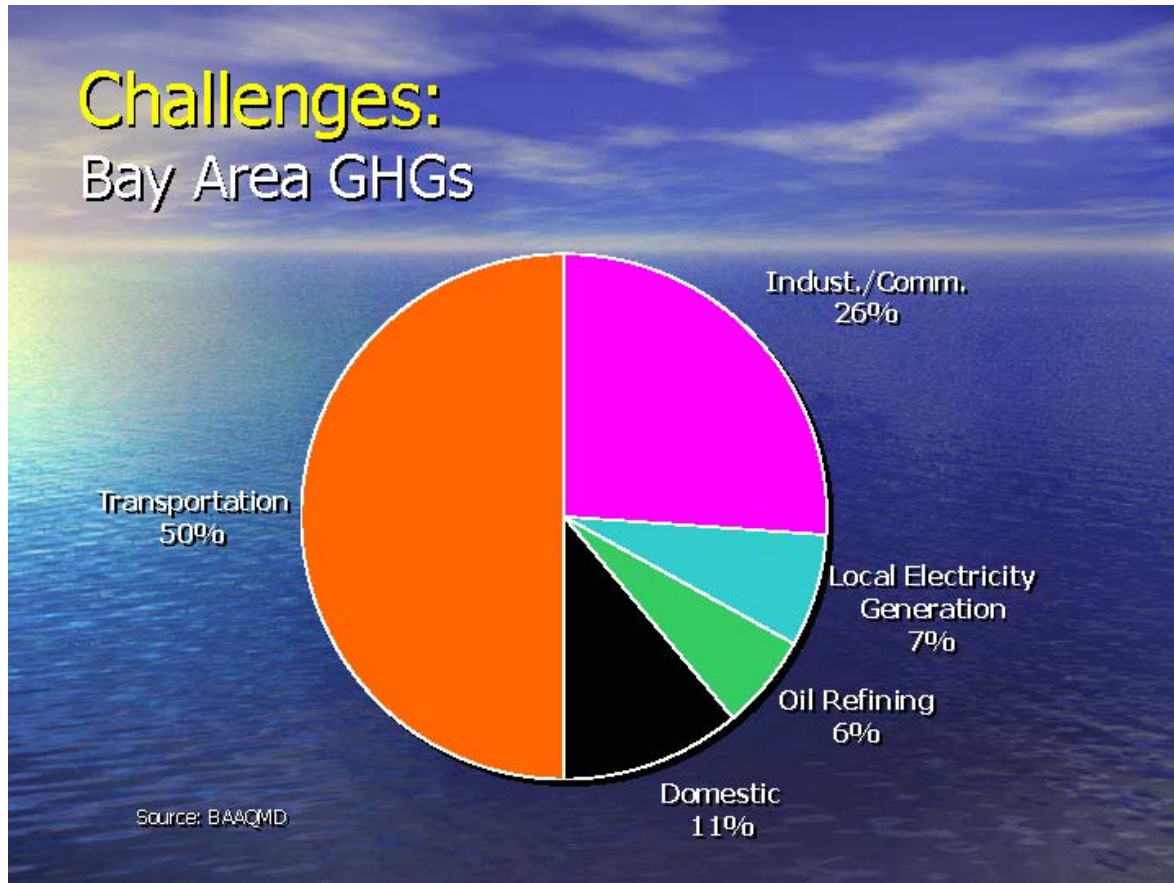
Contact Information

- Acterra: Debbie Mytels (debbiem@acterra.org) or Twana Karney (twanak@acterra.org)

Chapter 6. Transit and Transportation

Introduction

The transportation sector represents approximately 50% of Greenhouse Gas (GHG) emissions. The chart below was prepared by the Joint Policy Committee of the Metropolitan Transportation Commission, ABAG, and the Bay Area Conservation Development Commission.



In order to achieve State of California objectives¹ for reducing CO₂ emissions by 80 percent below 1990 levels by the year 2050, approximately one-half of the reductions will need to come from the transportation sector. This point cannot be stressed enough. **If the City of Mountain View is going to achieve CO₂ emissions targets, reduction in petroleum use by the transportation sector must be aggressively addressed.** If our world, our nation, and our community are to achieve substantial reductions in CO₂, there must be a fundamental shift in our thinking, our ways of doing business, our personal investments in mobility vehicles, our public investment in alternatives to petroleum use, our land use decisions, and ultimately, our personal choices on the modes of transportation we decide to utilize for the trips we make.

¹ California Global Warming Solutions Act of 2006 and Governor's Executive Order S-20-06

There are five primary strategies or technologies for reducing petroleum use for transportation:

1. First, we need to focus on **alternatives to normal driving**, such as walking, biking, carpooling, car sharing, trains and buses.
2. Second, **better land use planning** can make these options more viable for more people. To this end, the Transit and Transportation Working Group had three joint working sessions with the Land Use Planning Working Group.
3. Third, we need to transition to **more fuel-efficient and smaller cars, cars powered by biofuels, hybrid cars, and neighborhood electric vehicles**; these fuels and vehicles are available today.
4. Fourth, we need to **price transportation** to not subsidize our current usage patterns of petroleum.
5. Finally, **next generation vehicles such as electric cars, plug-in hybrid cars, and hydrogen cars** will help us transition away from petroleum in the mid- to long-term, using electricity instead of petroleum as the preferred propulsion means.

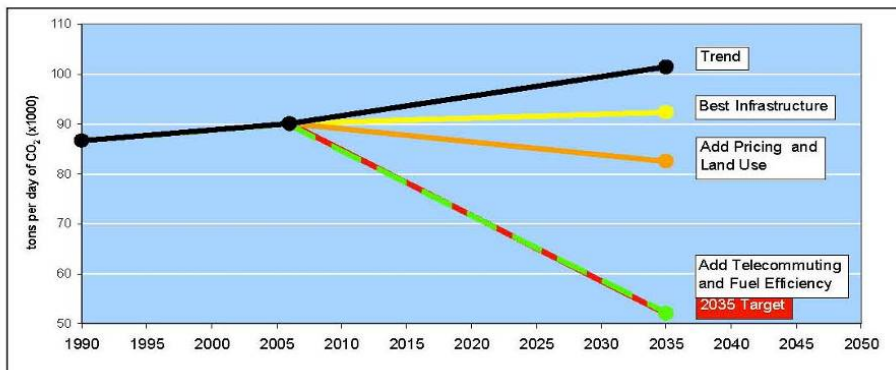
The Metropolitan Transportation Commission conducted technical analyses utilizing a modal-based approach, and pricing and land-use sensitivity analyses to determine how various broad packages of strategies would enable the region to achieve GHG emission objectives.² There is a need for aggressive implementation combining transportation behavior, pricing, land use, and fuel-efficiency advances if we are to achieve the target CO₂ reductions.

Emissions Measure: Carbon Dioxide (CO₂)

Target: Reduce CO₂ emissions by **40%** below 1990 levels

(Includes CO₂ from non-recurrent congestion)

Year	Tons per day of CO ₂ (x1000)
1990	87
2006	90
2035 Target	52



Obviously, achievement of CO₂ objectives for the transportation sector will require strong leadership at the national and state level. Fuel-efficiency standards and the research, development and deployment of alternative fuels and vehicles are national and state policy issues. The fact is that the transportation-sector initiatives that will have the most environmental impact in CO₂ reductions are the purview of Federal and State of California policy and regulation implementation. The June 2008 Scoping Plan³ for implementation of AB 32 in California lists the expected reductions in million metric tons of CO₂ equivalents (MMTCO₂E) from statewide policies and regulations, as shown in the following table.

² Metropolitan Transportation Commission, *2035 Change in Motion Travel Forecasts* for the San Francisco Bay Area 2009 Regional Transportation Plan Vision 2035 Analysis Data Summary. November 2007

³ California Air Resources Board *Climate Change Draft Scoping Plan*, June 2008.

Transportation Sector **	2020 Reductions
California Recommended Reduction Strategies	MMTCO₂e *
California Light-Duty Vehicle GHG Standards	
· Implement Pavley standards	31.7
· Develop Pavley II light-duty vehicle standards	
Low Carbon Fuel Standard	16.5
Vehicle Efficiency Measures	4.8
Heavy/Medium Duty Vehicles	2.5
· Heavy-Duty Vehicle GHG Emission Reduction	
· Medium- and Heavy-Duty Vehicle Hybridization	
· Heavy-Duty Engine Efficiency	
High Speed Rail	1
<i>* Million Metric Tons CO₂ Equivalent</i>	
<i>** See Appendix B for descriptions of strategies</i>	

State and Federal initiatives must provide leadership in improving auto-fuel efficiency and low carbon fuels. The working group has focused its efforts on what the City of Mountain View can contribute to reducing GHG emissions and improving overall sustainability goals at the local level. Our focus, in concert with the Land Use Planning Working Group, is to continue to build a community with a network of Village Centers and Grand Boulevards that enable an increased modal share of walking, bicycling, transit and significantly more utilization of zero or very low emission electric vehicles. These efforts will also reduce vehicle miles traveled by internal combustion engines.

Mountain View Has a Strong Foundation to Work From

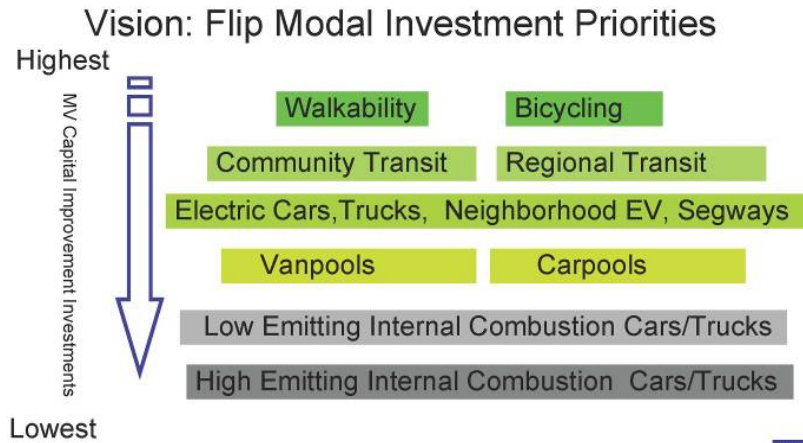
The City of Mountain View has a strong legacy of effective transportation and land-use planning. Compared to many communities, Mountain View has a very strong foundation to work from as the City considers new ways to address climate change concerns, and especially transportation sector contributions. Examples of these efforts include (partial list only):

- Mountain View Transportation Center: Caltrain, VTA light rail and buses, shuttles
- VTA Lines 22 and 522 on El Camino
- Urban design: Castro Street
- Transit-oriented development: The Crossings, Whisman Station, Avalon Towers, 399 W. El Camino
- Stevens Creek Bicycle and Pedestrian Trail
- The City of Mountain View is utilizing hybrid cars in its fleet and improving the efficiency of its vehicles.
- Google: the nation’s most extensive and well-utilized employee commute program

Recommended Goal

The City of Mountain View should adopt an overall transportation policy goal of “Feet First...Powered by the Heart.” This goal provides guidance for how the City should make transportation infrastructure investments to achieve overall mobility goals. This goal is very much aligned with the Land Use Planning Working Group’s Village Center and Grand Boulevard recommendations.

Feet First... Powered by the Heart



The challenges presented by global climate change necessitate a rethinking of priorities for funding of transportation projects at all levels of government. For the City of Mountain View, we are recommending a paradigm shift in Mountain View City Council policies, investment priorities, and City Staff allocation relevant to mobility. Walking and bicycling infrastructure improvements should receive top priority in the transportation portion of the City budget. The second tier priority should be community and City contributions to regional transit. The third tier should be accommodation and promotion of zero-emission electric cars, neighborhood vehicles, personal electric vehicles, such as Segways, hybrids, and plug-in hybrids. It is recommended that this vision be incorporated into the upcoming revision of the Circulation Element of the General Plan.

Recommended Guiding Principles

The above goal provides a vision for setting priorities for the City Council decision making in adoption of the Circulation element of the General Plan land-use deliberations, the capital improvement program, and Staff allocation.

- More land-use decisions that enable a significant shift to walking, biking, and neighborhood electric vehicle (NEV) driving opportunities. Bicycling and pedestrian infrastructure improvements will provide many modal shifts to bicycling and walking if there is continuation of land use decisions by the City Council that enable a greater degree of choice in being able to walk or bicycle for residents and employees daily activities.
- A reasonable alternative transportation choice for 75% of local trips
- Extensive use of emerging technologies for real time transit information, dynamic ride sharing, and smart paratransit.

Recommended Objectives

The average vehicle miles traveled per capita in the San Francisco Bay Area was 19.0 in 2006.⁴ The overall objective of the working group's recommendations is to reduce the vehicle miles traveled to an average of 17.1 vehicle miles traveled per capita by internal combustion engines, or by 10% by the year 2030.

⁴ Metropolitan Transportation Commission, 2035 Change in Motion Travel Forecasts, op. cit.

Overview of Recommended Strategies

The working group considered each of its priority recommendations in terms of how each might contribute to the recommended vision of “Feet First...Powered by the Heart” and our overall objective of a reduction of 10% vehicles miles traveled by internal combustion engines. The Chair of the working group has encouraged working group members to consider transportation and land use as an integrated system. Our short-term and Medium term priorities act as building blocks for making a paradigm shift in mobility choices.

Further, the working group’s priorities are part of a systems approach in rethinking a long-term vision of land use and transportation. They are not isolated individual recommendations. There is a well-documented correlation between the land use decisions the City of Mountain View makes and the mobility choices and corresponding transportation impacts that residents and employees make. Our recommendations support those of the Land Use Planning Working Group.

Therefore, we also feel that the fiscal impacts and environmental impacts cannot be adequately considered on a recommendation-by-recommendation basis. The Metropolitan Transportation Commission has recently implemented an activity-based transportation model. This model is much more capable of capturing the real impacts of the Village Center and Grand Boulevard concepts that provide the means to making our “Feet First...Powered by the Heart” vision work. The working group strongly recommends the General Plan consulting firm utilize this activity-based model to compare the environmental effects of the recommendations to business as usual.

It should be noted that two high-priority recommendations originally in the Transit and Transportation Working Group are now located in the Community Outreach and Green Business Working Group:

- Create Awareness of the Impacts of Transportation and Alternatives to Traditional Methods and Fuels
- Provide Encouragement for the Use of Hybrids, Plug-In Hybrids and Alternative Fuel Vehicles

Summary of Recommendations

1. Fully Implement Bicycle Boulevards
2. Provide Automated Bicycle Rental and Additional Bicycle Parking Facilities
3. Provide Community Shuttle Services
4. Adopt and Implement a Pedestrian Master Plan
5. Provide Alternative Transportation for School Children
6. Collaborate with Neighboring Cities To Develop a Regional Paid Parking Program
7. Fully Implement a Network of Four Grand Boulevards in Mountain View as Part of the General Plan Process
8. Establish a Green Parking Code in the General Plan and Zoning Ordinance
9. Increase VTA Bus Usage in Mountain View
10. Synchronize Signals to Calm Traffic and Reduce GHG Emissions

Additional recommendations that did not make the top 10 list but were contributed by Task Force members or the public are listed in the appendix.

Working Group

Cliff Chambers (Chair)

Shirley Ingalls

Bruce England

Jennifer Anderson

David Paradise

Ignacio Martin-Bragado

Les Montavon

John Carpenter

Deb Henigson, Land Use Planning Working Group Chair and liaison to Steering Committee

City of Mountain View staff and public agency staff who generously met with working group members

Joan Jenkins, City of Mountain View

Jessica von Borck, City of Mountain View

Mike Vroman, City of Mountain View

Corinne Goodrich, SamTrans

Title: Fully Implement Bicycle Boulevards

Statement of Issue

To increase bicycling options for city-wide transportation while reducing the need to drive, there should be a network of long-distance arterials specially designed for bicycles throughout the city and in the principle directions. These bicycle arterials are typically called “bicycle boulevards.”

Recommendation

The City should fully implement bicycle boulevards in Mountain View. City Staff should study the performance of the existing trial bicycle boulevard and implement the lessons learned to make that permanent. Then for the long term, use this first bicycle boulevard as a standard for implementation of the complete bicycle boulevard network. The current bicycle boulevard and the tentatively proposed complete network of these bicycle boulevards can be found in the “2008 Bicycle Transportation Plan” adopted in May 2008 by the City.

As the village concept being suggested by the Land Use Working Group manifests, these boulevards would be routed to provide the most efficient connectivity between the villages and other key points in the city.

Time Frame: Medium term

Environmental Impact

- Greater use of bicycling options will reduce the use of GHG-emitting vehicles
- Reduced need for street maintenance due to fewer automobiles, including construction and construction support equipment (which would further reduce GHG emissions) and paving materials (usually petroleum or other non-sustainable material based).
- Village interconnectivity through bicycle boulevards would make bicycling competitive with other modes for getting around in the city, reducing emissions further.

Obstacles

- The route suitable for a bicycle boulevard would not be suitable for through automotive traffic in order to make bicycling attractive and safe. Through automotive traffic would have to focus on the use of arterials built for automotive use; some neighborhood loss of automotive convenience could result.
- There is a lack of direct street continuity across El Camino Real and some other arterials to some extent, thus requiring route constructions along a median or some such and the moderate costs thereof.
- There are other barriers such as freeway, railroad, and creek routing, thus requiring greater costs for grade separations.

Partnerships

The MV Bicycle Pedestrian Advisory Committee (BPAC), neighborhood associations, and developers (for village conversions from shopping centers) could contribute to making the boulevard network more effective.

Title: Provide Automated Bicycle Rental and Additional Bicycle Parking Facilities



Statement of Issue

Many people could ride a bike instead of traveling by car to and from public transit or to get around town. But they may not possess a bicycle or are concerned about finding a good place to park it. Bicycle parking provisions have been sporadic and inconsistent throughout the city making it difficult to fully utilize the bicycle as a transportation option.

Recommendation

The City should facilitate installation of racks of bikes for automated rental at the train stations as well as in neighborhood depots near housing clusters (for example, at the approximately 15 well-distributed village centers proposed by the Land Use Group). The bikes would be sturdy single gear machines (with baskets), painted a distinctive color, with logo and instructions on the frame regarding rental and return. Rental charges should be low. In working out the details of the operation Mountain View could learn from the experience of other cities in the US and in Europe⁵. One possibility is that there be a yearly membership fee plus rental credits, prepaid by credit card, with low hourly rental rates. Cyclists should also be able to rent a bicycle on the spot, or make a reservation in advance using a credit card.

An alternative (or additional) set-up would have automated bicycle rental stations at a substantial number of Caltrain stations in Mountain View and in neighboring cities. The rental fee structure could be set to be attractive for dropping off a bike at one Caltrain station before taking the train to another station and renting another bike to get to the workplace and back to the train station- this would reduce the demand for places for bikes on the train itself.

Also, in order for bicycling to work as a preferred transportation option, bicycle parking must be available and the facilities should meet standards as has been done for automotive parking. The VTA Bicycle Technical Guidelines as well as City guidelines and requirements for these facilities should be vigorously applied.

Time Frame: Medium term

⁵ <http://www.washingtonpost.com/wp-dyn/content/article/2007/03/23/AR2007032301753.html>

Environmental Impact

- Reduced use of petroleum products from reduced use of vehicle fuels and materials for construction and maintenance.
- Reduction in vehicle miles traveled by cars within Mountain View (lower GHGs).
- Reduced need for car parking at train stations. More efficient use of existing spaces.
- Improved air quality, reduced travel times, improved health of MV residents because of exercise.

Fiscal Impact

- Set-up costs for the automated rental component could be substantial, including the need for expertise in choice of a suitable type of bicycle and the operation set-up. If the multi-city version were adopted the costs would be shared across participating cities and, most likely, with Caltrain. These costs could possibly be reduced through collaborations with bicycle manufacturers and repair shops. They might reasonably anticipate a subsequent increase in private bicycle use and sales.
- Reduced parking costs: increased use of bicycles would require more bicycle parking facilities, replacing some automotive parking spots; parking cost per bicycle is substantially less than for the automobile.
- The implementation of this and other recommendations that might further reduce the need for car parking at the Mountain View Caltrain Station. It is possible this would reduce the cost of a new parking garage near the station (estimated at \$17-20 million).

Obstacles

- If it should prove impossible in the short-term to find an appropriate vendor to set up the automated rental operation, it may be feasible to establish a Bicycle Library type of operation as has been successfully achieved by Bill Wright Burton and others in Arcata, California⁶ This latter type of operation may be volunteer intensive, and would, in time, be superseded by a more commercial operation.
- Not all city streets are well-designed for safe bicycle use, but the implementation of other bicycling related recommendations coming from this group will gradually rectify that situation.

Partnerships

- For automated bicycle rental: A bicycle rental vendor, local companies with an interest in bicycle commuting, for example, Google, a Bicycle manufacturer, Bicycle repair shop(s), and local bicycle enthusiasts (a possible volunteer pool). Bill Wright Burton would be a valuable advisor for such a project and collaboration with neighboring cities including Palo Alto is a distinct possibility. Caltrain should also be interested in the idea.
- For bicycle parking: Involvement of the Mountain View Downtown Committee as well as input from the MV Bicycle Pedestrian Advisory Committee (BPAC) and developers of one of the village concepts.

⁶ <http://www.librarybikes.org>

Title: Provide Community Shuttle Services



Statement of Issue

Mountain View lacks its own shuttle bus system. Such a system should be developed, using hybrid or (preferably) electric vehicles. The current Community Bus system, operated by the VTA, is limited in scope, and infrequent, even during its operating hours, which do not include evenings or weekends. In addition, fares are charged, which limits ridership. The fares are lower than other VTA fares, but this is not generally known, and may be a source of confusion to potential users of the system.

Recommendation

We recommend that Mountain View institute its own comprehensive system of frequent electric shuttles, designed to serve the needs of many sectors of the community, including:

- Connections to Caltrain, light rail, and other transport services that go beyond Mountain View.
- Trips that serve students in Mountain View.
- Connections for travel around town, including access to shopping, library, medical services, senior center, daycare center and pools without using a personal vehicle.
- Connections to downtown for restaurant patrons (for lunch and dinner).
- Evening and weekend shuttles to entertainment centers, including Shoreline Amphitheater, Century theaters and the Downtown Performing Arts Center. Also to Shoreline Park, and to the Farmers’ Market on Sundays.

The design of the system will clearly require considerable study and planning, and the system will doubtless evolve over time. Neighboring Palo Alto continues to refine and redefine its shuttle system⁷. There may be opportunities for coordination between Mountain View and our three neighboring cities of Sunnyvale, Palo Alto, and Los Altos in producing a rational system.

City-run shuttles should ideally be free and available to all (like the Marguerite system run by Stanford University). If that is deemed impossible, a system of prepaid passes could be sold by the City, and made available in multiple locations, including the Healthy Villages proposed by the Land Use Working Group. The system is much more likely to be successful, however, if it is free to all.

Time Frame: Medium term

⁷ <http://www.cityofpaloalto.org/civica/filebank/blobdload.asp?BlobID=12084>

Environmental Impact

- Utilizing the City of Menlo Park annual community shuttle ridership of 73,000 per year as benchmark, we assume that the City of Mountain could attract a similar ridership base. For sake of illustration, we are assuming that 75% of the ridership would be home-based work trip (average of 20 miles), and 25% (average of 3.5 miles) would be local trips. A recent passenger survey in Menlo Park found that 22% would drive alone if the shuttle was not available, and another 9 % would carpool. With these assumptions, there would be 100.3 annual metric tons of CO₂ reduced by the implementation of a community shuttle program. See Appendix D for calculations. Importantly, in the Menlo Park passenger survey 28% would not make the trip if the shuttle were not available. The mobility benefits for users of a community shuttle could far outweigh the benefits of CO₂ reduction benefits alone.
- Reduced need for parking in Mountain View, both at transit connections and at downtown locations

Fiscal Impact

The City of Menlo Park has an annual budget of \$350,000 per year for four shuttle routes utilizing clean diesel cutaway shuttles, operating 6,300 annual vehicle hours.⁸ The City of East Palo Alto, operates three shuttle services for \$425,000 per year, also utilizing clean diesel cutaway shuttles.⁹ With the utilization of small clean fuel buses, Mountain View should be able to operate a comparable community shuttle program *with* clean fuel vehicles for a 10-15% cost premium. The annual cost for a community shuttle program is between \$475,000 and \$550,000 per year.

Obstacles

- People don't like to get out of their cars, but if bus travel is free and they have to pay to drive and park a car then that may be an incentive to change behavior.
- Shuttle services planned in the past for Mountain View may not have been successful, but they were not comprehensive in scope, and gasoline prices were not as high as they are now.

Partnerships

VTA, Cities of Palo Alto, Sunnyvale, and Los Altos.

⁸ Debbie Helming, TSM Manager, City of Menlo Park

⁹ Mary Flamer, City of East Palo Alto Mobility Manager, City of East Palo Alto.

Title: Adopt and Implement a Pedestrian Master Plan

Statement of Issue

The City of Mountain View needs to provide a comprehensive plan to improve walkability throughout the City. Attractive pedestrian spaces are essential ingredients of healthy communities, both for support of multimodal travel and for providing great public spaces.¹⁰ While there are very good examples of good pedestrian access in Mountain View along Castro Street, Whisman Station, Stevens Creek Trail, to name just a few, there are significant opportunities for continuing to improve community infrastructure to improve the pedestrian environment.

The Healthy Villages and Grand Boulevard recommendations from the Land Use Planning Working Group focus on a pedestrian realm that provides pedestrians more safe, comfortable, and interesting walking spaces in their own neighborhoods.

The City Public Works Department, along with the Bicycling and Pedestrian Advisory Committee (BPAC), has developed a Mountain View Bicycle Transportation Plan¹¹ to guide bicycle investments; no equivalent plan exists to cover pedestrian issues.

Recommendation

The working group recommends that the Public Works Department and the BPAC create a stand-alone Mountain View Pedestrian Master Plan to develop a pedestrian network in Mountain View such that all Mountain View residents feel that walking or bicycling is a reasonable choice for a majority of the trips they make during an average day. The Mountain View Pedestrian Plan should provide a blueprint for prioritizing and implementing necessary infrastructure to encourage more pedestrian trips.

The working group recognizes that the ability to walk or bicycle is very dependent on the recommendations of the Land Use Planning Working Group. Specifically, the network of Healthy Villages and Grand Boulevards will make it more significantly more feasible to walk or bicycle for more residents than it is today.

The Santa Clara Valley Transportation Authority has developed an excellent set of Pedestrian Technical Guidelines that are specifically designed to provide guidance to cities like Mountain View in developing and implementing a Pedestrian Master Plan.

¹⁰ Santa Clara Valley Transportation Authority, *Pedestrian Technical Guidelines* October 2003.

¹¹ http://www.ci.mtnview.ca.us/services/learn_about_our_city/bicycling_in_mountain_view.asp

The following recommended elements should be included in the Pedestrian Master Plan:

- *Travelway*—narrower streets and travel lanes, striped on-street parking and building on the existing Mountain View traffic calming program.
- *Intersection*—high-visibility striping or alternative paving treatments for pedestrians, pedestrian refuge median islands, pedestrian friendly signal-timing, modern roundabouts at strategic locations, among others.
- *Sidewalk*—Sidewalks with appropriate widths, grades and surfaces; street trees and planting strips or tree wells to buffer pedestrian from traffic, pedestrian scale lighting, pedestrian-oriented signage, among others.
- *Connectivity*—Interconnected streets to disperse traffic loads; alleys and shared streets to increase connectivity; pedestrian connective where roadway connections are feasible such as mid-block access ways, cul-de-sac connectors, stairways, and bridges, among others.
- *Parking*—minimum amount supplied, accounting for shared on-street parking; Surface lots to the rear of buildings; parking structures wrapped with mixed use development; landscaping to reduce impervious surface and trees to shade pedestrians; number and width of driveways minimized; access shared with parking lots, among others.
- *Transit Access*—Stops located in high-activity areas; adequate width of pedestrian realm adjacent to transit facilities; enhanced crossings at intersections in proximity to station; direct access to station from adjacent development, among others.
- *Urban Public Space*—Small urban spaces provided, spaces visible, accessible from surrounding neighborhood; seating provided, with flexible configurations.

These elements would each be developed for Mountain View neighborhoods. The Pedestrian Master Plan would develop a prioritized capital improvement programs with phased in implementation. Pedestrian and bicycle capital improvements would receive top priority if the Transit and Transportation Working Groups “Feet First...Powered by the Heart” goal is adopted by the City Council.

As part of a Pedestrian Master Plan implementation it may be appropriate to revise the Levels of Service (LOS) calculations for City operations.

Additional resources:

- Specific improvements suggested by task force members that might be included in a City Pedestrian Master Plan are provided at: <http://sustainablemountainview.pbwiki.com/f/EvelynCalderonEtc-V6-appendix.doc>
- Walkability issues raised during the Leadership Mountain View (LMV) Walkability Workshop are provided at: <http://sustainablemountainview.pbwiki.com/f/WalkabilityLMV.doc>

Time Frame: Medium and Long-term

Environmental Impact

Net environmental impact is uncertain, as this is dependent on the number and scope of corrections and implementations that the City chooses or includes in the General Plan and in other planning documents. However, pedestrian- and bicycle-friendly design encourages individuals to use their gas-powered vehicles less, and any reduction in miles traveled by car results in an equivalent reduction in greenhouse gas emissions.

Nonetheless, the task force believes that the following are true if any significant implementations of the recommendations in this section are realized:

- As transportation accounts for 50% of the GHG emissions in the Bay Area, even walking two miles a day instead of driving will reduce motor vehicle use by 6% and therefore will produce a net reduction of 3% of these emissions.
- Traffic congestion, noise pollution, and air pollution will be reduced.

Fiscal Impact and Synergies

Uncertain, as this is dependent on the number and scope of corrections and implementations that the City chooses or includes in the General Plan and in other planning documents. Further, cost is affected by the mix of signals, signage, crosswalk paint and materials, and public outreach the City chooses to exercise in each case and in general for each action item.

Obstacles

The only possible obstacles identified at this time related to funding and labor sourcing. Most corrections and implementations called for in this document require cash outlay and/or budgeting, and the City must, necessarily weight the relative merits of one fiscal need over another with regard to city expenses.

Partnerships

In some cases, funding can be mitigated to some extent by considering, for example:

- For crosswalk brickwork, promote individuals or organizations names imprinting as a cost offset.
- Leadership Mountain View Walkability Group (<http://groups.google.com/group/mvwalkability> and <http://groups.google.com/group/lmv-walkability-group-project>)
- City of Mountain View Bicycling and Pedestrian Advisory Committee (http://www.ci.mtnview.ca.us/city_council/bcc/bicycle_pedestrian.asp)
- Silicon Valley Bicycle Coalition (<http://svbcbikes.org>)
- Valley Transportation Authority, Development and Congestion Management Division (<http://www.vta.org>)

Title: Provide Alternative Transportation for School Children

Statement of Issue

One of the major ways Mountain View parents and schools contribute emissions of GHGs to the environment is through the transportation of children to and from school. These emissions exist for two reasons: out-of-date school buses and children being driven to school in cars. Not only does this harm the environment it also creates a public health risk because exhaust emissions, especially particulates from buses, have a particularly harmful effect on children. Also, when children come to school in cars rather than walking or biking, it sets a bad example for them, their families and the community at large.

Recommendations

1. Apply for a Lower-Emission School Bus grant to retrofit old buses or buy new hybrid or compressed natural gas buses.
2. Put in extra bike racks and bike paths to encourage children to bike to school.
3. Encourage greater use of the district's school bus program by modifying bus routes to encompass neighborhoods currently not included.
4. Fully implement the four grants Mountain View has received from the "California Safe Routes to School Program" to: install speed monitoring equipment, provide education and institute a community-based alternative transportation program.
5. Adopt "parent-supervised buses" in which groups of children, with accompanying adults, bike together to and from school.
6. For high schools, consider adopting the successful Gunn GO-FAST program which reduced the number of cars driven to school by: (a) creating a program tailored to the students of that school, (b) raising the cost for parking passes, (c) providing parking passes and priority parking for carpools, (d) giving random small awards to students who biked regularly and, (e) giving large prizes, such as new bikes, to students who consistently biked the most to school.¹²
7. Consider helping to subsidize free community buses that would take children to and from school and could be utilized to transport other people during off hours.
8. Consider adopting San Mateo County's Transportation Demand Agency program of "schoolpooling" which provides gas cards worth \$25 to parents who transport at least two children from two different households to one school a minimum of two days a week for eight weeks.¹³

Time Frame: Medium and Long-Term

¹² Recommendations 1-6 are taken from "Greening" Mountain View Elementary Schools: An Analysis of Options for the Mountain View Whisman School District to Reduce Greenhouse Gas Emissions and Preserve Natural Resources (Transportation Section, pp.12-21). By O. Puerta, R. Rubio, J. Wooley, C. Sepe & T. Whinery. Stanford University: March 9, 2008.

¹³ <http://www.commute.org>

Environmental Impact

- Decreased number of diesel pollutants released into the air from old buses.¹⁴
- Decreased amount of carbon dioxide released into the air from cars being driven to school. For each gallon of gas used by these vehicles, 19.4 lbs. of carbon dioxide are emitted into the air.¹⁵
- Decreased idling which causes concentrated pollution and is of particular concern for children.¹⁶
- Less reckless driving from hurried parents and fewer potential accidents.
- Healthier children and less stressed parents.

Fiscal Impact and Synergies

- The cost in time or money needed to apply for a Lower-Emissions School Bus grant.¹⁷
- Money to subsidize free Community Buses
- Cost of installing bike paths and buying bike racks
- Fewer auto accidents at schools and therefore less need for City police and emergency services
- The cost of implementing the recommendations for relevant infrastructure improvements contained in the City's recently completed transportation study.
- The grants already received by the City from the "Safe Routes to School Program."
- The Bay Area Air Quality Management District which will pay an incentive of \$25,000 toward replacing pre-1977 buses.¹⁸

Obstacles

- Many Mountain View schools draw children from a large geographical area which might make walking or biking difficult.
- Difficulty in getting volunteers to implement alternative transportation programs.
- Persuading parents to participate in those programs.
- Persuading parents it's safe to let their children go to school by other means than by car.

Partnerships

- Mountain View's Bicycle/Pedestrian Advisory Committee
- California Safe Routes to School Program¹⁹
- The Mountain View/Whisman School District
- Mountain View-Los Altos High School District
- For a School-pooling program in Santa Clara County: VTA, C/CAG of Santa Clara County, S.C. County Transportation Authority, the Bay Area Air Quality Management District, the Metropolitan Transportation Commission.

¹⁴ See: U.S. Environmental Protection Agency (October 2007) *Clean School Bus USA*. And California EPA Air Resources Board (November 27, 2007) *Lower-Emission School Bus Program*.

¹⁵ Environmental Protection Agency (February 2005) Emission Facts: Greenhouse Gas Emissions from a Typical Passenger Vehicle.

¹⁶ American Lung Association of Santa Clara-San Benito Counties. *Protect Your Kids: Drive Less, Breathe Better*.

¹⁷ CA.gov Strategic Growth Plan Bond Accountability, *School Bus Retrofit and Replacement Account*.

<http://www.arb.ca.gov/bonds/schoolbus/schoolbus.htm>

¹⁸ Lower-Emission School Bus Program. (February 29, 2008). *Proposed Revisions to 2009 Guidelines*, p.2.

<http://arb.ca.gov/bonds/schoolbus/guidelines/2008lesbpguidelines.pdf>

¹⁹ <http://www.saferoutesinfo.org>

Title: Collaborate with Neighboring Cities to Develop a Regional Paid Parking Program



Source: City of Redwood City

Statement of Issue

All municipal on-street and off-street parking is free in Mountain View. Most public parking in or near the historic retail core (the Castro Street blocks between Evelyn and California Streets) is provided in eight permanent Parking District lots, two parking structures, plus on-street parking. A 1999 parking study found that “midday peak occupancy rate in the Parking District facilities were 93% in 1999, down from 97% in 1996. Parking policies are complex, and need to consider supply, demand and pricing. The later element is not discussed as a strategy in the 1999 downtown parking study. The guru on parking policy, Donald Shoup, professor at UCLA, estimates the cost of free parking to the national economy is over \$300 billion annually. Retail centers do not want to be at a competitive disadvantage and this is why we’re suggesting a sub-regional approach. The City of Redwood City has adopted innovative parking meter pricing to discourage auto use.

Recommendation

The City of Mountain View City Council should approach neighboring cities to develop a collaborative pricing and parking policy plan as implementation measure to each individual cities environmental sustainability task force. Each city should appoint three citizens representing neighborhood, business and environmental interests to the task force, supported by a technical advisory committee from each city. This sub-regional Green Parking Task Force would have one year to make a recommendation and presentation to a combined meeting of the City Councils.

Time Frame: Short term

Environmental Impact and Synergies

Impact depends on the recommendations of the Sub-regional Green Parking Task Force. However, it is unlikely that a 10% reduction in ICE vehicle miles travelled can be achieved without parking pricing strategies.

Obstacles

The obstacles to implementing metered and paid parking are enormous. However, the recommendation to provide a sub-regional collaborative effort along the Peninsula, and implement its recommendations, is significantly more palatable.

Partnerships

- Other cities on the Peninsula
- Chambers of Commerce
- Neighborhood Associations
- Developers

Title: Fully Implement a Network of Four Grand Boulevards in Mountain View as Part of the General Plan Process



Statement of Issue

Nineteen cities, San Mateo and Santa Clara counties, and local and regional agencies united to improve the performance, safety and aesthetics of the El Camino Real corridor. The Vision of the Grand Boulevard initiative is that El Camino Real will achieve its full potential as a place for residents to work, live, shop and play, creating links that promote walking and transit and an improved quality of life. The El Camino Grand Boulevard Corridor has the 522/22 high capacity rapid bus. The City of Mountain View has endorsed the guiding principles, but is awaiting full endorsement until General Plan process.²⁰ The City of Mountain View has approved several developments along El Camino that are very supportive of the Grand Boulevard concept, including Avalon Towers, a mixed use development at 399 W. El Camino, and the 1.4 acre BMW dealership at 120 E. El Camino. Downtown Castro Street has implemented many of the Grand Boulevard Principles.

Recommendation

The General Plan should consider development of a network of four Grand Boulevards in Mountain View. It is recommended that the Grand Boulevard network be fully fleshed out as part of the General Plan Circulation element. The working group initially recommends:

- Two east/west Grand Boulevards: El Camino Real and Middlefield Roads.
- One or two north/south Grand Boulevards along streets to be determined during the General Plan process
- The north/south Grand Boulevards should connect to the east/west Grand Boulevards

²⁰ <http://www.grandboulevard.net/library/GrandBoulevard/Grand%20Boulevard%20Guiding%20Principles.pdf>

Each Grand Boulevard should include the following transportation features:

- A high capacity transit service with a minimum of 15 minutes frequency. High capacity options include a streetcar, light rail or rapid bus. Streetcars have more frequent stops and provide more of a neighborhood mobility scale. Exclusive right of way would be optimal. Community transit would provide timed transfer connections.



Eugene, Or. exclusive lane rapid bus

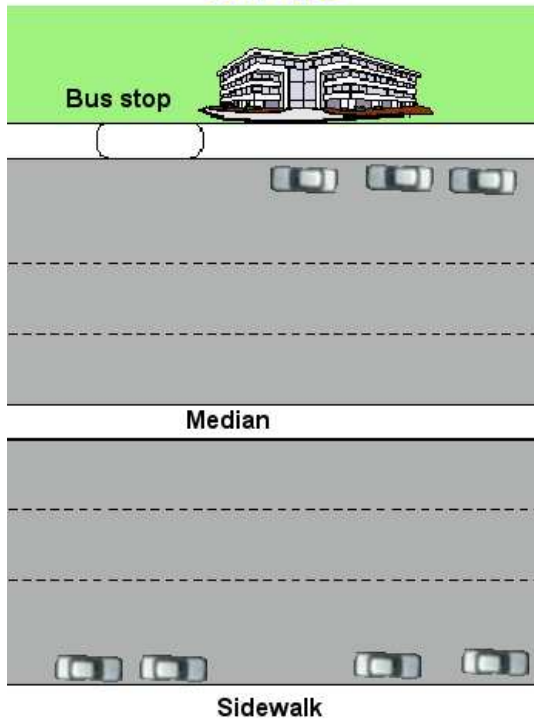


Portland Streetcar in mixed traffic

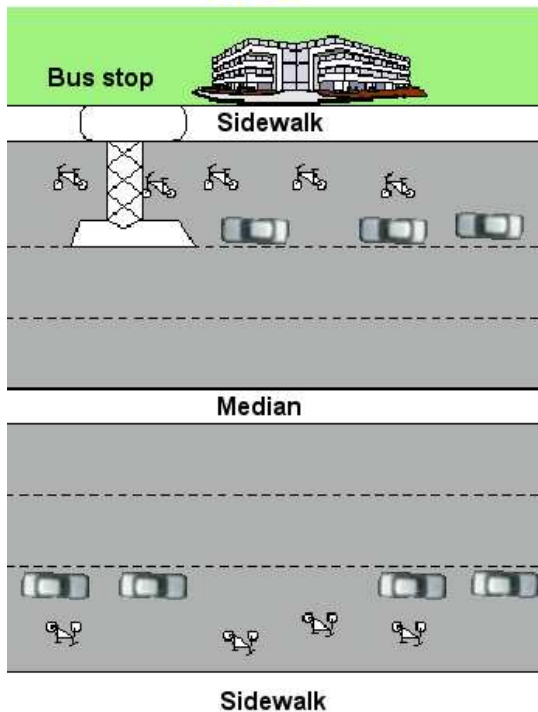
- A second partial lane would be devoted to bicycle and pedestrian utilization as utilized in many European cities with parking as a buffer to auto traffic. The illustration (on the next page) by a working group member describes how this might work on El Camino Real.
 - Reduce the three lanes on El Camino Real to 2 lanes, one of them dedicated to public transportation and emergencies (buses, taxis, fire service, ambulances, police)
 - Allow cars to park at the left part of the third lane (the one closer to the curb). This will create an empty space between the parked cars and the curb. This extra space is to be used by bikers. (And maybe walkers?)
 - The cars parked at the left side of the third lane (instead of at the right side of it, as now) will also provide a buffer for cyclist to make their trip safer.²¹ This is illustrated on the next page.
- Streetscape and walkability standards would be adopted to connect adjoining neighborhoods to the Grand Boulevard.
- Similar to downtown Castro, one lane in each direction for auto traffic, allowing for left turn movements.
- Full adoption of the Grand Boulevard Guiding Principles for Land Use considerations.
- Endorsement and Mountain View participation in funding Assessment of El Camino Real Economic and Housing Opportunities.

²¹ The City of San Jose has proposed some similar modifications as described in “Councilman unveils plan to make downtown San Jose more bike-friendly,” San Jose Mercury News, August 25, 2008, http://www.mercurynews.com/ci_10300289

Before



After



Historically El Camino Real was used to walk from mission to mission. Missions were located at 1 day walking trip to each other. It is ironic that nowadays El Camino Real in Mountain View is almost unsuitable for walking, and just impossible for biking. Is this fair to its history?

Have you ever tried to bike in this corridor? It is almost impossible. Using the sidewalk is seriously difficult, being so narrow, having the pedestrians (when any) the right of way and continuously going up and down in the irregularities created by the tree roots in the concrete pavement. Using the road is insane: There is always a dense traffic of careless drivers continuously passing by, while the adventurous cyclist has to avoid parked vehicles (and the possibility of car doors suddenly being opened) on his/her right, and buses and cars on the right.

An amazing simple and cheap solution is to close one lane for car transportation and use it more wisely making mandatory for cars to park on the left of the closed lane, so there will be a buffer between the parked cars and the sidewalk. This "buffer" will be a bike lane, safely insulated from the busy traffic by the parked cars. Dedicating this lane to bikes will also send the right message to the citizens: bikes and cars should and will share the road.

History lovers will be also happy to know that El Camino Real will be, once again, suitable for "muscle powered" transportation. In the future it might even be a major attraction for tourists, going all the way from San Diego to San Francisco by bike, as tourists do today with "El Camino de Santiago" going all the way from France to Western Spain.

Time Frame: Long term

Environmental Impact and Synergy

This recommendation was developed in collaboration with the Land Use Working Group. The focus here is on the transportation components of the Grand Boulevards

If adopted, would provide a framework for the redevelopment of the urban fabric and the mobility system in Mountain View. The emphasis of these corridors would be walkability, bikeability, and moving people through the corridor on fast and convenient high capacity options.

Fiscal Impact

As mentioned above, the Grand Boulevard Initiative on El Camino Real is currently attempting to fund an assessment of the economic and housing opportunities along the El Camino corridor. When this study is completed by economic experts, it will provide quantitative data on potential fiscal impact of the network of four Grand Boulevards that the Transit and Transportation Working Group is recommending.

Obstacles

Shoreline Boulevard, Middlefield Road, Moffett Boulevard and El Camino Real are major arterials that move substantial volumes of auto traffic in Mountain View. The large majority of Mountain View residents are currently dedicated ICE auto users. While the Grand Boulevards would be multimodal in nature, as envisioned they would slow down traffic, reduce volume, and emphasize the feet first access. This recommendation flips the modal priorities of these arteries and would require a wholesale shift in mindset of residents, the business community, and elected officials.

Title: Establish a Green Parking Code in the General Plan and Zoning Ordinance



Statement of Issue

The zoning code has permeated an oversupply of parking in many parts of Mountain View, and too much land has been paved over in order to accommodate car parking. There are significant opportunity costs in land use potential for a higher and better uses than a parking space. Many economists have argued that so much prime urban land is dedicated to parking that local government parking policies drives up the cost of just about everything, from housing to food; because the true costs of parking are bundled with goods and sold as a package. The zoning code parking requirements are based on traffic engineering trip generation tables, and for the most part do not account for the usage of alternative transportation modes. Mountain View’s Transit Zone, or T-Zone does allow a reduction from these standard parking rates on a case by case basis. There are numerous Precise Plans in Mountain View that also allow for zoning overlays that allow for parking reductions.

Recommendations

The General Plan Circulation Element should adopt a long-term goal for the reduction in internal combustion engine (ICE) auto vehicle miles traveled (VMT) by 10% over 2005 levels. A citywide parking study should be undertaken to determine the required supply of parking based on the 10% reduction in VMT. The Green Parking Code should:

- Adopt maximum parking requirements by land use to reflect the 10% VMT reduction goal
- Consider the needs of neighborhood electric cars and other electric vehicles, and prioritized parking.
- Consider parking site plans that encourage easy walking access and connectivity
- Shared parking incentives
- Consider the availability of on-street parking and restrictions for visitor parking, etc.
- Encourage standards for landscaping and tree plantings.
- Prioritize and significantly increase bicycle parking supply and locations to encourage local bicycling trips (See separate bicycle parking recommendation)
- Consider metered parking and parking fees in downtown Mountain View and other commercial areas as part of a regional strategy. (See separate recommendation: Regional Paid Parking Program)

Time Frame: Medium term (adoption in General Plan) and Long term (full implementation)

Environmental Impact and Synergy

This recommendation would have a very significant impact on sustainability and GHG emission reductions by both providing incentives for alternative mode usage (NEV, bicycling, walking access) and disincentives to ICE auto use. In the long-term, there would be a likely 5-10% reduction in the amount of land devoted parking utilization.

This recommendation has been developed jointly with the Land Use Planning Working Group.

Fiscal Impact

The reduction in parking requirements would have a positive fiscal impact in Mountain View. A July 2006 of parking needs at the Mountain View Station²² found that the cost of construction of a surface parking lot, without land acquisition, is \$7,000 per space. The cost of constructing a parking garage space, without land acquisition, is \$25,000 to \$35,000 per space.

Parking revenues generated by parking meter and parking lot fees would be utilized to support improvements in alternative transportation strategies in Mountain. See separate recommendation on Regional Paid Parking.

Given fiscal realities, the policy question should be, “Can we afford the current substantial opportunity costs of devoting so much our land to park automobiles?”

Obstacles

There is a general perception among many Mountain View residents that parking supply is insufficient. Reducing parking supply is contrary to current public sentiment. Being able to park in front of one’s own house or apartment is seen as an inalienable right by many. A public policy that ties parking supply to desired parking demand based on a 10% decrease in VMT is a bold initiative but will come under constant political pressure to increase parking supply.

There is also likely strong public and business community sentiment against paid parking in Mountain View. It is why a broad array of transportation alternatives must be provided at the same time paid parking is implemented.

Financial institutions often require minimum parking supply in order to provide project financing. Some developers may have trouble acquiring project financing with reduced parking requirements.

Partnerships

It would be desirable to work in collaboration with neighboring cities on a Green Parking Code.

²² Kimley-Horn and Associates, et al, “Caltrain Funding Priorities Study, Final Working Paper, Mountain View Station Parking Needs,” July 2006.

Title: Increase VTA Bus Usage in Mountain View

Statement of Issue

There are many underutilized buses traversing Mountain View while the streets are clogged with single-occupancy cars. This causes traffic jams, greenhouse gas emissions and the need for ever-increasing parking spaces. Reasons given for not taking buses include: inconvenience, cost, unreliability, discomfort, unattractiveness, lack of cleanliness, slowness, difficulty in obtaining information and stigma.

Recommendations

1. Provide transfers on VTA buses, as well as between VTA and Sam Trans, up to and including the advent of the Translink smart card in 2009.²³
2. Provide real-time arrival and departure signage at major bus stops.
3. Lobby CalTrans to designate a bus lane on major thoroughfares such as El Camino.
4. Design more attractive, covered, well-maintained and well-lit bus stops.
5. Hire a public relations firm, paid for jointly by the City and VTA, specifically to do a marketing campaign to reduce the stigma of riding buses.
6. Partner with the VTA in subsidizing residential eco-passes for multi-unit housing.
7. Increase the use of community buses on less well-traveled routes, for example, routes that go into the neighborhoods.
8. Start a “Try Transit” program, already in existence in San Mateo County, in which free coupons for transit are given to residents on a one-time basis.²⁴
9. Encourage the Metropolitan Transportation Commission to hasten the implementation of its bi-county transit plan (Santa Clara and San Mateo Counties).
10. Institute a Transit Information Center at the train station, possibly staffed by volunteers, which contains written material as well as internet access to www.google.com/transit and www.511.org.
11. Urge different travel providers, for example, VTA, Caltrain, and SamTrans to coordinate their services and provide real time information about those services in Trip Planners, including Google Transit: <http://www.google.com/transit>

Time Frame: Long term

Environmental Impact

- New research shows that a person who rides public transportation instead of driving reduces his or her carbon dioxide output by more than 20 lbs a day which equals a 10% reduction in all greenhouse gases produced by a typical two-car, two-adult household.²⁵
- The need for fewer cars to be built and sold.
- More transit riders per unit of distance and time.
- Fewer acres being paved over for parking.

²³ <http://www.translink.org>

²⁴ <http://www.commute.org>

²⁵ Public Transportation’s Contribution to U. S. Greenhouse Gas Reduction. Science Applications International Corporation, Sept. 2007.

Fiscal Impact

- Reduced road maintenance
- Reduced need to build more parking areas
- More transit riders and therefore more revenue for VTA that could be used to implement other recommendations.
- Money needed from the City to partner with VTA in marketing buses and subsidizing eco-passes for residents.
- In 2005, federal, state and local governments spent \$30.9 billion to provide transit services. These investments yielded at least \$60 billion per year in benefits from: reduced vehicle expenses, avoided congestion, global warming emission reductions, reduced road expenditures, reduced spending on parking and avoided traffic accidents.²⁶

Obstacles

Cost to the City, in money and Staff time, to partner with VTA.

Partnerships

- VTA
- Other possible partners include:
 - Santa Clara County Transportation Authority
 - Bay Area Air Quality Management District
 - Metropolitan Transportation Commission

²⁶ A Better Way to Go: Meeting America's 21st Century Transportation Challenges with Modern Public Transit. CalPIRG Education Fund, March 2008, page 3.

Title: Synchronize Signals to Calm Traffic and Reduce GHG Emissions

Statement of Issue

Traffic congestion and inadequate traffic control hamper the flow of arterial traffic. This causes problems such as:

- Use of neighborhoods as a short cut.
- Increased GHG emissions due to inefficient traffic flow.

Mountain View’s Neighborhood Traffic Management Plan (NTMP) partially addresses the first problem by implementing traffic calming measures in neighborhoods. Signal light synchronization helps both problems by improving the flow of arterial traffic.

Another way to reduce GHG emissions is to increase use of alternate modes such as bicycling and walking. Because of the current speed of traffic on arterials, people may consider them unsafe for such alternate modes. Signal light synchronization can be a tool to reduce traffic speeds and therefore increase the safety of bicycling and walking.

Recommendation

1. Synchronize the traffic signals on the major arterials within the City to a speed lower than the speed limits so that vehicles can enter and leave the streets smoothly and allow time for starting and stopping at signals. This would be the average speed that traffic moves on city streets anyway (short to medium term application).
 - Examples of major arterials: California Street, Middlefield Road., San Antonio Road., Grant Road.
 - Examples of synchronization speeds: 30 mph on streets set for 35+ mph speed limit, 15 mph on streets set for 25 mph. This allows the establishment of lower speeds while escaping the speed limit setting requirements imposed by the State. Be sure to post the speed at which the traffic signals are synchronized; that way motorists will know that traveling faster will be futile.

2. As a city-wide policy, make neighborhood streets unattractive for through traffic and permit the NTMP to allow residents to choose how this may be done to suit their neighborhoods (medium term).
 - Examples of deterrents: stop signs, traffic circles, speed humps or speed tables²⁷, tighter corners. Speed humps can be profiled to be crossed at a maximum of 25mph (standard) or at any lower speed of neighborhood choosing, thus escaping the speed limit setting requirements imposed by the State. Be sure to post the speed that any speed humps can be crossed (usual postings: 15mph) as this sets self imposed motoring speed of 15 to 20 mph for the street.
NOTE: Speed synchronization on major arterials would reduce the use of neighborhoods as short cuts and thus the more drastic deterrents would not have to be used.

Time Frame: Medium term

²⁷ The working group recommends that speed humps, speed tables, chicanes, bulb-outs, and the like be favored over speed bumps, which encourage drivers to speed up between bumps and slow to a crawl prior to the bumps. (supporting details: Pedestrian Technical Guidelines: A Guide to Planning and Design for Local Agencies in Santa Clara County, Valley Transportation Authority (VTA), 2003, pg. 2.25; <http://www.trafficcalming.org/measures2.html>)

Environmental Impact

- The lower and uniform speeds resulting from applying the recommendations above have been projected to reduce GHG emissions by 15%²⁸. This would be through reduction of traffic congestion and air pollution. Noise pollution would also be reduced.
- Bicycle riding would become more competitive and walking and biking would become safer because motoring speeds would be lower, especially when turning corners. The resulting increase in the use of these modes would reduce GHG emissions even further. For example: Even a reduction of 25% in trips would produce a net savings of 10% of the total GHG emissions.
- A reduction in the number of cars using neighborhood streets as arterials would reduce neighborhood air pollution and help avoid potential accidents caused by speeding cars.

Fiscal Impact

For traffic light synchronization:

- The cost of doing a study to review traffic signal settings.
- The savings in police time used to track and pull over red light runners.
- Reduction in the number of accidents and therefore less use of City emergency personnel.
- Reduction in the number of hospital emergency room visits
- The savings accrued from not needing to install cameras at intersections.
- The cost of implementing the resetting.
- Administrative cost.
- Cost of applying for more grants.

Following best practices can minimize, or even lead to no additional cost for maintenance of traffic light synchronization.²⁹

For traffic calming, the cost of deterrent measures can be kept under control by implementing them in successive steps as new budget becomes available.

Obstacles

- The costs mentioned above.
- Temporary opposition of drivers to reduced speeds involved (mitigated by no real loss in travel time and the greater viability of the bicycle and attendant reduction in local automotive traffic).

Partnerships

- Bicycling and pedestrian organizations and ADA accessibility organizations
- City Humans Relations Commission (accessibility), Parks and Recreation Commission, and the Bicycle Pedestrian Advisory Committee (BPAC).

²⁸ Based upon the Marin County Greenhouse Gas Reduction Plan, October 2006, to the extent it would apply to us, transportation contribution for them contributes 53 percent of the total emissions. Based also on the experience of Austin, TX where synchronization resulted in fuel savings of 3.5% (National Traffic Signal Report Card NTSRC Technical Report 2007 available at <http://www.ite.org/REPORTCARD/>).

²⁹ NTSRC Technical Report 2007 (cited above), page 13: "The City of Austin made its signal improvements with no additional funding, just a reallocation of dollars. Instead of spending money on the back side by responding to signals that have problems or receive a lot of complaints, the City spends money up front by proactively checking every signal for preventative maintenance. This has helped reduce maintenance calls from 5,000 to 2,500 in one year."

Appendix A: Secondary Recommendations

Additional ideas contributed by Task Force members and the public:

- Encourage Mountain View companies to promote the use of vans, carpools, and telecommuting (synergistic with Community Outreach and Green Business Working Group recommendation “Greening of Local Business”). For a write-up: <http://sustainablemountainview.pbwiki.com/f/TransitRec-AltTransportPgms.doc>.
- Promote plug-in vehicles, such as electric cars and plug-in hybrids by participating in the Plug-In Partners program; a statement of intention to buy plug-in vehicles for the City fleet when they become available (this recommendation is described in the Community Outreach and Green Business Working Group chapter). For a write-up, refer to: <http://sustainablemountainview.pbwiki.com/f/TransitRec-PromotePlugInVehicles.doc>
- Participate in a Car Share program that makes the City’s hybrid vehicles available to other users during times they are underutilized. For a write-up, refer to: <http://sustainablemountainview.pbwiki.com/f/TransitRec-MtnViewCarshare.doc>.
- Support and advocate for the electrification of Caltrain. For a write-up, refer to: <http://sustainablemountainview.pbwiki.com/f/TransitRec-ElectrifyCaltrain.doc>.
- An extended list of top recommendations for the Transit and Transportation Working Group summarized by the Working Group Chairperson can be viewed at: <http://sustainablemountainview.pbwiki.com/f/CliffComprehensiveList.doc>.
- Convert hybrid vehicles in the City fleet to plug-in hybrids using commercially available conversions, such as those offered by Hymotion (<http://www.hymotion.com>) to make them more efficient in advance of plug-in hybrids being available for purchase new.
- Promote the use of all-electric vehicles within the city, including purchasing them for City use, and offering incentives to delivery companies, such as UPS.
- Promote and purchase vehicles using “Stop Start” technology.
- Be the first city to declare itself pro-electric vehicle.
- Rescind ordinances limiting the use of personal electric vehicles in the City.
- Pass an Anti-Idling Ordinance.
- Provide information about public transport, including a carbon calculator, on the City web site.
- Promote carbon-neutral access to Mountain View Caltrain Stations via free electric shuttles.
- Require drive-through businesses to post signs requesting that customers shut off idling engines.
- Encourage the City Service Fleet to use Neighborhood Electric Vehicles (NEVs) as much as possible when carrying out city services.
- Encourage walking to the Farmers’ Market by implementing more frequent pedestrian crossing signals and posting crossing alert signs on nearby streets.
- Waive or reduce parking requirements for NEV’s within the City.
- Encourage VTA to increase the number of routes and service frequency.
- Provide easy ways for drivers to know that their tires are properly inflated.
- Implement “Pedestrian Scrambles” for safer and more pleasant walking experiences.
- Provide more frequent walk signals triggered by green light sequences on all traffic lights.
- Close Castro Street to cars from the Central Expressway to Church Street; create a Castro Street mall.
- Institute a City-wide Traffic Calming Program.
- Enforce garage parking ordinances for multiple-use housing to free-up the streets for bikes and pedestrians.

- Breach the barriers for bikes and pedestrians on streets that do not match up, for example, when crossing El Camino Real, the Central Expressway, and the Caltrain tracks.
- On streets with two or more lanes, increase sidewalk size by decreasing the number of lanes and creating a bike lane on part of those extended sidewalks.
- Create a carpool lane on all streets that have two or more lanes.
- Create safe walking at night and on week-ends by having some streets patrolled by police, for example, Castro Street and El Camino Real.
- Discourage the use of cars in popular areas by decreasing parking spaces, limiting the maximum speed, adding speed humps, creating elevated crosswalks and roundabouts, reducing the number of traffic lanes, and changing some streets to one-way only.
- Provide flashing yellow warning lights and lit crosswalks where there is no traffic signal.
- Make more traffic signals “motion sensitive” on well-traveled streets, for example, California Street, San Antonio Road, Mayfield Road, and Central Expressway.
- Provide an access ramp to the Stevens Creek Trail on the east side of El Camino Real.
- Add more visual cues for car drivers on bike lanes.
- Enforce the “no right-turn-on-red” law at traffic lights where it applies.
- Consider having fewer traffic lights at some intersections, for example, Bryant at California, and Castro at California, and transitioning those that remain to flashing yellow/red after 11p.m.
- Consider having a taxi license fee that varies according to the fuel efficiency of the vehicle.
- Encourage Caltrain to add more tracks in Mountain View in preparation for the advent of High Speed Rail.
- Attempt to influence the state to pass legislation that increases gas taxes and varies car registration fees according to fuel efficiency.
- Establish partnerships with VTA, Caltrain, and the Center for Collaborative Policy to help enact these recommendations.
- Provide an electric vehicle refueling station at City Hall.
- Consider buying carbon off-sets for air travel done by City Staff.
- Consider instituting a “Travel Choice” Project in which volunteers visit households to educate residents about alternative transport options.
- Consider changing the ordinance that requires two parking spaces per residence.
- Encourage Caltrain to add another bike car to its commuter trains.
- Provide special parking places on the first floor of City-owned garages for electric and hybrid cars and bicycles.
- Maintain bike paths on the streets (for example, fill in potholes).
- Encourage Caltrain and VTA to synchronize their schedules to lessen wait time when transferring from one mode of public transport to another.
- Designate one lane of El Camino for rapid buses and emergency vehicles and allow cars to park between that lane and the sidewalk to provide a buffer for pedestrians and bikers.
- Position Mountain View as a hub of alternative transportation awareness by sponsoring resident workshops, courses and eco-driving competitions as well as putting information on the City website (forwarded to the Community Outreach and Green Business Working Group for consideration as a priority recommendation).
- Reduce the number of parking spaces downtown and allot that space to bikers, walkers and outdoor terraces.

Appendix B: California Air Resources Board (CARB) Climate Change Draft Scoping Plan, June 2008

California Light-Duty Vehicle CHG Standards: Assembly Bill 1493 (Pavley, 2002) directed ARB to adopt vehicle standards that lowered greenhouse gas emissions to the maximum extent technologically feasible, beginning with the 2009 model year. ARB adopted regulations in 2004 and applied to the U.S. Environmental Protection Agency (U.S. EPA) for a waiver under the federal Clean Air Act to implement the regulation. The Pavley regulations incorporate both performance standards and market-based compliance mechanisms. California requires reductions in greenhouse gas emissions from vehicles weighing less than 10,000 pounds. The standards start in model year 2009, and ramp up to a 30 percent reduction in greenhouse gas emissions for vehicles sold in model year 2016 and beyond. To date, these rules have been adopted by 12 additional states that, with California, represent about one-third of the nation's registered automobiles. California's standards are stated as grams of greenhouse gases per mile and do not directly equate to miles per gallon. They require greenhouse gas emissions to be reduced and do not regulate fuel economy. The California Air Resource Board plans to adopt a second, more stringent, phase of the Pavley regulations.

Implementing the Pavley vehicle standards will by far have the most impact on GHG emissions in the transportation sector. However, in addition to delivering greenhouse gas reductions, the standards will benefit California drivers by ultimately saving them an estimated \$30 each month in avoided fuel costs.

Low Carbon Fuel Standard: In Executive Order (S-1-07), Governor Schwarzenegger called for the development of a Low Carbon Fuel Standard (LCFS), which would reduce the carbon intensity of California's transportation fuels by at least ten percent by 2020. The LCFS will incorporate market-based compliance mechanisms to provide flexibility to fuel providers while meeting the emission reduction goals.

Vehicle Efficiency Measures: Several additional measures could reduce light-duty greenhouse gas emissions. For example, measures to ensure that tires are properly inflated can both reduce greenhouse gas emissions and improve fuel efficiency. ARB is pursuing a regulation to ensure that tires are properly inflated when vehicles are serviced. In addition, the California Energy Commission is developing a tire tread program focusing first on data gathering and outreach, then on potential adoption of minimum fuel-efficient tire standards. ARB is also pursuing ways to reduce engine load via lower friction oil and reducing the need for air conditioner use. Mountain View's Transportation Awareness program can incorporate these efforts at the local level.

Heavy and Medium Duty Vehicle Regulations: Medium- and heavy-duty vehicles account for approximately 20 percent of the transportation greenhouse gas inventory. A regulation to require retrofits to improve the fuel efficiency of heavy-duty trucks could include devices that reduce aerodynamic drag and rolling resistance. Hybridization of medium- and heavy-duty vehicles would also reduce greenhouse gas emissions again through increased fuel efficiency. This measure would likely achieve the greatest benefits on trucks used in urban, stop-and-go applications, such as parcel delivery trucks and vans, utility trucks, transit buses, and other vocational work trucks.

High Speed Rail: A high speed rail (HSR) system is part of the statewide strategy to provide more mobility choice and reduce greenhouse gas emissions. This measure supports implementation of plans to construct and operate a HSR system between Northern and Southern California. As planned, the HSR is a 700-mile-long rail system capable of speeds in excess of 200 miles per hour on dedicated, fully-grade separated tracks with state-of-the-art safety, signaling and automated rail control systems. The system would serve the major metropolitan centers of California in 2030 and is projected to displace between 86 and 117 million riders from other travel modes in 2030. For Phase 1 of the HSR, between San Francisco and Anaheim, 2020 is projected to be the first year of service, with 40 percent of the projected 2030 ridership levels.

Appendix C: Community Shuttle Implementation Carbon Dioxide Reductions and Ridership Statistics

FY 2007/08 Menlo Park annual shuttle ridership (assumes same ridership for Mountain View):	75,000
Assumed ridership that currently bicycle, walk, get dropped off, or did not make trip:	51,750
Based on 2008 Menlo Park survey of passengers, number that would drive alone if shuttle not available:	16,500 (22%)
Annual vehicle miles traveled of 75% commuter drive-alone trips at 20 miles one-way:	247,500
Annual vehicle miles traveled of 25% local drive-alone trips at 5 miles one-way:	20,625
Based on 2008 Menlo Park survey of passengers, number that would carpool if shuttle not available:	6,750 (9%)
Vehicle miles traveled based on half of 9% of carpoolers driving and 75% commuting 20 miles one-way:	50,625
Vehicle miles traveled based on half of 9% of carpoolers being passengers and driving 2 miles to carpool location:	1,688
Annual total vehicle miles reduced by implementation of clean fuel shuttle program:	320,438
Average miles per gallon (estimates vary):	24.6
Annual gallons of gasoline saved by shuttle program implementation:	13,026
CO ₂ pounds per gallon of gasoline:	19.4
Annual pounds of CO₂ saved by community shuttle program:	252,703
Annual metric tons of CO₂ saved by community shuttle program:	114.6

Chapter 7. Land Use Planning

Introduction

Why does land use matter to climate change mitigation? According to the State of California, the top three potential sources of greenhouse gas (GHG) reduction are:

1. Vehicle fuel efficiency
2. Smart land use & intelligent transportation
3. Renewable energy for public utilities

The state expects 18 million metric tons of CO₂e to come from #2. That's more of a reduction on a local level than the state expects to achieve from utilities!

Right now, the City of Mountain View and its neighbors have a rare opportunity for change. Many cities all over the Bay Area are operating sustainability panels, going through general plan revisions, and updating their housing elements—this City (and others) need to put sustainability at the forefront of decision-making now, or we will not have a chance to revise for another 10 or more years. Major structural changes are occurring in our environment and are about to occur in the way the state and cities operate; once these changes happen, they won't revert. Mountain View has to proactively adapt, move forward, and look to the future; Pittsburg and Detroit were the Silicon Valley of their day, and we cannot allow our city to fall into the same pattern of overuse, abuse, and decline.

Truly, this city must prepare for the future, not just make changes now. The unprecedented magnitude and nature of upcoming shifts and increases (in population and temperature and more) have the potential to overwhelm city governments; conventional planning processes are inadequate to deal with the major changes bearing down upon us. Our cities need to become "intelligently more urban"; this needs to be a driving goal from the outset.

The population of Santa Clara County will grow by about 35% by 2035—that's equal to the current populations of Sunnyvale, Santa Clara, Mountain View, Milpitas, Palo Alto, Gilroy, Campbell, and Morgan Hill combined¹. This is the natural current pace of births (minus deaths) and immigration (minus emigration) for our county; this increase is going to happen and is practically unavoidable.

For city governments, the critical question therefore is, "How and where will people live?"

First, we need to recognize that sprawl contributes to global warming through Vehicle Miles Traveled (VMT) and the resulting pollution from internal combustion engine trips. We cannot just push populations further and further towards the Central Valley. 50% of Mountain View's GHG emissions come from transportation. Concerted GHG reduction efforts must take how people get around into account. Mountain View must develop land so that more residents can easily choose non-car methods for daily activities, and so fewer people must drive to work in Mountain View from an area of affordable housing. This will improve our air quality and mitigate GHG impact on the environment.

¹ Weden, Don: "Winds of Change: Adapting to the Changing Realities of the 21st Century," presentation, June 2008

The Land Use Planning Working Group strongly urges the City to take advantage of the General Plan Update to catalyze intelligent urbanization through “healthy villages” (a concept discussed further below) and walkable neighborhoods, in an effort to reduce GHG emissions and increase community prosperity and happiness. For example, one indicator of a walkable neighborhood is determining what percentage of a city’s population lives within walking distance from a good-sized grocery store. When the City revamps its general plan, does that percentage get better? If not, is the City actually making good, impactful changes?

Another example considers a MVWSD school teacher living in Tracy. The school teacher uses about 25 gallons of gas a week commuting from Tracy to Mountain View in an SUV. She uses ten gallons a week commuting in a hybrid. However, she only uses four gallons a week commuting in that same SUV if she lives in Mountain View!



It is plain to see that what realtors have always said still rings true: location, location, location. Technology alone cannot make up for sprawling land use. We need to create livable, walkable communities that support vivid, active lifestyles and de-emphasize transportation by individual automobiles.

Furthermore, as Avik Basu writes in his essay on smart growth ², “mounting empirical evidence confirms the link between compact, high-density development and economic vitality. Ciccone and Hall (Ciccone and Hall. 1996) have studied how density influences worker productivity and have shown that doubling employment density increases worker productivity by 6%. Furthermore, they report that workers in the 10 densest states generated \$38,782 of value while workers in the 10 least dense states produced \$31,578 (25% less).

² Avik Basu, “Smart growth towards economic performance,” University of Michigan: 2005, <http://www.umich.edu/~econdev/smartgrowth/index.html>

“A study by Cervero (Cervero 2000) showed that accessible cities, ones with efficient transportation and where businesses have easy access to labor markets, employed more productive workers than dispersed or less accessible cities do.”³ The recommendations below encourage Mountain View to develop in an intelligently more urban way, encouraging well-planned, healthy higher densities for a more vital economy and environment.

What we’re really looking at is what would make MV a great place to work and live in 30 years? We cannot focus solely on “the now”; we must consider, anticipate, and plan for future needs, just not current wants. The Land Use Subcommittee of California’s Climate Action Team is eventually going to start requiring these sorts of changes; the City would be better off to start implementing these ideas now, under local control, and voluntarily.

Summary of Recommendations

1. Implement a Connected System of Healthy Villages
2. Encourage Livable, Higher-Density Housing
3. Increase Healthy Affordable Housing
4. Establish Planning Incentives for Sustainable Development
5. Diversify Land Uses in Underutilized Areas
6. Adopt LEED Neighborhoods Guidelines
7. Encourage Urban Agriculture and Preserve Open Space
8. Develop Castro Street as a Model Healthy Village
9. Provide Ongoing Staff Education in Sustainable City Management Practices

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³ Ibid.

Title: Implement a Connected System of Healthy Villages

Statement of Issue

Residents need access to their basic needs and activities without having to drive a motor vehicle.

Recommendation

The City should amend its General Plan and various Precise Plans to encourage a connected system of Healthy Villages: mixed-use community developments that incorporate many of its residents' needs into a walkable radius.

Our city's zoning needs to actively promote and incentivize development which encourages residents to accomplish most of one's daily activities without getting into an automobile. This will accomplish many excellent goals:

- Reducing GHG emissions (see Environmental Impact, below)
- Engendering cross-community communication and interaction
- Improving the physical health of residents (every time a person walks somewhere instead of driving is a win for their cardiovascular and muscular health)
- Encouraging diversity in our local economy through improvements in our retail building stock
- Accommodating the aging baby boomer population (which prefers walkable, community-oriented development)

One thing everyone loves about Mountain View is its vibrant and walkable downtown. The City can encourage "mini-downtowns" through village-oriented zoning and redevelopment of existing strip malls and other neighborhood shopping centers; redevelopment that prioritizes pedestrian access over vehicular access. See the appendix for a case study, existing excellent example, and list of potential areas for "villageizing."

Villages should include at least three different uses such as:

- Necessity retail (grocery store, drugstore, fruit stand, etc.)
- Amenity retail (restaurants, cleaners, salon/barbershop, etc.)
- Higher-density housing close to the village core; especially low-cost housing for village center workers and accessible housing for senior citizens and the disabled
- Commercial space for local businesses
- Educational facilities for preschool/daycare and/or elementary school
- Basic recreational facilities (for example, a park, community center, trail access, gym, etc.)
- Meeting places (public & private; formal & informal; including religious spaces and outdoor seating)
- Attractive public transit (bus hub, rail, shuttles) that includes bicycle parking
- City services (fire, paramedic, police, library access, government service center)
- Medical/dental clinics or offices

Additionally, the City needs to amend the building codes to require new buildings to prioritize pedestrian-friendliness and accessibility over car-oriented access. Buildings should be constructed close to the public sidewalk and must have a principal entrance facing the street. Vehicle parking should be behind or under the site and may be reduced for buildings near transit stops or for buildings that incorporate a transit shelter or bicycle parking into their design. Minimum window requirements for walls facing the street help to ensure a more interesting (and safe) pedestrian environment.

These villages also need to relate to and support each other; neighborhoods connected with walkable pathways and bike lanes will make each individual village more comprehensive. For example, not every village could support a drugstore, but if a resident only needs to get to the next major intersection’s village to get his or her prescriptions, then that resident’s own village is more livable.

Also note that mixed use is not just vertical; the housing does not have to be on top of the retail. The grocery store can be across a pedestrian-friendly street from the residential housing component, which has a park or school behind it – this is horizontal mixed use. Horizontal mixed use fits perfectly into the current character of Mountain View. See the appendix for an existing example of pedestrian-friendly horizontal mixed use here in Mountain View (that isn’t Castro St.).

This is a long term (3+ yrs.) solution, with the potential for a huge impact in overall health and quality of life.

Environmental Impact

Transportation causes 50% Mountain View’s total GHG emissions. Healthy Village concepts mean less driving needed (GHG reduction) for every resident on a daily basis. Imagine if everyone could live close to Castro St. or near a pedestrian-friendly San Antonio Shopping Center and how much less driving within Mountain View would occur (trips that start and end in Mountain View).

A mere 9% reduction in solo trips translates into vehicle miles traveled (VMT) reduction of over 24 million miles annually—that’s an annual savings of over 700,000 gallons of gas and 13,630,000 pounds of CO₂.⁴

The chart below illustrates the various localized GHG emissions output per household in different parts of Mountain View. It is clear that households near amenities and services emit fewer greenhouse gasses—if this city can bring a walkable scale to more neighborhoods, the City’s overall GHG emissions will only go down.

Neighborhood Comparison: GHG Emissions of Mountain View Households (HH), 2006⁵

<i>Area/Neighborhood</i>	<i>VMT per HH per Day</i>	<i>GHG Emissions per HH per Year (metric tons)</i>
Rengstorff Park Area	20	3.1
San Antonio Area	21.5	3.3
Old Mountain View	24	3.7
Grant Road to 85	28	4.3

⁴ U.S. Conference of Mayors Energy & Environment Best Practices Survey Report, May 2006

⁵ Findings based on data from Chuck Purvis, Principal Transportation Planner/Analyst, Metropolitan Transportation Commission

Fiscal Impact and Synergies

This recommendation is in line with the Transit and Transportation working group's emphasis on shifting our mobility paradigm away from private automobiles and back to walking, biking, and public transit. Additionally, any new development should line up with the Built Environment Working Group's recommendations for best building practices, which allow our city to fill itself with livable green urban villages.

There is cost of City staff and Council and commission members in reviewing developer proposals for converting the shopping centers and, as applicable, building new villages; but this cost is already inherent to city operations and would not increase due to implementation of this recommendation.

Healthy villages oriented towards walking and biking could potentially reduce road maintenance costs for the City as well. Using village cores as a transit stop, there could be fewer stops and increased opportunity for more frequent transit, thus providing more transit riders and hence more fare box revenue with reduced service effort. Village cores use the City's infrastructure more efficiently through their higher-density layouts, thus reducing long-term maintenance costs for the City.

Obstacles

- Linking small parcels of land and otherwise working with property owners to redevelop existing car-oriented shopping hubs.
- Costs and time in finding developers to convert/redevelop existing shopping centers
- Cost and time in planning and establishing new villages.

Partnerships

- Urban Land Institute
- Mountain View Chamber of Commerce
- VTA
- Local property developers

Title: Encourage Livable, Higher-Density Housing

Statement of Issue

California’s current sprawl-oriented growth pattern is ineffective and unsustainable; even the Governor has said so.⁶ The California Energy Commission reports that one of the “promising means” for reduction transportation fuel demand is to use an integrated planning method for transportation and land use.⁷

Mountain View is blessed with transportation infrastructure that can allow people to use methods other than solo-driving to get around. However, the City needs to complement this infrastructure with land use patterns that are conducive to walking, biking, and encouraging transit use.

Demographic shifts point to an increased desire for exactly this type of development. Whereas households with two parents and more than one child used to be a large majority of households in the nation, that family type now only comprises 33% of households—and it’s shrinking. The fastest growing demographic groups are those that are childless, have a single-parent family, or are households of single adults. The single adults category comprises young professionals and aging seniors; in fact, one out of five residents in Santa Clara County will be over 65 years old in 2030, which is approximately double what it is today. These demographic groups historically have preferred compact townhomes and condos near transit and amenities.⁸ As part of the General Plan review, City Planners need to look to the future and realize that not everyone needs or wants schools or even a yard; more and more people want maintenance-free living options near vital community centers.

Recommendation

Build well-designed, compact, green, mixed-use housing around our transit infrastructure and existing amenities. Integrate these land use patterns into the General Plan and actively implement them.

1. *Short term:* Work with the General Plan process to develop healthy village plans that call for higher-density livable housing near transit in a coordinated, thoughtful manner. Higher-density housing is not effective if created in a vacuum – it must be located near transit options, walkable amenities, and other higher-density communities to be most effective.

Continue to capitalize on key parcels around our existing light-rail and Caltrain stations to build neighborhoods that include homes, shopping, and jobs that use the limited land efficiently.

Review and revise Floor Area Ratio (FAR) requirements to encourage developers to build at a minimum density that supports livable healthy villages and well-designed density.

⁶ “Schwarzenegger Embraces ‘Smart Growth’ Ideas to Curb Sprawl,” CNN.com, Inside Politics, November 21, 2003.

⁷ “Effect of Land Use Choices on Transportation Fuel Demand,” California Energy Commission, May 2005, <http://www.energy.ca.gov/2005publications/CEC-600-2005-019/CEC-600-2005-019.PDF>

⁸ *Why Transit-Oriented Development and Why Now?*, Reconnecting America and the Center for Transit-Oriented Development, www.reconnectingamerica.org.

2. *Medium term:* Take opportunities to obtain regional and statewide funds in order to plan and build infrastructure to support transit villages. Examples of such programs include MTC's TLC program, ABAG's planning grants, and the statewide Proposition 1C funds for transit-oriented development. Palo Alto just got a grant from MTC to do work on California Avenue, for example.⁹
3. *Long term:* Actively implement the General Plan.

Environmental Impact

The Urban Land Institute estimates a 30% reduction in vehicle miles traveled as the result of building more compact, infill development. This would result in a 7 to 10 percent reduction in transportation-related CO₂ emissions by changing land use alone.¹⁰ This means Mountain View could save over 927,000 metric tons of CO₂ by 2030,¹¹ just by encouraging more compact development.

Fiscal Impact and Synergies

Well-designed higher-density developments actually save a city money in infrastructure maintenance costs. A recent study analyzing the costs of sprawl estimated that more than \$100 billion in infrastructure costs could be saved over 25 years by pursuing better planned and more compact forms of development.¹²

Initial costs for planning and infrastructure towards green-built higher-density housing could be offset by funds from regional and statewide support programs for this type of development. For example, in Proposition 1C, \$850 million is dedicated to efforts to support regional planning, housing and infill development. An additional \$300 million is dedicated to supporting transit-oriented development specifically.

Additionally, a team of economists at Rutgers University in New Jersey states in a recent publication that urban sprawl is costing a bundle, even in New Jersey alone. Potential capital costs attributable to sprawl development patterns in the state of New Jersey were cited at \$1.3 billion over 20 years for roads, water, sewer, and school facilities. Additional operating and maintenance costs of development reached \$400 million annually. Capitalized at current borrowing rates, these numbers translate to a \$7-8 billion cost for sprawl over the twenty years from 1992 to 2012.¹³ This working group is not prepared to make similar calculations for Mountain View or California at this time, but the fiscal impact is striking nonetheless.

Furthermore, the City could see increased tax revenues from sites that are being used to their fullest potential. And research consistently shows that both residential and commercial property values rise with proximity to transit stations. This translates into expansion of the municipal property tax base, and a direct improvement in tax revenues in the very neighborhoods where public infrastructure and service delivery costs are reduced due to increased densities.¹⁴

⁹ Interview, June 2008: Don Weden, former Santa Clara County Planner

¹⁰ "Growing Cooler: the Evidence on Urban Development and Climate Change," Urban Land Institute, 2007, <http://www.uli.org/AM/Template.cfm?Section=Home&CONTENTID=118999&TEMPLATE=/CM/ContentDisplay.cfm>

¹¹ 421428 metric tons CO₂/year from transportation (ICLEI report); a reduction of 10% = 42142.8 metric tons CO₂/year; over 22 years = 927141.6

¹² Richard M. Haughey et al., *Higher-Density Development, Myth and Fact* (Washington, D.C.: Urban Land Institute, 2005)

¹³ Kasowski, Kevin. September 1992. "The Costs of Sprawl, Revisited." *Developments: The National Growth Management Leadership Project Newsletter*.

¹⁴ http://www.mass.gov/envir/smart_growth_toolkit/pdf/TOD_biblio.pdf

Obstacles

- Community resistance to change; particularly homeowners or nearby residents who have not been involved in or educated about the planning or development process
- Staff time in educating adjacent residents as to the positive impact of new nearby development
- Potential for more traffic in a localized area if the housing development is not planned in coordination with transit opportunities
- Existing zoning restrictions

Partnerships

- Metropolitan Transportation Commission
- State of California Department of Transportation
- Greenbelt Alliance
- Silicon Valley Leadership Group

Title: Increase Healthy Affordable Housing

Statement of Issue

Below-market-rate (BMR) housing opportunities in our city, particularly ownership options, will keep dedicated public servants (for example, teachers, police, firefighters and City Staff) in our community and reduce GHGs emitted (and traffic jams caused) during longer commutes from areas that currently have more affordable housing. It will also help preserve the economic, social, and cultural diversity that makes Mountain View such a unique and dynamic place to live.

Recommendation

Increase the supply of affordable housing for people working in Mountain View and earning less than the median family income. Locate affordable housing near transit options and in village-style developments to reduce Vehicle Miles Traveled (VMT) both to and through the city.

Remember our schoolteacher living in Tracy, and those 21 gallons of gas she'd save every week if she lived in Mountain View. But it's not just about commute trips; it's about overall trips too—to and through the city. Developing affordable housing in village-style centers and infill locations near transit hubs will also reduce VMT for everyday activities (see the Healthy Villages recommendation).

Mountain View should strive to meet the final Regional Housing Needs Allocation estimate adopted on May 15, 2008; specifically the 571 units for very low income, the 388 units for low income and the 488 units for moderate income families.¹⁵

Instead of accepting in-lieu funding, require developers to construct the required BMR units at the same construction quality levels as standard units, and dedicate some to ownership as well as rental. Although owners may not enjoy much appreciation if they choose to sell the unit, they will enjoy tax breaks and build equity that might allow them to buy at market rate in the future. Without this opportunity, dedicated Mountain View service employees may choose to live outside the city and eventually be recruited to work in the city where they live.

Additionally, the City can alter BMR rules to include some more creative provisions to impact VMT and overall community health:

- Give application preference to people and families who commit to having only one car in their household with the stated goal of driving less
- Give application preference to people and families who work or go to school within walking distance of a given development
- Allow preferential zoning and/or planning approval processes for affordable housing that meets green building standards (see Fiscal Impact, below)
- Allow preferential zoning and/or planning approval processes for affordable housing developments that provide transit passes to all of the tenants

This is a medium- to long-term recommendation.

¹⁵ http://www.abag.ca.gov/planning/housingneeds/pdfs/Final_RHNA.pdf

Environmental Impact

Affordable housing has both the aforementioned beneficial social impacts, and also can help lower the City's transportation-related GHG emissions levels.

Take city employees as an example. Approximately 325 city employees live outside of transit commute range (that is, they must drive a car to get to work every day) – in places like Hollister, Watsonville, Danville, Pleasanton...even as far away as Rocklin and Fresno,¹⁶ often in an effort to find affordable housing. If affordable housing in green urban villages were available to them in Mountain View, commute length could fall by an average of 52 miles round-trip¹⁷ every day—and that's excluding the ten employees who live 100 miles or more away from Mountain View.

CalTrans says the average Bay Area vehicle fuel economy is 20.6 MPG. EPA.gov says a gallon of gasoline is assumed to produce 19.4 pounds of CO₂. Therefore, affordable housing in Mountain View could potentially reduce GHG emissions coming into the city by 1876 metric tons of CO₂/year¹⁸ – and that's just for City employees.

Fiscal Impact and Synergies

City Staff time to meet with developers and administer ownership programs. Project development costs can be partially offset by Housing Impact Fees from other development projects in City. Building green affordable housing can potentially also lower the operating costs and environmental impact of the building (solar power, reduced energy consumption, etc.), which in turn potentially allows the building to take advantage of existing statewide rebates and require fewer subsidies to build. Please refer to recommendations from the Built Environment and Energy and Renewable Energy working groups for more information about these potential savings.

Obstacles

- Education (about BMR) and assistance programs for eligible individuals and families
- Administration of BMR programs
- Developer resistance; it is much easier to pay in-lieu fees instead of actually building and administering the BMR units

Partnerships

- Eden Housing
- Community Housing Developers
- Habitat for Humanity Silicon Valley
- Palo Alto Housing Corporation
- US Department of Housing and Urban Development
- BRIDGE Housing: <http://www.bridgehousing.org>
- Mid-Peninsula Housing: <http://www.midpen-housing.org>
- Charities Housing: <http://www.charitieshousing.org>
- First Community Housing: <http://www.firsthousing.org>
- Green Affordable Housing Coalition: <http://frontierassoc.net/greenaffordablehousing/>

¹⁶ City of Mountain View employee residence map 2008, provided by Peter Skinner

¹⁷ Average one-way commute for the 13 ZIP codes most populated by City Staff outside of easy transit range is 26 miles

¹⁸ 19.4 lbs / 20.6 miles * 52 mi/day * 260 working days/year * 325 employees = 4,138,039 lbs/CO₂ = 1876 metric tons of CO₂/year.

Title: Establish Planning Incentives for Sustainable Developments

Statement of Issue

The City needs to enhance existing market interests in green developments to drive developers and property owners towards sustainable goals.

Implementing further density bonuses and similar types of incentives will catalyze all the green building- and land use-related recommendations in this report, ultimately leading to healthier buildings and neighborhoods.

Recommendation

1. Provide fast-tracking incentives and density bonuses to developers and property owners in order to encourage sustainable developments in Mountain View.

Some suggested characteristics that would be deserving of fast-tracked planning/zoning review processes, enhanced weight towards staff approval, and/or fee reductions include:

- Developments that facilitate Village Centers
 - Redevelopment that fits with the Grand Boulevard plan for El Camino Real, for example.
 - Uniting parcels of land to develop higher-density uses
 - Overlapping residential zoning with commercial/retail to create mixed use developments (like Two Worlds at El Camino and Calderon)
 - Zoning district overlay to drive the market towards consolidating parcels
 - Higher-density buildings near transit
 - Green building practices (see recommendations from the Built Environment Working Group)
 - Building & business styles that encourage walkability, for example:
 - Windows on the sidewalk
 - Wider sidewalks
 - Sidewalks unbroken by many driveways
 - Parking underneath the building (or at least behind it)
 - Building & business styles that encourage bikeability
 - Bike parking
 - Showers/locker space inside
 - Public water availability
 - Medium, Medium-high, or High density residential developments with a community garden component
 - Green economy (“green collar”) businesses
2. Additional density bonuses near transit hubs and stations should be tied to meeting certain policy objectives rather than outright increases. These policy objectives include mixed-use development, affordable housing, underground parking, and a greater reliance on non-car modes of transportation. Density bonuses encourage smart choices on transit options, maximize a pedestrian character of the neighborhood and more efficiently use resources.

Some suggested density bonuses include appropriate motivational FAR increases (and increasing the allowable number of residential units) for developments:

- When all parking is provided within the building, entirely below grade, or in a parking garage of at least two levels
- When at least 20% of the dwelling units are affordable to households whose income does not exceed half of the local median household income
- When at least 50% of a ground floor of a residential building is devoted to commercial/retail uses.
- Developments that meet the Built Environment Working Group’s recommendations for green building, or LEED gold status, or other equivalent green building standard
- When the development meets the Transit and Transportation working group’s recommendations for non-automobile-oriented location, design, and amenities

This is a short-term solution with long-range impacts; these changes can be incorporated into the planning review process as quickly as official city process will allow.

Environmental Impact

This set of suggested city process changes will support GHG reductions through better planning already mentioned in earlier recommendations relating to Healthy Villages and Livable High-Density Housing. These incentives are necessary to accomplish the GHG reduction goals of the preceding recommendations. The overall benefits include:

- Reduction in GHG emissions due to increased walkability
- Healthier communities (healthier economy, diversity in tax base)
- Healthier buildings (green building standards)

Fiscal Impact and Synergies

- Denser commercial development will broaden the City’s tax base through an increase in available leasable square footage.
- Synergy with the Built Environment, Energy and Renewable Energy, and Transit and Transportation working groups’ recommendations for specific changes to building codes and standards towards sustainable building practices.

A report from the University of Michigan’s College of Architecture and Urban Planning explains how catalyzing this type of development can have major fiscal benefits for a municipality. To summarize:

Higher-density population centers gain fiscal advantages in two different ways. The first savings are through economies of scale—the marginal costs of serving additional population decreases as more residents cluster in a given region. The second set of savings is through economies of geographic scope—the marginal costs of serving an additional person decreases as the individual locates closer to existing infrastructure. Together, these ideas imply that both compact and higher-density communities can lead to significant savings in operational costs.

To look at it on a national scale, in 1999-2000, localities spent nearly \$140 billion to create new infrastructure such as schools, roads, and sewer and utility systems. In addition, over \$200 billion was spent on recurring costs such as infrastructure maintenance, police and fire services, and garbage collection. Managing this growth in an intelligent way provides an opportunity for significant savings for local municipalities. Several studies claim that over 2000-2025, governments practicing managed growth can reduce by 11.8% or \$110 billion their road building costs, 6% or \$12.6 billion dollars on water and sewer costs, and 3.7% or \$4 billion for recurring annual operations and maintenance costs.¹⁹

Even though those numbers aren't reflective of Mountain View's budgets, the research shows that the city could still see an overall cost reduction of 21% or more over the next 20 years, if it encourages this type of "intelligent urbanization" through zoning and planning incentives.

Obstacles

- Planning Department Staff will need focused education on how to evaluate projects for positive characteristics
- Economic Development Staff will need to spend more time working with developers to find the appropriate incentives and relationships to make these sorts of projects happen

Partnerships

- Association of Bay Area Governments
- Urban Land Institute

¹⁹ Avik Basu, 2005 <http://www.umich.edu/~econdev/smartgrowth/index.html>

Title: Diversify Land Uses in Underutilized Areas

Statement of Issue

Mixed-use developments that incorporate housing, commercial space, and retail options will attract a diverse range of employers and residents, helping to extend downtown-like vitality to otherwise under-served and under-used areas.

The City’s population is going to grow, and these underutilized areas are easy targets for redevelopment to accommodate this growth, in housing, services, and employment.

Recommendation

The City should work to develop coherent mixed-use villages in underutilized commercial zones to plan for Mountain View’s future needs.

Move away from “commercial-only” zones, and transform those currently underused areas into vibrant communities. The areas around Clyde Ave. area near Ellis, Dana/Pioneer, and North Bayshore are potential goldmines for sustainable development in Mountain View; the City should use these areas to plan for future growth, not preserve inefficient models that cannot sustain the city’s needs. This will help achieve earlier housing- and density-related recommendations.

Well-planned, higher-density, mixed-use redevelopment in current commercial-only zones can:

- Enhance our future economic competitiveness while gas prices skyrocket
- Create sustainable housing modes for ever-increasing population growth
- Reduce pressure on local budgets
- Reduce commuting time
- Help us preserve open space for parks and outdoor recreation

Remember the 35% population growth expected in Santa Clara County by 2035. This is sheer growth, not attracting new people to live in the area. The City needs to plan for its slice of this growth; these people will need to live somewhere; ideally they would also work and shop here as well, and not need a car to do any of it.

The North Bayshore area in particular is currently extremely underutilized; it is a striking opportunity for Mountain View to create a model sustainable community of the future, while expanding its commercial and retail tax base and addressing the city’s perpetual housing shortage. All development would have to proceed with an eye towards flood control and mitigation in the future (see the Adaptation to Climate Change chapter). Refer to the appendix for a more in-depth case study.

Environmental Impact

- Reduction in GHG emissions due to shortened commutes to employment
- Example: If 100 people lived *and* worked in N. Bayshore (instead of driving to N. Bayshore), this would reduce the city's GHG emissions by 266.55 metric tons of CO₂/year.²⁰
- Reduction in GHG emissions due to reduced car trips to shopping options
- More efficient land use with less square footage paved for parking creates more efficient GHG conversion, reduction in overall temperature, and natural replenishing cycle for the bay and Stevens Creek watershed

Fiscal Impact and Synergies

Based on the way we currently fund local governments:

- Addition of further retail components in the area will increase sales tax revenue²¹
- Denser commercial development will broaden the City's tax base through an increase in available leasable square footage.
- Mixed-use developments attract professional workers, which in turn will attract a greater variety of commercial business types, diversifying the City's tax base²²
- Compact development reduces infrastructure costs and saves money²³

See the appendix for a more thorough discussion of research supporting mixed-use development as an economic boon for a city.

These concepts compliment the Biodiversity group's concepts of preserving and enhancing open space, as well as the Transportation group's emphasis on non-car modes of transportation for commutes and errands.

Obstacles

- Precise Plans will need altering to plan for coherent and efficient mixed use development
- Attitude towards "Commercial Only" zones will need to evolve

Partnerships

- William McDonough + Partners
- North Bayshore, Clyde Avenue, and Dana/Pioneer employers
- VTA
- Metropolitan Transportation Commission

²⁰ 19.4 lbs / 20.6 miles * 24 mi/day * 260 working days/year * 100 residents = 587,650 lbs = 266.55 metric tons; see Appendix for statistical data references

²¹ *Regional Responses: Smart Growth and Affordable Housing* presentation by Carol Burns and Kimberly Vermeer for the Massachusetts Citizen Housing and Planning Association.

²² GVA Marquette Advisors and Maxfield Research. *Workforce Housing: The Key to Ongoing Regional Prosperity* Found at www.fhfund.org/_dnld/reports/Workforce%20Housing_Full%20Report.pdf.

²³ Bollinger, Berger and Thompson (2001) as cited by the Brookings Institution in "Is Washington Ready for Smart Growth" presentation. October 2004

Title: Adopt LEED Neighborhoods Guidelines

Statement of Issue

The City needs a method for evaluating development that takes into account the “big picture” – a method that unifies overall standards to bring precise plans, zoning exceptions, and individual project approvals together in a coherent way.

Sustainable living cannot happen in a series of isolated redevelopment projects; there must be an overarching vision or set of standards to guide the community towards healthy development – a General Plan for sustainability.

Recommendation

Mountain View should adopt the LEED Neighborhood Development Rating System²⁴ for both small and large developments. This is a national standard Mountain View can use to evaluate neighborhood location and design based on the combined principles of green building, smart development and redevelopment. This will allow the City to rate a development’s potential for building a more livable, sustainable community over time.

The LEED Neighborhood Development Rating System emphasizes the design and construction elements that bring buildings together into a neighborhood, and relate the neighborhood to its larger region. Use of this rating system will allow Mountain View to measure developments in terms of revitalization, reduced land consumption, reduced automobile dependence, promotion of pedestrian activities, improved air quality, and reduced water runoff with the objective of building, over time, more livable, sustainable communities for people of all income levels.

For an overview of all the topics the LEED for Neighborhoods system takes into account, review the LEED for Neighborhood Development Pilot Draft Project Checklist²⁵ available on the USGBC website and in the attachments to this report. Please see the appendix for a slightly more thorough explanation of this system’s benefits to communities.

This working group is not suggesting that every project must be LEED registered or certified; instead, we encourage the City to use the LEED for Neighborhoods checklist and guidelines to evaluate zoning changes, exceptions, plan amendments, and other similar decisions.

Adopting this sort of unifying standard will bring together all sustainability recommendations into a forest, rather than lots of individual trees.

This solution has short-, medium- and long-term implications.

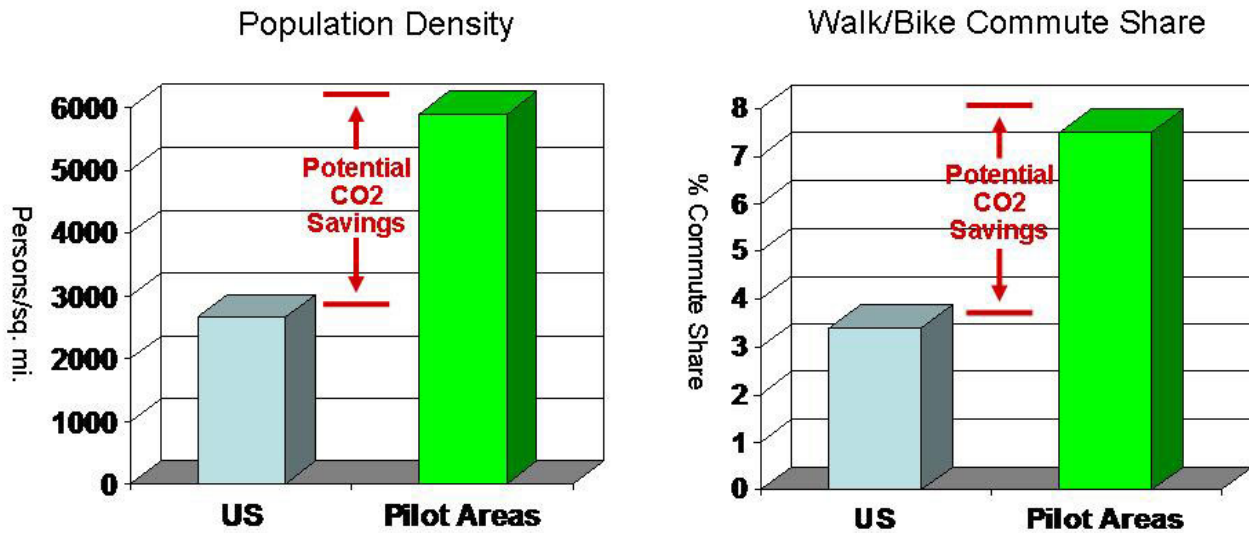
Environmental Impact

The US Green Building Council commissioned studies of the potential impacts of “LEED for Neighborhoods” implementations in pilot communities. In one such study, conducted by Criterion Planner, LEED neighborhoods showed remarkable improvements in GHG reductions compared to

²⁴ <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=148>

²⁵ <http://www.usgbc.org/ShowFile.aspx?DocumentID=4109>

similar neighborhoods not in the pilot program. For example, the charts below show potential CO₂ savings from commute pattern changes that emerge in LEED communities:



“For their work commute, residents in the pilot projects’ ZIP codes are 2.5 times more likely to use public transportation than residents in all ZIP codes. Furthermore, they are more than twice as likely to bicycle or walk to and from work.”²⁶

Fiscal Impact and Synergies

Minimal cost to the City; any costs for staff education or printing materials could potentially equalize with improved efficiencies in planning review (if developers/applicants must fill out the LEED for Neighborhoods checklist first).

This recommendation directly relates to the work of the Built Environment, Transit and Transportation, Waste and Recycling, Water, Community Outreach and Green Business, and Suburban Natural Ecosystems and Biodiversity working groups; the LEED rating system takes all these different aspects of community-building into account.

Obstacles

- Getting developer buy-in
- Educating residents about what changes and positive outcomes this set of standards could bring to the community
- Staff education on the content of the LEED for Neighborhood concepts, rating system, and basic checklist

Partnerships

- US Green Building Council
- LEED-certified professionals in architecture, civil engineering, and planning fields

²⁶ www.usgbc.org/ShowFile.aspx?DocumentID=3773

Title: Encourage Urban Agriculture and Preserve Open Space

Statement of Issue

Farmland, or working landscapes, provides economic, environmental, and social benefits. Locally grown food maintains its freshness and nutritional value, contributes to the County’s food security, and can also reduce transportation related air pollution and costs.²⁷ In particular, organic gardening techniques enhance the soil and increase its carbon sequestration capacity, reduce toxic chemicals in the environment, and contribute to a healthy, well-functioning ecosystem.

Mountain View has strong agricultural roots. The community has clamored for community gardens. The creation of community organic farming, tied to the school system and powered by community garden volunteers can create educational opportunities, meet the public demand for gardens and ultimately enhance the community's food security.

Recommendation

Enhance open space in Mountain View with integrated community farming and develop a community garden requirement for the General Plan, either under the Parks section or as part of the Housing Element.

1. *Short term*—Encourage rooftop gardens and edible landscaping with appropriate building and zoning codes. Support the concept of “Victory gardens” – small-plot, localized urban farming that shows residents how “their” land can directly help with the food supply—in the General Plan. Work with existing HOAs and developers to incorporate community garden components into existing and new developments, especially for medium-to high-density housing.
2. *Medium term*—Build on the programs already running at Deer Hollow Farm to expand orchard-related learning and growing opportunities. Work with Mountain View Trees and other groups to get high school students involved in community garden programs. Consider identifying suitable parcels of land for community gardens, especially in areas with higher-density housing.
3. *Long term*—Work with local non-profit organizations (like POST, the Peninsula Open Space Trust) to acquire the orchard lands near the intersection of Middlefield and Whisman and/or use the orchards near Cuesta Park to create another educational, community farm that is more accessible to the community. No hike is required, light rail and bus lines run nearby for easy access. Enhance the programs already offered at Deer Hollow in this facility by expanding it with facilities like the Full Circle Farm²⁸ in Sunnyvale, for example:
 - Affordable, organic produce
 - Reduced-cost produce for low-income families
 - Preserving community use with open space
 - Good-neighbor composting program
 - Community festivals and events

²⁷ Sustainable San Mateo County, 2008 Indicators report, pg 12, <http://www.sustainablesanmateo.org/reports/2008IndicatorsReport/IndicatorsWholeReport.pdf>

²⁸ Full Circle Farm community presentation, http://64.78.36.136/Presentations/Community1/Community1_files/frame.htm, “What we bring to the community”

- Hands-on nutrition, sustainability, and science education classes
- Community gardening and cooking classes

Integrated community farming can enhance city open space, create more potential use for rainwater collection, and help mitigate the heat island effect from buildings and parking lots (see the Built Environment and Suburban Natural Ecosystems and Biodiversity working groups' recommendations on these topics). There are no downsides to healthy community gardens; everyone wins.

Environmental Impact

Reinvigorating urban agriculture in Mountain View could have striking reduction effects on local greenhouse gas emissions. The impact estimates for the Full Circle Farm²⁹ in Sunnyvale are:

- Sequester 31,500 lbs. CO₂ from atmosphere into soil
- Prevent another 9,000 lbs. CO₂ into atmosphere due to 150,000 lbs. of locally grown food (75 tons produce * 0.08 lbs. CO₂/ton-mile * 1,500 miles)
- Early preparation for rising oil prices due to Peak Oil:
 - Re-localize the food supply
 - Alternative fuels cannot replace the energy density of fossil fuels
 - A sustainable future must restore local self-sufficiency

Fiscal Impact and Synergies

- Developing a community garden component for the General Plan will not cost the City anything additional, as long as it is done during the current revision process.
- Encouraging community gardens, rooftop gardens, and edible landscapes through appropriate zoning changes and discussions with developers in the early stages of project planning will not incur any additional costs for the city.
- Costs of converting current landscaping to community garden space are minimal, considering the City already spends over \$7 million on landscaping annually³⁰. Turning over some current monoculture landscape to community garden efforts could actually reduce City maintenance costs over the long term, as volunteers take over the maintenance of certain areas. Initial costs would be staff time to select a site and a non-profit to administer the site. Many different grants and funding opportunities exist to offset these costs, including:
 - The USDA's Community Food Projects Competitive Grants Program
 - The Duncan-Dalton Foundation
 - The Satterberg Foundation (granted \$40,000 to Sunnyvale to start a community garden)
 - California Foundation for Agriculture in the Classroom (for more education-specific grant programs, see the appendix)

This recommendation ties directly into many of the recommendations mentioned in the Suburban Natural Ecosystems and Biodiversity chapter, as well as green roof and edible landscaping components in the Built Environment chapter.

²⁹ Full Circle Farm community presentation, http://64.78.36.136/Presentations/Community1/Community1_files/frame.htm, "Environment & Sustainability"

³⁰ Email exchange with Joan Jenkins, July 2008

Obstacles

- Proactive community education needed to counteract negative perceptions of community gardens; this must be done in advance of any actual community garden construction s. The City could leverage relationships with several non-profit organizations mentioned below to accomplish this sort of educational campaign.
- Cost of acquiring or arranging acquisition of land for community gardens
- Potential cost of converting current mono-use landscaped space (for example, parking lot trees, parkland) into edible landscapes or community garden space
- Water use and supply issues

Partnerships

- Mountain View Trees
- Midpeninsula Regional Open Space District
- Peninsula Open Space Trust
- Santa Clara County
- Friends of Deer Hollow Farm
- Sustainable Community Gardens
- Santa Clara Unified School District
- Fairview Gardens
- CoolEatz
- Village Harvest
- Bay Tree Design, Inc.
- UC Berkeley Cooperative Extension, San Jose State University, Stanford University
- Santa Clara County Master Gardeners
- Conexions: Partnerships for a Sustainable Future
- Second Harvest Food Bank of Santa Clara and San Mateo Counties
- American Community Gardening Association

Title: Develop Castro Street into a Model Healthy Village

Statement of Issue

In general, Mountain View’s connections between its neighborhoods need improvement in order to encourage healthy lifestyles and non-car methods of transportation. Some thoroughfares are very pleasant for walking and cycling, and easy to access for public transit; many others lack key characteristics that can transform a series of streets into a network of livable communities. Castro Street’s position as the heart of Mountain View makes it a prime opportunity for encouraging healthy village development and promoting sustainable lifestyles.

Recommendation

Use Castro Street as a model for the “healthy villages” lifestyle and Grand Boulevard characteristics. Additionally, integrate Grand Boulevard concepts into the General Plan, for both El Camino Real and major thoroughfares inside Mountain View. (Please refer to the Transit and Transportation chapter for a further discussion of Grand Boulevard recommendations.)

1. *Short term*—Convert all parking on Castro Street into either dining/sitting space or bike parking.

Castro Street is Mountain View’s most treasured, well-featured street; its streetfront parking gives front-and-center priority to individual cars, which is exactly the opposite of what this Task Force wants Mountain View to accomplish. The City should reclaim those spaces for public use, emphasizing walkability, non-car transportation, and community gathering places instead.

When the City started its parking space rental program, it instituted a maximum number of spaces that could be rented. The City has reached this cap, with still more businesses left wanting to rent their parking space. This working group would like to see every parking space available for rental.

Further, if a retail establishment doesn’t want its street-front parking for dining or seating space, the City should convert it to informal gathering places and/or simple, functional bike racks. Suggested improvements include planters with benches and tables, or even integrated tabletop game boards (e.g chess), to encourage impromptu gatherings that help create a sense of community. Prominent and easy bicycle parking is severely lacking in Downtown (witness all the bikes locked to tree cages on a Thursday night); this would be an easy way to solve this problem and visibly emphasize Mountain View’s commitment to alternative means of transportation. 12 - 16 bikes can fit into one car parking space, so even one dedicated space for bikes per block would be a huge improvement.



2. *Medium term*—Consider a gradual conversion of Castro Street to a pedestrian mall, in the style of Pearl St. in downtown Boulder, CO. This conversion could be accomplished in phases, with input from commercial, retail, and resident interests:

- Close the street for a trial period (~3 months); possibly only the 100 – 300 block to start
- Poll merchants to determine if they experienced a decline or increase in business
- Collect input from residents as to traffic increases in their neighborhoods
- Poll commercial businesses to see if they experienced any positive or negative effects

If the results were beneficial overall, allocate a budget from the downtown revitalization fund to complete the conversion.

3. *Long term*—Design healthy villages around a network of Grand Boulevards to assure interconnectedness and mutual support between village centers (see Land Use Recommendation #1). Ensure Grand Boulevard standards are written into the General Plan, especially for the suggested major arteries in Mountain View (see below). This is a concept jointly recommended by both the Transit & Transportation and Land Use working groups; please refer to the Transit & Transportation chapter for a further discussion of Grand Boulevard concepts and recommendations.

Environmental Impact

Grand Boulevard principles encourage residents to use non-car methods for accomplishing every day errands; the potential GHG reduction from implementing these principles could be enormous. For example, a typical grocery store trip in the Bay Area is about three miles one way.³¹ If only 10% of City residents took advantage of a Grand Boulevard’s amenities to use non-car methods of making that trip, the City would see a decrease in its internal GHG emissions by nearly 950 metric tons of CO₂e per year.³²

³¹Bay Area Economic Forum report, “Supercenters and the Transformation of the Bay Area Grocery Industry: Issues, Trends, and Impacts,” page 61; <http://www.bayeconfor.org/pdf/PPRSCscreen11.2.pdf>

³² 19.4 lbs / 20.6 miles * 6 mi/trip * 52 trips/year * 7070 residents = 2077344 lbs = 942 metric tons; see Appendix for statistical data references

Fiscal Impact and Synergies

Additional income from streetfront parking space rental will cover the costs for converting some of Castro Street's car parking into bicycle parking.

Implementing Grand Boulevard concepts can fit neatly in with existing plans for street upgrades and maintenance; working with developers and state planning and transportation agencies can ensure that these methods of development won't cost the city any undue fiscal burden.

The Transportation, Built Environment, and Biodiversity working groups all promote Grand Boulevard concepts in their reports; the Grand Boulevard is an overarching idea that can unite many sustainability goals into a cohesive plan for Mountain View's future.

Obstacles

Grand Boulevards emphasize alternative methods of transportation to make non-car transit methods more accessible, convenient, and enjoyable. This recommendation flips the modal priorities of these arteries and would require a wholesale shift in mindset of residents, the business community, and elected officials. A majority of community interests (residents, business owners, etc.) would need to buy into Mountain View's new commitment towards de-emphasizing car access to make these Grand Boulevard concepts truly function well.

Partnerships

- State of California Climate Action Team: Land Use Subgroup (LUSCAT)
- Caltrans
- Metropolitan Transportation Commission

Title: Provide Ongoing Staff Education in Sustainable City Management Practices

Statement of Issue

City Staff needs proactive and regular education regarding current best practices in sustainable city management in order to make the healthiest decisions for our community.

Recommendation

The City should set aside staff education funds for a regularly-scheduled “Green Practices Update” session, to learn about sustainable best practices and current innovations in communities around the world.

Staff members review all planning decisions, ordinances, exceptions, etc. – staff should therefore actively be educated in the latest information on sustainable city planning.

This working group’s ideal scenario:

- Training would occur during regular working hours
- Trainings would be mandatory for staff to attend
- Each training would have a related online resource (instead of paper handouts or manuals) that would be available on the city website for residents to read as well
- Training sessions would be targeted towards specific areas of City operations, for example.
 - Planning staff could learn about intelligent implementation of higher-density housing projects and mixed-use zoning and see examples of such in other communities
 - Public Works could learn about new materials and care methods for recreational open space

At minimum, a non-profit group (or two) could conduct a more generalized training session that touches on a variety of current topics in sustainable city management.

Environmental Impact

This recommendation’s scope is more about people than technology or policy changes, therefore this working group was unable to calculate a specific numerical GHG emissions drop related to implementing this recommendation. However, this group maintains that a well-educated staff will make the best decisions for our city, thereby bringing the most effective positive environmental impacts to our city, including:

1. Improvement of overall City operations with regards to operations and resource use
2. A “trickle-down” effect to the community through excellent working examples in city operations and future development projects
3. An emphasis on healthy and sustainable projects throughout the city

Education is always a powerful force for positive change, and thoughtful, coherent, and regular on-the-job training will improve our city’s operations for years to come.

Fiscal Impact and Synergies

The fiscal implications are simply an annual outlay of some specific amount for training. Minimum cost is free, conducted by a local non-profit (see Partnerships below), ranging up to \$25,000 for a training program done by senior partners from William McDonough + Partners (the premiere sustainable architectural and community design firm in the US).

Alternately, the City could choose to make the Environmental Sustainability Coordinator position permanent and have this person conduct the trainings; the fiscal outlay would then be that person's salary.

Obstacles

- Getting a budget for this training
- Scheduling staff time
- Getting supervisor buy-in to allow their staff to dedicate working hours to this educational program

Partnerships

- Greenbelt Alliance
 - The South Bay representative from Greenbelt Alliance has offered to do this type of training for free. See the Contacts section for her email and phone number.
- Urban Land Institute
- Sierra Club
- US Green Building Council
- Build It Green

Appendix A: Case Studies, Sources, and Further References

Recommendation 7-1:

Case Study

The City has many existing opportunities to transform neighborhoods into Healthy Villages with mixed-use cores. For example, there are several shopping centers already located near housing or transit that could become excellent village centers with the addition of a third or more use into the mix. One specific example is the corner of Middlefield and Rengstorff.

The shopping center is very auto-centric and presents an inhospitable environment for pedestrians and bicyclists. As an example, there is a central median that divides one side of Middlefield from the other for a quarter-mile. Restaurants and shops are tucked in the back of the complex, so they are not visible from the street. Pedestrians have to walk through a vast, barren expanse of parking to reach the shops and restaurants.

There is a bus stop on Rengstorff that is right on the edge of the shopping center. However, pedestrians have to walk a long way to reach the shops because they are tucked in the back.

The shopping center is surrounded by a mix of housing types including townhomes and single-family homes. However, the design of the streets (several wide lanes of traffic plus the median) and the non-pedestrian friendly design of the shopping center (expansive parking lot in front and shops in the back) make it less likely that residents will walk to the shopping center even though it is physically close.

Recommendations

1. Move the stores from the back of the lot to the front with entrances at the sidewalk.
2. Reduce parking spaces by one-third.
3. Build homes above the shops.
4. Improve pedestrian access across Middlefield Road.
5. Build homes at the back side of the lot to blend in with the existing neighborhood.

Existing Example

The area around the Mountain View/Los Altos Adult School near Cypress Point Dr. on Moffett Blvd. is a good example of a village area outside of Downtown Mountain View that accomplishes most of this recommendation's goals:

- The two shopping centers provide both necessity and amenity retail
 - One center includes a grocery store with fresh produce, a huge win for the neighborhood!
- Bus stops are easily accessible
- Good pedestrian access to cross Moffett Blvd. safely
- The adult school itself is very pedestrian-oriented
 - Main entrance on the street
 - Covered bike parking
 - Wider sidewalks
 - Windows and landscaping in a people-sized scale
 - Auto access and parking are behind the building, leaving the front sidewalk uninterrupted for the length of the building

- New hotel development is also pedestrian-oriented
 - Auto parking in back
 - Main entrance facing the street
 - Wider sidewalks
 - Easy bus stop access
- Higher-density housing, both owned (townhomes) and rental (apartments) exist behind the shopping areas
- Trail entrance nearby at the end of Central Ave.

This area is not totally ideal—the two shopping centers are still more car-oriented than pedestrian- or bike-oriented, with their front-access parking lots. The center next to the Adult School is better than the one across the street, since it allows one restaurant and two of the stores to be right on the sidewalk for easy pedestrian access. But this area is always lively with walkers, bus riders, and bicyclists (especially during commute times) going to school, going to work, or running errands; much more so than many other neighborhood shopping center areas listed below as candidates for redevelopment.

Areas for “Villageizing”

Listed below are existing shopping centers that are excellent candidates of potential Village cores. These shopping centers already have several of the Village concept components nearby; with some careful restructuring (eschewing the car and embracing the walk), these centers could be vibrant hearts of walkable, sustainable neighborhoods.

- San Antonio Shopping Center—San Antonio and El Camino
- Old Mountain View—Grant and El Camino
- Cuesta—Cuesta and Miramonte
- El Monte—El Monte and El Camino
- East End—Americana and El Camino
- Stierlin—Shoreline and Montecito
- Rancho Castro—Central and Rengstorff
- Rengstorff—Rengstorff and Middlefield
- El Norte—Old Middlefield and Rengstorff
- Whisman—Whisman and Middlefield

Potential locations for new village development:

- The Farms—Levin and Grant
- Shoreline—Charleston and Shoreline
- Sylvan—Sylvan and Moorpark
- Mayfield—Mayfield and Central/Showers

Citations

KQED’s Health Dialogues, April 2008
 The Preserve in Chino, CA
<http://www.thepreserveatchino.com/community/>

The National Institutes of Health (NIH) have funded USC's Keck School of Medicine to study whether **smart-growth principles can lead to a decrease in obesity and other health problems**. The study, which will focus on the above housing development in Chino, Calif., marks the first time the NIH has funded such research. "[H]ow you build and make choices during the planning process is an exciting way to affect and shift the health of an entire population," said Marilyn Pentz, the director of the Center for Prevention Policy Research at the Keck School.

NPR's "Climate Connections" series, April 2008
<http://www.npr.org/templates/story/story.php?storyId=89231809>

The Atlantic Station Project in midtown Atlanta
<http://www.atlanticstation.com/home.php>

The story compares a family in the Atlantic Station development with another family living in a large house in the suburbs. The Atlantic Station family moved to the planned community for the convenience of "jobs, home and shopping all in one place," and in the process dramatically cut its carbon footprint. While the regional average VMT is about thirty-two miles per day per person, the residents of Atlantic Station travel only about one-third that amount. Mother Malaika walks her eleven-year-old daughter Maya to the bus stop, and then generally walks to work a mile away; she also does her grocery shopping on foot. This is in sharp contrast to another Atlanta family featured in the NPR series, the Carvalhos, who moved to a five-bedroom "dream house" on a big lot in the suburbs, but commute more than an hour to work.

Recommendation 7-2:

Additional Information

It is important to note that "density" refers not only to high-rise buildings. In this report, higher density simply means new residential and commercial development at a density that is higher than what is typically found in the existing area. Thus, in a sprawling area with single-family detached houses on one-acre lots, single-family houses on one-fourth or one-eighth acre are considered higher density. In more densely populated areas with single-family houses on small lots, townhouses and apartments are considered higher-density development.³³

The development called Classics on the Square (on Evelyn Avenue.), for example, fits the character of the neighborhood while still creating a medium- to medium-high density housing opportunity. These are desirable units with many benefits and an efficient footprint; the development could only be improved by incorporating green building and water efficiency standards. It is an excellent model to improve upon and implement in appropriate places in Mountain View.

³³Richard M. Haughey et al.



Evelyn Avenue's Classics on the Square



Classics on the Square, as seen from above; note the proximity to transit, services, and retail options

Recommendation 7-4:

Citations

Urban Land Institute presentation: “A Plan for Tomorrow: Creating Stronger & Healthier Communities Today”

Recommendation 7-5:

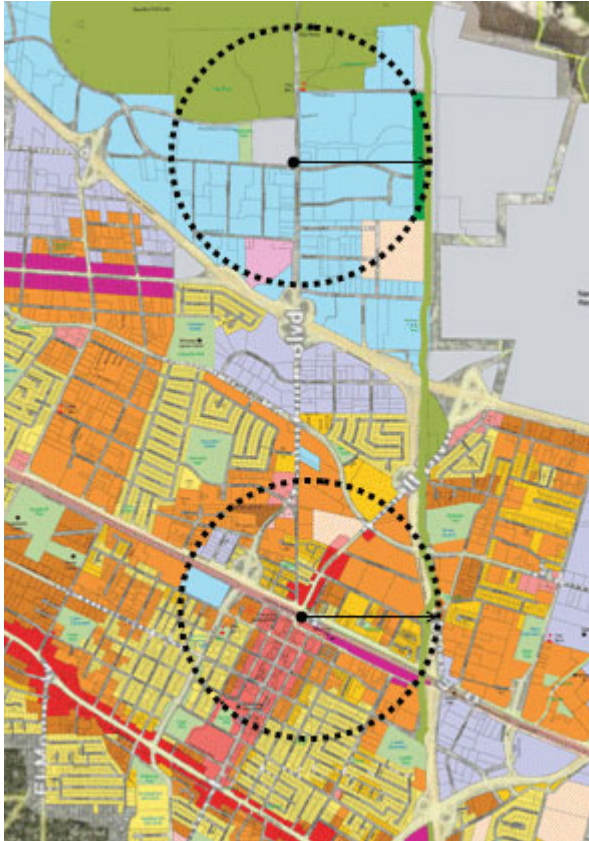
Citations

Mounting empirical evidence confirms the link between compact, high-density development and economic vitality. Ciccone and Hall (Ciccone and Hall. 1996) have studied how density influences worker productivity and have shown that doubling employment density increases worker productivity by 6%. Furthermore, they report that workers in the 10 densest states generated \$38,782 of value while workers in the 10 least dense states produced \$31,578 (25% less).³⁴

³⁴ <http://www.umich.edu/~econdev/smartgrowth/index.html>

Carlino (Carlino 2001) also links denser local economies with increasing patent activity. He reports that the number of patents per capita have risen 20-30% for every doubling of density, which in turn increases the competitiveness of denser regions over less dense regions.

Case Study: North Bayshore



The North Bayshore area is currently extremely underutilized; it is a striking opportunity for Mountain View to create a model sustainable community of the future, while expanding its commercial and retail tax base and addressing the city's housing shortage.

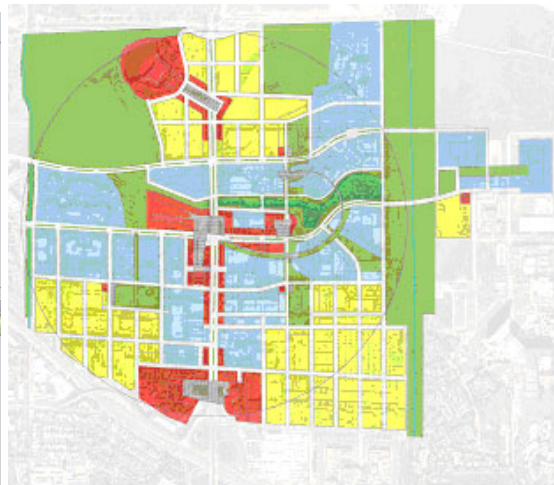
Mixed-use developments that incorporate housing, commercial office space, and retail options will attract a diverse range of both employers and residents, helping to extend Downtown-like vitality to an otherwise underserved and underused area.

The image shows a half-mile radius around both Downtown and N. Bayshore; it clearly shows the mixed-use vigor and diversity around Castro St. that the Shoreline/Charleston area almost completely lacks.

Higher-density, mixed use redevelopment can:

- Enhance our economic competitiveness by attracting a diverse resident base
- Reduce pressure on local budgets
- Reduce commuting time
- Help us preserve open space for parks and outdoor recreation

There are existing proposals to revamp the North Bayshore area into a vital community. Compare the area's current land use...



... with what it could look in one conception of a mixed-use redevelopment.

Blue = commercial
Red = retail
Yellow = residential
Green = open space

This working group would like to see this sort of development for North Bayshore in the future, with the caveat that new development needs to plan for rising flood levels that may occur with sea level change (as posited in the Adaptation and Climate Change's report; levees or absorption/redistribution building methods would be a start). This sort of redevelopment can start now, and have a positive impact for years to come; its ultimate fruitfulness is a long-term win for our city and the whole Bayshore area.

Calculations

- EPA.gov says a gallon of gasoline is assumed to produce 8.8 kilograms (or 19.4 pounds) of CO₂
- ABAG says the average commute length is just over 12 miles one way in the Bay Area
- The calendar says there are 260 working days in a year (52 weeks/year, 5 days/week; not counting holidays)
- NRDC researchers, relying on data from CA DOT say the average bay area vehicle fuel economy is 20.6 miles per gallon

Therefore, 100 units of housing for workers in the North Bayshore area could potentially reduce the city's GHG emissions by 266.55 metric tons of CO₂/year.

Recommendation 7-6:

Benefits of Developing a LEED for Neighborhood Development Community

From the US Green Building Council's website, <http://www.usgbc.org/>

The LEED for Neighborhood Development Rating System integrates the principles of smart growth, urbanism and green building into the first national system for neighborhood design.

LEED certification provides independent, third-party verification that a development's location and design meet accepted high levels of environmentally responsible, sustainable development.

Reduce Urban Sprawl—To reduce the impacts of urban sprawl, or unplanned, uncontrolled spreading of urban development into areas outside of the metropolitan region, and create more livable communities, LEED for Neighborhood Development communities are:

- Locations that are closer to existing town and city centers
- Areas with good transit access
- Infill sites
- Previously developed sites
- Sites adjacent to existing development

Typical sprawl development, low-density housing and commercial uses located in automobile-dependent outlying area, can harm the natural environment in a number of ways. It can consume and fragment farmland, forests and wildlife habitat; degrade water quality through destruction of wetlands and increased storm water runoff; and pollute the air with increased automobile travel.

Encourage Healthy Living—LEED for Neighborhood Development emphasizes the creation of compact, walkable, vibrant, mixed-use neighborhoods with good connections to nearby communities. Research has shown that living in a mixed-use environment within walking distance of shops and services results in increased walking and biking, which improve human cardiovascular and respiratory health and reduce the risk of hypertension and obesity.

Protect Threatened Species—Fragmentation and loss of habitat are major threats to many imperiled species. LEED encourages compact development patterns and the selection of sites that are within or adjacent to existing development to minimize habitat fragmentation and also help preserve areas for recreation.

Increase Transportation Choice and Decrease Automobile Dependence—These two things go hand-in-hand; convenient transportation choices such as buses, trains, car pools, bicycle lanes and sidewalks, for example, are typically more available near downtowns, neighborhood centers and town centers, which are also the locations that produce shorter automobile trips.

Benefits to Project Developers of LEED for Neighborhood Development Communities

Potentially Reduced Fees or Waiting Periods—Increasingly, municipalities are reducing fees or waiting periods associated with the approval process for community projects that can demonstrate a commitment to sustainability. Successfully completing the first stage of LEED for Neighborhood Development certification (pre-review approval) may assist projects that are still in the planning stages to gain the necessary approvals as expediently and cost-effectively as possible.

A Good Impression on your Neighbors—A LEED for Neighborhood Development certification can help projects explain the environmental and community benefits of a project to residents and businesses in nearby areas. The rating system also encourages projects to work collaboratively with the existing neighborhood to make sure their needs are taken into account.

Higher Tenancy Rates—Rising demand for housing in highly walkable or transit-accessible areas can result in higher tenancy rates.

A LEED for Neighborhood Development Pilot Draft Project Checklist, in PDF format, can be found here: <http://www.usgbc.org/ShowFile.aspx?DocumentID=4109>.

Recommendation 7-7:

Web Sites

Many grant opportunities exist to support gardens in schools, or education-related garden development. An excellent list is available on the California School Garden Network site: <http://www.csgn.org/page.php?id=30>

Recommendation 7-8:

Calculations

- EPA.gov says a gallon of gasoline is assumed to produce 8.8 kilograms (or .0087 metric tons) of CO₂.
- The Bay Area Economics Forum report cited above says a typical grocery store trip in the Bay Area is about three miles one way.
- Estimating an average of one trip per week to the grocery store, or 52 in a year
- NRDC researchers, relying on data from CA DOT say the average bay area vehicle fuel economy is 20.6 miles per gallon.
- Mountain View population numbers:
http://www.mountainview.gov/services/learn_about_our_city/demographics.asp

Recommendation 7-9:

Contact Information

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Chapter 8. Built Environment

Introduction

“The UN Climate Convention’s ultimate objective is to “prevent dangerous climate change.” To achieve this objective, the most recent Intergovernmental Panel on Climate Change report concludes emission growth must be reversed within a decade; reductions of 50 - 85 percent by 2050 will be necessary.

According to the United States Green Building Council (USGBC)¹, in the United States “the current building stock – more than 300 billion square feet – is the single largest contributor to global warming in the country. Buildings generate 48 percent of greenhouse gas emissions in the United States, creating one of the greatest opportunities to take immediate action on climate change. In the United States alone, buildings account for:

- 70% of electricity consumption,
- 39% of energy use,
- 39% of all carbon dioxide (CO₂) emissions,
- 40% of raw materials use,
- 30% of waste output (136 million tons annually), and
- 12% of potable water consumption”

According to the study by the International Council for Local Environmental Initiatives (ICLEI), the City of Mountain View’s CO₂e (carbon dioxide equivalent) emissions by sector are (in metric tons):

- Residential: 100,431
- Commercial: 160,273
- Industrial: 46,234

This represents a combined total of 306,938 metric tons of CO₂e emissions per year. The total CO₂e emissions from the City of Mountain View are 846,146 metric tons. The energy usage of the buildings alone in Mountain View comprises 36% of the entire CO₂e output. This does not take into account the CO₂e generated in the transportation used for construction or maintenance of those buildings or the CO₂e generated for the solid waste from the construction or demolition of those buildings.

In addition to the CO₂e emissions, “buildings also have a significant impact on human health. Americans spend an average of 90% of the day indoors. A significant number of all buildings are associated with sick building syndrome or building related illness; up to 30% new and remodeled buildings may experience acute indoor air quality problems. Indoor air typically contains between 2 and 5 – and at times greater than 100 – times more pollutants than outdoor air. As a result, poor indoor air quality in buildings has been linked to significant health problems such as cancers, asthma, Legionnaires' disease and hypersensitivity pneumonitis”².

¹ <http://www.usgbc.org>.

² Green Building Research Funding: An Assessment of Current Activity in the United States by Mara Baum, 2006 Mark Ginsberg Sustainability Fellow U.S. Green Building Council, 2007 U.S. Green Building Council

Since typical building construction uses so many resources and touches on just about every environmental category measurable, it is prudent to look to building design, construction, maintenance and operations to quickly slow down and ultimately stop climate change, the destruction of our local environment and degradation of our personal health. To this end, the Santa Clara County Cities Association (SCCCA) developed several actions for the member cities within Santa Clara County to take up. The Mountain View City Council voted for two of the recommendations, “1) Recognize and adopt the United States Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED) rating system and Build It Green’s BIG GreenPoint Rated system as the official building standards for the City of Mountain View and, 2) Require all development application submittals to include a completed LEED or GreenPoint Rated checklist”. The third action from the SCCCA, “Adopt a policy of LEED Silver certification or better for all new public construction and renovation projects over 5,000 square feet”, was referred to the Built Environment Working Group for their recommendations. The working group’s recommendation for this action is covered in Recommendation 8-1.

The working group supports the decision of the City Council on all three actions. LEED is the nationally accepted benchmark for the design, construction and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings’ performance. The U.S. Green Building Council is a 501(c)(3) non-profit community of leaders working to make green buildings available to everyone within a generation. The USGBC developed the LEED rating system. The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is a voluntary, consensus-based national rating system and third-party certification program for developing high-performance, sustainable buildings. LEED addresses all building types, emphasizes state-of-the-art strategies and promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

The LEED Rating System provides different versions to meet the needs of various building and development types, such as, LEED for New Construction, Existing Buildings, Operations & Maintenance, Commercial Interiors, Core & Shell, Retail, Healthcare, Homes, Schools and Neighborhood Development (currently in Pilot form). The LEED Rating Systems have four achievement levels based on the points earned through performance within the above mentioned categories. Should the project team prove to the USGBC through the LEED documentation and application process that the building meets the rating system requirements amounting to 26–32 points, the project would receive LEED Certified certification status, 33–38 points would earn LEED Silver, 39–51 points would earn LEED Gold, and 52–69 points would earn LEED Platinum certification.

LEED is constantly being reviewed by volunteer construction industry professionals and updated to the latest advances in the construction industry. Although the point totals tend to remain the same, each year buildings must meet higher performance standards in order to earn the same certification. As the years pass, the system becomes more rigorous to keep up with advances in technology and continuing market transformation.

Summary of Recommendations

1. Require Public Buildings to Achieve LEED Silver
2. Implement Green Building Standards for Private Buildings
3. Establish a Revolving Loan Program to Fund Energy Efficiency Upgrades
4. Require an Online PG&E Energy Audit (or Equivalent) for Business License Renewal
5. Establish a Home Energy Efficiency Rating System
6. Develop Energy Consumption Standards for All Buildings
7. Enhance the Expertise of Planning and Building Department Staff Members in Green Building Processes and Practices
8. Establish a Green Building Incentive Program
9. Require Diversion of 75% of Construction and Demolition Debris from Landfills

Working Group

Yvonne Farrell (Co-Chair)

Elisa Peters

Randy Potter (Co-Chair)

Title: Require Public Buildings to Achieve LEED Silver

Statement of Issue

Buildings in Mountain View are responsible for 36% of the entire CO₂e output when calculating just their energy use. Their water usage, material usage, solid waste generation from construction, heat increase to the immediate area and sick building syndrome are all serious issues in addition to their heavy energy use and CO₂e generation.

The LEED rating system is a proven resource throughout the nation and the world. The LEED rating system touches on all the problem subjects noted above and has been shown through studies to reduce a building's impact in each category in a substantial way. The LEED rating system is as much an educational tool as it is a system for quantifying the reductions in environmental impacts of buildings. Through LEED, the USGBC has brought about a very quick market transformation that no other system had been able to accomplish. The difference is in the holistic approach of including everyone involved in the business of making buildings. Not only are the designers and builders of buildings included, but also the product manufacturers, material suppliers, and the owners. By including everyone, we are finally able to create the synergies required to transform the entire marketplace. By adopting LEED, the City is supporting a continued market transformation that will bring about high-performance green buildings as the norm.

Mountain View can benefit greatly from the work of several other Bay Area communities that have been building LEED-certified buildings for years. Many communities within Santa Clara County have already passed regulations calling for LEED Silver certification for their public buildings; some have already called for LEED Gold. The construction industry in the Bay Area is quite accustomed to designing and building LEED certified building projects.

Recommendation

All construction projects, new and renovations, for public buildings greater than 5,000 square feet must achieve LEED Silver certification. Within five years the level will be raised to LEED Gold.

Environmental Impact

LEED Silver certified commercial and institutional buildings are designed to use an average of 37% less electricity, 26% less natural gas, and 41% less total energy than standard buildings. This is about a 5% reduction over LEED-certified buildings. LEED Gold and Platinum buildings use 51% less energy.³ LEED rated buildings also save water and other resources, and promote sustainable practices and healthy building environments. Reduction in CO₂e is difficult to assess without information from the City as to the plan for renovated and new construction projects. Every renovation of existing facilities should include HVAC equipment and lighting upgrades to realize the energy savings and reduce the existing CO₂e emissions.

³ Energy Performance of LEED® for New Construction Buildings by: Cathy Turner & Mark Frankel, 2008

Fiscal Impact and Synergies

Studies from Davis Langdon have shown that buildings rated up to a LEED Silver rating cost virtually the same as market-rate buildings. This is due in large part to the positive market change, which is largely a result of the USGBC and LEED programs. The more green buildings we build the more the prices for green products and buildings will reduce even more. LEED promotes healthy buildings and have shown a substantial increase in productivity and reduced absenteeism for their inhabitants increasing staff efficiency.

Obstacles

- There is a learning curve for designers and builders who have not yet done LEED projects or “green” buildings, but that is lessening quickly as more and more of them learn the marketing benefits of knowing how to design and build green buildings. LEED is definitely where the construction market is going, as local construction professionals will attest. These professionals can turn what may seem like a deficit into an opportunity by educating themselves in green building and marketing themselves in this incredibly fast growing market.
- Another obstacle in achieving LEED certified buildings is the notion by many people, construction professionals and clients as well, that green buildings cost more money than non-green or traditional buildings. Studies have shown that this is not true, as noted by the Davis Langdon study, but the notion prevails due to a lack of education on the subject. As noted in the study “We continue to see project teams conceiving of sustainable design as a separate feature. This leads to the notion that green design is something that gets added to a project – therefore they must add cost. This tendency is especially true for less experienced teams that are confronting higher levels of LEED certification (Gold and Platinum). Until design teams understand that green design is not additive, it will be difficult to overcome the notion that green costs more, especially in an era of rapid cost escalation. Those of us in the industry like to explain it to our clients this way: instead of calling them green buildings we call them high performance buildings. Clients are getting a better, high performance building for the same amount of money as a market grade building.”

Partnerships

There are many local affiliates of national construction professional association who have green building education programs. For instance the Northern California Chapter and Silicon Valley Branch of the US Green Building Council (USGBC), the Committee on the Environment (COTE) for the American Institute of Architects (AIA), Santa Clara Valley Chapter, and the International Interior Designer Association (IIDA) are just a few of the local associations who hold regular lunch-and-learns, seminars and workshops to educate local construction professionals in green building techniques.

Title: Implement Green Building Standards for Private Buildings

Statement of Issue

To create a more efficient and healthy building stock, Mountain View should implement Green Building standards that mandate certain green building practices. Two programs that are well established and have already been adopted by many of the communities in Santa Clara County and San Mateo County are the U.S. Green Building Council's LEED and Build It Green's GreenPoint Rated programs.

The LEED rating system is a proven resource throughout the nation and the world. The Mountain View City Council has already moved to enact an ordinance calling for LEED to be the Green Building rating standard for city projects. While LEED has become the standard for commercial projects, GreenPoint Rated has become the Bay Area standard for residential home rating; nearly every community has established Green Building programs using the GreenPoint Rated program as their guideline.

Recommendation

We recommend the implementation of the following mandated standards for all construction projects in Mountain View requiring a permit:

1. All private buildings greater than 5,000 square feet must fill out the LEED checklist. The checklist should be on the cover sheet of submitted drawings. Applicants should show verification of the checklist by a LEED Accredited Professional. The standard will rise over a three year period to achieve the LEED Certified certification.
2. All new residential construction, as well as additions and renovations with a project value of >\$75,000, should require a verified GreenPoint checklist as a part of the submittal drawings. A minimum score of 70 points should be achieved in order to qualify for a building permit. Standards should be established in line with what Palo Alto has adopted. These standards are among the most aggressive verification-required standards established to date in the Bay Area (see table below for program details).

Project Type	Requirement	Minimum Threshold
Multi Family Residential		
New Construction	Multifamily GreenPoint Checklist	70 points - <i>Verified</i>
Additions/Renovations <i>Value > \$100,000</i>	Multifamily GreenPoint Checklist	Submit Checklist on Plans
Single Family Residential		
New Construction >2,550 sf	Single Family GreenPoint Checklist	70 points + 1 point per additional 70 sf (150 point max)- <i>Verified</i>
New Construction of >1,250 sf and <2,550 sf	Single Family GreenPoint Checklist	70 points - <i>Verified</i>
Additions <1,250 sf and/or renovations with permit value of > \$350,000	Single Family GreenPoint Checklist	70 points - <i>Verified</i>
Additions <1,250 sf and/or renovations >\$75,000 and <\$350,000 permit value	Home Remodeling GreenPoint Checklist	<i>Submit filled in checklist on plans -Self Verified</i>
Renovations of <\$75,000	No Requirement	No Requirement

3. The City should provide an expert to help individuals get up to speed on rating system requirements for developing projects within the city, and appropriate timing of steps and methodologies to successfully meet the new requirements. While, for the most part, any private developer can hire a firm with the correct expertise to design and build a LEED or GreenPoint Certified building, those individuals who are inexperienced in green project development may need some high-level consulting, provided by the City, to make sure they meet some of the early phase rating system requirements. Some rating system prerequisites must be correctly planned from initial phases of the project, or the project may not earn its certification. Until a larger percentage of owners, designers, and contractors have built buildings within these rating systems, the City should provide this expertise to make sure these constituents are successful. In the short term, the City Council can hire a firm that has this expertise to help building owners take the necessary steps at the correct time to make sure they can achieve the LEED or GreenPoint certification requirements. For the long term, the City should hire individuals within the appropriate departments with this expertise and train their existing staff in these rating systems.

Environmental Impact

- LEED certified commercial and institutional buildings are designed to use an average of 32% less electricity, 26% less natural gas and 36% less total energy than standard buildings.
- Metrics for GreenPoint Rated homes are not readily available; however, since the Energy Star designation requires the same minimum requirements (15% above Title 24 requirements), metrics for this program can be used. Buildings that have earned the Energy Star label use an average of almost 40% less energy than average buildings, and emit 35 percent less GHG according to the US EPA. The ICLEI study of Mountain View states that 100,431 metric tons of CO₂e is created by residential buildings, so the potential for GHG savings in the residential building stock in Mountain View is: 35% x 100,431 = 35,150 metric tons CO₂e reduction.

Fiscal Impact and Synergies

- Studies from Davis Langdon & Associates have shown that buildings up to a LEED Silver rating cost virtually the same as market-rate buildings. This is due in large part to the positive market change, which is largely a result of the USGBC and LEED programs. The more green buildings we build, the more the prices for green products and buildings will reduce. LEED-certified rated buildings show a 36% savings in energy bills, which will continue to increase with the rising price of fuels to create that energy.
- According to the CoStar study⁴, LEED buildings command rent premiums of \$11.33 per square foot per year over their non-LEED peers and have a 4.1% higher occupancy. Rental rates in Energy Star buildings represent a \$2.40 per square foot per year premium over comparable non-Energy Star buildings and have 3.6% higher occupancy.
- In a trend that could signal greater attention from institutional investors, Energy Star buildings are selling for an average of \$61 per square foot more than their peers, while LEED buildings command a remarkable \$171 more per square foot. *The Appraisal Journal* cites a \$20.73 increase in resale value for every \$1 in annual energy-cost savings in a recent study.

Obstacles

In addition to the obstacles noted in Recommendation 8-1:

- There is a learning curve also for the building and planning departments. These techniques and requirements are new and different to what is in staff's comfort zone. There will need to be a willingness to try things they have not done before. Many new 'green' systems are not being approved currently even though they are not technically against the current codes. There has to be an openness to allowing techniques and systems that are new and foreign to the plan checkers and review staff. Promoting group meetings where all the parties from various departments meet with designers and builders to review new green systems together to gain a better understanding and aid in approvals is necessary.

Partnerships

There are many local affiliates of national construction professional association who have Green Building education programs. For instance, the Northern California Chapter and Silicon Valley Branch of the US Green Building Council (USGBC), the Committee on the Environment (COTE) for the American Institute of Architects (AIA), Santa Clara Valley Chapter, and the International Interior Designer Association (IIDA) are just a few of the local associations who hold regular lunch-and-learns, seminars and workshops to educate local construction professionals in Green Building techniques.

⁴ <http://www.costar.com>.

Title: Establish a Revolving Loan Program to Fund Energy Efficiency Upgrades

Statement of Issue

Most energy efficiency upgrades pay for themselves over time with savings on energy bills. Yet up-front costs can deter investments. Reluctance to invest in energy efficiency is particularly a problem for rented or leased properties, where owners make investments but often don't reap the benefits of reduced energy bills. Renter-occupied housing units total 18,285, or 58% of Mountain View's residents.⁵ Owners of rental housing usually do not pay for utilities and therefore do not have financial incentives to invest in energy efficiency upgrades to properties. Similarly, most utility bills for commercial properties are not paid by owners; making energy efficiency upgrades a low priority.

The State Assembly recently enacted a bill that can help to solve this. Assembly Bill 811 (Levine) allows cities and counties to make low-interest loans to homeowners and businesses to install renewable energy and energy efficiency improvements. Participants would pay back the loans over decades through property taxes; the loan balance, including improvements, would be transferred to the new owner in the case of property or business sale. The cities of Berkeley and Palm Desert have already implemented such loan programs.

Recommendation

The City of Mountain View would establish a revolving loan program to fund energy efficiency and renewable energy upgrades of commercial and residential properties, with highest priority on lending to projects improving rental and low-income properties not already covered by the state's Low-Income Energy Efficiency Program.⁶

Time Frame: Medium term

Environmental Impact

High potential for greenhouse gas (GHG) reductions at properties where investments are made.

As one example, up-front funding through the loan program could bring more efficient refrigerators into Mountain View homes. An Energy Star-qualified refrigerator model uses at least 20% less energy than required by current federal standards.⁷ According to the U.S. Department of Energy, the price premium for an Energy Star refrigerator is \$30 to \$100, with an investment recovery period of two to six years.⁸ Yet most new refrigerator purchases are not Energy Star; currently only 38% of California households have an Energy Star refrigerator.

If 20% of Mountain View's homes bought an Energy Star refrigerator instead of a lower-efficiency new model, savings could amount to 200 metric tons CO₂e per year. If an additional 10% of old (pre-1993) refrigerators were upgraded to Energy Star models, savings could total over 550 metric tons CO₂e. (See Annual Savings chart in the appendix)

⁵ City of Mountain View, http://www.ci.mtnview.ca.us/services/learn_about_our_city/demographics.asp

⁶ <http://www.cpuc.ca.gov/PUC/energy/consumers/liee.htm>

⁷ http://www.energystar.gov/index.cfm?c=refrig.pr_refrigerators

⁸ U.S. Department of Energy, "Refrigerators 2007 Partners Resource Guide."

http://www.energystar.gov/ia/partners/manuf_res/downloads/2007Refrigerator_prg.pdf

Fiscal Impact and Synergies

Staffing would be needed to design and oversee program.

Partnerships

A partnership with a financial institution would be ideal. A partnership with a non-profit environmental group or with relevant corporate entities working in the energy efficiency arena could also be beneficial. For instance, HomeZ USA, a Mountain View-based startup company, is already developing a pay-as-you save financing program for residential energy efficiency upgrades.

Title: Require an Online PG&E Energy Audit (or Equivalent) for Business License Renewal

Statement of Issue

According to the ICLEI study, the City of Mountain View emissions by sector are (in metric tons): Residential 100,431 CO₂e, Commercial 160,273 CO₂e and Industrial 46,234 CO₂e totaling 306,938 CO₂e metric tons per year. The total CO₂e emissions from the City of Mountain View are 846,146 metric tons. The energy usage of the buildings alone in Mountain View comprises 36% of the entire CO₂e output. Existing buildings will be higher than that percentage depending on how old they are and if they have upgraded their equipment to newer, more efficient models. Existing buildings comprise a much larger portion of the buildings in Mountain View so the issues are twofold.

PG&E provides electricity for most of the buildings in the City. They provide free energy audit services as the first step in determining the most effective ways to reduce energy usage in existing buildings. PG&E offers financial rebates and are knowledgeable of State and Federal rebate and grant programs to provide financial aid in replacing outdated equipment.

Recommendation

The City should require an online PG&E energy audit (or equivalent) on all existing commercial buildings. The building, or business, owners must show a completed audit in order to renew their Mountain View business license. Within five years, business license applicants must show proof of an in-person energy audit (except home-based businesses).

Environmental Impact

Building modifications are not required as a part of the recommendation. It is hoped that by identifying the problem areas and potential savings of many items that it will be shown to be in the business owner or building owner's best interest financially to perform many of these items. The environmental impact will be to reduce energy usage, and as a result, GHG's, but it is very difficult to calculate how much.

Fiscal Impact and Synergies

Although savings will vary widely among the differing building/operational types and the amount of upgrades performed based on the audit results, but in a two-minute online energy survey on the PG&E website, \$8,000 in estimated annual energy savings were identified for a 10,000 square foot office building in Mountain View.

Partnerships

- PG&E
- The State of California
- The Public Utilities Commission

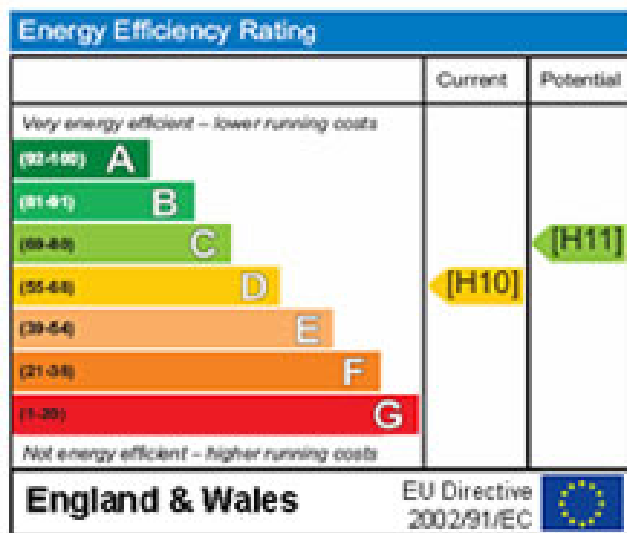
Title: Establish a Home Energy Efficiency Rating System

Statement of Issue

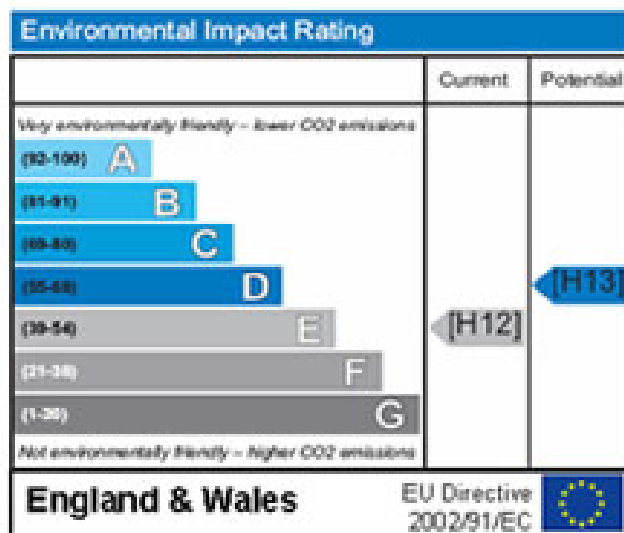
Existing homes and businesses are responsible for 31% of Mountain View’s CO₂e emissions.⁹ Energy costs are high, and rising, yet little or no information on the historical energy use of a building or home is available to people making decisions about purchase, lease, or rental. Energy use can vary substantially, depending on a building’s installed appliances, lighting, heating, ventilation, air conditioning, and overall building shell performance.¹⁰ Resident energy-using habits are part of the variance, but most of it can be tracked to the home’s installed heating, air conditioning, appliances, and building shell performance.

Information on energy usage would aid purchase, lease, and rent decisions, and help to put a value on properties with better energy efficiency. It would also provide an incentive for owners to make energy efficiency upgrades.

In the United Kingdom, a successful Energy Performance Certificates program is already in place for all homes. It provides information on the energy efficiency of a home, on a scale of A-G. The most efficient homes are in band A. The Certificate also tells, on a scale of A-G, about the impact the home has on the environment. Better-rated homes should have less impact in terms of CO₂ emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills will be.



The environmental impact rating is a measure of a home’s impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

The average property in the UK rates in bands D-E for both ratings. The Certificate includes recommendations on ways to improve the home's energy efficiency to save money and help the environment.¹¹

⁹ From data in Baseline and Measurements Working Group report, June 27, 2008.

¹⁰ HomeZ USA, a Mountain View-based energy consulting firm, reports that for Bay Area homes of approximately 2,400 square feet, annual natural gas costs vary by at least \$3,500, and annual electricity costs vary \$6,300.

¹¹ http://www.homeinformationpacks.gov.uk/consumer/17_Energy_Performance_Certificate.html

Recommendation

Establish a home energy efficiency rating system similar to the UK Energy Performance Certificates program. Start out as a voluntary program, whereby property owners use the program as a way to demonstrate low energy use. Over time, the program would be phased in as a requirement for all homes.

Time Frame: Short term

Environmental Impact

Energy certificates could provide an incentive for building performance and energy efficiency improvement in the commercial and residential sectors.

Fiscal Impact and Synergies

The City would need to devote staff time to development and oversight of the program.

Obstacles

One potential obstacle is the availability of energy-usage data for rentals where the owner does not hold the PG&E account. It is possible that an alternative reporting system would be necessary for rental properties where tenants are responsible for part or all of the utility billing.

Partnerships

A partnership with PG&E could potentially solve the problem mentioned above.

Title: Develop Energy Consumption Standards for All Buildings

Statement of Issue

To create the most straightforward path to a more energy efficient existing building stock based on an energy performance standard that each building must meet, the first step is to establish these standards. Since energy usage data will be collected and disseminated through both the audit program (commercial) and the mandated energy usage data program (residential), the City should use this data in order to provide building owners and occupants a basis to evaluate their building's performance based on how other like buildings in the area are performing.

Recommendation

Establish standards for energy use based on building type and size so that the City can provide building owners and occupants with this information.

Create a database of energy-usage data on all buildings in Mountain View based on the data collected through the audit program and energy-usage data program. After enough information has been collected (<1 year's worth), data can then be evaluated and averages for various building types can be established. These averages can then be communicated to building owners, occupants, and operators based on building size and type (*for example, a single family home of 1,750-2,000 sq. ft. averages xxx electricity usage and xxx natural gas usage during the month of June*). This would provide a basis for those responsible for building operation to see how their building is performing compared to other like buildings in the area.

After these averages have been established, target standards can be set for various building types to give the City a basis to monitor building energy usage and establish more creative programs to incentivize efficiency upgrades. This system of measurement and feedback will then create demand for programs such as the revolving loan program (Recommendation 8-3).

Environmental Impact

The environmental impact of such a program could be significant and is based on the fact that if you give those responsible a measuring stick to evaluate their building's performance, they will inherently take notice and make efforts to reduce usage and make buildings more efficient. This phenomenon has been seen with energy monitoring devices placed in buildings that allow occupants to see their usage real time. In these cases, buildings with monitoring devices performed at significantly more efficient levels simply because the operators had the data to evaluate. This is also seen with hybrid automobiles like the Toyota Prius, which provide feedback on fuel efficiency and allow the driver to make adjustments based on their driving habits.

Fiscal Impact and Synergies

The cost of collecting of data and maintaining a database would be the only realized costs for such a program. Incorporating this program into an audit and usage feedback systems would be a relatively simple next step.

Obstacles

The most significant obstacle would be acquiring energy-usage data from PG&E and disseminating it to the proper individuals. Resistance from groups like local Realtor and Building Operator Associations should be expected since such a system would require mandates for information disclosure.

Partnerships

Partnerships with PG&E will be critical in order to get access to data. Groups such as Acterra or Sustainable Silicon Valley (SSV) could also be of great help in collecting usage data as well as establishing usage standard targets.

Title: Enhance the Expertise of Planning and Building Department Staff Members in Green Building Processes and Practices

Statement of Issue

The most significant impact on implementing Green Building practices can be made by those responsible for the permitting and oversight of construction projects in Mountain View, namely the Planning and Building departments. The Staff of these departments should be knowledgeable in all aspects of Green Building methodologies and practices and should be able to provide input and recommendations that will enhance green projects. The current state of the planning and building process tends to be very restrictive when it comes to green systems and construction practices.

These departments should be seen as a tool to help homeowners as well as design and construction professionals to integrate green elements into their projects, rather than an impediment to making them happen.

Recommendation

1. Have planning and building-department personnel trained on Green Building practices through Build It Green's Certified Green Building Professional (CGBP) program. This is a two-day program that covers Green Building practices from design through finish construction and provides a great basis of understanding for green design and construction methodologies. The goal of this education is to create a consultative nature to these departments so that they can actually encourage and influence green decisions at the formative decision stage of planning. By working collaboratively with the public as well as building professionals, these practices can be implemented much more effectively on a project by project basis than by mandates or requirements.
2. Review the City design guideline documents that are distributed to give industry professionals guidance on how to design a building in Mountain View. These documents contain no information on green design ideas, green systems, green materials or anything that would allow a designer/architect to integrate green aspects into their project. Again, by encouraging these practices proactively, rather than reactively, the City will be able to realize a much greater rate of compliance with Green Building standards. As an alternative to adding green content to the existing planning documents, use already available pieces from Build It Green or the USGBC; both have extensive libraries of material available for use at no charge.
3. Have the Planning and Building Departments join and become active in Build It Green's Public Agency Council (PAC), a Green Building council made up of representatives from local Bay Area municipalities (see Partnerships).
4. Establish a volunteer sustainable-building advisory committee made up of local Green Building professionals to help advise City Staff on Green Building practices and help create green design and building guidelines.

Time Frame: Short term

Environmental Impact

Higher performing green buildings are cost effective, even for projects loaded with high-value features. Higher first costs are often recovered within three to five years through lower operating expenses and utility rebates for energy-saving equipment. Savings in energy costs of 20-50% are common through integrated planning, site orientation, energy-saving technologies, on-site renewable energy systems, light-reflective materials, natural daylight and ventilation, and downsized equipment.

Currently, many of these green building elements do not come with a cost premium, especially when it comes to smart design planning, which is where planning department education can be invaluable in assisting applicants in adopting these practices.

20-50% energy reduction from buildings means a potential reduction of 61,388–153,469 metric tons CO₂e from Mountain View buildings (based on 306,938 total metric tons per year combined for all buildings from ICLEI study).

Fiscal Impact and Synergies

Cost for CGBP training is \$400 per participant. However, staff training could certainly be arranged on a group basis through Build It Green. Consultants could also be sought out to conduct such training tailored specifically for department staff. Marc Richmond of Practica consulting in Berkeley teaches the Build It Green sessions and could be engaged for such purposes. The Public Agency Council costs \$100 per year to join.

Obstacles

The only true obstacle is the resistance of City Staff to embrace green principles and training.

Partnerships

- Build It Green's Public Agency Council, <http://www.builditgreen.org/councils/pac>.
- Practica Consulting, <http://practicaconsulting.com/index.html>

Title: Establish a Green Building Incentive Program

Statement of Issue

Mandated practices in the form of checklists and verification processes are useful for educating project participants and guiding them through the green design and construction process. However, in order to raise the bar and encourage projects to really push the limit with respect to energy efficiency and resource consumption, there needs to be positive incentives to go above and beyond the standard. Incentives will provide a basis for participants to look beyond what is established as baseline practices and explore ways to make buildings even more efficient than previously imagined.

Recommendation

Establish a reward system that will incentivize projects to push for the highest efficiency and resource conservation thus reducing the carbon footprint created by these projects. Incentives should be explored that are not hard costs to the City but provide value to the project owner and participants. This incentive program could be tied to Title 24 data (for example, incentives for exceeding Title 24 by more than 20%).

Ideas for such incentives include:

- *Application Fast Tracking*—Provide expedited process time for both planning and building department applications. This is a great way to transfer value from non-green projects to green projects. In construction, time is literally money, so a couple of weeks of expedited time saving in review can have a huge dollar value to the project and cost nothing to the City.
- *Allowances*—Offer extra allowances for green projects that meet a certain threshold. These allowances can be in the form of floor area ratios (FAR), setbacks, height requirement concessions, and so on.
- *Reduced Application Fees*—Reduced fees could be a strong incentive to push a project towards greater efficiency. In order to keep the overall balance of revenues from application fees unaffected, non-green projects would be charged more in order to balance out the reduction in costs for green project.

Mountain View should try to meet or exceed any neighboring city's incentive program so as to try and attract green developers and truly efficient building projects. Look to other neighboring cities like Palo Alto, Menlo Park, and Los Altos, which are just establishing these incentives and will be implementing them in the near future.

Time Frame: Short term

Environmental Impact

The measurable environmental impact is hard to quantify. However, these incentives would facilitate a process of continually pushing for increased building efficiency through innovative design, new technology, and advanced building practices. Perhaps the greatest impact overall of an incentive system would be the resulting model green projects in the city of Mountain View and the ability of the City to use these model projects as educational tools to continually seek to improve building

performance by encouraging like practices on future projects. The snowball effect of such a process can have a significant effect on the reduction of the carbon footprint created by the built environment.

Fiscal Impact and Synergies

If incentives are created strategically by using no cost programs as well as redistributing some of the fee revenue generation towards non-green projects, they can have a zero sum cost to the City.

Obvious synergies exist here between mandated Green Building standards, green education through the Planning and Building departments, and Green Building incentives. Education will support the Green Building standard system which will then give much more importance to the incentive system.

Obstacles

Any incentive system has the potential to incent undesirable actions, so the system would have to be reviewed and any cracks sealed up so that only the most desirable green practices are incented.

Title: Require Diversion of 75% of Construction and Demolition Debris from Landfills

Statement of Issue

Landfills all over the country are filling to capacity faster than new sites can be identified. The State of California passed a law several years ago to force communities to reduce their landfill space by 50%. Most communities then turned to recycling to alleviate this problem. Curbside recycling has helped substantially, but construction debris remains as a substantial landfill problem.

- The EPA estimates that 136 million tons of building-related construction and demolition (C&D) debris was generated in the U.S. in a single year.¹²
- Compare that to 209.7 million tons of municipal solid waste generated in the same year.¹³

These estimates total 345.7 million tons of solid waste with 39% construction waste and 61% municipal solid waste. Materials that end up in the landfill are for the most part new material that can easily be recycled into new products or reused on another project. Much of this material is not biodegradable and will remain for many years exactly as it was left, all the while leaching poisons into the soil. Many of the products we use each day are actually considered hazardous waste when disposed of, even when brand new. Much of it ends up in our landfills anyway due to a lack of understanding about the products and their manufacturing process.

The City Council recently passed an ordinance requiring 50% of all construction-waste to be diverted. The base level of LEED requires 50% of construction waste to be diverted for other uses such as recycling. Many LEED projects have achieved the second level of diversion, which is 75%. If projects designed ahead of time to achieve 75%, it can be achieved without much more effort than 50%. The design specification, waste diversion plan, and waste management system on the job site are virtually the same for 50% and 75%, but 75% gives the project and the City a much bigger environmental bang for their buck.

To earn these credits, however, the recycling system in Mountain View will need to be slightly modified. Currently, if a contractor hires Foothill Disposal to haul their construction waste, it will be treated at mixed construction and demolition (C & D) waste. The mixed construction waste will be taken to the SMART station where it will be sorted and diverted or sent to the landfill. LEED requires contractors to submit the weighed receipts for the waste. If it's mixed C & D waste, they must submit the weight receipts and the certified yearly diversion totals for that waste facility to determine what percentage of the total construction waste was diverted. Currently, SMART does not track the amounts required to certify their yearly totals. You cannot earn LEED credits if you currently use the SMART station. You can separate all the construction waste on site and contract with haulers to go to separate facilities to get the receipts needed to earn the credits, but many contractors contract with Foothill Disposal because they have the overall Mountain View solid waste contract, making a mistake that cannot be fixed after the fact. Once the waste is sent to SMART, even one bin, the project cannot earn the credits based on anything that was diverted from those bins. They have to be treated as non-diverted solid waste, even if everything put in the bins was recyclable.

¹² <http://www.epa.gov/epaoswer/non-hw/debris/about.htm>, and U.S. EPA Characterization of Construction and Demolition Debris in the United States, 1997 Update.

¹³ U.S. EPA Characterization of Municipal Solid Waste in the United States, 1997 Update. Report No. EPA530-R-98-007

Recommendation

Require all construction projects, new and renovation, to divert 75% of their construction and demolition debris from landfills.

Environmental Impact

If, on average, construction waste totals approximately 39% of the solid waste in landfills, then we can approximate the total GHG from construction-waste in Mountain View landfills to be 45,934 metric tons CO₂e of the total GHG of 117,780 metric tons CO₂e noted in the ICLEI study on Mountain View CO₂e emissions.

Removing 75% of construction waste would result in a reduction of approximately 34,451 metric tons CO₂e.

Fiscal Impact and Synergies

The fiscal impact is typically substantial cost savings to the project and contractor due to very expensive tipping fees for construction waste. There is also substantial savings to the City or community that would normally go to pay for additional landfill space.

Obstacles

As with any new program or methodology, there is always a learning curve. After the design and construction teams do this once, they will have no problem repeating this behavior time and again; after the contractor sees the cost savings, there will be no obstacle.

Partnerships

Most communities and the State of California provide a myriad of informational aids.

- <http://www.stopwaste.org> is a great website with everything needed to learn how and where to recycle construction waste.
- The California Integrated Waste Management Board has many resources to learn about recycling: <http://www.ciwmb.ca.gov/>

Appendix: Citations, Web Sites, and Additional Information

Recommendation 8-1

Citations

- Cost of Green Revisited: Reexamining the Feasibility and Cost Impact of Sustainable Design in the Light of Increased Market Adoption July 2007 by Davis Langdon
- <http://www.usgbc.org>

Recommendation 8-2

RESIDENTIAL GREEN BUILDING ORDINANCES

Location	Jurisdiction	Requirements	Incentives	Type of Standard
Cities Within SCC	Los Altos	All new construction and >50% remodels must achieve GreenPt rating of 50	Expedited review for project >75 GreenPts.	MANDATORY - Build it Green
	Los Altos Hills	All new construction must be 15% more efficient than Title 24 standards through increased efficiency or solar		MANDATORY - Title 24
	Palo Alto	All new construction greater than 1250 sf must achieve GreenPt rating of 70		MANDATORY - Build it Green
	Los Gatos	Voluntary Hillside Building Standards		VOLUNTARY
	Saratoga	Green Point checklist required		VOLUNTARY - Build it Green/ Cities Assoc.
	Santa Clara	Green Point checklist required		VOLUNTARY - Build it Green/ Cities Assoc.
	Campbell	Green Point checklist required		VOLUNTARY - Build it Green / Cities Assoc.
	Milpitas	Green Point checklist required		VOLUNTARY - Build it Green/ Cities Assoc.
	Morgan Hill	Green Point checklist required		VOLUNTARY - Build it Green/ Cities Assoc.
	Cupertino	Green Point checklist required		VOLUNTARY - Build it Green
	Sunnyvale	Green Point checklist (voluntary)		VOLUNTARY - Build it Green
	San Jose	Green Point checklist (voluntary)		VOLUNTARY - Build it Green
Counties in Bay Area	Alameda County	Alameda County/StopWaste (voluntary)		VOLUNTARY - Alameda County StopWaste
	San Mateo County	All new construction and >50% remodel must achieve 50 GreenPt or LEED cert	Expedited review for project >75 GreenPts.	MANDATORY - Build it Green or LEED
	San Francisco County	Voluntary until 2009, then 25 GreenPts in 2009, 50 in 2010 and 75 in 2012		VOLUNTARY / MANDATORY - Build it Green
	Marin County	New construction/remodels larger than 3,500 sf and additions >500 sf resulting in floor area of >3500 sf must achieve Title 24 efficiency of a 3,500 sf residence		MANDATORY - Title 24
	Santa Cruz County	Requires minimum score to receive building permit (10 pts for first 350 sf, 1.5 pts for ea additional 100 sf)	Expedited review for higher points; Green Building Award	MANDATORY - Alameda County/StopWaste
	Contra Costa County	Green Point checklist (voluntary)		VOLUNTARY - Build it Green
Sonoma County	Voluntary			
Other cities/counties	Mill Valley	New construction/remodels larger than 3,500 sf and remodels >500 sf must achieve Title 24 efficiency of a 3,500 sf residence		MANDATORY - Title 24
	Santa Rosa	All new construction must be 15% more efficient than Title 24 standards		MANDATORY - Title 24
	Rohnert Park	New construction > 1,600sf and additions > 1,000 sf must be 10% more efficient than Title 24; larger than 2,000 sf must be 15% more efficient than Title 24		MANDATORY - Title 24
	Albany	All new construction and renovation subject to Design Review must achieve GreenPt rating of 50		MANDATORY - Green Point
	Petaluma	Green Point checklist (voluntary)	Green Point rated structures receive \$500 rebate	VOLUNTARY - Green Point
	King County, WA	Voluntary		VOLUNTARY - "Built Green"

*provided by Santa Clara County

- <http://www.ecosmartinc.com/presentations/1-Eco-Smart-HO-FreeGuide.pdf>
- <http://www.usgbc.org>
- <http://www.builditgreen.com>

Recommendation 8-3

ANNUAL SAVINGS: Energy Star Refrigerators

Scenario	% of homes making change	Annual CO2e Savings (tons)
Replace pre-1993 model with comparable new Energy Star model	0.10	354
Purchase Energy Star model instead of comparable new model	0.20	205
Total		558

Recommendation 8-4

- <http://www.pge.com>

Moderate action scenarios

Annual CO2e savings (metric tons)	Annual tenant savings (\$)	Scenario
120	\$71,133	25% of businesses install occupancy sensors for lights
21	\$15,750	10% of homes for sale make improvements saving 20% CO2e
519	\$162,468	10% of rental homes upgrade to moderately efficient showerheads (2.2 gpm from existing mix of 5.5 and 2.5 gpm).
135	\$170,288	20% of rental homes replace three incandescent bulbs with CFLs
794	\$419,638	

Medium to high action scenarios

Annual CO2e saved (metric tons)	Annual savings (\$)	Scenario
1221	\$710,030	50% of businesses install lighting savings devices, including a mix of occupancy sensors, timers and daylighting
63	\$47,250	30% of homes for sale make improvements saving 20% CO2e
2766	\$866,473	60% of rental homes upgrade to moderately efficient showerheads (2.2 gpm from existing mix of 5.5 and 2.5 gpm).
336	\$425,719	50% of rental homes replace three incandescent bulbs with CFLs
4386	\$2,049,473	

Recommendation 8-6

- <http://www.acterra.org>
- <http://www.sustainablesiliconvalley.org>

Recommendation 8-7

Build It Green's Public Agency Council

The Build It Green Public Agency Council (PAC) is a unique collaborative effort of over 100 participating public agencies that meet quarterly to share information, create consistent Green Building standards in their regions, and support each other's programs and initiatives.

Benefits of Participation

- Participate in an exchange of ideas and resources about municipal Green Building programs
- Develop mutually beneficial programs in a forum that connects with the building industry
- Network with other public agencies and community leaders
- Hear about the latest Green Building products & technologies
- Collaborate on state initiatives and programs to facilitate the adoption of Green Building in California

Requirements for Becoming an Affiliate Member

Participation in the PAC is available only to those professionally affiliated with a California public agency or utility. Build It Green Company Membership is encouraged but not required. Membership is only \$100/year and gives your agency a vote in our annual Board of Directors election and discounts on training. It is a great value.

Each PAC chapter meets quarterly, and Affiliates and guests are welcome to attend meetings in any region regardless of their place of work.

Meeting agendas, minutes, and other information are available only to affiliates in the login-protected PAC area.

Join us at our PAC Meetings

To apply to become a Public Agency Council Affiliate or attend as a guest, please contact the Government Relations Manager by phone at 510-845-0472 or go to <http://www.builditgreen.org/councils/pac>.

- <http://www.builditgreen.org/factsheets?page=1>
- <http://www.usgbc.org>
- <http://www.practicaconsulting.com/index.html>

Chapter 9. Suburban Natural Ecosystems and Biodiversity

Introduction

Numerous indicators suggest that the limits of the natural world to adapt to stress and change are being stretched beyond tolerance. For example, hundreds of species of birds are in severe decline in the United States, falling in population by as much as 90 percent since the 1960s.¹ The main cause for their steep decline is loss of habitat; however, other destructive elements include invasive plant species that take over native seed and nesting sources, pesticides, and climate change which is contributing to further reductions in habitat ranges.¹ *(Note to readers: Because this chapter makes heavy use of references, all the references are included in Appendix C at the end of this chapter. This differs from the placement of footnotes in other chapters.)*

In 2006, commercial migratory beekeepers along the East Coast of the United States began reporting sharp declines in commercial domestic honey bee colonies. Given that honey bees are the most economically valuable pollinators of agricultural crops worldwide and are responsible for every third bite of food, this loss may have serious implications for our nation's food supply.² In our most critical environmental threat faced to date, overuse of fossil fuels and its associated global warming is causing significant changes in the climate, resulting in altered weather systems, rising water levels, and expanding public health threats.

Local environmental indicators also show cause for concern.³ Data from 2003 show that in Silicon Valley, endangered species listings continue to accelerate, populations of the endangered California clapper rail shorebird declined 19 percent from 1997-8, and burrowing owl habitat continues to disappear.³ However, within Mountain View, there are numerous opportunities to enlist the help of the natural environment to mitigate the effects of greenhouse gases and pollution, and create a more sustainable, healthy, and ecologically resilient community. Our group has a vision for Mountain View in which every backyard, porch, roof garden, parking lot, schoolyard, church, recreational area, roadway, business site, neighborhood, and community is filled with trees (to sequester carbon, provide shade, produce oxygen and reduce pollution), habitats (to shelter and nurture plants and animals), and food-producing plants (to reduce our reliance on fossil fuels and provide healthier and more nutritious choices for us and our children).

All living organisms (including us!) depend on resilient, well-functioning ecosystems for life itself. The benefits and services provided by a healthy ecosystem include:⁴

- Generation of soils and maintenance of soil quality. The activities of microbial and animal species, including bacteria, algae, fungi, mites, millipedes and worms, condition soils, break down organic matter, and release essential nutrients to plants.
- Plant species purify the air and regulate the composition of the atmosphere, recycling vital oxygen and filtering harmful particles resulting from industrial activities.
- Wetland ecosystems absorb and recycle essential nutrients, treat sewage, and cleanse wastes.
- Approximately 99 percent of potential crop pests are controlled by a variety of other organisms, including insects, birds and fungi.
- Detoxification and decomposition of wastes.

- Pollination and crop production. Many flowering plants rely on the activities of various animal species – bees, butterflies, bats, and birds, for example – to help them reproduce through the transportation of pollen. More than one-third of humanity’s food crops depend on this process of natural pollination.
- Climate stabilization. Plant tissues and other organic materials within land and ocean ecosystems act as repositories of carbon, helping to slow the build-up of atmospheric carbon dioxide, and thus contributing to climate stabilization.

As in medicine, our working group used the guiding principal "First, Do No Harm" as our initial screening tool when assessing the impact of various activities on the suburban natural ecosystem. While development itself is a defining feature of the urban environment, it needs to be in a thoughtful manner and additional harmful effects on the ecosystem need to be minimized. Decisions regarding development need to be made with adequate information regarding the potential effect a project will have on the environment. For example, introducing toxic chemicals or invasive species into the environment and excessive use of valuable resources such as water should be avoided whenever possible.

Our second guiding principal is that working with natural ecosystems is generally more effective, requiring less energy and resources than interventions done in a manner contrary to nature. Planting trees to shade buildings from the sun requires far less energy than running air conditioners all summer. Planting lawns and other water-intensive landscaping in a hot, semi-arid climate results in high-resource use, greater maintenance costs, and extra energy input to properly maintain such ill-suited vegetation.

Natural ecosystems rely on a series of intricate feedback loops, keeping members in check and creating diverse, resilient ecological communities. When we use pesticides instead of integrated pest management, we strip the ecosystem of its natural system to keep pest populations in check, requiring us to add more toxic and energy-intensive products to control the resulting proliferation of pests. This results in harmful effects on all members of the food web, from the smallest microbe to the largest mammal (which in Mountain View is - us!)

Biodiversity is another essential feature of natural ecosystems, allowing them to adapt to environmental changes to stay healthy and functioning well. (Biodiversity means having a variety of species of plants and animals that represent a diverse gene pool and are present in a range of ecosystems.)⁵ When invasive species become established, they can crowd out other species in an area and undermine the important environmental services that natural systems provide, such as flood control and habitat for native plants and animals. When we artificially favor certain varieties of plants and animals at the expense of others, we can disrupt the natural population controls that predator/prey cycles create. In addition, there is a risk of population collapse when a particular species doesn't have the genetic reservoir to adapt to changes in the environment.

Our final guiding principal was the scouting motto, "Be Prepared!" An environmental crisis of worldwide proportion is upon us, and significant changes in our lifestyles and priorities are required. Having a healthy, resilient, diverse ecosystem within Mountain View will help us weather the storms ahead, creating stability and the capacity for our community to adapt to change. Having greater access to locally produced foods will also help us as a community be less susceptible to fluctuations in gas prices and variations in food availability from other more-distant regions.

Summary of Recommendations

1. Increase Tree Coverage in Mountain View
2. Minimize Pesticides and Herbicides in Mountain View's Environment
3. Restore Mountain View's Natural Waterways and Wetlands
4. Preserve and Restore Natural Habitats
5. Reduce and Contain Invasive Species in Mountain View
6. Prioritize Mountain View's Urban Ecology in Local Planning Decisions
7. Establish a Green Collar Training Program, Initially Focused on Green Gardening

Working Group

Nancy Dinsmore
Marn-Yee Lee
David Oliver
Esperanza Sanz-Escudero
Liz Snyder-Liles
Cheryl Woodward
Cynthia Kappahn (Chair)

Title: Increase Tree Coverage in Mountain View

Statement of Issue

Trees are an essential part of the Mountain View environment and play an important role in making the city more sustainable. Carbon sequestration, improvement in air quality, reduction in heat island effects, and the creation of a pedestrian friendly streetscape are three important factors for impacting emissions and climate change. Overall, the City has good tree ordinances and is committed to having a tree friendly environment; however, opportunities for improvement remain.

Recommendation

Increase tree coverage within Mountain View from 80% to 90% by the year 2015.

Implementation Strategies¹

See Appendix B.

Environmental Impact

Trees have many positive impacts on the urban environment, including^{2,3,4}:

- *Sequestering Carbon*—Trees can absorb carbon dioxide, younger trees absorb more than mature trees, though more mature trees have more sequestered carbon.
- *Reducing Pollutants and Air Quality Enhancement*—Trees absorb gaseous pollutants that might otherwise be inhaled, and deposit them in the soil or metabolize them to less toxic components.
- *Protecting Water*—Trees filter polluted particulate matter, reduce the flow of storm water and run-off into streams, and use nutrients like nitrogen, phosphorus, and potassium which can pollute streams.
- *Saving Energy*—The shade that trees provide can reduce household and business energy needs.
- *Reducing Sun Damage*—Trees provide shade, reducing exposure to ultraviolet radiation from the sun and associated skin damage and elevated cancer risk.⁵

Fiscal Impact

Though there would be an initial increase in expenditure, over time enhancing Mountain View’s urban forest would lead to fiscal savings. A strong urban forest in Mountain View could increase tourism and local spending, reduce pollution control costs, reduce social services budgets, increase real estate values thereby increasing property tax revenue and reducing energy costs in both homes and businesses.

Obstacles

- Increased costs in construction when adding trees to parking lots, etc.
- Planting and maintaining urban trees and vegetation requires expenditure, planning, and care. Initial water requirements are high, but decrease annually as tree root systems become well established.
- The value of trees is not easily measurable.
- Solar panel installation could render some areas unsuitable for trees (may be mitigated by recent State Assembly action).
- Public lack of knowledge or apathy regarding the benefits of trees.

Partnerships

- Mountain View Trees: <http://www.mountainviewtrees.org>
- Our City Forest: <http://www.ourcityforest.org>
- Friends of the Urban Forest: <http://www.fuf.net>
- USDA Forest Service: <http://www.fs.fed.us>
- American Forests Association: <http://www.americanforests.org>
- The Western Chapter International: <http://www.wcisa.net>
- International Society of Arboriculture: <http://www.isa-arbor.com>
- Society of Municipal Arborists: <http://www.urbanforestry.com>

Title: Minimize Pesticides and Herbicides in Mountain View’s Environment

Statement of Issue

The economic and environmental costs of pesticides and herbicides have been well-documented and include the ongoing costs of repeated applications and specialized equipment, contamination of ground water, air, and food, resistance, resurgence, and secondary pest outbreaks, and unintended impacts on other non-targeted species including birds, invertebrates, beneficial micro-organisms.¹ In Santa Clara County alone in 2005, 832,446 gross pounds of pesticides were applied, including 114,768 gross pounds for landscaping purposes.² These numbers only include pesticides applied by farmers, commercial agricultural pesticide applicators, structural pest control companies, and commercial landscaping firms, and do **not** include applications by consumers and most industrial and institutional applications, which may add an additional 30% to the chemical burden for our county.²

Recognizing the deleterious effects that pesticides and herbicides have on humans and the environment, the city of Mountain View has had a policy requiring Integrated Pest Management in place since June, 2003.³ Integrated Pest Management provides a sustainable approach to managing pests, by integrating biological, cultural, physical and chemical tools in a manner that minimizes economic, health and environmental risks. Despite this sound policy, 5 years later after its introduction, issues of public access to the plan and to its monitoring and evaluation still exist.

The Integrated Pest Management Plan (IPM) is comprehensive and delineates goals such as training of staff, IPM policies and procedures, tracking and reporting, and public outreach and education. In 2002 the Mountain View City Council adopted an IPM policy containing the following philosophy, “the City of Mountain View employees and City contractors will perform pest management operations at City-maintained facilities in a manner **that reduces or eliminates chemical pesticide use to the maximum extent** feasible and practical”.³ The IPM also states that “**this Plan will be continually revised and updated**”. In addition, California’s Healthy Schools Act of 2000 requires that public schools notify parents and school employees about pesticides that will be used at schools. The act also encourages schools to establish and implement an integrated pest management program.⁴

Without easy access to the City of Mountain View’s plan, its revisions, and updates, there is no way for the public to determine the extent to which the plan is being implemented. Additionally, the plan lacks specificity as to which positions in the City staff are responsible for each of the seven goals of the plan. Also lacking are timetables for the monitoring and evaluation of the each of the goals, and for how often updates and revisions will be done to the plan. In addition, in order to protect the health of humans and the natural ecosystem within Mountain View, Integrated Pest Management should be used not only on all city properties, but also on all other public and private properties within the City of Mountain View.

In addition, it is essential to reduce pesticide and herbicide applications by private home owners and local businesses. As noted by Seattle’s pesticide reduction coordinator for the Seattle Parks Department, "Residential streets are the worst possible place for pesticides. There is a lawn, a sidewalk and gutter and a catch basin all within a couple feet of each other. The entry into the water supply is right there."⁵

Recommendations

1. Require the use of Integrated Pest Management at all public sites within Mountain View by 2010.
2. Establish a voluntary program promoting the use Integrated Pest Management at private homes, businesses, and other institutions within Mountain View by 2010.
3. Eliminate the use of pesticides and herbicides for cosmetic purposes within Mountain View by 2012.

Implementation Strategies

See Appendix B.

Fiscal Impact

While initial expenditures may be increased, as new methods of pest management are introduced, long-term savings are likely to occur. The plan itself states that “In many cases, IPM can be cost-effective due to reduced chemical purchases” (page 4).⁴ There may be other cost reductions as well from less water usage, plant purchases, etc., as the City shifts to more environmentally integrated methods for maintaining its landscaping and facilities. The fiscal benefits of a healthy, stable, bio-diverse ecosystem and safe, unpolluted water resources are difficult to estimate but are likely to be extremely valuable.

Synergies

Water Availability and Use Working Group – maintaining the quality of local water resources.

Obstacles

The main obstacle is having a City employee with the interest and the authority to steward the IPM program. Without that, the Integrated Pest Management Plan will be a document created to comply with the law, but will remain unimplemented. Integrated Pest Management also requires new knowledge and a shift from the “quick fix” mentality associated with pesticide and herbicide use, to a long-term resource management approach. This may create obstacles in the private and public sector.

Partnerships

If there is a will to fully and continually implement the Plan, there are many resources the City could turn to for help, including collaborating with nearby cities such as Palo Alto, Menlo Park, and Sunnyvale which also have IPM plans. There are number of other cities, particularly in Canada, that have instituted “no cosmetic use of pesticides” policies.

Also, organizations, such as the Pesticide Action Network have a plethora of information and resources available. The Santa Clara Valley’s Urban Run-off Pollution Prevention Program is another resource for information regarding less-toxic pest management methods.

Local resources, such as Common Ground and the University of California Cooperative Extension’s Master Gardeners Program could also be a resource for the City regarding practical ways to implement and update the Plan, and for the community regarding organic gardening methods and integrated pest management.

Title: Restore Mountain View’s Natural Waterways and Wetlands

Statement of Issue

Undeveloped open space is very limited within the city of Mountain View. As a result, there are few natural habitats available for wildlife and plants. Rivers and streams represent an area of great opportunity for the restoration and development of wildlife habitats within Mountain View. In addition, Mountain View is fortunate to be located adjacent to San Francisco Bay.

These areas have major ecological significance and in addition are essential to a thriving local economy and stable community. “Wetlands and associated upland habitats play a vital role in maintaining a healthy ecosystem by buffering the impact of floodwaters, cleansing pollutants, and providing critical habitat for waterfowl and hundreds of fish and wildlife species.”¹ Local commercial and recreational fisheries depend on the health of San Francisco Bay wetlands.² Invertebrates, amphibians, and reptiles also require wetlands and shallow water habitats that have dwindled considerably from their historical extent.¹ The San Francisco Estuary today has only 52,000 acres of wetlands remaining of an historic total of 225,000 acres, according to analysis by the San Francisco Estuary Institute.¹

While natural waterways have been altered and degraded significantly by human intervention over the past decades,¹ a parcel tax passed in 2000 has provided new opportunities and resources for restoration and enhancement of riparian communities.³ Santa Clara County’s “Clean, Safe Creeks and Natural Flood Protection Plan” funds are designated for the following four purposes: 1) Flood protection for homes, schools, businesses and transportation; 2) Clean, safe water in creeks and bays within the county; 3) Healthy creek and bay ecosystems, 4) Trails, parks, and open space along waterways. In addition, there has been a recent commitment to restore the Cargill Salt ponds to their natural state.

While Stevens Creek has been the focus of recent restoration efforts, with habitat restoration and new trails projects that have benefited both native species and the public, the Permanente Creek remains primarily a series of concrete channels, with little remaining habitat available. Major physical barriers prevent fish and other aquatic wildlife from swimming upstream.^{4,5} Streams and creeks habitats are degraded when homeowners extend their property boundaries past the set-back area along riverbanks. In addition, dumping refuse into streams can cause significant damage and pollution. Urban run-off into storm drains can contain hazardous chemicals such as oil and detergents, fertilizers that cause overgrowth of algae, and leaves and garden debris that alter the oxygen content of the water. Excessive water running into the bay may also alter the natural salinity levels of the wetlands adjacent to San Francisco Bay, disrupting the natural ecosystem there.

Recommendation

Return Stevens Creek and Permanente Creeks to natural streambeds flanked by native plant/animal corridors, in all sections determined by the SCVWD to be appropriate for restoration after erosion and channel control factors have been taken in account, by the year 2020.

Implementation Strategies⁶

See Appendix B.

Environmental Impact

Restoration of streams, rivers, and wetlands within Mountain View benefits the community in several key ways ^{4,5}:

- Natural stream and river ecosystems provide better flood protection for communities. Trees and natural vegetation along the banks of rivers and streams increase the natural capacity of creeks to retain soil and provide shade. As a result, these ecosystems are better able to provide a natural buffer against fluctuating water levels.
- Many of the endangered species within Mountain View depend on rivers and streams for all or part of their natural life cycle. (See Appendix D for list of local endangered species.)
- The contiguous nature of the waterways within Mountain View provides a natural pathway beside which trails and natural parkways can be developed, enhancing opportunities for the public to enjoy nature and providing trails to allow transportation by foot or by bike.
- Contiguous “green corridors” of protected land create habitats that are more favorable for wildlife restoration than fragmented parcels of land.

Fiscal Impact

While funds have been designated for the restoration and enhancement of waterways within Santa Clara through the “Safe Creeks and Natural Flood Protection Plan” bond act,³ the city needs to take action to have a portion of these funds directed towards restoration efforts for waterways within Mountain View. The Water Board decides how to distribute these bond funds. Cities demonstrating an interest and commitment to waterway restoration by allocating funds (for example, 10-20% of the cost of a project) will be more likely to have the Water Board designate funds to cover the remaining cost of the restoration effort. While the total cost of a significant restoration project is likely to be millions of dollars, cities need only take on a small share of the costs, a sign of their support for a project and commitment to ensuring its success.

Ensuring that homeowners and business comply with rules and regulations regarding setbacks near waterways and do not pollute or dump refuse into streams and rivers would add an incremental cost to funds currently committed to law enforcement in Mountain View.

Volunteer efforts to clean and restore waterways and label storm drains to discourage dumping would be a low cost intervention, and could be coordinated with local NGOs. Partnering with the Don Edwards Environmental Education Center to increase citizens’ awareness of the importance of protecting our waterways would also be a relatively low cost intervention.

Synergies

- Transit and Transportation Working Group – bike and walkways along riparian corridors
- Water Availability and Use Working Group – maintaining the quality of local water resources

Obstacles

- Public perception that concrete water channels reduce erosion (in reality, improvement in erosion control can be achieved through a combination of natural vegetation and judicious use of concrete barriers in areas of high flow. The Santa Clara Valley Water District is involved in in-depth study of water flow conditions, to achieve the optimal balance of natural and man-made materials to achieve effective erosion control, while maximizing habitat restoration.)
- Cost is a significant obstacle for larger restoration efforts, though other funding mechanisms mentioned above should help ease this burden.
- Purchasing land for increased set-backs surrounding waterways would be costly, both from a financial and political perspective.

Partnerships

- Don Edwards Environmental Education Center in Alviso, <http://www.fws.gov/desfbay/>
- Santa Clara Basin Watershed Management Initiative, <http://www.scbwmi.org/>
- Santa Clara County Creeks Coalition, <http://www.sccreeks.org/>
- Santa Clara Valley Audubon Society, <http://www.scvas.org/index.php>
- Santa Clara Valley Water District, <http://www.valleywater.org/>
- Stevens Creek and Permanente Creeks Watershed Council, <http://www.spcwc.org/>
- Friends of Stevens Creek Trail, <http://stevenscreektrail.org/>

Title: Preserve and Restore Natural Habitats

Statement of Issue

The goal is to maximize small and large scale habitat preservation, restoration and creation within Mountain View.

To preserve natural diversity, we must focus on protecting entire ecosystems and, in damaged areas, work toward the restoration of the ecosystem to its natural state. An ecosystem will be more resilient if it is bio-diverse and includes numerous native plants and animals that have adapted well over time to local conditions. Since humans and all living organisms, rely on resilient, well-functioning ecosystems to provide essentials such as air to breath, water to drink, food to eat, etc., it is in our best interests to preserve this precious resource.

Enormous shifts have occurred in the United States over the past several decades in how land is used and the amount of undeveloped land available for wildlife and native plants. Over half the population in the United States now lives in suburban areas, as compared to one third of the population in 1960.¹ According to the California Native Plant Society, less than 10% of our original coastal sage scrub land and less than 1% of native grassland remain intact. One third of our native plants are identified as rare, endangered, or threatened. If we are to preserve healthy ecosystems and biodiversity, suburban areas must become an extension of the natural ones, fully incorporating sanctuaries for wildlife, native plants, and other threatened species throughout the fabric of these communities.

The preservation of wildlife habitats and biodiversity needs to occur through both small scale and large scale interventions. The essential features of a wildlife habitat include having a food source, water, shelter, and place for wildlife to raise young.^{2,3}

According to the Bay Nature Magazine, “Habitat doesn’t only mean parks and undeveloped lands; it also means backyards and front yards and side yards and median strips. It even means gardens of potted plants.”⁴ They also note that 20-60% of residential land remains open – not yet sealed by paving or man-made structures. Converting backyard lawns into native plant landscapes allows the creation of a patchwork of urban habitats suitable for all types of wildlife.

Within Mountain View, every home, school, church, business, local park, and empty lot represents a potential site for small-scale habitat restoration. For larger scale efforts in the region, we are also fortunate to have access to several excellent databases and draft management frameworks.^{5,6,7}

Native plants are by definition “Plants best adapted to the local climate and once established, seldom need watering, mulching, protection from frost or continuous mowing.”⁴ This low-maintenance approach means savings, in time and money. Energy costs are less, as native plants are less likely to need fertilizers and other additives, or mowers and other air and noise polluting equipment to maintain.⁸ Native plants in the urban landscape increase biodiversity, by providing food, nectar, cover, shelter, and nesting areas that local birds, butterflies, and other animals need.^{8,9} Native plants generally support many times as many species of native wildlife as non-native plants. They stabilize soil and reduce erosion, and more effectively filter storm water than exotic plantings.⁹ Since they are more resistant to insect pests and disease outbreaks, they require less fertilizers, herbicides, and pesticides, thus reducing contaminants in storm water run-off. Many native plants are self-renewing, since most are either perennials or self-sowing biennials.⁴

Recommendation

Engage the city in community-wide and regional efforts to restore habitat and create sanctuaries for wildlife and native species.

Implementation Strategies

See Appendix B.

Environmental Impact

- Preserved and restored habitats use fewer natural resources such as water, produce less compostable materials such as lawn clippings, and don't require pesticides and fertilizers which contaminate both land and waterways, and produce GHG in their production. Consequently native habitats are more sustainable and lower the city's carbon footprint.
- Native habitats also work to preserve the interconnected ecosystem of plants, birds, insects and other wildlife, as well as enhance the lives of humans. Mountain View is the home to a number of endangered and threatened species (see Appendix D) that will benefit from habitat preservation, restoration and creation.

Fiscal Impact and Synergies

Over time there are fiscal savings, though there might be an initial increase in expenditure. While there will be an initial investment required to convert turf to native or drought tolerant landscaping, there will be a significant long-term reductions in the cost of landscape maintenance and irrigation. The monetary value of an ecological sound, bio-diverse community is difficult to estimate but extremely valuable. Healthy, bio-diverse ecosystems are more stable and resilient, decreasing maintenance costs and ensuring longevity for the ecosystem that sustains us locally.

Certifying Mountain View in wildlife preservation programs will gain publicity for the city, and spotlight our community as an environmentally-friendly place to live and work, which may have beneficial economic effects for the city at the same time that it is building community spirit and civic engagement. In addition, local tourism might increase as others view and learn from the programs.

Obstacles

- The concurrent potential for development of lands that can also be targeted for preservation and restoration.
- These activities require a change in perception and activities that result from these perceptions, as to the importance, and necessity of native habitats in the reduction of GHG. Maintenance of native landscapes requires significantly less labor; there is no need for heavy watering during summer months, pruning is much decreased, fertilizers are not needed and pesticides are not used for cosmetic enhancement.
- Native plant landscaping can still look lush and beautiful. Common misperceptions regarding the appearance of native plant gardens should be addressed through educational outreach and demonstration gardens. Converting to native plant landscaping requires more initial involvement from the homeowner/businesses or similarly knowledgeable gardeners. There is a steep learning curve towards implementing native gardens compared to maintaining a lawn. It is imperative to provide training programs to bridge the gap, perhaps in conjunction with California Native Plant Society (CNPS). In addition, training programs such as the one

described in Recommendation 9-7 will help ensure that professional gardeners have the knowledge base to assist with this transition.

Partnerships

There is the potential for partnership between the City of Mountain View and numerous local non-profit organizations, such as the California Native Plant Society - Santa Clara County chapter, Mountain View Trees, Acterra, California Native Plants Society, the Bay Area Open Space Council (including the San Francisco Bay Area Upland Habitat Goals Project), and Friends of the Stevens Creek Trail, as well as national non-profits such as The Audubon Society, the National Wildlife Foundation and others organizations listed in the websites section below.

Title: Reduce and Contain Invasive Species in Mountain View

Statement of Issue

As residents of California, we are heirs to an exceptionally rich ecological heritage. For example, California has 3,488 native plant species, 60% of which are found nowhere else on earth.¹ The California Biodiversity Council, (a consortium of federal, state, and local government agencies), notes that, “California is one of the most biologically diverse areas in the world. The state's rich natural heritage—vegetation cover and distribution, wildlife and fish habitat, recreation and aesthetic values, water and air quality—provides the basis for California's economic strength and quality of life. Sustaining the diversity and condition of these natural ecosystems is a prerequisite for maintaining the state's prosperity.”²

However California’s biologically rich heritage is under significant threat from invasive species, which are second only to habitat destruction in the risk they pose to biodiversity.³ An estimated 42% of endangered or threatened species in the United States are at risk from invasive species.⁴ While many exotic (non-native) species are present in suburban areas, a species is only considered invasive if it is able to rapidly colonize an area, causing subsequent economic or environmental damage to humans and/or wildlife.⁵ Their impact can include loss of native species, increased risk of flooding or fire, and damage to crops.^{5,6} Once established, these invasive species can be extremely difficult and expensive to eradicate.⁷ Every 60 days, a new and potentially damaging exotic species is introduced to California. Each year, hundreds of millions of dollars are lost to invasive species in California.⁹ Disturbed areas, like those found in suburban settings such as Mountain View, are particularly vulnerable to colonization by invasive species.⁹ Global warming may further disrupt natural ecosystems, making them even more vulnerable to invasion by non-native species. “Invasive species and climate change are two of the most significant threats to biodiversity. Together they form a lethal cocktail. Their impacts are likely to be far more severe if effective management and adaptation strategies are not developed and implemented. Climate change is set to radically alter natural systems; invasive species are far more likely to take advantage of altered systems.”¹⁰

In Mountain View, invasive water plants such as Atlantic cordgrass (*Spartina alterniflora*) are threatening restoration efforts along the Bay.¹¹ Invasive plant species such as English ivy and periwinkle are frequently found in local landscaping and along roadsides, crowding out other species and risking spread to other areas within the city and region.¹² Scotch broom and pampas grass are also found throughout Mountain View, and pose the additional problem of increasing fire risk.¹³ Local nurseries continue to sell invasive plants such as these, with no labeling to inform consumers of the risk they pose to our environment.

While feral cats do not meet the strict definition of an invasive species, they represent a species that has been introduced to natural areas and is causing significant damage to wildlife. Feral cats are the “wild” offspring of domestic cats and are primarily the result of pet owners’ abandonment or failure to spay and neuter their animals, allowing them to breed uncontrolled. Feral cats threaten populations of songbirds, and pose a particular threat to the California Clapper Rail, an endangered shorebird found only in California.^{14,15}

Because non-native invasive species are so widespread, it is neither possible nor practical to eliminate them. However, significant improvements in the environment can be made by controlling current invasions as much as possible, attempting to exclude invasive species from especially sensitive areas, and quickly identifying newer invasive species in time to either remove them or prevent them from extending their range.¹³ The cost of control increases exponentially over time once an invasive species gets established, so prevention, early detection, and rapid response are particularly cost effective interventions.¹³

Recommendations

1. Implement voluntary codes of conduct for the key sectors involved in the introduction and maintenance of invasive plant species in Mountain View by 2010. Voluntary codes of conduct were developed through the St. Louis Declaration on Invasive Plant Species in 2001, and include specific codes for Government, Nursery Professionals, Gardening Public, and Landscape Architects.¹⁶
2. Work with the appropriate government agencies and NGOs to identify the major invasive species that currently pose a significant threat to Mountain View's biodiversity and ecosystems, and develop a strategy by 2010 to target these species for elimination or containment on public and private lands.
3. Expand low-cost and/or no-cost spay and neuter programs and increase outreach efforts to control feral cat populations.

Implementation Strategies

See Appendix B.

Environmental Impact

Significant improvement in key environmental indicators, such as bio-diversity could result from successful eradication or containment of local invasive species. Effective strategies may contribute to recovery of local threatened and endangered species. Improved local flood control and reduced fire hazard are other important environmental benefits of effective invasive species control.

Fiscal Impact

Costs for implementing control strategies could vary from low to high, depending on partnerships established, funding sources utilized, and at what stage of colonization an invasive species is identified. Significant cost savings can be achieved if new invasive species are identified early, before they become well-established.

Obstacles

- Many invasive species populations are already well-established and will require considerable interagency cooperation and funding to eliminate or contain.
- Lack of knowledge regarding threat of invasive species.
- Homeowners' and landscapers' aesthetic preferences regarding plant selection for landscaping. (The California Invasive Plant Council brochure includes suggestions for non-invasive alternatives to invasive species commonly used in landscaping).

- Public opinion regarding animal control may limit how completely feral cats can be eliminated from wildlife areas – trap/neuter/release programs are a more humane alternative to euthanizing animals, but do not have as immediate an effect on eliminating the threat of feral cats to wildlife.
- Pet owners may be reluctant to keep pets indoors or on leash.

Partnerships

- Acterra
- California Native Plant Society
- Audubon Society
- Watershed Council
- Don Edwards Environmental Education Center
- Coastal Conservancy
- San Francisco Estuary Initiative
- California Invasive Plant Council, www.cal-ipc.org,
- Plant Right Organization: <http://www.plantright.org/index.php>
- Santa Clara County Weed Management Area
- The Center for Invasive Species Research <http://www.cisr.ucr.edu/>
- Peninsula CatWorks <http://www.peninsulacatworks.org/index.php>
- Fat Cat rescue <http://www.fatcatrescue.org/about.php>

Title: Prioritize Mountain View’s Urban Ecology in Local Planning Decisions

Statement of Issue

Very little open space areas remain within the city of Mountain View. While the city has some areas of vibrant habitat with a good mix of urban flora and fauna, city parklands are limited, and not widely distributed throughout the city. When the City Council is asked to consider approving a project on parklands, information on the anticipated environmental impact of a project is not required until after a specific project concept has been approved.

As with every other city in California, Mountain View follows the CEQA guidelines as to when an Environmental Impact Report (EIR) is deemed to be necessary with a development.¹ However, this process as it is currently implemented does not fully take into account the destruction/modification of the ecosystem elements (such as trees and animals), and the “mitigation” efforts may not truly mitigate the damage done, for example, trees planted that will take a long time to reach the age of the trees destroyed or planted in an area removed from where the original trees were. In addition, it is essential that city planning staff have the training and expertise to assess the true impact of any proposed project on the urban ecosystem and ensure that preserving the ecosystem’s function and sustainability are considered high priorities in any planning decision.

Recommendations

Establish a process to ensure that adequate information on the potential impact of proposed projects on Mountain View’s ecosystem is available to the City and public, prior to any approval of concept for projects involving open space or undeveloped land.

Implementation Strategies

See Appendix B.

Environmental Impact^{2,3,4}

It is felt by this group that preserving a viable and bio-diverse ecosystem is essential in order for the City to achieve its sustainability goals. If the effect on the biological environment is more fully taken into account when development/re-development is being considered, many of the elements mentioned earlier (increasing/preserving the tree cover, maintaining/restoring habitats) will be realized.

Fiscal Impact

As mentioned elsewhere, a strong urban ecosystem in Mountain View could increase tourism and local spending, reduce pollution control costs, reduce social services budgets, increase real estate values thereby increasing property tax revenue and reducing energy costs in both homes and businesses.

Potential Costs:

- Decreased revenues due to less development/re-development
- Cost of maintaining the ecosystem

Obstacles

- Resistance from stakeholders to having to take into account another set of guidelines for developments.
- Resistance by City to potential extra training of planners that may be needed.
- Resistance to potential reductions in development.
- Lack of accepted method to measure the value of a strong urban ecosystem (See reference 5 for some models to do so).

Partnerships

- Mountain View Trees, www.mountainviewtrees.org
- Friends of the Urban Forest, www.fuf.net
- Sierra Club, <http://lomaprieta.sierraclub.org/>
- Humane Society: Urban Wildlife, www.hsus.org/wildlife/urban_wildlife_our_wild_neighbors/
- The Ecological City Project, <http://www.umass.edu/ecologicalcities/>
- Center for Urban and Regional Ecology (CURE), <http://www.cure.gatech.edu/>
- Urban Wildlife Resources, www.urbanforestry.com

Title: Establish a Green Collar Training Program, Initially Focused on Green Gardening

Statement of Issue

A significant percentage of Mountain View residents hire landscape workers to design, install and maintain their gardens. Residents who want to follow environmentally sustainable practices must have access to those trained in appropriate Green Gardening knowledge and skills. Green Gardening practices involve the use of native and drought tolerant plants, integrated pest management techniques, water conserving irrigation, and the use of compost and mulches to enhance soil health and productivity.

Green Gardening training programs benefit communities in two significant ways. The first is the creation of a cadre of green Gardeners, who have a specialized skill that is both needed and appreciated by the community. This promotes job security and increases a resource for Mountain View. The participants can include those who are unemployed or hard to employ, thereby bettering the well being of a troubled segment of the community.

The second major benefit is the introduction and increased focus on environmentally sustainable gardening and landscaping. Often the consumer relies on the hired gardener for their expertise in suggesting appropriate plants, irrigation, pest control, landscaping and maintenance. Those who are trained in green techniques benefit not only their clients, but the community at large.

Green gardening is just one of a host of new employment opportunities that have arisen as our state turns towards greater energy self-sufficiency and fuel conservation. For example, in 2006, renewable energy and energy efficiency were responsible for an estimated \$970 billion in industry revenues and 8.5 million jobs.¹ Many job opportunities exist, spanning a range of skill and wage levels.² However, America's growing green economy faces a looming labor shortage in sectors such as manufacturing, construction and installation.² Green-collar training programs are being developed to address this shortage. One Bay Area program, Oakland's Green Job Corps program, trains impoverished and at risk youth and young adults in trades integral to a environmentally sustainable economy, creating career opportunities for these individuals while providing an environmental and economic service to the community.³

Recommendations

1. Establish a 40 hour, multilingual Green Gardening Certification program, offering the first class by January 2010. Explore options to offer this course on-line, as well as in a classroom setting.
2. Create a public data base of green landscapers, landscape assistants and youth workers, including current knowledge, skills and experience by 2012.
3. Require all licensed gardeners/landscape assistants within the city of Mountain View to be certified as green gardeners by 2015.
4. Develop and implement Green Trades programs at the community college and high school levels.

Implementation Strategies

See Appendix B.

Environmental Impact

- Decreased pollution of the environment by the prohibition of toxic substances such as pesticides and herbicides
- Decreased GHG through the decrease in the use of natural resources such as water, gasoline (lawnmowers, leaf blowers)
- Decrease GHG through a decrease in garden waste

Fiscal Impact and Synergies

This program will be run with the awareness that the majority of participants will find it difficult to both pay for the course and take a week from work/wage to participate in the course, if done in a classroom setting. In order for the course to be successful there must be funds to cover the cost of the course as well as to offer an award for its completion. While it is important that those who employ gardeners and landscape assistants to participate in the costs of the course, it is unreasonable to expect them to cover all the costs.

It will require a significant expenditure to create this program. The cost benefit will be seen in the long term. It is difficult to predict the exact cost, and the recommendation is for the city of Mountain View to designate \$5000 for a feasibility study and the creation of a more in depth proposal for the Green Gardener Training Project.

Sen. Steinberg's Green Jobs/Technical Education Act passed the California Senate (Senate Bill 1672). It is now heading to the Assembly Appropriations Committee. The bill would invest \$2.25 BILLION in projects that create green jobs, provide education to youth and adults, and stimulate growth in clean energy business. There is potential for the Green Collar Training Program to obtain funds from this bill.

Obstacles

- Financial, this will require a significant initial expenditure
- Lack of community knowledge about the importance of green trades
- Time to complete coursework
- Gardeners who are working in Mountain View but are not licensed or are undocumented residents may be resistant to certification programs and local databases

Partnerships

- Acterra
- Apollo Alliance, <http://www.apolloalliance.org/>
- Common Ground
- Foothill-De Anza Community College District
- Green For All, <http://www.greenforall.org/>
- Monterey Bay Green Gardeners Program, <http://www.green-gardener.org/>
- Mountain View Day Worker Center
- Mountain View – Los Altos Union High School District, <http://www.mvla.net/>
- Santa Clara County Master Gardeners

Appendix A: Other Issues Considered

Goose Contraceptives

Another issue that was raised was the use of contraceptives for the Canada Goose population at Shoreline Golf Course. Concern was raised regarding the effect on the environment and other animals.

Gas-Powered Leaf Blowers

Concern was also raised regarding the use of gas-powered leaf blowers in the city of Mountain View. While gas-powered leaf blowers do contribute to greenhouse gases, so do the quieter electric models, albeit with less on-site air pollution production. While manual raking of leaves is desirable from an environmental standpoint, it may place an undue burden on gardening professionals, so we decided not to take a stand on this issue in the current list of recommendations. There may be opportunities to address this issue in the future through the Green Gardening program suggested in Recommendation 9-7.

Appendix B: Implementation Strategies

Recommendation 9-1:

Short term:

1. Implement recommendations of the recent City Commissioned Davey Resource report and the 2006 Urban Forest Management Report⁵.
2. Make it easier for residents to get free trees at the Arbor Day celebration by outreach and information in multicultural/ethnic formats. Try to make more trees available.
3. There are issues with the growth pattern of many native trees being less optimal for an urban environment; however, native trees should be selected for planting when appropriate sites are identified.
4. Work with MV Trees to add more information (especially in the languages spoken) to the existing website with tree care information.
5. Partner with MV Trees for more trees planting in the city to achieve the 90% goal of planting City street trees in suitable locations by 2015. Some strategies could include:
 - Create a city wide program to challenge residents/ business to meet the goal of planting 1000 trees in 5 years (this could be broken down into a yearly total) using MV Trees website to track the ongoing total.
 - Encourage the appropriate governing bodies to plant trees at schools and churches to provide shelter and interesting play areas for children. Create a contest to see which school or church could plant the most trees.
6. Work with MV Trees existing network of volunteer tree ‘amigos’ (who monitor the growth of newly planted and existing trees) to ensure City wide coverage and survival of young saplings.
7. Enact legislation to punish those who damage or kill any MV trees and strengthen the existing heritage tree ordinance.

Fiscal Impact: Low to Medium

Medium term:

8. Add another city staff person responsible for tree welfare.
9. Require new development to have a significant amount of trees (at least one tree within 12 feet of any parking space).
10. Encourage more residential programs to plant new trees in higher density housing – townhomes and apartment complexes
11. Increase the funds the city spends on street trees to meet the goal of 90% tree coverage by 2015.
12. Ensure adequate funding to maintain healthy trees, including the establishment of a funding mechanism to assist property owners who are experiencing increased costs associated with maintaining heritage trees.

Fiscal Impact: Medium to High

Long term:

13. Create pedestrian friendly streetscapes with trees and consider planting for all infill development and redevelopment projects
14. Add more trees to all MV parks, schools, and city building campuses – especially around parking areas and in areas where school children or other members of the public congregate, such as school playgrounds and outdoor seating areas.

Fiscal Impact: Medium to High

Recommendation 9-2:

Short term

1. Although the City created the IPM Plan in June 2003, the plan is NOT on the City’s website. This should be remedied immediately and information from the following recommendations should also be posted on the City’s website.
2. The plan has 7 goals with one or two objectives listed under each goal. Each goal should have a person or position identified to be the point person for that goal.
3. Each goal should be thoroughly evaluated to determine:
 - The degree to which the goal and its objectives are being met
 - What needs to be done to improve implementation
 - What changes may need to be done to the goal and its objectives
 - Persons/positions identified who will carry out the implementation of the goal
4. The evaluation should be completed by the end of the year and annual evaluations should be done thereafter.
5. All evaluations and their results should be posted to the website as soon as they are concluded.
6. Designate persons/positions responsible for each goal of the plan
7. Initiate a public education program, and encourage citizens and businesses to “Take the Pledge” to reduce or eliminate pesticide use on their properties. Initiate a “Pesticide Free Zone” program, for homes, businesses, and other institutional settings within Mountain View, in which signs that can be posted in the garden are distributed to individuals who have signed a pledge to use integrated pest management at their site. For an example, see Seattle’s “Pesticide Free Zone” program, <http://www.watoxics.org/homes-and-gardens/pesticide-free-zone/yard-sign>. The Sierra Club of Canada also sponsors “Getting Your Lawn Off Drugs” workshops, that may provide a useful model for similar a program in Mountain View.



Fiscal Impact: Low to Medium

Medium term

8. Create an annual progress evaluation of each goal of the plan.
9. Annually, revise the plan as necessary.
10. Initiate Green Gardening Program (see Recommendation 9-8)
11. Continue public education campaign.

Fiscal Impact: Low

Recommendation 9-3:

The city of Mountain View should work with public and private organizations within the city and region, to protect and restore the natural waterways within Mountain View.

Short term

1. The City in collaboration with the Santa Clara Valley Water District and other cities along Stevens and Permanente Creeks should develop a “Riparian Corridor Specific Area Plan” that provides a long term vision for creek restoration and a blueprint for achieving it.
2. Excellent environmental education opportunities focusing on the health of the bay and local watershed are already available at the Don Edwards Environmental Education Center, located nearby in Alviso. The city could collaborate with this center to facilitate participation of more Mountain View residents in these educational programs.

Fiscal Impact: Low

Medium term

3. Support efforts to keep creeks clean, by working with local public interest groups to organize creek clean-up days, adopt-a-creek programs, vigorous enforcement of laws prohibiting dumping of refuse into waterways, and educational events highlighting the importance of healthy ecosystems along local waterways in Mountain View.
4. Ensure that proper set-backs are honored, so that fences and private property don't encroach into the flow area of streams and creeks. Where possible, increase setbacks adjacent to waterways.
5. Work with local groups to establish and track local watershed indicators that will reflect the health of Mountain View's local waterways and the success of efforts to restore wetland habitats.⁶

Fiscal Impact: Low to Medium

Long term

6. Support projects to allow fish and other species living within riparian ecosystems to move unobstructed along the waterways, without significant obstacles or uninhabitable expanses within the waterway.
7. The city has recently indicated their support of Santa Clara Valley's plan to install a flood basin at Cuesta Park Annex, using plans that include habitat restoration and enhancement. Our workgroup supports this effort, provided that the environmental impact assessment scheduled to be completed in November indicates that this would have a favorable impact on plants and wildlife.
8. Continue to support efforts to restore the Cargill Salt Ponds and other wetland areas to their natural state.

Fiscal Impact: Low to High for the city, depending on funding source for projects

Recommendation 9-4:

Short term:

1. To establish a Species of the Year community-wide program, (similar to the Book of the Year program at the Mountain View Public Library), combining activities and education to promote protection and growth of species that are threatened, such as the monarch butterfly, or of great ecological importance to the community, such as bats (which control mosquitoes and other insects) to begin January 2010.
2. Develop goals for larger-scale habitat restoration within the city of Mountain View, working collaboratively with the San Francisco Bay Area Upland Habitat Goals Project.⁷
3. Require habitat preservation and creation as an essential component of new building permits.
4. Permit and promote living roofs (see San Francisco and Chicago for examples).

Fiscal Impact: Low to Medium

Medium term:

To participate as a city in regional and national programs designed to create a network on wildlife sanctuaries throughout the nation, achieving the following milestones:

5. Preserve and restore a minimum of 50,000 square feet of residential, community, business, and city-run habitat-focused garden space within the city of Mountain View, with attention to drainage and soil type, sunlight and plant mix. This will include the establishment of a community wide project to recognize these achievements through certification as a Monarch Watch Waystation butterfly migration stops (or equivalent program) by the year 2011.¹⁰
6. Preserve and restore local habitats in a minimum of 200 homes, 6 common areas or workplaces, and 5 schools certified as backyard wildlife habitats by the year 2011. This is achieved by particular attention to the presence of native plants, water sources, cover and places to raise young and sustainable gardening. This will include the establishment of a community wide project to recognize these achievements through certification as a Community Wildlife Habitat, through the National Wildlife Federation (or equivalent program).²
7. Work with local businesses to develop local “Wildlife at Work” programs, in which businesses participate in habitat restoration projects. Businesses can work towards certification through programs such as the Wildlife Habitat Council’s program, and can be nationally recognized for the commitment to conservation.¹¹
8. Work with local schools to support programs creating wildlife habitats at local school sites and integrating wildlife habitat lessons and opportunities for observation. Benjamin Bubb Elementary School is an example of one school in our community that has planted gardens featuring native plants, a butterfly habitat, and organic vegetables. Several other local schools have obtained grants to expand gardening and habitat restoration programs at their sites as well. Lesson plans for schools and corporate collaboration programs are also available through national organizations, such as the Wildlife Habitat Council’s Corporate Lands for Learning or Wings of Wonder programs.¹¹
9. Set up a database of all residential, community, business and city habitats that are preserved and restored, to track efforts within the city.

These strategies will be implemented through collaboration with neighborhood committees, school programs, youth groups, churches and community organizations.

Fiscal Impact: Medium to High

Long term

10. Participate in larger-scale habitat restoration projects within Mountain View, as identified in collaboration with the Uplands Habitat Goals Project and/or other region environmental planning initiatives.

Recommendation 9-5:

The St. Louis Declaration on Invasive Plant Species, developed during a seminal conference convened in 2001, outlined the key principals needed to develop effective control strategies for invasive species.¹⁶ As noted in that report: “A successful invasive plant species strategy will make use of all available tools including voluntary codes of conduct, best management practices, and appropriate regulation. Codes of conduct for specific communities of interest are an essential first step in that they encourage voluntary initiative, foster information exchange, and minimize the expense of regulation.”¹⁶

Short term:

1. Implement voluntary codes of conduct for the key sectors involved in the introduction and maintenance of invasive plant species in Mountain View. Voluntary codes of conduct were developed through the St. Louis Declaration on Invasive Plant Species, and include specific codes for Government, Nursery Professionals, Gardening Public, and Landscape Architects. (For website with links to voluntary codes, see ref 16).
2. Endorse the St. Louis Declaration’s Voluntary Code of Conduct for Governments, and begin to implement its principals and actions, as outlined below:
 - Require risk assessment for government-led or financed plant introductions to ensure that no new harmful plant species are introduced, intentionally or unintentionally.
 - Do not distribute existing holdings of invasive plant species to areas where they can potentially do harm; eliminate these holdings or maintain new or existing holdings using appropriate safeguards.
 - Coordinate and facilitate collaboration in databases, early warning systems, monitoring, and other means of preventing invasive plant species problems.
 - Lead and fund (subject to budgetary considerations) the development of environmentally sound methods to control harmful invasive plant species, seek control of such species on public lands and promote their control on adjacent private lands.
 - Develop and promote the use of non-invasive plant species within all government units and to the public.
 - Facilitate, lead, coordinate and evaluate public outreach and education on harmful invasive plant species.
 - Encourage the employees and management to participate in ongoing training programs on invasive plant species.
 - Foster international cooperation to minimize the risk of the import and export of potentially invasive plant species.
 - Develop partnerships and incentive programs to lessen the impact of invasive plant species and provide non-invasive restoration materials.
 - Provide a forum for regular evaluation of the effectiveness of these voluntary codes of conduct towards preventing the invasive plant species problem.
 - Enforce invasive plant species legislation at all levels.

Fiscal Impact: Low for initial planning stage; Low to Medium for implementation, depending on the partnerships and funding sources utilized

Medium term:

Containing invasive species is an ongoing battle, continually requiring reassessment and ongoing interventions to keep invasive species populations in check. In addition to continuing the actions outlined in the Governmental Voluntary Code of Conduct, suggested ongoing activities include the following:

3. Monitor efforts to eliminate or contain the major invasive species in Mountain View
4. Work with local groups and state agencies to identify and eliminate potential invasive species populations in Mountain View, before they become well established.
5. Expand low-cost and/or no-cost spay and neuter programs and increase outreach efforts to control feral cat populations. There are a variety of rescue groups that do trap/neuter/release (TNR) for feral cats in Mountain View, but no single responsible organization. For further information, contact:
 - Peninsula CatWorks <http://www.peninsulacatworks.org/index.php>
 - Fat Cat rescue <http://www.fatcatrescue.org/about.php>Supporting the work of groups working to address the feral cat issue may benefit local wildlife populations, including endangered species.
6. Encourage homeowners to keep cats indoors.
7. Continue to work with local and regional organizations to increase public awareness regarding invasive species and the risk they pose to our environment and economy. Examples of possible activities include the following:
 - Distribute a color list of local invasive plant species to all residents and businesses and in Mountain View. (For a good example, see the “Don’t Plant a Pest” brochure, distributed by the California Invasive Plant Council.)¹⁴
 - Partner with local organizations such as Acterra and the California Native Plant Society to sponsor a native plant for invasive exchange, in which residents can bring in a garbage bag full of invasive plants with roots that they have pulled, in exchange for a free native plant or seed packet.
 - Sponsor an all Mountain View “Eliminate the Invasives” day, with educational activities and invasive plant removal work parties occurring at various sites throughout the city.

Fiscal Impact: Low, Medium, or High, depending on extent of project, partnerships, and funding sources

Recommendation 9-6:

Short to medium term:

1. Set up an ad hoc committee of people who are interested in the urban ecosystem and have relevant expertise.
 - Have this committee draw up a set of guidelines for assessing the biological, ecological and sustainability impact of projects.
 - Task the Environmental Planning Commission with evaluating the projects taking these guidelines into account in a public forum.

Fiscal Impact: Low

2. Ensure that the entire City's Planning Staff has adequate training in the value of the urban ecosystem such as the impact of projects on local ecosystems, native plants, and biodiversity, implications for greenhouse gas production, etc., if they are not already qualified in this area.

Fiscal Impact: Low

3. Whenever parkland is being considered for development, even if that development is for a city project (such as, a museum or recreation center), information regarding the anticipated impact of a project on the local ecosystem and biodiversity should be available for the City Council and public to review, prior to any approval of concept for a project.
4. Every effort should be made to identify alternative sites on previously developed land for any new buildings, parking lots, or other developments being proposed for construction on parkland or other open space areas currently owned by the city.

Fiscal Impact: Medium

Long term

5. Identify land currently owned by Mountain View that could be converted to parkland. Identify land within Mountain View that can be purchased for additional parklands within the city. Focus these purchasing and redeployment efforts on areas within Mountain View that currently have more limited area devoted to parks.

Fiscal Impact: Medium for redeployment of city lands to parks and open space; High for new land purchases

Recommendation 9-7:

Short term:

1. Train landscapers, landscape assistants and youth workers to promote and practice the principles of environmentally sustainable landscaping. This will be accomplished through the creation of a Green Gardener Certification Program, offered in both English and Spanish, such as the Monterey Bay Green Gardener Program.⁴⁰
 - Establish a 40 hour, multilingual Green Gardening Certification program, offering the first class by January 2010.
 - The Green Gardener Program would be linked to existing programs; such as the Environmental Studies and Horticulture programs at Foothill and De Anza Junior Colleges, the Mountain View Workers Day Center, the YMCA, Alta Vista and other Technological/Educational Programs.
2. It is recommended that the City of Mountain View include their gardeners and landscapers in this training program
3. Create a public data base of green landscapers, landscape assistants and youth workers, including current knowledge, skills and experience
4. Promote the use of Green Gardening techniques through City of Mountain View educational literature

Fiscal Impact: Medium

Medium term:

5. Require all licensed gardeners/landscape assistants within the city of Mountain View to be certified as green gardeners by 2012.

Fiscal Impact: Low

Long term:

6. Develop Green Trades Vocational Training Programs at the community college and high school level.

Fiscal Impact: Medium

Appendix C: Footnotes, References, and Web Sites

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Appendix D: Federal Endangered and Threatened Species that Occur in or May be Affected by Projects in the City of Mountain View

Document Number: 080518081717

Database Last Updated: January 31, 2008

Legend:

E - Endangered

T - Threatened

X - Critical habitat designated for this species

NMFS - Species under the jurisdiction of the National Oceanic & Atmospheric Administration's Fisheries Service

Listed Species

Invertebrates

- *Euphydryas editha bayensis*
 - bay checkerspot butterfly (T)
- *Incisalia mossii bayensis*
 - San Bruno elfin butterfly (E)
- *Lepidurus packardi*
 - vernal pool tadpole shrimp (E)

Fish

- *Acipenser medirostris*
 - green sturgeon (T) (NMFS)
- *Hypomesus transpacificus*
 - delta smelt (T)
- *Oncorhynchus kisutch*
 - coho salmon - central CA coast (E) (NMFS)
- *Oncorhynchus mykiss*
 - Central California Coastal steelhead (T) (NMFS)
 - Central Valley steelhead (T) (NMFS)
 - Critical habitat, Central California coastal steelhead (X) (NMFS)
- *Oncorhynchus tshawytscha*
 - Central Valley spring-run chinook salmon (T) (NMFS)
 - winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

- *Ambystoma californiense*
 - California tiger salamander, central population (T)
- *Rana aurora draytonii*
 - California red-legged frog (T)

Birds

- *Charadrius alexandrinus nivosus*
 - western snowy plover (T)
- *Rallus longirostris obsoletus*
 - California clapper rail (E)
- *Sternula antillarum* (=Sterna, =albifrons) *browni*
 - California least tern (E)

Mammals

- *Reithrodontomys raviventris*
 - salt marsh harvest mouse (E)

Species of Special Concern

Burrowing Owl: We have at least four big populations in Santa Clara County; two are located in San Jose State University and San Jose Airport, and within Mountain View we have one in Moffett and another in Shoreline Park. These owls take the burrows (normally done previously by another animal such as ground squirrel) in the grasslands and really short grasses, so campuses, parks and airports are common place for them to have their habitat.

Chapter 10. Sustainable Quality of Life



“The cost of failure is infinite.”

Introduction

Our world, our nation, and our city are running a deep ecological deficit. We consume more than we produce, and we consume far more than we sustainably produce.¹ We are drawing down the wealth of natural resources that we inherited, consuming our own “natural capital”.

We know that we cannot continue doing what we do now—we cannot continue pumping groundwater faster than it is recharged, cutting forests faster than they re-grow, and mining non-renewable resources such as oil and metal, yet we feel no urgent need to change. We have boundless faith that technology will allow us to grow population and consumption forever.

However, the truth is that technology will save us only if we use it to close the gap between what we consume and what we produce sustainably (which is far less than we currently consume). For example, if we use increases in automobile engine efficiency to travel the same number of miles on less fuel, then we are reducing the gap between what we produce and what we consume. If, however, we use increases in engine efficiency to power a bigger car, then we are not reducing the gap. In essence, technology will save us only if we use it to consume LESS, not more.

Historically, when we have improved technology, we have almost always used it to consume more. For example, automobile manufacturers increased engine efficiency 30% over the last 20 years, but almost all of that went into increasing power, not MPG.² Similarly, aircraft fuel efficiency increases

¹New Scientist Magazine, October 6, 2007, p. 10.

²Ray and Tom Magliozzi say that almost all of the fuel efficiency increase in the last 20 years has gone into increasing horsepower. http://www.pbs.org/wgbh/nova/transcripts/3507_car.html

John Dillin, in the May 29, 2008 issue of the Christian Science Monitor (p.9) says that average automobile and light truck horsepower has increased from 118 to 233 horsepower since 1987. During the same time, average MPG has fallen.

1% per year, but passenger-miles traveled increase 5% per year.³ New computer processors use less energy per calculation, but higher speeds, increased memory, and increasing numbers of computers mean that computers use more electricity than ever. And instead of moving towards the “paperless office”, we use more paper than ever.

These are not isolated examples. If technology were going to save us by closing the gap between what we produce sustainably and what we consume, then that gap should be shrinking each year. In fact, however, we grow further and further from sustainability each year, and this is true in every country, regardless of its technological level.⁴

If we do not change our behavior, no amount of technological improvement will save us from ourselves. On the other hand, if we do change our behavior, we do not need any new technology in order to get radically closer to sustainability. Thus technology is neither necessary, nor sufficient, for us to become much closer to sustainable. ***The one factor that IS both necessary and sufficient is a change in behavior.***

We are often told that we must choose between a healthy economy and a healthy environment. In fact, however, this is nonsense. A healthy economy is dependent upon a reasonably healthy environment. Our economy depends upon "ecosystem services" for which we have no substitute at any price. For example, several years ago, scientists built a multi-acre biosphere separated from the rest of planet earth—in essence a giant self-contained bubble with food-producing areas, water purification areas, etc.⁵ Built at a cost of \$200 million, the system could not keep 8 people alive for 2 years. The scientists had to "cheat" by adding oxygen, and the people inside the bubble lost weight because they could not produce enough food. As another example, despite decades of research, we can't build a self-sufficient spaceship—astronauts need frequent re-supply trips (at a cost of \$10,000 per pound of payload) to bring in supplies and "take out the garbage."

Three main factors control whether we reduce or expand the gap between what we produce sustainably and what we consume:

- Population
- Per-capita consumption
- The type of technology that we use

For a system to be sustainable, EVERY factor must be sustainable. Sustainable and unsustainable factors cannot be “averaged out” to achieve sustainability.

For the system to be sustainable, neither population nor per-capita consumption can grow indefinitely.⁶ (You might think that technology would allow infinite growth. However, although there is plenty of room for technology to improve the efficiency with which we do things such as grow food, transport goods, etc., we will by definition never be able to exceed 100% efficiency, and we

³"New aircraft, such as Boeing's 787 Dreamliner, due out in the summer of 2008, will be made of lighter composite materials and employ other fuel-saving measures. But these improvements won't be nearly enough to offset the predicted increase in air travel (including air freight)." Christian Science Monitor, February 12, 2007, p.14

"Efficiency is only set to improve at 1 or 2 percent per year at best, while the number of passenger kilometers is growing at 5 or 6 percent." Peter Lockley, quoted in Christian Science Monitor August 17, 2007 p. 5

⁴New Scientist Magazine, October 6, 2007, p. 10. The article also says: "By looking at each country's historical trajectory, a clear pattern emerges... [the ecological impact] is growing at a rate proportional to their wealth. Developed countries in particular have done very little to reduce their impact."

⁵http://en.wikipedia.org/wiki/Biosphere_2

⁶The laws of thermodynamics limit growth within a system – even a system as large as the universe.

will never be able to violate the laws of thermodynamics, so there is an upper limit to what the technological factor can do.) We must halt population growth and consumption growth as quickly as practical. (In the unlikely event that we halt these soon enough, and that technology improves efficiency fast enough, we might be able to resume some growth in these for a limited period of time in the future, but currently we are deep in “ecological deficit” and we cannot safely grow population or consumption until we dig ourselves out of our deficit and build up a large “safety margin”.)

Ironically, although the level of change required is enormous, the changes will be much less difficult than we are often told. For example, anti-environmentalists often warn that if even the most trivial of environmental laws are passed, we will all be “shivering in the dark”. (Vice-President Cheney has sneered at energy conservation and focused entirely on increasing production.) In fact, however, our economy and our personal consumption are so inefficient that there is a lot of “low-hanging fruit” that allows us to drastically reduce our environmental impact by making only minor changes. (These changes will not be sufficient for us to become fully sustainable, but will buy us quite a bit of time in which to prepare ourselves both psychologically and economically for larger changes.)

Amory Lovins and the Rocky Mountain Institute staff estimated that Americans could reduce their energy consumption by 90% with almost no change in standard of living.⁷ For example, Lovins says that we could cut consumption of electricity for lighting by 92%.⁸ Such improvements are not just theoretical. At 7000 feet above sea level, the Rocky Mountain Institute building in Colorado uses “passive solar” technology to capture the sun’s energy and is well insulated, so it needs only 1% as much heat as a normal building, even in winter.

Vision: What Might a Sustainable Mountain View Look Like?

What might a 100% renewable energy Mountain View look like? Unfortunately, it probably will not like a typical “science fiction” town but will instead look more like a rural/high-tech mix. Why?

The total energy consumed in the US is about 3.2 TW⁹. Putting one solar panel on every US home rooftop would generate only 0.25 TW (8%). In fact, “to meet a 3 TW goal, the US would have to install about a half-million typically sized (2kW peak power) solar roof systems every day, continuously from now until 2050”.¹⁰ Putting windmills everywhere except in cities and environmentally sensitive areas would produce only about 10% of U.S. energy consumption. Finally, biomass is another loser: “in 2006 in the US, 20% of the corn crop provided 2% of our transportation fuel. And it used almost as much energy input as the energy it produced”. All these previous statements are not unproven allegations; they were taken from the plenary conference¹¹ at the Material Research Society Symposium given by Nathan S. Lewis, from the California Institute of Technology, on April 11, 2007. His colleague, Dr. Smalley, testified in Congress that “energy is indeed the most critical of current day issues”.

⁷ <http://www.loe.org/shows/segments.htm?programID=08-P13-00013&segmentID=4>

⁸ “A comprehensive study by Rocky Mountain Institute suggests that if the thousand or so best electricity-saving innovations now on the market were fully installed in U.S. buildings and equipment, they’d save about three fourths of all electricity now used, at an average payback of slightly more than one year, while providing unchanged or improved services.”

http://www.rmi.org/images/other/Energy/E90-20_NegawattRevolution.pdf, Amory Lovins says that we could reduce electricity for lighting by 92%: <http://www.ccnr.org/amory.html>.

Note: These quotes from Lovins are from approximately 1989-1990, so some of the potential energy efficiency improvements may already have been made. Nonetheless, we still have plenty of opportunities for conservation that not only requires no sacrifice, but are outright profitable.

⁹ Material Research Society bulletin, volume 32, October 2007.

¹⁰ If you do the math, you’ll see that at 2KW * 500,000 per day, we would need only 12.8 years, not 42 years, to reach 3.2 TW of capacity. I believe that the difference is because the 2KW systems produce 2KW *peak*, not average, power.

¹¹ Also at MRS bulletin, vol 32, 10, October 2007.

It is also worth noting that all the previous statistics excluded the energy cost of producing the solar panels, windmills, etc. For instance, how much energy is needed to produce a 2kW solar panel? If it is more than 2kW (for example, its EROEI¹² is smaller or equal than 1), then building them is nonsense. (The equivalent is extracting oil when it takes 1 or more gallons of oil to extract 1 gallon). The EROEI for solar varies from 30:1, 6:1, to 1:1¹³.

In consequence, it sounds impossible for renewable energy sources to produce as much energy as we currently consume. It is also impossible to continue using non renewable energy, not just because of its GHG emissions, but because we will eventually run out of it. The only solution is to decrease energy consumption while phasing out non-renewable resources.

No one knows for sure what a sustainable Mountain View would look like. One strong possibility is that decades from now Mountain View would have a dense downtown surrounded by agricultural land that could provide food at low transportation cost. The dense downtown will reduce the need for transportation. There will be few cars, probably electric, and used mainly by police, firemen, health services, and taxi drivers. Some local transportation will be provided by low-tech or mixed-tech means, such as bicycles that can be powered either by the rider or by a small electric motor. Slightly larger electric vehicles would be used for transporting small to mid-sized items. The city will be connected to other cities via electrified trains. Photovoltaic panels, along with some windmills, will generate enough electricity for cooking, lighting, heating, and telecommunication system and some other technological infrastructure. The electricity for trains and other high-demand systems will probably be generated outside the City using hydroelectric power plants. The reduced availability of energy will probably reduce the size of industry and companies, giving people more free time. Most of the food consumed locally will be produced in this city and nearby cities. Urban development outside of the dense downtown will be rare.

Although there are many other possible visions of Mountain View's future, we believe that this is the "safest" of the plausible visions. This vision has a reasonable chance of being sustainable without assuming radical changes in technology or society. Because a higher percentage of some necessities (energy and food) would be produced locally, the city would be more resistant to external shocks.

Although we expect that there WILL be major improvements in technology, possibly including some so radical that they simply cannot be predicted today, we know that unless our behavior changes, even the most radical improvements will simply be used to consume more, rather than to bring us closer to sustainability. Furthermore, the odds of "bad" events (the next unexpected crisis such as global warming, ozone layer depletion, etc.) are at least as high as the odds of "good" events, so it is extremely risky to design a future that assumes that "game-changing" events will be in our favor.

¹²<http://en.wikipedia.org/wiki/EROEI>

¹³ www.jeffvail.net/2006/11/energy-payback-from-photovoltaics.html

Summary of Recommendations

1. Include a Sustainability Expert on the Environmental Planning Commission (EPC)
2. Ensure that All Residents Have Access to Family Planning
3. Make the Environmental Sustainability Coordinator Position Permanent
4. Tax Extraction of Non-Renewable Resources and Extraction of Renewable Resources at Unsustainable Rates
5. Balance Jobs and Housing
6. Keep a Prudent Environmental Safety Margin to Mitigate the Impact of Disasters
7. Phase Out Use of Non-renewable Energy Sources
8. Use the Right Measuring Tools When Measuring Economic Progress
9. Encourage Work/Life Balance

Working Group

Jennifer Anderson
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Additional Contributors

Esperanza Sanz-Escudero

Title: Include a Sustainability Expert on the Environmental Planning Commission (EPC)

Statement of Issue

City planners and the EPC can lose sight of the need to be environmentally sustainable¹⁴. If there is someone on the commission to test each proposal against this need and to report on it and make recommendations, then sustainability concerns can be made visible, considered, and adhered to.

Having a sustainability expert on the EPC also helps follow up on the Environmental Sustainability Task Force (ESTF) recommendations.

Recommendation

Add a sustainability representative to the EPC. This can be done by either:

- Requiring that at least one member of the EPC be competent in sustainability issues; or
- Having a non-voting sustainability expert on the EPC. Adding a non-voting person to the EPC could probably be done almost immediately.

Environmental Impact

There is no direct environmental impact to putting a sustainability expert on the EPC. The indirect impact could be large, depending upon the decisions that the EPC makes after adding the expert.

Fiscal Impact and Synergies

There are small additional costs in time and money to select another member for the EPC.

Both the costs and the benefits of having a sustainability expert on the EPC could be considerable as the objectives and concerns that have been expressed by the Environmental Sustainability Task Force would be made ever-present. Both the costs and benefits of specific decisions could be large.

Depending upon the decisions the EPC makes, the cost of appointing a sustainability expert onto the EPC could be recovered. (Appendix D, “Sustainability Expert on Environmental Planning Commission,” gives examples of some potential cost savings that could come from including a sustainability expert on the EPC.)

Since having a sustainability expert on the EPC would tend to support many (probably most) of the recommendations that the ESTF has made, putting a sustainability expert on the EPC has a large positive synergy with most or all of the ESTF working groups’ recommendations.

Note: Measuring in dollars, as opposed to measuring in resources (such as carbon, air, and water) can be a false measure because such a measure may not be consistent with physical law.

¹⁴California Environmental Quality Act, CEQA. Several lawsuits have been filed to require agencies to analyze climate change and greenhouse gas emissions in connection with projects. One notable use of CEQA to combat climate change occurred last year, when Attorney General Jerry Brown filed a lawsuit against the County of San Bernardino. The lawsuit contended that the EIR for the general plan did not adequately analyze the effects of development on global climate change, nor did it identify feasible mitigation measures. New residential developments can have far reaching consequences, and city planners are not experts on those many fields, probably agreeing to have expert sustainability representation.

Obstacles

Selecting an expert may be difficult.

- Some interest groups may not want an “environmentalist” on the planning commission at all.
- Because sustainability is a broad topic, it may be difficult to find a person who is well-qualified on sustainability issues and meets all other necessary qualifications for the EPC.
- If there are no “ideal” candidates, there may be many partly-qualified candidates, and it may be difficult to choose among them.

Title: Ensure that All Residents Have Access to Family Planning

Statement of Issue

There is an unmet need for family planning services in Mountain View, particularly among young females and males who are still in school.¹⁵ In the state of California as a whole, more than 60% of all pregnancies are unintended.¹⁶

Unintended pregnancies increase strain on the environment, on families, and on government budgets.

- Population growth is a major contributor to environmental problems. Furthermore, for a system to be sustainable, its population cannot grow indefinitely. The population will only be sustainable if each family has no more than 2 children.¹⁷
- Mothers (especially young mothers) and the children born as a result of unintended pregnancy often experience reduced opportunities in life because of inadequate prenatal care in high-risk pregnancies¹⁸, and lack of resources for raising the children.
- In the long run, governments pay higher medical costs when high-risk pregnancies do not get adequate pre-natal care. Furthermore, as population grows, infrastructure costs for government (and the private sector) often rise faster than population. If sprawl occurs, costs for roads and sewers tend to grow faster than tax revenue. If population increases density rather than sprawl, the price of land rises rapidly, and the cost of buying land for schools, parks, and so on, goes up faster than the increase in tax revenue generated by the larger population.

After declining in the 1960s and 1970s, the birth rate has increased since then. U.S. population (which never did level off, much less decline) continues to increase.

“The US is experiencing a baby boomlet... A decline in contraceptive use and poor education are among reasons experts cite.”¹⁹

Recommendation

Mountain View should support outreach work by the State of California’s Family PACT and associated organizations such as Planned Parenthood²⁰. Persons who are of low income or uninsured or who seek confidentiality may be unaware of services available to them. Planned Parenthood is one of the few agencies assisting undocumented persons. Possible outreach work includes:

¹⁵ Article in Mountain View Voice, May 23, 2008 by Casey Weiss, titled ‘Eighteen, pregnant and graduating’. There are currently 17 young girls aged 15 to 18 in the MV/LA Young Parents Program. There may be other pregnant young women who have dropped out of school altogether, particularly in years when a Young Parents Program is unfunded.

¹⁶ <http://www.marchofdimmes.com/files/exec.sum.pdf>

¹⁷ Each person must reproduce him/herself only once. If a person has children from more than one marriage (or outside marriage), the total of all those children cannot be more than the total number of parents involved. Remarrying does not increase the number of children that a person can have.

¹⁸ Prenatal care for teens is more likely to be inadequate than for older mothers, and pre-term and very pre-term births (and low and very low birth weight births) are more prevalent in teen pregnancies. Santa Clara County Public Health. Department Report on Teen Births (1995-2003), at www.sccphd.org/statistics2

¹⁹ Christian Science Monitor, January 17, 2008. p. 3. <http://www.csmonitor.com/2008/0117/p03s04-nbgn.htm>

²⁰ Family PACT (Planning, Access, Care and Treatment), is a program funded by the state of California to provide free, confidential reproductive health services to men and women of reproductive age, including boys and girls, who reside in California. A list of Family PACT sites within 5 miles of Mountain View is included as an Appendix.

- Providing public locations to place posters/pamphlets advertising family planning services
- Supporting more comprehensive evidence-based sex education in high schools and middle schools²¹.
- Facilitating tabling at public events by organizations associated with Family PACT. Planned Parenthood, for example, would send two people to staff a table at such events, a clinic staff-person, and an educational program staff-person²².
- Encouraging the use of innovative outreach strategies to reach youth in need of family planning services²³.
- As youth who perceive a lack of future life opportunities are more likely to engage in risk-taking behaviors, including unprotected intercourse²⁴, continue to support efforts within Mountain View to provide youth potentially at risk for teen pregnancy with adult mentors, support services, and opportunities to engage in positive activities within the community, through groups such as the Police Activities League (PAL), Mesa de la Comunidad, and local youth-focused collaborations, such as the Mountain View - Los Altos Challenge Team.

The time-line is short (< 1 year) but on-going.

Environmental Impact

- Natural population increase will be reduced, a necessary factor in the eventual attainment of sustainability. In Mountain View, at least 20 fewer children would be born each year, or 100 over 5 years. (If the teen birth rate in MV were the same as that of Santa Clara County as a whole there would be approximately 40 such births per year, but Mountain View's rate is estimated to be lower.) By the fifth year the total GHG's averted per year should be approximately 1000 metric tons of CO₂ (assuming 10 metric tons CO₂ per person per year) relative to what would have been produced otherwise. *These reductions in CO₂ emissions continue to accumulate indefinitely.*
- Quality of life of young women will be improved as they can complete their education and become productive members of society, before choosing whether or not to have a child.

Fiscal Impact

The City of Mountain View should provide financial support if necessary to close the gap between what other levels of government (county, state, and federal) already provide and the amount actually needed for education, services and outreach activities. Placing family planning information and facilitating tabling are relatively low cost activities. The eventual long-term savings and other benefits should be substantial because of improved opportunities for young women, and lessened population increase, with resulting reduced use of all resources and reduced GHG production. The Guttmacher Institute has calculated (for '97-'98) that every dollar spent through Family PACT saved an estimated \$4.48 in medical, social service and education costs²⁵. (Much of this saving accrues to the State, not the City.) Within Mountain View there would be additional savings because of the reduced number of children attending school and participating in other City-funded activities.

²¹ J.J. Card, Sociometrics <http://www.socio.com/newpasha/pashatablebox1.htm>

²² Discussion with Valerie Rowe of Planned Parenthood Mar Monte on April 1, 2008

²³ Innovation Outreach: Findings from the TeenSMART Outreach Evaluation, UCSF, April 2008. Available at http://bixbycenter.ucsf.edu/publications/files/TSO%20Innovative%20Outreach%20Findings_2008Apr.pdf

²⁴ 'Generation Sex', by Mary Beth Regan, Johns Hopkins Public Health Special Issue 2008, pages 20-23.

²⁵ <http://www.guttmacher.org/pubs/tgr/03/5/gr030501.html>

An estimate of the maximum cost incurred by Mountain View per year for filling gaps in family planning coverage is \$100,000. Thus the cost per ton of CO₂ avoided of this program would be \$100,000 for 200 tons of CO₂ emissions averted in the first year, rising steadily to \$100,000 for 1000 tons in the fifth year. In twenty years, the annual reduction in CO₂ emissions would be of the order of 4000 tons per year and would continue to rise indefinitely.

Obstacles

There might be opposition from individuals or groups opposed to family planning in general.

Partnerships

Possible partners include:

- Family PACT
- Santa Clara County Dept of Public Health
- Planned Parenthood
- Mountain View/Los Altos Adult School
- Mountain View-Whisman Elementary Schools
- Los Altos Sociometrics, which has studied how best to reduce teen pregnancy.
- Adolescent Pregnancy Prevention Network, Santa Clara County
- Mountain View – Los Altos Challenge Team

See also Appendix E, “Family PACT Sites in or near Mountain View.”

Title: Make the Environmental Sustainability Coordinator Position Permanent

Statement of Issue

Transforming Mountain View into a sustainable city cannot be done without a continuous effort and vigilant attention. Even when the formation of the ESTF was a big push for this goal, continuity and supervision are still needed.

Recommendation

The City of Mountain View should make the "Environmental Sustainability Coordinator" position permanent.

Environmental Impact

We believe that, without continuous support and supervision, the number of recommendations produced by the ESTF and finally implemented will be smaller. Also, modifications and improvements made by a coordinator might increase the efficiency of some recommendations. It is unclear how much this position will improve the overall implementation, but we can assume that it might increase the efficiency by 1.5x, for example. We can assume an extra reduction of 50% total more GHG with the coordinator than without him/her.

Fiscal Impact and Synergies

The annual cost of this position is approximately \$110,000 (\$6119-\$7647/month plus benefits).

This recommendation is synergistic with all the other recommendations produced by the Task Force.

Obstacles

The obstacle to this recommendation is cost.

Title: Tax Extraction of Non-Renewable Resources and Extraction of Renewable Resources at Unsustainable Rates

Statement of Issue

Economist Herman Daly pointed out that our tax policies are backwards: we tax (and thus discourage) things we want more of, like savings, and we subsidize (and thus encourage) things that we want less of, like pollution.

Since extraction of non-renewable resources (or extraction of renewable resources at unsustainable rates) is obviously unsustainable, and since futures markets do not adequately take this into account, we should use taxes to discourage this.

Recommendation

The City should ask the State of California to tax extraction of non-renewable resources, and extraction of renewable resources at unsustainable rates.

Prior to making this request, Mountain View should set an example by taxing extraction of groundwater when that water is extracted at greater than sustainable rates. “Greater than sustainable rates” means rates greater than any of the following:

- The amount that is replenished.
- The maximum amount that can be withdrawn without causing ground subsidence or soil compaction (which reduces future storage capacity).
- The maximum amount that can be withdrawn without drawing in pollutants, including but not limited to:
 - Saltwater intrusion
 - Spread of pollutants such as solvents that have contaminated groundwater.

To help ensure that users see the marginal cost of water, rather than the average cost, the tax should be combined with tiered rates for water users, with the tiers based on sustainability of the water source. This rate should vary based on the actual rate of replenishment – in a drought year, rates would increase.

This recommendation can be implemented in the short term and continued into the long term.

Environmental Impact

- By making over-pumping of groundwater more expensive, this would discourage unsustainable levels of groundwater extraction and encourage conservation and “greywater” recycling.
- By reducing water pumping, this would also reduce energy consumption and thus CO₂ emissions.

The size of these effects is unknown because they depend heavily upon how much groundwater we currently pump and how we price that water. Because only about 1% of the water consumed in

Mountain View is Mountain View's own groundwater²⁶, the effect on water price and thus conservation is likely to be fairly small. However, by using tiered pricing to price water "at the margin", the effect could be increased.

Fiscal Impact

This tax would reduce costs of pumping. The size of the effect is unknown, but probably small.

If the tax must be implemented from scratch, there is an unknown administrative cost to doing that. If the tax is merely a change in existing tax rates, it would probably have little administrative cost.

The cost-benefit ratio depends upon whether the tax revenue is kept by the City or is offset by reducing another tax.

Obstacles

- Any increase in taxes or prices will be opposed by some people who will pay the higher price.
- If only Mountain View groundwater extraction is taxed, it's possible that we would increase water extracted from other areas where the tax does not exist, so to some extent the problem might be moved rather than solved.
- We would need to genuinely know the maximum sustainable amount of groundwater that we could pump. This might not be knowable until we have damaged the aquifer, and it would vary from year to year depending upon the amount of rainwater seeping into groundwater reservoirs. Past pumping in the Santa Clara Valley has caused substantial subsidence, and information based on that experience might help estimate maximum sustainable pumping.
- Since Mountain View gets water from multiple sources, and the price and availability of water from each of those sources may vary from year to year, water rates would vary from year to year. Users may be reluctant to invest in water conservation if they don't know whether water prices will go up or down in the future.
- If there are any private wells that don't have meters, it would take extra work and expense to monitor those.

Partnerships

- Santa Clara Valley Water District
- San Francisco Water Department (Hetch Hetchy)

²⁶ City of Mountain View: Water Quality '07 Consumer Confidence Report.

Title: Balance Jobs and Housing

Statement of Issue

Poor planning puts housing and jobs far apart even when the jobs do not cause problems such as noise and smoke. The geographic separation of jobs and housing is exacerbated by the tendency of cities to seek more jobs and less housing, because housing tends to be a net drain on City revenue. When jobs and housing are geographically separate, commutes are long, which increases consumption of fossil fuels and emissions of greenhouse gases (GHGs), and reduces quality of life (largely because of affordability and commute time). Often, the burden falls hardest on the poor.

Think of land use as a “budget” in which the supply of land is fixed and the “spending” must not exceed the “income” (the supply of land). Furthermore, within the limits imposed by the amount of land available, we should also balance jobs and housing, rather than trying to maximize jobs and minimize housing. The sum of jobs and housing must also be balanced against emissions and the quality of life. For the past 50 years, this land use “budget” has been neglected.

Recommendation

Whenever a new source of jobs is considered for the City, there must be a survey of housing available for the likely employees. If no such housing is available nearby, there must be a plan for sufficient additional housing with attendant affordability to be made available in a timely manner in order for this new opportunity to be approved. Likewise, when new housing is considered, there must be sufficient jobs for those who will occupy the housing before the housing is approved²⁷.

Environmental Impact

This practice would substantially reduce the GHG emissions coming from commuter. At the most, there would be a balance in the directions in which the commute would be into and out of the City.

Fiscal Impact

Costs of road maintenance and automobile parking could be substantially reduced as walking and bicycling become more viable commuting options

Obstacles

- If people change jobs more frequently than homes, new jobs may not be near current housing.
- The lack of ease by which people can move to live in the jurisdiction of their employment.

Partnerships

Employers and housing developers must work together, perhaps to generate a combined proposal that puts housing and jobs near each other, and that ensures that the type of housing is appropriate for the income level of the employees.

²⁷Genentech in South San Francisco wanted to add buildings to accommodate additional staff. Local authorities rejected the proposal until the company proposed providing regular commuter buses from the city, avoiding a major increase in cars coming into the area.

Title: Keep a Prudent Environmental Safety Margin to Mitigate the Impact of Disasters

Statement of Issue

“[Disasters are the] new ‘normal’ ... In today's densely populated and technologically dependent communities, disasters have a far greater impact than ever before.”²⁸

– Russel Honoré, former commanding general First Army, leader of Joint Task Force Katrina

For a system to be sustainable, it must be able to survive not only “normal” or “average” conditions, but also “worst-case” conditions, without reducing long-term carrying capacity. Yet at every scale from individual to global, we assume the future will have better-than-average conditions. We assume that next year a new technology, a pay raise, or a charismatic leader will lift us out of the fiscal and ecological deficits that we have dug ourselves into.

In fact, however, when we do receive a raise or develop better technology, it brings us no closer to sustainability. As U.S. incomes have risen, savings have shrunk, not grown. And despite increases in technology, we grow further from sustainability each year.²⁹ When we improve technology, we use it to consume more, rather than to make ourselves more sustainable.

As General Honoré said, our society is becoming more “brittle” – less able to withstand shocks. We become ever more dependent upon long supply lines, as our food travels a thousand miles to reach us, and our water travels 200 miles to reach us. Although economic theory (the doctrine of comparative advantage) says that long supply lines are not a problem, this is true only if nothing goes wrong. Long supply lines are fine for optional luxury goods, but they are dangerous for necessities.

At the global level, we destroy our safety margins. Humans consume more and more of the “net primary product” produced by the planet’s ecosystem. (Net primary product (NPP) is the total amount of material produced by all photosynthetic organisms.³⁰) In 1986, Vitousek, et al. estimated that humans directly and indirectly consumed 40% of the net primary product produced on land and 25% of the net primary product from land and oceans combined³¹. The number has risen since then.

At the local level, the “brittleness” of our society leaves us even more susceptible than necessary to both man-made and “natural” disasters, such as earthquakes and droughts.

Recommendation

Just as a prudent family or government or business keeps a “rainy day” savings fund, so a prudent society keeps a large safety margin that it could use in times of emergency. Mountain View is justifiably proud of its disaster preparedness efforts, such as CERT training classes, but should do far more to survive under far-from-best-case scenarios.

²⁸ <http://www.cnn.com/2008/US/weather/06/02/honore.preparedness/index.html>

²⁹ I haven’t found an exact definition of Net Primary Product. However, I believe the term is very similar to Primary Product as explained at http://en.wikipedia.org/wiki/Primary_production

³⁰ Cited by Herman Daly, who was at the time working for the Federal Reserve Board. <http://www.fs.fed.us/eco/eco-watch/ew920714>

³¹ Cited by Herman Daly, who was at the time working for the Federal Reserve Board. <http://www.fs.fed.us/eco/eco-watch/ew920714>

1. Mountain View should follow EBMUD’s example and require large new developments to show that water supplies are adequate to support those new developments, using two criteria:
 - In a 100-year drought, “normal” water needs can be met from our normal sources of supply (Hetch Hetchy, etc.) *with no degradation of the water sources*.
 - Under emergency conditions (for example, post earthquake AND 100-year drought), survival needs (water for drinking, cooking, sanitation, and firefighting) must be available from sources entirely within the city (mostly groundwater) without causing damage to these sources (for example, soil compaction in aquifers. Mountain View should also be able to pump the water even after a major earthquake disables conventional power sources.
2. City planning should keep a large “safety margin.”

This is a long-term task.

Environmental Impact

This recommendation is intended to increase broad, long-term sustainability. Steps to stabilize or reduce population, and to reduce the “brittleness” of our high-consumption economic system, will also reduce GHG emissions somewhat.

Fiscal Impact

No one knows the cost, but it could be high. (The cost of doing nothing is even higher.)

Obstacles

- Given a choice, most people choose to consume now rather than increase their safety margin.
- Politicians are rarely rewarded by the public for thinking ahead.

Partnerships

The City already partners with disaster preparedness groups, including the Red Cross and the City’s own CERT. We must go to the next level and reserve resources (land, water) for use after a disaster.

Furthermore, since the government cannot by itself make all the preparations that are required, all Mountain View residents and businesses must take responsibility for preparing themselves with supplies of water, food, and camping gear, as well as by building robust financial security.

Note:

We recognize that this recommendation is vague and has no cost-benefit analysis. We decided to keep it anyway because it is a crucial yet often overlooked aspect of sustainability, and because it is clearly appropriate for City-level government.

Title: Phase Out Use of Non-Renewable Energy Sources

Statement of Issue

By definition, relying on any non-renewable source is unsustainable. The use of any non renewable source of energy, in particular oil, where supply cannot keep with demand ³², will produce a crisis of unpredictable consequences when the resource begins to be depleted.

Recommendation

Transform the City to avoid using oil (medium-term) and to use 100% renewable energy (long-term).

Environmental Impact

A way of life that is based on the consumption of non-renewable resources cannot be sustained. As soon as the resource is depleted, society is forced to change suddenly. This sudden change puts the society at risk of social unrest, or even collapse. Recent indicators³³ suggest that we have already reached that limit for oil. As a consequence, net oil production will be constant in the next few years and begin to decline afterwards. Since the global economy is trying to increase oil consumption rather than decrease consumption, oil prices are expected to continue increasing³⁴. The dependence on this resource is extremely unsustainable and has unpredictable³⁵ critical consequences.

Fiscal Impact and Synergies

The fiscal impact of not going into an oil free economy is huge. With predictions of \$200 to \$500 a barrel of oil, possibly as soon as in the next years, avoiding the use of this resource is extremely important. Switching to a non-oil, non-fossil fuel way of life is a must.

This recommendation is synergistic with the recommendations of the Transit and Transportation Working Group.

Obstacles

- The main obstacle is the delusion that there is no such problem, or that technology will automatically solve the problem, and that oil and other forms of non renewable energy will always be available at affordable prices.
- Implementing this recommendation is not easy, due to the big inertia of people's habits.

Partnerships

- San Francisco Bay Oil: <http://www.sfbayoil.org>

³² The Wall Street Journal: "The conservative IEA appears to be inching ever-closer to the "peak-oil" crowd. Supply simply can't keep pace with demand—everybody with an oil well has the taps open, but there's not much left in the keg" <http://blogs.wsj.com/environmentalcapital/2008/07/01/peak-oil-iea-inches-toward-the-pessimists-camp/>

³³ Countdown to \$200 oil: IEA says current prices are justified. <http://europe.theoil Drum.com/node/4241>

³⁴ IEA warns of tightening oil supplies: <http://www.ft.com/cms/s/0/cd683aa0-4764-11dd-93ca-000077b07658.html>

³⁵ "By 2010, the production of the fuel that has driven the world's economy will start to rapidly decline. This will conflict with the steadily increasing demand for oil. The collision of these two trends will lead to shortages and increased prices... Due to unequal distribution through the world of oil and gas supply and consumption, [the upcoming] transition will result in significant shifts in global power and wealth." <http://www.energybulletin.net/node/45679>

Title: Use the Right Measuring Tools When Measuring Economic Progress

Statement of Issue

At the national level, our primary measurement of economic health is GNP/GDP. However, GDP (and GNP) have several severe weaknesses.

- GDP measures economic ACTIVITY, not economic BENEFIT.
- Although an economic system should maximize satisfaction, ours is designed to maximize dissatisfaction—advertising is designed to make people dissatisfied so they’ll buy more.
- GDP fails to measure many things that people value, such as time spent with family.
- GDP is very weakly correlated with quality of life.
- GDP is biased against sustainability. As with a business that consumes its own capital until it goes out of business, we inflate our current GDP by consuming natural capital (fertile soils, groundwater, oil, metals) and thus decreasing future GDP without accounting for that.

For more details, see Appendix A, “Weaknesses in GDP as a Measure of Economic Progress.”

For all of these reasons, GDP should be used as a minor economic statistic, yet maximizing GDP growth is government’s primary way of measuring success. This is true at every level of government, from national to local. (At the local level, we define “success” as increased population, increased per-capita income, and business growth, all of which have the same weaknesses as GDP.)

Ultimately, people seek security, happiness, and sustainability. Where material wealth contributes to these things, we should continue to welcome it. But where material wealth undercuts these things, we should not measure it as progress.

Recommendation

If our city chooses to measure its success, that success should be measured using a quality of life measure, not GDP-like measures such as income, profit, and population. Measuring quality of life is difficult and subjective – but the difficulty in fine-tuning an accurate measuring tool is no reason to choose the wrong measuring tool (GDP). Crude quality of life measures already exist. See Appendix C, “Quality of Life Measures.”

Specifically, the City should:

1. Declare that our goal is sustainability and that sustainability takes precedence over growth. This goal should guide the City’s General Plan, as well as decisions by the City Council and recommendations from the Planning Commission.
2. Adopt a quality of life measure, such as the Genuine Progress Indicator. (See Appendix C)
3. Ask residents subjectively about their quality of life in Mountain View via a question on an election ballot. However, some alternate provision should need to be made for residents who are not entitled to vote.
4. Report residents’ measured quality of life in Mountain View’s newsletter “The View.”

See Appendix B (Sources of Happiness Outside GDP) and Appendix C (Quality of Life Measures) for further discussion of ways that an economy can improve without necessarily increasing GDP or GHG.

Environmental Impact

For decades, California's population has grown an average of about 2% per year. Although Mountain View's population growth has been negligible since 2001, after the current series of bubbles ("dot-com", housing, etc.) finishes bursting, the City will probably resume growing.

Between 1974 and 2007, technology and efficiency improvements reduced energy consumption per dollar of GDP by about 50%. CO₂ and GHG emissions per dollar of GDP decreased about 40% since 1980 (the earliest year for which this source reports).³⁶ However, the net effect of technological improvements has not been to reduce GHG emissions because as technology and per-capita GDP increased, we applied technology to consume more, rather than to consume less. (For example, automobile companies have increased engine efficiency 30% over the last 20 years, yet almost all of that improvement went into increasing power, not fuel economy. In other words, radical improvement in technology provided approximately ZERO reduction in GHG emissions.)

Since per-capita energy consumption has been approximately constant since 1974 and GHG emissions have been approximately constant since 1980, GHG emissions have grown at more or less the rate of the population.

Assuming that population increases 1-2% per year, per-capita GDP increases 2% per year, and that we need to decrease GHG emissions 2% per year to meet target levels, we would need to reduce emissions approximately 3-4% per person per year and 5-6% per dollar of GDP per year, rather than the 1-2% per year we have been averaging. Furthermore, this rate of improvement would have to continue forever, yet would become increasingly difficult as the easy improvements would be made first, leaving only the more difficult improvements available.

Choosing to stabilize population, and choosing to stabilize GDP while increasing other quality of life factors, would result in flat GHG emissions. This would give other recommended policies and technology a chance to actually reduce GHG emissions.

Fiscal Impact

The direct cost of using an alternative measures to GDP (or its local equivalent) is unknown but probably fairly small. For example, the cost of adding a question to existing ballots is approximately \$25,000 per election.³⁷

The cost of making changes to actually raise the quality of life is unknown. Initially, it is low because there is a lot of "low-hanging fruit" that can be harvested at no cost, or even profitably, by increasing efficiency and by not making decisions that increase GDP at the cost of quality of life. However, in the distant future, the cost could be higher.

³⁶ <http://www.eia.doe.gov/emeu/aer/txt/ptb0105.html> U.S. Department of Energy

³⁷ When the City Council debated whether to add a ballot question similar to Berkeley's global warming question, the cost was estimated at \$25,000.

Obstacles

There is no direct obstacle to government choosing to use a GPI-like indicator to replace or supplement GDP-like indicators. There are potential indirect obstacles:

- Since businesses measure success based on gross revenue and profit, businesspeople may oppose government setting goals based on any criteria that doesn't drive consumption and profits up.
- Although it is highly likely that the average consumer/resident would welcome government measurements of, and attempts to increase, quality of life rather than just nominal income, consumers might oppose specific measures that reduce government support for income growth if it's not clear that those measures will increase quality of life.
- People don't all rate each quality of life factors the same. One person might rate "peace and quiet" as his top priority, while another might rate "exciting dance parties" as her top priority. Not only is it difficult to capture both of these in a single measurement, but in this case the priorities are mutually exclusive (within the same period of time and geographic area).
- Simply measuring whether quality of life is rising or falling is not sufficient; you also need to know which factors are falling and how to fix those factors.

Partnerships

- Redefining Progress (<http://www.rprogress.org/>), which developed the Genuine Progress Indicator.
- ICLEI, has information about the "Triple Bottom Line" (see appendices), as well as GHGs.
- The "Mountain View 2030 Vision" team has already asked residents what they value. That work could be extended, repeated at regular intervals (for example, every 5 years), and perhaps made more rigorous.

Title: Encourage Work/Life Balance

Statement of Issue

Many Americans says they would trade some income for more free time in order to spend it with family or leisure activities³⁸. Since income is directly related to consumption, this trade off would decrease consumption while increasing quality of life.

Recommendation

The City of Mountain View should allow its Staff to negotiate the number of hours a day they want to work. Naturally, reductions in work hours would reduce pay.

Environmental Impact

- Assuming that GHG emission per capita is proportional to purchasing power (which actually may underestimate GHG emissions) a reduction from 40 to 35 hours a week would decrease GHG by 12.5%.
- For those reducing to only 4 working days a week, emissions from commuting will shrink 20%.
- Less consumption per-capita will increase sustainability.
- This example might serve as a model for private companies and other institutions.

Fiscal Impact and Synergies

In principle, this recommendation should not add much cost, but in practice it will need extra reorganization and further complication of HR departments, which fiscal impact seems complicated to measure.

This recommendation might also have a positive impact for the City: it will attract employees seeking to work as City Staff.

Obstacles

- Even when Americans say they would be happy to do this trade of work/income for free time, will they really do it? This recommendation needs a change of perspective that more income might not increase our quality of life (or satisfaction) but, rather and contradictorily, decrease it.
- Both the public and private sector might find the benefit of this change small in contrast with the extra organization needed to supply the lack of personal with new one.
- High cost of living in the Bay Area. Provisions such as affordable housing would help.

Partnerships

- Simple living: <http://www.simpleliving.net/main/>

³⁸ <http://users.ipfw.edu/ruflethe/american.html>

Appendix A: Weaknesses in GDP as a Measure of Economic Progress

At the national level, our primary measurement of economic health is GNP/GDP. However, GDP (and GNP) have several severe weaknesses.

1. GDP measures economic ACTIVITY, not economic BENEFIT. The costs of prisons, environmental cleanup, and kidney dialysis are added to GDP although increasing crime, pollution, and kidney disease will not make our economy healthier.
2. GDP isn't even a good measure of economic activity. GDP omits domestic work by stay-at-home parents.³⁹ GDP also omits services (for example, water pollution cleanup) provided by nature.⁴⁰
3. GDP fails to measure other things that we say we value, including time spent with family, volunteer work, recreation that doesn't require spending money, and "spiritual" values.
4. GDP is biased against sustainability. As with a business that consumes its own capital until it goes out of business, we inflate our current GDP by consuming natural capital (fertile soils, groundwater, oil, metals) and thus decreasing future GDP.
5. GDP is rarely corrected for population growth. For example, a recession is defined as 2 successive quarters of declining GDP. However, if population grows 1.0% and GDP grows 0.5%, then people are worse off (in financial terms), but the economy looks as though it is growing. Conversely, if population shrinks 0.5% and GDP shrinks 0.25%, we would officially be in a recession, despite the fact that incomes would be rising.
6. GDP is very weakly correlated with quality of life. Surveys indicate that quality of life declined over the last 50 years, even though inflation-adjusted per-capita income nearly tripled.⁴¹
7. In theory, the purpose of any economic system is to maximize satisfaction. But the purpose of our economic system is to maximize DISSatisfaction. As far back as 1929, GM executive Charles Kettering stated that although customers should be sold products on the grounds that those products would bring them greater satisfaction, those same customers must be made dissatisfied after the purchase so that they will buy a newer product.⁴² This is a recipe for both unhappiness and unsustainability, since we can consume everything that can possibly be consumed, and yet still be left unhappy.

If we're spending more and consuming more but we're not happier, then the system is broken, even from a purely materialist perspective, and even ignoring environmental damage.

³⁹For example, if my partner stays home and takes care of our child, nothing is added to the GDP. But if we pay a neighbor \$1000 per hour to take care of our child while the neighbor pays us \$1000 per hour to take care of her child, then GDP skyrockets – yet the total amount of child care produced is the same in both cases. Some studies of the economic production of stay-at-home parents estimate approximately \$100,000 a year of value for child-raising, cooking, nursing during illness, and so on.

⁴⁰Overall, the annual value of the world's ecosystem services is estimated at \$33 trillion, or greater than the gross national product of all nations combined [in the year the calculation was done].” In other words, half of the economy was ignored by this one measurement error alone. <http://www.sciencedaily.com/releases/2007/12/071205131149.htm>

⁴¹Although our material standard of living has tripled over the last 50 years, "the number of Americans who say they are very happy peaked in 1956 and has gone steadily downhill ever since", says Bill McKibben, author of "Deep Economy: The Wealth of Communities and the Durable Future". McKibben says our economic policies are a double failure, increasing environmental damage while decreasing satisfaction. The U.S. is "near the bottom of the developed world, and behind a surprising number of developing countries, in levels of happiness". McKibben points out that if happiness is not closely linked to material consumption, then re-designing our economy can simultaneously increase happiness and decrease environmental damage. In Europe, happiness and leisure time are higher; yet energy usage is 50% lower. See also <http://www.csmonitor.com/2007/0529/p17s01-bogn.html?page=2>

⁴²Charles Kettering, General Director of Research Laboratories at General Motors wrote an article titled "Keep the Consumer Dissatisfied" The article was originally published in *Nation's Business*, 17, no. 1 (January 1929), 30-31, 79. My citation is from: http://websupport1.citytech.cuny.edu/Faculty/pcatapano/lectures_us2/consumerdis2.html

Appendix B: Sources of Happiness Outside GDP

This is a list of some sources of happiness that are not included in GDP. This is, of course, not a complete list.

1. A more close-knit community.
2. Time with family.
3. Time with friends.
4. Time alone.
5. “Peace and quiet”.
6. “Less stress”.
7. Sleep. (Studies show that Americans are seriously sleep-deprived, and this decreases job productivity, increases stress, shortens lifespan, and reduces quality of life.)
8. Freedom from telemarketers, “spammers”, junk mail, door-to-door solicitors, etc.
9. “Spiritual Values”.
10. Artistic pursuits that require very little money or resources, such as music, painting, dance etc. (Of course, if you want to buy a Stradivarius, or want to dump cadmium-based paints into the sewer, or want to build a dance hall, those don’t necessarily qualify as low-cost and as harmless to the environment. But some arts require very little money.)
11. Education in many topics, such as languages.

The following requires money to buy land, but once the land has been purchased (which of course is not cheap in Mountain View), the activities themselves require almost no money from the user. As the population grows, which drives up the price of land, opportunity for these activities decreases *no matter how much per-capita income grows*.

1. Types of recreation that don’t require much money, for example, jogging and bicycling.
2. Gardening.

Our point is not that government bureaucrats (or environmental task force members) should choose which of these to emphasize. Our point is simply that these are ways to increase quality of life without increasing consumption of non-renewable resources or increasing greenhouse gas emissions.

Appendix C: Quality of Life Measures

Although no quality of life measure is perfect, there are some that we can use, and we expect at least some of these to improve over time.

The GPI (Genuine Progress Indicator), which was developed by a group called “Redefining Progress”, takes into account some quality of life factors and also subtracts, rather than adds, money spent on things like prisons, health care costs due to obesity and smoking, etc.⁴³

Bill McKibben’s work relies on self-reported happiness surveys.

Ronald Inglehart, of the University of Michigan, has compared happiness levels across countries. According to Inglehart, peace and freedom of choice are the biggest factors in people’s happiness.⁴⁴ (Some people might worry that if the government bans or taxes certain activities to increase sustainability, it will decrease our freedom of choice. While this is possible, it is also true that increasing population density and decreasing available resources will increase conflicts, and those conflicts, as well as government’s response to those conflicts, will decrease our freedoms. Furthermore, if we consume our resources to the point where nothing is left, we will have very little practical freedom of choice, even if the legal structure does not limit us at all.)

Other researchers have found that most people’s level of happiness is determined not by their absolute wealth, but by their perception of their wealth relative to others. This suggests that societies that have an uneven distribution of income, and in which most people are relatively poor, and in which people are aware of their relative income, have a relatively low rate of happiness. Interestingly, Puerto Ricans rate themselves as happier than Americans, despite the fact that their average income level is considerably lower.

The country of Bhutan has explicitly set its goal as maximizing Gross National Happiness, not Gross National Product. Bhutan’s four pillars of Gross National Happiness are:

- Sustainable socioeconomic development
- Environmental protection
- Cultural preservation
- Good governance

According to one source, self-reported happiness among the people of Bhutan is quite high.⁴⁵ The country has suffered from ethnic tensions, however, and 100,000 ethnic Nepalese were expelled from Bhutan. Those 100,000 people no longer in Bhutan might not report an equally high level of happiness.

Some people are recommending the “Triple Bottom Line” approach for measuring success. This approach measures success not only on profit, but also on sustainability and social factors. (Social responsibility can be subjective, so this part of the measurement is not finished.) Cities in Canada and Australia (including Melbourne and Sydney) are starting to use Triple Bottom Line assessments.

⁴³ http://www.rprogress.org/sustainability_indicators/about_sustainability_indicators.htm

⁴⁴ <http://www.cnn.com/2008/HEALTH/07/02/nations.happiness/index.html?iref=mpstoryview>

⁴⁵ http://ngm.nationalgeographic.com/geopedia/The_Democratic_Experiment_of_Bhutan

Appendix D: Sustainability Expert on Environmental Planning Commission

We cannot calculate the real cost/benefit ratio of having a sustainability expert on the EPC because the costs and benefits depend upon the decisions made by the EPC with this expert (and upon how different those decisions are from what they would have been without the sustainability expert). In this appendix we list some of the types of ideas that a sustainability expert might suggest and describe the possible savings from those ideas.

1. Reduced need for (and costs of) motor vehicle parking for businesses in Mountain View. This would directly reduce City capital costs for acquiring land and constructing roads and parking lots on the land, and would also save the City money on the cost of maintaining the roads and parking lots. To the extent that businesses would spend less on parking (both on what they construct at their own expense, and on what they pay tax money to the City to construct), the savings could allow greater competitiveness in a greater variety of goods and services at attractive costs.
2. Access to schools and other services can be designed in to be made easier for walking and bicycling options.
3. Solar and wind energy, depending upon the particular situation, can be allowed for and required.
4. Clean commercial enterprises could be encouraged more.
5. Increased use of sustainable building materials (employing LEED requirements for one).
6. Reduced costs in cleanup from the settling of pollutants from the air.
7. Reduced cost in health care on the account of more healthy physical activity and reduced lung diseases.

Thus the appointment of a person onto the EPC who is strong on sustainability along with staff support could have its costs recovered by the decisions made by the EPC.

Appendix E: Family PACT Sites in or near Mountain View

Family Pact sites found within five miles of Mountain View (sometimes teens prefer to travel to a nearby community for family planning, so they are less likely to be seen and recognized by friends and family), ranked by distance from zip code 94040.

TEEN AND YOUNG ADULT CLINIC (0.0 miles)

(Part of LPCH's Center for Adolescent Health at Castro Commons)

1174 CASTRO ST, SUITE #250 MOUNTAIN VIEW, CA 94040

650-694-0600

<http://www.lpch.org/clinicalSpecialtiesServices/ClinicalSpecialties/AdolescentMedicine/teenClinic.html>

PLANNED PARENTHOOD (0.0 miles)

225 SAN ANTONIO ROAD, MOUNTAIN VIEW, CA 94040

650-948-0807

BARRETT, BENNITT, AND MCNEIL MDS (0.0 miles)

2485 HOSPITAL DRIVE, MOUNTAIN VIEW, CA 94040

650-988-7470

MAYVIEW COMMUNITY HEALTH CENTER (1.9 miles)

100 MOFFETT BOULEVARD, MOUNTAIN VIEW, CA 94043

650-965-3323

COUNTY OF SANTA CLARA (3.3 miles)

660 SOUTH FAIROAKS AVENUE, SUNNYVALE, CA 94086

650-730-8176

PLANNED PARENTHOOD SUNNYVALE (3.3 miles)

604 EAST EVELYN AVENUE, SUNNYVALE, CA 94086

650-739-5151

MAYVIEW COMMUNITY HEALTH (3.7 miles)

270 GRANT AVENUE, PALO ALTO, CA 94306

650-327-8717

LUCILE PACKARD CHILDRENS HOSPITAL (4.8 miles)

725 WELCH ROAD, PALO ALTO, CA 94304

650-497-8000

STANFORD MEDICAL CENTER OBGYN CLINIC (4.8 miles)

900 BLAKE WILBUR DRIVE, PALO ALTO, CA 94304

650-725-6079

Appendix F: Additional Ideas

We had several recommendations that we would have liked to make, but we recognized that they are difficult to implement at the level of City government. These are important principles of sustainability, however, so we list some here rather than lose them completely.

1. In the U.S., GHG emissions per capita have been constant⁴⁶ since the 1970s. This implies that GHG emissions are simply proportional to the number of people and thus population growth is the largest factor causing increased GHG emissions⁴⁷. Despite that, government provides massive subsidies to encourage further population growth. These subsidies effectively bribe people to have more children than they can support (without the subsidy), and far more than the earth's carrying capacity can support. We have come to think of many of these subsidies, such as the tax deduction for dependent children, as normal and good and "pro-family", but they are bad environmental policy, bad economic policy, and bad social policy. All levels of government (primarily national and state) should phase out these subsidies.
2. An "external cost" is a cost that is not paid for by the consumer or producer of a product. For example, most pollution is an external cost. Economic theory says that external costs lead to outcomes that are inefficient, as well as undesirable in other ways. All levels of government should strive to internalize "external costs", both in the public sector and the private sector. External costs can be addressed in at least 3 ways:
 - "Command and control" such as banning or limiting emissions.
 - Pricing, for example taxing products based on the external costs.
 - Internalizing the external costs. Note that there are 3 options within this:
 - Producer pays (and typically passes some or all of the cost on to the purchaser/consumer).
 - Consumer pays. For example, consumers might be required to take hazardous waste to an approved site and pay for proper disposal.
 - The producer (or consumer) ameliorates the problem. For example, a producer that generates toxic waste products may choose to detoxify the material, recycle the material, use less of the material, or choose a process that generates less waste. In many/most cases it's best for the producer, not the government, to choose which of these is done, because the business has an incentive to choose the most effective solution. (The government still needs to make sure that the producer or consumer does actually internalize the cost and not just dump the problem somewhere else.)

Estimating external costs, and thus charging for them, can be difficult. In many cases, halting an activity may be easier and cheaper than figuring out how much to charge for it so that you can ameliorate or compensate for the damages. Every dollar spent identifying external costs, the entit(ies) responsible for the external cost, and forcing them to internalize the cost, is a dollar not spent actually solving the problem.

⁴⁶http://www.nature.com/climate/2008/0806/fig_tab/climate.2008.44_F1.html

⁴⁷ Nature: The population problem. <http://www.nature.com/climate/2008/0806/full/climate.2008.44.html>

Appendix G: Fundamental Principles and Guidelines

1. We are currently unsustainable. We cannot keep doing what we're doing now.
2. We are growing further away from sustainability, and this is true for all countries, regardless of technological level.
3. Since we are unsustainable and growing further from sustainability, if we do not make radical changes, then we will never become sustainable.
4. The cost of failure is effectively infinite.
5. Although cost/benefit calculations are helpful, they often can't be done because not enough information is available. Since the cost of failure is infinite, and since failure is certain unless we make major changes, we cannot use lack of cost/benefit information as a justification for inaction.
6. Technology does not change the laws of physics. The laws of thermodynamics set absolute limits, independent of any level of technology.
7. We need to "front-load" changes. Most proposals for change "back-load" the changes. For example, Democrat John Edwards and Republican Arnold Schwarzenegger have each set a goal of reducing CO₂ emissions 80% – by the year 2050, long after they will have left office. However, we need to "front-load" the changes. Logically, we should start making changes that are easiest or have the most favorable cost/benefit ratio. This means that the work will get harder as time goes on. If, for example, we plan to make 50% of the changes in the next 20 years, and the remaining 50% of changes in the 20 years after that, we would give the illusion of splitting the work evenly, but actually the second half would be far more difficult than the first half. (This is true even if you take technological improvement into account.)
8. You'll get more compliance at lower cost and with less bureaucracy if you "Make it as easy as possible to do the right thing, and as hard as possible to do the wrong thing."
9. "Smart growth" makes as much sense as "smart obesity". Redistributing a problem is not the same as solving it.
10. "The real bank is resources, not money." Money is an accounting system, not a store of value. Our "natural capital" is depreciating rapidly, and our accounting system masks that rather than highlighting it.
11. "The environment is not an optional luxury sector in the economy; the economy is an optional luxury sector in the environment."

Chapter 11. Community Outreach and Green Business



*Without public support, sustainability measures have little hope for success.
Without outreach, the public has little opportunity to know and learn what's needed.
Mountain View is a great city.
Let's help the public to make it a great sustainable city.*

Introduction

Mountain View is the historical center of Silicon Valley. Even before Silicon was a consideration our roots as an agricultural center were strong. Our City has reinvented itself a number of times, progressing to becoming a substantial defense centre, then a light industrial focus. We were right in the center of the high-tech explosion, and most recently find ourselves the home to many leaders in the new Nano, Bio and Green Tech fields.

Our city is known as being home plate in technological advances, ground zero for some of the most recognizable and renowned names in current times. Mountain View is very much on the map as the "home of Google". Google's Mountain View campus receives significant press attention as being a model green company.

Is this not, then, the opportunity for the City to establish a leadership role environmentally—to the extent that our accomplishments are also worthy of such press attention?

Taking into account the inherent desirability of our City, we're already in an excellent position to spread the message that a Bay Area city can be environmentally sustainable and still be a wonderful place to live, work in, visit, and do business with.

San Francisco, San Jose, Berkeley, Oakland, and Palo Alto have, to varying degrees, put stakes in the ground about taking “green leadership” among cities. In order for the City of Mountain View to build upon our past successes and continue to remain in the forefront, Mountain View now must step into the lead in the Bay Area, this time in sustainability.

In addition to the final report requested by Council, the Community Outreach and Green Business Working Group also worked on outreach for the public input meetings held in order to gain suggestions and input from the residents of Mountain View. Each of the working groups has incorporated this public input into their final report submission. The Community Outreach and Green Business working group gained valuable insight into the sentiments and level of concern held by the residents who we were able to touch.

The main thing we learned is that engagement is critical. The residents of Mountain View are aware, concerned, and eager to participate. This participation will ensure the success of the City’s sustainability efforts. In the reverse scenario, the lack of community participation will surely doom the City’s efforts to a mediocre result.

Each and every working group within the Mountain View Environmental Sustainability Task Force has elements and recommendations which, in order to be successful, require the public to be engaged and informed about the profound changes we all need to make.

The overwhelming message is that public involvement is absolutely critical.

Summary of Recommendations

1. Commission and Implement a Comprehensive Outreach Campaign
2. Form and Support an Ongoing Green Citizens Collaboration and Action Team
3. Support and Encourage Student and Youth Outreach Initiatives
4. Install Signs and Banners to Broadcast Environmental Gains and Metrics, and Place Public Art to Promote Environmentalism
5. Promote Green Business Certifications and Practices
6. Create and Maintain an Environmental Focus Section and Rotating Displays at Mountain View Public Library
7. Sponsor Sustainability Tabling and Outreach at Local Events
8. Explore Implementation of Regional and/or City Services and Sustainability #311 Call Center Line
9. Create Awareness of the Impacts of Transportation and Alternatives to Traditional Methods and Fuels
10. Provide Encouragement for the Use of Hybrids, Plug-In Hybrids and Alternative Fuel Vehicles

Working Group

Aileen La Bouff (Chair)
Bruce England
Larry Moore
Roberta Chisam
Mike Mielke
Kirsten Hayes
Mike Kahn
Esperanza Sanz-Escudero

Title: Commission and Implement a Comprehensive Outreach Campaign

Statement of Issue

It is becoming increasingly clear that if humanity wishes to become sustainable, many, many of us need to change the way we live and work. We need to encourage a cultural transformation away from consumerism and excess to a more balanced and sustainable lifestyle.

For Mountain View, this means that we need to help our community become more environmentally aware so that all people who live, work and play in Mountain View can contribute to the future sustainability of our great city.

Many of us need to make a ‘U-Turn’ in our thoughts, actions and choices. We need to ‘Turn Around’ our community’s impact on the environment. We need to have a Clean Green Action Plan to help members of our community know what steps they can take to assist with the reduction of CO₂e emissions.

Mountain View is already taking many valuable and commendable steps towards reducing our environmental impact, but this action is largely behind the scenes. In order to gain cooperation at the grass roots level, current and future actions need to become much more visible. Another Bay Area city aptly described their outreach goals as wishing to create a ‘bandwagon effect’. Mountain View also needs to create their bandwagon, and encourage all community members to join the effort.

Recommendation

It is recommended that the City immediately engage the services of a professional outreach specialist to devise and implement a comprehensive Outreach and Education Plan to promote, encourage, educate and empower community members to reduce their impact on the environment.

It is recommended that this marketing plan be devised around a catch phrase or identifying statement such as ‘turn-around’ or ‘u-turn’ so as to be instantly recognizable and to encourage the profound changes that each member of the community will be called upon to make.

It is also recommended that careful consideration be given to assess and target the specificities of Mountain View’s unique demographic, including students and youth, cultural minorities, young professionals, established families, non-English speaking residents and other under-served sectors of our community.

The goals of this plan would include but not be limited to the following:

- Capture the public’s imagination. Get the word out to the community to let them know what is going on, why and what they can do.
- Identify groups that can increase the outreach (multipliers) and recognize and include leaders in the process to promote buy-in.
- Build and maintain a comprehensive, graphically interesting, constantly refreshed website, showcasing Mountain View’s ongoing sustainability efforts as well as providing information and resources to assist and inform the community about their Carbon Footprint and other relevant sustainability issues.

- Provide residents with access to education and assistance to reduce their environmental impact. Educational programming may include movies, roundtable and panel discussions, eco-fairs, workshops and networking for community building.
- Create and encourage themed events such as ‘The Year of Sustainability’ with a monthly area of focus providing subject matter for the presentations, fairs and workshops mentioned above.
- Offer yard signs to residents to allow them to share their dedication and passively encourage participation from neighbors and visitors.
- Institute an ‘edgy’, attractive viral marketing outreach plan
- Design and implement an easily recognizable logo and branding system to be used for all City-based environmental efforts. It is recommended that this logo be used in as many applications as possible, including but not limited to bumper stickers, written materials, advertising for educational and outreach events, sign-writing on city vehicles and equipment etc.
- Encourage community participation in the sustainability effort, possibly by holding a logo competition, Low-Carbon Diet competition or other interactive event to kick start the sustainability effort, and periodically follow up with similar efforts to refresh public involvement.
- Develop tools that help tell the story of the greening of Mountain View and which encourage transparency and accountability.
- Make the City of Mountain View immediately recognizable as a forward-thinking, progressive city, eager to address its sustainability issues.
- Encourage ‘peer-review’ practices, for example a regular local news column where the sustainability efforts of a selected individual or group are highlighted each week.

Further separate recommendations have been made regarding specific outreach and education efforts including, but not limited to partnerships with local schools and colleges, specific library displays, tabling at events etc.

Environmental Impact

The environmental impact of this recommendation is both far-reaching and impossible to quantify. A more relevant question may be ‘what is the impact of not implementing this recommendation?’ Without public buy-in, the city’s efforts may well provide minimal results. Encouraging residents, businesses and other organizations to recognize and take their part in reducing GHG emissions may well spell out the difference between success and failure in reaching this important goal. Seeing residents use bags with a sustainability logo, or seeing cars sporting bumper stickers with this logo, may encourage another resident to be more aware of their environment.

If an effective outreach plan were instituted, the projected result would be that the City could create the aforementioned, so-called ‘bandwagon effect’, and encourage more residents to be conscious of their environmental choices.

Fiscal Impact

It is expected that this recommendation could be categorized as a Medium Cost (\$30,000 to \$100,000) in the short to medium term to High Cost (\$100,000 to \$300,000) over the longer term. Some impact could be mitigated somewhat by the involvement of community volunteers for staffing and running some of the elements of the program.

This recommendation would also involve City Staff resources for management and implementation.

Obstacles

- Cost – without being able to provide quantifiable GHG benefits, there may be opposition to the initial outlay required to fund this program.
- Management – In order to effectively manage such a program, it will be critical for Mountain View to permanently retain its Sustainability Coordinator, or expand the position to a Sustainability Director, which requires the City to budget for this position.

Partnerships

The success of this recommendation will provide partnerships between the City and community members to ensure the success of other sustainability efforts. These partnerships can be supported and encouraged by implementation of a joint City/business/citizen action committee such as the Los Altos Green Team or Palo Alto CEAP as discussed further in other proposals.

Sustainability is such a topical and critical theme that many existing partnerships can be expanded upon to enhance the City's efforts (such as, the Chamber of Commerce).

Title: Form and Support an Ongoing Green Citizens Collaboration and Action Team

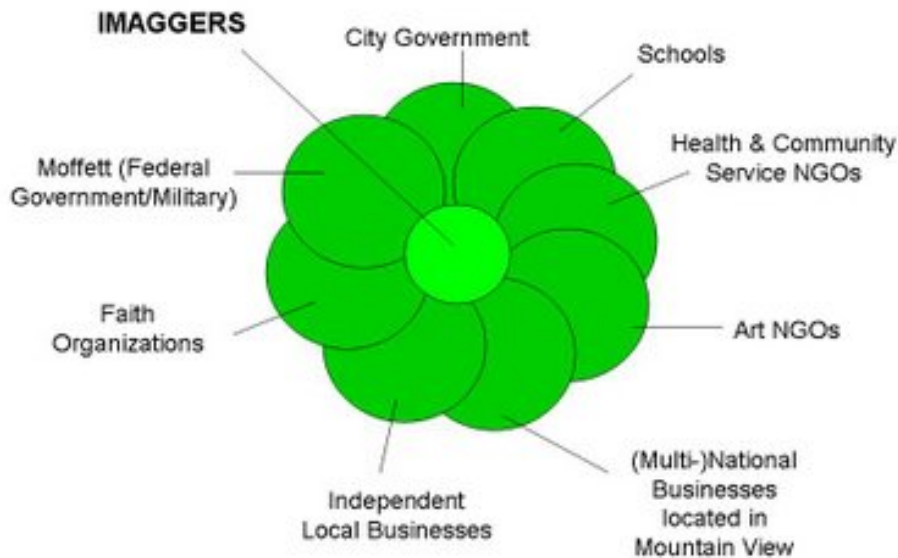
Statement of Issue

In order to implement and achieve Mountain View’s short-term and long-term community-wide actions to reduce greenhouse gas emissions and create a sustainable environment, Mountain View needs an organization that encourages, drives and measures implementation. The City staff and officials themselves cannot implement all of the necessary changes, the individuals and organizations that make up the community of Mountain View need to come together to support and/or make required changes. We need an organization to support that.

Recommendation

Establish a program the Task Force is calling IMAGGERS (Implement – Measure – Achieve: Greenhouse Gas Emission Reduction and Sustainability).

Mountain View IMAGGERS should be a community-wide organization made up of representatives from the following constituencies:



The recommendations and plans the Working Group members are developing as part of the Mountain View Environmental Sustainability Task Force have interdependencies and suggest opportunities to leverage the efforts of existing organizations and efforts in the community. IMAGGERS’ mission would be to bring segments of the community together to share, collect and distribute information; find common ground; leverage resources and efforts and create and implement solutions in accordance with recommendations made by the task force. IMAGGERS would also identify opportunities for Mountain View to combine or trade efforts and leverage resources among other local communities as appropriate to make the greatest contribution toward Mountain View’s and the region’s goals.

IMAGGERS goals would include:

- Initiate and measure progress toward objectives
- Support public outreach to educate members of the community and engage/challenge them to action towards meeting the identified goals
- Create ongoing public outreach mechanisms for announcing initiatives, gathering feedback and results and communicating results
- Develop mechanisms for recruiting volunteers and resources
- Identify and implement opportunities for leveraging resources and efforts
- Gather input from experts including existing best practices to use as input for all aspects of the team's efforts

Organization Structure

In thinking about an appropriate structure for this organization we referenced, among other resources, the book “Creative Leadership for Community Problem Solving” and a similar organization that Palo Alto is creating called CEAP. The CEAP structure is very similar to what we had in mind. Rather than “recreate the wheel,” the task force proposes a similar structure.

The structure and formality of IMAGGERS (Implement – Measure – Achieve: Greenhouse Gas Emission Reduction and Sustainability) is up to its participants to decide. As we proceed, we will need to evolve and develop this structure to fit our evolving activities.

Segment Liaisons

The initial proposal is a structure based on a committee of liaisons, two from each community segment, chosen by the constituents of each segment. Liaisons would serve staggered two year terms. Staggering terms will help maintain and hand-off institutional memory.

Liaisons make the commitment to be the lead for their segment; however, they do not formally represent their segment and cannot make commitments on behalf of their segment.

Liaison Expectations

- Map their segment – who is included, what is already happening, what interest level is there, what are the barriers to greening
- Disseminate information about IMAGGERS throughout their segment
- Communicate segment efforts to IMAGGERS
- Attend 75% of Committee meetings each year
- Foster environmental actions in their segment either through existing or new segment networks

Liaison Term Length

Staggered terms to begin – half 1 year, half 2 years – then move all to 2 years

Liaison Invitations

Each segment chooses its liaisons. IMAGGERS will help initiate a meeting of segment members. The attendees will select liaisons at that meeting. A Committee Chair would be appointed for the first year and then elected annually thereafter.

Committee Chair

A Committee Chair would be appointed for the first year and then elected annually thereafter. The role of the Committee Chair includes:

- Create Meeting Agendas
- Facilitate Meetings
- Coordinate information sharing between segments and committee
- Facilitate the rotating responsibility for meeting minutes by a liaison

Environmental Impact

The environmental impact of this recommendation is both far-reaching and impossible to quantify. A more relevant question may be ‘what is the impact of not implementing this recommendation?’ Without public buy-in, the City’s efforts may well provide minimal results. Encouraging residents, businesses and other organizations to recognize and take their part in reducing GHG emissions may well spell out the difference between success and failure in reaching this important goal.

Fiscal Impact

It is expected that this recommendation could be categorized as High Cost (recurring annual expense). The principal requirement from the City would be a time commitment for a future Staff member, such as a Sustainability Director or Coordinator. This involvement would be more time-intensive to begin with during a set-up period, and then would reduce to a workload equal with other volunteer members of the group.

Obstacles

- *Cost*—without being able to provide quantifiable GHG benefits, there may be some opposition to the initial outlay required to fund this program.
- *Management*—In order to effectively manage such a program, it will be critical for Mountain View to permanently retain its Sustainability Coordinator, or expand the position to a Sustainability Director, which requires the City to budget for this position.

Partnerships

The success of this recommendation will provide partnerships between the City and community members, to ensure the success of other sustainability efforts.

Sustainability is such a topical and critical theme that many existing partnerships can be expanded upon to enhance the City’s efforts (for example, the Chamber of Commerce).

Title: Support and Encourage Student and Youth Outreach Initiatives

Statement of Issue

As students and youth in general represent the future, and because their lives are more potentially impacted by environmental changes in future years, it is essential that they are engaged in any environmental sustainability initiatives that we undertake within in the city. These can be undertaken most successfully at the schools and recreation program levels.

Recommendation

1. The Task Force recommends that the City recreational programs be evaluated in terms of what they can provide that might support environmental sustainability education, activities, and sensitivity as part of their youth targeted programs.¹ Outreach efforts that involve youth directly in planning and leadership roles can be particularly effective in leading to changes in attitude and behavior.
2. The Task Force recommends that the City investigate ways that extra-curricular programs could be provided to support and enhance school efforts.
3. For a variety of reasons, the City of Mountain View, and schools and school districts within the city operate independently of one another. For example, each has its own budgets and funding sources, guiding laws and regulations, and governing bodies. However, addressing climate protection is a shared responsibility across the community, and, therefore, working across jurisdictional barriers when we can should be considered prudent. The Task Force recommends that the City establish or enhance its policies related to information and resource sharing with local schools and school districts within Mountain View as they relate to climate protection and environmental sustainability. Likewise, we recommend that city schools and school districts establish or enhance their communications policies and mechanisms with regard to the City. The Task Force hopes that the City and the schools community will embark on these efforts in a collaborative manner. The Task Force recognizes that such sharing cannot compromise the necessary autonomy inherent for both the City, and for schools and school districts. However, we urge the City and the schools community to keep such autonomy at a reasonable minimum when sharing might help to achieve climate protection and environmental sustainability goals for Mountain View as a whole.

Accordingly, because the City cannot dictate to schools or school districts what steps they must take to address environmental sustainability, this report does not describe them. However, reviewing details that the Task Force compiled during the course of their research might be useful for the City and its decision makers to understand the work that schools and school districts are likely to undertake in the months to come, and to consider ways that City resource and information sharing can be enhanced to assist with these efforts. To see the Task Force research results, go to <http://sustainablemountainview.pbwiki.com/f/Comm-SchoolsActions.doc>.

¹ City of Mountain View Youth and Teen Services,
http://www.ci.mtnview.ca.us/city_hall/comm_services/recreation_programs_and_services/outreach.asp

Environmental Impact

The extent of the environmental impacts these recommendations might affect are difficult to estimate, as they are dependent on the extent of their implementations both at the City and schools levels.

Fiscal Impact and Synergies

- The Task Force’s recommendation related to schools should only cost the City in terms of staff time spent on support tasks, which we believe would be extremely minimal, as regular job duties would, of course, always take precedence.
- The Mountain View Waste, Waste Reduction, and Recycling working group has identified Zero Waste Lunch programs as an important idea for local schools to consider.²
- The Mountain View Transit and Transportation working group has identified safe and alternative routes to schools³ ⁴ as important ideas for local schools to consider.
- The Energy and Renewable Energy Working Group discussed City support for schools’ installing solar panels on their buildings, but they chose not to include this item in the report in order to focus their attention on City buildings. Nonetheless, some good information about reducing energy use in our school buildings is available for reference, such as “Roadmap to Zero Net for California Schools” in Green Technology Magazine.⁵

Partnerships and Resources

- Public schools and school districts
- Private schools
- Mountain View - Los Altos Challenge Team, which focuses on improving the health and well-being of adolescents in the region
- The City’s Youth Resource Manager
- Scouting organizations
- Church and community youth organizations

² For information on Zero Waste Lunch programs see the California Integrated Waste Management Board web site at <http://www.ciwmb.ca.gov/schools/wastereduce/Food/ZeroWaste.htm> and <http://www.wastefreelunches.org/>

³ Some related recommendations are taken from “Greening” Mountain View Elementary Schools: An Analysis of Options for the Mountain View Whisman School District to Reduce Greenhouse Gas Emissions and Preserve Natural Resources (Transportation Section, pp.12-21). By O. Puerta, R. Rubio, J. Wooley, C. Sepe & T. Whinery. Stanford University: March 9, 2008, <http://sustainablemountainview.pbwiki.com/f/WhismanSchoolDistrictGHGReport-031008.pdf>

⁴ <http://www.saferoutesinfo.org>

⁵ http://www.green-technology.org/green_technology_magazine/thorman.htm

Title: Install Signs and Banners to Broadcast Environmental Gains and Metrics and Place Public Art to Promote Environmentalism

Statement of Issue

In order to address climate protection and environmental sustainability in Mountain View in a meaningful way, proposed actions must be understood and taken community-wide. Therefore, keeping the community well informed about what the goals are and how we are progressing toward them is an important component for the public outreach effort.

Individuals can make a difference, especially when their actions are taken collectively. So capturing the public imagination and civic spirit are perhaps the clearest means for engaging and empowering our citizens to move ahead toward environmental sustainability gains and goals.

Signs, banners, and public art can go far to spread and reinforce the messages needed to engage the public on this front.



Mountain View city banners at El Camino Real and Castro Street demonstrate that our city has a history of showing city pride to our residents, businesspeople, and visitors. (c. 1920) (Mountain View Public Library)

Recommendation

1. *Mountain View Welcome Sign*—As noted in a recent article in the Palo Alto Daily News⁶, the City is considering either removing or updating the welcome sign located at Shoreline Boulevard and Stierlin Road. The working group recommends that the City and/or city organizations reuse the sign to announce Mountain View as a "green city", and include some form of a maintained "scoreboard" to indicate the City's progress toward reaching or approaching certain significant targets related to climate protection and environmental sustainability. Doing this would help to accomplish two key goals identified so far by the working group:
 - To announce Mountain View as a green city to those visiting or driving into the downtown area through Stierlin Road, Castro Street, or Shoreline Boulevard
 - To provide a communication tool for those living or working in Mountain View to show how we are progressing environmentally

To fund updating the sign and maintaining the information provided on it, the task force suggests that organizations noted on the sign and local businesses who might want to be added be approached to provide or assist with funding, which we believe would be minimal, and with management tasks. As an incentive to businesses, the City might consider unobtrusively including company names or logos on the sign (similar to ways that businesses are noted on school scoreboards).

⁶ No longer a sign of the times: Welcome monument is showing its age, Melanie Carroll / Daily News Staff Writer, May 26, 2008, <http://www.dailynewsgroup.com/article/2008-5-26-mv-signs>

The working group also suggests that the sign be relocated within the island to increase its visibility, and that surrounding plants be specifically drought tolerant and native to help further the overall message, to possibly reduce current plant maintenance, and to position the entire island as promoting the green message.



View of the existing welcome sign including the surrounding landscaping

2. *Other Signs and Banners within the City*—Regardless of the City taking action on updating the existing welcome sign, multiple signs addressing environmental sustainability should be considered. Any primary entrance route into the city or well travelled thoroughfare would be a good candidate.⁷
3. *Public Art Placed in the City*—Public art can help to inspire those in our city to act environmentally, or, at least, to think along those lines. A sculpture in Palo Alto called “Rrrun”⁸ and the Cool Globes Exhibit in San Francisco⁹ serve as interesting examples of such potentially evocative art. In Mountain View, public art as described here is managed by the Community Development Department as advised by the City Visual Arts Committee.¹⁰



“Rrrun”, on Alma Street at North California Avenue, Palo Alto, and the Cool Globes Exhibit in Chrissy Fields, San Francisco

Environmental Impact

No quantitative environmental impact can be established for these recommendations, as gauging the impact of an engaged citizenry is not feasible. However, it is reasonable to assume that engaging the

⁷ The City of Mountain View permits the hanging of banners in three locations within the City 1-12 months advance notice, http://www.ci.mtnview.ca.us/city_hall/comm_services/recreation_programs_and_services/community_events/special_event_planning.asp

⁸ On the 'Rrrun': A car travels on childlike legs in new Palo Alto public artwork, Palo Alto Weekly, July 7, 2006, http://www.paloaltoonline.com/weekly/story.php?story_id=1868

⁹ <http://www.coolglobes.com/sanfran.php>

¹⁰ The City has published a guide to the public art in Mountain View, both city- and corporate-owned. The "Public Art in Mountain View" guide is available in the Community Development Department in City Hall or by calling Joanne Saucedo at 903-6379.

public and stimulating its interest in the process can only help to enhance the City's goals toward addressing climate protection and environmental sustainability.

For updating the welcome sign, the justification for acting on the recommendation is two-fold:

- The current sign is sadly out of date and in a state of deterioration. Having the sign stand as is does not reflect well on the city image
- The City can carry forward a piece of its heritage into the modern age and, at the same time, communicate important information about climate protection and environmental sustainability goals to the community

Fiscal Impact and Synergies

Costs are to be determined as noted in planning proposals and as potentially shared by local groups and organizations. Potentially, these recommendations could be implemented with no net cost to the City.

Our Working Group believes that synergy with the Sustainable Quality of Life Working Group is worth noting. That Working Group is recommending that the City publish a "quality of life" metric to counterbalance economic activity metrics (which are often at odds with sustainability goals). One or more of these metrics would be ideal to include on signs or banners as proposed here.

The overall cost of these recommendations falls within the categories ranging from Very Low (<\$10,000) to Low (\$10,000 to \$30,000) dependant on whether the City chooses to fund the recommendations independently or accept contributions from local businesses and organizations.

For public sculptures, \$20,000 to \$40,000 might be expected per piece, though the Mountain View Visual Arts Committee¹¹ is the best source for working estimates.

Obstacles

- Budget priority limitations
- Groups and organizations with interest in the sign and how they envision its future use

Partnerships

As noted previously, some businesses or business organizations might be approached to assist with some or all of the funding and maintenance. Specifically, the City could contact:

- Chamber of Commerce Mountain View
- Organizations currently represented on the welcome sign
 - Mountain View Rotary Club
 - Order of White Shrine of Jerusalem
 - Kiwanis International
 - General Federation of Women's Club
 - American Legion
 - Rotary International
 - Independent Order of Odd Fellows

¹¹ Mountain View Visual Arts Committee, http://www.ci.mtnview.ca.us/city_council/bcc/visual_arts.asp

Title: Promote Green Business Certifications and Practices

Statement of Issue

Businesses are a powerful force in our society and often act as the engine that drives economic growth. Businesses contribute substantially to the use of resources and production of GHG emissions within our community.

In addition, consumers are increasingly making the connection between business activities and the quality of life in a community. More and more people are basing purchasing decisions upon their concern for the health of their community and the planet. In fact, 8 out of 10 consumers believe that it is important to buy from ‘green companies.’ It is projected that consumer spending on green products and services will double in the *next year* alone, totaling an estimated \$500 billion annually.¹²

With this increasing focus by consumers on supporting green businesses it is important for city government to support green business proposals that ultimately bring more business, and therefore more revenue, into the community, while supporting the efforts to reduce GHG emissions. It also helps to have our city placed as a leader in the green revolution.

It is critical, therefore, that local businesses are encouraged to become leading participants in the effort to “green” Mountain View—for their benefit, as well as the benefit of the entire community. Currently, only 23 of approximately 4,000 eligible Mountain View businesses are “Green Business Certified” through the Santa Clara County Green Business Program.

The County program is restricted mainly due to the lack of manpower, and a lack of awareness within the business community.

Recommendation

1. Support and assist the current Santa Clara County Green Business certification program by providing outreach and encouragement to local businesses.
2. Develop a local working group of interested parties (possibly utilizing the partnerships built with the proposed IMAGGERS group) to assist county staff in promoting green business certification and enrollment.
3. The City should include information regarding the advantages of being, and how to become, a green business in all business license application packets, business license renewals and information packets for prospective businesses.
4. Consider implementing a “fast track” for business license renewal, reduced fees, or less frequent inspection programs for Certified Green Businesses.
5. Hold an annual event to recognize the Green Businesses.

¹² 2007 Image Power Green Brands Survey

6. Present each certified business with a plaque/certificate commemorating the length of time they have been certified. Follow up with periodic newspaper advertising congratulating Green Businesses on the length of their certification period.
7. Develop “Green Zones.” For details about the “Green Zones” concept, see <http://sustainablemountainview.pbwiki.com/f/Comm-GreenBusinessZones.doc>.

Environmental Impact

- *GHG Reduction Impact*—This recommendation contains elements that will have a direct impact on GHG mitigation and the reduction of a business’s carbon footprint
- *Broad Sustainability Impact*—This recommendation contains elements that will have a direct impact on community sustainability, it similarly encourages a larger number of businesses to engage in efforts to become Green and Sustainable
- *Justification*—Everyone stands to gain from the certification of Green and Sustainable Businesses: Residents will benefit from an even more healthy and sustainable community in which to live and work

Fiscal Impact

- Staff support would be required for this program. The permanent position of a Sustainability Director or Coordinator could include the duties associated with this recommendation.
- Increased revenues from successful green businesses would offset some or all of the costs of a coordinator in later stages.
- Costs can also be offset by soliciting financial support for the programs from local business interests.
- Additional funding to support City and/or County Staff could be explored. Possible sources are grants, tipping fees, or other funds from local utilities.

Obstacles

- *Engaging the Business Community*—Businesses must be brought to the table and given some ownership – as part of the larger community – of this process so that they will engage with and support the initiative.
Solution: Find champions from small, medium and large businesses.
- *Differentiation*—In order to successfully market itself as a destination for green consumers, Mountain View must build upon and carefully protect and manage what makes it unique.
Solution: Build upon the existing green businesses located in the city by creating a web portal as well as acknowledging defined physical locations as they develop (such as Castro Street, shopping malls, etc.) – “Green Zones.”

Partnerships

- Mountain View Chamber of Commerce
- Santa Clara Valley Green Business Program
- Silicon Valley Leadership Group
- Palo Alto Community Environmental Action Partnership (CEAP) business segment, <http://pa-ceap.pbwiki.com/CEAP+-+Business>
- Palo Alto Business Goes Green program, <http://www.paloaltochamber.com/green>
- Village Green <http://www.VillageGreen.com.au>

Title: Create and Maintain an Environmental Focus Section and Rotating Displays at Mountain View Public Library

Statement of Issue

To enable the complete turn-around that our city needs to reach its environmental sustainability goals, it will be necessary to engage the public in any way possible.

Our library is very well used and in particular has a wonderful children's section, and in the words of one of our esteemed Council Members during the May 19th Public Input Meeting..."The key to Green is the kids."

Although we have a great library, there remains a lack of focus on environmental concerns. An ability to read and learn about the environment in which we live, and having the resources to research our impacts is a great step towards effecting environmental change.

Public knowledge leading to individual environmental efforts will only be the beginning. Using this knowledge, citizens will take their efforts to schools, workplaces, and to their community.

Recommendation

It our recommendation that the City assist and encourage the Library to create and dedicate a specific, visible area of display and shelving to Environmental concerns. This should be in the form of a permanent display or kiosk, supported by readily available reference materials, and a prominent rotating display, possibly based on a monthly subject of focus within the sustainability realm. We would also propose a special display in the children's zone, including special programs and lectures, programs, contests and/or other activities aimed at raising environmental awareness. This has been achieved in many libraries. For example, in San Francisco Public Library there is a whole section including movies, magazines, books and special exhibits related to climate change and environmental stewardship.

Mountain View Library already owns a number of relevant publications, and there is already a display in the magazines section with some recommended books. Improving this collection is critical. The City could suggest 'Book Sponsorship' opportunities as a method of creating further outreach possibilities and community awareness.

Members of this workgroup assisted Library Staff during the month of May to assemble a special display in the Children's Section, giving information and capturing ideas from the younger generation. They are the ones who will deal with our efforts in years to come, and their insights are invaluable. Please see Appendix B for some examples.

Environmental Impact

- Knowing about how much CO₂ we put in the atmosphere, we can truly help to reduce our emissions and mitigate climate change.
- Children will know about those new issues and could teach their adult family members how to behave with the recycling, garbage cans or car emissions.
- All patrons of the library will become more aware of the problem and the solutions to the problem, and will carry that knowledge outside, supporting the aforementioned 'bandwagon effect'

Fiscal Impact

- It is expected that the cost of implementation of this recommendation will be in the Very Low (<\$10,000) to Low (<\$10,000 to \$30,000) categories. Books and materials can be provided via City Grants, or specific fundraising efforts by City or Staff requesting donations of materials are sure to elicit a positive response.
- The costs of implementation will be mitigated by the benefits of encouraging public participation.

Obstacles

- Funding for acquisition of new books by the library.
- Management of fundraising, staff input and selection of materials.
- Ensuring that the new display is refreshed and updated to remain appealing and interesting to the public.

Partnerships

- Donors, both individual and business
- Friends of the Mountain View Library

Title: Sponsor Sustainability Tabling and Outreach at Local Events

Statement of Issue

Regular contact with the public is an important way to generate awareness for environmental sustainability activities being done by and in the City of Mountain View. Partnering with events already taking place in the community is an efficient way to do outreach. Specific Mountain View public events to consider for partnerships are the Farmers’ Market, Thursday Night Live street fairs, A la Carte and Art, and the Art and Wine Festival.

Recommendation



The City should support local tabling at local events throughout the year to promote sustainability activities taking place in Mountain View. Ongoing tabling at events throughout the year with at least one table providing information from the City and green businesses, government agencies, community groups, and nonprofits.

Use of tabling is important in order to educate and inform the public, encourage individual action, receive valuable public input, and strengthen community ties. Each of these events could provide cross-benefit with the Task Force’s proposed Outreach Campaign by providing a venue for distribution of materials and information relating to the City’s ongoing sustainability outreach efforts.

We are asking the City to:

1. Officially agree that ongoing tabling is a beneficial outreach opportunity and encourage these efforts.
2. Provide assistance for any relevant approval processes.
3. Consider supplying initial tabling materials (table, tablecloth, shade tent, brochure holders, etc.) or funds to purchase them.
4. Support the encouragement of local businesses and community groups to participate in these tabling opportunities.

Environmental Impact

- Without community outreach, sustainability efforts by the City that involve public participation and/or approval are more likely to fail.
- Doing outreach at events already taking place cuts GHG emissions since many people will already be in the area instead of making a separate trip to the venue.
- Tabling opportunities could assist local business and organizations in spreading the word about their programs and services. This could help synergize with the Green Business proposal especially for those business that are scattered throughout the city.
- If a City green logo is adopted, public outreach can create brand recognition for it. A logo would also help provide a banner under which to promote the ongoing tabling. This can create community pride in local environmental activity and could lead to increased participation.

Fiscal Impact

- Costs for tabling will be dramatically reduced by having infrastructure (setup, security, and clean-up) in place from events that are already taking place. Advertising costs can also be cut by co-promotion with event partners.
- Utilizing volunteers to staff the table and to perform various functions at the green fair will keep costs to a minimum.
- Sponsorship from businesses could have the potential to offset all costs. Donations could be found for green giveaways, such as CFLs, re-usable shopping bags, bike maps.
- Considering the above, it is likely that the cost of this recommendation could be categorized at Very Low (<\$10,000) for the short term, and Low to Medium (\$10,000 to \$30,000) in the mid to long term time frames.

Obstacles

- Unforeseen legal or bureaucratic issues preventing event partners from expanding the space of their events to accommodate a table or a larger fair.
- Limitations on time and energy from the community for coordination and volunteer people power to make the events an ongoing activity.

Partnerships

- Arbor Day, City of Mountain View
http://www.ci.mtnview.ca.us/city_hall/comm_services/forestry/arbor_day.asp
- Mountain View Farmers' Market: California Farmers' Market Association
<http://www.cafarmersmkts.com/mtnview.html>
- Thursday Night Live, City of Mountain View
<http://www.ci.mtnview.ca.us/news/displaynews.asp?NewsID=171>
- Mountain View Central Business Association
<http://www.mountainviewdowntown.com/events.html>
- A la Carte and Art, Mountain View Central Business Association
<http://www.mountainviewdowntown.com/events.html>
- Art and Wine Festival, Mountain View Chamber of Commerce
<http://www.chambermv.org>
- Other entities to partner with for tabling and green fair efforts:
Acterra, Cool Cities, Sierra Club's Loma Prieta Chapter, Step it Up

Title: Explore Implementation of Regional and/or City Services and Sustainability #311 Call Center Line

Statement of Issue

In order for the City, its residents, and those who work in Mountain View to complete city-related tasks in the most efficient and effective manner, it is essential that easy-to-use and accessible information-gathering and reporting tools are made available to them. This is as true for environmental sustainability and greenhouse gas (GHG) emissions reductions efforts as it is in the general case.

Recommendation

The Task Force recommends the City explore implementing a “one-stop shopping” call center so that those in Mountain View can reach any department or service provided by the City. For environmental sustainability issues, such calls routed through the center could include those related to:

- Recycling
- Energy and water usage
- Codes and permits that cover renewable energy hardware installations.

This call center would consolidate calls for the City’s services, and simplify the need for outreach for citizens to report waste, damage or breach of environmental concerns as well as code violations and any other number of city concerns.

Value add could be realized for services not yet provided by the City; for example, including the ability to forward calls for public comments portions of webcast meetings. Further, if callers to the 311 phone line could be transferred to non-City or Santa Clara County services as well, the more valuable and widely used the program might be. Not only would this program provide a valuable service to the community, it could be an important tool for transferring information related to environmental sustainability and GHG emissions reductions between residents and City representatives.



311 programs in our region: Dark grey = Municipal 311 (Realized), light grey = Planning or implementation stage (Program on Networked Governance, http://www.hks.harvard.edu/netgov/html/311_N11_map_us_canada_government_call_center_cirm.htm)

Environmental Impact

The impact of this program would be more qualitative than quantitative, and its impact on environmental sustainability and GHG emissions reductions would be indirect and essentially not measurable; however, New York City uses tracks calls placed over their 311 phone lines to gather important data, such as the number of times contact is made with particular services, how long it took for a call to be answered or returned, and how successfully issues were resolved on average. Data such as this could be valuable to the City in tracking its success regarding implementing programs related to environmental sustainability and GHG emissions.

Fiscal Impact and Synergies

The working group estimates that costs for implementing the program would be very high, and costs for administrating the program would be high on an annual basis. Some of the costs could be mitigated by sharing the costs with other local governments.

The working group has identified synergies with the Community Outreach and Green Business Working Group recommendation titled “Complete U-Turn Outreach Campaign,” which should include information about the 311 program, and with the Water Efficiency working group, which recommends a specific “water hotline” for the City.

Obstacles

This program can only be implemented successfully if the City is able to allocate necessary funding and staffing to plan and set it up initially, and to administrate it on an ongoing basis.

Partnerships

If Mountain View chooses to share this program with one or more neighbor cities, those cities would be partners in the implementation and administration.

Title: Create Awareness of the Impacts of Transportation and Alternatives to Traditional Methods and Fuels

Statement of Issue

Soaring increases in gas and diesel costs have levied an unbidden financial burden on all Mountain View residents. It's quite possible that rapid energy cost increases will turn out to be the biggest challenge the Mountain View community has ever faced.

In addition, the environmental impacts of traditional transportation methods pose the highest contribution to Greenhouse Gas (GHG) Emissions.

Recommendation

We recommend that Mountain View embrace an ongoing leadership role as promoter and coordinator of transportation and renewable energy related information sharing. Specific tasks, such as teaching efficient driving habits, can have positive effects almost immediately (Short term). The movement to cleaner and domestic fuels will take longer. (Medium to long term)

Specific recommendations:

1. Position Mountain View as a Silicon Valley transportation and renewable energy awareness center.
2. Expand upon and publicize the City's already substantial efforts to reduce GHG by the use of hybrid vehicles –sign-write these vehicles to share City efforts with the community.
3. Sponsor alternative energy and transportation outreach that offers businesses and residents the ability to share information.
4. Hold an alternative transportation and renewable energy information festival. Art and wine can be included.
5. Dedicate a section of the City's website to the ongoing learning of transportation and energy awareness.
6. Offer courses in economic driving skills and/or explore the use of simulators to teach economic driving.
7. Hold economic driving competitions within the city and/or between neighboring cities.

Environmental Impact

Promoting more efficient driving and the use of non-fossil fueled transportation methods will lead to a cleaner, safer and healthier environment as well as reducing the GHG emissions produced. Additional benefits will be:

- Lowered noise levels and cleaner air.
- Streets safer for pedestrians and bicyclists.
- Money formerly sent abroad to pay for oil can be redirected to environmental restoration and improvement.
- Health and environmental issues associated with the burning of fossil fuels will be reduced.
- Oil spills, land and groundwater contamination can be reduced.

Fiscal Impact

Devoting resources to an ongoing campaign of information sharing may be the least expensive and most expedient method of mitigating the inevitable fiscal impacts of escalating transportation and energy costs.

- Establishing Mountain View as a leader in the promotion of alternative transportation and renewable energy encourages business investment within the city, resulting in increased revenue and employment opportunities.
- Helping citizens save money on transportation and energy costs helps keep those savings circulating within the community.
- Lowering pollution levels lowers the cost of pollution related health services throughout the community.
- The costs of implementation of this Awareness Outreach could be covered by the complete outreach campaign discussed in the first recommendation regarding general outreach.

Obstacles

Redirecting the momentum of nearly 100 years dominated by gasoline and diesel transportation will be no small undertaking.

- The stifling emotions of fear, uncertainty and doubt over this issue will require the continued diligent application of education, clarity and decisiveness.
- There may not be good models of communities who have taken on the role of transportation awareness provider.
- Some may find the task overwhelming and choose to wait for the return of \$1 gasoline.

Partnerships

The enormous task of improving our current transportation system should create a natural openness toward entertaining partnerships.

- Partner first with local residents.
- Partner with local businesses, including Google, that are currently taking a lead in many areas of advanced transportation technology.
- Partner with nearby communities to coordinate smoother transportation between cities and to share pertinent transportation related information.

Title: Provide Encouragement for the Use of Hybrids, Plug-in Hybrids and Alternative Fuel Vehicles

Statement of Issue

It is widely accepted that conventional combustion-engine vehicles are proving to contribute greatly to our GHG emission problems. The more focus that can be placed on alternative-powered vehicles the better.

Plug-in hybrids and electric vehicles are able to charge their batteries from any source of electricity to supply some or all of their power. This reduces GHG emissions significantly and reduces fuel costs.

Plug-in hybrids run on battery power for shorter trips and use conventional fuels for unlimited range. Conventional hybrids, while still using conventional fossil fuels greatly increase the fuel efficiency while remaining more mainstream and accessible to the general populace.

Electric vehicles have a limited range that easily satisfies most daily driving needs.

Recommendation

Short term (1-12 mos.):

- Participate in the Plug-In Partners Program. Participants agree to consider purchasing Plug-In Vehicles when they are available. The Program presents auto makers with an aggregate “soft” order from participants to encourage the manufacture of Plug-In vehicles.
- Incent local gas stations to provide alternative fuels

Medium term (1-3 yrs.):

- Reward drivers of conventional hybrid, plug-in hybrid, alternative fuel and pure electric vehicles by providing preferential parking in downtown and high-use areas.
- Consider transitioning some of the City fleet to Plug-In Hybrids or Electric Vehicles. This could be a conversion of current hybrids as the technology becomes readily available.
- Use appropriate City vehicles as a billboard to advertise that Mountain View is dedicated to sustainability.
- Participate in pilot Vehicle to Grid projects (where plugged in vehicles get reduced electric rates by providing power to the electric grid during peak use times).
- Apply for grants from appropriate agencies and organizations to help finance above items.

Long term (3+ yrs.) solution: Develop requirements or incentives that encourage use of Plug-In vehicles and hybrid vehicles citywide. These could include:

- Require parking for commercial buildings offer vehicle charging stations. Have new residential buildings wired with outlets for charging Plug-In Vehicles.
- Provide dedicated parking for Neighborhood Hybrid and Electric Vehicles.

Environmental Impact

- Conventional Hybrid vehicles provide gas mileage that is substantially better than standard vehicles, reducing emissions and usage of non-renewable resources.
- A Toyota Prius converted to a Plug-In Hybrid has 66% less CO₂e per mile than the average vehicle in the U.S. fleet¹³. When auto makers sell a vehicle designed from the start as a Plug-In Hybrid it will be much more efficient than a converted car, offering even better GHG reductions.
- Ongoing reductions in GHG intensity of our electricity supply will allow Plug-In vehicles to provide improving GHG reductions over time.

Fiscal Impact and Synergies

- Joining the Plug-In Partners Program costs nothing and only requires estimating the City's expected vehicle purchases. These purchases would be recommended as a replacement cost that would ordinarily be met on an at-need basis.
- Hybrid vehicles pose a marginal extra cost to the purchaser, which can be easily recouped in gas mileage savings, but at no cost to the City.

Generally, the cost of preferential parking to the City would fall into the Very Low category, with less than \$10,000 being required for re-allocation and sign writing of existing parking spaces. Future development could build in this requirement at no extra cost.

The City's cost of installing plug-in capabilities would also be limited to City vehicles and may be mitigated by the use of grants.

The cost of sign writing these vehicles is covered in Recommendation 11-1.

Obstacles

- Purchasing Plug-in hybrids or pure electric vehicles: Since they are expected to be available from multiple manufacturers only in 2010, it is too early to reliably estimate cost. For economic analysis see the report titled "How to Use Life Cycle Analysis Comparisons of PHEVs to Competing Powertrains" from the Argonne National Laboratory (<http://www.transportation.anl.gov/pdfs/HV/501.pdf>).
- Requiring charging stations in shared parking areas such as multifamily housing and commercial parking lots presents obstacles such as:
 - Determining who pays for electricity, or finding a way to charge users appropriately.
 - Developing standards for safe and effective public charging-facility designs.
 - Providing preferential parking may meet with some opposition from standard vehicle drivers, and may take some enforcement.

Partnerships

Plug-In Bay Area and the Silicon Valley Leadership Group are working to familiarize Bay Area cities with this technology and to assist them in joining the Plug-In Partners' national campaign (see <http://www.pluginbayarea.org>).

¹³ See report at <http://www.rechargeIT.org> documentation at <http://www.google.org/recharge/dashboard/calculator>

Appendix A: Secondary Recommendations

These were a few of the initial recommendations that were not included in this report due to time constraints:

1. Bring Your Own Bag initiative
2. Environmental Presentation Schedule – classes and meetings
3. Outreach In A Box
4. Regular Banner across El Camino
5. Partnerships with private outreach such as the Voice, radio, local business.
6. Window decals to advertise green citizens
7. Encouragement of vocational training – Green Collar jobs
8. Sister City Competition
9. Ongoing Environmental group

Appendix B: References and Web Sites

Recommendation 11-1:

- MVEST Communications Kit In A Box:
<http://sustainablemountainview.pbwiki.com/f/Comm-KitInBox.doc>
- Community Outreach and Green Business Working Group files:
<http://sustainablemountainview.pbwiki.com/f/Comm-OutreachCampaign.doc>
<http://sustainablemountainview.pbwiki.com/f/Comm-logo.doc>
- City of Palo Alto Community Environmental Action Partnership (CEAP)
http://www.city.palo-alto.ca.us/environment/doing_your_part/ceap.asp

Recommendation 11-2:

- Community Outreach and Green Business Working Group files:
<http://sustainablemountainview.pbwiki.com/f/Comm-CitizensCollaboration.doc>

Recommendation 11-3:

- Community Outreach and Green Business Working Group files:
<http://sustainablemountainview.pbwiki.com/f/Comm-SchoolsYouth.doc>

Recommendation 11-4:

- Community Outreach and Green Business Working Group files:
<http://sustainablemountainview.pbwiki.com/f/Comm-PublicSignsArt.doc>

Recommendation 11-5:

- Community Outreach and Green Business Working Group files:
<http://sustainablemountainview.pbwiki.com/f/Comm-Businesses.doc>
- Lisa Rose, Santa Clara County Green Business administrator, Lisa.Rose@aem.sccgov.org, 408-282-3166

Recommendation 11-6:

- Community Outreach and Green Business Working Group files:
<http://sustainablemountainview.pbwiki.com/f/Comm-Library.doc>
- In May, 2008 a display was set up in the Children's Services section of Mountain View Library with the cooperation of Karin Bricker. Karin indicates that she would be willing to cooperate in future efforts. Children were asked to fill out cards and place in a suggestion box, using the theme "My green idea for Mountain View."

Following are some of the answers. (Note that there are some mistakes—that's is way it was written.)

PERSON	COMMENT
Sarafina Smith (Age 10)	To have a day where everybody is supposed to clean up their school.
Miles (Age 6)	Plant trees.
Logan (Age 6)	It's so sunny in Mountain View. Why not add more solar panels?
Katia Gibson (Age 9)	For every garbage bag you throw away, plant a seed, even from a fruit you put in the garbage can.
Julianne Wilson (Age 10)	Have a trash parade so we can pick up the trash.
Daniel Clark (Age 16)	If money would permit, convert government vehicles to run on hydrogen, biodiesel, or other eco-friendly energy sources.
Chris (Age 7)	Use green lights.
Karin Merchant (Age: 6)	Have an event about it for families.
Josephine Hong (Age 9)	Is to pick up trash and to make our mother earth more beautiful by planting more plants.
Jamie Kotcher (Age 12)	Promote planting of trees throughout the schools.
Susan Barber (Age undisclosed)	Bike racks at MVCPA in front where they can be seen!
Lani Takano (Age undisclosed)	Create more bike lanes throughout Mountain View.
No name (Age 14)	Clean the trash up at Castro School, as it is filthy by the fences.
Martin O'Leary (Age 40)	Use LED lighting. Create better parking for hybrid and electric vehicles.
Cathryn Krajewski +Sarah (Ages 5 / 36)	Better bike racks at community center in Rengstorff Park.

- Mountain View Public Library: http://www.mountainview.gov/city_hall/library/default.asp
- Environmental Center, San Francisco Public Library: <http://sfpl4.sfpl.org/librarylocations/main/envir/envir.htm>
- Wiki tool for book recommendations, <http://sustainablemountainview.pbwiki.com/Recommended-books>
- Reference Desk (in charge of the cases for displays also) Kathleen Long, 650-526- 7035
- Librarian in children's services Bobbi Weesen-Baer, bobbi.weesen-baer@mountainview.gov
- Children's services supervisor Karin Brickner, Karin.Bricker@mountainview.gov

Recommendation 11-7:

- Community Outreach and Green Business Working Group files: <http://sustainablemountainview.pbwiki.com/f/Comm-PublicFairs.doc>

Recommendation 11-8:

- Community Outreach and Green Business Working Group files: <http://sustainablemountainview.pbwiki.com/f/Comm-311.doc>
- Albuquerque 311 Citizen Contact Center, <http://www.cabq.gov/crm/>
- Chicago 311 System Overview, http://egov.cityofchicago.org/webportal/COCWebPortal/COC_EDITORIAL/MakingChicagoWorkBetter_1.pdf
- City of Dallas 311 Info and Services, <http://dallascityhall.com/services/services.html>
- NYC 3-1-1 services, <http://home.nyc.gov/html/311/home.html>
- Los Angeles information on 3-1-1, <http://www.laparks.org/311.htm>

- Information on Pittsburgh's 3-1-1 (Pittsburgh Post-Gazette), <http://www.post-gazette.com/pg/06297/732393-53.stm>
- National Institute of Justice. (2005), Calling 311: Guidelines for Policymakers, NCJ 206257, Washington, DC, U.S. Department of Justice, <http://www.ojp.usdoj.gov/nij/pubs-sum/206257.htm>
- National Institute of Justice. (2005), Managing Calls to the Police With 911/311 Systems, NCJ 206256, Washington, DC., U.S. Department of Justice, <http://www.ojp.usdoj.gov/nij/pubs-sum/206256.htm>
- International City/County Management Association (ICMA), 311 and Customer Service Technology Study, <http://www.icma.org/311study>
- City of New York 311 program.¹⁴ For information, contact Kunal Malhotra, Director of Legislation and Budget, Office of Council Member Gale A. Brewer, 250 Broadway, Room 1744, New York, NY 10007, Kunal.Malhotra@council.nyc.gov, Office: 212-788-6975, Cell: 347-461-4329
- Andre Harrison, Communications Operations Supervisor, Mountain View Police Department, 650-903-6822, for questions about how the MVPD implements its communications infrastructure and to what extent they share resources with other cities and counties in the region.
- Jim Keane, City of Palo Alto City Manager, developed a centralized complaint system for Tucson, Arizona when he was city manager there.^{15 16}

Recommendation 11-9:

- Community Outreach and Green Business Working Group files:
<http://sustainablemountainview.pbwiki.com/f/Comm-TransAwareness.doc>
- A short video explaining the basic tips of economy driving.
Economy Driving: The Next Time You Get Gas (1993)
<http://www.archive.org/details/economy-driving>
- Edmonds puts gas saving tips to the test.
WE TEST THE TIPS
<http://www.edmunds.com/advice/fueleconomy/articles/106842/article.html>

¹⁴ http://www.nyc.gov/html/doitt/html/about/about_311.shtml

¹⁵ New City Manager Ready for Challenge, Palo Alto Daily News, June 28, 2008.

¹⁶ Department of Neighborhood Resources: 792-CITY is the number to call when you don't know where to call for service. If you are seeking government services from the City, we will make that connection for you. If you are seeking government services from entities other than the City of Tucson, we will provide that information. http://www.nyc.gov/html/doitt/html/about/about_311.shtml