



LAS POSITAS  
COLLEGE



# Las Positas College Climate Action Plan 2010

# Acknowledgments

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Members of the Sustainability Committee are:

Michael Ansell  
Eric Harpell  
Amy Chovnick  
William Eddy  
Neal Ely  
Janneice Hines  
Justine Whitfield  
Nan Ho  
Candace Klaschus  
Bob Kratochvil  
Craig Kutil  
Scott Miner  
Paul Torres  
Toby Bielawski  
Elizabeth Hopkins  
Colin Schatz  
Jeff Sperry  
Adeliza Flores  
Jeremiah Bodnar



Other individuals who contributed their time and efforts include:

DeRionne Pollard  
Pam Luster  
Laurel Jones  
Jill Carbone  
Layne Jensen  
Karen Kit  
Amber Machamer  
Tim Nelson  
Elizabeth Noyes  
Jenna Heath  
Charles Bender  
Stan Barnes  
Tom Fuller  
David Grabarek

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June 7, 2010

Dear Students, Faculty, Staff and Community Members:

Our Chancellor, Dr. Joel Kinnamon, became a signatory to the American College and University Presidents Climate Commitment (ACUPCC) on August 21, 2007; in doing so, he demonstrated Chabot-Las Positas Community College District's pledge to develop carbon neutral college campuses. This commitment not only aims to protect our environment, but also benefits the local communities of Livermore and Hayward where our two colleges are located. Additionally, our District's efforts help the State of California achieve its goal of dramatically reducing greenhouse gas (GHG) emissions, as put forth in local and statewide legislation.

In 2007-2008, Las Positas College established a Sustainability Committee to further the institution's commitment to global responsibility, explore green practices, and develop sustainability goals that reflect the College's Mission and Values Statements. As part of its charge, the Sustainability Committee seeks to uphold the principles of ACUPCC and to encourage progress toward more sustainable use of resources. In this regard, it hopes to position the College as a model for the local community and higher education.

College Sustainability Goals follow two main guidelines:

1. Assess the operation of the college, finding ways to embed sustainability within the daily work routine to reduce our carbon footprint and the impact on the environment.
2. Address sustainability through the curriculum, serving the needs of the community by offering degrees and certifications in "green" technologies, which will help to fill the growing need for green job technical skills.

Using data generated from a comprehensive Greenhouse Gas Inventory conducted in 2009, the Sustainability Committee has recommended strategies designed to: 1) reduce the College's greenhouse gas emissions; and, 2) establish the pathway to meet the goal of a 15% reduction in emissions below 2008 levels by 2020, with consideration for the longer term vision of achieving carbon neutrality by the year 2050.

Our students, faculty, staff and Board of Trustees are proud that the colleges have taken a leadership role in sustainability and carbon footprint reduction, thus demonstrating a commitment to our local and global communities. Moreover, we are inspired by those members of our College community who have engaged in these efforts and who continue to promote environmental, economic, and social sustainability.

Sincerely,

**DeRionne P. Pollard, Ph.D.**  
President  
Las Positas College

**Joel L. Kinnamon, Ed.D.**  
Chancellor  
Chabot-Las Positas Community  
College District

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**OFFICE OF THE CHANCELLOR**

5020 Franklin Drive  
Pleasanton, CA 94588  
Tel: 925-485-5207  
Fax: 925-485-5256  
www.clpccd.org

# 1

## Executive Summary

The Las Positas College community understands what it means to “think globally and act locally.” As an educational institution, the college recognizes its responsibility is two-fold. First, it must lead by example for other institutions and for future generations. Second, it must prepare a new kind of workforce equipped with the knowledge and skills to work in or with emerging clean industries.

As a signatory to the American College and University President’s Climate Commitment (ACUPCC), Las Positas College has agreed to initiate actions designed to move the campus towards carbon neutrality. The college has completed a greenhouse gas (GHG) emissions inventory report for years 2005 to 2008, and it has taken proactive measures to reduce GHG emissions while planning for further, long-term reductions. Early actions include, but are not limited to:

- Minimum LEED Silver or equivalent rating for all new construction and renovations;
- Energy star procurement;
- Conversion from T-12 to T-8 fluorescent lights;
- Solar panels on parking lots;
- Replace gas-powered vehicles with alternative fuel vehicles;
- Alternative fuel infrastructure development;
- Promotion of alternative transportation;
- Reclaimed water program;
- Stormwater management;
- Comprehensive recycling and composting program;
- Paper reduction initiative;
- Reduced use of plastic water bottles; and
- Distance learning courses and web communications.

While specifically focused on reducing the carbon footprint of the College's activities, practices and operations, the strategies included in this plan also consider improvement to the local environment and neighboring communities within the region. Mitigation strategies cover the following five major areas:

- Buildings and energy;
- Transportation;
- Waste and recycling;
- Water; and
- Research, Education and Community Outreach.

**Buildings and energy** – Purchased electricity is Las Positas College's second highest source of GHG emissions, making up 18% of total emissions in the baseline year 2008. Natural gas

and electricity are provided primarily through Pacific Gas & Electric. As of 2009, the college produced about 20% of its electricity needs with solar power. To become "grid neutral" by 2030, two additional megawatts of renewable energy will be produced on site. Further measures to increase energy efficiency will involve enhanced building energy management controls and expanding the central utility plant.

**Transportation** – Transportation sources include fuel purchases for District-owned vehicles, directly financed travel, air mileage from the International Student Program, and student, staff and faculty commuting to and from campus. Transportation is the primary source of GHG emissions for the college, accounting for nearly 80% of the gross total in the baseline



year 2008. Student commuting makes up about 68% of the 2008 total with about 78% of the 9,000 + students driving alone. Addressing this considerable emission source will involve innovative strategies, incentives for carbon reducing behavior and practices, working together with local transportation providers, and educating the campus community about alternative transportation options.

**Waste and Materials** – Most waste and materials (with the exception of fertilizers) are indirect emissions considered under scope 3, as defined by the GHG Protocol. Waste and materials account for the least amount of GHG emissions, with less than 3% of total emissions in 2008. Although this sector source is not a major contributor to the college's carbon footprint, the college administration is committed to further reducing paper consumption, conserving valuable drinking water, and reducing waste on campus through improved electronic document

management systems, and reduced waste in food packaging, among other strategies.

Las Positas College began implementing sustainability actions in conjunction with the 2004 passage of a \$495 million capital improvement bond (Measure B Bond). As a result of these actions, the per student GHG emissions have had a downward trend over the past four years. Las Positas College and the Chabot-Las Positas Community College District are committed to continually improve and sustain excellence in education, economic, social and environmental responsibility. This Campus Climate Action Plan provides a pathway to achieving the college's near term goal of meeting a 15% reduction in emissions below 2008 levels by 2020 with consideration of the longer term vision of reaching carbon neutrality by 2050. As the college and neighboring community grow, the climate action plan will be updated periodically to ensure continued movement towards academic, social, economic, and ecological sustainability.

# 2

## Baseline Emissions Inventory

In 2009, Las Positas College developed a greenhouse gas emissions inventory report summarizing the campus's anthropogenic greenhouse gas emissions for fiscal years 2005 to 2008. The inventorying process was the first step in determining major sources of emissions and identifying reduction opportunities to help the campus move towards climate neutrality.

### Methodology

The Greenhouse Gas Emissions Inventory Report covers both direct sources ("scope 1" emissions), such as fuel combustion of District-owned vehicles and fertilizers, and indirect sources ("scope 2" – purchased electricity and "scope 3" – all other indirect emissions), such as purchased electricity, campus commuting, air travel, waste water, solid waste, and paper use for fiscal years 2005 to 2008. Calculations were based on generally accepted principles and guidelines as provided by the ACUPCC and Clean-Air Cool Planet, the Intergovernmental Panel on Climate Change (IPCC), the World Resources Institute Corporate Accounting and Reporting Standard (The GHG Protocol), and United States Environmental Protection Agency (US EPA) with adjustments, as necessary, utilizing campus-specific data and inputs when and where possible. Results are presented in metric tons of carbon dioxide equivalent (MtCO<sub>2</sub>e), using 100-year global warming potentials from the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report (TAR).

**Table 2-1. Las Positas College Historical GHG Emissions, by Scope**

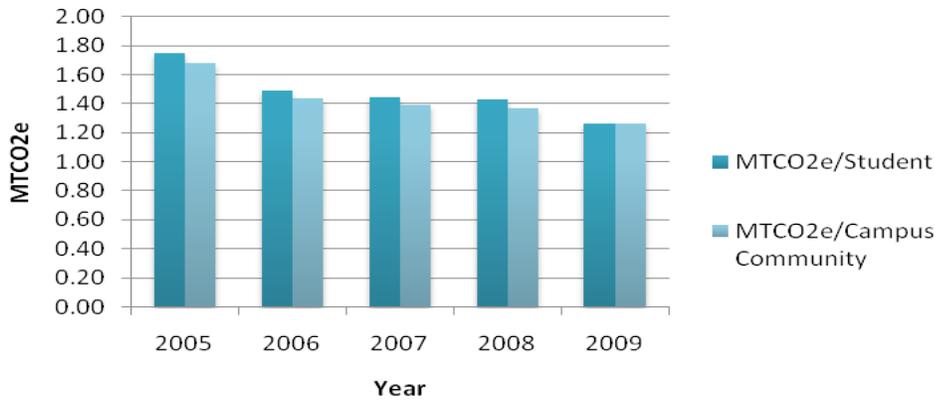
LAS POSITAS COLLEGE		2005	2006	2007	2008
Scope 1	Direct Transportation	37.4	37.7	21.8	33.4
	Agriculture	0.2	0.2	0.2	0.2
Scope 2	Purchased Electricity	2,297.8	2,723.9	2,642.3	2,629.3
Scope 3	Faculty / Staff Commuting	1,020.2	1,171.6	1,259.2	1,344.8
	Student Commuting	9,221.2	9,919.0	10,461.4	9,847.3
	Directly Financed Air Travel	51.8	52.5	68.0	82.6
	Other Directly Financed Travel	19.5	17.4	22.1	25.5
	Study Abroad Air Travel	73.2	79.5	104.8	168.6
	Solid Waste	18.5	19.1	14.3	17.9
	Wastewater	1.0	1.1	1.3	1.3
	Paper	12.3	13.6	13.5	14.6
	Scope 2 T&D Losses	227.3	269.4	261.3	260.0
Offsets	Additional	-3.5	-4.6	-4.8	-4.8
Totals	Scope 1	37.6	37.9	22.0	33.6
	Scope 2	2,297.8	2,723.9	2,642.3	2,629.3
	Scope 3	10,645.0	11,543.2	12,205.9	11,762.6
	All Scopes	12,980.4	14,305.0	14,870.2	14,425.5
	All Offsets	-3.5	-4.6	-4.8	-4.8
	Net Emissions	12,976.9	14,300.4	14,865.4	14,420.7
Population	Students - ALL FTE	7,421	9,620	10,298	10,123
	Faculty and Staff	313	358	386	408
	TOTAL Campus Community	7,734	9,978	10,684	10,531
Emissions Per Capita	MTCO <sub>2</sub> e/Student	1.75	1.49	1.44	1.43
	MTCO <sub>2</sub> e/Campus Community	1.68	1.43	1.39	1.37

## 2005-2008 Inventory Results

A detailed overview of gross and net emissions for years 2005 to 2008, is provided in Table 2-1. Over the four-year period, there was an average growth rate of 3.7% in historical gross greenhouse gas (GHG) emissions. In 2005, gross emissions were estimated at 12,980.4 MtCO<sub>2</sub>e and in 2008 they were estimated at 14,425.5 MtCO<sub>2</sub>e. Scope 3 emissions account for a majority of campus GHG emissions, with

transportation (primarily from commuting) being the largest sector source, accounting for nearly 80% of all emissions.

Despite growth in total gross emission levels, student per capita emissions steadily declined over the same period from 1.75 MtCO<sub>2</sub>e in 2005 to 1.43 MtCO<sub>2</sub>e in 2008. Further decline in student per capita emissions is observed in the last year, reaching about 1.26 MtCO<sub>2</sub>e per student in 2009 as a result of new renewable energy sources and increased energy efficiencies on campus.

**Figure 2-1. Per Capita Emissions**

Source: Parsons Brinckerhoff, 2010

## Base Year Summary

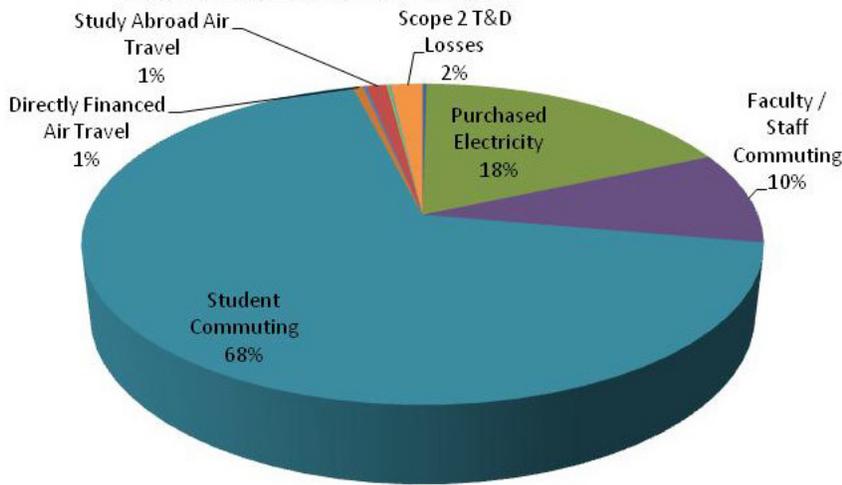
In 2008, the college was responsible for nearly 14,426 metric tons of carbon dioxide equivalent (MtCO<sub>2</sub>e)<sup>1</sup>. Transportation, including fuel purchases, air travel and other directly financed travel, and daily commuting by students, staff and faculty, accounted for nearly 80% of all emissions. As anticipated for a two-year commuter college, nearly 70% (see Figure 2-2) of total emissions are derived from student commuting, with about 78% of the student population reporting as solo drivers.

<sup>1</sup>A unit of carbon dioxide equivalent (MtCO<sub>2</sub>e) represents a standard unit covering the total impact of the six major greenhouse gases: carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>).

## Emissions Forecast

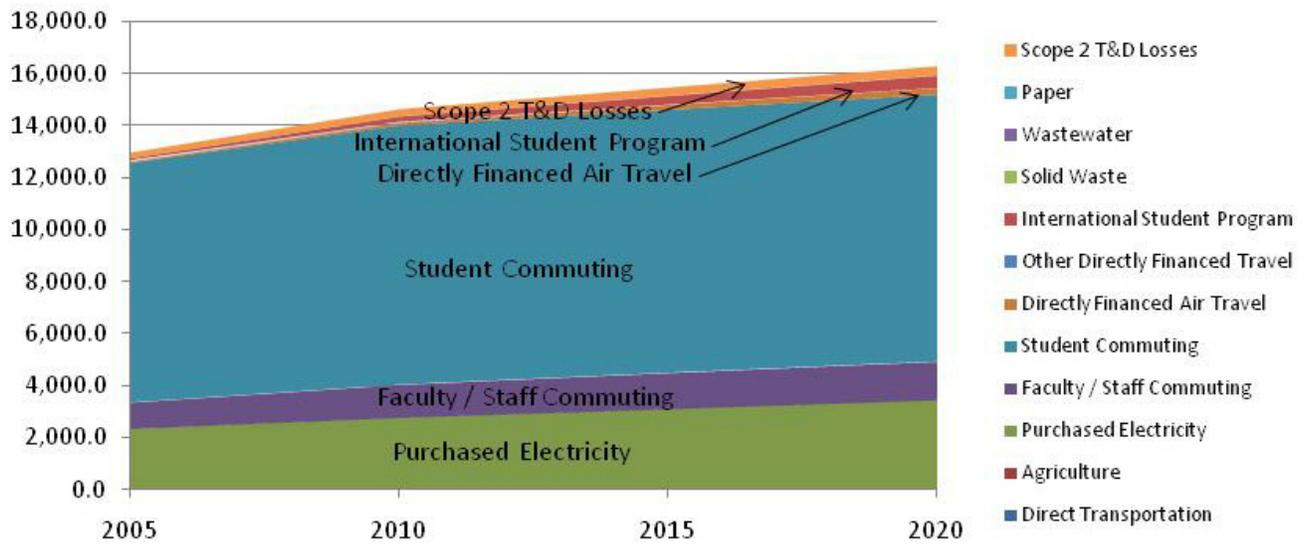
To understand future baseline trends in GHG emissions under business as usual (BAU) assumptions, reference case projections were estimated from year 2009 through 2020. Figure 2-3 illustrates the historical and reference case gross GHG emissions through 2020 and the reduction trend line necessary to achieve a 15% reduction below 2008 levels by 2020 (a 2020 target equivalent to approximately 12,262 MtCO<sub>2</sub>e). Without emissions reduction measures, gross GHG emission levels in year 2020 are projected to reach approximately 16,271.5 MtCO<sub>2</sub>e. Las Positas College, however, has taken proactive measures to implement early energy- and cost-saving strategies to reduce its current and future emissions. This is revealed through the declining emissions per student. Early action measures and further emissions reduction strategies are discussed in the following sections.

**Figure 2-2. 2008 Gross GHG Emissions Summary (MtCO<sub>2</sub>e)**



Source: Parsons Brinckerhoff, 2009

**Figure 2-3. Las Positas College Historical and Reference Case GHG Emissions, 2005-2020 (MtCO<sub>2</sub>e)**



Source: Parsons Brinckerhoff, 2009

# 3

## Early Actions

Las Positas College has taken early action measures to improve campus sustainability and reduce greenhouse gas emissions. A number of early, tangible actions taken in the areas of buildings and energy, transportation, water and waste, education and outreach are outlined below.

### Buildings and Energy

#### 01 Minimum LEED silver or equivalent for all new construction and renovations

In 2005, the Chabot-Las Positas Community College District Board of Trustees adopted a Sustainability Design Policy that requires all new buildings constructed under the Measure B Bond issued to be a minimum Leadership in Energy and Environmental Design (LEED) Silver Certified and that all new renovations be LEED Silver equivalent. Sustainability guidelines can be found in the 2005 Las Positas College Facilities Master Plan. Current LEED projects totaling \$120 million include the College Center for the Arts, the Child Development Center, a Science Building, and a Student Services Building. Construction of these buildings is expected to be completed by 2013.

#### 02 Energy Star procurement

In 2006 the District Purchasing Office developed an RFP process that includes a request for Energy Star certified products.

# LEED Silver Certified or Equivalent Buildings

## Measure B Bond Funding



1 *Student Services Building*

2 *Science Building*

3 *Child Development Center*

4 *College Center for the Arts*



### 03 Conversion from T-12 to T-8 fluorescent lighting<sup>2</sup>

All fluorescent bulbs and ballasts have been converted from T-12 to the more efficient T-8 lighting system. Older, linear fluorescent fixtures generally used T-12 type magnetic ballasts which operate at 60 Hz and require 15% more power beyond the lamp requirements to operate. Not only do the new bulbs save energy, but they promote health: studies have shown that although the light flicker generated at a 60 Hz cycle is undetectable to the human eye, over time it can affect performance, concentration, and the overall health of some individuals. Newer T-8 electronic ballasts operate at 20,000 Hz. T-8 bulbs are more efficient and save about \$30 per year in energy use per light fixture over T-12.

### 04 Solar panels in parking lots

In 2009, more than 6,600 solar panels were installed with capacity of producing 1.1 megawatts of electricity, meeting more than 20% of the campus's current electricity needs. Although the recent GHG Emissions Inventory Report did not include the solar panels (as its installation occurred after 2008), the solar power is estimated to reduce annual CO<sub>2</sub> emissions by approximately 527 metric tons, equivalent to planting about 130 acres of trees. Economic benefits of the solar panels also include about \$2.9 million in California Solar Initiative Incentives and reduced electricity bills. Real-time data can be viewed at: <http://kiosk.utilityvision.com/content/projects/LasPositas/Production.aspx>.

<sup>2</sup>The T figure describes the diameter of the bulbs in 1/8 inch increments (T8 = 8/8 = 1 inch and T12 = 12/8 = 1.5 inches)

## Transportation

### 05 Replace gas-powered vehicles with alternative fuels

The District replaced four of its security vehicle fleet with hybrid-electric security vehicles.



### 06 Alternative fuel infrastructure development

In 2010, applications for six plug-in electric chargers were submitted. Installation of the chargers is anticipated within the next year and will be located near the PV arrays on campus.

### 07 Promotion of alternative transportation

Information on transportation alternatives such as carpooling, biking or taking public transit to the campus is disseminated through posters and on the campus sustainability website at: <http://www.laspositascollege.edu/green/index.php>.

## Water and Waste

### 08 Reclaimed water program

The campus irrigation systems for lawns and landscaping uses reclaimed water, and weather sensor systems have been installed to maximize water efficiency throughout the year. Since reclaimed water contains minerals and phosphates, nitrogen-containing fertilizers are not required for lawns or landscaping, saving both nitrogen emissions and valuable drinking water. Reclaimed water also replaces domestic potable water in toilets in the new buildings on campus.

### 09 Stormwater management

As part of the bond program, a campus wide stormwater management plan has been implemented. The Stormwater management plan is designed with retention and filtration basins such that campus outflows will be at no greater rate and no less quality than outflows prior to the bond program.

### 10 Comprehensive recycling and composting program

The Chabot-Las Positas Community College District implemented an integrated waste management plan in 2003, including on-site composting of organic material, construction waste diversion, and single-stream recycling.



To improve waste management through better separation of construction debris, trash and dirt fill generated during current and future construction activity, Las Positas College requires construction bid documents to include a “Debris Recycling Statement.” Through this program, overall waste diversion rates have been as high as 85.3%.

## 11 Paper reduction initiative

Over the years, Las Positas College has continuously reduced its consumption of paper through a number of efforts, including: online admission applications; registration, grades, and course materials through Blackboard and instructional websites; reduced number of hardcopy agendas and minutes for institutional meetings; electronic curriculum development; GoPrint stations in the library, computer labs, and classrooms; online job postings; and using recycled scratch paper and “Green Books.”

# Education and Community Outreach

## 12 Sustainability committee

The Las Positas College Sustainability Committee started as a task force in 2007/2008 and is now a formalized standing committee with at least 13 members. Its membership currently consists of student representatives, faculty from various divisions, classified staff, and administrators.

## 13 Distance learning

Currently, Las Positas College offers more than 75 online courses and 25 hybrid courses, reducing the number of vehicle trips to campus and associated emissions.

## 14 Web communications

Through the work of the Sustainability Committee and the College Web Master, a “Las Positas Goes Green” website was designed and released in February 2010. This website includes information about the college’s sustainability initiatives, real-time information about renewable energy generated from the college’s solar panels, and alternative transportation opportunities to reach the campus, including public transit, bicycle, and carpool options.

The screenshot shows the top portion of the Las Positas College website. At the top is a dark red navigation bar with the text "LAS POSITAS COLLEGE" and "Students First" in white. To the right of this bar are links for "Home", "Online Learning", "Library", "Find People", "Faculty + Staff", and "GroupWise Email". Below this is a search bar with a "Search" button. A secondary navigation bar contains links for "High School Students", "Adult Learners", "Current Students", "Business & Community", "International Students", and "Quicklinks". The main banner features the text "LAS POSITAS goes GREEN" in large, bold, green letters against a background of a green sunburst. Below the banner is the heading "LPC Goes Green: Sustainability, Transportation, Solar Energy" and the question "Did you know?". A note states: "More than 70% of our carbon footprint\* comes from single passenger vehicles commuting to and from campus. We need to do better." Below this is a small asterisked note: "\*LPC Greenhouse Gas Emissions Inventory 2005-2008. Draft September 2009". The page is divided into three colored boxes: a blue box for "Mass Transit", an orange box for "Carpooling", and a purple box for "Biking". Each box contains a list of links and information. To the right of the "Biking" box is a red box for "LPC Green Initiatives" containing a list of links.

**Mass Transit**

- [Wheels Bus System Map](#)
- [System Schedules](#)
- [LPC can be reached by Bus 12 from the Livermore Transit Center](#)
- [Where's Bus 12 Anyway?](#)
- [How & when to get bus passes?](#)
- [Bus Facts](#)
- [BART Connection](#)
- [Connect to Bus 12 from the Dublin/Pleasanton BART station](#)
- [BART to Livermore Future Plans](#)

**Carpooling**

- [511.org Rideshare](#)
- [Reasons to carpool](#)
- [Carbon, Commuting and Coal](#) By Eric Harpell, Astronomy

If you share a car with just one person, your gas bill, mileage, and carbon footprint are cut in half. Plus, there will be one less car in your way!

**Biking**

There are 4 bike racks on campus that can accommodate a total of 32-33 bikes

- [Current bike routes \(PDF\)](#)
- [Bike racks on campus](#)
- [Portola Overpass from Livermore \(under construction\)](#)
- [Stonewide extension \(under construction\)](#)
- [Dublin Blvd. to North Canyon Road \(Dublin Master Plan\)](#)

**LPC Green Initiatives**

- [Community Education: Understanding Energy Series](#)
- [Live Solar Production: Updated Hourly](#)
- [Photovoltaic Project Overview Facts](#)
- [Photovoltaic Solar Panels Project Benefits](#)
- [LEED Construction Standards](#)
- [Recycling and Composting](#)
- [Paper Reduction](#)
- [Reclaimed Water and Water-efficient Bathrooms](#)

## 4

# Mitigation Strategies (2010-2020)

## 01 Generate Renewable Energy On-Site

As noted above, in 2009, more than 6,600 solar panels were installed on campus with the capacity of producing 1.1 megawatts of electricity. As a result of the installation, annual electricity purchases have been reduced by approximately 20% and the installation has the potential to decrease annual emissions by an expected 527 MtCO<sub>2e</sub>, equivalent to planting about 130 acres of trees. Economic benefits of the solar panels also include about \$2.9 million in California Solar Initiative Incentives, and additional cost savings on electricity bills. Additional renewable energy production on site is currently being explored to generate at least another megawatt of power, with future plans to become grid neutral. Additional renewable sources of energy under consideration by the District include the following or a combination of the following: additional solar photovoltaic panels, wind power, biogas, and fuel cell technology. The tables below (which will follow with each strategy) outline the potential for GHG reductions for years 2010, 2015, and 2020. The values are expressed in terms of metric tons of carbon dioxide equivalent (MtCO<sub>2e</sub>).

Reduction Strategy (MtCO <sub>2e</sub> )	2010	2015	2020
Solar Panels	-527.1	-527.1	-527.1
Add'l Renewable Energy Generation	0.0	-527.1	-527.1

## 02 Expand Building Energy Management Controls

The college plans to expand its building energy management controls to aid in further energy efficiencies, reduce reliance on petroleum-based energy sources, and cut greenhouse gas emissions while saving on utility expenditures.



Part of this effort includes expansion of the central utility plant which when fully connected will enable heating and cooling of older, existing buildings about 40% more efficiently than the currently decentralized HVAC systems. A component of the central utility plant is an ice storage system. Ice is produced at night at lower energy costs which is used during peak daytime hours for building cooling.

Additional potential energy efficiencies include improved building temperature controls and power management for electronics and lighting. It is recommended that seasonal thermostat ranges for buildings range from 70-76 degrees Fahrenheit in the summer and 68-72 degrees Fahrenheit in the winter. According to the U.S. EPA, a home saves 1% of its heating bills for each degree the thermostat is turned down. Applying this formula directly to institutional buildings with an estimated 30% of energy use attributed to heating and cooling of buildings, lowering the temperature in campus buildings by one degree should also save up to 1% of heating costs for the college.

Reduction Strategy (MtCO <sub>2</sub> e)	2015	2020
Enhanced Building Energy Mgmt	-13.3	-14.7

### 03 Reduce Vehicle Miles Traveled (VMT)

Like many other commuter colleges, reducing GHG emissions from transportation is one of the biggest challenges Las Positas College faces. Commuter travel makes up nearly 80% of the college’s total emissions. Key means to reducing transportation-related GHG emissions will involve a reduction in vehicle miles traveled, improvements in vehicle technology, fuels, and design and operations of transportation networks (both vehicular and non-vehicular). Using these strategies, the college can influence VMT reduction.

A campus-wide transportation survey conducted in fall 2009 revealed that 67% of all respondents drive alone to campus, with about 78% of the student population as solo drivers. When choosing how to get to campus, survey responses showed that the most important factors were travel time and convenience. For those usually driving alone to campus, 60% of respondents would be willing to try carpooling as a transportation alternative. About 39% of respondents who drive alone would also consider taking public transit and 37% would be willing to telecommute (i.e., work from home or take online courses).

In addition to the transportation survey, home-based zip code analyses were conducted to determine primary neighborhoods which the college serves. Figure 4-1 illustrates that nearly 7,000 individuals (approximately 65%) of the campus community (students, faculty, and staff) live in the five zip codes shaded in green. The



top home cities are Livermore, Pleasanton, Tracy, Dublin, San Ramon, and Castro Valley with about 65% of campus commuters living in the corridor between the Dublin/Pleasanton BART station and the college.

To address the commuting needs within this corridor, a number of transportation alternatives and strategies are being explored for the next three to ten years, including:

- A robust ridesharing program;
- Implementation of an Express Shuttle service;
- Exploring partnerships with local car-sharing services to provide transportation alternatives to and from campus, and to accommodate for mid-day trips; and

- Improved bicycle facilities and infrastructure.

### *Ridesharing and Express Shuttle Service*

A robust ridesharing program would involve coordination at the regional level with 511 Rideshare and at the campus level through student organizations. Ridesharing can offer a fun and social alternative to driving alone. Sharing the ride also means sharing the costs, and it provides access to carpool lanes and reduced bridge tolls during peak commute hours. The program could be promoted through the campus green website, on-line listings, and forums for students, faculty, and staff and bulletin boards. To incentivize ridesharing, those who commute to campus as part of this program with occupancy of two or more people could have access to reserved, prime parking spaces on campus.

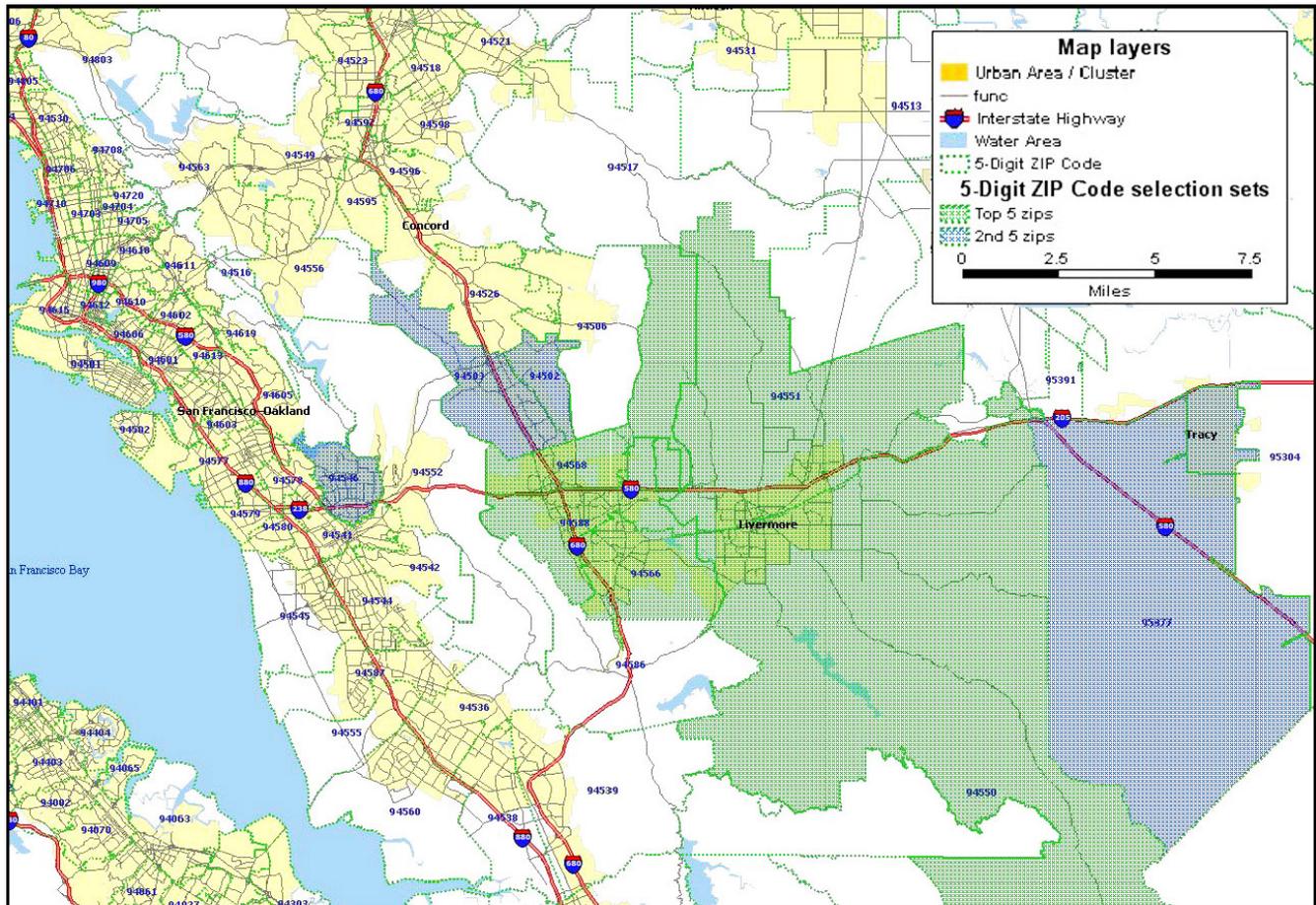
An express shuttle service could have a number of pick-up and drop-off points in areas with the highest student population density in Livermore, Dublin and Pleasanton. The express shuttle service could provide access not only to the campus but to the downtown area and to regional transit networks. Details of shuttle operations are dependent upon further studies. An initial survey of peer shuttle operations revealed all-inclusive costs in the range of \$90,000 to \$400,000 per year.

### Car-Sharing Services

Partnering with car-sharing services like City Car Share or Zip Car could provide campus transit/ride share users with access to vehicles when needed for trips to and from campus during the day, thus removing an excuse for driving to campus and reducing the number of solo drivers and relieving parking spaces. Car-sharing vehicles also could be given preferred parking, like carpools and vanpools.

Reduction Strategy (MtCO <sub>2</sub> e)	2015	2020
Ridesharing + Express Shuttle	-284.1	-567.8

**Figure 4-1. Zip Code Analysis**



Source: Parsons Brinckerhoff, 2010

**Figure 4-2. Proposed Bike Routes, City of Livermore**



Source: City of Livermore

*Improved Bicycle Facilities and Infrastructure*

Currently, there are four bike racks on campus with capacity for storing up to 33 bicycles (Figure 4-3). Working with the welding department, the college plans to increase the number of bike racks available within the next two years and triple the bicycle capacity over the next ten years. Newer, safer bike routes are being developed by the City of Livermore along a new Portola Avenue extension currently under construction to the east (Figure 4-2). Construction of the Isabel/I-580 interchange will improve access to not just Las Positas College, but residential developments and commercial businesses. Construction work

has already started and completion is anticipated by early 2013. Long-term plans also include connecting Dublin Boulevard and North Canyon Parkway to the west of campus.

**04 Increase Campus Average Fuel Economy**

The campus-wide transportation survey conducted in fall 2009 estimated the campus average fuel economy was 25.2 miles per gallon (mpg). One of the goals of the college is to increase the average fuel economy of its campus community to 30.7 mpg (about a 18% increase) over the next ten years through a combination

of improved vehicle and fuel technologies, fleet turnover, alternative transportation modes as compared to driving alone, and eco-driving training. Eco-driving is a form of driving behavior that promotes fuel-savings, including simple ideas like avoiding rapid stops and starts, using cruise control, avoiding unnecessary idling, maintaining appropriate tire pressure, and removing unnecessary weight from a vehicle. The International Transport Forum states that eco-driving can reduce emissions by up to 15%, while a Ford eco-driving test found an improvement in fuel economy by an average of

24%<sup>3</sup> and U.S. EPA states eco-driving has the potential to reduce emissions by up to 33.3%.

Reduction Strategy (MtCO <sub>2</sub> e)	2015	2020
Increased Fuel Economy	-1,723.6	-2,465.3

## 05 Sustainable Scheduling

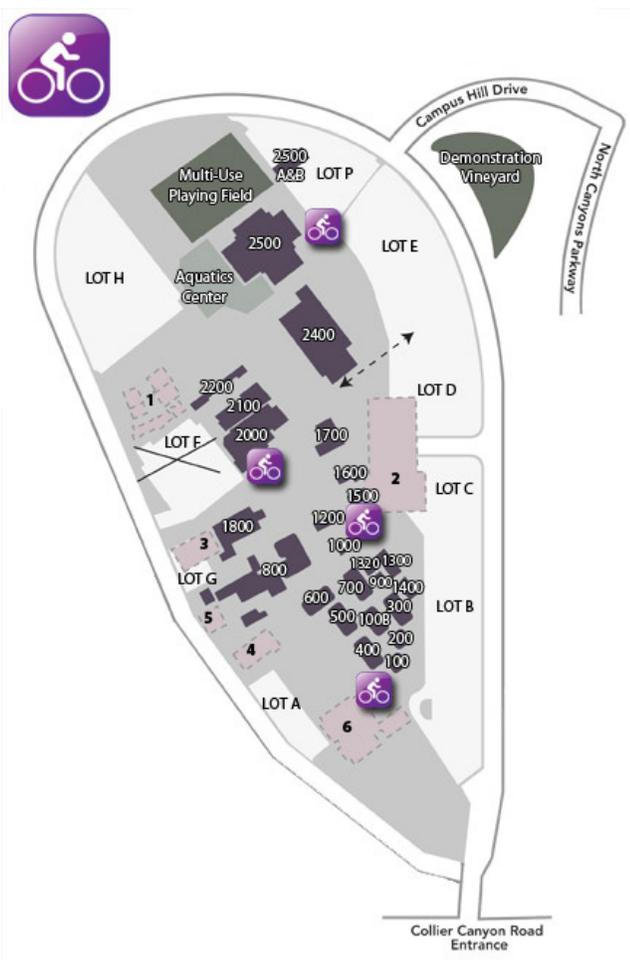
Sustainable scheduling provides a new framework for how we look at using and coordinating resources, time, and energy more efficiently. This strategy will examine work, class, and meeting schedules for students, faculty, and staff, in coordination with transportation schedules and options. Examples of situations or questions this strategy would address include:

If the last class gets out at 9:45pm, and the last transit bus departs campus at 8:37pm, can we work with the local transit provider to better match the transit schedule with the rider needs, or is there a “guaranteed ride home” option that can be explored to provide alternatives to driving alone to campus?

If a faculty member or student has a 1-hour meeting on campus on a day he or she may not normally commute, are there other means of meeting participation, such as video conferencing like CCC Confer.

This strategy may also include options for alternate schedules. There are multiple scheduling schemes that have been studied and implemented across the country that the college and District may consider. Within the next 2-year cycle, the college and District may further examine the feasibility of various alternate

**Figure 4-3. Bike Rack Locations on Campus**



Source: [www.LasPositasCollege.edu/green/bikeracks.php](http://www.LasPositasCollege.edu/green/bikeracks.php)

<sup>3</sup><http://www.ford.com/about-ford/news-announcements/press-releases/press-releases-detail/pr-ford-tests-show-ecodriving-can-28948>

schedules. Alternate schedules could improve work-life balance of employees, reduce vehicle miles traveled, and provide building energy cost savings. The potential GHG reduction for the college consists of an amalgam of various sustainable scheduling concepts used in other programs across the country considering emissions savings from both transportation and building energy.

Reduction Strategy (MtCO <sub>2</sub> e)	2015	2020
Sustainable Scheduling (Transp)	-390.0	-426.0
Sustainable Scheduling (Energy)	-134.0	-134.0

## 06 Research, Education and Community Outreach

Las Positas College Leadership understands that research, education, and community outreach are essential to creating and maintaining a sustainable campus. As a result, a number of avenues for promoting awareness of sustainability have been identified:

- Las Positas College Strategic Plan;
- Enhanced distance learning;
- Development of “Sustainability Concepts;”
- Sustainability events and workshops; and
- Web communications.

The Las Positas College Strategic Plan identifies Sustainability as a Goal. The strategies and performance indicators in the Strategic Plan are aligned with the Climate Action Plan and serve as an additional way to outreach to on-campus and off-campus communities. Inclusion of the Climate Action Plan into the College Strategic Plan situates the Climate Action Plan into the planning, funding, and evaluative structures of the college.

Las Positas College currently offers more than 75 online courses and over 25 hybrid courses. To enhance the current online and hybrid course offerings, other distance learning options can be explored, such as podcasts and using CCC Confer, (a desktop sharing and video conference technology) for California community colleges.

“Sustainability concepts” have been and will continue to be developed for incorporation in labs, courses, and certification programs for interested faculty members on a voluntary basis. The biology and chemistry teaching labs, for example, have used different strategies, when pedagogically and logistically appropriate, to support sustainability efforts. These include lab-exercise modifications that reduce the amount and toxicity of materials used and the amount of biological and chemical waste generated. Additionally, pooling orders for supplies decreases the number of required vendor shipments (that contribute to greenhouse gas emissions). Other examples of sustainability concepts may include but are not limited to the following:

- Energy and Sustainability (open for Spring 2011) as a core course for the Environmental Studies and Science Program;
- Biology and/or Chemistry: Algae to Fuels;
- Automotive: Hybrid Technology;
- History: Origins of Earth Day or Evolution of Environmental Laws in California involving sustainability; and
- Engineering or Architecture: Green Technology and Green Building Design.

Sustainability events and workshops could include: a reusable office supply exchange program, a “Switch it Off” Campaign, regular E-recycling events, Earth Day events, Eco-

driving training workshops, and a Sustainability Speaker Series. Promotion of and information on sustainability events, workshops, and initiatives should be disseminated through a variety of means, including the Las Positas Goes Green Website.

## 07 Reduce Paper Volume through Improved Electronic Document Management

Document Management Systems are software packages that allow people to share documents electronically, keep track of drafts, and archive documents, but most importantly, allow “work-flow.” With these systems documents can be routed to a series of people for electronic signatures. This would save an enormous amount of time, money, and paper. Admissions and Records was the first group to evaluate software, and will be followed by Financial Aid, Human Resources, Payroll, and other groups. Software is anticipated to be implemented on campus and District-wide to all interested groups within the next 3-5 years.

Further reductions in paper consumption are expected to be achieved through implementation of CurricUNET. Each year, hundreds of curriculum proposals are created, reviewed, modified, and approved at Las Positas College. Three years ago, the Curriculum Committee began using an online system for review of all curriculum proposals. The Committee is now in the process of implementing CurricUNET to automate the entire process of submitting course and program proposals via a web browser, thereby virtually eliminating the use of paper.

## 08 Other Campus Actions

Other campus actions to mitigate GHG emissions in the near term include:

- Continue working with the Livermore Amador Valley Transit Authority to identify and implement bus service improvements for all commuting to and from Las Positas College;
- Purchase and install water meters in all buildings and irrigation lines to track monthly usage;
- Install waterless urinals and/or low-flow, high efficiency toilets;
- Explore more energy-efficient heating options for pools, such as using waste heat from co-generation in the future;
- Conduct regular energy audits;
- Explore feasibility of double-sided default printing;
- Reduce waste in food services and packaging and support healthy and sustainable practices for growing, processing, marketing and distributing food;
- Reduce number of shipments and improved distribution methods to reduce GHG emissions;
- Compost food waste and recycle cooking oil for biofuels conversion; and
- Improve plumbing maintenance to minimize potential water leakages.



Table 4-1 below summarizes near-term quantifiable mitigation strategies with full implementation to be phased in over the course of the next ten years. Some strategies, like additional renewable energy generation and improved bicycle facilities and infrastructure are currently in early planning phases with potential implementation within the next 3-5 years.

Annual savings to the college is estimated for year 2020, with the greatest energy and cost savings from renewable energy generation and increased energy efficiency for all campus buildings and facilities. On the other hand, strategies like increased fuel economy and transportation savings from sustainable scheduling are not direct cost savings to the college, but rather to the campus community through estimated annual fuel savings as a result of these strategies. Current average gasoline prices for the San Francisco Bay Area region were considered in this analysis, and as a result, the anticipated cost savings in future years may change depending on changes in future gasoline prices.

**Table 4-1. Summary of GHG Reduction Strategies and Impacts**

Reduction Strategies	GHG Reductions (MtCO <sub>2</sub> e)		Initial Cost (Current dollars)	Annual Savings (2020)
	2015	2020		
Composting	-6.7	-8.1	N/A	N/A
Solar Panels	-527.1	-527.1	\$7,000,000	\$224,303
Add'l Renewable Energy Generation	-527.1	-527.1	\$7,000,000	\$224,303
Enhanced Building Energy Mgmt	-13.3	-14.7	\$150,000	\$9,385
Increased Fuel Economy	-1,723.6	-2,465.3	\$0	TBD
Ridesharing + Express Shuttle	-284.1	-567.8	\$250,000	\$250,000
Sustainable Scheduling (Transp)	-390.0	-426.0	\$0	\$15,126
Sustainable Scheduling (Energy)	-134.0	-134.0	\$0	\$18,200
BAU Emissions Baseline	15,460.3	16,271.3	\$14,400,000	\$741,316
Total Offsets	-3,605.9	-4,670.0		
Net Emissions Baseline	11,854.3	11,601.2		

Note: Emissions expressed in terms of metric tons of carbon dioxide equivalents (MtCO<sub>2</sub>e)

# 5

As part of the President’s Climate Commitment, Las Positas College will update its GHG emissions inventory annually, and provide an update to its Climate Action Plan every two years on the even years. In addition, brief progress reports on the status of Climate Action Plan implementation will be provided every other year, on the odd years. The timetable below illustrates the various check points to fulfill ACUPCC requirements.

## Tracking and Measuring Progress

**Table 5-1 ACUPCC Progress Reporting Schedule**

ACUPCC Requirements	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
GHG Emissions Inventory	•	•	•	•	•	•	•	•	•	•	•	•
Climate Action Plan		•										
Climate Action Plan Update			•		•		•		•		•	
Progress Report			•		•		•		•		•	

# 6

## Appendices

# Las Positas College Greenhouse Gas Emissions Inventory 2005-2008



# Acknowledgments

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# Executive Summary

Las Positas College, a signatory of The American College and University Presidents Climate Commitment (ACUPCC), is committed to achieving campus carbon neutrality. The greenhouse gas (GHG) emissions inventory is the first step in identifying major sources of GHG emissions and a baseline to measure performance of reduction measures against. This report provides a historical and reference case baseline assessment of the college's GHG emissions for fiscal years 2005 to 2008 and estimates trends from 2009 to 2020. Measures to reduce GHG emissions and help set the college on the path to achieve carbon neutrality will be outlined in a subsequent document known as a Climate Action Plan.

The basic framework of the inventory approach is based on generally acceptable principles and guidelines as provided by the ACUPCC and Clean Air-Cool Planet, the Intergovernmental Panel on Climate Change, the World Resource Institute Corporate Accounting and Reporting Standard (The GHG Protocol), and the United States Environmental Protection Agency with adjustments, as necessary, utilizing campus-specific data and inputs when and where possible. As recommended in the ACUPCC implementation guidelines and for ease of comparison among peer institutions, the Clean Air-Cool Planet Campus Carbon Calculator was selected as the tool to conduct the emissions inventory.

Since the District owns and controls all of its operations, all campus GHG-emitting activities were accounted for and analyzed in terms of "scopes" (as defined by the GHG Protocol) as well as "sectors." The following outlines the two analytical perspectives:

In addition to gross emissions analyzed, net emissions were also evaluated through on-campus offsetting activities, such as on-site composting of organic materials and installation of solar photovoltaic panels.

Over the four-year period from 2005 to 2008, there was an average growth rate of 3.7% in historical gross GHG emissions. In 2005, gross emissions were estimated at 12,980.4 MtCO<sub>2</sub>e and 14,425.5 MtCO<sub>2</sub>e in 2008. Scope 3 emissions account for a majority of campus GHG emissions, with transportation (primarily from commuting) being the largest sector source, accounting for nearly 80% of all emissions. Despite growth in total gross emission levels, student emissions per capita steadily declined over the same period from 1.75 MtCO<sub>2</sub>e in 2005 to 1.43 MtCO<sub>2</sub>e in 2008. Further decline in student emissions per capita is observed in the last year, reaching about 1.26 MtCO<sub>2</sub>e per student in 2009.

In efforts to understand future baseline trends in GHG emissions under business as usual (BAU) assumptions, reference case projections are estimated from year 2009 through 2020. Without emissions reductions measures, gross GHG emission levels in year 2020 are projected to increase by almost 50 percent as compared to 2005 levels. However, Las Positas College has taken proactive measures to implement early, energy and cost-saving strategies to reduce its emissions. Development and implementation of renewable energy sources like the 6,000+ solar photovoltaic panels recently installed, coupled with current composting efforts on campus will already help the college reduce its gross emissions by at least three percent per year through 2020. Further GHG reduction strategies for the near-term and mid- to long-term will be outlined in a campus climate action plan and will help set the college on the path to successfully achieving its carbon neutrality goals.

**Table 1-1: Organization of Emission Sources**

Emissions by Scope		Emissions by Sector	
<p><b>Scope 1 Emissions</b> <b>(Direct Sources)</b></p> <ul style="list-style-type: none"> <li>• Direct Transportation (Fuel Purchases for District-owned Vehicles)</li> <li>• Agriculture (Fertilizer)</li> </ul>		<p><b>Transportation</b></p> <ul style="list-style-type: none"> <li>• Direct Transportation (Fuel Purchases for District-owned Vehicles)</li> <li>• Commuting</li> <li>• Directly Financed Travel (Conference travel, mileage reimbursement, etc.)</li> <li>• Air Travel from International Student Program</li> </ul>	
<p><b>Scope 2 Emissions</b> <b>(Indirect Sources)</b></p>	<p>Purchased Electricity and Natural Gas</p>	<p><b>Buildings and Facilities</b></p> <ul style="list-style-type: none"> <li>• Purchased Electricity and Natural Gas</li> <li>• Transmission and Distribution Losses from Electricity</li> </ul>	
<p><b>Scope 3 Emissions</b> <b>(Other Indirect Sources)</b></p>	<ul style="list-style-type: none"> <li>• Commuting</li> <li>• Directly Financed Travel (Conference travel, mileage reimbursement, etc.)</li> <li>• Air Travel from International Student Program</li> <li>• Solid Waste</li> <li>• Wastewater</li> <li>• Paper</li> <li>• Transmission and Distribution Losses from Electricity</li> </ul>	<p><b>Waste and Materials</b></p> <ul style="list-style-type: none"> <li>• Agriculture (Fertilizer)</li> <li>• Solid Waste</li> <li>• Wastewater</li> <li>• Paper</li> </ul>	

# Introduction

Las Positas College signed The American College and University Presidents Climate Commitment (ACUPCC) on September 15, 2007.<sup>1</sup> As a signatory, Las Positas College is publicly committed to achieving campus carbon neutrality. This ambitious goal will be achieved by developing and implementing a comprehensive plan that includes: annually auditing each college's greenhouse gas emissions, taking two or more immediate, tangible actions as identified under the ACUPCC, setting specific targets and timelines for achieving climate neutrality, and making their commitment plans and progress reports publicly available.

The greenhouse gas emissions inventory provides a baseline understanding of the College's emissions levels, summarizing Las Positas College's anthropogenic greenhouse gas emissions for fiscal years 2005 to 2008 and estimating future emission trends for the period 2009 to 2020. This inventorying process is the first step in identifying major sources of greenhouse gas emissions of the college and a baseline to measure performance of reduction measures against. A subsequent document, the campus Climate Action Plan, will outline near-term and mid- to long-term measures to reduce GHG emissions and help the college achieve its GHG reduction targets.

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<sup>1</sup> American College and University Presidents Climate Commitment, 2008 Annual Report, [http://www.presidentsclimatecommitment.org/html/documents/ACUPCC\\_AR2008\\_053109LR.pdf](http://www.presidentsclimatecommitment.org/html/documents/ACUPCC_AR2008_053109LR.pdf)

# Developing the Greenhouse Gas Emissions Inventory

In May 2009, the District, in consultation with Parsons Brinckerhoff, began preparing a preliminary draft greenhouse gas (GHG) emissions inventory and reference case projections covering years 2005 to 2020.

As recommended in the ACUPCC implementation guidelines and for ease of comparison among peer institutions, the Clean-Air Cool Planet (CA-CP) Campus Carbon Calculator was selected as the tool to conduct the emissions inventory.

The basic framework of the inventorying approach is based on generally accepted principles and guidelines as provided by the ACUPCC and Clean-Air Cool Planet, the Intergovernmental Panel on Climate Change (IPCC), the World Resources Institute Corporate Accounting and Reporting Standard (The GHG Protocol), and United States Environmental Protection Agency (US EPA) with adjustments, as necessary, utilizing campus-specific data and inputs when and where possible.

Although there are naturally occurring greenhouse gas emissions, such as brush fires or plant decay, the inventory focuses on the six greenhouse gases as result of human activity. These six greenhouse gases are defined as carbon dioxide ( $\text{CO}_2$ ), nitrous oxide ( $\text{N}_2\text{O}$ ), methane ( $\text{CH}_4$ ), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride ( $\text{SF}_6$ ). For consistency purposes in reporting, results will be expressed in carbon dioxide equivalents ( $\text{CO}_2\text{e}$ ). Greenhouse gases expressed in units of  $\text{CO}_2\text{e}$  calculates the impact of other greenhouse gases by their global warming potential (GWP). GWP is the ratio of the warming that would result from the emission of one kilogram of a greenhouse gas to that from the emission of one kilogram of carbon dioxide over

a fixed period of time, such as 100 years. For example, 1000 kilograms (one metric ton) of CO<sub>2</sub> is equivalent to one metric ton of CO<sub>2</sub>e. One metric ton of CH<sub>4</sub>, however, is equivalent to 23 metric tons of CO<sub>2</sub>e.<sup>2</sup>

Consistent with The GHG Protocol, the goals and principles of the GHG inventorying effort are to:

- **Manage GHG risks and identify reduction opportunities.** Use inventory and data collected to identify risks associated with GHG constraints in the future and identify cost effective emissions reduction opportunities. Set GHG reduction targets that are ambitious yet achievable, in addition to measuring and reporting progress procedures.
- **Public reporting and participation in voluntary GHG programs.** Facilitate voluntary stakeholder reporting of GHG emissions and progress towards GHG targets, and reporting to appropriate government and non-governmental reporting programs, including GHG registries such as the Climate Registry.
- **Participate in mandatory reporting programs.** Facilitate participation in government reporting programs at the national, regional, or local level where appropriate.
- **Participate in GHG markets.** Support internal GHG trading programs, and participate in external cap and trade allowance trading programs where appropriate and facilitate in the calculation of carbon and applicable GHG fees or taxes.
- **Recognize early voluntary action.** Provide information to support baseline and enable credit for early actions.

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<sup>2</sup> Intergovernmental Panel on Climate Change, Third Assessment Report, 2001.

## Accounting and Reporting Principles

### Relevance

Ensure that the GHG inventory appropriately reflects the GHG emissions of the District and that the data collected is utilized to appropriately inform decision makers. Data collection should take place within one of the following boundaries: organizational structures, operational boundaries or business context of activities and people involved.

### Completeness

All GHG emission sources and activities within the identified inventory boundary should be accounted for and reported on. A good faith effort must be made to provide a complete, accurate, and consistent accounting of emissions. Any specific exclusions should be clearly disclosed and justified.

### Consistency

Use of consistent methodologies will allow for meaningful comparisons of emissions over time to track and identify any trends and assess District performance. Any changes to data, inventory boundary, methods or any other relevant data or factors should be clearly documented.

### Transparency

All relevant issues, including assumptions, data, and appropriate references to the accounting and calculation methodologies should be documented in a factual and coherent manner.

### Accuracy

Ensure that the quantification of GHG emissions is neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as much as possible. The data should be sufficiently precise to enable intended users to make decisions with reasonable assurance that the reported information is credible.

# Boundaries

## Organizational Boundaries

The District office owns and controls all of its operations, thus all GHG-emitting activities were accounted for under each campus location. The aggregate of the emissions from the District office, Chabot College and Las Positas College comprise the total District emission budget.

## Operational Boundaries

GHG emission sources are analyzed in terms of “scopes” as defined by the GHG Protocol, and will also be described by sector, covering buildings, transportation and materials and waste. Energy and electricity will cross-cut these sectors and will be described throughout the following sections.

The three scopes of analysis cover direct and indirect emissions as follows:

### *Direct Emissions*

Direct emissions, also defined as “scope 1 emissions,” are from sources directly owned or operated by the institution. Examples of such sources include combustion of fossil fuels in college-owned facilities like cogeneration plants, or from District-owned vehicles. Other direct sources may also include fugitive emissions from leakage of refrigeration or air conditioning equipment, on-campus agriculture including fertilizer applications, and livestock husbandry.

### *Indirect Emissions*

Indirect emission sources cover “scope 2 emissions” and “scope 3 emissions.” Scope 2 emissions are defined as sources neither owned nor operated by the institution but whose products are directly linked to on-campus energy consumption. Examples of scope 2 emission sources include purchased electricity (i.e. from electricity retailers like Pacific Gas & Electric), steam and chilled water.

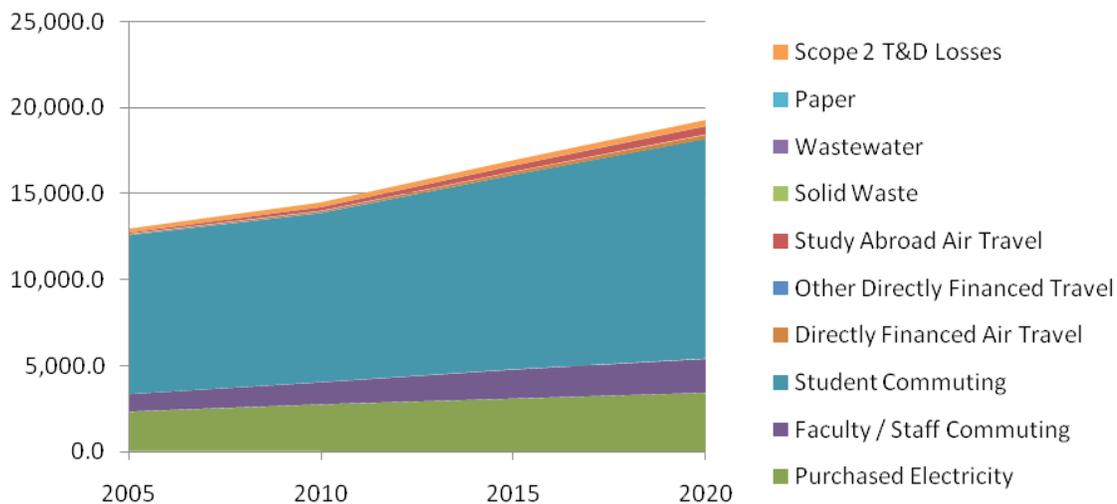
Scope 3 emissions cover all other indirect emissions from sources that are neither owned nor operated by the institution, but are either directly financed (i.e. air travel or rental car reimbursements from the District), or linked to the campus through influence or encouragement (i.e. air travel for international study program, or regular student, faculty, staff commuting to and from campus). Other scope 3 emission sources may include solid waste (off-campus incineration or landfill), waste water, upstream emissions from directly financed purchases like paper production, and transportation and distribution losses from purchased energy.

Scope 1 and 2 emissions are typically the minimum required and serve as the basis of many reporting protocols. The ACUPCC, however, requires that all scope 1 and 2 emissions are reported and scope 3 emissions from commuting and directly financed air travel “to the extent that the data is available” are also inventoried. Institutions are also encouraged to report all other scope 3 emissions where data is available and large enough to be reduced. In addition to direct and indirect emissions, on-campus carbon reduction projects have also been evaluated. These include on-site composting and waste reduction programs.

# Historical and Reference Case GHG Emissions

The college's anthropogenic GHG emissions and offsets were estimated for the period from 2009 to 2020. Figure 1-1 illustrates historical GHG emissions and reference case projections through year 2020. The initial reference case projections (2009-2020) are based on historical trends and transparent assumptions in facility square footage, population, stationary source combustion activities, electricity consumption, fuel use, travel patterns and other GHG-emitting

**Figure 1-1: Las Positas College Historical and Reference Case GHG Emissions, 2005-2020 (MtCO<sub>2</sub>e)**



activities.

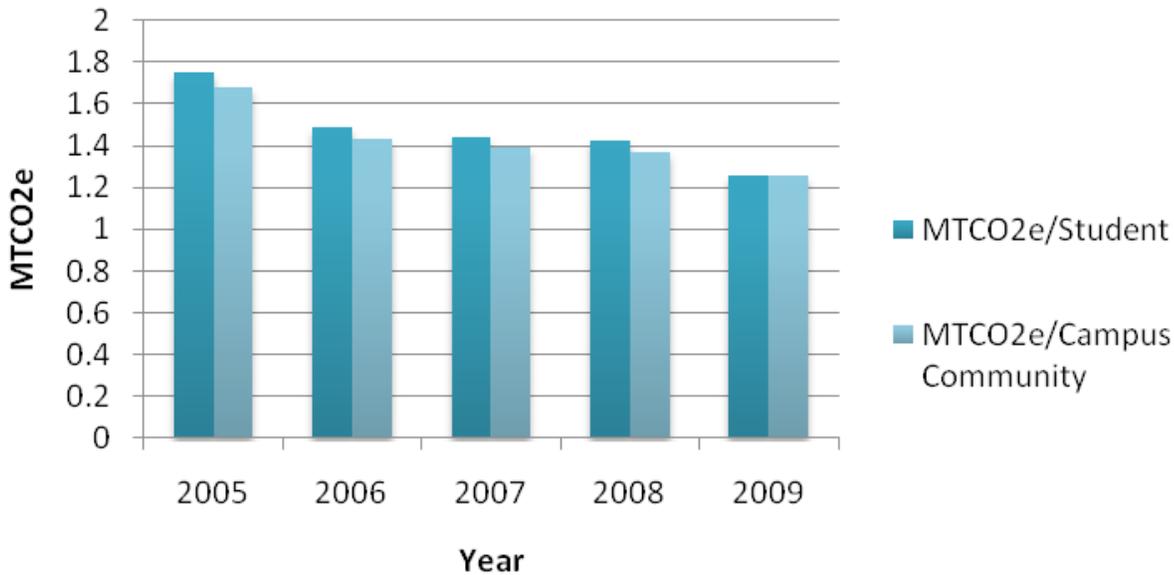
Table 1-2 provides a detailed summary of historical (2005-2008) and reference case projection (2009-2020) GHG emissions for the District. GHG-emitting activities are subdivided into three scopes. Scope 1 includes emissions from direct transportation which account for the fuel combustion of District-owned vehicles and agricultural sources (primarily fertilizer use) on campus. Scope 1 emissions also generally include stationary sources like co-generation

plants, however, is not applicable to the Las Positas campus. Scope 2 emissions include indirect sources like purchased electricity, and scope 3 emissions include student, faculty and staff commuting, other directly financed travel (i.e. conference reimbursements or international student exchange programs), solid waste, wastewater, paper and transmission and distribution losses from scope 2.

As outlined in Table 1-2, under the reference case projections, Las Positas College's gross GHG emissions would continue to grow unless the college actively pursues reduction strategies. Without reduction strategies the GHG emissions are projected to increase to about 19,258 metric tons of carbon dioxide equivalent (MtCO<sub>2</sub>e) by 2020, increasing about 50 percent from 2005 levels. Emissions per capita for the student population, however, show decreasing values from 1.75 MtCO<sub>2</sub>e in 2005 to 1.43 MtCO<sub>2</sub>e in

**Table 1-2: Las Positas College Historical and Reference Case GHG Emissions, by Scope**

(MtCO <sub>2</sub> e)	2005	2006	2007	2008	2009	2015	2020
<b>Scope 1 Emissions</b>	<b>37.6</b>	<b>37.9</b>	<b>22.0</b>	<b>33.6</b>	<b>23.5</b>	<b>5.1</b>	<b>0.2</b>
Direct Transportation	37.4	37.7	21.8	33.4	23.3	4.9	0.0
Agriculture	0.2	0.2	0.2	0.2	0.2	0.2	0.2
<b>Scope 2 Emissions</b>	<b>2,297.8</b>	<b>2,723.9</b>	<b>2,642.3</b>	<b>2,629.3</b>	<b>2,287.4</b>	<b>3,094.7</b>	<b>3,444.5</b>
Purchased Electricity	2,297.8	2,723.9	2,642.3	2,629.3	2,287.4	3,094.7	3,444.5
<b>Scope 3 Emissions</b>	<b>10,645.0</b>	<b>11,543.2</b>	<b>12,205.9</b>	<b>11,762.6</b>	<b>11,336.2</b>	<b>13,834.0</b>	<b>15,812.9</b>
Commuting	10,241.4	11,090.6	11,720.6	11,192.1	10,854.5	12,987.9	14,742.4
Directly Financed Travel	71.3	69.9	90.1	108.1	110.3	183.8	243.7
Study Abroad Air Travel	73.2	79.5	104.8	168.6	166.7	339.4	477.5
Solid Waste	18.5	19.1	14.3	17.9	17.9	6.2	0.0
Wastewater	1.0	1.1	1.3	1.3	2.3	3.7	5.2
Paper	12.3	13.6	13.5	14.6	8.3	6.9	3.4
Scope 2 T&D Losses	227.3	269.4	261.3	260.0	226.2	306.1	340.7
<b>Total Gross Emissions</b>	<b>12,980.4</b>	<b>14,305.0</b>	<b>14,870.2</b>	<b>14,425.5</b>	<b>13,697.1</b>	<b>16,933.8</b>	<b>19,257.6</b>
Additional	-3.5	-4.6	-4.8	-4.8	-4.8	-6.7	-8.1
Non-Additional	0.0	0.0	0.0	0.0	-527.1	-527.1	-527.1
<b>Net Emissions</b>	<b>12,976.9</b>	<b>14,300.4</b>	<b>14,865.4</b>	<b>14,420.7</b>	<b>13,165.2</b>	<b>16,400</b>	<b>18,722.4</b>

**Figure 1-2: Per Capita Emissions**

2008. From 2008 to 2009, per capita emissions continue to show decreasing values reaching about 1.26 MtCO<sub>2</sub>e per student in 2009. Over this time period (2005-2009), the student population grew from 7,421 full time equivalents, including summer students to 10,865 in 2009. Similarly, for the entire campus community (including faculty, staff, adjunct and administrators as well), per capita emissions also show declining values from 1.68 MtCO<sub>2</sub>e in 2005 to 1.26 MtCO<sub>2</sub>e in 2009.

Decline in per capita emissions from 2005 to 2009 are attributed to a number of early action, energy saving measures. With recent implementation of offsetting strategies such as on-site generation of renewable power with the installation of 1 megawatt of solar panels and on-site composting programs, gross emissions are projected to be reduced by three percent per year through 2020. Further reductions to achieve

carbon neutrality goals will be discussed in the climate action plan. Examples of other reduction measures could include, but would not be limited to:

- Building energy reduction measures;
- Providing information and access to ridesharing or car sharing programs;
- Developing additional renewable power generation systems;
- Parking pricing;
- Working with local transit agencies to develop park and ride lots and improve service that meets student and faculty schedules;
- Providing resources for at least one dedicated sustainable campus and carbon neutral coordinator; and
- Ongoing tracking and recording of GHG emitting activities.

# Inventory Results by Sector

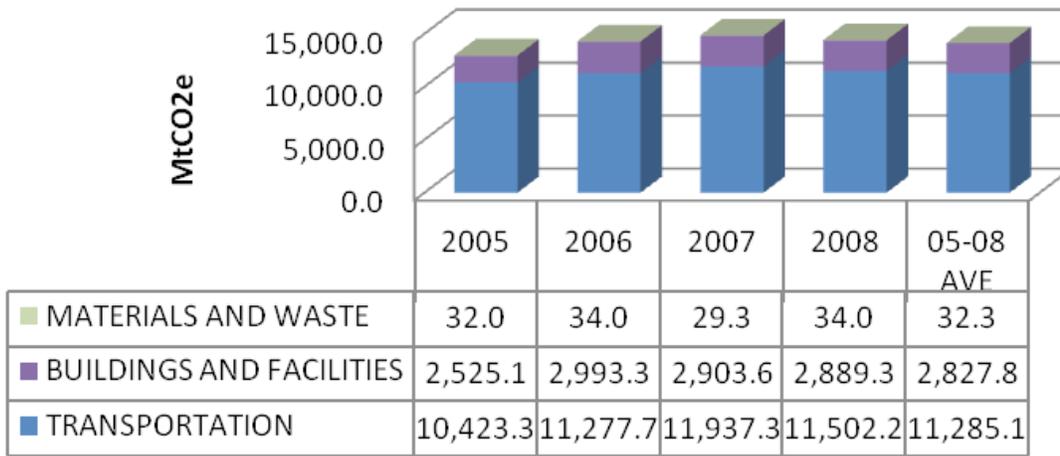
Inventory results below are presented by sector, with sources analyzed in the following three categories: transportation, buildings and facilities, and materials and waste.

Figure 1-3 illustrates gross emissions by sector for the college for years 2005 through 2008 and averages over the course of the four years. As a commuter campus, transportation is the largest sector source of emissions, followed by

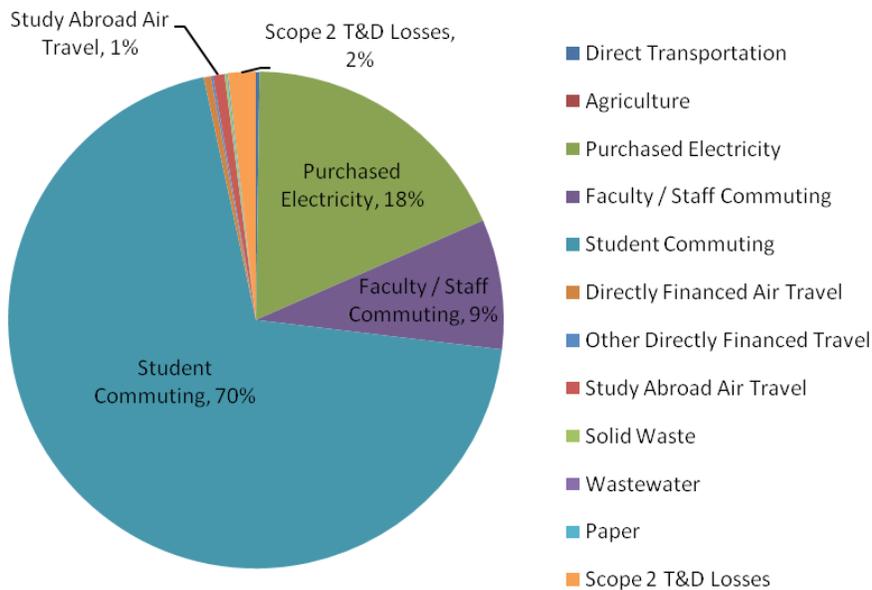
Transportation	Buildings and Facilities	Materials and Wastes
<ul style="list-style-type: none"><li>• Fuel purchases for District-owned vehicles</li><li>• Student/faculty/staff commuting</li><li>• Directly financed travel (air, mileage, etc.)</li><li>• International program air travel</li></ul>	<ul style="list-style-type: none"><li>• Purchased electricity and natural gas</li><li>• Transmission and distribution losses</li></ul>	<ul style="list-style-type: none"><li>• Solid waste</li><li>• Paper</li><li>• Wastewater</li><li>• Fertilizers</li></ul>

buildings and facilities, and materials and waste. Figure 1-4 depicts the average breakdown of emission sources from 2005 to 2008. From 2005 to 2008, transportation on average accounted for nearly 80% of total gross GHG emissions, with a majority of those emissions derived from campus commuting. The next largest sector source for emissions was buildings and facilities, accounting for about 18% of total gross emissions on average, followed by materials and waste, accounting for about 2% of total gross emissions on campus.

**Figure 1-3: Las Positas College Gross Emissions, By Sector 2005-2008 (MtCO<sub>2</sub>e)**



**Figure 1-4: Las Positas College Gross GHG Emissions, 2005-2008 Average (MtCO<sub>2</sub>e)**



## Buildings and Facilities

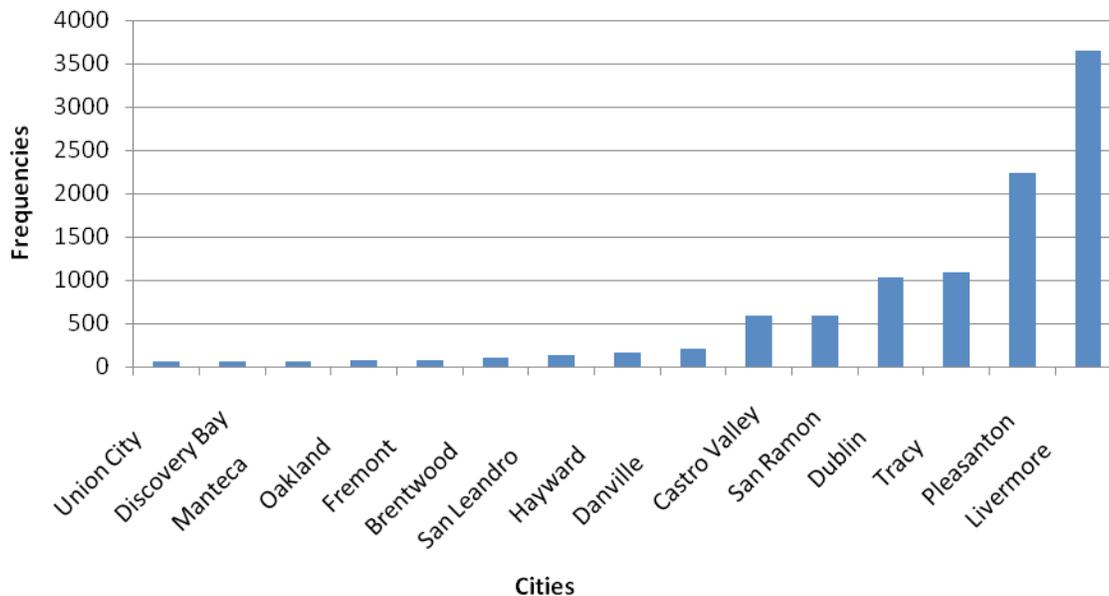
Buildings and facilities are the second largest source of greenhouse gas emissions at Las Positas College. Primary sources of emissions under the buildings and facilities sector cover purchased electricity and associated transmission and distribution losses. Emissions from electricity consumption on campus grew about 14% from 2,525 MtCO<sub>2</sub>e in 2005 to 2,889 MtCO<sub>2</sub>e in 2008. Over the course of those five years, campus facilities expanded and the number of full time equivalent students increased from 6,171 to 7,305. Total gross square footage of campus building space increased from 176,427 square feet in 2005 to 309,184 square feet in 2009. Although electricity consumption has increased over the years with facility expansion, electricity demand from the grid is anticipated to decrease with the recent installment of 1 megawatt of solar panels with the ability to satisfy approximately 20-25% of the current campus electricity needs by producing 1.6 million kilowatt hours per year.

## Transportation

In the San Francisco Bay Area region, transportation is the largest single source of greenhouse gas emissions, accounting for about 41% of the region's total emissions. For the Chabot-Las Positas Community College District, transportation accounts for about 80% of total greenhouse gas emissions District-wide. Transportation emissions on the Las Positas campus account for an average of nearly 80% of total emissions over a four-year

time period from 2005 through 2008. Elements of the transportation footprint include fuel consumption for District-owned vehicles at Las Positas College, air mileage accumulated from the International Student Program, directly financed travel (i.e., conference reimbursements covering mileage by air, personal vehicle, car rental, shuttle or taxi, and bus), and student, faculty and staff commuting information. Over the course of these four years, transportation emissions grew from 10,423 MtCO<sub>2</sub>e in 2005 to 11,502 MtCO<sub>2</sub>e in 2008, growing at an average rate of about 1.8% per year due to facility growth and modernization effort. Diesel and gasoline fuel purchases in addition to a vehicle inventory by campus was provided by the Director of Maintenance and Operations. Air mileage from the International Student Program was estimated using online travel sites such as Expedia.com or Orbitz.com. Country of origin data were provided by the Office of Public Relations and Governmental Affairs and air mileage estimates accounts only for students traveling directly from their home countries to Las Positas College (not inter-campus exchanges) and assumes shortest distance of air travel into Oakland International Airport.

Emissions from directly financed travel were determined through a detailed analysis of all travel-related expense reports by campus location, broken down by airfare, car rental, shuttle or taxi, bus/charter and mileage reimbursements. No data were available to determine mileage from public transportation. In determining airfare mileage, round trip airfare was calculated utilizing airport codes and an air mileage calculator, WebFlyer.com. Miles from car rental assumed an average cost of \$75 per day and an average of 100 miles driven per day. Total

**Figure 1-5: Top Home Locations**

costs were divided by 75 to obtain the number of days and then multiplied by 100 to obtain total mileage by car rental. For shuttles and taxis, the average fare in the bay area ranges from \$1.967/mile to \$3.83/mile. An average rate of \$2.50/mile was assumed and total costs were divided by this rate to estimate mileage from shuttles and taxis. Personal mileage reimbursements were estimated using the following average standard mileage rates provided by the U.S. Internal Revenue Service:

FY04-05	\$0.39/mile
FY05-06	\$0.455/mile
FY06-07	\$0.465/mile
FY07-08	\$0.495/mile
FY08-09	\$0.5675/mile

## Las Positas Transportation Survey

A campus-wide transportation survey for faculty, staff and students was conducted over a two-week period in Fall 2009. Based on approximately 300 survey responses, results indicated that about 67% of all respondents drive alone to campus and about 6% carpool. Remaining responses take public transportation (7%), ride a motorcycle (1%), participated in online courses (4%) or did not have class (16%) during the survey period.

For those respondents driving alone to campus, the average fuel economy of cars driven to and from campus was 25.2 miles per gallon. About 69% of respondents drive non-hybrid small to mid-sized vehicles, while about 26% drive non-hybrid trucks or SUVs. Hybrid vehicles are driven by about 3% of survey respondents.

**Table 1-3: Las Positas College Waste Information, 2003-2007**

(tons)	2003	2004	2005	2006	2007
Total Waste Diverted	165.4	192.1	131.2	393.5	155.7
Total Waste Disposed	69.4	125.6	66.0	68.0	50.8
Total Tonnage Generated	234.8	317.7	197.1	461.5	206.5
Overall Diversion Percentage	70.4%	60.5%	66.5%	85.3%	75.4%

Based on Fall 2009 transportation survey results, the average one-way distance to campus was 16.1 miles. To refine this estimate and increase the sample size to capture commuter distances beyond those that self selected to take the survey, zip code information was obtained capturing over 9,000 registered students and over 1,500 faculty, staff, adjunct and administrators. For the 9,000+ students included in the zip code analysis, the average one-way distance to campus was refined to 13.5 miles, and 21.8 miles for faculty, staff, and administrators. A summary of the top home locations for all students, faculty, staff, and administrators can be found in Figure 1-5 below.

In addition to collecting information about how students, faculty and staff get to campus, how far and often they travel, questions about factors that influence mode choice were also asked. When choosing how to get to campus, the most important factor was travel time (71%), followed by convenience (59%), reliability (31%) and cost (31%). Other factors influencing travel behavior to and from campus included the ability to make stops on the way to work or home (25%), comfort and safety (14%), stress (9%) and reducing pollution or conserving energy (9%).

For those who usually drive alone to campus, 60% of respondents would be willing to try carpooling as a transportation alternative. About 39% of respondents who drive alone would also consider taking public transit and 37% would be willing to work at home for a regular work day. Other transportation alternatives respondents would be willing to try include: biking (22%), vanpooling (14%) or walking (3%). While respondents would be willing to try these transportation alternatives, some have responded that they do not currently use them because for about 45% of respondents the transit service doesn't currently match the individual's route or schedule. About 40% of respondents work late or irregular hours, while 38% prefer to drive their own personal car for various reasons and 32% have found it difficult to find others to carpool or vanpool with.

## Materials and Waste

Materials and waste comprise less than 1% of total GHG emissions at Las Positas College. From 2005 to 2008, materials and waste contributed 32 MtCO<sub>2</sub>e to 34 MtCO<sub>2</sub>e. Sources of emissions covered under materials and

waste includes solid waste, water/waste water, paper consumption and fertilizer usage. Waste diversion is also covered under this category, such as recycling and on-site composting (which also contributes to emission offsets, or on-site emissions reduction measures).

## Solid Waste

Solid waste information was determined using annual reports to the California Integrated Waste Management Board provided by the Office of Maintenance and Operations. From 2003 to 2007, Las Positas College's waste stream (materials disposed in landfills) has decreased since the original Integrated Waste Management Plan was submitted, due to several factors including but not limited to:

1. Expansion of several materials recovery programs has resulted in less disposed surplus equipment, cardboard, mixed paper, scrap metal and scrap wood. In addition to materials recovery and exchange, other waste diversion programs include business source reduction, beverage containers, grasscycling, on-site composting, rendering and MRF;
2. Implementation of a new inkjet reuse/refill program and new commingled recycling program in 2003 has resulted in less disposed inkjet cartridges; and
3. More careful data tracking, more precise estimates, and more accurate data conversions have contributed to a decrease in the reported disposal tonnage.

Over the course of the five-year reporting period available, increased waste generated in 2004 and 2006 was largely due to the construction of new or modernized facilities on campus, including the construction of a new physical education building in 2004. Waste generated in

2005, however, decreased with less construction and less enrollment than expected. With current and future construction, the college is improving waste management through better separation of construction debris, trash, and dirt fill. As a result, Las Positas College now requires construction bid documents to include a "Debris Recycling Statement." Other resources committed to implementing the Integrated Waste Management Plan include time and funds for a recycling coordinator, custodial staff to collect recyclable materials, grounds staff to collect and process organic material for on-site composting, and maintenance and warehouse staff to collect and/or haul scrap metal, surplus equipment, polystyrene, wood, paint, tires, and batteries.

Hazardous waste materials, such as electronic wastes and used oil were not included in the total tonnage generated but are covered under existing waste diversion programs. Annual reports for 2008 and 2009 were not yet available at the time of data collection.

### *Composting*

On-site composting and mulching as part of the Las Positas College's waste diversion program, has also been a consistent part of the campus's greenhouse gas mitigation efforts. From 2003 to 2007, composting efforts on the Las Positas campus have grown from 9 tons to 12.5 tons. With facility expansion over time, total tonnage of compost produced is anticipated to increase, thus producing additional campus offsets.

### *Waste Water*

Water and waste water information was collected through monthly utility bills provided by the Director of Maintenance and Operations. Water

consumption covered commercial water use, irrigation and sewer. From 2005 to 2008, water usage increased from about 1.9 million gallons to 2.6 million gallons, accounting for both increases in total building space, as well as student and faculty population. With the addition of two new Olympic sized pools on campus, water usage will peak in 2009 to over 4.5 million gallons. In a normal year, about 5,000 units of water are used over the course of 12 months. With the construction of two new Olympic sized pools, water consumption more than doubled in the course of two months consuming 3,000 units of water as a result of refilling, recycling and flushing water prior to use.

Since reclaimed water was used for irrigation, fertilizer usage for landscaping and athletic fields was kept to a minimum. Synthetic fertilizer with a

formula of 8-12-4 is applied for the roses about every month from January to October and once a year for the rose bushes, equating to about 600 pounds of fertilizer with 8% nitrogen content. This amount equates to about 0.2 MtCO<sub>2</sub>e annually from fertilizer usage at Las Positas.

### *Paper*

Paper consumption at Las Positas College was obtained through reports provided by Staples covering all paper purchases from 2005 to 2009. Data were then sorted by year, paper classification, recycled content and weight to determine total pounds of paper purchased per year. Emissions from paper consumption increased from 12.3 MtCO<sub>2</sub>e in 2005 to 18.2 MtCO<sub>2</sub>e in 2009.





# LAS POSITAS COLLEGE

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## TRANSPORTATION SURVEY RESULTS / SEPTEMBER 2009

This report was produced by

511 Rideshare  
70 Washington St, Suite 407  
Oakland, CA 94607  
(510) 273-3600



# LAS POSITAS COLLEGE

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**LAS POSITAS COLLEGE**  
**3000 Campus Hill Drive, Livermore, CA 94551**  
**Transportation Survey Results**  
**September 2009**

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This survey is designed to help you improve your employees' and students' commute. Shorter, less stressful commutes benefit employees/students individually. They also benefit your organization, as your employees/students arrive more rested. And, evidence suggests that campus' whose employees/students use ridesharing alternatives have reduced absenteeism and improved retention. Finally, improving your employees' and students' commute benefits the community. Encouraging your employees/students to rideshare removes cars from the road, reducing congestion and improving air quality.

At your organization, 311 of the 7000 employees, students, faculty, staff, adjunct, administrators, and managers (referred to as respondents) in your organization participated in the on-line survey for a response rate of 4.4 percent. This survey was conducted from September 2 to September 16, 2009.

In the following sections, boldface questions are taken verbatim from the survey that was given to your group. Unless otherwise specified, the wording within the tables is also taken directly from the survey.

### **Section 1: How Respondents Get To Campus**

To develop effective strategies to encourage the use of commute alternatives, you need to understand how your employees/students currently commute.

#### **How did you get to work each day this week?**

- **Table 1** shows the aggregated commute mode for Monday through Sunday of the survey week
- **Table 2** provides a detailed breakdown of employee/student commute mode for each day of the survey week

Your goal is to reduce the drive-alone rate and increase the use of commute alternatives. Your impact on congestion, parking and pollution will be greatest by getting commuters into modes such as transit, walking and bicycling that do not involve bringing a vehicle.

Look for commute alternatives that seem to be under-used. Which commute alternatives are currently most popular? Employee/student commute distance (Table 3) and home location (Tables 13 and 14) may help to explain employee commute mode choices. What services and incentives can you offer to increase the use of each alternative mode? Does employee/student commute mode vary significantly from day to day? If so, consider how you can reduce the drive alone rate on days where it is higher than normal.

## Commute Mode Monday Through Sunday Combined (Table 1)

Table 1 - Commute Mode Monday Through Sunday Combined

		Percent
Mode	Drove alone	67%
	Carpooled (2 to 6 people)	6%
	Vanpooled (7 to 15 people)	-
	Took public transit	7%
	Took a shuttle	-
	Rode a motorcycle	1%
	Biked	0%
	Walked	-
	Skateboarded	0%
	I did not have class	16%
	I had an online course	4%
	Total	100%

\*Note: This table excludes instances where respondents selected "I didn't work (because of day off, vacation, sick, other)"

## Daily Commute Modes (Table 2)

Table 2 - Daily Commute Modes

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Drove alone	70%	68%	68%	67%	41%	3%	0%
Carpooled (2 to 6 people)	5%	9%	5%	7%	2%	-	-
Vanpooled (7 to 15 people)	-	-	-	-	-	-	-
Took public transit	7%	7%	7%	6%	3%	1%	-
Took a shuttle	-	-	-	-	-	-	-
Rode a motorcycle	0%	1%	0%	1%	0%	0%	-
Biked	-	0%	-	0%	0%	-	-
Walked	-	-	-	-	-	-	-
Skateboarded	-	0%	-	-	-	-	-
I did not have class	11%	8%	11%	11%	33%	16%	17%
I had an online course	3%	3%	3%	3%	4%	2%	2%
Class was cancelled	-	-	-	-	-	-	-
I didn't work/come to class (because of day off, vacation, sick, other)	4%	3%	5%	5%	16%	78%	81%
Total	100%	100%	100%	100%	100%	100%	100%

**If you get to work in a carpool or vanpool, how many people are in the vehicle (including yourself)? (Table 3)**

This question makes the distinction between carpools, with 2-6 passengers, and vanpools, with 7-15 passengers (often in a leased or company owned 7-15 passenger van). Using this distinction, 4 people commuting together in a mini-van would be considered a carpool, not a vanpool.

Table 3 - Rideshare Occupancy Rates

<b>Average Carpool Ridership</b> Average number of people per vehicle in carpools (2 to 6 people)	2.41 people per vehicle
<b>Number of employees commuting by vanpool</b> Number of people who said that they vanpool at least once a week	None
<b>Average Vanpool Ridership</b> Average number of people per vehicle in vanpools (7 to 15 people)	N/A
<b>Combined Carpooling and Vanpooling Ridership</b> Averages all responses to this question	2.41 people per vehicle

**If you drive to work, what kind of vehicle do you drive? (Table 4)**

While using an alternate mode such as biking, carpooling, or transit is the best way to reduce the carbon footprint of your company, the type of vehicles and gas mileage of drive-alone commuters (and carpoolers, for that matter) can have a significant impact on the emissions being produced in getting to and from work.

It should be noted that if you are primarily concerned with impacts of transportation demand – such as parking availability and congestion on roads – they type of vehicle has less of an impact; this question is primarily useful for companies with an interest in the environmental impacts of commuting.

**Table 4 - Vehicle Type**

	Number	Percent
Vehicle Type Small to Midsized car (not hybrid)	199	69%
Truck/SUV (not hybrid)	75	26%
Hybrid (all models)	10	3%
Electric (all models)	-	-
Motorcycle	3	1%
Total	287	100%

The average vehicle mileage is 25.2 miles per gallon.

The following table shows the breakdown of average mileage reported by employees.

**Table 5 - Vehicle Mileage**

	Number	Percent
Average Mileage 30 MPG or more	74	27%
21-29 MPG	115	42%
16-20 MPG	65	24%
12-15 MPG	14	5%
Less than 12 MPG	3	1%
Total	271	100%

## Section 2: Commute Distance and Time

### What is the one-way distance (miles) between your home and the place where you work? (Table 6)

Commute distance often determines the types of commute alternatives that are most appropriate for your employees. Employees/students who live within 5 miles of the work site are good candidates for walking, bicycling, and transit. Medium distance commuters, who travel from 6 to 20 miles to work, are good candidates for transit and carpooling. Vanpooling, carpooling, and telecommuting may be good commute alternatives for long distance commuters who live more than 20 miles from the work site.

**Table 6 - Distance Traveled to Work**

		Number	Percent
Distance to Work	0-5 mi	58	19%
	6-10 mi	111	37%
	11-20 mi	56	18%
	21+ mi	79	26%
	Total	304	100%

**The average one way commute distance is 16.1 miles.**

Table 7 shows a breakdown of commute mode for each distance range. Look at the relationship between commute distance and commute mode for your work site. Do most employees/students live close to the work site? How does the drive-alone rate change at different distances? In planning your trip reduction program, focus on the distance ranges with the most employees (Table 7) and the highest drive-alone rates (Table 7). Once you identify target groups, consider which services and incentives would be most appropriate for the employees/students in these groups.

**Table 7 - Commute Mode by Distance**

		Distance to Work			
		0-5 mi	6-10 mi	11-20 mi	21+ mi
Mode	Drove Alone	63%	66%	72%	73%
	Carpooled or Vanpooled	7%	8%	4%	6%
	Took a Shuttle or Public Transit	9%	5%	3%	9%
	Walked or Biked	-	1%	-	-
	All other options*	22%	21%	21%	13%
	Total	100%	100%	100%	100%

\*Note: "All Other Options" includes Motorcycle, Telework/Telecommute, Compressed work week, and work at a different location.

**What time did you usually get to work this week? (Table 8)****What time did you usually leave work this week? (Table 9)**

For most types of business, the majority of employees/students start work between 6 a.m. and 10 a.m. There are two strategies related to work schedule that can reduce congestion. One is to move trips out of the peak period by allowing employees/students to flex their schedules toward the early or late end of the peak; the other is to concentrate arrival times to make shared rides more likely. Carpooling rates are normally higher during the “peak of the peak” (e.g., 7:30 to 8:30 am). A high concentration of employees/students arriving during the peak of the peak may increase carpool matching potential.

**Table 8 - Work Arrival Times**

		Number	Percent
Time	Before 6 AM	-	-
	6:00 to 6:59 AM	7	2%
	7:00 to 7:59 AM	50	16%
	8:00 to 8:59 AM	72	24%
	9:00 to 9:59 AM	62	20%
	10:00 AM or later	114	37%
	Total	305	100%

**Table 9 - Work Departure Times**

		Number	Percent
Time	Before 3 PM	62	20%
	3:00 to 3:59 PM	31	10%
	4:00 to 4:59 PM	44	14%
	5:00 to 5:59 PM	44	14%
	6:00 to 6:59 PM	24	8%
	7:00 PM or later	99	33%
	Total	304	100%

### Section 3: Factors That Influence Mode Choice

#### What is most important to you when you choose how you get to work? (Select up to 3) (Table 10)

This information can help you to understand the factors that motivate your employees' and students' commute mode choices. You can use this to help develop your marketing and education efforts. Present commute alternatives with an emphasis on the factors that your employees/students consider important. For example, if travel time is important you could highlight the time saving advantages of carpool lanes. If cost is important, drive alone commuters may not understand what it actually costs to drive alone; educating employees/students about the true costs of driving is an appropriate and effective way to encourage carpooling and transit use.

Table 10 - Mode Choice Factors

		Number	Percent
Factor	Travel time	214	71%
	Convenience/Flexibility	178	59%
	Reliability	94	31%
	Cost	92	31%
	Ability to make stops on the way to work or home	75	25%
	Comfort & Safety	43	14%
	Stress	26	9%
	Reducing pollution, conserving energy	26	9%
	Total Respondents (N)*	300	N/A

\*Note: Because respondents were invited to select more than one answer, the percentages for each factor add up to more than 100%.

#### If you usually drive alone to work, what other ways would you be willing to try? (Select up to 3) (Table 11)

This question tells you which commute alternatives your employees/students are most willing to consider. Use this information to develop incentives and services to promote the most popular alternatives. For many employers, the most common answer is carpooling. Facilitating carpooling means matching employees/students and helping them to overcome obstacles to ridesharing. If transit use seems to have good potential, making route and schedule information available, selling passes on-site and/or subsidizing transit passes will encourage employees/students to use transit.

## Potential Commute Alternatives for Solo Drivers (Table 11)

Table 11 - Potential Commute Alternatives for Solo Drivers

		Number	Percent
Mode	Carpool	139	60%
	Transit	91	39%
	Work at home for a regular work day	86	37%
	Bike	51	22%
	Vanpool	33	14%
	Walk	7	3%
	Total Respondents (N)*	233	N/A

\*Note: Because respondents were invited to select more than one answer, the percentages for each factor add up to more than 100%.

## If you usually drive alone to work, why don't you use other ways (like carpooling, transit, biking or walking) to get to work? (Select up to 3) (Table 12)

This question asks solo drivers why they don't use commute alternatives. You could use this information to offer services that help to eliminate these obstacles. For example, if many employees/students are concerned that they will not be able to get home in an emergency, you can offer a guaranteed ride home service. If employees/students say that it is difficult to find others with whom to share a ride, think about how you can help them find carpool and vanpool matches among your own employees and those who work for nearby employees/students.

Table 12 - Reasons Why Solo Drivers Don't Use Commute Alternatives

		Number	Percent
Reason	Transit service doesn't match my route/schedule	114	45%
	Work late or irregular hours	100	40%
	Prefer to drive my own car	95	38%
	Difficult to find others to carpool/vanpool	81	32%
	Use my car on the job	55	22%
	Need to make stops on the way to work or home	47	19%
	Cannot get home in an emergency	40	16%
	Poor bike/walk access	34	13%
	Need vehicle for appointments or errands	18	7%
	Total Respondents (N)*	252	N/A

\*Note: Because respondents were invited to select more than one answer, the percentages for each factor add up to more than 100%.

**If you usually drive alone to work, what would encourage you to use a different way to get to work (like carpooling, transit, biking or walking)? (Select up to 3) (Table 13)**

Here drive-alone commuters reveal what it would take for them to consider a commute alternative. Since you will not be able to offer all incentives which interest employees/students, focus on those that will reduce the greatest number of drive alone trips. Match these responses with other information, such as commute distance and the modes individuals are most interested in trying.

**Table 13 - Incentives to Use Commute Alternatives**

		Number	Percent
Incentive	Financial incentives	89	41%
	Work schedule flexibility	69	32%
	Shuttle between transit station and work place	57	26%
	Guaranteed ride home in an emergency	53	24%
	Help finding carpool/vanpool partners	49	22%
	Better bike/walk access	36	16%
	Special parking for carpools/vanpools	36	16%
	Bike lockers/showers at work	23	11%
	Help with transit information	23	11%
	On-site services (banking, convenience store, dry cleaning)	22	10%
	Awards/prizes	18	8%
	Transit passes sold at work	15	7%
	Total Respondents (N)*	219	N/A

\*Note: Because respondents were invited to select more than one answer, the percentages for each factor add up to more than 100%.

#### Section 4: Employee Home Locations

Home location obviously has a strong influence on employee/student commute mode. Table 14 shows the top ten home locations for your employees/students, and Table 15 shows employee/student home zip codes for all survey respondents. This information is useful for identifying clusters of employees/students who could form carpools and vanpools. You can also identify appropriate transit information based on where clusters of employees/students live (e.g., bus routes) and make that information available. You might want to plot the data on a zip code map (available from the 511 Regional Rideshare Program).

**Top Ten Home Locations (Table 14)**

**Table 14 - Top Ten Home Locations**

Home Cities of the Respondents	Number	Percent
Livermore	97	31%
Pleasanton	51	16%
Dublin	33	11%
Tracy	24	8%
Castro Valley	20	6%
San Ramon	14	5%
Oakland	11	4%
Brentwood	7	2%
San Leandro	5	2%
Fremont	5	2%
Total	267	87%

\*Top 10 locations only

**Home Zip Codes (Table 15)**

**Table 15 - Home Zip Codes**

	Number	Percent
Zipcode 94550 Livermore	51	16%
94551 Livermore	46	15%
94568 Dublin	33	11%
94566 Pleasanton	33	11%
94588 Pleasanton	18	6%
94546 Castro Valley	15	5%
95376 Tracy	12	4%
95377 Tracy	8	3%
94583 San Ramon	8	3%
94513 Brentwood	7	2%
94582 San Ramon	6	2%
94552 Castro Valley	5	2%
94619 Oakland	3	1%

94610	Oakland	3	1%
94587	Union City	3	1%
94578	San Leandro	3	1%
94536	Fremont	3	1%
95391	Tracy	2	1%
95363	Patterson	2	1%
95304	Tracy	2	1%
94605	Oakland	2	1%
94586	Sunol	2	1%
94577	San Leandro	2	1%
94544	Hayward	2	1%
94526	Danville	2	1%
94110	San Francisco	2	1%
95621	Citrus Heights	1	0%
95382	Turlock	1	0%
95360	Newman	1	0%
95351	Modesto	1	0%
95316	Denair	1	0%
95240	Lodi	1	0%
95205	Stockton	1	0%
95054	Santa Clara	1	0%
94973	Woodacre	1	0%
94920	Belvedere Tiburon	1	0%
94805	Richmond	1	0%
94804	Richmond	1	0%
94707	Berkeley	1	0%
94704	Berkeley	1	0%
94702	Berkeley	1	0%
94611	Oakland	1	0%
94609	Oakland	1	0%
94606	Oakland	1	0%

94598	Walnut Creek	1	0%
94596	Walnut Creek	1	0%
94561	Oakley	1	0%
94545	Hayward	1	0%
94539	Fremont	1	0%
94538	Fremont	1	0%
94531	Antioch	1	0%
94523	Pleasant Hill	1	0%
94520	Concord	1	0%
94514	Byron	1	0%
94511	Bethel island	1	0%
94505	Discovery Bay	1	0%
94503	American Canyon	1	0%
94501	Alameda	1	0%
94303	Palo Alto	1	0%
94131	San Francisco	1	0%
94118	San Francisco	1	0%
90277	Redondo Beach	1	0%

## Section 5: Employee Comments

Your employees/students were provided with the opportunity to share additional comments about their trip to work.

- 5 miles away is really too far to walk to work and poor time management for mass transit.
- Although I drive to class Mondays as an adjunct, I often ride my bike to work. I've thought about cycling to class as well from work, but I need to carry a briefcase for class and class ends after dark.
- bike access from Pleasanton is not good.
- Biking to campus can be dangerous and difficult. The rider has to cross over the Airway overpass, where the bike lane disappears, drivers are intent on entering the freeway and don't always see bikers. There are occasionally meetings off campus, too.
- Couldn't answer 12 because I had changed my mind and survey says no more than 3 answers.
- Due to req'd attendance at off-campus mtgs, carpooling would be diff. HOWEVER, w/online classes it is astonishing to me that we are still req'd to physically be on campus 5 days/ wk & must petition & justify a 4day assign. 2days on campus is 21st century.
- Get new or fix the ticket machines that give out the daily parking pass!!
- going to move closer so I can bike!
- I am a part time employee with flexible hours. None of the above could fit my

schedule.

- I am disabled. can not walk much.
- I believe the school has taken too many students without providing the proper space for parking. It is very dangerous and stressful parking during late morning hours. Being late to class effects our grades.
- I don't come to the campus because I take online classes.
- I drive alone because there usually aren't student's who are at the campus all day. I work here and take classes here so I am here all day.
- I drive straight to LPC from my day job to teach an evening class. To take transit would cost me a full hour plus extra 40 minutes to get home.
- I drive Vasco and few other ways to school
- I go to school while my kids are in school, I don't have the flexibility to wait for a bus that is late or missing from route. And I would be worried about security and privacy issues with carpool, vanpool, and bike partners.
- I grew up in Europe, where public transportation is often the fastest way to commute. Here, it would take me at least three times longer to do the same commute on public transportation. I carpool occasionally.
- I have a 2yr old, so I really need to drive my own car and be able to pick him up if I need to, so carpools are not an option. The bus near my house takes a long time with several stops, and would increase my childcare costs, so that is not an option.
- I have another job to get to on Tuesdays and Thursdays after class. It's difficult to carpool in this situation.
- i have only online classes and do not ever go to campus
- I have to take my granddaughter to and from school. She has zero period so none of the other parents can take her.
- I have tried carpooling before and have had bad experiences so I prefer to drive to work alone and not commit myself to ride sharing.
- i like pizza
- I live close to campus and when I can afford to purchase a bicycle, I plan to ride to school. Until then, my schedule for school doesn't allow for me to carpool. I Usually only have one class per day.
- I live far away, have a son with a late start to school and teach many evening classes. I am concerned about the environment and right now there aren't many choices to help me out.
- I live in an area that is not served by public transit so I have limited options
- I live in Mountain House and there is no public transportation!
- I live over an hour away. My dad works in Oakland so I come with him in the morning, the problem is he has to be there at 7:30am and my first class starts at 9:00am. He would have to drop me off at 6:30am and there's nothing open that early on campus.
- i live rurally, so it's very tough to find someone willing to pick me up or drop me off, as I live up a 1/2 mile gravel road.
- I live too far away from campus. No one else commutes the distance I do at the hours I do, and I do not want to lose time to making additional stops on the way.
- I love seeing all the wildlife around campus...rabbits, foxes, golden eagles, wild turkeys, etc.
- I must drive because I have to drop off and pick up my child at a daycare.
- I really dont like how some of the classes end at 9:45pm and the last bus departs at 9:38pm
- I rush to my evening classes straight from work. Sometimes I have time to drop by my house and drop off the people I carpool with to work, other times they drop me off and have to pick me up later.
- I strictly take online courses to avoiding driving to campus. I prefer to do everything online if possible
- I teach online and only come on campus for office hours, It's unlikely I'd find someone with my schedule.
- I think that occasional free week-long bus passes (like they had the first week of the

semester) or an increased discount for student riders on public transit would encourage public transportation use further.

- I took BART for over 1 year, the bus schedule has changed and in the peak morning hours there are less busses
- I use the bus exclusively to get to LPC.
- I used to circle the parking lot 30 minutes before class has started to find parkign and still be late for class. Now I arrive at 8:30am for my 9:30am class, and 10am for my 1:30pm class and spend the extra time studying.
- I would be willing to set my schedule up so that I can ride share at most 3 x per week at least 2x per week with flexibility to change if I have an event or meeting that can't be changed
- I would like safer bike lane across 580.
- I would like to carpool, but I am new to campus and don't know anyone yet.
- I would love to bike from the Dublin bart station to the Las Positas college campus, except there is no easy way to do it. How about completing the frontage road or Dublin Blvd along interstate 580 from Dublin bart to Airway Blvd.
- I would love to see BART extend further East, a frontage road between Vasco and Airway, and convenient public transportation between Brentwood/Discovery Bay and Livermore.
- I would prefer to take public transportation, however, according to my research, I would have to, from Concord, take 4 or 5 buses or BART trains to get to LPC. Two way travel would be about 4 hours. Not exactly efficient!
- I would really like to find a group of responsible friendly SAFE people to carpool with to school mondays thru thursdays, but i havent met any people who fit that category thus far.
- I would take bart if there was a bart station by the campus and in Mountain House, or Tracy!!! I'm sure many others feel the same.
- I would take BART if there were a convenient, frequent shuttle to LPC.
- if dublin boulevard was extended to collier canyon in livermore, I would be able to bike to work. Congestion would lessen as well. Right now, from dublin to livermore, 580 is the only option. :-(
- if there was more parking i wouldn't have to worry about getting to campus an hour early just to look for a spot. there have been times i've looked for over an hour and then had to be late to class. i suggest more parking because i work in between classes
- If we had a transit system like NYC, it would be easier to take public transportation. But the way our system is set up, there are not enough stops at enough locations and limited hours of operation. And there are not monthly passes or discounts.
- I'm tired that I have to get the other bus going to the bus terminal and get on 12 bus.
- It took me 1.5 hours to get to work today due to accidents on the road. This would be a normal commute time for me if I were to use public transportation because I would need to get to a BART station and park; travel to Livermore, then get transported to
- It would be great to have designated carpool parking spaces. Use the Bart system where each person has a card to put on the dash.
- Las Positas is a commuter school! There is no affordable housing close by for those willing to walk or bike to school. There is only one way into the school via 580 which lends itself to heavy traffic conditions making it unsafe for bikers.
- last year i tried bart for 3 months. without a student picking me up and dropping me off at the dublin station it is impossible to get to and from LPC in a timely manner, expecially in the evening. The commute was an uncomfortable 1 hour plus.
- Last year, I tried taking the bus. There is a bus stop on Railroad right near my apartment complex so I thought that it would be convenient. However, the bus does not come regularly enough and it took over 3x longer than driving.
- live too far and public transportation would take me significantly longer. I tried 511 rideshare, but no one was coming from my area
- Local public transportation is poor and getting poorer--routes cut, prices up. I would probably have to drive to a stop with a direct route to campus, and I often carry bags of

books & papers. I think I'm doing the best I can by buying a small car.

- Mostly use BART to work
- My hours vary from day to day. Sometimes I work Saturdays from 9ish to 2ish.
- my only concern is finding a parking space.
- My work hours are varies during the week.
- Not nearly enough parking!! The number of students coming to the campus has increased greatly but the number of parking spots has not kept up.
- Nothing would encourage me to drive in a pool. As an adjunct instructor, I would require someone who worked the same hours I do both at my main job (8:30-5:30 on a good day) and at LPC (6:00 - 7:00 one day, 6:00 - 8:00 on another, and 6:30 - 10:00 twice.
- Parking is horrible right now. I have to get to campus an hour and a half early to get a decent spot.
- Parking is horrible. Many days I arrive up to an hour before my class an just make it to my class before it starts.
- People drive around like maniacs. My mum says she was almost T-boned a few times.
- Please connect Dublin to Livermore for cyclists. I wouls bike to school but there is not a direct path or route that takes me safely to campus.
- question 12 wouldn't allow me to post a response. I would ride my bike if the route didn't require me to use a HIGHWAY.
- Really though, i need to get my kids to school each day. We could all ride bikes, but it would make it impossible to work 30 hours per week, because we don't have any child care. I could never get back to the school in time to pick them up.
- Regarding below my schedule varies due to the block schedule MWF classes T/th
- San Ramon is not close enough for me to chance my timely arrival to class using public transit. I also have varied work hours which require driving as an option. If I were a Livermore local, I would feel public transit would be a real option.
- Since I drop off and pick up my children right before and right after going to campus, my time is tight. I'm too paranoid to carpool (strangers) and public transit takes A LOT longer than driving and is unreliable.
- Survey does not allow one to unclick and then reclick so was not able to complete survey
- The bus does not run at 9:45 or later. I usually have a big load to carry. Could part-time instructors have a locker to keep things in?
- The bus schedule des not line up conveniently with class start times.
- The campus speed limit is ridiculous. No one follows INCLUDING campus security
- The college gives every incentive for employees to drive solo (parking paid for + preferable locations), and none to carpool or take transit.
- The drive is quick and easy it's the parking once I get there that makes me crazy
- The number one reason I don't BART is because of my late hours at the college and the fact that I would have to transfer twice (once onto the Dublin line and then catch a shuttle)
- The parking is horrible! I have to leave 1 hour and 30 minutes before my class just so I can find a parking spot
- The parking lots are packed, but understandably I have the leisure time to arrive a bit earlier to find a parking spot.
- The schedule is inconvenient and buses tend to run late, but public transportation still helps with money, parking, and environmental issues.
- The survey wouldn't allow me to answer #12. My answers would have been 1,3, and 4.
- The transit "service" in the TriValley is shameful. What is now a 15 minute drive would be a 2 hour bus trip.
- There is no public transportation from East Contra Costa County to LPC that I am aware of.
- There needs to be more frequent buses going to and leaving LPC
- There should be more buses going to and from LPC it is getting way too crowded with

the reductions in the wheels system

- Too many students and too little parking especially in the morning
- Until the Portola overcrossing is completed with the realignment/construction of the Isabel extension to I580, it is impractical to bicycle to work and with my work schedule, it is impossible to carpool, as it would be an inconvenience to ride partners.
- Urge more faculty to take public transportation.
- we definitely need more parking
- When a class ends at 9:45 PM, a woman does not want to deal with walking to bus stops, waiting at transit centers for the proper connection, and then walking home .75 miles from the bus stop to home in the dark. It is not safe, nor practical.
- While usually I drive alone, I have experimented with Biking and busing from Dublin, Biking all the way from dublin and other public transit measures. The biking is horrible because bike access to the college over 580 is dangerous.
- will begin carpooling with another instructor once schedules get ironed out
- Would be nice to have a more frequent bus service



**Chabot-Las Positas  
Community College District**

5020 Franklin Drive  
Pleasanton, CA 94588  
Phone: (925) 485-5215  
Fax: (925) 485-5251  
[www.clpccd.org](http://www.clpccd.org)



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