

Appendix B: Implementation Matrix

LEGEND:

Potential GHG Reduction: Total metric tons of estimated annual greenhouse gas reduction.

Start Up Cost: Low= under \$10,000; Medium = \$10,000 – 100,000; High = over \$100,000

Staffing Level: Low = Existing staff can implement without changing current priorities

Medium = Existing staff can implement, but will require reprioritization of current tasks to accommodate new task(s)

High = Requires new staff or contract position(s) to implement

Annual Cost: Low= under \$10,000; Medium = \$10,000 – 100,000; High = over \$100,000

Timeframe: Short = 1-3 years (2009-2011); Medium = 4-5 years (2012-2013); Long = 6-11 years (2014-2020)

Responsibility: City department or outside agency responsible for implementation

Funding Sources: Preliminary suggestions of funding sources

Program	Potential GHG Reduction	Start Up Cost	Staffing Level	Annual Cost	Time frame	Responsibility	Funding Sources	How we will measure progress	2020 Goal
1. Decrease miles travelled in single-occupant vehicles:								Reduction in annual vehicle miles travelled (VMT) on local streets. Increase in alternate modes used in journey to work (US Census data).	10% reductions: 2005 VMT: 228,733,090 2020 VMT Goal: 205,859,780
LF1: Continue to encourage greater residential and commercial densities within walking distance of high frequency transit centers and corridors as called for in the General Plan. High frequency is defined as buses arriving at least every 15 minutes.	6,775	None	Low	Low	Ongoing	Community Dev.	Staff Time (General Fund), Development Application Fees	Number of new housing units added within ½ mile of high frequency transit.	500 units built within ½ mile of high frequency transit (15 minute headways)
LF2: Consider land use and transportation alternatives (better bicycle and pedestrian access and increased transit feeder service) to best use the future Civic Center SMART station.	Included in above	Medium	Medium	None	Short	Community Dev.; Public Works; SMART; Marin Transit; TAM	Measure A, Staff Time (General Fund), State or Federal Planning and Infrastructure Grants	Frequency of transit and increase in ridership serving Civic Center station. Creation of bicycle and pedestrian connections to Civic Center station. Number of housing	15-minute headways for busses and shuttles. Bicycle and pedestrian connection to North San Rafael Promenade.

Program	Potential GHG Reduction	Start Up Cost	Staffing Level	Annual Cost	Time frame	Responsibility	Funding Sources	How we will measure progress	2020 Goal
								units approved within ½ mile radius of station.	200 units built within ½ mile of station.
LF3: Identify neighborhood areas that do not have suitable pedestrian facilities convenience retail services and transit stops within walking distance. Determine if sidewalk improvements, land use changes or transit stop locations can be modified for underserved areas.	Unknown	Low (land use) High (sidewalks)	Medium	Low	Long	Community Dev.; Public Works; Marin Transit	Staff Time (General Fund), State or Federal Planning and Infrastructure Grants	Completion of land use and infrastructure audits. Completion of land use changes and infrastructure upgrades.	Audits completed, zoning changes considered. Infrastructure upgrades considered during update to City's Bicycle/Pedestrian Master Plan.
LF4: Facilitate creation of a bike share program, particularly in the Downtown area.	525	Medium	Medium	Low	Medium	Public Works; Economic Dev.	Parking District, Private Vendor, Grant	Number of shared bikes available and daily use.	Program in operation (or tested).
LF5: Coordinate with Marin Transit and the Transportation Authority of Marin to pursue funding opportunities to increase transit service and improve convenience to encourage greater ridership.	870	High	Low	High	Long	Public Works; Marin Transit; TAM	Measure A, State Transportation Funds	Increase in bus ridership on San Rafael routes.	Increase of 250 daily riders on Routes 23 and 45. 2005 ridership: 2020 ridership:
LF6: Continue to implement sidewalk and street improvements for the Safe Routes to School program. Encourage the school districts, Marin Transit and the Transportation Authority of Marin to increase funding for school busing programs, promote carpooling and limit vehicle idling.	Unknown	High	Medium	High	Medium	Public Works; School Districts; Marin Transit; TAM	State Transportation Funds; Measure A	School district monitoring of ridesharing and bus ridership.	None.
LF7: Provide transit and carpool incentives to City employees, including alternate work schedules and telecommuting opportunities.	155	Medium	Medium	Medium	Medium	Public Works	General Fund, grants	Proportion of City employees using alternate modes of commuting to single-occupancy vehicles.	20% of employees use alternate modes.
2. Promote energy savings from transportation:									
LF8: Encourage ownership of plug-in	130	High	Medium	Low	Medium	Public Works;	Private Vendor,	Number of plug-in	110 charging

Program	Potential GHG Reduction	Start Up Cost	Staffing Level	Annual Cost	Time frame	Responsibility	Funding Sources	How we will measure progress	2020 Goal
electric vehicles, as they become available and in use, by providing charging stations in City garages and parking lots, consider requirements for charging stations in newly constructed private parking facilities, and participate in regional efforts to encourage widespread availability of charging stations.						Parking District; Community Dev.	Parking District	stations available.	stations available.
LF9: Adopt a policy to limit City vehicle idling where practical. Evaluate equipping trucks with an auxiliary electrical system for illumination and warning signs.	190	Low	Low	Low	Short	Public Works; Police; Fire	General Fund	Reduction in annual per vehicle gallons of fuel purchased.	20% reduction in annual per vehicle gallons of fuel purchased. 2005 gal/vehicle: 52,027 gal. gasoline; 6,564 gal. diesel 2020 goal: 41,622 gal. gasoline; 5,251 gal. diesel
LF10: Educate and encourage businesses and residents to limit vehicle idling.	n/a	Low	Low	Low	Medium	Police	General Fund	Initiation of education effort.	n/a
3. Reduce material consumption and increase resource re-use:								Reduction in annual tons of total waste.	70% reduction. 2005: 71,940 annual tons 2020 goal: 21,582 annual tons
LF11: Adopt a Zero Waste Goal and develop a Zero Waste Strategic Plan for San Rafael. Consider the following: a. Zero Waste planning advice to non-City organizations b. Organic composting c. Waste exchange d. Public education outreach e. Incentives for waste minimization f. Set department goals to reduce	9,260	Medium	Medium	Medium	Medium	City Manager; Marin Co. Haz. & Solid Waste JPA	Landfill "tipping" fee, grant	Reduction in annual tons of total waste.	70% reduction. 2005: 71,940 annual tons 2020 goal: 21,582 annual tons

Program	Potential GHG Reduction	Start Up Cost	Staffing Level	Annual Cost	Time frame	Responsibility	Funding Sources	How we will measure progress	2020 Goal
waste g. Establish requirements for all public events and meetings									
LF12: Encourage the Marin County Hazardous and Solid Waste JPA to establish a landfill “tipping fee” to fund waste reduction efforts.	n/a	Low	Low	Low	Short	City Manager; Marin Co. Haz. & Solid Waste JPA	Landfill “tipping” fee	Amount of revenue generated to fund waste reduction efforts.	To be determined
LF13: Encourage programs to educate and assist homeowners in composting, and the creation of facilities to convert organic waste (e.g., vegetative or food waste) to energy to significantly reduce or eliminate landfill disposal.	2,260	High	Low	Low	Medium	City Manager; Marin Sanitary; Central SR Sanitation Agency	Waste franchisee, Central SR Sanitation Agency, Grants	Annual tons of organic waste diverted.	100% reduction in organic waste going to landfill 2005: 46,800 annual tons 2020: 0 annual tons
LF14: Work with the City’s waste franchisee to create additional incentives in the rate structure for waste reduction and recycling and expand the range of recycled products if resale markets exist. a. Incentivize waste reduction and recycling for residents and businesses. b. Require detailed material flow information from all licensed waste haulers. c. Substitute waste franchise fee predicated on volume with a waste minimization mitigation fee. d. Ensure sales of recyclable materials are linked with the cost of waste services to incentive residents. e. Require and expand the range of products collected in the recycling program including collection of a greater range of plastics and paper. f. Modify recycling franchise exclusivity to encourage greater	4,750	Low	Low	Low	Short	City Manager; Marin Sanitary	Waste franchisee	Increase in annual diversion rates.	

San Rafael Climate Change Action Plan

Program	Potential GHG Reduction	Start Up Cost	Staffing Level	Annual Cost	Time frame	Responsibility	Funding Sources	How we will measure progress	2020 Goal
market response and competition.									
LF15: Adopt a construction debris recycling and reuse ordinance.	1,255	Low	Low	Low	Short	Community Dev.	Staff Time (General Fund)	Proportion of constr. & demolition waste diverted.	50% construction & demolition waste diverted.
LF15 Assist in establishing additional reuse facilities (resale shops, refilling stations, repair shops and resource recovery yards).	570	Low	Low	Low	Long	Community Dev.; Economic Dev.	Staff Time (General Fund)	Number of additional reuse facilities established.	
LF16 Investigate options for banning nonrecyclable single use items, such as plastic bags and polystyrene takeout food containers.	n/a	Low or High (if EIR required)	Medium	Low	Short	City Attorney	Staff Time (General Fund)	Number of material bans established.	
LF17 Modify the City's purchasing practices and policies to become a model for other businesses and organizations. <ul style="list-style-type: none"> a. Stop purchase of single-use items (i.e. batteries, water bottles). b. Promote new Green Purchasing Policy for cleaning products. c. Address cleaning products, vehicles, computers, paint, lighting, and paper office products. d. Give preference to bidders on City contracts for using green products or require it of all City contractors. e. Make sure all City printers are set to default to double-sided. f. Purchase durable products (i.e. upgradeable computers, longer life light bulbs, LED's) g. Lease large equipment like copiers and materials like carpet leasing so they can be replaced as needed. h. Investigate use of state-wide purchasing contracts to lower the unit cost of green items like paper, computers, etc. 	275	Low	Medium	Low	Short	Finance	General Fund	Creation of internal Green Purchasing Team.	Goals to be established by staff team.

Program	Potential GHG Reduction	Start Up Cost	Staffing Level	Annual Cost	Time frame	Responsibility	Funding Sources	How we will measure progress	2020 Goal
i. Require that any vendor who sells computers, electronics, batteries, lighting, etc to the City must also take them back for recycling.									
4. Increase the supply of renewable energy sources:									
BU1: Support efforts of Marin Energy Authority to increase the proportion of renewable power offered to residents and businesses and to provide financial and technical assistance for energy efficiency upgrades.	90,000	Low	Medium	Low	Short	City Manager	Marin Energy Authority	Proportion of total power supply from renewable sources.	Objectives to be established by MEA Board
BU2: Consider creation of or participation in a bond financing program to fund installation of renewable energy systems and energy efficiency measures.	4,310	Low	Medium	Low	Short	Community Dev.; Finance; Marin Energy Authority	Assessment District; Staff Time (General Fund)	Number of bond financed renewable energy or efficiency upgrades installed.	3,150 properties participating in program
BU3: Adopt zoning allowances for residential wind power generators and for location of solar collectors.	510	Low	Low	Low	Short	Community Dev.	Staff Time (General Fund)	Adoption of zoning amendments. Number of wind turbines installed.	1% of dwellings install wind turbines (142)
5. Reduce dependency on non-renewable resources:								Reduction in annual electricity and natural gas use.	20% energy savings. 2005: 305,406 mWh and 11,270,649 therms 2020: 244,325 mWh and 9,016,519 therms
BU4: Apply green building requirements to residential, commercial and civic remodeling projects as well as new construction.	1,700	Low	Medium	Low	Short	Community Dev.	Staff Time (General Fund)	Number of new remodeling projects that are Green Point Rated or LEED certified.	All major remodels meet new ordinance requirements.
BU5: Develop a program to achieve energy savings in existing buildings, with a goal of decreasing energy use by 20% as of the year 2020.	34,700	Low	Medium	Low	Medium	Community Dev.; Marin Energy Management Team	Staff Time (General Fund), Grants, Marin Energy Authority	Annual energy savings from efficiency upgrades installed.	20% energy savings. 2005: 305,406 mWh and 11,270,649 therms

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									2020: 244,325 mWh and 9,016,519 therms
BU6: Develop a program to achieve water conservation in existing buildings and landscaping, with a goal of reducing water use by 30% by the year 2020.	1,010	Low	Low	Low	Short	Community Dev.; Marin Municipal Water District	MMWD, Staff Time (General Fund)	Reduction in annual water use per household.	30% reduction in household water use. 2005: 350 gal/day/hh 2020: 245 gal/day/hh
BU7: Complete the energy audit of major City buildings and facilities to identify opportunities for efficiency measures and renewable power generation opportunities and develop an implementation plan for upgrades.	120	High	Medium	Low	Short	Public Works; Marin Energy Management Team	Federal grant, General Fund, Marin Energy Authority	Reduction in annual energy use for City facilities.	15% energy savings. 2005: 2.2 mWh 2020: 1.9 mWh
6. Increase carbon sequestration through tree planting and maintenance:									
EN1: Inventory tree and vegetative cover to determine existing resources and carbon sequestration, and establish citywide goals and strategies to increase carbon sequestration.	440lbs/tree /year	Medium	Medium	Low	Medium	Public Works	Staff Time (General Fund); Grants	Completion of inventory and adoption of goals and strategies.	Completion of inventory and adoption of goals and strategies.
EN2: Adopt ordinances to regulate the removal and replacement of significant trees and preclude sale of invasive non-native plants.	n/a	Medium	High	High	Long	Public Works	Staff Time (General Fund); Fees	Adoption of ordinances.	Adoption of ordinances.
EN3: Update zoning regulations for parking lot landscaping to increase shading and reduce thermal gain.	n/a	Low	Medium	Low	Short	Community Dev.	Staff Time (General Fund)s	Adoption of ordinances.	Adoption of ordinances.
EN4: Consider establishing a local carbon offset program to support tree planting and maintenance.	440lbs/tree /year	Low	Low	Low	Medium	Public Works; Finance	Staff Time (General Fund); Contributions	Revenue from offset program. Number of new trees planted.	Establishment of offset program.
7. Increase local food production:									
EN5: Encourage the creation of home and community gardens, including	n/a	Medium	Medium	Medium	Medium	Community Services		Number of community gardens.	

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possible use of surplus City properties for community gardens.									
EN6: Continue to promote local farmers markets.	n/a	Low	Low	Low	Ongoing	Economic Dev.	Redevelopment Agency	Attendance at local farmers markets.	
8. Monitor sea level rise and plan for shoreline defense:									
EN7: Develop a program of levee analysis, including inventorying heights, testing and maintaining public and private levees. a. Inventory levee heights, materials for seismic resilience, condition, and potential impacts on wetlands b. Prepare for storm surges (estimate 12" storm surges) c. Support ways to recycle concrete and other materials for use in levees d. Maintain pumps and improve as necessary	n/a	High	Medium	Low	Long	Public Works	Staff Time (General Fund); Private Property Owners	Number of miles of public and private levees surveyed for height. Number of miles of public and private levees surveyed for structural integrity.	
EN8: Install a sea level monitoring gauge to track changes over time.	n/a	Medium	Low	Low	Short	Public Works		Installation of monitoring gauge.	
9. Increase understanding and preparation for the effects of climate change:									
EN9: Participate in Marin County's regional vulnerability assessment, and prepare a local vulnerability assessment for San Rafael. a. Use watershed as the planning areas b. Understand the sedimentation impacts on wetlands and habitat c. Determine protocols for rising water liabilities, including the potential for increased salinity in the water supply and clean up of contaminated lands as needed d. Review need to relocate waste and sewer facilities due to sea level rise	n/a	Medium	Medium	Medium	Medium	Public Works	Staff Time (General Fund)	Completion of local vulnerability assessment. Completion of regional vulnerability assessment.	
EN10: Continue to provide emergency planning and community	n/a	Low	Medium	Medium	Ongoing	Emergency Services Planning	Staff Time (General Fund)	Number of individuals trained in emergency preparation.	

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awareness.									
10. Support environmentally beneficial businesses and job creation:									
EC1: Continue to promote new green business opportunities.	n/a	Low	Low	Low	Ongoing	Economic Dev.	Redevelopment Agency	Number of local certified green businesses.	
EC2: Support and encourage green businesses in conjunction with Marin County's Green Business Program.	n/a	Low	Low	Low	Short	Economic Dev.; Marin County	Redevelopment Agency	Number of local certified green businesses.	
11. Enhance social equity among all segments of the community:									
EC3: Continue to expand the supply of affordable housing, which reduces commute times and congestion.	n/a	Low	Low	Low	Ongoing	Economic Dev.; Community Dev.	Redevelopment Agency; Staff Time (General Fund); Private Developers	Number of new deed-restricted affordable housing units.	560 affordable units (consistent with Housing Element)
EC4: Support the creation of environmentally beneficial ("green collar") jobs, particularly for lower income residents.	n/a	Low	Low	Low	Medium	Economic Dev.	Redevelopment Agency	Number of "green collar" jobs created.	n/a
12. Increase community education and commitment towards sustainability efforts:									
CO1: Increase City employees' awareness of climate protection issues, and develop internal committees (such as a green purchasing initiative or energy efficiency) to implement plans.	n/a	Low	Low	Low	Short	City Manager	Staff Time (General Fund)	Formation of internal City committees implementing climate protection initiatives.	n/a
CO2: Use the City's website and City publications and work with community organizations to promote sustainability efforts to both residents and businesses.	n/a	Low	Low	Low	Short	City Manager	Staff Time (General Fund)	Number of website hits. Number of articles in City publications on sustainability issues.	n/a
CO3: Partner with other agencies and organizations to hold an annual "Green Festival" to promote sustainability efforts.	n/a	Medium	Medium	Low	Short	City Manager; Marin County;	Staff Time (General Fund); Concessionai	Number of "Green Festival" attendees.	To be determined.

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						Non-Profits; Volunteers	res; Non-Profits		
13. Encourage other levels of government to work towards sustainability:									
CO4: Advocate for state and federal legislation that advance GHG reductions and other sustainability efforts.	n/a	Low	Low	Low	Ongoing	City Manager	Staff Time (General Fund)	Number of legislative actions supported by the City which are adopted.	n/a
CO5: Continue to provide a leadership role with other local governmental agencies to share best practices and successes.	n/a	Low	Low	Low	Ongoing	Community Dev.; Marin Climate and Energy Partners	Staff Time (General Fund)	Number of Marin agencies adopting or participating in sustainability efforts. Number of partnership efforts City participated in.	n/a
14. Monitor success in achieving Plan objectives and update periodically:									
IM1: Evaluate future development applications and the City's Capital Improvement Program against compliance with the Climate Change Action Plan.	n/a	Low	Low	Low	Ongoing	Community Dev.	Application Fees; Staff Time (General Fund)	n/a	n/a
IM2: Prepare an annual report to the Planning Commission and City Council assessing the implementation of the Plan.	n/a	Low	Low	Low	Ongoing	Community Dev.	Staff Time (General Fund)	n/a	n/a
IM3: Hire a Sustainability Coordinator to advance efforts to implement the Climate Change Action Plan.	n/a	Low	High	Medium	Short	City Manager	Grants; General Fund	n/a	n/a
IM4: Appoint a Sustainability Commission to advance efforts to implement the Climate Change Action Plan.	n/a	Low	Medium	Low	Short	Unknown	General Fund	n/a	n/a