

Appendix D: Reduction Measure Selection Process

In this appendix:

D1: List of 125 reduction measures considered at the Sept. 16, 2008 CAP Subcommittee meeting

D2: List and description of 31 reduction measures chosen for community consideration by the Subcommittee *

D3: Final list of 24 reduction measures chosen by the subcommittee and community for inclusion in the CAP**

* These reduction measures are referred to as "goals" in the Climate Action Plan

** Some of the 24 reduction measures were combined for clarity in this draft Climate Action Plan

Appendix D
Summary of Updates

Sector	Emission Source	Former Output Data CO ₂ e (metric tons/year)	Updated Output Data CO ₂ e (metric tons/year)	Description of Update
Residential	Electricity Consumption	16,320	16,320	No change.
	Natural Gas Consumption	32,858	32,858	
	<i>Subtotal</i>	49,178	49,178	
Commercial (Industrial)	Electricity Consumption	29,060	37,352	In the former version, industrial natural gas and PG&E electricity were included in the commercial outputs, yet Industrial Direct Access Electricity was in an “industrial” category. In this version, all industrial energy was put into the commercial sector for clarity and consistency.
	Natural Gas Consumption	17,267	17,267	
	<i>Subtotal</i>	46,327	54,619	
Industrial	Electricity Consumption	8,293	--	Industrial Direct Access Electricity was combined with Commercial electricity for consistency.
	Natural Gas Consumption	--	--	
		8,239	--	
Transportation	Highway Gasoline and Diesel Consumption (VMT)	60,951	60,947	The transportation sector was updated with an estimate of CalTrain diesel consumption from San Carlos weekday commuters. See Appendix C for the methodology used. CO ₂ e levels for highway and community on-road travel changed slightly with new emissions coefficients from ICLEI.
	City Roadway Gasoline and Diesel Consumption (VMT)	52,833	52,834	
	CalTrain Diesel consumption for San Carlos commuters	--	702	
	<i>Subtotal</i>	113,785	114,483	
Waste	Lifetime Decomposition of Waste Generated	11,422	12,590	While the 2005 tonnage of waste remains the same, the methane capture, CO ₂ e coefficients, and methodology changed between the original and updated inventory.
	Lifetime Decomposition of Alternative Daily Cover	188	187	
	<i>Subtotal</i>	11,610	12,777	
Total		229,193	231,057	

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Climate Action Plan Reduction and Adaptation Strategies for Consideration by the City of San Carlos

The purpose of this list is to inform the San Carlos CAP Subcommittee's efforts to propose 40-60 emission reduction measures for use at the September 25, 2008 public meeting. The eventual goal is to arrive at 24 reduction measures that can be used to develop or support programs to reduce the City's government and community emissions. Following ranking of preference, the 24 most preferred measures will be analyzed to determine the amount of CO2e reduced per unit of cost. This spreadsheet includes emission reduction measures and includes adaptation measures that won't reduce emissions, but will support the City's development of emission reduction strategies.

Sub-Category	Strategy	Ca Attorney General	Alameda 25% below 2005 by 2020	Aliso Viejo/Clairemont Various reduction targets	Berkeley 33% below 2000 by 2020	Marin 15% below 2000 by 2020	Palo Alto 15% below 2005 by 2020	San Diego 15% below 1990 by 2020	San Francisco 20% below 1990 by 2010	San Mateo 1990 levels by 2012	Sonoma 20% below 2000 by 2020
Energy Use											
Green Building / Energy efficient building design	1	<i>Site buildings to take advantage of shade, prevailing winds, landscaping and sun screens to reduce energy use.</i>	x								x
	2	<i>Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings.</i>	x							x	
	3	Adopt a Green Building Standard for new development. Apply LEED standard for a large-scale commercial buildings and Build it Green (BIG) standards for smaller scale residential properties. Provide additional training for zoning and building permit plan-checkers to enable them to become more familiar with the industry's latest green building techniques.		x	x	x				x	
	4	Consider establishing energy efficiency standards for new construction and remodel projects that exceed the State's Title 24 energy standards applied to the City's climate zone.			x						
	5	Develop a wood-burning prohibition ordinance to reduce air pollution for new residential construction	x								
	6	Require light colored, high albedo (white content) rooftops and pavement to prevent the heat-island effect and lower air conditioning use.		x							x
	7	Identify and develop financial incentives, low-cost financing tools, and targeted tax rebates to enable increased green building in the private sector.			x			x		x	
Enhance energy services and standards for existing residential properties.	8	Expand and better integrate programs for low-income households such as the distribution of CFL lights and water-conserving showerheads.			x			x	x		
	9	Update or create a Residential Energy Conservation Ordinance (RECO) and consider using RECO to establish home energy ratings.			x						
	10	Perform energy-efficient lighting retrofits and/or home energy audits. Expand the distribution of free or subsidized energy and water saving devices and services to the mass market.	x		x	x					x
	11	Identify opportunities for energy savings in renter-occupied buildings.			x						
Enhance energy services and	12	<i>Install energy efficient heating and cooling systems, appliances, and equipment, and control systems.</i>	x								
	13	Reward businesses that develop and implement energy conservation programs including energy efficiency improvements and fuel switching (including use of solar energy), heat recovery/co-generation systems.									x

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standards for existing commercial properties.	14	Review and update the City's Commercial Energy Conservation Ordinance.			x						
	15	Identify voluntary opportunities to implement energy improvements at the time of sale.			x						
	16	Expand energy saving opportunities designed specifically for small businesses.			x						x
	17	Expand energy saving opportunities for large commercial and industrial properties									
Increase use of energy-efficiency in city-run buildings and services	18	<i>Install LED lights for traffic signals, street lights, and other outdoor lighting.</i>	x			x					
	19	<i>Limit the hours of operation of outdoor lighting.</i>	x								
Establish Financing Programs to Support Emission Reduction Strategies	20	Develop a tax rebate program for efficiency improvements in businesses.									x
	21	Establish financing programs for efficiency improvements in the community, for example, revolving loan funds through bonds, taxes, etc.									

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Increase renewable energy use.	22 Identify opportunities for increasing solar system installations, wind energy generation, solar and tankless hot water heaters, energy efficient ventilation and air conditioning. Research biomass energy opportunities.			x							
	23 <i>Install solar panels on carports and over parking areas.</i> This could be required by the City in new large-scale residential and commercial projects.	x									
	24 <i>Use combined heat and power in appropriate applications.</i>										
Support and develop green power purchasing	25 Support legislation to allow the City to be compensated for exported solar power.							x			
Solid Waste											
Increase commercial recycling, composting, and waste reduction	26 Continue and enhance cooperative outreach efforts with StopWaste.Org and other entities to encourage increased participation in existing recycling/composting programs				x				x		
	27 Facilitate connections between food rescue organizations and Palo Alto businesses to reduce the amount of food discarded into the waste stream.				x		x				
	28 Consider a ban on polystyrene foam to-go containers		x								
	29 Expand efforts to work with local businesses to reduce the use of disposable items such as plastic bags and take-out containers.		x		x		x				
Implement a "Zero Waste" policy	30 For municipal operations, establish a Zero Waste policy. Everything would be recycled, no or minimal disposables would be allowed, and composting would be required.		x				x				
Establish waste reduction policies for construction and demolition of buildings	31 Design and implement more effective "space allocation ordinances" to ensure that new and remodeled commercial buildings provide adequate space for storage of recycling materials, i.e., refuse enclosure areas to accommodate recycling and composting bins and a convenient recycling system for building occupants.						x		x		
	32 Establish a construction waste reduction ordinance to reuse and recycle construction and demolition waste.	x	x		x	x	x		x		
Increase residential recycling and composting	33 Target expanded recycling outreach and services to multi-family residential buildings, including apartment buildings, fraternities and sororities, and cooperative housing.				x		x		x		
	34 Ensure that new waste collection and processing service RFP includes Zero Waste service options (e.g., expanded organics collection, expanded C & D debris collection and container inspections upon collection).						x				

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	35 Enforce residential recycling and fine residents and landlords for not recycling or recycling incorrectly, including composting garden waste.							x			
Mandate recycling and green waste programs at large events, in public areas, and for city buildings	36 <i>Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas.</i>	x				x		x			
	37 Support development of a Sustainable Purchasing Policy and Implementation Plan										
	38 Make recycling mandatory at public events.			x		x					
Increase landfill and wastewater treatment efficiency	39 <i>Recover by-product methane to generate electricity.</i>	x									
	40 Propose materials to be banned from landfills in the city					x					
	41 <i>Install an anaerobic digester at wastewater treatment facilities.</i>	x			x						
Support alternate collection methods for recyclable materials	42 Increase metals recycling.							x			
	43 Find a location for a local recycling drop-off center and household hazardous waste facility. Support community drop-off, buy-back, and collection			x		x					

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Extend producer responsibility for product waste	44 Support policies at other levels of government that place the responsibility for product waste on the brand owner or manufacturer.			x		x					
product waste	45 Enhance outreach and education to local businesses about the waste embodied in products and packaging and create incentives.			x							
Transportation and Land Use											
Encourage mixed-use, high density, infill development to reduce vehicle trips	46 <i>Include mixed-use, infill, and higher density in development projects to support the reduction of vehicle trips, promote alternatives to individual vehicle travel, and promote efficient delivery of services and goods.</i>	x		x	x	x				x	x
	47 <i>Develop "brownfields" and other unused or defunct properties near existing public transportation and jobs.</i>	x									
	48 Create a work/live ordinance to provide great opportunities for reduced work-related commutes					x					x
	49 Provide for a mixture of complementary retail uses to be located together to create activity nodes and serve adjacent neighborhoods and to draw visitors from other neighborhoods and from outside the area (e.g. sports facilities).				x						
	50 Increasing housing density near transit (transit overlay zone or transit oriented development)		x	x	x	x				x	x
Provide for convenient and safe local travel	51 Maintain a high level of connectivity of the roadway network. Minimize cul-de-sacs and incomplete roadway segments.			x							
	52 Apply creative traffic management approaches to address congestion in areas with unique problems, particularly on roadways and intersections in the vicinity of schools in the morning and afternoon peak hours, and near churches, parks and community centers.				x						
	53 Work with adjacent jurisdictions to address the impacts of regional development patters (e.g. residential development in surrounding communities, regional universities, employment centers, and commercial developments) on the circulation system.				x						
Incorporate non-vehicular modes of transportation into project design	54 <i>Incorporate public transit into project design</i>			x		x					
	55 <i>Incorporate bicycle lanes and routes into street systems, new subdivisions, and large developments.</i>			x		x					
	56 Create travel routes that ensure that destinations may be reached conveniently by public transportation, bicycling, or walking.	x		x							
	57 Encourage local employers to hire locally in order to reduce the distance those employed in the city have to travel.				x						

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Promote land use policies that reduce personal vehicle travel	58	Revise minimum/appropriate parking requirements, including shared parking and disincentives for single-occupant autos.									
	59	Consider reducing or eliminating on-site parking requirements and adjusting parking pricing.			x		x				
	60	Require transportation demand management (TDM) programs and develop monitoring programs to track effectiveness	x				x				
	61	Pedestrian-oriented street design, including direct, short, convenient linkages.		x							
Preserve and create open space and parks	62	Expand "green" park design and sustainable maintenance practices.									
	63	Coordinate with local and regional plant experts in selecting tree species that respect the natural region in which San Carlos is located, to help create a healthier, more sustainable urban forest.		x							
	64	Require the planting of street trees along streets and inclusion of trees and landscaping for all development projects to help improve airshed and minimize urban heat island effects. Identify a specific percentage goal to achieve within 5 yrs.		x							
	65	<i>Preserve and create open space and parks. Preserve existing trees, and plant replacement trees at a set ratio.</i>	x								

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Increase car sharing and ridesharing opportunities as an alternative to single-occupancy driving.	66	<i>Promote ride sharing programs.</i>	x	x	x				x		
	67	<i>Create car sharing programs. Accommodations for such programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation.</i>	x	x		x	x				
	68	<i>Promote "least polluting" ways to connect people and goods to their destinations.</i>	x								
	69	Consider providing incentives or requiring that developers of new residential and commercial projects make spaces available for car share vehicles.			x						
Support trip reduction through employer-based programs	70	Provide bike parking and shower facilities		x							
	71	Create parking disincentives for single occupancy vehicles or provide parking cash-out programs.					x				
	72	Offer to enroll nearby employers in carpool match-up programs. Give preferential parking to carpooling vehicles.					x				x
	73	Consider alternative work hours (e.g. four-day work week or 10-7 to reduce rush hour traffic)		x							x
	74	<i>Limit idling time for commercial vehicles, including delivery and construction vehicles.</i>	x				x				
	75	<i>Institute a telecommute work program. Provide information, training, and incentives to encourage participation. Provide incentives for equipment purchases to allow high-quality teleconferences.</i>	x		x	x		x			
Encourage more fuel-efficient vehicles, electric vehicles, and other alternatively-fueled vehicles.	76	<i>Use low or zero-emission vehicles, including construction vehicles.</i>	x								
	77	<i>Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles.</i>	x		x						
	78	Convert more City vehicles to hybrid, electric, and alternative fuel vehicles.		x	x			x			
	79	Develop a program to reduce the use of 2-cycle combustion engines, including the enforcement of existing ordinances. Encourage the establishment of trade-in programs.		x							
	80	Offer prioritized parking for hybrid or alternative fuel cars.				x	x		x	x	
	81	Promote local bio-diesel market development.		x	x		x				
Discourage personal vehicle trips	82	Implement tiered vehicle registration fees based on vehicle size or emissions.					x				
	83	Price parking in the downtown and other commercial areas to discourage moving of vehicles between parking facilities (e.g. initial hour(s) more expensive than subsequent time when parked).							x		

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Improve the bicycle and pedestrian environment in the City.	84	<i>Incorporate bicycle-friendly intersections into street design.</i>	x	x	x	x		x			
	85	<i>For commercial projects, provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience. For large employers, provide facilities that encourage bicycle commuting, including, e.g., locked bicycle storage or covered or indoor bicycle parking.</i>	x	x	x		x	x	x		
	86	Guarantee emergency rides home for pedestrians and bicyclists.									x
	87	Provide ADA accessible sidewalks and paths.									
	88	Provide safe and convenient pedestrian and bicycle connections to and from town centers, other commercial districts, office complexes, neighborhoods, school and other major activity centers, and surrounding communities.			x						
	89	Encourage businesses or residents to sponsor street furniture and landscaped areas.			x						
	90	Provide for an education program and stepped up code enforcement to address and minimize vegetation that degrades access along public rights- of way.			x						
	91	Actively promote walking as a safe mode of local travel, particularly for children attending local schools - employ traffic calming methods such as median landscaping and provisions of bike or transit to slow traffic, improve roadway capacity, and address safety issues.			x						
	92	Partner with Cal train and other transit providers to improve bicycle access on trains and at stations.			x	x			x		
	93	<i>Create bicycle lanes and walking paths directed to the location of schools, parks, and other destination points.</i>	x		x				x		
Make public transit more	94	<i>Provide public transit incentives such as free or low-cost monthly transit passes.</i>	x		x	x					x
	95	<i>Provide shuttle service to public transit.</i>	x	x							x
	96	<i>Work with the school district to restore or expand school bus service.</i>	x		x		x				
	97	Expand local or regional bus service in range and/or frequency.			x		x		x		
	98	Work to provide a strong paratransit system that promotes the mobility of all residents and educate residents about local mobility choices.			x						
	99	Encourage convenient public transit service between San Carlos and airports. Work with Caltrain and BART.			x						
	100	Coordinate the different modes of travel to enable users to transfer easily from one mode to another.			x						

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convenient and accessible.	101 Enhance and encourage provision of attractive and appropriate transit amenities, including shaded bus stops, to encourage use of public transportation.		x								
	102 Create an alternative transportation funding priority list for the City's Capital improvement Program. The list should include project costs and funding sources.		x								
	103 Establish a service center for transit passes, route information, schedules, maps, car and van pool information and coordination.									x	
	104 Investigate the potential for real-time transit signage for bus lines.				x						
	105 Support regional efforts to implement improved bus service, including consideration of bus rapid transit (BRT).				x						

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Water Resources (As the supply of drinkable water decreases, our use of energy to filter and move that water increases. Therefore, this is not only an adaptation measure for a limited natural resource affected by climate change, but a reduction measure for energy use as well)											
Conserve water through building and site design	106	<i>Create water-efficient landscapes.</i>	x								
	107	<i>Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.</i>	x								
	108	<i>Design buildings to be water-efficient. Install water-efficient fixtures and appliances.</i>	x								
	109	Implement low-impact development practices to manage storm water and protect the environment.	x								
Increase or establish use of reclaimed/gray water	110	<i>Use reclaimed water for landscape irrigation in new developments and on public property. Install the infrastructure to deliver and use reclaimed water.</i>	x								
	111	<i>Use graywater (untreated household waste water). For example, install dual plumbing in all new development allowing graywater to be used for landscape irrigation.</i>	x								
Protect water resources and ensure flood protection	112	Continuously protect the ecological integrity of the City's primary drinking water source.									
	113	Work to provide exceptional flood protection.									
	114	Implement the Statewide Urban Water Conservation Council's water conservation best management practices.									
Create water conservation policy and enforcement	115	<i>Restrict watering methods and control runoff.</i>	x								
	116	<i>Restrict the use of water for cleaning outdoor surfaces and vehicles.</i>	x								
	117	<i>Provide education about water conservation and available programs and incentives.</i>	x								
Community Outreach and Education											
Incorporate Public education into each GHG reduction strategy	118	<i>Provide education on energy efficiency</i>	x	x	x						
	119	<i>Provide education about water conservation and available programs and incentives</i>	x			x					
	120	<i>Provide education and publicity about reducing waste and available recycling services</i>	x								
	121	<i>Educate the public about the benefits of well-designed, higher density development</i>	x								
	122	Sustain outreach to single-family homes regarding curbside recyclables and organic waste collection.			x		x		x		

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123	<i>Provide information on all options for individuals and businesses to reduce transportation-related emission. Provide education and information about public transportation.</i>	x									
124	Create a personal pledge for community member to sign along with strategies for them to decrease their personal carbon footprint Make a San Carlos "My Very Own Climate Action Plan" appendix that includes easy, intermediate, and advances options for community members to attain their reduction goal.			x							
125	Require that all recommended City Council actions include an analysis or evaluation of whether the action supports or is consistent with the reduction goals of the City. Mandate that every staff report about a Council action include a "Climate Change Analysis" much like the "fiscal analysis" that is already included.		x								

San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
Energy Use			
1	(1) Site Buildings to take advantage of shade, prevailing winds, landscaping and sun screens to reduce energy use.	Incorporate consideration of shade, prevailing winds, sustainable landscaping, and sun screening into building permit approvals. The California Attorney General recommends this measure.	These are natural, low-cost methods of reducing the urban heat island effect and lowering cooling costs for building owners. Some costs would be incurred to the City to address these issues in municipal codes, educate Staff, and enforce the issues. If the Green Building standard strategy (below) is chosen, this reduction measure will be unnecessary as Green Building requires sustainable siting.
2	(3) Adopt a Green Building Standard for all new development and major remodels. Apply a high LEED standard (silver or gold) for large-scale commercial buildings and Build it Green (BIG) standards for residential properties. Consider a lower certification (ex: LEED certified) for smaller scale commercial buildings. Provide additional training for zoning and building permit plan-checkers to enable them to become more familiar with the industry's latest green building techniques.	Green building standards certify and give guidance on how to make a building more efficient and reduce its effect on human health through better siting, design, construction, maintenance, and operation. The requirements would be based on building square footage for new development and on remodel cost for existing development. The Cities of Alameda, Berkeley, Marin, and San Mateo recommend a green building ordinance in their Climate Action Plans (CAPs).	This requirement would significantly lower the GHG emissions from new construction and eventually lead to decreased emissions from the commercial and residential sectors, which today create 41% of San Carlos' emissions. There would be increased costs to developers and a need for more Staff time.

San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
3 (4)	Consider establishing energy efficiency standards for new construction and remodel projects that exceed the State's Title 24 energy standards applied to the City's climate zone.	All new construction and additions have been required to meet minimum energy efficiency standards since 1978. The State of California is currently updating its Title 24 requirements for 2009. The City would consider establishing standards exceeding the State's standards at that time. For more information on Title 24 see http://www.energy.ca.gov/title24/ . The City of Berkeley recommends a similar measure in their draft CAP.	Benefits cannot be determined until the new requirements are released in 2009. However, electricity use is the cause of 23% of San Carlos' GHG emissions, so these standards could significantly reduce emissions. Costs would be staff time for writing the requirements into the Building Code and potential increased costs to developers and homeowners at the onset of construction.
4 (8)	Expand and better integrate programs that increase energy efficiency in low-income households.	Expand free services to low-income households, including: energy efficient appliances, window repair/replacement, water conserving showerheads, water heater blankets, energy saving light bulbs, attic insulation, and more. The Cities of Berkeley, San Francisco, and San Mateo have a similar measure in their CAPs.	It is important to protect all residents from climate change equally. There are numerous funding sources for programs such as these, including federal grants, the State of California Low-Income Energy Efficiency (LIEE) Program, and PG&E's Energy Partners Program.
5 (10)	Perform energy-efficient lighting retrofits and/or home energy audits. Expand the distribution of free or subsidized energy and water saving devices and services to the mass market.	Encourage residents to perform home energy audits and to follow up on implementation of the recommendations of the audit. The California Attorney General recommends home energy audits as a reduction measure.	This would be a way to reach out to homes built before the Title 24 standards came into effect in 1978. The program could benefit from partnerships with citizen-run organizations, PG&E, and auditors. Cost associated with Staff time for implementing, monitoring, and advertising the program.

San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
6 (16)	Expand energy saving opportunities designed specifically for small businesses.	It is especially difficult for small businesses to find the time or money to become energy efficient. This program would increase outreach to small businesses (less than 20 employees) and educate them about ways in which energy can be saved through lighting modifications, refrigeration, etc. The City of Berkeley draft CAP includes a similar measure.	Energy saving opportunities for small businesses could increase their revenue and decrease the City's GHG emissions. Cost associated with outreach and Staff time. Possible partnerships with PG&E or the Public Utilities Commission.
7 (17)	Expand energy saving opportunities for large commercial and industrial properties.	Large commercial and industrial businesses are already feeling the burden of increased fuel and electricity costs. PG&E and RecycleWorks.org already have services and/or staff to help these businesses, but it would be beneficial to have a City staff person to make sure businesses are up-to-date and aware of current services, information, and rebates.	There would be increased Staff time, but since the programs are run by other organizations there would be minimal additional costs.
8 (20)	Develop a tax rebate program for efficiency improvements in businesses.	Tax rebates would be offered upon completion of a major energy-saving improvement in order to lessen the monetary impact these improvements have on businesses at the onset. The Sonoma County CAP recommends a similar measure.	San Carlos' businesses create 20% of the City's GHG emissions. This rebate program would act as an incentive for more businesses to become energy efficient by decreasing their energy use and our emissions. It would result in decreased revenue to the City, however if a cap was created capping how many businesses were eligible to apply per year, the impact could be minimized and would result in a competitive process promoting timely efficiency improvements.

San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
9 (22)	Identify opportunities for increasing solar system installations, wind energy generation, solar and tankless hot water heaters, energy efficient ventilation and air conditioning. Research biomass energy opportunities.	Research and identify opportunities for incorporating these devices into municipal code language, installing them in City-owned facilities, and educating businesses about their benefits. Use state programs to encourage alternative energy and net-metering to provide additional emissions reductions. The California Attorney General recommends a similar measure.	These methods for decreasing GHG emissions are effective, yet not commonly used. Using them would establish San Carlos as a progressive, technologically aware city on the topic of climate change.
10 (19)	Implement reduction strategies included in the energy audit of City facilities. Continue to monitor City facility performance.	The City is currently working on auditing the energy performance of City owned and operated facilities. This measure is to implement the recommendations included in the audit to increase efficiency in these buildings. This measure was largely derived at the 9/16 meeting.	The energy-saving measures will save the City money on electricity while lowering its GHG emissions. It will also establish the City as an example for privately-owned facilities to follow.
11 (106)	Create water- and waste-efficient landscapes.	Efficient landscaping, also known as xeriscaping, reduces the amount of resources needed to maintain it by using native plants and efficient irrigation systems. These technologies could be used in City park renovations and encouraged in residential and commercial development. The Attorney General recommends water-efficient landscapes.	This measure saves water and thus the energy used for water filtration and movement. It also lowers the amount of yard waste sent to landfills and reduces demand on our supply of fresh water, which largely comes from the Hetch Hetchy reservoir. While the irrigation systems can cost more than traditional sprinklers, the planting cost is comparable to normal landscaping and requires less maintenance.

San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
12 (118)	Provide education on energy efficiency.	Improve existing efforts to educate the public about ways in which they can save energy in their homes and businesses. This is a common measure included in the Attorney General recommendations and in many CAPs.	This would lower energy use in San Carlos, a sector that today contributes 23% of our GHG emissions. There would be costs associated with outreach, but there are agencies and private organizations available for partnering opportunities.

Solid Waste

13 (30)	For municipal operations, establish a Zero Waste policy.	Under a zero waste policy, everything would be recycled, minimal disposables would be allowed, and composting would be required. This would require considerable cooperation with the local garbage and recycling collection firm as well as the South Bayside Waste Management Authority (SBWMA). The Cities of Alameda and Palo Alto include a similar measure in their CAPs.	A zero waste policy would significantly decrease the amount of waste sent to landfills. It would also decrease the GHG emissions from landfills, which currently accounts for 5% of the City's emissions. There may be an increase in collection fees to residents or the City as a result of subsidizing the service, but costs are unknown at this time.
14 (30)	Establish an environmentally preferable purchasing program (EPP) for government operations.	Environmentally Preferable Purchasing, or EPP, refers to buying products and services with reduced effects on human health and the environment. An EPP policy would require that environmentally preferable products be purchased when possible and reasonable. The US EPA provides substantial guidance on this issue here: http://www.epa.gov/epp/ . This measure was added at the 9/16 CAP Subcommittee meeting.	An EPP policy for local government operations would establish the government as an example for citizens to follow in order to decrease their GHG emissions. The City already purchases recycled paper and hybrid vehicles, but expanding into carpets, building construction and other fleet vehicles is possible and often results in saving costs in the long run.

San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
15 (32)	Enhance the existing construction and demolition (C&D) waste reduction ordinance to increase reuse and recycling of construction and demolition waste to 75%.	C&D materials can include lumber, paper, cardboard, metals, masonry (brick, concrete, etc.), carpet, plastic, pipe (plastic, metal, and clay), drywall, rocks, dirt, and green waste related to land development. San Carlos adopted a construction and demolition debris diversion ordinance (Zoning Ordinance Chp 8.05) in 2000. It requires a construction/demolition permit applicant to address their waste before the permit is approved. There are also minimum amounts of the waste that must be recycled or reused according to type. The City of San Carlos could consider increasing the total amount of diverted C&D material to 75%. C&D ordinances are recommended by the Attorney General and in the Alameda, Berkeley, Marin, Palo Alto, and San Francisco CAPs.	According to the California Integrated Waste Management Board, Construction and Demolition materials account for 10.4% of business disposal. A stricter ordinance could reduce this number. Additionally, it is often less expensive to recycle or reuse C&D material than it is to dispose of it. Organizations such as RecycleWorks.org have instruction manuals on how to recycle or find reuse for almost all materials.
16 (33)	Target expanded recycling outreach and services to multi-family residential buildings, including renter-occupied apartment buildings.	Increase recycling outreach to landlords and property managers about making recycling and compost bins available to tenants. The Cities of Berkeley, Palo Alto, and San Francisco have similar reduction strategies in their CAPs.	The amount of waste diverted from landfills would increase. Multi-family houses comprised about 32% of San Mateo County households in 2000, so there is a lot of potential for emissions reductions.

San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
17 (34)	Ensure that new Requests for Proposals (RFPs) for waste collection and processing services include Zero Waste service options (e.g., expanded organics collection, expanded C & D debris collection and container inspections upon collection).	This would require that new RFPs for waste collection include Zero Waste options (see above Zero Waste measure for explanation). A similar reduction measure is included in the Palo Alto CAP.	This would be a forward-thinking measure that would ensure that Zero Waste becomes a reality in San Carlos.
18 (38)	Make recycling mandatory at public events.	Public events are notorious for over-excessive packaging and disposable utensils, plates, and cups. Similar to the C&D requirements, public event permits would be conditional upon a waste plan. The event holder would have to agree to divert a certain amount of waste through recycling or composting in order to be awarded the permit. A similar reduction measure is included in the Palo Alto and draft Berkeley CAP.	This would increase public awareness of recycling and divert waste from landfills. There would be costs associated with staff time and education.

Transportation and Land Use

19 (46)	Encourage development that is mixed-use, infill, and higher density in order to support the reduction of vehicle trips, promote alternatives to individual vehicle travel, and promote efficient delivery of services and goods.	The principles of infill, high density, and mixed-use lead are also known as 'smart growth.' They are most effective when applied to a particular part of the City identified as needing infill development and increased vitality. A similar reduction measure is included in almost every Bay Area CAP and recommended by the Attorney General.	There are social benefits to these principles, including: better health, lower infrastructure costs, increased neighborhood vitality, and increased accessibility. There are also benefits to the environment because residents drive less. Mixed-use and higher-density development is already recommended through land use option three in the General Plan update process.
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San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
20 (50)	Increasing housing density near transit (transit overlay zone or transit oriented development).	Increasing housing density near transit is an excellent way to make a city more equitable, accessible, and lower greenhouse gas emissions from personal vehicles. The Cities of Alameda, Berkeley, Marin, San Mateo, and Sonoma County have similar reduction measures in their CAPs.	General Plan Land Use alternative 3 increases housing density consistent with this emission reduction measure. Implementing the alternative would mean decreased GHG emissions and a more economically and socially vibrant downtown.
21 (56, 88, 93)	Create travel routes that ensure that destinations may be reached conveniently by public transportation, bicycling, or walking. Provide safe and convenient pedestrian and bicycle connections to and from town centers, other commercial districts, office complexes, neighborhoods, school and other major activity centers, and surrounding communities.	Identify barriers to safe or convenient walking, biking, and transit ridership from major residential areas to public areas of interest (gyms, employment centers, schools, etc). This problem could be dealt with through one or more of the following: 1) Create a plan to address these problems and implement it, 2) Make it a condition for approval that new large-scale developments address transit, biking, and walking access to the location. The Attorney General recommends this measure.	As gas prices rise, residents of San Carlos will want to use alternative modes of transportation. The City should be prepared for this increase of walkers, bikers, and transit riders. This measure would require funding for bike lanes, sidewalk improvements, and transit signage, but would reduce traffic with the resulting reduced impacts to public works facilities.

San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
22 (64)	Encourage the planting of trees along streets to help improve airshed and minimize urban heat island effects by doing the following: a) Support community tree planting programs, b) require a specific tree coverage for all new development, and c) develop and implement a shading requirement for all City parking lots and streets.	Encompass the aforementioned measures in an urban forestry management plan that would do the following: support community tree planting, create a tree coverage percentage for all new development, require street trees to be planted at a certain rate per year, require that parking lots have a tree canopy. Tree planting is recommended by multiple CAPs, but this measure was largely derived from discussion at the 9/16 CAP Subcommittee.	Trees naturally sequester CO2 and create more oxygen. Additionally, they shade houses and pavement, thus reducing the urban heat island effect. Costs would include staff time for maintaining the program and the cost of planting and maintaining trees if on City property.
23 (67)	Create car sharing programs. Accommodations for such programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation.	Car sharing programs like City Car Share (http://www.citycarshare.org/) and Zip Car (http://www.zipcar.com/) allow for members to reserve a car online for a minimal hourly rate. Car sharing is recommended by the Attorney General and currently used in Berkeley and San Francisco.	It has been found that car sharing has a major impact on the travel behavior of its members by reducing the number and length of trips. Once members give up their personal cars, the car is no longer the default mode of travel. Additional benefits include the more fuel-efficient models these car-sharing companies operate.
24 (69)	Consider providing incentives or requiring that developers of new residential and commercial projects make spaces available for car share vehicles and electric vehicle recharging stations.	This requirement or incentive would establish dedicated parking spaces for car share vehicles and/or electric vehicle recharging stations. The requirement could be written in to the parking requirements for new development or be used as an incentive or concession when approving use permits or variances. The City of Berkeley considers a similar measure for car share vehicles in its draft CAP.	By providing dedicated spaces for car share and electric vehicles, residents would be encouraged to buy or operate such vehicles. The cost to developers would depend on whether this parking space would be replacing a standard space or be in addition to the existing parking requirements.

San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
25 (78)	Convert more City vehicles to hybrid, electric, alternative fuel, or smaller vehicles.	The City of San Carlos has already started to convert its vehicles to alternative fuels. The police chief and building inspection department uses hybrids and parking enforcement utilizes an electric utility vehicle. This program would expand upon current efforts. The Cities of Alameda and San Diego include similar measures in their CAPs.	Studies show that hybrid vehicles recoup their higher cost in 2-3 years. They also emit 80% less harmful pollutants and greenhouse gases than comparable gasoline cars. Electric cars have even greater benefits, although they are generally more expensive.
26 (80)	Offer prioritized parking for hybrid or alternative fuel cars.	There are two ways to offer prioritized parking for these vehicles: 1) Create conveniently-placed, dedicated parking spots (similar to handicapped parking spots) in which only certified hybrid or alternative fuel cars would be able to park and 2) Encourage large parking lots to dedicate the most conveniently placed parking spots (aside from handicapped spots) to certified hybrid or alternative fuel vehicles. The Cities of Marin, Palo Alto, San Mateo, and Sonoma County include similar measures in their CAPs.	This would increase demand for hybrid and alternative fuel cars, decreasing San Carlos' GHG emissions. There would be costs associated with planning, signage, and enforcement.

San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
27 (84)	Incorporate bicycle-friendly intersections into street design.	The San Carlos Bicycle/pedestrian Advisory Committee has made great strides in making San Carlos a bike- and ped-friendly city. Additional possibilities include increasing the number of class 2 bike lanes, creating cross signs and request buttons at bicycle level, and reevaluating the cross time intervals to ensure adequate cross timing for all users. The majority of CAPs for cities in the bay area encourage bicycle-friendly design.	Cycling is the most efficient way of traveling in terms of speed and emissions and should therefore be encouraged. There is cost associated with street redesign and signage.
28 (85)	For commercial projects, provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience. Encourage large employers to provide facilities that encourage bicycle commuting, including locked bicycle storage, shower facilities, and covered or indoor bicycle parking.	Dedicated bike parking (in lieu of locking to trees and parking meters) reduces bike theft and increases convenience for cyclists. This reduction measure is recommended by the Attorney General. Similar language appears in the CAPs for Alameda, Berkeley, Palo Alto, San Francisco, and San Mateo.	An increase in convenient and safe bike parking could increase bike commuting, therefore reducing the GHG emissions associated with car travel within the City (currently 23% of emissions). There would be a cost for the bike racks and outreach to employers. Grants and funding are available to support bicycle related projects.
29 (90)	Provide for an education program and stepped up code enforcement to address and minimize vegetation that degrades access along public rights of way.	Trees and shrubs often clutter sidewalks, creating an accessibility and convenience issue. This program would educate residents on their responsibility to maintain public rights of way adjacent to their properties. It would also provide for increased enforcement and, possibly, an outlet for residents to report violations. This reduction measure is included in a list of compiled measures from the Cities of Aliso, Viejo, and Claremont.	Decreasing the barriers to pedestrian travel is not only an equity issue but it encourages more walking within the city, decreasing GHG emissions. Cost associated with public outreach and enforcement, but some revenue could be made if citations are given.

San Carlos Climate Action Plan Reduction Measures Under Consideration

# (prev. #)	Reduction Measure	Description	Cost / Benefit
30 (91)	Actively promote walking as a safe mode of local travel, particularly for children attending local schools. Employ traffic calming methods such as median landscaping, improve roadway capacity, and establish clear pedestrian rights of way.	There are design and policy methods to promote pedestrian travel, including: increased tree planting, median landscaping, clearly dedicated crosswalks (painted or paved differently), and count-down style cross signals. These strategies all promote enhanced aesthetics, reduced vehicle speeds, and safer pedestrian environments. This reduction measure is recommended by the Attorney General and by the Cities of Berkeley and San Francisco.	The cost would vary by method, but has been shown to lead to increased pedestrian travel and safety.
31 (95)	Provide shuttle service to public transit.	Provide shuttle service to and from areas not adequately served by public transit and the Caltrain station. This measure is recommended by the Attorney General and considered in the City of Alameda and County of Sonoma CAPs.	This will increase transit ridership, however the GHG emissions from shuttle vehicles and monetary cost of running such a service is unknown for San Carlos. If alternative fuels or hybrid vehicles are used in the shuttle buses, emissions would be significantly less than traditional vehicular options.

San Carlos Climate Action Plan: Analysis of 24 Reduction Measures Under Consideration

The purpose of this list is to analyze the emission reduction measures preferred by the Climate Action Plan Subcommittee and to reflect discussion at the Sept. 25th Community Workshop. All 31 emission reduction measures chosen by the Subcommittee on Sept. 16th (column 3) and voted for by the community on Sept. 25th (column 4) are reflected in this list, however some similar measures have been combined. This list separates each measure into its individual components in order to analyze whether a Greenhouse Gas (GHG) emission reductions or cost estimates can be made. It also gives qualitative information on the measures, especially where a numerical estimate cannot be made. This analysis will inform the Subcommittee's efforts to recommend 24 reduction measures and will also lead to greater specificity and clarity in the Climate Action Plan. *For more information on the categories below, including the methodology used, please see the Key on the last page.*

#	9/25 #	Subcommittee Preference	Community Votes	Reduction Measure	Strategic Policy Focus	Components	GHG Quantifiable?	Initial Cost Quantifiable?	Qualitative Information
1	2	3	21	Adopt a Green Building Standard for all new development and major remodels. (Subcommittee priority)	#1: Building Efficiency / Site Design	<p>Apply a high LEED standard (silver or gold) for large-scale commercial buildings.</p> <p>Build it Green (BIG) standards for residential properties.</p> <p>Consider a lower certification (ex: LEED certified) for smaller scale commercial buildings.</p> <p>Provide additional training for zoning and building permit plan-checkers to enable them to become more familiar with the industry's latest green building techniques.</p>	<p>Yes- LEED silver and gold developments have quantifiable energy reductions that can be converted to GHG reductions based on the growth rate of new large-scale commercial construction.</p> <p>Yes- BIG has quantifiable emissions reductions for its certified properties. We can calculate GHG emission reduction based on the rate of new construction.</p> <p>Yes- LEED certified buildings have a quantifiable energy reduction that we can convert into GHG emissions based on the rate of small business growth.</p> <p>No- There are no GHG emissions associated with training, however this component is necessary to implement a Green Building Ordinance.</p>	<p>Yes- An Full Time Equivalent (FTE) estimation of city staff time is possible based on other case studies.</p> <p>Yes- An FTE estimation is possible based on other case studies.</p> <p>Yes- An FTE estimation is possible based on other case studies.</p> <p>Yes- An FTE estimation is possible based on other case studies.</p>	<p>This requirement would significantly lower the GHG emissions from new construction and eventually lead to decreased emissions from the commercial and residential sectors, which today create 41% of San Carlos' emissions. According to the US Green Building Council (USGBC), green building does the following: enhances and protects ecosystems and biodiversity, improves air and water quality, reduces solid waste, conserves natural resources, reduces operating costs, improves employee productivity and satisfaction, optimizes life-cycle economic performance, enhances occupant comfort and health, minimizes strain on local infrastructure, and contributes to overall quality of life. (1)</p>

#	9/25 #	Subcommittee Preference	Community Votes	Reduction Measure	Strategic Policy Focus	Components	GHG Quantifiable?	Initial Cost Quantifiable?	Qualitative Information
2	19	3	8	Encourage development that is mixed-use, infill, and higher density in order to support the reduction of vehicle trips, promote alternatives to individual vehicle travel, and promote efficient delivery of services and goods. (Subcommittee priority)	#2: Auto Emission Reduction		Possible- Estimates from multiple agencies (USGBC, APA) and other sources could provide a GHG reduction estimate based on General Plan Land Use scenarios.	No- More specificity would be needed to estimate necessary staff time or city funding.	There are social benefits to these principles, including: better health, lower infrastructure costs, increased neighborhood vitality, and increased accessibility. There are also many environmental benefits. A 2005 Seattle study found that residents of neighborhoods where land uses were mixed and streets are better connected, making non-auto travel easier and more convenient, traveled 26 percent fewer vehicle miles than residents of neighborhoods that were more dispersed and less connected. (2) Mixed-use and higher-density development is already recommended through land use option three in the San Carlos General Plan update process.

#	9/25 #	Subcommittee Preference	Community Votes	Reduction Measure	Strategic Policy Focus	Components	GHG Quantifiable?	Initial Cost Quantifiable?	Qualitative Information
3	22	3	28	Encourage tree planting in order to improve airshed quality and minimize urban heat island effects (Subcommittee priority)	#1: Building Efficiency / Site Design	Support community tree planting programs. Require a specific tree coverage for all new development. Develop and implement a shading requirement for all City parking lots and streets.	No- Until the level of support and rate of tree planting is known, a GHG emission reduction cannot be quantified. The age of trees can also affect GHG reduction capability. Possible- While there is data on temperature decreases resulting from increased tree coverage, it is unclear how this would affect air conditioning usage or pedestrian behavior. Yes- There is data on temperature decreases resulting from increased tree coverage and how that affects energy usage.	No- More specificity needed. Monetary support or administrative support? Tree planting programs need City support to help with identifying whether a desired tree location conflicts with City plumbing, wiring, or paving. Yes- An FTE estimation is possible based on other case studies. Possible- Similar programs for parking lot and street shading can be given. Public Works may be able to estimate tree planting and maintenance costs.	Trees naturally sequester CO2 and create more oxygen. Additionally, they shade houses and pavement, thus reducing the urban heat island effect. Air temperature differences of approximately 3.6°F to 7.2°F have been observed for urban neighborhoods of contrasting tree cover, averaging approximately 1.8°F per 10% canopy cover. (3)
4	12, 29	2.5	5, 6	Community education about climate change and enforcement codes. (Subcommittee priority)	#4: Alternative, Non-Automotive Travel Modes	Provide for an education program and stepped up code enforcement to address and minimize vegetation that degrades access along public rights of way.	Possible- The emissions reductions resulting from education programs and increased walkability is difficult to separate from emissions reductions from other influences, however information is just now becoming available on this subject.	Yes- An FTE estimate for education and enforcement is possible.	This would lower energy use in San Carlos, a sector that today contributes 23% of the community's GHG emissions. The exact reduction in emissions is difficult to calculate, but community awareness of energy consumption and climate change is essential for change to occur. There are agencies and private organizations available for partnering opportunities.

#	9/25 #	Subcommittee Preference	Community Votes	Reduction Measure	Strategic Policy Focus	Components	GHG Quantifiable?	Initial Cost Quantifiable?	Qualitative Information
					#1: Building Efficiency / Site Design	Provide education on energy efficiency.	Possible- The emissions reductions resulting from education programs is difficult to separate from emissions reductions from other influences, however information is just now becoming available on this subject.	Yes- An FTE estimate could be made based on an assumption of the level of education to the community.	
5	13	2	7	For municipal operations, establish a Zero Waste policy. (Subcommittee priority)	#5: Zero Waste		Yes- A zero waste policy would negate the 2020 projection for 'business as usual' solid waste production.	Yes- An estimate of FTE for education and oversight and contract revision to waste management operations is possible.	A zero waste policy would significantly decrease the amount of waste sent to landfills, thus reducing the GHG emissions released from landfills (currently 5% of the City's emissions). There may be an increase in collection fees to residents or the City as a result of subsidizing the service, but costs are unknown at this time. The majority of entities that have implemented zero waste policies at this time are businesses. According to the Zero Waste Alliance, Hewlett Packard in Roseville, CA reduced its waste by 95% and saved \$870,564 in 1998. Interface, Inc. in Atlanta, GA has eliminated over \$90M in waste from a zero waste policy. (4)

#	9/25 #	Subcommittee Preference	Community Votes	Reduction Measure	Strategic Policy Focus	Components	GHG Quantifiable?	Initial Cost Quantifiable?	Qualitative Information
6	28	3	20	Increase bike parking	#4: Alternative, Non-Auto Travel Modes	<p>Require large employers to provide facilities that encourage bicycle commuting, including locked bicycle storage, shower facilities, and covered or indoor bicycle parking.</p> <p>For commercial projects, provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience.</p>	<p>No- It is unclear how these facilities will affect community travel behavior. A commuter survey would help in making this measure quantifiable.</p> <p>No- It is unclear how these facilities will affect community transit behavior. A commuter survey would help in making this measure quantifiable.</p>	<p>Yes- An FTE estimation is possible based on other case studies.</p> <p>Yes- An FTE estimation is possible based on other case studies.</p>	<p>The City of Portland requires one bike parking space per 3,000 square feet of commercial or office space or 5-10% of the number of automobile spaces. The City of Santa Cruz requires two bike parking spaces plus 15% of the number of automobile spaces. Additionally, 20-60% of new bike spaces in Santa Cruz are required to be Class 1, or individual lockers. The City of Vancouver requires any development with four or more bike parking spaces to provide shower and wash bin facilities. (5)</p>
7	25	3	9	Convert more City vehicles to hybrid, electric, alternative fuel, or smaller vehicles.	#4: Alternative, Non-Auto Travel Modes		<p>Possible- Based on an estimate of how many fleet vehicles will be converted to hybrid or electric vehicles, an estimate of emissions reductions can be made. The municipal emissions inventory numbers are needed for this determination.</p>	<p>Possible- the cost of hybrid and electric vehicles is known in comparison to a traditional gas vehicle. Based on an estimate of how many fleet vehicles would be converted per year, a total cost estimate could be calculated.</p>	<p>Studies show that hybrid vehicles recoup their higher cost in 2-3 years (6). They also emit 80% less harmful pollutants and greenhouse gases than comparable gasoline cars (7). Electric cars have even greater benefits, although they are generally more expensive.</p>
8	23	2	7	Promote car sharing programs	#4: Alternative, Non-Auto Travel Modes	<p>Create a car sharing program.</p> <p>Provide parking spaces for the car share vehicles at convenient locations accessible by public transportation.</p>	<p>Possible- The communities in which VMT reductions have been measured as a result of car sharing programs can be compared to San Carlos, however surveys are needed to accurately estimate a GHG equivalent.</p> <p>No- This measure would depend on whether the parking spaces were new or existing. It is also unclear how increased parking for car share vehicles would affect commuter behavior.</p>	<p>Yes- An FTE estimate for program management can be quantified based on similar programs.</p> <p>Yes- An FTE estimate for enforcement and program management is possible.</p>	<p>In San Francisco, car share members' daily VMT (weekday/workday) fell from 2.80 to 1.49 miles. Among the control group of non-members, it rose from 5.45 to 20.85. These figures refer to second-year impacts; first-year impacts showed a net increase in VMT. In Arlington, VA members reported a reduction in VMT of 43%, or 3,250 miles per year. 45% of respondents reported reducing driving after joining car-sharing, while 35% said they increased their driving. Nearly half of respondents (49%) said they walk more often because of their involvement in car sharing, and 54% said they use transit more often. (8)</p>

#	9/25 #	Subcommittee Preference	Community Votes	Reduction Measure	Strategic Policy Focus	Components	GHG Quantifiable?	Initial Cost Quantifiable?	Qualitative Information
9	30, 27	2	35, 32	Actively promote walking and biking as safe modes of local travel, particularly for children attending local schools.	#4: Alternative, Non-Auto Travel Modes	<p>Traffic calming method: landscaped median barriers.</p> <p>Traffic calming method: establish clear pedestrian rights of way.</p> <p>Incorporate bicycle-friendly intersections into street design.</p>	<p>No- Median barriers slow traffic, but it is unclear how these new traffic patterns will affect the pedestrian and cycling rate in San Carlos.</p> <p>No- Clear pedestrian rights of way slow traffic and decrease rates of vehicle-pedestrian collisions, however it is unclear how these new traffic patterns will affect the pedestrian and cycling rate in San Carlos.</p> <p>Possible- Bicycle-friendly intersections increase bicycle trips, however it is unclear whether these trips are recreational or in lieu of vehicle trips. A community survey would help clarify which bicycle-friendly measures would be most effective in changing commuter behavior.</p>	<p>Yes- Fehr and Peers, a transportation engineering firm, estimates that median barriers cost \$15,000-\$20,000 per 100 ft. Specific estimates could be obtained by Public Works. (9)</p> <p>Yes, depending on the method- Raised crosswalks cost an estimated \$4,000 each. (11) Painting crosswalks in bold stripes is less expensive, yet also effective, and cost estimates may be obtained from Public Works.</p> <p>Yes- A typical bike lane costs \$52,000 per mile, or 30¢ per 2.1 mile bicycle trip if used by 80 cyclists a day, while a typical new sidewalk is estimated to cost 12¢ per trip. (12)</p>	<p>Median barriers cause an average 31% decrease in traffic volume, or a decrease of 1167 vehicles per day (from a sample of 10 sites; average includes various types of volume control measures) (10)</p> <p>Communities that improve cycling conditions often experience significant increases in bicycle travel and related reductions in vehicle travel. For U.S. cities with more than 250,000 population, each additional mile of bike lanes per square mile is associated with a roughly one percentage point increase in bicycle commute mode share. (13)</p>

#	9/25 #	Subcommittee Preference	Community Votes	Reduction Measure	Strategic Policy Focus	Components	GHG Quantifiable?	Initial Cost Quantifiable?	Qualitative Information
10	18	2	20	Make recycling and composting mandatory at public events.	#5: Zero Waste	The event holder would have to agree to divert a certain amount of waste through recycling or composting in order to be awarded a permit.	No- There is no data on how much waste is generated at public events within San Carlos. General estimates are available but they cannot be suited to San Carlos accurately.	Yes- Cost would be minimal since the requirement would be folded into an existing contract process. Some staff time required to prepare contract revisions and an FTE estimate could be made.	The City of San Francisco passed an ordinance requiring recycling at special events. This, along with their ban on polystyrene food service ware, helped the city achieve a 70% waste diversion rate in 2006. California law (AB 2176) already requires large public venues and special events to develop and implement solid waste management plans.(14)
11	3,4, 5	2	15, 7, 12	Improve residential energy efficiency	#1: Building Efficiency / Site Design	<p>Consider establishing energy efficiency standards for new construction and remodel projects that exceed the State's Title 24 energy standards applied to the City's climate zone.</p> <p>Perform energy-efficient lighting retrofits and/or home energy audits.</p> <p>Expand the distribution of free or subsidized energy and water saving devices and services to the mass market.</p>	<p>No- Until the energy efficiency standards are decided upon, a good estimate of energy reductions cannot be made.</p> <p>Yes- Lighting retrofits have a quantifiable average energy savings associated with them. An estimate for San Carlos can be generated from these average energy savings in other communities and an assumption as to how many households can be served.</p> <p>No- Studies are currently underway to measure the effectiveness of subsidized energy and water saving devices.</p>	<p>No- An estimate of time required to create new standards will become clearer once the new Title 24 energy standards are released.</p> <p>No- An estimate of time and money required to perform energy-efficient lighting retrofits would depend on the level of partnership with local electricity providers and the availability of grant money, both of which are unknown.</p> <p>No- Some staff time, yet the division of responsibility between the City and PG&E is unknown.</p>	<p>These standards could significantly reduce the 23% of San Carlos GHG emissions from electricity. All new construction and additions have been required to meet minimum energy efficiency standards since 1978. The State of California is currently updating its Title 24 requirements for 2009. The City would consider establishing standards exceeding the State's standards at that time. (15)</p> <p>This would be a way to reach out to homes built before the Title 24 standards came into effect in 1978. The program could benefit from partnerships with citizen-run organizations, PG&E, and auditors.</p> <p>It is important to protect all residents from climate change equally. There are numerous funding sources for programs such as these, including federal grants, the State of California Low-Income Energy Efficiency (LIEE) Program, and PG&E's Energy Partners Program.</p>

#	9/25 #	Subcommittee Preference	Community Votes	Reduction Measure	Strategic Policy Focus	Components	GHG Quantifiable?	Initial Cost Quantifiable?	Qualitative Information
						Expand and better integrate programs that increase energy efficiency in low-income households.	No- There are examples of energy savings from similar communities, but the emissions reductions cannot be clearly quantified until 'low-income' is defined and a scope is created.	No- The cost of this program depends on the division of responsibility between the City, private organizations, and PG&E. The cost of similar programs in the Bay Area can be given.	
12	11	2	14	Create water- and waste-efficient landscapes. Native vegetation, smart sensors for watering, reduced concrete cover, etc.	#1: Building Efficiency / Site Design	Use water- and waste-efficient landscaping in City Park renovations Encourage practice in new and existing properties.	No- The water and waste reductions associated with these practices cannot be measured in GHG equivalent, however there is a quantifiable water use reduction from the USGBC. No- The water and waste reductions associated with these practices cannot be measured in GHG equivalent.	No- The cost of water- and waste- efficient landscaping is comparable to traditional landscaping, however the initial cost cannot be calculated without a more specific scope and assistance from Public Works. Yes- An FTE estimation is possible based on other case studies.	This measure saves water and thus the energy used for water filtration and movement. It also lowers the amount of yard waste sent to landfills and reduces demand on our supply of fresh water, which largely comes from the Hetch Hetchy reservoir. The City of Menlo Park has a water-efficient landscape ordinance requiring all new development and landscape renovations to submit a landscape plan with sprinkler flow rates, a soils test, irrigation schedule, plant selection, and more. (15)
13	31	2	13	Provide shuttle service to public transit.	#4: Alternative, Non-Auto Travel Modes	Provide shuttle service to and from areas not adequately served by public transit and the Caltrain station.	Possible- It is unclear how the availability of a shuttle service would affect community travel behavior. Community surveys and historical data may provide context. Defining a service area would also help to develop ridership estimates.	Yes- Based on assumptions of new vehicle cost, average daily trips, mileage, and driver salary, a cost to the City could be estimated.	The City of Emeryville has operated a shuttle system since the mid-1990's. Named the Emery-Go-Round, it connects major commercial and residential areas to transit. In 2005, Emeryville was recognized by the EPA as one of the "Best Places to Work" as a result of the Emery-Go-Round. In addition, the shuttle helped spur development of brownfield sites surrounding the Emeryville Amtrak Station. (16)
14	9	2	12	Identify opportunities for increasing the following:	#3: Low Carbon Energy Use	Solar system installations Wind energy generation	Possible- More specificity is needed before an estimate can be made. Possible- More specificity is needed before an estimate can be made.	Possible- More specificity is needed before an estimate can be made. Possible- More specificity is needed before an estimate can be made.	GHG emission reductions vary with different technologies and models, therefore it is difficult to make an estimate before a more specific scope is detailed.

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						Solar and tankless hot water heaters	Possible- More specificity is needed before an estimate can be made.	Possible- More specificity is needed before an estimate can be made.	
						Energy efficient ventilation and air conditioning	Possible- More specificity is needed before an estimate can be made.	Possible- More specificity is needed before an estimate can be made.	
						Research biomass energy opportunities.	Possible- More specificity is needed before an estimate can be made.	Possible- More specificity is needed before an estimate can be made.	
15	6, 7, 8	2	11	Expand energy saving opportunities to businesses.	#1: Building Efficiency / Site Design	Develop a tax rebate program for efficiency improvements in businesses.	No- It is unclear how a tax rebate program will affect efficiency in businesses.	No- An FTE estimation cannot be made until the scope of the rebate program is established. The loss in tax revenue to the City cannot be estimated either until a more specific scope is established.	San Carlos' businesses create 20% of the City's GHG emissions. This rebate program would act as an incentive for more businesses to become energy efficient by decreasing their energy use and emissions. The City of Berkeley and the City of Oakland Smart Lights program provides businesses with hands-on assistance in assessing lighting needs and installing high-quality, energy-efficient appliances. Through the program, small businesses have reduced energy costs by 20-50% and improved lighting quality. Most of the participating businesses recover their costs in less than one or two years. Their program has also saved 3.5 million kWh of energy, \$580,000, and 850 tons of CO2e over five years.(17)
					Expand energy saving opportunities for large commercial and industrial properties.	No- The benefit from energy saving opportunities for large commercial properties is unclear. The benefit to industrial properties could never be quantified to due privacy laws.	No- The cost of this program depends on the division of responsibility between the City, private organizations, and PG&E.		
					Educate and give hands-on assistance to small businesses (less than 20 employees).	Yes- There have been similar programs in bay area cities. The results of those programs could be modified to apply to San Carlos' business pool.	No- An FTE estimate could be made for staff coordination of the project, yet the cost of materials and labor for hands-on assistance is too variable to make a good estimate.		

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16	14	2	10	Establish an environmentally preferable purchasing program (EPP) for government operations.	#5: Zero Waste		No- Examples of EPP emissions savings can be given, but until the government inventory is completed, a numerical estimation of emissions reductions is infeasible.	Yes- An FTE estimation is possible based on other case studies.	An EPP policy for local government operations would establish the government as an example for citizens to follow in order to decrease their GHG emissions. The City already purchases recycled paper and hybrid vehicles, but expanding into carpets, building construction and other fleet vehicles is possible and often results in saving costs in the long run.
17	15	2	9	Enhance the existing construction and demolition (C&D) waste reduction ordinance to increase diversion of construction and demolition waste to 75%.	#5: Zero Waste		Yes- The tonnage of waste diverted from future construction can be estimated and then converted into CO2e.	Yes- An FTE estimation is possible based on other case studies.	According to the California Integrated Waste Management Board, Construction and Demolition materials account for 10.4% of business disposal. A stricter ordinance could reduce this number. Additionally, it is often less expensive to recycle or reuse C&D material than it is to dispose of it. Organizations such as RecycleWorks.org have instruction manuals on how to recycle or find reuse for almost all materials.(18)
18	16	2	9	Target expanded recycling outreach and services to multi-family residential buildings, including renter-occupied apartment buildings.	#5: Zero Waste		No- It is unclear how expanded recycling services to multi-family residential buildings will affect community behavior. A survey would help if possible.	Yes- An FTE estimation is possible based on other case studies.	The amount of waste diverted from landfills would increase. Multi-family houses comprised about 32% of San Mateo County households in 2000, so there is a lot of potential for emissions reductions.

#	9/25 #	Subcommittee Preference	Community Votes	Reduction Measure	Strategic Policy Focus	Components	GHG Quantifiable?	Initial Cost Quantifiable?	Qualitative Information
19	20	2	7	Increasing housing density near transit (transit overlay zone or transit oriented development).	#1: Building Efficiency / Site Design		Possible- Multiple sources estimate how housing density near transit can affect community transit ridership or decrease personal vehicle VMT. A survey would help in quantifying this measure.	No- The City is already considering increased density near transit in General Plan update land use option 3. The future FTE needed to modify housing density near transit depends on the Land Use option chosen for the General Plan.	A study of the Portland area found that 30% or more of the Transit Oriented Development residents commuted by the regional light rail system at least once a week and 23-33% used transit as their primary commute mode. This compares to less than 10% of workers in the automobile-oriented suburbs of Hillsboro and Beaverton with 15% of Portland workers. Overall, transit commuting increased when people moved to TODs. A 2003 California TOD travel characteristics study found TOD office workers within 1/2 mile of rail transit stations to have transit commute shares averaging 19% as compared to 5% region wide. For residents, the statewide average transit share for TODs within 1/2 mile of the station was 27% compared to 7% for residences between 1/2 mile and 3 miles of the station. (19)
20	26	2	7	Offer prioritized parking for hybrid or alternative fuel cars on City streets.	#4: Alternative, Non-Auto Travel Modes		Possible- It is unclear how prioritized parking would influence the community at this time, however new information is just now becoming available.	Yes- An estimate of re-painting parking spaces and adding signage could be made.	
21	10	2	6	Implement reduction strategies included in the energy audit of City facilities. Continue to monitor City facility performance.	#1: Building Efficiency / Site Design		No- The reduction in GHG emissions will be unclear until the Government Operations audit is completed.	No- The initial cost will not be available until the Government Operations audit is completed.	The energy-saving measures will save the City money on electricity while lowering its GHG emissions. It will also establish the City as an example for privately-owned facilities to follow.

#	9/25 #	Subcommittee Preference	Community Votes	Reduction Measure	Strategic Policy Focus	Components	GHG Quantifiable?	Initial Cost Quantifiable?	Qualitative Information
22	24	2	6	Consider providing incentives or requiring that developers of new residential and commercial projects make spaces available for car share vehicles and electric vehicle recharging stations.	#2: Auto Emission Reduction		No- It is unclear how car share parking spots and electric vehicle recharging stations will influence community behavior.	Yes- An FTE estimate to revise ordinances and codes is possible.	
23	21	1	23	Create travel routes that ensure that destinations may be reached conveniently by public transportation, bicycling, or walking.	#4: Alternative, Non-Auto Travel Modes	<p>Identify barriers to safe or convenient walking, biking, and transit ridership from major residential areas to public areas of interest (gyms, employment centers, schools, etc).</p> <p>Create a plan to address these problems and implement it.</p> <p>Public outreach campaign.</p> <p>Make it a condition for approval that new large-scale developments address transit, biking, and walking access to the location.</p>	<p>Yes- Identifying barriers does not have a GHG equivalent, yet it is necessary for implementation.</p> <p>No- An estimate of increased cyclist activity cannot be made until the plan is written.</p> <p>Possible- There are other examples and research from the Urban Land Institute that could be used to estimate the effectiveness of a public outreach campaign in San Carlos.</p> <p>No- It is unclear how these conditions of approval will affect community behavior.</p>	<p>Yes- An FTE estimation is possible based on other case studies.</p> <p>Yes- An FTE estimation is possible based on other case studies.</p> <p>Yes- An FTE estimation is possible based on other case studies as well as an estimation of costs of materials.</p> <p>Yes- An FTE estimation is possible based on other case studies.</p>	As gas prices rise, residents of San Carlos will want to use alternative modes of transportation. The City should be prepared for this increase of walkers, bikers, and transit riders. This measure also promotes equity.

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24	17	1	5	Ensure that new Requests for Proposals (RFPs) for waste collection and processing services include Zero Waste service options (e.g., expanded organics collection, expanded C & D debris collection and container inspections upon collection).	#5: Zero Waste		No- It is unclear how the option of Zero Waste service will affect the waste generating behavior of the community.	Yes- An FTE estimate associated with contract modification and enforcement is quantifiable.	This would be a forward-thinking measure that would ensure that Zero Waste becomes a reality in San Carlos. For more information on the benefits of zero waste, see measure #17.

#	9/25 #	Subcommittee Preference	Community Votes	Reduction Measure	Strategic Policy Focus	Components	GHG Quantifiable?	Initial Cost Quantifiable?	Qualitative Information
Key							Footnotes		
<p>"Subcommittee Priority": This notation signifies that at least two Subcommittee members identified the measure as in their top five at the 9/16 Subcommittee meeting. Preferences are based on the draft minutes from that meeting date.</p> <p>"GHG Quantifiable?": This category addresses the question of whether a specific, numeric reduction in GHG emissions can be estimated based on similar case studies, current research, and San Carlos characteristics.</p> <p>"Initial Cost Quantifiable?": This category addresses whether a specific, numeric initial cost can be estimated based on case studies, previous expenditures by the City of San Carlos, and current research. Due to time and budget constraints and lack of life-cycle financial research, only the initial cost is addressed in this document.</p> <p>For both the GHG and Initial Cost Columns,</p> <p>"Yes" = There is sufficient information and research to make a good estimate.</p> <p>"No" = There is not enough research or available data applicable to San Carlos to make an estimate.</p> <p>"Possible" = The estimate is based on information that is not yet available, yet could be available the time the CAP is released. Conversely, "possible" could mean that more specificity is needed in order to make quantification feasible.</p> <p>"Qualitative Information": Climate Change is not strictly science-based. Qualitative, non-numerical information can make a difference in decision-making as well. This section gives examples on some of the qualitative research or ideas concerning each reduction measure. Although some of this information may be quantitative, it is not typically transferable to dollars or GHG equivalent for San Carlos and is therefore qualitative.</p>							<p>(1) US Green Building Council (USGBC), www.usgbc.org, accessed Sept. 30, 2008.</p> <p>(2) US Environmental Protection Agency (EPA). "Environmental Benefits of Smart Growth." http://www.epa.gov/dced/topics/eb.htm, accessed Oct. 1, 2008.</p> <p>(3) Scott, Simpson, and McPherson. "Effects of Tree Cover on Parking Lot Microclimate and Vehicle Emissions." Journal of Arboriculture 24(3): May 1999, 129.</p> <p>(4) Zero Waste Alliance, http://www.zerowaste.org/case.htm#benefits, accessed Sept. 30, 2008.</p> <p>(5) Victoria Transport Policy Institute. "Bicycle Parking." Online TDM Encyclopedia, http://www.vtpi.org/tdm, accessed Sept. 30, 2008.</p> <p>(6) Hybrid Car Organization, www.hybrid-car.org, accessed Sept. 20, 2008.</p> <p>(7) Carte, Sharon Silke. "Hybrids recoup higher cost in less time." USA Today, 5/12/2008, http://www.usatoday.com/money/autos/environment/2008-05-11-hybrids-gas-prices_N.htm.</p> <p>(8) Cervero, Robert and Tsai, Yu-Hsin (2003). San Francisco City CarShare: TravelDemand Trends and Second-Year Impacts. University of California at Berkeley, Institute of Urban and Regional Development. Working Paper 2003-05.</p> <p>(9-13) Fehr and Peers, TrafficCalming.org, http://www.trafficcalming.org, accessed Sept. 30, 2008.</p> <p>(14) US EPA, "Recycling on the Go Success Story," http://epa.gov/osw/conservation/rrrr/rogo/documents/sf-ca-30, 2008.</p> <p>(15) City of Menlo Park, "Water-efficient Landscaping Ordinance." http://www.menlopark.org/departments/waterlandord.pdf, accessed Sept. 30, 2008</p> <p>(16) City of Emeryville Planning Department. "Opportunities and Constraints: Sustainability." http://www.ci.emeryville.ca.us/Opportunities%20and%20Challenges/10SUSTAIN.pdf, accessed Oct. 1, 2008.</p> <p>(17) City of Berkeley Draft Climate Action Plan, www.berkeleyclimateaction.org, accessed September 5, 2008.</p> <p>(18) California Integrated Waste Management Board, www.ciwmb.ca.gov/organics/xeriscaping, accessed September 5, 2008.</p> <p>(19) Victoria Transport Policy Institute. "Transit Oriented Development." Online TDM Encyclopedia, http://www.vtpi.org/tdm, accessed Sept. 30, 2008.</p>		