

2	Encourage alternative fueling stations within close proximity to potential customers.	Negligible	19	Negligible
3	Encourage developers to dedicate parking lot spaces to electric vehicle recharging stations.	Negligible	30	Negligible
TOTAL		\$10,000	49	\$200

11. Price on-street parking in high-traffic areas in order to alleviate congestion, increase motorist convenience, reduce VMT, and create a new revenue stream for the City

**-4,576
Metric
Tons Co₂e**

In busy commercial areas such as on Laurel Street and San Carlos Avenue, convenient street parking is often filled, while less convenient spaces in back parking lots and side streets are often unoccupied. This trend reduces motorist convenience, forcing drivers wanting to make a quick stop to circle for parking. In fact, as much as 8-74% of urban traffic congestion is caused by vehicles searching for on-street parking with motorists spending an average of 3.5 to 13.9 minutes to find a curb space.⁴⁸ This congestion results in greater VMT and, thus, greenhouse gas emissions.

A parking management plan would encourage turnover in high traffic areas along Laurel Street and San Carlos Avenue by charging a small amount per hour. As a result, guests and employees that plan on spending a long period of time in the area would be more likely to park in a City-owned parking plaza, leaving the more convenient street parking spots open for people in need of a quick coffee stop, dry cleaning pickup, or similar errand. Per hour prices for parking would be readjusted on a regular basis to ensure that on-street spaces are kept at around 85% occupancy. This may necessitate dynamic increases and decreases in parking fees to correspond with peak and non-peak parking demand. Fluctuating parking rates are easily managed through electronic parking kiosks like those in Redwood City.

Although pricing parking creates a disincentive for parking on the street, case studies have shown that it does not negatively affect business to an area. A motorist may celebrate when he finds a free parking space directly in front of his destination, but there are not enough of these spaces for everyone. Parking management trades the convenience of a few for the convenience of the majority by creating more choice. Some shoppers will find it worthwhile to park in the unpriced plazas for long trips, leaving on-street parking available for the busy office worker who is happy to have an open parking space available for a quick lunch stop (even for a small fee).

⁴⁸ Victoria Transportation Planning Institute, *Parking Pricing*, www.vtpi.org/tdm/tdm26.htm, accessed January 13, 2009.

Future revenue streams from the parking pricing could be directed to downtown area improvements or utilized to fund implementation of other Climate Action Plan measures. Redwood City's recently-implemented parking pricing program netted \$850,000 in its first year.



Parking Pricing Success Story: Redwood City Parking Management Plan

Redwood City unanimously approved a congestion management parking ordinance in 2005. Parking spots are now 50 to 75 cents along Broadway and free or 25 cents on side street or in nearby garages with no time limits imposed throughout the area. The shopping district has seen a significant decrease in overall traffic and an increase in revenue, all of which they've given back to the downtown business improvement district for cleanup and streetscape improvements. The meters are solar-powered and networked so that a shopper can recharge a parking spot from a few blocks away.

The Redwood City Parking Plan modeled a worst case scenario in which parking was only 25 cents an hour and occupancy fell below current levels. Even with these conditions, the City still calculated \$160,000 in profit after expenses.

<http://shoup.bol.ucla.edu/Downtown%20Redwood%20City%20Parking%20Plan.pdf>

Initial Cost

Costs to the City would include Staff time for writing and coordinating a parking pricing plan and costs for purchasing and installing the parking kiosks. Solar-powered, networked parking kiosks that accept bills, coins, and credit cards cost approximately \$11,000 each.⁴⁹ There are approximately 170 non-handicapped parking spots along San Carlos Avenue and Laurel Street, necessitating approximately 19 parking kiosks (9 spots per kiosk). It is therefore estimated that the total cost for preparing a parking plan and installing the kiosks would be \$230,000.

It is estimated that the City would see a return on its investment within two years. Even under a worst case scenario that on-street parking occupancy falls to an average of 50%, the City would still recuperate costs in two years, assuming an average of 50 cents charged per hour.⁵⁰

In order to maintain consistency with the other reduction measures in this Plan, only the \$230,000 in initial start-up costs will be considered in the cost per metric ton CO₂e analysis.

⁴⁹ \$11,000 per parking kiosk estimate obtained from several sources and companies, including the City of Dallas, TX (<http://www.dallascityhall.com/pdf/pio/WestEndParking.pdf>) and Baltimore (<http://articles.lancasteronline.com/local/4/232277>.)

⁵⁰ 303 business days per year * 9 hours per day * 173 parking spots * 50% occupancy * 50 cents = \$117,942 * 2 years = \$235,000

Greenhouse Gas Emission Reduction

A study by the Victoria Transport Policy Institute on transportation emission reduction strategies indicates that parking pricing affects 40% of urban travel. Within this affected population, pricing parking where it was previously free of charge typically reduces travel by 10-20%.⁵¹ Parking pricing results in these reductions by creating further incentive for alternative modes of transportation and reducing VMT previously spent on finding a free on-street parking spot.

The study concludes that parking pricing can reduce urban/community travel by 4-8%. For this study, we will assume that travel will decrease by the lower range, or 4%, due to the small area of the San Carlos Avenue/Laurel Street corridor. This reduction measure will reduce overall transportation emissions by 4,576 metric tons of CO₂e per year by 2030.

Table 25
Summary of Transportation and Land Use Reduction Measure 11

	Component	Initial Costs to the City	GHG Reduction (metric tons CO ₂ e / year)	Cost per metric ton CO ₂ e
1	Price on-street parking in high-traffic areas in order to alleviate congestion, increase motorist convenience, reduce VMT, and create a new revenue stream for the City.	\$230,000	4,576	\$50.26
TOTAL		\$10,000	4,576	\$50.26

⁵¹ Todd Litman, *Win-Win Emission Reduction Strategies: Smart Transportation Strategies Can Achieve Emission Reduction Targets And Provide Other Important Economic, Social and Environmental Benefits*, Victoria Transport Policy Institute (www.vtpi.org), 2006, www.vtpi.org/wwclimate.pdf.

Transportation and Land Use Reduction Measures – Progress to Date

Efforts to reduce transportation-related emissions are already underway in the City of San Carlos. In addition to hybrid vehicle purchases for the municipal fleet, the City is developing multiple traffic calming measures. The following analyzes San Carlos's progress in achieving the transportation and land use reduction targets outlined in this chapter.

Traffic Calming⁵²

Traffic calming measures such as traffic circles, bulbouts, and chokers help to reduce greenhouse gas emissions by lowering traffic speeds and improving the pedestrian and bicycle environment. The City's traffic calming policy was amended in 2004 to require the homeowners pay 100% of construction of traffic calming devices.

Following adoption of the policy and the budget, the following petitions were filed:

- 1) The residents of 2200 and 2300 blocks of Howard Avenue for installation of a traffic circle at the intersection of Howard Avenue and Dayton Avenue
- 2) The residents of 700 block of Cordilleras Avenue for installation of two Chokers
- 3) The residents of 900 and 1000 blocks of Elm Street for installation of a Traffic Circle at the intersection of Elm Street and Morse BLVD
- 4) The residents of Magnolia Avenue for installation of a traffic circle and a choker at the intersection of Magnolia Avenue and Chestnut Street

Following several neighborhood meetings and with recommendation from the Traffic Commission, the above projects were approved by the City Council and were constructed at no cost to homeowners.

It is estimated that this reduction effort will reduce emissions by **approximately 5 metric tons CO₂e**, which contributes directly to Reduction Measure 5 - Actively promote walking and biking as safe modes of local travel, particularly for children attending local schools.

Bike Lanes⁵³

Multiple bike lanes were installed during the period of 2005 to 2009, including those on the following streets:

- Brittan Avenue
- Alameda de las Pulgas in 2007
- Sharrows and Share the Road signs were installed on Cedar Street and Arroyo Ave in 2008
- Arroyo Ave: 3/4 miles of sharrow/share the road signage

⁵² San Carlos City Council Staff Report, "Report on Traffic and Pedestrian Safety Efforts," dated December 11, 2006.

⁵³ Communication with Rober Weil, City of San Carlos Public Works Director/Engineer, Feb. 23, 2009.

▣ Cedar Street: 1.9 miles of sharrow/share the road signage

It is estimated that the bike lane installations since 2005 have saved **10 metric tons CO₂e**.

Curb Ramps

Funding has been approved through the American Recovery and Reinvestment Act of 2009 (aka the stimulus package) for the 2009 Pedestrian Improvement Project, which would complete 99 new curb ramps and 110 new crosswalks at the current level of funding. Construction would occur starting in Summer 2009. It is estimated that these curb ramps will reduce transportation emissions by approximately **2 metric tons CO₂e**.

Hybrid Vehicles

The City of San Carlos has already begun to convert its vehicle fleet to hybrid and alternatively-fueled vehicles where possible. The police chief and building inspection department recently switched to hybrid vehicles and parking enforcement utilizes an electric utility vehicle. These two hybrids and one electric vehicle are estimated to reduce emissions by approximately **10 metric tons CO₂e** compared to business-as-usual.

Analysis of Reduction Target – Transportation and Land Use

The 11 measures in this chapter help San Carlos achieve 50% emissions reductions by 2030 in combination with State initiatives such as the Pavley bill discussed later in this document and the Low Carbon Fuel Standard.

Table 26
Summary of Transportation and Land Use Emissions Reductions

	Metric Tons CO ₂ e per year
Reference year 2030 Transportation “Business-as-Usual” Emissions	195,016
1 Encourage development that is mixed-use, infill, and higher density.	- 5,544
1.1. Revise municipal codes to encourage and allow for mixed-use, infill, and high-density development.	
2 Increase housing density near transit.	- 4,957
2.1. Revise municipal codes to encourage and allow for higher density commercial and residential centers near transit corridors with the express intent of encouraging transit ridership and reducing the use of personal automobiles.	
3 Address and minimize vegetation that degrades access along public rights of way.	n/a
3.1. Provide for an education program to residents and businesses as well as increased code enforcement in order to minimize vegetation that degrades access along public rights of way.	
4 Increase Bike Parking	- 150
4.1. Increase the bicycle parking requirement for commercial projects in order to promote cyclist safety, security, and convenience.	
4.2. Require large employers to provide facilities that encourage bicycle commuting, including shower facilities, and covered or indoor bicycle parking.	
5 Actively promote walking and biking as safe modes of local travel, particularly for children attending local schools.	- 170
5.1. Promote traffic calming methods on City streets such as landscaped median barriers and traffic circles.	
5.2. Establish clear and convenient pedestrian rights of way with shade and minimal tripping hazards.	
5.3. Incorporate bicycle-friendly intersections and boulevards into street design as recommended by the Bicycle Transportation Plan currently being updated.	
5.4. Promote “Walk pools” or “Walking buses” to increase the number of students who walk to school.	
6 Create travel routes that ensure that destinations may be reached conveniently by public transit, bicycling and walking.	- 122
6.1. Create a plan to identify and address barriers to safe or convenient walking, biking,	

	Metric Tons CO ₂ e per year
Reference year 2030 Transportation “Business-as-Usual” Emissions	195,016
and transit ridership from major residential areas to public areas of interest and see to the plan's implementation.	
6.2. Make it a condition for approval that new large-scale developments address transit, biking, and walking access to the location.	
7 Provide for a shuttle service in order to increase transit ridership.	- 1,733
7.1. Establish a shuttle service within the City of San Carlos connecting areas not adequately served by public transit to Caltrain.	
8 Promote car sharing programs.	- 1,158
8.1. See to the establishment of a car sharing program.	
8.2. Provide parking spaces for car share vehicles at convenient locations accessible by public transportation.	
9 Convert more City vehicles to hybrid, electric, alternative fuel, or smaller vehicles.	- 59
9.1. Replace 18 traditional automobiles in the City's fleet with hybrid vehicles.	
10 Increase accommodation and promotion of alternatively fueled vehicles and hybrid vehicles.	- 49
10.1. Offer prioritized parking for hybrid or alternative fuel cars on City streets.	
10.2. Encourage siting of alternative fueling stations within close proximity to potential customers.	
10.3. Encourage developers to dedicate parking lot spaces to electric vehicle recharging stations.	
11 Price on-street parking in high-traffic areas in order to alleviate congestion, increase motorist convenience, reduce VMT, and create a new revenue stream for the City.	- 4,576
11.1. Price on-street parking in high-traffic areas in order to alleviate congestion, increase motorist convenience, reduce VMT, and create a new revenue stream for the City.	
Total Community Reduction	-18,518
Pavley I and II	-91,978
Low Carbon Fuel Standard	-10,304
Net community Transportation Emissions	74,216
Base Year 2005 Transportation Emissions	150,663
Percent below 2005 level	50.7%

It is also important to note that the Caltrain line is slated to become fully powered by electricity through the Caltrain Electrification Project. The Project would convert the Caltrain mainline between San Francisco and Gilroy from diesel-powered to solely electric-powered. Not only would travel time and frequency improve under the new system, but greenhouse gas emission levels would be greatly reduced. The conversion planning process is currently under environmental review.

It is possible that San Carlos could achieve greater transportation and land use emissions reductions with greater regional and state cooperation. For now, the aforementioned reduction measures and their corresponding emissions reductions are a best effort under current technology and the limited ability of a municipal government. The effect of State initiatives is explored further in Chapter 7.