VALENCIA COLLEGE

Climate Action Plan Update

Prepared by:
Valencia College
Office of Sustainability
January 2014

President's Signature Page

The signature below signifies that the President of Valencia College hereby accepts the Climate Action Plan Update.

Dr. Sanford Shugart

President, Valencia College

1-29-2014

Date

Climate Action Plan Update

Authors:

Valencia College
Dr. Deborah Green, Director of Sustainability
Phone: 407-582-1830
dgreen1@valenciacollege.edu

Dr. Allen Bottorff, Assistant Vice President for Facilities and Sustainability
Phone: (407) 582-1701
ebottorff@valenciacollege.edu

Review Editors:

Valencia College

Andy Ray, Professor Building Construction Technology and Co-Chair, Sustainability Committee

Robert Hickman, Operations Manager, Energy Efficiency

Patti Riva, Operations Manager, Energy Education

Larry Rosen, Institutional Research Analyst

Patricia Smith, Professor, Biology

James Adamski, Professor, Geology

Jerry Reed, Programmer Analyst, Instructional Technology

Deb Hall, Professor, Electrical Engineering

Annmarie Wise, Purchasing Agent, Procurement

The original (2010) version of this Climate Action Plan was completed by:

EcoAsset Solutions, LLC

Authors:

David A. Palange, Sustainability Project Manager

Resham Shirsat, Sustainability Project Associate

Review Editors:
Valencia College
Dr. Winsome Bennett
Helene Loiselle

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACUPCC CLIMATE ACTION PLAN UPDATE

Valencia College

EXECUTIVE SUMMARY

As a signatory of the American Colleges and Universities Presidents Climate Commitment (ACUPCC), Valencia College has committed to annual reporting of its sustainability progress, drafting and implementing a Climate Action Plan (CAP) every three years, and reporting on its greenhouse gas (GHG) emissions every year. Valencia College has committed to achieve Climate Neutrality by 2060.

In accordance with its 2010 CAP, Valencia College has committed to the following GHG reduction goals:

- Reduce GHG emissions 12% below 2006 levels by 2015
- Reduce GHG emissions 30% below 2006 levels by 2025
- Reduce GHG emissions 52% below 2006 levels by 2040
- Reduce GHG emissions 100% below 2006 levels by 2060[1]

The 2060 climate neutrality goal appears to be in the distant future. However, the interim goal of 2015 is fast approaching. The College needs to achieve a reduction of *approximately 11,000 metric tons* of GHGs to meet the 2015 goal.

Based on the results of its 2006-2012 GHG inventories, Valencia College is focusing on sectors with the highest GHG emissions in order to achieve the reductions. These are:

- Energy (Scope 2 Purchased Electricity).
- Transportation (Scope 3 Commuting).

Since 2006, Valencia College has been experiencing significant growth in student enrollment and has expanded its building square footage by 34%. Enrollment growth is likely to continue.

Valencia College's Facilities Department has been able to reduce Scope 2 (Electricity) emissions by 39% over the period 2006-2012 through energy efficiency measures. Reductions of 12.6 million kWh or 38,074 million BTU have occurred between 2006 and 2012. *This represents a reduction of 7,873 metric tons of GHG emissions since 2006, which is 72% of the 2015 reduction goal of 11,000 metric tons.*

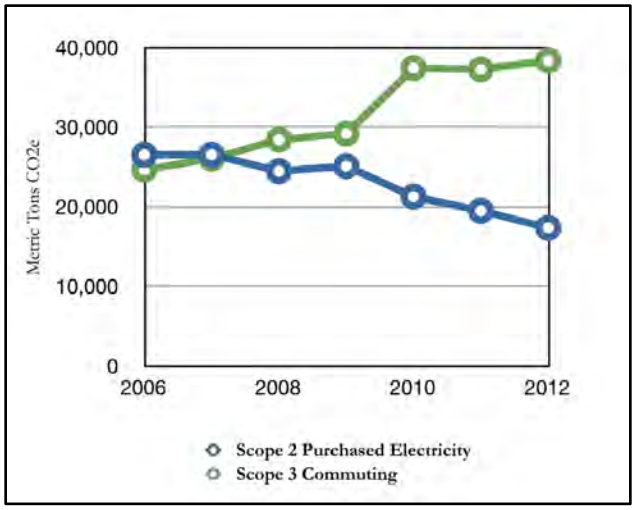
Building energy reductions benefit Valencia College not only in moving toward carbon neutrality but in saving money on purchased electricity. The College's energy managers record a reduction of $6.3 million in electricity bills since 2009. Measures include HVAC (Heating, Ventilation and Air Conditioning) and lighting retrofits, operations and maintenance improvements, implementation of an efficient Building Automation System college-wide allowing central management, and an aggressive behavioral energy efficiency (Energy Education) program. The six new buildings constructed since 2007 have all been certified LEED Gold or equivalent, and each of these has emphasized energy efficiency.

However, as a commuter school with increasing enrollment, Valencia College's Scope 3 (Commuting) emissions have *increased* between 2006 and 2012. *An additional 13,709 metric tons (a 56% increase) have been emitted by our student and employee commuting.* Central Florida does not have the infrastructure for alternative

[1] Purchase of carbon offsets will be necessary to achieve complete carbon neutrality, due to emissions from equipment.

transportation of other parts of the country where ACUPCC Associate's Colleges are located. Surveys administered in 2013 indicate that 96% of employees and 73% of students drive single occupancy vehicles to their home campus and that there is considerable intercampus travel.

Figure 1.0. Valencia College Emissions from Purchased Electricity and Commuting in Metric Tons of CO2 equivalent 2006-20121



Key findings of this Climate Action Plan Update include:

- Throughout the seven years of greenhouse gas (GHG) inventories, Valencia College's building space grew by nearly 516,000 square feet (33.6%) and student population (Full Time Equivalent or FTE) increased by 40%. Even with this steady growth, Valencia's campus carbon footprint increased only minimally—about 3000 metric tons or 6%. This only minimal increase can be attributed primarily to building energy efficiency.

- Valencia College's 2012 gross emissions per 1,000 square feet are 26.91 metric tons. This is only slightly higher than the average gross emissions per 1000 square feet for other Associate's Degree institutions (24.66 metric tons).

- Valencia College's 2012 Scope 3 emissions (primarily commuting by students and employees to campus, but also air travel, solid waste, and fertilizer) totaled 38,630 metric tons, *which is a 13,709 metric ton increase over 2006 levels*. When qualified by FTE (30,077 students in 2012), this is 1.28 metric tons per FTE, which is only slightly higher than the average emissions for other ACUPCC Associate's Degree institutions (1.21 metric tons per FTE). The stabilization of Valencia's commuting emissions despite growth in FTE and lack of alternative transportation infrastructure can be attributed to an increase in hybrid and online classes.

- To offset the aforementioned increase in Scope 3 Commuting emissions, the College will have to achieve even greater reductions in building energy use through energy efficiency measures or produce its own low carbon energy through renewables.

- Some of the energy efficiency measures, such as the Energy Education (behavioral energy efficiency)

program, are low in cost. But others (retrofits involving installation of new equipment) are capital-intensive. A stable source of funding for energy efficiency, such as a Green Revolving Fund, will enable further GHG reductions.

- Programs to reduce vehicle miles traveled need to be continuously pursued, not only by the Transportation Task Force but with support by Valencia College administration. Most promising, in that is costs the College nothing, is promotion of ride-sharing (car-pooling). The reThink Your Commute agency, funded by Florida Department of Transportation, provides an online interface through which students and employees can find partners for carpools. Becoming an Employer Partner with reThink at the Gold Level and seeking recognition under the national Best Places for Commuters program are worthwhile goals to further use of alternative transportation.

- Removal from the road of 2,292 passenger vehicles or the CO2 emissions from 1,233,184 gallons of gasoline consumed will eliminate the 11,000 metric ton reduction needed by 2015. With 73% of Valencia's 30,000 credit students (FTE) driving their own cars, there are an estimated 21,900 cars traveling to Valencia's six campuses. Reducing travel to campus by these cars by 10% would accomplish this reduction.

- Trees absorb CO_2, and an extensive tree inventory was carried out by members of the Tree Campus USA committee and Biology and Horticulture students in 2010. Valencia College's over 21,000 trees sequester 1,799 metric tons of CO2.

- Planting additional trees has other ecological benefits besides CO_2 absorption. An important part of Valencia College's carbon neutrality goal is involvement of Stakeholders, including a wide segment of the college community. Tree planting events and other outdoor events are one of the best ways to achieve involvement of students and employees in sustainability efforts.

Figure 1.1. Green Apple Day of Service 2013, West Campus Butterfly Garden Maintenance event.

1.0 INTRODUCTION

Valencia College is located in the Orlando Metropolitan Area in Central Florida. Valencia College is one of the largest colleges in Florida, with almost 70,000 students enrolled on six campuses in Orange and Osceola Counties (Figure 1.2).

While primarily a community college (Associate's College), Valencia College now has several 4-year degree programs. Its first Bachelors degree students graduated in 2013. Without on-campus housing, students and employees of Valencia College must commute to and from campus on a daily basis.

In 2009, Valencia College's President Sanford Shugart became a signatory of the American College and University Presidents' Climate Commitment (ACUPCC). President Shugart's participation demonstrates the institution's dedication to environmental stewardship and Sustainability. It also acknowledges the reality of global climate change, which is projected to increase Florida's average temperature between 4 and 10 degrees Fahrenheit over the next 100 years.

Valencia College is joined in this commitment to achieve climate neutrality by 679 other colleges and universities across the United States. These include thirteen Florida universities and one other Florida community college.

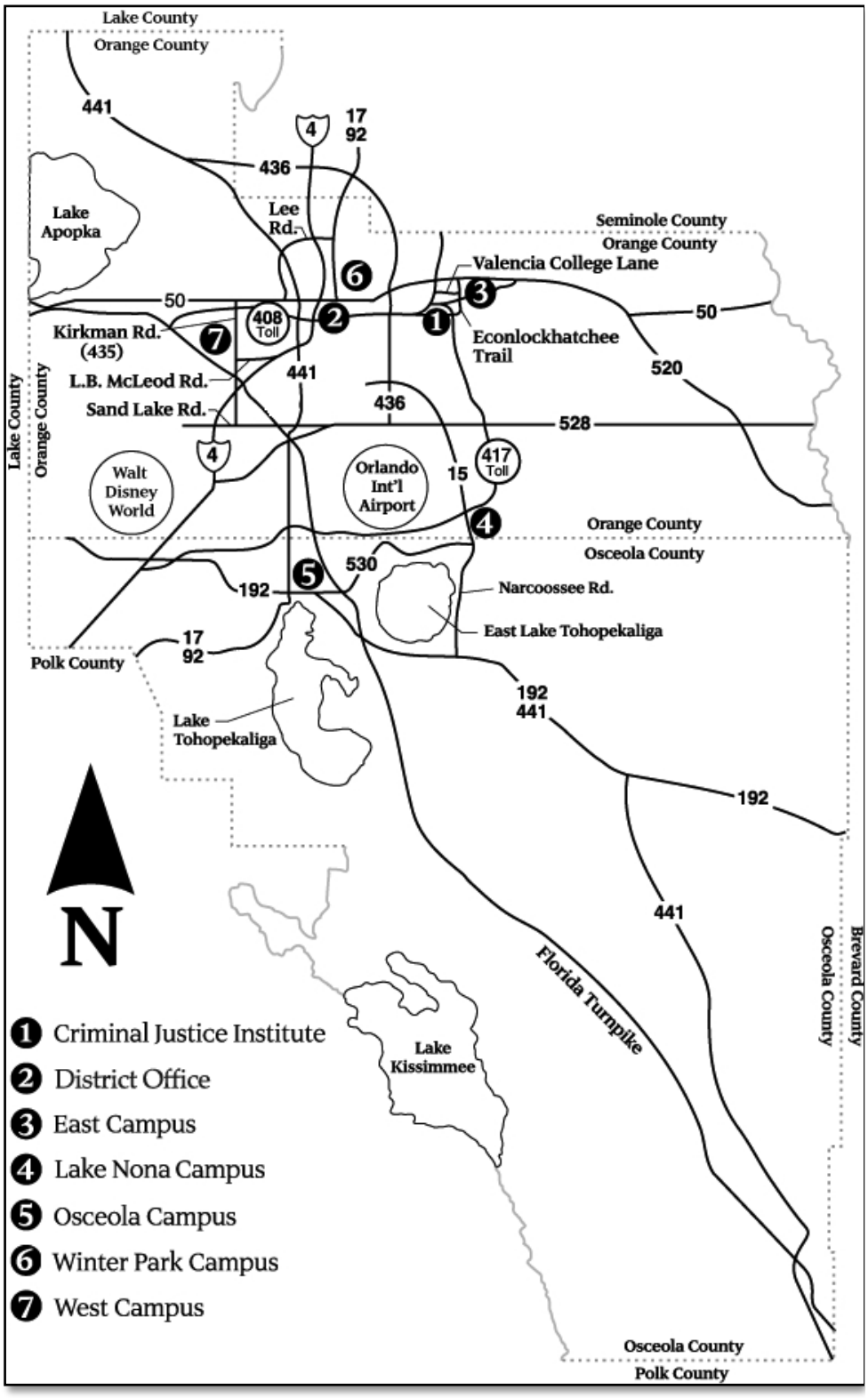


Figure 1.2. Map of Valencia Campus Locations

The Valencia College Facilities Department has implemented sustainability initiatives on all campuses. These include extensive energy efficiency projects, a green building policy for all new buildings, a green cleaning program, and adopting ecological landscaping practices.

The College's Sustainability Committee was established in 2005, and the Office of Sustainability was established in 2011. In addition to Facilities sustainability improvements, the Office of Sustainability coordinates a *Sustainability Across the Curriculum* Faculty Development class, collaborates with Student Development to involve students, and seeks to make sustainability part of the Valencia College culture.

Valencia College is a member of the Association for the Advancement of Sustainability in Higher Education (AASHE) and participates in the Sustainability Tracking and Rating System (STARS). Valencia achieved STARS Silver (under Version 1.2) in 2012, one of only 15 community colleges nationally to achieve that rating.

1.1 Background on CAP Update

The purpose of this report is to update the 2010 Climate Action Plan (CAP) for Valencia College. The CAP provides a roadmap to decrease the College's greenhouse gas emissions, with the ultimate goal of achieving climate neutrality. The CAP is based on Valencia College's annual greenhouse gas (GHG) inventories, compiled for years 2006 through 2012 to date.

The original (2010) version of this Climate Action Plan was completed by EcoAsset Solutions, LLC. EcoAsset Solutions, a wholly owned subsidiary of Lykes Brothers Inc. based in Tampa, Florida, also conducted Valencia College's original GHG inventories for 2006, 2007 and 2008. In 2009 Valencia College Facilities staff conducted the GHG inventory, following the same methodology. In 2010, 2011 and 2012, Valencia College's Office of Sustainability staff completed the GHG inventories using the Clean Air Cool Planet software and methodology, which is widely accepted in the Higher Education sustainability community.

In preparation of this CAP Update, assumptions used by EcoAsset Solutions for the 2006-2008 GHG surveys were reviewed. Difficulties in developing accurate inventories for Scope 3 commuting emissions have been articulated, with suggestions for future refinements (Appendix I). For consistency, the same estimating assumptions used in the 2010 CAP are applied where possible.

1.2 Climate Neutrality

Greenhouse gases (GHGs) trap heat in the atmosphere and in this way contribute to global climate change. GHGs are typically emitted through the combustion of fossil fuels (i.e. coal, oil, natural gas, etc.), but some are released through decomposition of biogenic material, the handling of certain chemical substances, and the combustion of other fuels. The most commonly reported GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). While emissions of CO2 worldwide are greatest by volume, the other GHGs have greater global warming potential. For example methane is 25 times more powerful and nitrous oxide 298 times more powerful as a greenhouse gas. Carbon Dioxide Equivalent (CO_2e) is a metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

Under its ACUPCC agreement, Valencia College has the end-goal of achieving carbon neutrality by 2060. ACUPCC defines *climate neutrality* as "having no net GHG emissions, to be achieved by minimizing GHG emissions as much as possible, and using carbon offsets or other measures to mitigate the remaining emissions if necessary."

1.3 Florida and Climate Change

Through his ACUPCC commitment Valencia College President Shugart acknowledges the seriousness of climate change and the need to lead by example. This is particularly important in Florida, a state anticipated to experience significant impacts from the Earth's changing climate. Over the next 100 years, global warming is projected to increase Florida's average temperature between 4 and 10 degrees Fahrenheit and has the potential to increase sea level up to 2 feet. Rainfall is anticipated to become more intense but also more sporadic, causing more extreme droughts and storms.[2] If action is not taken, flooding and erosion from sea level rise threaten Florida's homes, businesses, and ecosystems, including the state's prized beaches that draw thousands of tourists every year. A changing climate may also impact commercial farming and forestry operations through more extreme weather systems (i.e. concentrated rains and droughts). With most of the state's population living near the coast and an economy highly dependent on tourism and agriculture, global warming poses a significant threat to Florida's economy and population.

In 2011, the State of Florida ranked fifth overall in the nation in total GHG emissions, due to its large population,[3] although it was only 45th overall in per capita energy consumption due to lack of energy-intensive industry. In July 2007, Florida Governor Charlie Crist declared action against climate change by signing three Executive Orders related to climate and energy policy.

Many Florida cities and counties are trying to lead by example by measuring their GHG emissions, developing Climate Action Plans, and committing to take action to reduce their GHG emissions. Valencia College representatives have served on Sustainability Task Forces for City of Orlando and Orange County toward development of updated regional plans emphasizing sustainability.

1.4 ACUPCC and Valencia College's Tangible Actions

ACUPCC signatories commit to initiating two or more of seven specified tangible action options to reduce greenhouse gases within the two years after their implementation start date. Valencia College committed to 3 of 7 Tangible Actions, as follows:

1. Established a policy that all new campus construction will be built to at least the U.S. Green Building Council (USGBC) LEED Silver standard or equivalent. Valencia College constructed six new buildings from 2008-12 that were LEED Gold or equivalent.

The Allied Health Sciences building was tied with Orlando Utility Commission (OUC) Reliable Plaza as the first USGBC LEED Gold building in Orange County in 2009. Valencia achieved LEED Gold certification for West Campus's University Center (Building 11) and the Special Events Center (Building 8) in 2010. The College has recently achieved LEED Gold certification for Osceola Campus Building 4. The Lake Nona Campus Building 1 and West Campus Building 10 were certified as Three Green Globes, equivalent to LEED Gold (see p. 43 for reasons that the Green Globes rating system was used instead of LEED).

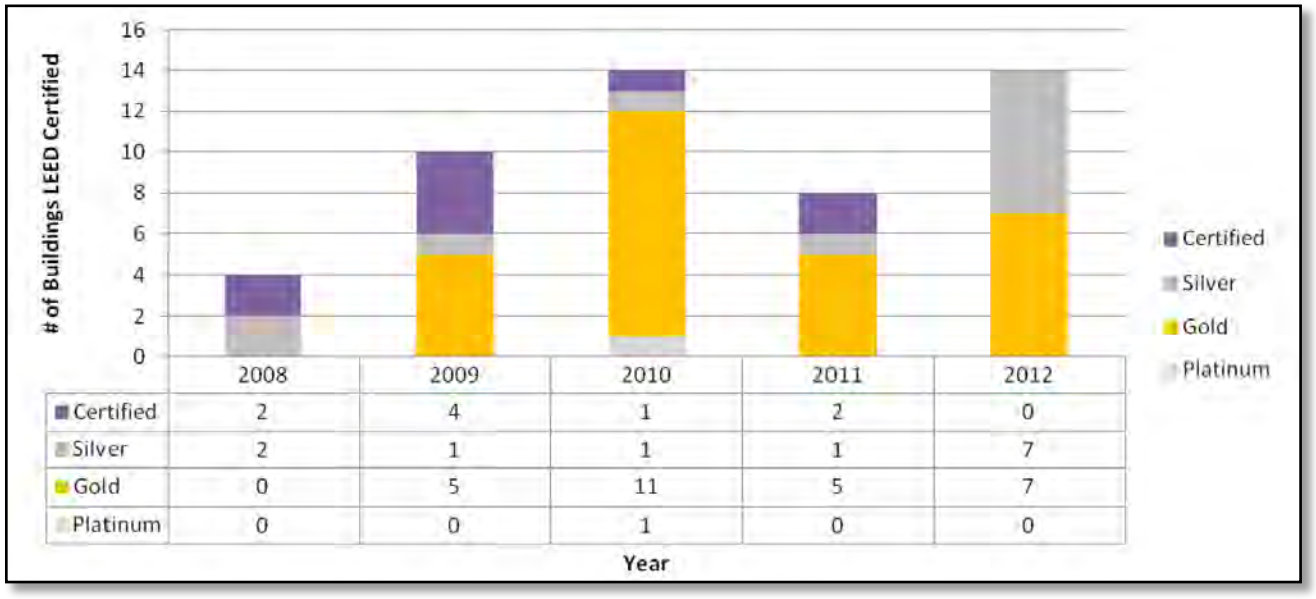
With help of carefully selected architects, even renovation projects are achieving LEED or Green Globes certification. For example, the West Campus Student Services Building renovation was awarded Two Green Globes in late 2013.

[2] Natural Resource Defense Council. Feeling the Heat in Florida: Global Warming on the Local Level. Retrieved December 2013. http://www.nrdc.org/globalwarming/florida/execsum.asp

[3] Energy End Use Sectors in Florida (from U.S. Energy Information Administration): http://www.eia.gov/state/

Valencia's six LEED Gold or equivalent buildings make up a large portion of certified green buildings in Orange County, Florida as in Table 1.1 from Orange County's 2013 "Sustainability Assessment."

Table 1.1. LEED certified Buildings in Orange County, FL 2008-2012. (From "2013-09-24 Sustainability Assessment," accessible on www.orangecountyfl.net).



	2008	2009	2010	2011	2012
Certified	2	4	1	2	0
Silver	2	1	1	1	7
Gold	0	5	11	5	7
Platinum	0	0	1	0	0

Valencia College is also working toward certification of its first building under the LEED Existing Building Operations and Maintenance (EBOM) certification program, under V.4. East Campus Building 3 is the building under which this program is being piloted, with potential to expand college-wide.

2. *Adopted an energy-efficient appliance purchasing policy that requires purchase of ENERGY STAR certified products in all areas for which such ratings exist.* This policy was adopted in 2009 and is included in Valencia College's Architectural and Engineering Guidelines. Valencia College became an Energy Star Partner in August 2012 and seeks to promote Energy Star purchases to the campus community.

3. *Participated in the Waste Minimization component of the national RecycleMania competition, and adopt three or more associated measures to reduce waste.* Measures were to increase recycling, encourage double-sided printing, and encourage the college community to used recyclable/reusable products.

Valencia College won the Waste Minimization component of the national RecycleMania competition in 2012 and 2013. Although the College's quantity of landfilled waste has increased with its student population, thanks to recycling, the landfilled waste per FTE has gone down. This is the criterion for the Waste Minimization competition.

The College has recycling bins for plastic bottles and aluminum cans, adjacent to bins labeled "Landfill." Labeling the landfill bins helps educate students on making a choice to recycle. Paper recycling bins are located in key locations in offices. Earth Day and Campus Sustainability Day include education on recycling, and America Recycles Day has been celebrated in the past.

Figure 1.3. Earth Day 2013 West Campus- This is one day's trash and recycling on display for students to guess at quantities. On right are plastic and aluminum can recycling bins next to a labeled Landfill bin. This configuration is in place college-wide.

1.5 Progress toward Sustainability Goals in 2010 CAP

For most of the general sustainability goals outlined in the 2010 CAP, considerable progress has been made as follows:

- Establish an institutional structure to oversee the development and implementation of the school's Sustainability program within two months. *The Facilities Department began the process of hiring a Director of Sustainability in 2010, and was able to hire a Director and establish an Office of Sustainability within the Facilities Department in November 2011.*
- Take some immediate steps to reduce GHG emissions. *Focusing on Scope 2 Electricity emissions, rapid progress is being made. Lighting retrofits, chiller plant and other HVAC upgrades and the implementation of a highly functional Building Automation System have been pursued, with improvements ongoing. A behavioral energy efficiency (Energy Education) program was established in summer 2011 and within its first two years has reduced the college's electricity costs by nearly $2 million (below a baseline established the year before the program started).*
- Complete an emissions inventory within a year, and annually thereafter. *Annual GHG inventories have been completed and uploaded to the ACUPCC website from 2006 to 2012.*
- Establish a climate neutrality action plan within two years. *The 2010 CAP outlined plans to move toward climate neutrality by 2060.*
- Make the climate action plan, inventory and progress reports publicly available. *Reports filed with ACUPCC are publicly available on the ACUPCC website (http://rs.acupcc.org/) and on the Valencia College Sustainability website (www.valenciacollege.edu/Sustainability).*
- Integrate Sustainability into the curriculum. *Starting in 2012, a Faculty Development class Sustainability Across the Curriculum has been taught each semester. As of December 2013, the class has graduated 48 faculty members in diverse fields. Each instructor now includes a unit incorporating sustainability in one of their courses.*

Figure 1.4. Instructors in the Fall 2012 Sustainability Across the Curriculum class learn about the West Campus environment.

1.6 Highlights of Sustainability Efforts at Valencia College

Table 1.2 Valencia College Sustainability Highlights 2005-2013

Year	Achievements
2005	Valencia College's Sustainability Committee is established.
2006	Valencia College establishes a policy for all new campus construction to be U.S. Green Building Council's LEED Silver or equivalent.
2007-8	Valencia College hires an ESCO to audit all campus facilities and implement energy efficiency projects. Plans were made for West Campus chiller plant upgrades.
2009	Valencia College's President Shugart becomes a signatory of ACUPCC. Valencia completes chiller plant upgrades on West Campus. Valencia builds its first LEED Gold building on West Campus, the Allied Health Sciences (AHS) building. Valencia College adopts an energy-efficient appliance purchasing policy requiring purchase of ENERGY STAR certified products in all areas for which such ratings exist.
2010	With assistance from EcoAsset Solutions, Valencia College completes a baseline greenhouse gas inventory and Climate Action Plan. A College-wide tree inventory is completed. Valencia completes chiller plant upgrades on East Campus. Valencia completes two more LEED Gold buildings on West Campus: Building 11 and Building 8.
2011	Using the Clean Air Cool Planet software, Valencia College completes its 2010 greenhouse gas inventory. Valencia College contracts with Energy Education (now Cenergistic) to help develop an aggressive behavioral energy efficiency program. The Operations Manager, Energy Education position is created and filled. Energy Education Guidelines are developed, adopted and publicized. With the hiring of a Director of Sustainability, the Office of Sustainability is created. Valencia becomes a Tree Campus USA for the first time.

Table 1.2., continued. Valencia College Sustainability Highlights 2005-2013.

Year	Achievements
2012	Valencia College develops and fills the position of collegewide Operations Manager, Energy Efficiency. The Automated Logic Corporation (ALC) Building Automation System that had been used on West Campus is put in place on other campuses.
	Valencia starts a pilot LEED EBOM project on East Campus.
	The Energy Education program achieves the milestone $1.5 million in savings.
	Valencia completes the new Lake Nona Campus Building 1 and Building 10 on West Campus (certified Three Green Globes). Building 4 Osceola Campus is completed to LEED Gold standards (and received certification in 2013).
	Valencia wins First Prize nationally in Recyclemania in the Waste Minimization category.
	Valencia launches the Sustainability Across the Curriculum Faculty Development class.
	Valencia again earns Tree Campus USA certification.
	Valencia earn STARS Silver recognition through AASHE.
2013	Using the Clean Air Cool Planet software, Valencia College completes the 2011 and 2012 greenhouse gas inventories.
	The ALC Building Automation System is implemented college wide.
	Valencia wins First Prize nationally in Recyclemania in the Waste Minimization category for the second year in a row.
	Valencia publishes an AASHE Case Study on Energy Efficiency efforts.
	Valencia is recognized by Chevrolet as a pilot in its Higher Education Clean Energy Carbon Reduction Program and contracts to sell a portion of its carbon reductions, with intent to create a Green Revolving Fund.
	Valencia again earns Tree Campus USA certification.
	Valencia wins Honorable Mention in the Green Cleaning Award from *American School and University* magazine.

1.7 Valencia College Greenhouse Gas Emissions Overview

Compiling a GHG inventory involves data collection from several Valencia College departments and analysis using the best available scientific methodologies. While laborious to compile, GHG inventories help identify the use categories that contribute the most GHG emissions and suggest points of focus to reduce emissions.

The following are included: Electricity consumption, natural gas consumption, refrigerant use, fuel use by the College vehicle fleet, commuting by students and employees, solid waste, and fertilizer applications.

Valencia College's full GHG inventory report is available online on the ACUPCC website (http://rs.acupcc.org/) and on the Valencia College Sustainability website (www.valenciacollege.edu/Sustainability).

GHG emissions are categorized into three Scopes:

- Scope 1 emissions are from sources that are owned and managed by the institution. Stationary combustion refers to the burning of fuels to produce electricity, steam, heat, or power-using equipment in a fixed location such as boilers, burners, heaters, furnaces, incinerators, kilns, ovens, dryers, and engines. Mobile combustion refers to the burning of fuels by institution-owned cars, trucks, tractors, and buses. Fugitive Emissions are leakage of refrigerants and other chemicals. Nitrous oxide emissions from fertilizer use and methane emissions from animals are also classified as Scope 1 emissions.
- Scope 2 emissions are indirect emissions through consumption of purchased electricity.
- Scope 3 emissions are indirect emissions that occur as a result of the institution's activities, but are not linked to GHG sources that it controls or manages. GHG emissions from commuting by faculty, staff and students are the largest source of Scope 3 GHG emissions. Methane emissions from solid waste and indirect emissions from fertilizer (nitrous oxide) from nitrogen leaching and run-off from primarily agricultural soils are also counted as Scope 3.

In calendar year 2006, Valencia College emitted 52,785 metric tons of CO_2e across seven different sources. The majority of emissions were classified as Scope 2 and Scope 3, which comprised 50% and 47% of the Valencia College's total emissions, respectively. In 2006 the total of Scopes 1, 2 and 3 were 2.5 metric tons of CO_2e per Full Time Equivalent (FTE) and 33.8 metric tons of CO_2e per 1000 square feet.

In calendar year 2012, Valencia College emitted 56,142 metric tons of CO_2e across the same sources, which unfortunately is an increase over 2006 levels. With a 40% increase in FTE between 2006 and 2012, Scope 3 Commuting emissions have increased. The total of Scopes 1 + 2 + 3 was 1.9 metric tons of CO_2e per FTE and 26.91 metric tons of CO_2e per 1000 square feet. When qualified by FTE or 1000 square feet, Valencia College's GHG missions have decreased. However, the net increase in emissions has to be addressed to move toward Climate Neutrality.

The following charts compare the major sources of GHG emissions between 2006 and 2012:

Table 1.3. Valencia College's Greenhouse emissions between 2006 and 2012.

Source	Source	GHGs	2006 Emissions [metric tons CO2e]	2012 Emissions [metric tons CO2e]
Scope 1 Emissions				
Direct Emissions from Stationary Combustion	Natural Gas Consumption	CO2, CH4, N2O	924.43	0
Direct Emissions from Mobile Combustion	Gasoline and Diesel Fuel Use for Valencia College's Vehicle Fleet	CO2, CH4, N2O	138.74	180
Direct Emissions from Fugitive Emissions	Refrigerants Used in HVAC systems, Chillers, and Vehicle A/C units	R-12, R-22, R-134A, R-404A, R-409, R-502	295.43	4
Direct Emissions from Fertilizer	Fertilizer application	N2O	2.73	0
		Total	1,361.33	184
Scope 2 Emissions				
Indirect Emissions from Purchased Electricity	Purchased electricity	CO2, CH4, N2O	26,509.99	17,328.00
		Total	26,509.99	17,328.00
Scope 3 Emissions				
Indirect Emissions from Employee/Student Commuting	Fuel use from personal vehicles and buses used in commuting to and from Valencia College campuses	CO2	24,641.85	38,351.00
Indirect Emissions from Solid Waste	Solid waste sent to landfill	CO2, CH4	269.77	279.00
Indirect Emissions from Fertilizer	Fertilizer application	N2O	2.07	0
		Total	24,913.69	38,630.00
	Total		52,785.01	56,142.00

Regarding Valencia's Vehicle Fleet (Scope 1 Mobile Emissions), the college owns and operates only a limited number of vehicles. Valencia College Courier Services has vehicles that make deliveries among the campuses; In the Plant Operations Department, Trades and Grounds utilize vehicles mainly on campus or to purchase supplies, mostly in the nearby vicinity. The Custodial Department uses "golf carts" to transport equipment and supplies throughout the campus, and Security uses carts to patrol campus. There is an increasing portion

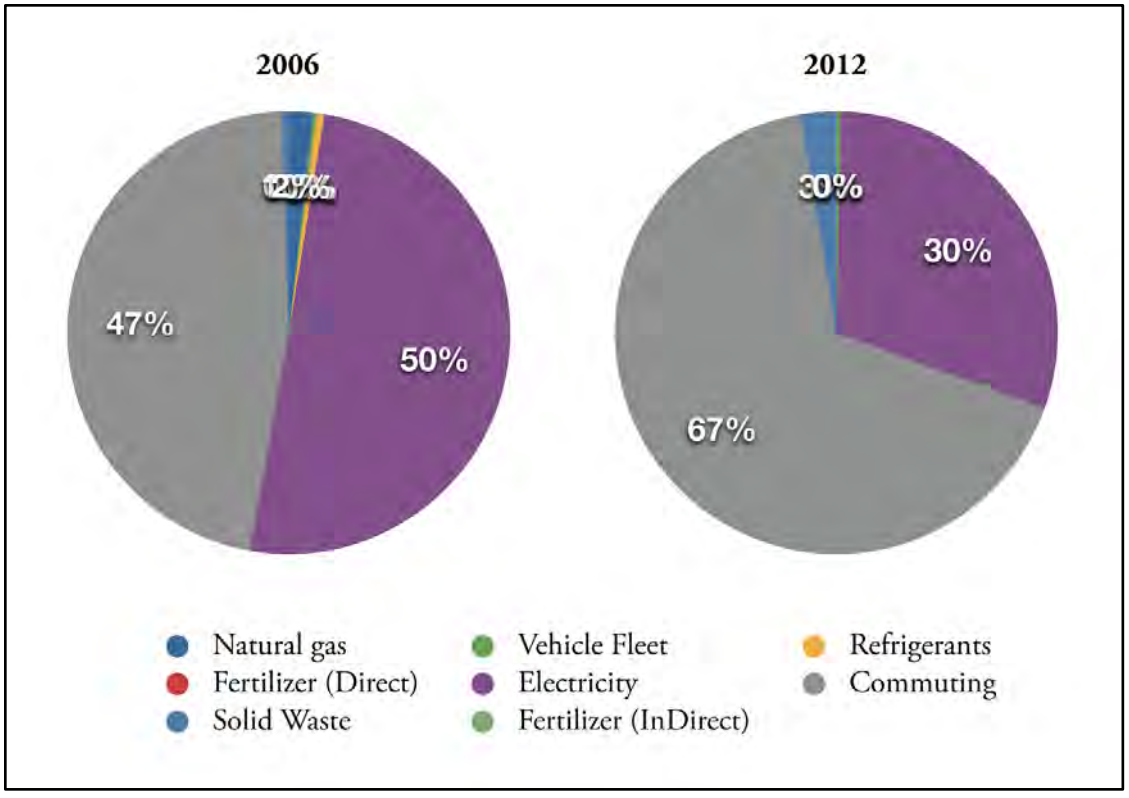
of carts using electricity, with outlets available in the departments. However, Security has preferred to continue with gas-powered carts. Use of diesel fuel is primarily for emergency generators.

Staff in the Facilities Planning Department, based on West Campus, including the energy managers, make frequent intercampus visits, and utilize two college SUVs. Recently, a hybrid vehicle was purchased for use primarily by the Operations Manager, Energy Education, and the Osceola Campus Superintendent recently purchased a fuel-efficient compact for off campus trips. Additional efforts could be made to emphasize fuel efficiency in purchasing new vehicles.

Intercampus travel by staff in most departments is with private vehicles, with reimbursement available for mileage. Anecdotal information suggests that employees do not document a large percent of intercampus travel, for meetings on different campuses.

By 2010, Valencia College's Scope 1 Stationary Source (natural gas) emissions had dropped to negligible levels due to the removal of a large boiler on West Campus. Fugitive emissions have also dropped, as Valencia College's new chillers have virtually no leakage of refrigerants. The new chillers use the most environmentally friendly refrigerants that are readily available.

Figure 1.5. Valencia College's Greenhouse Gas Emissions: Comparing percent of emission categories between 2006 and 2012.



Valencia College's Scope 2 GHG emissions are from purchased electricity. Valencia's six campuses purchase electricity from four electricity utility providers (Table 1.4), each with a different rate structure. Fortunately, these emissions from purchased electricity are relatively easy to quantify using billing invoices. Clean Air Cool Planet calculates CO2e emissions from electricity purchases automatically based on the fuel mix of the electricity utility providers.

Table 1.4. Electricity Utility Providers for Valencia College by Campus

Utility	Locations served
Orlando Utilities Commission	West Campus, Downtown Center, Lake Nona Campus
Kissimmee Utilities Authority	Osceola Campus
Duke Energy	East Campus, Criminal Justice Institute
Winter Park Utilities	Winter Park Campus

Since 2011, with the initiation of the Energy Education program, Valencia has been using ECAP software to input and analyze purchased electricity use. Valencia College's energy managers have reduced Scope 2 emissions by an exemplary 39% over the period 2006-2012 and by 47% over the period 2010-2012.

Scope 3 emissions are primarily from student and employee commuting, and contributed 47% of total emissions in 2006 and 69% in 2013. Due to lack of available data, emissions from air travel were not calculated for the 2006-9 inventories; however, estimates were made for the 2010-2012 inventories. These estimates included air travel to conferences in other parts of the country by faculty and staff, as well as faculty participation in Study Abroad. While students pay their own fares for Study Abroad, it is considered part of Valencia College's carbon footprint, since students would have been unlikely to take these trips without the College's programs.

Currently Valencia College's air travel estimates are higher than other Associate's Colleges, according to ACUPCC data. In 2011 Valencia College was awarded the inaugural Aspen Prize for Community College excellence. In part due to this honor, conference abstracts submitted by Valencia College faculty and staff are accepted at a higher rate than those of many other Associate's colleges, and the College has been willing to support travel to conferences. Valencia College also has developed international relationships with colleges and universities in the Netherlands and Saudi Arabia, which will continue contributing to higher air travel emissions.

Natural gas consumption for labs and for reheat, fertilizer application and fugitive emissions from refrigerants accounted for the small remaining percentage of Valencia College's Scope 3 GHG emissions. Converting to organic fertilizer on East Campus and later on West Campus reduced fertilizer application emissions to negligible levels. Emissions from solid waste have increased only slightly, despite a 40% increase in FTE, with the implementation of a recycling program that reduced mixed municipal solid waste (MSW).

1.8 Valencia College's Growth Trends and Responses

Valencia College's student population (Full Time Equivalent or FTE) has increased 40% since 2006, and increased particularly rapidly during the recent recession as students sought new skills for the job market. Student enrollment reached its peak in 2010/2011 (Figure 1.4).

Enrollment growth is likely to continue, as Florida is predicted to gain population at the rate of 1.7% annually, through job creation and an influx of retiring Baby Boomers. The Orlando Metropolitan Statistical

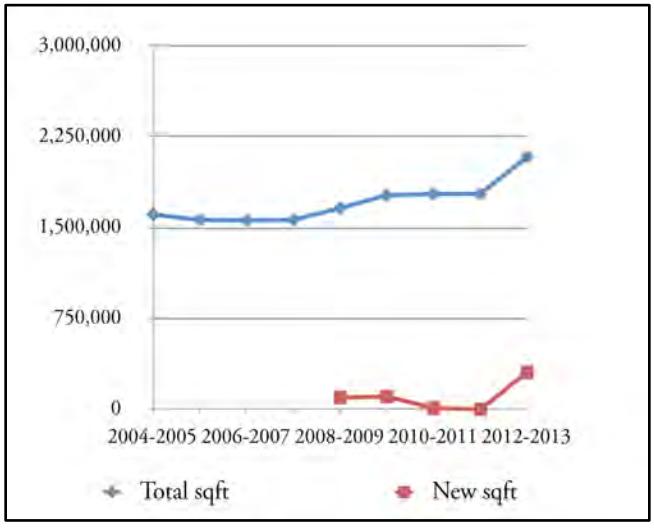
Area (MSA) is predicted to grow at the rate of 2.3%, which is higher than the state average and than all of the other Florida MSAs.[4]

Figure 1.6. Increase in Student Enrollment (Full Time Equivalent or FTE) 2006/2007 to 2012/2013.

To accommodate this growth in student population and to provide new curricular offerings, six new buildings were constructed between 2007 and 2012, most of which are larger than the typical older building. There are now 66 buildings on 6 campuses with an increase in square footage of 29.6% since 2006.

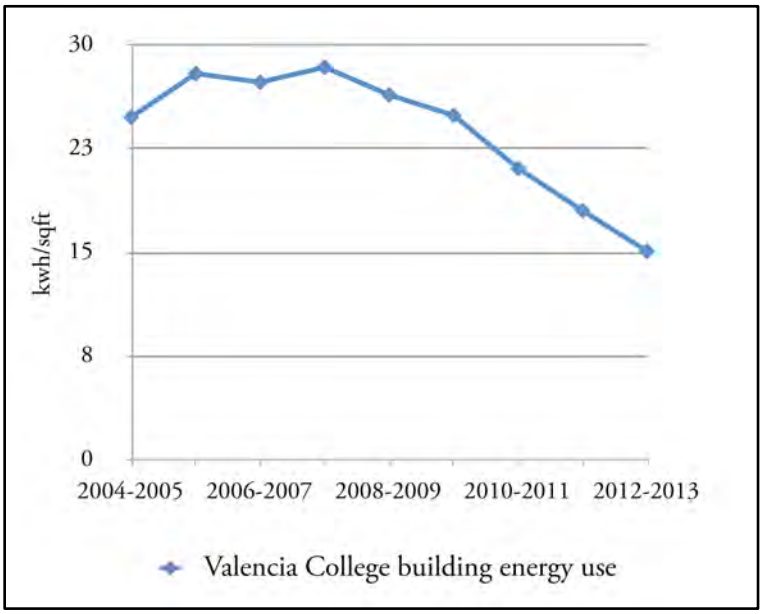
Energy use per square foot has *decreased* by 39% since 2007, as Valencia's new and existing buildings have become more energy efficient and other energy efficiency measures have been put into place. When considered over only the past three years, Valencia College has increased square footage by 1/3 and reduced energy use per square foot by a remarkable 47%. This decrease is attributable to energy savings from the efficient new buildings, HVAC retrofits, implementation of one central Building Automation System, and the behavioral (Energy Education) program.

Figure 1.7. Valencia College increases in square footage, 2004/2005 to 2012/2013. Note that during the period 2009-2012 new LEED Gold or equivalent buildings have replaced some older properties.



[4] Florida & Metro Forecast April 2013, Institute for Economic Competitiveness, University of Central Florida, 2013.

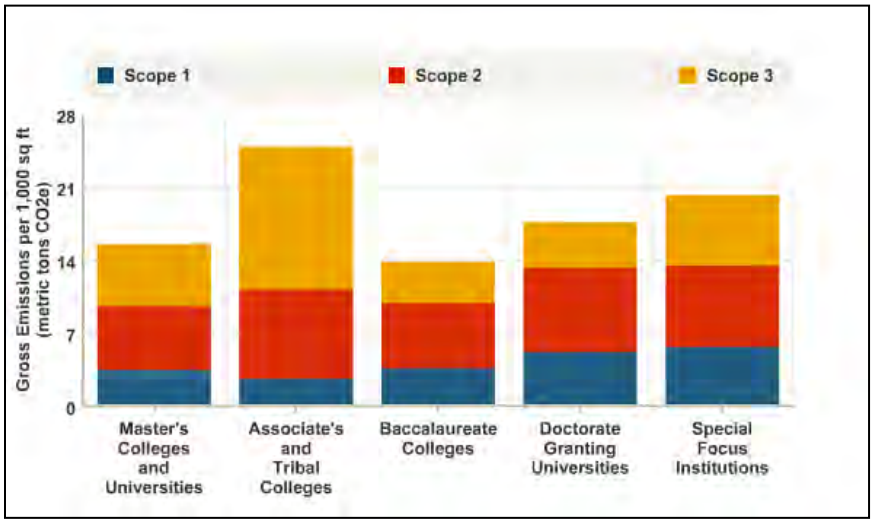
Figure 1.8. Decrease in energy use per square foot, 2004/2005 to 2012/2013.



1.9 Comparison to other Colleges

ACUPCC has compared Associate's colleges with other types of other higher education institutions around the country as in Figure 1.7. Data from the 178 Associate's Colleges that are ACUPCC signatories indicate that Scope 1 and 2 make up an average 45% of CO_2e emissions per 1000 square feet. Scope 3 (primarily Commuting) emissions make up 55% of emissions.

Figure 1.9. Comparison of percent of Scopes 1, 2 and 3 emissions by different types of colleges or universities (from ACUPCC website http://rs.acupcc.org/stats/ghg-scope-stats/).



Valencia College in 2012 had 23% of emissions as Scopes 1 and 2 and 77% Scope 3 (primarily Commuting) per 1000 square feet. This is a higher percentage from Commuting that the average Associate's college.

Figure 1.10 Comparison of percent of Scopes 1, 2 and 3 emissions between average ACUPCC-reporting Associate's Colleges and Valencia College (2012 data).

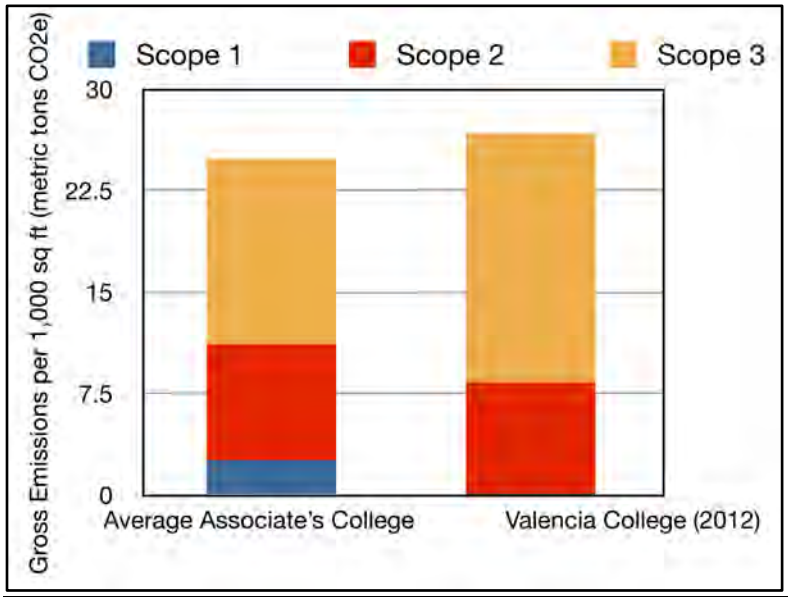
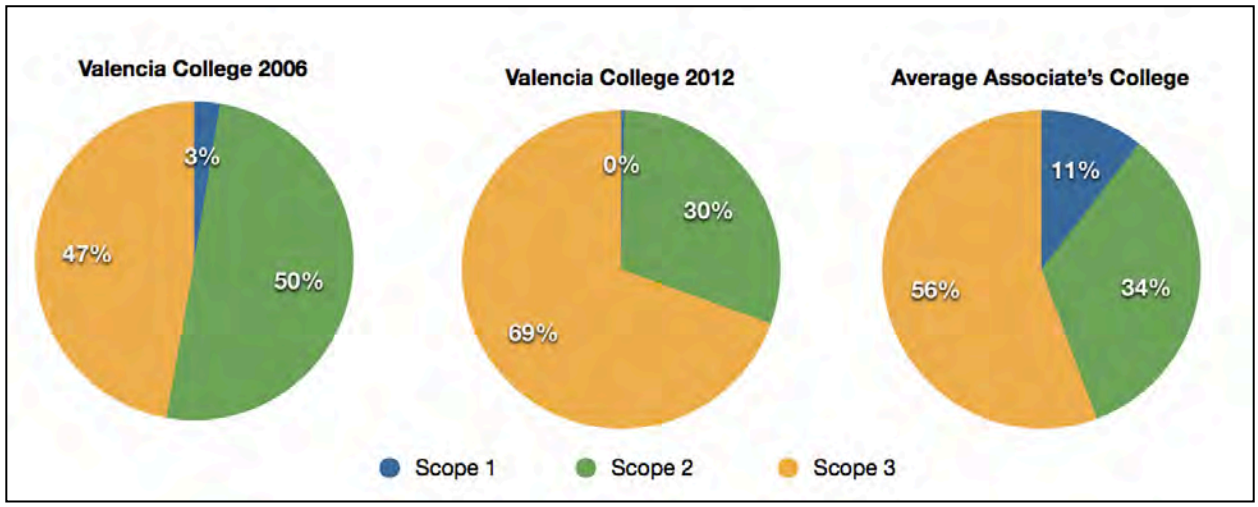


Figure 1.11. Valencia College in 2006 and 2012 compared to the average ACUPCC-reporting Associate's Colleges (data from ACUPCC website http://rs.acupcc.org/stats/ghg-scope-stats/). Valencia College is lower in Scope 1 and 2 but higher in Scope 3. Data in these charts are not normalized for square footage or FTE.



1.10 Climate Neutrality Goals and Targets

Valencia College in 2009 adopted the goal to become climate neutral by 2060. To reach this goal, Valencia College will aim to reduce its 2006 baseline GHG emissions: 12% by 2015, 30% by 2025, and 52% by 2040.

Table 1.5 GHG Emissions Reduction Goals

Target Year	Emissions Goal [Metric tons CO_2e]	GHG Reduction Goal from 2006 baseline
2015	46,571	12%
2025	36,950	30%
2040	25,337	52%
2060	4,751	100%[5]

Based on the results of the GHG inventories, Valencia College is focusing on the high GHG intensity sectors with the highest emissions:

- Transportation (specifically student and employee commuting).
- Energy.

For each sector, Valencia College has developed aggressive yet achievable goals along with a suite of GHG reduction strategies that should be implemented to reach the established benchmarks. Strategies were selected based on feasibility, cost, proven success at other similar institutions, and stakeholder interest.

To meet the target GHG emissions reduction goal of 12% below 2006 levels by 2015, a reduction of nearly 11,000 metric tons from 2012 levels, Valencia College will have to continue to deepen its exemplary Scope 2 (electricity) reductions as well as make significant reductions in Scope 3 (commuting) emissions.

1.11 CAP Recommendations from 2010 with Updates

This Climate Action Plan Update provides a roadmap for the Office of Sustainability, with help of the Sustainability Committee and many Valencia College departments, to chart Valencia College's path toward meeting the 2015 interim goal and towards climate neutrality by 2060.

[5] To achieve 100% emissions reduction will require purchase of carbon offsets.

Strategies identified in the 2010 CAP include some that directly reduce emissions and others that increase the college-wide Sustainability awareness in support of GHG reductions. These strategies with updates are the following:

- Strategy 1: The formation of a Transportation Task Force to educate the Valencia College community on alternative forms of transportation, develop a long range transportation plan to increase public transit to the college's campuses and centers, and establish incentives to decrease commuter vehicle miles traveled (VMT).

    - Progress: *This Transportation Task Force was formed in February 2012 and has met periodically through 2012 and 2013. Task Force members include Sustainability Committee members who are interested in transportation issues, Security staff, Student Government Association representatives, and a representative from Orange County Environmental Protection Division (to connect the group to regional efforts). Further discussion of the initiatives of this Task Force is given on page 27.*

Figure 1.12. Photovoltaic array on Building 11 West Campus.

- Strategy 2: Initiatives to increase onsite electricity generation using low carbon and renewable fuels.

    - Progress: *One of the West Campus LEED Gold buildings (Building 11, also called University Center) completed in 2009 has photovoltaic panels. An array of 336 panels, each producing 305 watts, provides a capacity of 102.48 kW. This provides 16% of the building's electricity (July 2011 through June 2012 data). Energy not used by the building is supplied to the local power grid, and the college receives a monthly credit from OUC. Since this project has a very long payback period, additional renewable energy projects are not immediately planned. However, the rental of photovoltaic equipment, which appears to be more cost-effective, is now being explored.*

Strategy 3: Policy initiatives aimed at conserving energy, increasing renewable energy, and reducing waste disposal and personal vehicle travel.

- Progress: *Energy Education Guidelines were adopted in September 2011. A policy of having each new building include renewable energy as part of the construction budget might be discussed. Recycling and transportation initiatives are ongoing, currently as educational efforts not policy issues.*

- Strategy 4: The establishment of an Office of Sustainability and hiring of a full time Sustainability Officer to coordinate all Sustainability efforts and oversee the Sustainability Committee.

    - Progress: *Valencia College's first Director of Sustainability was hired in November 2011, creating the Office of Sustainability. This Director co-chairs the Sustainability Committee and works closely with committee members on implementation of various college initiatives. The Director is part of the Facilities Department, but works closely with Procurement, Faculty Development, and Student Development. Other members of the Office of Sustainability are the Operations Manager, Energy Efficiency and Operations Manager, Energy Education. The latter two positions were also created or restructured in 2011 and 2012.*

- Strategy 5: Numerous educational and outreach efforts that integrate Sustainability into the everyday lives of students and employees.

- Progress: *Ongoing efforts include the Sustainability Across the Curriculum Faculty Development classes, skillshops on sustainability topics for students, Sustainability information in New Student Orientation, Eco-Clubs on the three largest campuses, and many events that engage the campus community in promoting sustainability.*

Carbon Offsets Valencia College has not chosen to purchase carbon offsets so far.

1.12 Financing

The 2010 CAP suggested that to support the development of more capital-intensive GHG-reducing strategies, Valencia College will need to take advantage of a variety of financing mechanisms. Comments on how the mechanisms suggested by EcoAsset Solutions have been able to be utilized are as follows:

- Cost Savings through Operations Improvements- *Savings from energy efficiency projects have traditionally gone into Valencia College's General Fund. The Office of Sustainability is looking at the feasibility and effectiveness of establishing a "Green Revolving Fund" to utilize specific savings to provide stable funding for capital-intensive energy efficiency measures.*
- Valencia College's Endowment: *The Valencia College Foundation, currently with an endowment of over 60 million, provides funding for student scholarships. There are no plans to approach the Foundation for funding for capital-intensive GHG reducing efforts.*
- State and Federal Grants *The State of Florida has not provided energy efficiency or renewable energy grants in recent years. On the federal level, The American Recovery and Reinvestment Act of 2009 (ARRA) was the funding source for the electric car charging stations on two Valencia Campuses through the College's electric utilities, OUC and Duke Energy. While opportunities will be monitored, staff does not see Federal or state grant availability increasing in the near term.*
- Utility Incentives and Rebates: *Limited utility rebates have been obtained so far. An example is the Thermal Storage Unit at CJI for which a rebate was secured from Duke Energy (formerly Progress Energy). This technology offsets peak load, which is part of Duke's energy strategy. The Operations Manager, Energy Efficiency is actively seeking rebate opportunities from the College's four utility providers.*
- Property Assessed Clean Energy (PACE) Financing. *This funding is not available for higher education.*
- Clean Renewable Energy Bonds *These bonds were for electric cooperatives, government entities and public power providers, not higher education, and funds were fully allocated in October 2009.*

Other Funding Sources Not Discussed in the 2010 CAP

- Performance Contracting: *Many other colleges have carried out successful projects using an ESCO, or Energy Service Company, to develop, install, and arrange financing for projects designed to improve the energy efficiency and maintenance costs for facilities over a seven to twenty year time period. In 2006 a large ESCO proposed a chiller plant and other HVAC system upgrade projects for $13.5 million paid over 20 years, with the ESCO guaranteeing savings of an average of over $900,000 per year. Valencia was fortunate enough that the Florida Department of Education was ready to fund a "shovel ready" project, so the College was able to pay for the first phase of the project up front. This enabled achievement of savings right away and avoided finance charges. The ESCO still guaranteed the same level of savings; however, now the contract became a measurement and verification contract. Each year, energy savings were measured and quantified through billing and meter data. In the first year, savings projections were not quite met and the ESCO paid the college $6898. After that, savings*

projections were met. Once it was determined that the ESCO met their guaranteed savings, the costly Measurement and Verification arrangement was terminated. As Valencia College has highly qualified staff able to initiate and manage energy projects, the ESCO option is considered to have limited benefit at this time.

- State Public Education Capital Outlay (PECO) funds and Valencia College construction funds: *PECO funds have paid for many of Valencia College's new construction projects and part of retrofits. For example, the chiller plant and other HVAC renovations on West Campus (Phase One) cost $7,500,000, and the chiller plant and other HVAC renovations on East Campus (Phase Two) cost $6,000,000. PECO funds paid for all of Phase One in 2006 and part of Phase Two. The budget for four-story 150,000 square foot Building 4 Osceola Campus was $45 million, including the state of the art chiller plant, and was partially funded by PECO). The budget for the three-story, 82,280 square foot Lake Nona Building 1, including the state of the art chiller plant, was a $21.7 million and was funded by the College. West Campus's new 500-ton magnetic bearing chiller was installed and other HVAC upgrades made as part of the $13.3 million budget for the three-story, 60,000-square-foot Building 10, funded by the college. However, Valencia College cannot count on availability of state PECO funds, and needs to develop its own long term funding strategies for energy efficiency and renewable energy.*

- Carbon Credit Sales: *There are voluntary carbon offsets and compliance carbon offsets (mostly in Europe; in the U.S. in California). Valencia College was selected by Chevrolet to pilot a Higher Education carbon sale process, in its Chevy Carbon Reduction Fund. Valencia College will receive $250,000 over a 3-year period. Once having worked through the process of verifying the carbon reductions under the Verified Carbon Standard, Valencia could possibly sell additional credits to other buyers. Unfortunately, these reductions will not be able to count toward the 2060 carbon neutrality goal.*

- Use of a Green Revolving Fund: *A Green Revolving Fund (GRF) is an internal fund that provides financing to parties within an organization to implement energy efficiency, renewable energy, and other sustainability projects that generate both direct carbon reductions and savings to the College. (This is a refinement of the first option listed under this section, Cost Savings through Operations Improvements). Establishment of Green Revolving Funds is a major initiative of the Association for the Advancement of Sustainability in Higher Education (AASHE), as a way to ensure progress toward energy efficiency and renewable energy in Higher Education. The Billion Dollar Green Challenge is a national effort in which participating colleges and universities have access to excellent project tracking software (called GRITS) and access to information on other institution's savings as well as guidance through all aspects of the Green Revolving Fund process. Return on investment for carefully chosen energy efficiency projects is often much higher than mutual funds, and the endowments of several universities are investing for the profit aspect as well as to contribute sustainability efforts. The start up capital currently under proposal for the initiation of a Green Revolving Fund at Valencia College is the $250,000 grant for clean energy projects/carbon purchase from the Chevy Carbon Reduction Fund.*

Cost Savings through Operations Improvements is the only financing option available to fund capital-intensive projects to deepen Valencia College's GHG reductions. Facilities staff (the Operations Manager, Energy Efficiency) requests to do capital intensive energy efficiency projects, and in the past has received support for these projects, through the Assistant Vice President, Facilities & Sustainability and Chief Financial Officer. However, to continue to deepen energy savings and greenhouse gas emission reductions will require a stable funding source. Establishing a Green Revolving Fund is a way to secure stable long-term funding.

1.13 Stakeholder Engagement

Stakeholder engagement is critical for the successful implementation of any plan and is used to gauge the current status, needs, and attitudes in the population that will be impacted by potential changes. At Valencia College, the 2010 Climate Action Plan stakeholder engagement process involved both an online survey and presented at two stakeholder meetings. The online survey was created using Survey Monkey and emailed to students and employees. While the survey was predominantly used to collect data on Valencia College's commuting behavior, stakeholders were asked to rank the importance of different actions that Valencia College should undertake and to list suggestions on how to make Valencia College more sustainable.

Employees and students who expressed interest in participating more actively in the CAP process were invited via email to attend two stakeholder meetings held on April 22, 2010 (Earth Day) on West Campus. One student joined faculty and staff in providing input.

For the 2013 update, the Director of Sustainability collected suggestions on the directions that Valencia College's sustainability efforts should take through question and answer sessions following presentations around the College. Comments were also collected following the many Sustainability articles in the online employee newsletter *The Grove.* Additionally several surveys using Qualtrics were administered.

- In 2012, a survey was administered to all Valencia faculty, full time and adjunct, regarding interest in the *Sustainability Across the Curriculum* class. A final question was on suggestions for Sustainability efforts. Each of the four semesters of the *Sustainability Across the Curriculum* class included feedback on Sustainability efforts at the end of the class. A follow-up survey was also administered in November 2013 to the 48 graduates of the class.
- In 2013 three Transportation Surveys were conducted, two for students and one for staff that lived 15 miles or more from their home campus.
- A Thermal Comfort and Air Quality Survey was administered to all faculty and staff in December 2013.

Feedback on current efforts has been received through student participation in the Transportation Task Force in 2013, and through discussions by the Director of Sustainability with Student Government Association (SGA) leaders.

The Sustainability Committee, which includes members from all campuses and employment categories, meets monthly, and the agendas always include the opportunity for suggestions by attendees. Tier One and Two Action Items (Table 2.11, p.77) were discussed with the Sustainability Committee in December 2013. Finally this Climate Action Plan Update was reviewed by the Assistant Vice President of Facilities and Sustainability, the two Energy Managers, and by several members of the Sustainability Committee.

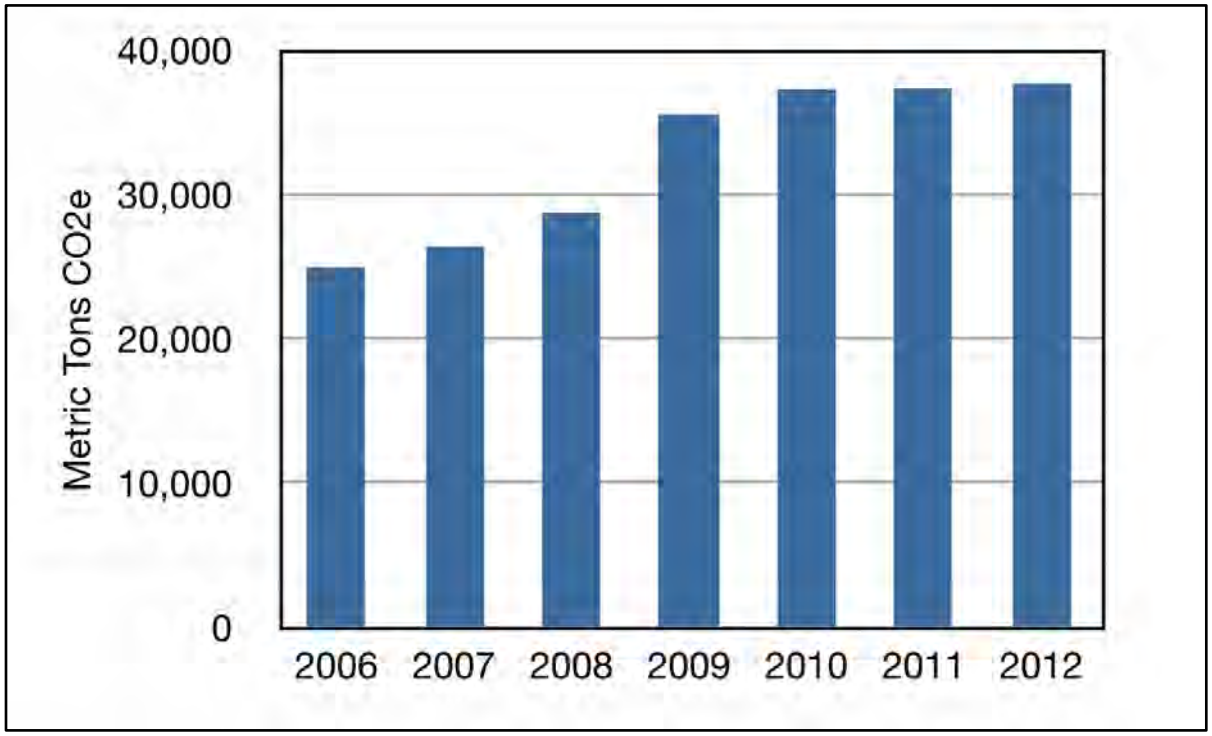
2.0 MITIGATION STRATEGIES

2.1 TRANSPORTATION

2.1.1 Background

As a commuter school in a metropolitan area with limited options for mass transit, Valencia College students and employees rely heavily on personal vehicles to travel to and from campus. The largest proportion of Valencia College's total GHG emissions is Scope 3 emissions from commuting. As illustrated in Figure 1.7 from ACUPCC based on information from 365 Associate's College participants, this pattern is typical of Associate's Colleges.

Figure 2.1 Transportation CO_2e emissions 2006-2012 have grown along with student population.



Valencia College's East and Osceola Campuses have experienced tightening parking availability as student populations on these campuses have increased. A large number of apartments have been built near West Campus and greater numbers of students now bike and walk to that campus. With completion of widening of the road in front of the East Campus, pedestrian and bike access will be improved and a greater number of students may utilize these options.

Obtaining accurate estimates of GHG emissions from commuting at Valencia College presents many difficulties; however, it is clear that these emissions have continued to rise on an annual basis more than any other category. Between 2006 and 2008, the percentage of total emissions from commuting grew from 47% to 53%. Between 2006 and 2012, the percentage of total emissions from commuting grew from 47% to 69%. Possible inaccuracies associated with these estimates are detailed in the Appendix. For consistency and in

absence of better data, commuting assumptions made in 2010 by EcoAsset Solutions have been carried forward.

2.1.2 Challenges of Addressing Scope 3 Commuting GHGs

Promoting alternative transportation methods to reduce Scope 3 emissions is more challenging in Central Florida than in many other parts of the country. The Transportation for America and the Surface Transportation Policy Partnership has ranked U.S. metropolitan areas based on the relative danger of walking, and as of 2011 Orlando-Kissimmee, Florida ranks FIRST among the ten most dangerous pedestrian cities in the United States, with only 1.2% of workers walking to work.[5]

Some of Valencia College's challenges in reversing the rising trend of GHG emissions from transportation are that: Public transportation options are currently limited to the bus system. LYNX, the Central Florida Regional Transportation Authority, provides bus transport within Orange, Seminole and Osceola counties. Each of the Valencia College campuses has bus service with reasonable fares and relatively frequent service.

However, transit is not convenient. To commute from one end of Orlando to the other, the rider must change buses downtown at LYNX's central station. This makes the commute by bus extremely lengthy. Also, as was learned by Sustainability Committee members on a field trip using LYNX, frequent stops and turns on the route make it difficult for a student to study on the bus.

Asking LYNX to develop more frequent and direct routes to Valencia College campuses from locations where a large percentage of students live was an early effort by the Transportation Task Force. Institutional Research provided an up to date map of student home locations in order to recommend better routes to campus. However, LYNX officials explained their funding difficulties- less than 25% of the cost of service comes from fares. City of Orlando gas tax and funds authorized by the County Commission make up the remainder. Some employers, like certain hoteliers, fund bus routes that help their employees. Without Valencia College stepping up to fund better bus service, LYNX cannot make the service any more convenient.

Figure 2.2. Transportation Task Force members meeting with LYNX planners in 2012.

2) Safe bike routes connecting from residential neighborhoods have been requested by the Transportation Task Force to the City of Orlando, but funding to develop path improvements is not yet in place. Transportation infrastructure planning depends to a large extent on the County and City Planning Departments and MetroPlan. Within the campus properties, improvements have been made for pedestrian and bicycling safety and convenience, for example on West Campus.

3) Regarding promotion of ride-sharing (carpooling), many students and employees have inflexible, tight schedules and depend on personal vehicles to fulfill other obligations during the day, including off-campus

5 Dangerous by Design: Solving the Epidemic of Preventable Pedestrian Death (and Making Great Neighborhoods),"http://www.saferoutespartnership.org/sites/default/files/pdf/Lib_of_Res/SSI_CS_Dangerous-by-Design-2011.pdf

jobs, childcare, etc. Faculty and staff members may travel among campuses during the day. Varying class schedules and work schedules make it difficult to coordinate rides between students. When SunRail is completed in 2014, Valencia College should coordinate vanpools for employees to the campuses. ReThink your Commute offers vanpools.

4) Online and hybrid offerings, which require fewer or no trips to campus, are increasing. However, a large percentage of course settings require face-to-face delivery; for example, science, engineering, architecture, culinary, art and music and film classes all involve labs. Also many students attending Valencia College must take college preparatory classes. These students often do not have computer skills or the discipline to work online and benefit most from face-to-face classes.

2.1.3 Transportation Stakeholder Feedback and Vision

VISION

Valencia College would be a place with fewer cars in the parking lots and fewer parking lots (paved areas) in general. Valencia College's campuses and centers would be integrated with the city and county's transportation plan, with bus routes, bike paths, carpooling programs and light rail stations near Valencia College's campuses and centers.

Across all categories, transportation was viewed as the most stagnant area in Valencia College's path to becoming a more Sustainable institution. Many different recommendations were made by stakeholders to decrease personal vehicle travel (Table 2.2).

Since the 2010 CAP, progress has been made in two areas: With the expansion of the Osceola Campus, and development of the Lake Nona Campus, more convenient campus locations have been provided. Also more fully on-line or hybrid course offerings are available.

Student survey respondents ranked carpool incentives (40%) and assistance in finding carpool partners (42.1%) as the most valuable tools to encourage alternative forms of transportation (Figure 2.2).

While 50% of employee respondents expressed that no benefits would encourage a change in behavior, 33% did check that incentives would encourage them to consider carpooling.

Figure 2.3 Student Commuter Survey Results for Valencia College (2010)

If you DRIVE ALONE to campus, check up to THREE reasons why you drive alone		
Answer Options	Response Percent	Response Count
Need car to travel between Valencia College and work	56.20%	168
Saves time	38.80%	116
Irregular school schedule or night classes	35.80%	107
Want car for emergencies	23.40%	70
No one to carpool with	54.20%	162
Saves money	2.30%	7
No bus where I live	15.10%	45
Buses don't run frequently enough or during the hours I commute	15.70%	47
Bus takes too long	28.80%	86
Not interested in carpooling	15.70%	47
Drive children to/from destinations	10.00%	30
Other (please specify)	10.00%	29
Total responses		299
If you DRIVE ALONE, what benefits would encourage you to try an alternative? (up to THREE options)		
Answer Options	Response Percent	Response Count
Help finding carpool partners	42.10%	120
Incentives for carpools	40.00%	114
Discounts on Lynx Bus	15.10%	43
More bike racks	5.30%	15
More information on bus schedules	15.40%	44
Reserved parking for carpools	35.40%	101
Showers for bike riders and walkers	7.40%	21
No benefits would encourage me to try an alternative	34.00%	97
Other (please specify)	8.40%	24
Total responses		285

2.1.4 Transportation Roadmap

GOAL

Reduce transportation GHG emissions by 10% by 2015, 25% by 2025, 45% by 2040 and 85% by 2060.

Table 2.1 Transportation recommendations from Valencia College stakeholders

STUDENTS	EMPLOYEES
Safer bike paths to school	Option for an Emergency Ride Home if carpooling
Making courses available at multiple campuses	Provision of a college vehicle for travel off site to meetings during the work day
Park and Ride Service	Flex Schedule
More frequent bus service	Alternative to hold same position at another Campus closer to home
Ride-sharing coordination	
Schedule changes every semester, which makes it hard to organize carpooling	
Intercampus shuttle	

There are numerous strategies that Valencia College can implement to reduce commuting vehicle miles traveled (VMT) to its campuses and centers. The suite of strategies below aims to promote increased use of alternative transportation, reduce the average distance of the daily commute, and minimize the number of trips taken during the day. To reduce VMT over the long term, Valencia College will need to collaborate with local transit agencies (for example, MetroPlan) to improve access to its campuses, establish meaningful incentives, and use internet-based tools. Milestones, goals and target dates for each strategy are listed in Table 2.4.

1) **Establish A Transportation Task Force**

The first step specified in the 2010 CAP was to assemble a Transportation Task Force to oversee and address transportation issues at the college.

Progress: *In February 2012, a Transportation Task Force first began meeting. According to the suggestions of the CAP, the committee is comprised of students, faculty and staff and has the goals of 1) evaluating the current transportation-related policies and commuting behavior at Valencia College of the students and staff, 2) engaging the appropriate departments on campus to develop and implement new transportation policies and programs, and 3) executing the plan set forth in the 2010 CAP. The Task Force has met periodically through 2012 and 2013 and plans regular monthly meetings with full participation by Student Government Association representatives in 2014.*

2) **Collect and analyze commuting data**

While initial commuting data was collected for Valencia College's GHG inventory by survey, it did not capture a significant percentage of the staff and students. The Transportation Task Force along with

Institutional Research and Campus Security should develop a survey to collect comprehensive data on student and staff commuting behavior. This study should investigate the trips to and from campus, trips between campuses, and trips between campus and non-campus destinations (i.e. work, child care, etc.). The survey can be administered through the online decal application process. Once the data has been collected, the committee should analyze the data to identify large-scale trends on how employees and students travel to and from the different campuses.

Progress: *Administering a survey through the online decal application process will not capture information from all students, because decals are not required. Two student transportation surveys and one staff transportation survey were administered through Atlas email in 2013 and additional surveys are planned.*

3) **Plan and launch a transportation awareness campaign**

Valencia College should initiate a college-wide campaign to educate students on alternative forms of transportation available to students and staff and the relative environmental and economic impacts. The main venues to educate the Valencia College community include:

Internet: A webpage should provide resources on bus routes, rideshare programs, and bike amenities at Valencia College's campuses and centers. The website should also highlight housing options located near the different campuses.

Workshops: A workshop with accompanying materials should be developed to educate students and staff at orientation, events, and meetings.

Kiosks: Strategically placed kiosks should be placed around Valencia College's campuses and centers to make the community aware of alternative transportation options.

The 2010 CAP suggested that before launching the campaign, the Transportation Task Force select a carpooling coordination tool, preferably web-based and able interface with social networking sites such as Facebook. Listed resources included: Go Loco; Pickup Pal; and ZimRide.

Progress: *After learning that the popular ZimRide ride-matching program would cost the college $10,000 per year with a four-year contract, the Director of Sustainability consulted other Florida colleges as to ride-sharing programs. Engaging ZimRide or similar services was concluded to be cost-prohibitive. However, the Transportation Task Force, shortly after its formation, learned from its Orange County Environmental Protection Division member of a free ride-matching program in Central Florida funded by FDOT.*

This program, ***reThink Your Commute*** ***www.rethinkyourcommute.com,*** *has an online interface where Valencia staff, faculty, and students can register to find carpool partners going to the same campus from their neighborhoods. An Emergency Ride Home option for those signed up for carpools can be invoked up to 4 times per year.*

Prior to promoting reThink, Valencia's liability toward participants in the ride-sharing program was considered by the college's attorneys. Based on widespread promotion of ride-matching nationwide and the online agreement a

ReThink participant must sign, Valencia's attorneys and campus Presidents gave the go-ahead to promote the program in late 2012.

Many entities across the College expressed concern with students getting into cars with strangers. To familiarize students with how to meet potential carpool mates in person before setting up carpools, a student tips sheet (Figure 2.3) was developed and distributed along with other reThink literature.

Monthly registration data is provided. Registration has been very slow, but plans are in place for extensive promotion in 2014.

Figure 2.4. At Welcome Back events and Earth Day and Campus Sustainability Day events representatives from reThink Your Commute provide information and sign up students.

Instead of the kiosks suggested in the 2010 CAP, reThink information (including the Student Tips) is placed on each campus at the Atlas lab (where students register), in the Student Development and Security offices. Having reThink staff at events seems to be the most effective way to increase awareness of the program, and fortunately reThink has the staff and willingness to have them participate in events.

Valencia College will soon be honored as a promotional partner of reThink at the Silver level, as in Figure 2.5.

Table 2.2. reThink registration of Valencia College students and staff. In 2012, Valencia College went through a phase of securing administrative approvals prior to promoting the program. Promotion is planned in 2014.

Year	2010	2011	2012	2013	Total
New Registrants	3	11	7	237	258

Figure 2.5. reThink Student Tips handout

VALENCIACOLLEGE

COLLEGE STUDENT TIPS FOR A SUCCESSFUL CARPOOL

How to find a carpool partner

Visit reThinkYourCommute.com and choose "Find Me A Match" to register.

Plug in "Student" where it asks for Department and add your contact info.

On the bottom left, choose Request Matchlist.

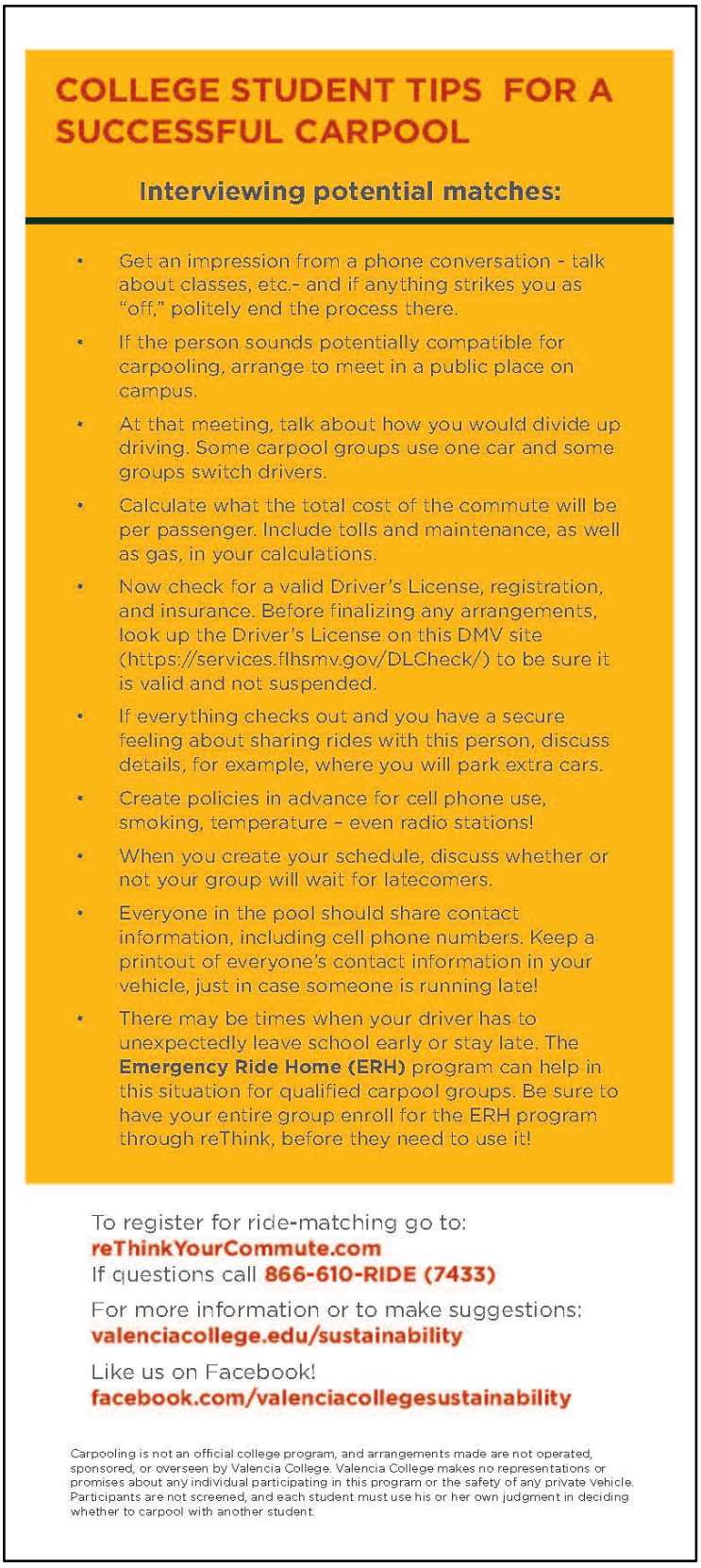
To the left, you will see the email addresses and phone numbers of students living near you who go to your campus and have also registered with reThink.

If no one comes up within a 5-mile radius, consider using a wider radius or just check back in a month or so. People will be continuing to register with reThink on an ongoing basis.

Remember, you don't have to carpool every day. Even one or two days a week will help you save money and help the environment.

Ridesharing
is an important effort to reduce Valencia College's
Greenhouse Gas
emissions.

Figure 2.5a. reThink Student Tips handout p.2



COLLEGE STUDENT TIPS FOR A SUCCESSFUL CARPOOL

Interviewing potential matches:

- Get an impression from a phone conversation - talk about classes, etc.- and if anything strikes you as "off," politely end the process there.
- If the person sounds potentially compatible for carpooling, arrange to meet in a public place on campus.
- At that meeting, talk about how you would divide up driving. Some carpool groups use one car and some groups switch drivers.
- Calculate what the total cost of the commute will be per passenger. Include tolls and maintenance, as well as gas, in your calculations.
- Now check for a valid Driver's License, registration, and insurance. Before finalizing any arrangements, look up the Driver's License on this DMV site (https://services.flhsmv.gov/DLCheck/) to be sure it is valid and not suspended.
- If everything checks out and you have a secure feeling about sharing rides with this person, discuss details, for example, where you will park extra cars.
- Create policies in advance for cell phone use, smoking, temperature – even radio stations!
- When you create your schedule, discuss whether or not your group will wait for latecomers.
- Everyone in the pool should share contact information, including cell phone numbers. Keep a printout of everyone's contact information in your vehicle, just in case someone is running late!
- There may be times when your driver has to unexpectedly leave school early or stay late. The **Emergency Ride Home (ERH)** program can help in this situation for qualified carpool groups. Be sure to have your entire group enroll for the ERH program through reThink, before they need to use it!

To register for ride-matching go to:
reThinkYourCommute.com
If questions call **866-610-RIDE (7433)**

For more information or to make suggestions:
valenciacollege.edu/sustainability

Like us on Facebook!
facebook.com/valenciacollegesustainability

Carpooling is not an official college program, and arrangements made are not operated, sponsored, or overseen by Valencia College. Valencia College makes no representations or promises about any individual participating in this program or the safety of any private vehicle. Participants are not screened, and each student must use his or her own judgment in deciding whether to carpool with another student.

Figure 2.6 reThink Your Commute Employer Partner Rating Form

reThink Your Commute

Employer Partner Rating for: Valencia College Date 1/6/14

FIRST: BRONZE LEVEL – MUST DO AT LEAST FIVE	
Designate ETC and complete training session(s)	
Host at least one Lunch & Learn Workshop	X
Place transportation benefits/alternative commute info in new-hire packets	
Host a regularly-updated commuter info rack and/or provide transit schedules on-site	
Provide a link on employee intranet, promote program via email, and post fliers as appropriate at worksite(s)	
Conduct Employee Transportation Assessment	X
Conduct Worksite Transportation Assessment	
Host at least one event at worksite to encourage carpool/vanpool matching	X
Encourage employees to report their use of an alternative mode of transportation to reThink	
Incorporate "reThink Your Commute" messaging into existing Green program	X
Incorporate "reThink Your Commute" messaging into existing Wellness program	
Install new or rehabilitate existing parking for bikes OR designate a bicycle parking area inside of the office	X

THIRD: GOLD LEVEL – MUST DO AT LEAST THREE	
Provide transit passes to employees at reduced cost	
Pay at least 50% of the vanpool monthly lease fee	
Provide bicycle commuters at least $20 a month	
Provide cash in lieu of parking spot	
Provide a regular and accessible shuttle	
Pay for employee(s)to take a bicycle safety training course	
Pay for membership in a Carsharing program	
Pay for membership in a Bikesharing program OR provide fleet of company-owned bicycles for employee use	
Pay for a membership at/use of telecenter to facilitate telecommuting	
Integrate "Commuter of the Year" award in annual recognition program	

SECOND: SILVER LEVEL – MUST DO AT LEAST FIVE	
Preferential Parking Program	
Host multiple Transportation Lunch & Learn workshops	X
Offer an informal Telecommute Program	
Offer informal Flextime	X
Offer informal Compressed Work Week scheduling option	X
Offer Commuter Tax Benefit option allowing employees to set aside their own money to pay for a transit pass or vanpool expenses	
Reduce parking costs for carpool and vanpool groups	NA
Provide on-site amenities OR worksite is located in mixed-use complex	X
Provide showers/lockers to employees OR make arrangements with neighboring business/organization to share access	X
Allow the use of fleet vehicles to car-free commuters for daytime errands	
Perform Proximate Commuting Analysis and re-assign employees to worksites closer to home	
Provide incentives to encourage employees to live closer to worksite	
Provide incentive program to encourage the use of transportation options (e.g. additional vacation time, etc.)	
Sell transit passes on-site	
Participate in the annual "reThink Your Commute" challenge	

COMMUNITY PARTNER	
Encourage employees to report their use of an alternative mode of transportation to reThink	
Provide discounts/coupons to alternative mode commuters	
Display reThink promotional materials on-site	
Promote reThink program in company newsletters	
Promote reThink program by placing a link to reThink's website on company website	
Display reThink window decal sticker	
Creative way to promote transportation options	

Primary Contact Name/Number/Email

Deborah Green/ 407-582-1830/ dgreen1@valenciacollege.edu

FY 12/13 Level _____

4) **Promote local housing and day care services**

Valencia College should play a more active role in promoting apartment/housing options, food establishments and day care services that are within a short distance from campus. This should be accomplished through the transportation web site and materials provided to the students during orientation. If there is a lack of facilities, Valencia College should encourage businesses to locate near the campuses.

Progress: *In the past few years a large number of apartments and food establishments have built up near West Campus. Apartment information is provided on all campuses through Student Development. Additional day care services information could be provided.*

5) **Promote Use of e-meeting software**

On a daily basis, faculty and staff commute between campuses to conduct meetings. The Task Force should consider purchasing a subscription to a web-based e-meeting application and training appropriate staff on how to use it. If necessary, Valencia College can develop a policy that mandates the use of the tool in certain situations. Some criteria may include the travel distance and time required to and from the meeting as well as the number of people in attendance.

Progress: *Increasingly meetings at Valencia College have a remote option, often using GoToMeeting. Job interviews for administrators are frequently done using SKYPE. More recently the college has installed LYNC software (formerly Microsoft Office Communicator), which has many of the features of GoToMeeting, including screen sharing. LYNC also includes Instant Messenger/Chat features.*

Starting in summer 2013 for the first Campus Sustainability Day, the Director has met with the Director of Campus Technology Services West Campus to explore how use of these online options can be promoted. Two "iGreen" workshops on this technology were offered for Campus Sustainability Day, and monthly workshops are now being offered on all campuses as Edge workshops. Administrative support for "greening" of meetings through technology is needed.

6) **Expand on-Campus food services**

Many students and staff leave campus to access off-campus food facilities. Valencia College should try to work with local food vendors to bring private food services to its campuses. Although building space is limited, Valencia College can offer centrally located outdoor space for vendors to set up temporary food stalls or carts. Students and staff should have the option to vote for the vendors and priorities should be given to those that are local and use eco-friendly materials and practices. Proper permitting will need be considered for each of the vendors that are invited to campus.

Progress: *Valencia College's food vendor has had a five year contract, recently renewed for 2 additional years (until June 2015). Asking this vendor to modify practices has been difficult, due to specifications in the contract. The Office of Sustainability has brought forward (through Procurement) suggestions for healthier food options and more environmentally friendly packaging. These suggestions will be used to guide the RFP process for the next vendor or vendors after June 2015. Quality of food service has emerged as an important issue for both SGA and Faculty Senate, particularly on West Campus. Healthy vending machines are now being installed on each campus, upon the request of the Office of Sustainability and SGA. Unfortunately, items in the healthy vending machines are*

expensive, as both the college's food vendor and the vending machine company must do a markup. Efforts to raise awareness about healthy eating are ongoing and have included inviting the Culinary Arts Student Association to prepare vegan food for West Campus Sustainability Day 2013.

Figure 2.7 Culinary Arts Student Association serving vegan food on Campus Sustainability Day 2013.

7) **Organize commuter challenge month event**

A commuter challenge is a fun way to bring awareness to alternative transportation methods and spark competition among members of the community to reduce their carbon footprints. Students and staff commit to travel to campus using a Sustainable form of transportation. For every trip, they log the miles traveled and the form of transportation used. Every week, results are announced and prizes are awarded to participants. The challenge can be based on individuals, departments, or programs. New initiatives, ideas and programs are likely to grow out of the event that can become long term transportation solutions.

Progress: *This type of competition has not been attempted so far, but the Office of Sustainability is considering it as part of the "Green Office" program. To reward individual staff members for participating in alternative transportation, Wellness Points could also be given. Rethink your Commute works with employers on incentive programs, similar to Health Savings Accounts. Valencia College is in the process of being recognized as a partner of reThink Your Commute at the Silver Level (Figure 2.5). With administrative support more could be done to promote alternative transportation.*

8) **Devise long-term transportation plan with transit agencies**

Representatives of the Transportation Task Force should establish relationships with LYNX, Metroplan Orlando, and other relevant transit agencies and groups to explore opportunities to partner on transportation initiatives serving Valencia College's campuses and centers. With the support of the agencies, the Task Force should develop a long-term plan to encourage more Sustainable forms of transportation. The plan should include planned bike paths, park and ride lots, potential bus and rail stops and electric vehicle charging stations.

Progress: *The Director and other Valencia representatives have participated on regional committees and studies, and now work closely with the Florida Department of Transportation-funded regional transportation organization reThink Your Commute.*

In coordination with the Get Ready Central Florida, an Orange County effort to make Central Florida one of 20 metro areas around the country developing an electric car charging infrastructure, Valencia College has installed 10 charging stations on West Campus (funded by OUC) and 2 on East Campus (funded by Duke Energy). A Get Ready Central Florida event was held at West Campus in July 2012.

Figure 2.8. July 2012 Get Ready Central Florida Electric Car Awareness Event at Valencia College West Campus.

Bike paths are included for East Campus in the Econlockhatchee Trail road-widening project. For Osceola Campus, there are City of Kissimmee bike trail projects underway. For West Campus, a proposal for a path from downtown to Kirkman Road was developed jointly by the Transportation Task Force and by the City of Orlando. This proposal has been ranked and funding from MetroPlan will be forthcoming in the next few years.

9) **Establish telecommuting program**

Valencia College should consider implementing a telecommuting program for staff members with duties that do not require them to be physically present on campus. The program should initially target employees that live beyond a certain distance threshold from campus. A number of programs already exist that Valencia College can easily adopt.

Progress: *Although periodically suggested, telecommuting has not been an officially supported program at Valencia College to date.*

Figure 2.9. Proposed Bike path extension to Valencia College West Campus from Downtown Orlando has been proposed and is now listed by MetroPlan, awaiting funding.

Figure 2.10. Top: Bike racks continue to be provided on campus as the need increases. Bottom: The biking and pedestrian trail at Valencia College West Campus that will connect with the multipurpose trail when that trail is funded.

10) **Establish incentive system and parking fee structure**

With free parking at all campuses, students and staff have little reason to change their commuting habits. Once the community is aware of other transportation options available to them, Valencia College should consider implementing a parking fee in tandem with incentives to carpool and take alternative forms of transportation to campus. A variety of incentives, both financial and social, are available to encourage students and staff to consider sustainable transportation: reserved carpool spaces, subsidized bus fares, free parking passes, and Emergency Ride Home Service

Progress: *College administration has not wanted to charge students for parking, which is also the case in many other community colleges in Florida. Consequently free parking passes are not an incentive, and funds from parking passes cannot be used to subsidize bus fares as is done in other colleges. Reserved carpool spaces in the desirable positions near buildings would be a positive option, but to date the campus presidents have not wanted to support converting these dedicated spaces now utilized by Faculty and Staff to carpool spaces.*

The suggested "Emergency Ride Home Service" is a part of the ReThink Your Commute program.

11) **Develop and fund intercampus shuttle program**

Given the results of the commuting study, there may be sufficient demand to develop an intercampus shuttle program that can transport students and staff between select campuses. This program will serve the purpose of cutting down on single occupancy vehicle travel during the day.

Progress: *As a pilot program for an intercampus shuttle, using a LYNX 14-passenger bus running hourly between East and West Campuses, a proposal costing $80,000 was submitted for funding by Student Development in 2012-2013. This pilot program was not funded, but will be resubmitted.*

12) **Implement capital projects**

Capital projects identified in the transportation plan should be implemented when funding becomes available. These projects may include park and ride lots, installation of bike lanes, bus shelters and other forms of transportation infrastructure. Some of these projects will be funded by the transit service while certain partnerships may include a cost share between the agency and Valencia College.

Progress: *Adequate bus shelters are in place on Valencia College campuses from LYNX. ReThink Your Commute has a limited number of Park and Ride lots for carpools. Valencia College should publicize campus overflow lots as Park and Ride lots.*

Also SunRail (train) service will travel to Winter Park, downtown Orlando and Kissimmee in 2014. No transit in an East West direction that would access the East and West Campus is currently planned. The Transportation Task Force should work with reThink to organize van pools for employees and later for students.

13) **Adding other campus locations**

By adding other localized campuses Valencia College may dramatically reduce the commute distance and time frame. By reducing the travel distance walking and bicycling may be encouraged if safe routes are provided.

Progress and new Suggestions: *Valencia College has added the Lake Nona Campus since the 2010 CAP, but needs to continue working on alternative transportation options to that campus. Similarly, as the Poinciana Campus is constructed, alternative transportation options should be planned and incorporated.*

14) **Providing more fully and hybrid course offerings**

Fully on-line course offerings eliminate the need to commute to and from campus. Hybrid courses have the ability to cut commuting in half by offering 50% or more of the content on-line. Expanding these types of course offerings to students can have a significant impact.

Progress: *Since the 2010 CAP, Online and hybrid classes have increased by approximately 20%.*

Table 2.3 Transportation GHG Reduction Strategies, Milestones, Goals and Targets for Valencia College

Strategy	Milestones	Goal	Target Date
1. Expand Transportation Task Force	Expand Task Force to include representatives from each campus and from Faculty, Staff and Students.	Expand group with 5-8 members, comprised of representatives from Master Planning, Campus Security, Institutional Research, Student Services, Communications and the Sustainability Committee.	Jul-14
2. Commuting Data Collection and Analysis	1) Commuting Analysis Report through Institutional Research 2) Additional Transportation Surveys	Track increases in Use of Transportation Alternatives, interest in Intercampus Shuttle, and improve accuracy of GHG reporting	Dec-14
3. Carpool Transportation Awareness Campaign	Deployment of workshops and kiosks on all campuses	Increase participation in reThink Your Commute to a minimum of 500 by end of 2014. Publicize successful carpools in The Grove and Valencia Voice. Secure reThink staff participation in a minimum of 6 events each year on major campuses and 3 events each year on satellite campuses. Keep literature stocked in Security and Atlas labs as well as Student Development. Maintain 10% annual student participation in carpool program until 2060	Dec-14
4. Promote Local Housing and Day Care Services	Resources listed on website and incorporated in orientation materials	Connect students and staff with resources on nearby housing and day care facilities. Where none exist, assess demand and encourage companies and developers to fill need.	Dec-14
5. E-meeting Software Training and Promotion	1) E-meeting policy 2) Software employee training workshops	1) Aim for 100 e-meetings in 2014. 2) Increase e-meetings by 100 annually through 2020.	Dec-14
6. Expand On-campus Food Services	1) Approved policy authorizing private vendors to provide food on Campus grounds 2) Vendor selection process	Develop RFP for food vendor(s) with Sustainability features prior to June 2015 expiration of current contract.	Jan-15

Table 2.4 Continued. Transportation GHG Reduction Strategies, Milestones, Goals and Targets for Valencia College

Strategy	Milestones	Goal	Target Date
7. Commuter Challenge Month as part of Green Office Program	1) List of participants and VMT reductions by department 2) Follow-up actions to establish departmental programs	Aim for 100% department participation in event.	Jun-15
8. Long Term Transportation Plan	1) Draft Plan 2) List of transportation capital projects	Continue to participate in planning with transit agencies and Valencia College Master Planning Department that will decrease personal vehicle miles to Valencia College Campuses.	Jun-15
9. Telecommuting Program	1) Approved telecommuting policy 2) Selection of participants	Aim for 5% staff participation in 2015 and increase 1% annually over next five years.	Jun-16
10. Incentive System Implementation	1) Parking fee/permit system enforcement policy 3) Collaborative programs developed with local transit agency	Decrease total number of personal vehicles on Campuses by 5% in 2015 and 2% annually until 2030.	Jun-15
11. Intercampus Shuttle Program	1) Feasibility Study 2) Proposed Schedule	Resubmit funding proposal Transport 250 individual riders daily in 2015 and increase ridership as needed.	Jun-14
12. Capital Projects	List of transportation related capital projects and funding approval	Implement capital projects identified in long term transportation plan.	Ongoing through 2060

2.2 ENERGY

2.2.1 Background

Valencia College owns and operates its buildings for their full life cycles, and one of the most critical aspects is energy use. In 2006, building energy use was the largest contributor of GHG emissions across Valencia College's campuses. Electricity use alone totaled 25,028 metric tons, or 49% of Valencia College's CO_2e emissions– the highest value of all seven (7) source categories. When GHG emissions from natural gas were added, the total carbon footprint attributed to energy was 25,952 metric tons, or 51% of total emissions. Natural gas emissions dropped by 2010 due to the removal of a large natural gas boiler on the West Campus.

Through energy efficient technologies and practices in new and existing buildings, energy consumption per square foot by all of the Valencia College Campuses has been reduced by approximately 1/3 over a 5-year period and by 47% in the past three years (Figure 1.6) Improvements have been primarily to HVAC (heating, ventilation, and air conditioning) and lighting.

Improvements include new Central Energy Plants, new air handlers and point of use boilers. Staff now has considerable expertise on automation controls and other aspects of operations and maintenance for its chiller plants.

Maintenance is critical to performance of HVAC equipment. Routine maintenance is now performed by staff (12 maintenance and 7 HVAC technicians) and monitored through a work management system. Continuing service contractors are used for larger jobs. Weekly construction meetings bring Facilities supervisors from all of the Campuses together, along with Facilities Planning and Sustainability staff, allowing good communications and sharing of resources college-wide.

Figure 2.10. Weekly Facilities Department meeting, including staff from different campuses, allows sharing of experience.

When staff members show initiative, they are allowed to assume greater responsibility and to advance. For example, in their earlier roles in Trades and Maintenance, the College's now Operations Manager, Energy Efficiency and now West Campus Superintendent converted T-12 fluorescent lights with magnetic ballasts to T-8s with electronic ballasts as early as 1998, years before the national phase out of magnetic ballasts. The electronic ballasts have higher "first costs" but are much more energy efficient, fail less often and thus the college save maintenance labor costs. Staff converted from 40 watt T-12s to initially 32 watt T-8s and later to 28 watt T-8s. Breezeway and stairway lights were changed from high-pressure sodium lights to more efficient induction lighting.

Figure 2.11 LED Roadway lighting along perimeter road of Valencia College West Campus

Now staff is doing extensive research on LEDs, comparing models and prioritizing specification of LED installation where hours of use are extensive or bulb replacement is difficult.

Examples include the roadway lighting along the perimeter and internal roads of the College, which for security reasons are on all night, and atrium lights, which are difficult to reach. LED roadway lighting was installed on West Campus in 2013, and is currently being installed on other campuses.

In 2006, a large ESCO proposed to the college to perform comprehensive energy studies and to develop a project with a mix of infrastructure upgrades, lifecycle cost performance, and savings. The project involved completely replacing old inefficient air-cooled chillers on the West and East Campuses with high-efficiency variable speed chillers (West Campus - four new 500-ton chillers and East Campus - two new 650-ton chillers) and DDC controls. The smaller Winter Park Campus has two 155-ton variable-frequency-drive air-cooled chillers.

With these upgrades staff became familiar with using Variable Primary Flow (instead of Primary Secondary) with differential pressure sensors in the furthest buildings. This newer technology allows cooling without using more chilled water than necessary and saving hydronic pumping energy. This newer form of chiller plant operation is now used as the standard in all of the college's water-cooled plants, with performance averaging 0.50 to 0.80 kw/ton (kilowatts per ton).

In Summer 2012 three new 500-ton chillers were installed on the Osceola Campus, in part to serve the new LEED Gold Building 4. These chillers were the College's first magnetic bearing oil-free type, which may be up to 40% more energy efficient than standard centrifugal chillers. Two 160-ton magnetic bearing oil-free chillers were also installed by summer 2012 to serve the new Lake Nona Campus. On West Campus a new 500-ton magnetic bearing chiller was installed and other HVAC upgrades made for the new three-story Building 10.

The energy utility budgets of the Osceola and Lake Nona Campuses had been established based on previous utility bills for the Osceola Campus. In a testimony to the efficiency of these two state of the art chiller plants, the actual utility bills in the first year of operation of these two plants were so much lower that over $500,000 was returned to the college's General Fund.

Figure 2.12. Opening of the new state-of the-art chiller plant on Osceola Campus was an opportunity for vendors and members of the green building community to speak on new technologies.

White roofs are standard on all new buildings, and even Valencia College's older buildings have light-colored roofs. The new buildings have Energy Recovery Ventilation (ERV) or Bipolar Ionization. The former technology pre-cools outside air as it enters the building using already cooled and conditioned air.

CO_2 sensors reduce the quantity of outside air needed. Bipolar Ionization provides extensive treatment of inside air allowing it to meet Indoor Air Quality (IAQ) standards without introducing as much outside air. Whenever outside air is introduced in the hot humid south, it adds to the energy load. Using these technologies allowed Valencia College to reduce the cooling tonnage needed.

USGBC does not currently accept Bipolar Ionization for the LEED Indoor Air Quality (IAQ) prerequisites, which is why two of Valencia's recently constructed buildings have been certified under Green Globes. Lake Nona Building 1 and West Campus's Building 10 were both awarded Three Green Globes from the Green Building Institute , which is roughly equivalent to LEED Gold.

Building 4 on the Osceola Campus is the one of Valencia's three newest buildings that is being certified under LEED (and has achieved LEED Gold). This building has ERVs rather than Bipolar Ionization. A small Bipolar Ionization unit was later added to eliminate kitchen odors. Other Bipolar Ionization units were added to another building on the Osceola Campus to address air quality issues while reducing costs.

New air handler units and condensing boilers have contributed significant energy savings. The addition of automatic and Pressure Independent Characterized Control (PICC) valves has been used to increase the performance and maintain the hydronic balance of the chilled water systems. As of December 2013, this technology has been completely implemented on the West, Osceola, and Lake Nona Campuses.

Figure 2.13. Thermal Storage Tank stores ice produced during off-peak hours to assist in cooling chilled water for use during peak hours.

Ice tanks (Thermal Energy Storage) were added to the existing air-cooled chiller system at the Criminal Justice Institute (CJI). These make ice during off peak electric rate periods (at night) and store cooling capacity with the ice helping to avoid operating the chillers during peak hours. This was less expensive than retrofitting with a water-cooled chiller and leveraged the peak rate structure of CJI's electric utility (Progress Energy, now part of Duke Energy). It also garnered the College a utility rebate. The College's campuses buy electricity from four utilities, and Duke Energy previously was the only one with a peak rate structure. The utility serving the Osceola Campus, Kissimmee Utility Authority (KUA), now has a peak rate structure, and the potential for Thermal Energy Storage is being explored as that campus expands.

All of Valencia's new buildings undergo Commissioning as part of the green building process. Wherever the budget allows, Retro-Commissioning of existing buildings is also used to identify ways to improve performance. Valencia College is working on a LEED for Existing Buildings Operation and Maintenance (EBOM) pilot process on East Campus, and that process also involves retro-commissioning.

Valencia College has also implemented a high cycles water treatment program (ZeroTek) for the cooling towers, with college-wide annual savings of approximately 25,000,000 gallons of billed water ($230,000). Saving water also saves electricity to pump the water.

Between 1998 and 2012, a long series of Building Automation Systems (BAS), also called Energy Management Systems (EMS), from many major manufacturers were tried on different campuses. Automated Logic Corporation (ALC), specifically its WebCntrl system, won out as most reliable, efficient and user-friendly. This BacNet system has an intuitive user interface and powerful control features that include many different energy savings strategies. College-wide implementation is almost complete, with staff able to control all systems from anywhere that Internet Explorer and an Internet connection is available. New developments will bring the ability to control the systems in the field from any Internet connected platform.

At Valencia College the BAS is used throughout to regulate temperatures, with occupied set points are 68 degrees heating and 74 degrees cooling F (plus or minus 2 degrees) within zones. Previously allowing staff to adjust the thermostats caused many problems, but recent updates to the software automatically reset the changes nightly.

Figure 2.14. ALC Building Automation System controls all HVAC systems college-wide from a central point. Robert Hickman, Operations Manager, Energy Efficiency leads the effort, and several other staff members can operate the system.

Unoccupied set points are 85 degrees F in the cooling and 55 degrees F in the heating season. There are also systems overrides that will automatically bring the systems on to properly maintain humidity.

In December 2013, the first bi-annual Thermal Comfort and Air Quality survey was administered to all Valencia College employees. The survey and an article in *The Grove* explained how employees can request attention to temperature or air quality problems through the Work Order process.

For lighting sensors, Valencia College uses dual technology infrared, ultrasound and motion (occupancy) sensors. Daylight harvesting sensors, in which the building lights dim or turn off areas when there is adequate daylight, are used on many of the new buildings, including Lake Nona and Osceola Building 4, and in a successful retrofit of the West Campus Cafeteria. Janitorial closets utilize simple timers to turn off lights.

Thanks to the Building Automation System and the Energy Education program described below, during unoccupied periods HVAC systems are shut down to all areas except science labs, which contain chemicals that need to be kept cold, and MDF (main distribution facility) and server rooms, which with servers still running continuously need ongoing cooling. Security lighting also remains on.

There are differences in energy use in kW per square foot among all of the campuses, due to age of buildings, recentness of replacement of equipment, and to a limited extent management. With the BAS now being connected college-wide and one Operations Manager, Energy Efficiency able to address problems on all campuses, each campus will continue reducing its energy use per square foot.

Figure 2.15. Valencia College campuses with differences in energy use in kW per square foot (2011 data from ECAP).

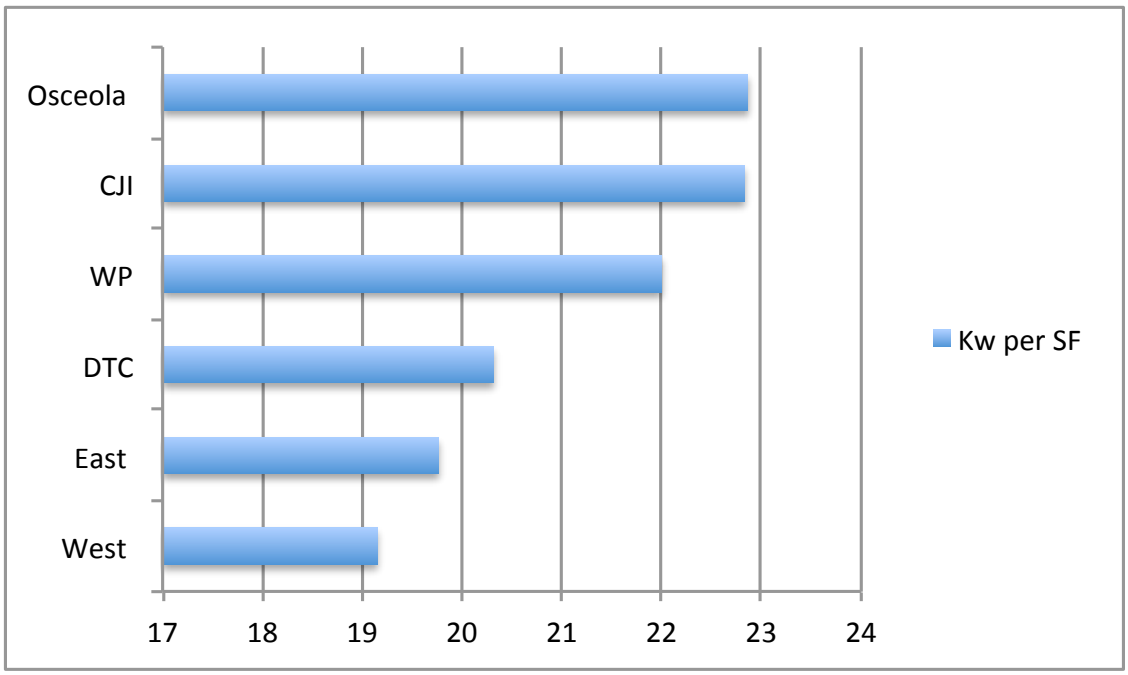


Table 2.4 Energy Efficiency Improvements by Campus 2007-2010

CJI

- Installed thermal storage units
- Replaced building automation system
- Installed window tint in CJI Rm.164

East Campus

- Replaced Air Cooled Chiller yard with Water Cooled Chiller Plant
- New high efficiency Chiller Plant has two (2) 650-ton chillers using variable primary flow
- Added campus wide building automation system
- Extended chiller water loop to include the entire Campus
- Lighting retrofit projects in Buildings 1, 3, 4, 5, and 6
- Energy efficient fixtures in parking lots
- Window tint on first floors of North and East walls in Building 5 and south wall in Building 6
- Installed Energy Recovery Ventilator (ERV) unit on Building 7
- Replaced boilers in Buildings 1A, 5, and 6 with high efficiency water heaters

- Replaced 2 air handling units with high efficiency units in Building 3 and the Performing Arts Center
- Replaced one (1) air handling unit with a high efficiency unit in the Theater Technology Lab
- Installed variable frequency drive (VFD) on all air handler units (AHU)
- Replaced moduline terminal units with high efficiency variable air volume (VAV) system in Buildings 1B, 2 and 3
- Installed new roof light-colored on Building E

Osceola Campus

- Some lighting control retrofits
- Interfaced building automation systems to WebCntrl
- Installed occupancy sensors in classrooms
- Replaced magnetic ballast and T12 lamps with electronic ballasts and T8 lamps
- Extended campus loop and centralized chillers

Winter Park Campus

- Installed occupancy sensors throughout
- Replaced old inefficient boiler with energy efficient boiler
- Upgraded energy management system (EMS)

West Campus

- Extended chilled water loop to serve all buildings from the central chiller plant
- Renovated old inefficient chiller plant and installed (4) 500 ton high efficiency chillers using variable primary flow
- Installed occupancy sensors throughout classrooms and offices
- Installed reflective roofs on Buildings 3, 8, 10 and 11 and a partial roof on the SSB Building.
- Replaced inefficient campus boilers with new 95% efficiency condensing boilers
- Installed 103 kW solar array on Building 11.
- Installed auto-flow and pressurized independent characterized control (PICC) valves.
- Upgraded from traditional water treatment to ZeroTek. A high cycles new technology water treatment system.

Table 2.4, Continued. Energy Efficiency Improvements by Campus 2011-2013

CJI

- Upgraded building automation system to WebCntrl
- Re-engineered thermal storage sequence of operations

East Campus

- Replaced air handling units with high efficiency units in Building 4 and 5
- Upgraded building automation system to WebCntrl
  - Upgraded from traditional water treatment to ZeroTek high cycles water treatment
  - Upgraded water softeners to ECO water. A new technology water softener.

Osceola Campus

- Lighting control retrofits
  - Upgraded building automation system to WebCntrl
  - Replaced air-cooled chiller yard with high efficiency chiller plant
  - New chiller plant included (3) 500-ton frictionless chillers using variable primary flow, ZeroTek high cycles water treatment and ECO water softeners
  - Replaced all 2-way control valves with pressurized independent characterized control (PICC) valves.

Winter Park Campus

- Added exterior and interior hallway lighting control to building automation system
- Added airflow stations to reduce outside air

West Campus

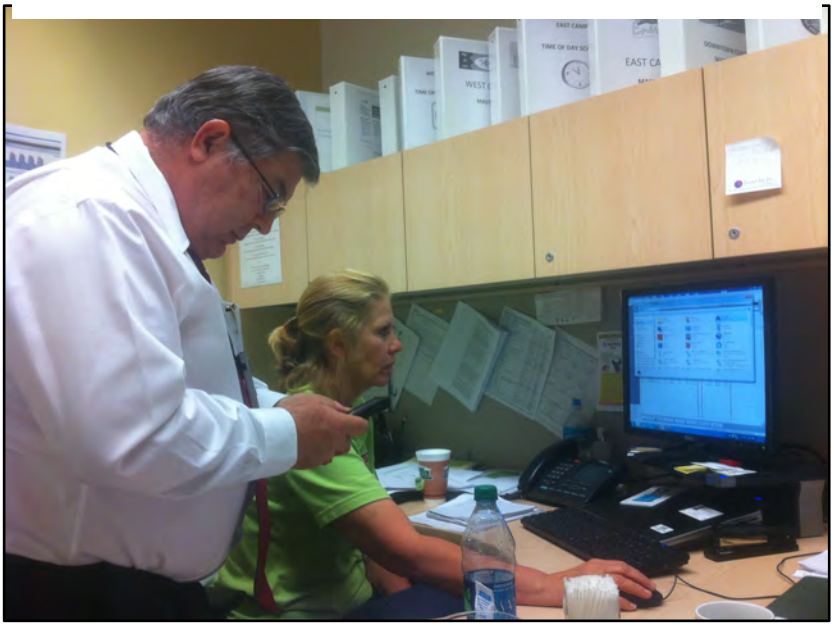
- Replaced all roadway lights with LED's
- Replaced all walk way pole lights with LED's
- Separated stairway lights from breezeway light circuits
  - Upgraded water softeners to ECO water. A new technology water softener
- Added high efficiency frictionless chiller to chiller plant

Figure 2.16. Headline in The Grove upon milestone of $2 million saved by Energy Education program.

Energy Education Program

Valencia College's Energy Education Program aims to engage the campus community in finding ways to save energy, to identify various energy management opportunities, and make adjustments without compromising comfort. Since HVAC makes up such a large portion of the college's energy budget, scheduling of air handler units more concisely is the major way the program achieves savings.

Figure 2.17. Operations Manager, Energy Education Patti Riva entering data in conjunction with Cenergistic staff.



Valencia College had traditionally provided tips for energy savings to its staff and faculty in staff newsletters and occasionally carried out more intensive educational efforts. However, observations indicated that there was still considerable wastage.

A nationally known company focusing exclusively on organizational and behavioral change to save energy, now called Cenergistic, had proposed working with the Valencia College starting as early as 2008. This company, that works mostly with K-12 schools, including local school districts, identified one million dollars in savings per year directly from behavioral actions by faculty and staff.

The Energy Education program, which began with the contract with Cenergistic in May 2011, costs only the salary of one staff person and the site license for the sophisticated ECAP software to process billing, meter, and enter other information into reports. Cenergistic works closely with Valencia College to achieve and document savings and receives a negotiated percentage of the savings under a five-year contract.

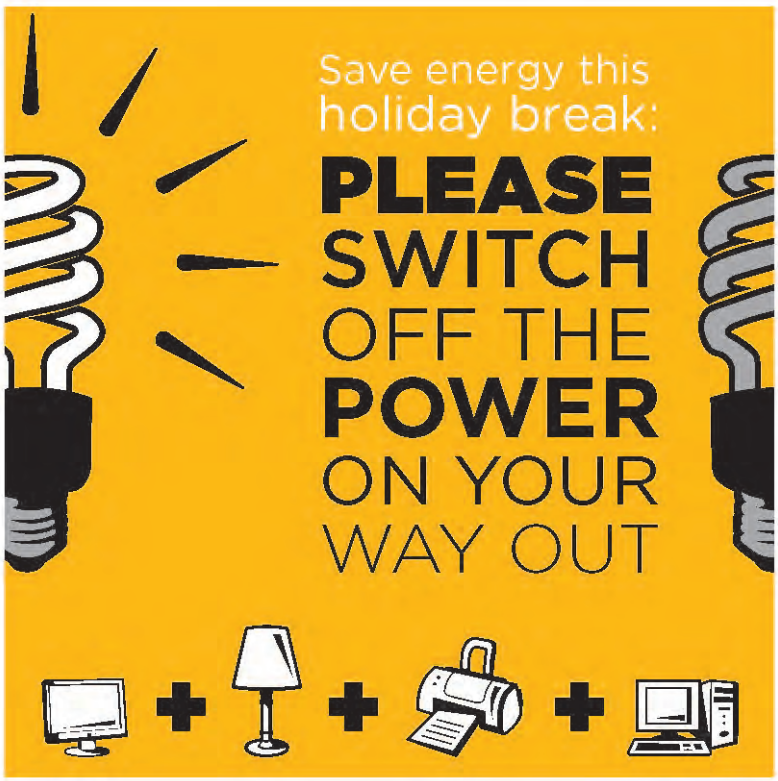
The Operations Manager, Energy Education was selected from existing staff so as to have a knowledge of the college culture.

College-wide guidelines for energy efficiency (Figure 2.18) were adopted in September 2011, and an email notification was sent to all faculty and staff from Dr. Shugart emphasizing the importance of this effort.

Cenergistic staff members with different roles worked with the Operations Manager, Energy Education extensively in the first few months and on an ongoing basis visit about five hours every two weeks, while they make a circuit of their Florida clients. The Operations Manager enters billing and meter data into the ECAP software. Careful analysis, including cross checking by the Operations Manager, Energy Efficiency, allows an assessment of what part of the energy savings can be attributed to the Energy Education effort and what part is due to the new buildings being more energy efficient, the HVAC and lighting retrofits, vagaries of the weather, and other factors.

Evening, weekend and holiday shutdowns are a big part of Valencia College's Energy Education program. Faculty and staff are encouraged to clean out and unplug refrigerators over holiday breaks and power down most electricity-using equipment every night and weekend.

Figure 2.18. Graphic used as a reminder to employees to unplug before holidays.



Systems shut down during unoccupied periods include everything but science labs, security lighting, and the main distribution facility (mdf) and server rooms.

The Operations Manager, Energy Education does unoccupied and occupied energy audits and provides oversight of comfort complaints. She orchestrates frequent publicity on achieved college-wide savings in the online weekly newsletter, *The Grove.* Challenges include that the East Campus is the campus of the arts, and there are many weekend events, which need to be monitored to make sure HVAC is not in use longer than needed.

There has been a move at Valencia College to use central office copiers instead of individual copiers, but faculty and staff are not told they cannot have an individual printer in their office. Likewise, campus administration has not wanted to tell faculty and staff that they cannot have small refrigerators or other appliances in their offices, so the Energy Education program has had to work with this situation educationally.

An important element of Valencia's Energy Education program is scheduling of classes, with the Operations Manager, Energy Education continuously reviewing class schedules and room bookings. For example, if there are only a few classes in a building in summer term, classes can be rescheduled to another building, perhaps

one that houses labs and in which classes cannot be moved. Shutting down HVAC to a whole building or perhaps a floor of a building can save significant energy and money. These "strategic shut down procedures," however, would not be successful if the college did not have good Building Automation Systems along with ongoing reviews of schedules. Meticulous efforts are made on a weekly basis to verify schedules particularly of large-used facilities such as auditoriums and specialty conference rooms. Cooperation with deans and staff involved in room scheduling has also been critical.

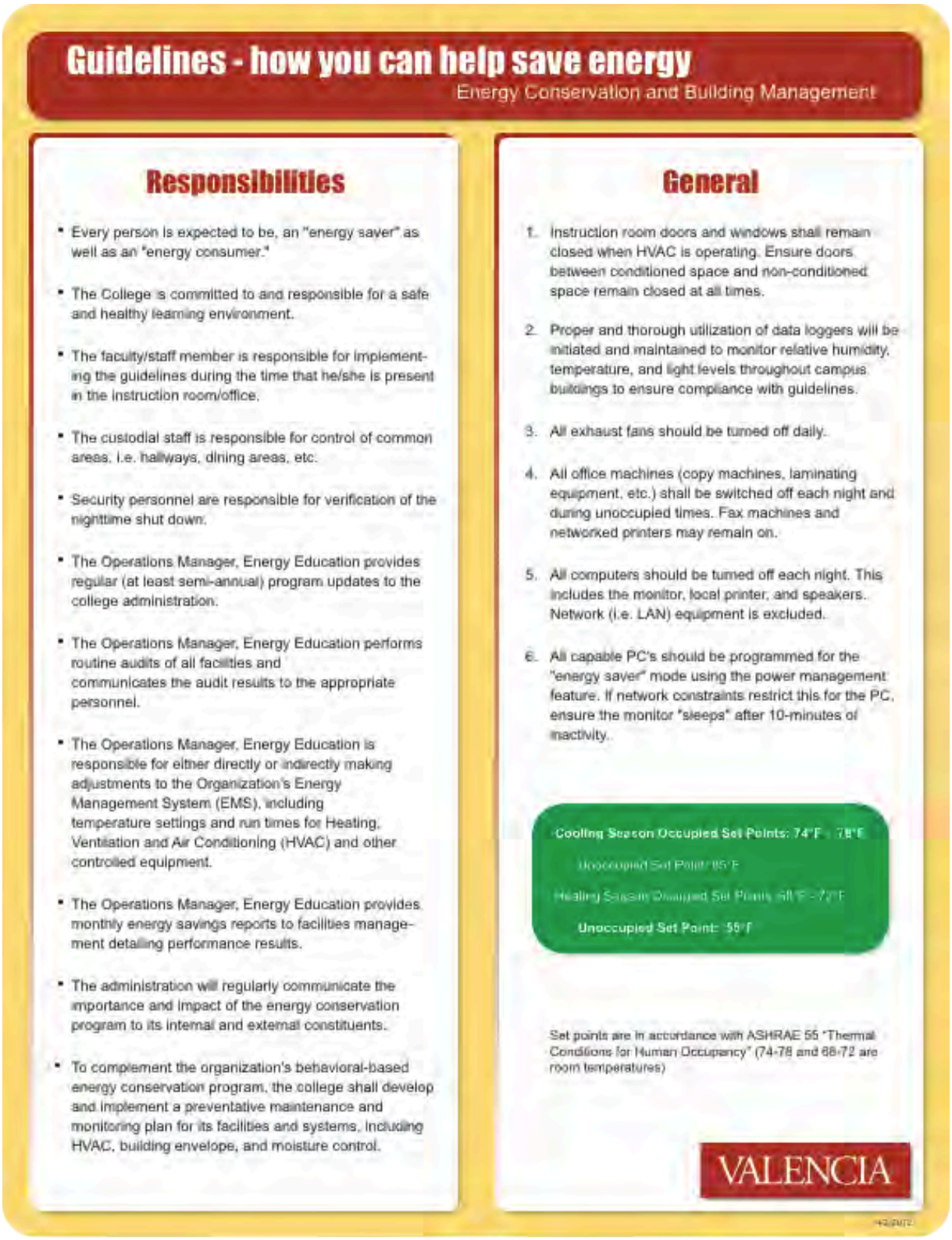
Cultural changes are being made as faculty and staff members internalize the need to be energy efficient. For example, no reports on buildings being used on weekends were previously compiled. Now these reports assist not only energy efficiency but also custodial efforts and Security in awareness of closed facilities.

In 2012 the Operations Manager, Energy Education developed the Energy Heroes recognition program, with a unique logo and other graphics from Valencia's Communications Department. This program recognizes exceptional energy efficiency efforts by staff and faculty members.

Figure 2.19. Recognition of Energy Heroes, faculty or staff that have contributed significantly to energy savings.

The Operations Manager, Energy Education takes every opportunity to educate on energy efficiency, including educating students through class visits and displays at Earth Day and other events. At each milestone, such as when the College reaches $2 million in savings, publicity is orchestrated in *The Grove.*

Figure 2.20. Energy Education Guidelines, adopted October 2011 (p.1)



Guidelines - how you can help save energy

Energy Conservation and Building Management

Responsibilities

- Every person is expected to be, an "energy saver" as well as an "energy consumer."
- The College is committed to and responsible for a safe and healthy learning environment.
- The faculty/staff member is responsible for implementing the guidelines during the time that he/she is present in the instruction room/office.
- The custodial staff is responsible for control of common areas, i.e. hallways, dining areas, etc.
- Security personnel are responsible for verification of the nighttime shut down.
- The Operations Manager, Energy Education provides regular (at least semi-annual) program updates to the college administration.
- The Operations Manager, Energy Education performs routine audits of all facilities and communicates the audit results to the appropriate personnel.
- The Operations Manager, Energy Education is responsible for either directly or indirectly making adjustments to the Organization's Energy Management System (EMS), including temperature settings and run times for Heating, Ventilation and Air Conditioning (HVAC) and other controlled equipment.
- The Operations Manager, Energy Education provides monthly energy savings reports to facilities management detailing performance results.
- The administration will regularly communicate the importance and impact of the energy conservation program to its internal and external constituents.
- To complement the organization's behavioral-based energy conservation program, the college shall develop and implement a preventative maintenance and monitoring plan for its facilities and systems, including HVAC, building envelope, and moisture control.

General

1. Instruction room doors and windows shall remain closed when HVAC is operating. Ensure doors between conditioned space and non-conditioned space remain closed at all times.
2. Proper and thorough utilization of data loggers will be initiated and maintained to monitor relative humidity, temperature, and light levels throughout campus buildings to ensure compliance with guidelines.
3. All exhaust fans should be turned off daily.
4. All office machines (copy machines, laminating equipment, etc.) shall be switched off each night and during unoccupied times. Fax machines and networked printers may remain on.
5. All computers should be turned off each night. This includes the monitor, local printer, and speakers. Network (i.e. LAN) equipment is excluded.
6. All capable PC's should be programmed for the "energy saver" mode using the power management feature. If network constraints restrict this for the PC, ensure the monitor "sleeps" after 10-minutes of inactivity.

Cooling Season Occupied Set Points: 74°F - 78°F

Unoccupied Set Point: 85°F

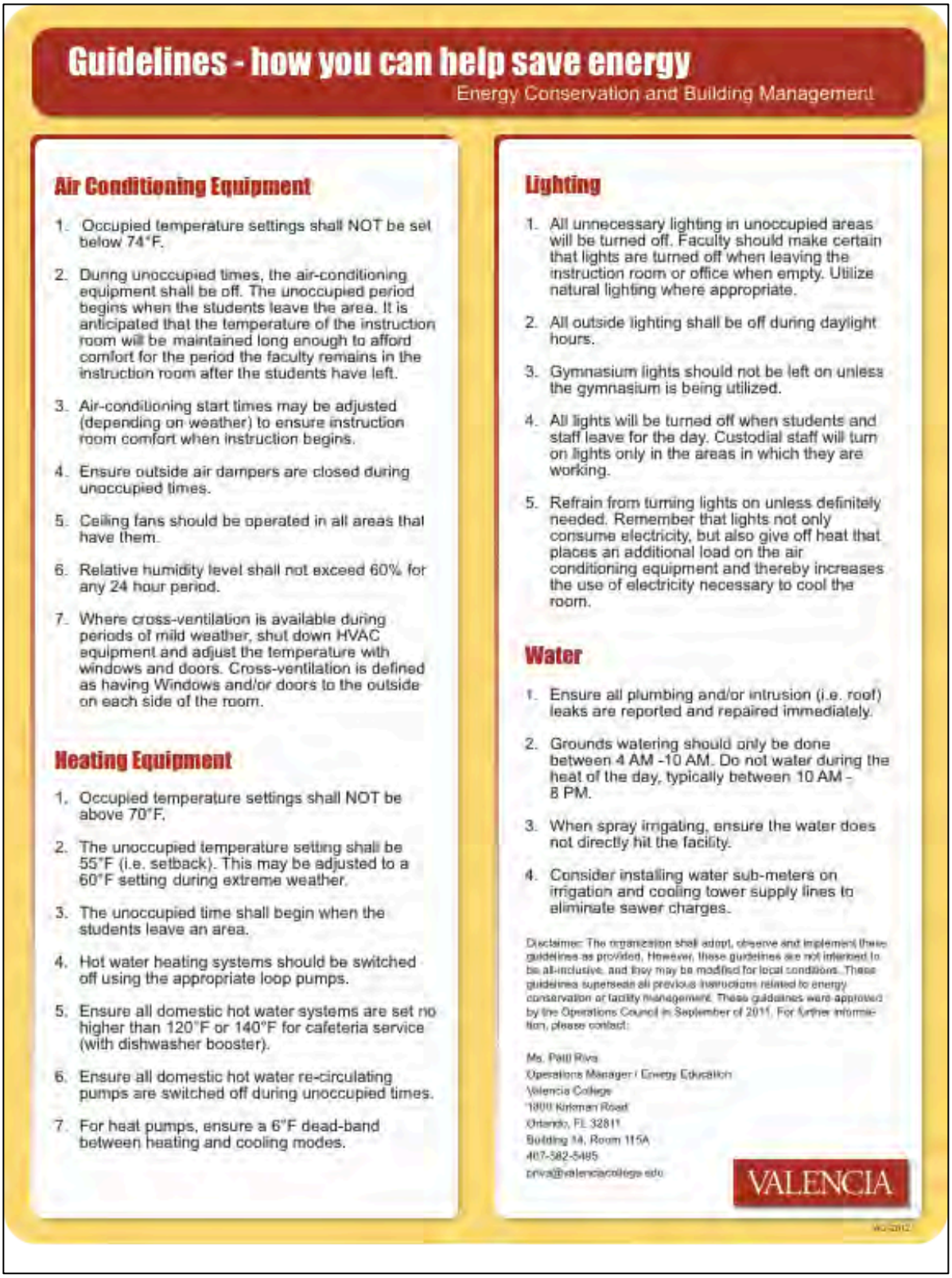
Heating Season Occupied Set Points: 68°F - 72°F

Unoccupied Set Point: 55°F

Set points are in accordance with ASHRAE 55 "Thermal Conditions for Human Occupancy" (74-78 and 68-72 are room temperatures)

VALENCIA

Figure 2.20. Energy Education Guidelines, adopted October 2011 (p.2)



Guidelines - how you can help save energy

Energy Conservation and Building Management

Air Conditioning Equipment

1. Occupied temperature settings shall NOT be set below 74°F.
2. During unoccupied times, the air-conditioning equipment shall be off. The unoccupied period begins when the students leave the area. It is anticipated that the temperature of the instruction room will be maintained long enough to afford comfort for the period the faculty remains in the instruction room after the students have left.
3. Air-conditioning start times may be adjusted (depending on weather) to ensure instruction room comfort when instruction begins.
4. Ensure outside air dampers are closed during unoccupied times.
5. Ceiling fans should be operated in all areas that have them.
6. Relative humidity level shall not exceed 60% for any 24 hour period.
7. Where cross-ventilation is available during periods of mild weather, shut down HVAC equipment and adjust the temperature with windows and doors. Cross-ventilation is defined as having Windows and/or doors to the outside on each side of the room.

Heating Equipment

1. Occupied temperature settings shall NOT be above 70°F.
2. The unoccupied temperature setting shall be 55°F (i.e. setback). This may be adjusted to a 60°F setting during extreme weather.
3. The unoccupied time shall begin when the students leave an area.
4. Hot water heating systems should be switched off using the appropriate loop pumps.
5. Ensure all domestic hot water systems are set no higher than 120°F or 140°F for cafeteria service (with dishwasher booster).
6. Ensure all domestic hot water re-circulating pumps are switched off during unoccupied times.
7. For heat pumps, ensure a 6°F dead-band between heating and cooling modes.

Lighting

1. All unnecessary lighting in unoccupied areas will be turned off. Faculty should make certain that lights are turned off when leaving the instruction room or office when empty. Utilize natural lighting where appropriate.
2. All outside lighting shall be off during daylight hours.
3. Gymnasium lights should not be left on unless the gymnasium is being utilized.
4. All lights will be turned off when students and staff leave for the day. Custodial staff will turn on lights only in the areas in which they are working.
5. Refrain from turning lights on unless definitely needed. Remember that lights not only consume electricity, but also give off heat that places an additional load on the air conditioning equipment and thereby increases the use of electricity necessary to cool the room.

Water

1. Ensure all plumbing and/or intrusion (i.e. roof) leaks are reported and repaired immediately.
2. Grounds watering should only be done between 4 AM -10 AM. Do not water during the heat of the day, typically between 10 AM - 8 PM.
3. When spray irrigating, ensure the water does not directly hit the facility.
4. Consider installing water sub-meters on irrigation and cooling tower supply lines to eliminate sewer charges.

Disclaimer: The organization shall adopt, observe and implement these guidelines as provided. However, these guidelines are not intended to be all-inclusive, and they may be modified for local conditions. These guidelines supersede all previous instructions related to energy conservation or facility management. These guidelines were approved by the Operations Council in September of 2011. For further information, please contact:

Ms. Patti Riva
Operations Manager / Energy Education
Valencia College
1800 Kirkman Road
Orlando, FL 32811
Building 14, Room 115A
407-582-5485
priva@valenciacollege.edu

VALENCIA

2.2.2 Challenges of Reducing Energy GHG Emissions

Some of the challenges that Valencia College faces in reducing GHG emissions from energy use include the following:

1. The high upfront costs and long payback periods of renewable energy remain a barrier for implementation, especially without any local or state rebate programs.
2. Valencia College purchases all electricity from local utilities and has no influence over the fuel mix responsible for power generation. All of these utilities rely on coal as a major source to generate electricity.
3. There are currently no mandates from the federal government or State of Florida that require electrical utility companies to reduce greenhouse gas emissions. As a result, predicting future reductions are not possible at this time.
4. Valencia College plans continued expansion to meet demands of the growing student population. Naturally, this will increase overall energy demand.
5. Valencia College has already identified and implemented many of the quick payback energy efficiency projects ("low hanging fruit") on its campuses. Achieving additional decreases in energy consumption will become harder and more expensive to achieve.

2.2.3 Energy Stakeholder Feedback and Vision

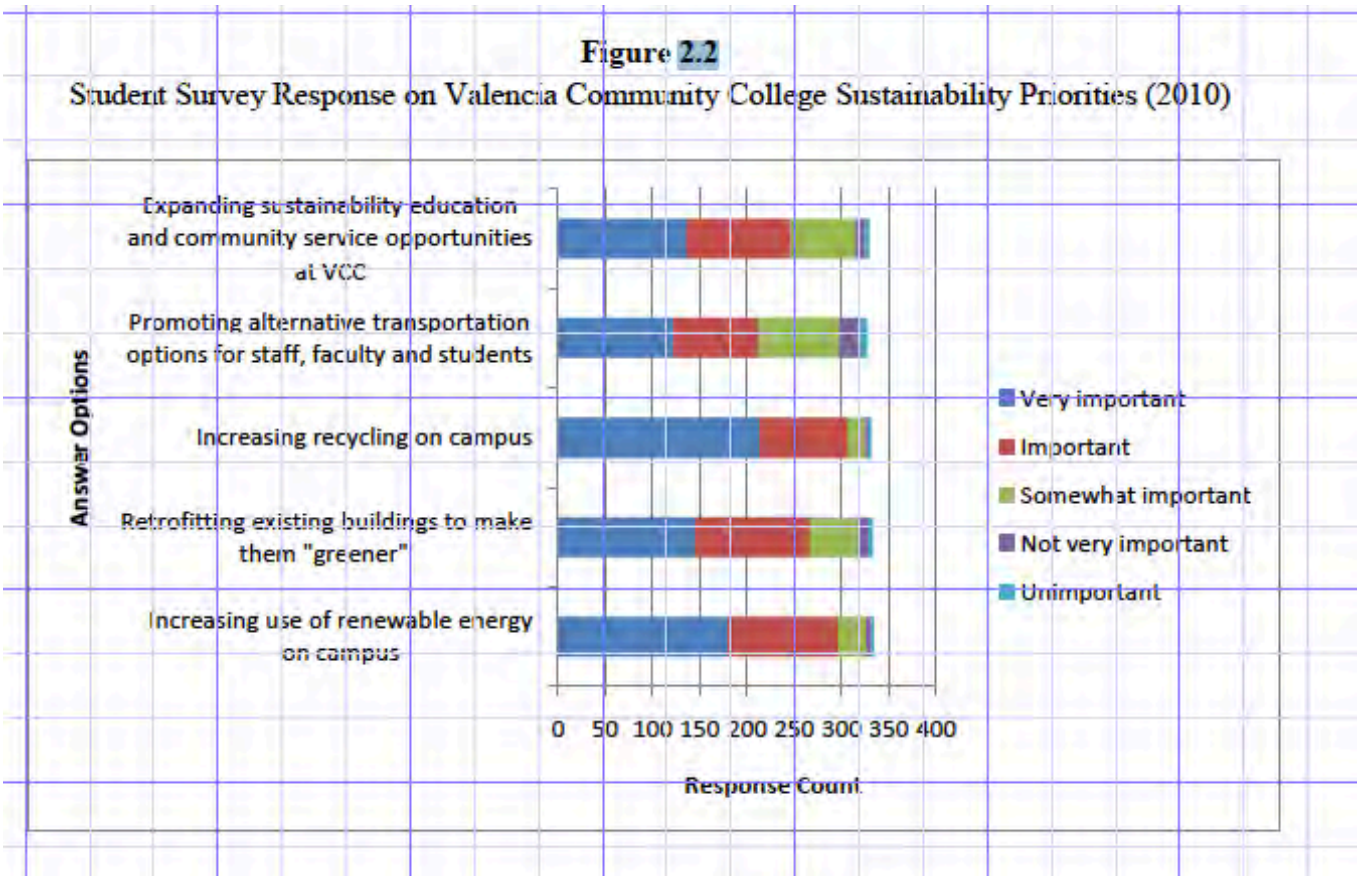
VISION

Valencia College would generate some of its own power using renewable sources of energy, operate more energy efficient buildings, and foster awareness of energy conservation among students and employees.

Stakeholder participants felt that Valencia College has been moving in a Sustainable direction with energy. However, the 2010 CAP reported that efforts had been stagnating recently due to the lack of funds to finance further projects.

The online survey revealed that students consider renewable energy and green buildings as very important actions that Valencia College should take to become more Sustainable (Figure 2.2).

Figure 2.21 Student Survey Response on Valencia College's Sustainability Priorities (2010)



2.2.4 Energy and Built Environment Roadmap

GOAL

Reduce energy GHG emissions by 20% by 2015, 35% by 2025, 60% by 2040 and 100% by 2060.

Valencia College currently relies on purchasing close to 100% of its electricity and natural gas from utilities. The four electrical utilities that Valencia College depends on are heavily reliant on coal, a high intensity GHG emissions source. While Valencia College should continue to prioritize energy efficiency strategies to reduce energy demand, the college will need to gradually ramp up investment in renewable energy technologies to generate an increasing supply of its own electricity. Each strategy is described in detail below. The milestones, goals and target dates for each energy strategy are listed in Table 2.5.

1) **Establish a green policy for retrofits/upgrades in existing buildings**

Although Valencia College has a policy that requires all future new building construction to be LEED Silver certified or better, Valencia College should also establish a policy and minimum standard to retrofit existing buildings using the most economically environmentally preferred choice or product. Examples of this may

include: increasing the amount of thermal zones; window upgrades (low emission factor); renewable energy systems; green walls for shading; reflective roof paint; green roofs; soy insulation; occupancy sensors

Progress: *Valencia College has included some of these options in the new buildings and the retrofits described previously. A focus on window upgrades, as requested for comfort reasons for some faculty members, might be a new emphasis. Most classrooms have occupancy sensors. Any spaces not having them should be prioritized for installation.*

2) Establish re-commissioning schedule for high energy use equipment

Valencia College should continue on its current path of updating chillers, distribution systems, thermal storage and boilers across all campuses. A goal should be set to strategically upgrade all systems by 2020. A schedule should also be made for periodic re-commissioning of all existing buildings to optimize energy efficiency.

Progress: *Valencia College is carrying out recommissioning as problems arise in different buildings and in conjunction with implementation of the college-wide Building Automation System. Recommissioning is part of the LEED EBOM process, currently underway for East Campus Building 3.*

3) Evaluate and update space allocation plan

Space is an expensive commodity due to the high cost of construction, operation, maintenance, and upgrades. Reviewing and updating Valencia College's space allocation plan should be a priority, especially since the college has a higher FTE to square footage ratio compared to other Colleges.

Valencia College should try to organize class schedules in order to maximize energy efficiency without sacrificing the student experience. Administration should attempt, in less busy periods, to schedule classes that would normally be held at the same time in different buildings to continually be held at the same time, but in the same building. This facilitates empty buildings to be in "sleep mode", by having no lights or air conditioning running.

Progress: *The Energy Education program has captured significant savings using the technique of "Strategic Scheduling." During summer if a building has only a few scheduled classes, these are moved to a building that has greater occupancy. This has required strong cooperation of campus Presidents, Deans, and scheduling staff.*

4) Use power management software to manage electronic equipment

Valencia College owns and operates multiple computers throughout the College's computers laboratories and employee offices. While Valencia College has communicated with staff to hibernate or turn off computers when not in Use, this policy does not always lead to action. However, through the use of power management software, the sleep mode of computers can be programmed and managed from a central place. The software's ability to manage a large network of computers ensures that machines are automatically and consistently shut off. Valencia College should explore the options available on the ENERGY STAR Power Management Website and choose a solution that makes the most sense given the number of computers it has and the effectiveness of the current policy.[6] Aside from computers, Valencia College should regularly schedule audits of printers, copiers, monitors and other electronic equipment across the campuses to ensure they are configured to use the power saving mode.

[6] General Technical Overview of Power Management: http://www.energystar.gov/index.cfm?c=power_mgt.pr_power_management

While student laptops are not connected to the Valencia College network, they regularly draw power through the college's outlets. Valencia College should educate students on using the sleep mode of their computers to save energy.

Progress: *The Energy Education program is working with the Office of Instructional Technology and computer lab managers in the implementation of shut off procedures. To date these have emphasized simple manual shut down procedures rather than technological solutions.*

5) Generate electricity through low carbon and renewable energy resources

While Valencia College should prioritize energy conservation and efficiency strategies that reduce energy demand, it should implement a goal to increase onsite electricity generation 20% every 10 years. As discussed above, Valencia College purchases electricity from four utilities, whose energy comes at least in part from coal. To offset this dependence, Valencia College should conduct a feasibility study to identify distributed power generation projects that use low carbon sources such as natural gas and renewable energy sources such as biomass. For the projects, Valencia College Facilities Department should identify important conditions and price points where it makes economic sense to invest in these technologies. These projects would be ideally implemented first on West and East Campus, which have the highest demand for electricity. Solar photovoltaic (PV) systems should be considered for the smaller campuses and centers, where space is limited.

Progress: *One of the West Campus LEED Gold buildings (University Center or Building 11) completed in 2009 has photovoltaic panels. Rental of photovoltaic equipment is now being explored.*

6) Set minimum renewable energy standard for new buildings

As Valencia College continues to expand and construct new buildings, the College should establish a policy that each new building meets a minimum percentage (10%) of its energy demand through onsite renewable energy. This policy forces the College to budget the renewable energy system into the cost of the overall building. The policy should also specify that all new buildings should be built solar-ready. When solar technology does become less expensive, the infrastructure (i.e. wiring and roof) will be in place and will reduce the time and expense to add solar PV. Unfortunately, grants and rebates mentioned in the 2010 CAP are not available.

Progress: *This would be a valuable policy commitment that could start with the new Poinciana Campus.*

7) Purchase green power

In the short term, Valencia College should consider purchasing green power from utilities to reduce the emissions generated from electricity consumption. Green power is electricity that is generated from clean, renewable resources such as solar, wind, geothermal, biomass, and low-impact hydro facilities. Although none of the local utilities that serve Valencia College sell green power in Florida, there are national sellers that can be selected through EPA's Green Power Locator.[7] Valencia College can also consider joining the EPA's Green Power Partnership, a voluntary program that encourages organizations to buy green power as a way to reduce the environmental impacts associated with purchased electricity Use.

Progress: *This option may be considered at a later date.*

[7] http://www.epa.gov/grnpower/pubs/gplocator.htm

Table 2.5 Energy-related GHG Reduction Strategies, Milestones, Goals and Targets for Valencia College

Strategy	Milestones	Goal	Target Date
1) Green Building Policy for Existing Buildings	1) List of environmentally preferred upgrades 2) Draft policy	Upgrade 25% of existing buildings every 3 years.	December 2015
2) Re-commissioning Plan	Draft plan with proposed dates of upgrades	Re-commission all buildings every 3 years.	June 2014
3) Evaluate and Update Space Allocation Plan	Consider Review and Update	Re-evaluate plan in coordination with benchmarked utility savings.	December 2014
4) IT Power Management Solutions	1) Select IT Power Management Software 2) List of equipment and configuration status	1) Manage all computer equipment through a program by 2014. 2) Quarterly audits of equipment to ensure that they are configured for power saving mode.	December 2014
5) Increase onsite electricity generation	1) Feasibility Study 2) List of potential projects 3) Issue RFI for projects	Increase onsite electricity generation 20% every 10 years.	June 2020
6) Renewable Energy Standard on New Buildings	Draft and approve policy	1) All new buildings must meet a minimum of 10% percentage of its energy demand through onsite renewable energy. 2) All new buildings must be built solar-ready.	June 2014

2.3 SOLID WASTE

2.3.1 Background

While solid waste contributes less than 1% of Valencia College's total GHG emissions, it is the topic that received the most attention from stakeholders and was traditionally the most visible sustainability effort at Valencia College. Moreover, there are still valuable opportunities to reduce solid waste while achieving valuable cost savings.

In 2006 staff on the Winter Park Campus carried out a pilot project of recycling mixed paper. In 2007 the Custodial Services Department Supervisor, East Campus, took on the recycling effort for all campuses. Planning involved finding an initial budget for purchase of recycling containers, making arrangements with a recycling company, and educating the college community on what to recycle. Collection of cardboard, aluminum cans, plastic bottles along with mixed paper on all campuses has been carried out since 2007. Recycling containers are color-coded and marked "Valencia Recycles" in common areas on each campus. Trash receptacles are now labeled "Landfill," and recycling bins and landfill receptacles are arranged adjacently to create awareness of a decision of where to thow an item.

Policies to use electronic files and print only if needed, and to use double-sided copies have been instituted throughout the college for some time. They are now codified in Operations and Maintenance Green Guidelines, which are posted on the Valencia College Sustainability website and which are part of the Architectural and Engineering Guidelines on the Facilities website.

Through construction of USGBC LEED Gold buildings Valencia College's contractors have recycled a large proportion of Construction and Demolition (C&D) waste, which had been mentioned as a concern in the 2010 CAP.

2.3.2 Challenges

Some of the challenges that Valencia College faces in reducing solid waste GHG emissions include the following:

1) Reducing solid waste relies on the participation of all staff and students and cannot be accomplished immediately through simple internal changes.

2) Many products are still not designed to be recyclable and recycled products tend to cost more than conventional products. Cost of plastic containers utilized by the College's Food Service is so low that it has been difficult to convince the vendor to utilize more sustainable recycled paperboard plates and containers. Bottled water is so inexpensive and providing it has become the norm, so it has been difficult to re-educate the campus community to use reusable beverage containers. The campus coffee shops, a part of the Food Service contract, have been unwilling to embrace the refillable mug model that is used elsewhere.

2.4.3 Stakeholder Feedback and Vision

Valencia College's recycling efforts received significant praise at the 2010 stakeholder meetings and the group agreed that the college was moving toward a more Sustainable direction. Faculty and staff shared numerous successful examples of efforts at the college to decrease paper use. The 2010 focus groups did request more bins for paper recycling in offices and classrooms. As seen in Figure 2.2, students considered increased recycling as the most important activity that Valencia College could take to become more Sustainable.

2.4.4 Solid Waste Roadmap

GOAL

Reduce Solid Waste by 15% by 2015, 50% by 2025, 75% by 2040 and 100% by 2060.

Table 2.6. Comparison of weight of materials recycled and disposed as garbage per person 2005 and 2011.

	Students, faculty, and staff members	Tons of materials disposed as garbage	Tons of materials recycled	Tons of materials disposed as garbage/ person	Tons of materials recycled/ person
2005	12,912	790	0	0.06	0.00
2011	19,157	909.22	173.39	0.05	0.01

Milestones, goals and target dates for each solid waste strategy are listed in Table 2.7.

1) **Organize textbook recycling events**

Many students discard textbooks at the end of the semester that they cannot sell back resulting in tons of waste delivered to the landfill. Valencia College should organize a textbook recycling week at the end of each semester to collect textbooks that would otherwise be discarded by students. Some groups such as Book Drives, Inc. will send boxes to set up and pay the institution for each full box that is returned. This could generate extra income for Valencia College, minimize waste disposal, and ultimately guarantees that all books are reused or recycled.

Progress: *Books with no buy back market may be donated by students in a large bin near the bookstore and taken free by other students. Those not taken are finally disposed of with other paper recycling. The Bookstore initiated book rental in 2013, which appears to be gaining interest. Finally, there is an ongoing effort for faculty to consider Ebooks, which are less expensive for students.*

2) **Initiate composting program**

Valencia College initiated use of organic fertilizer on East Campus, resulting in a significant reduction of greenhouse gas emissions. A composting program has both the desired effect of reducing Valencia College's current municipal solid waste and providing a low-cost source of organic fertilizer that groundskeepers can

apply at Valencia College's campuses and centers. Valencia College could establish a partnership between food services and facilities to collect organic waste from vendors, students and staff for conversion into compost. Strategically placed bins could be placed around campus to collect the organic waste along with explanatory signs of materials that can be discarded. Additionally, the composting site/facility could serve as an educational tool that can be incorporated into the science curriculum.

Progress: *Valencia's food vendor has provided information that there is not much food in their waste stream. After this vendor's contract expires in 2015, new vendors may utilize more fresh produce and have more compostable waste, and working with a college composting program could be a part of the contract. Composting of landscape clippings is done to a certain extent by Grounds Departments on all campuses but could be expanded.*

3) **Establish construction and demolition recycling standard**

Construction and Demolition (C&D) waste represents 15-25% of Valencia College's solid waste in weight annually. This C&D waste ultimately is transported to and deposited in nearby landfills. Where feasible, Valencia College should establish guidelines to reuse the material on site during new building construction or require delivery of a certain percentage of the waste to C&D Recycling Centers located at a number of Orange County landfills.

Progress: *Although recycling of C&D waste was not included in the recent revision of Valencia's Architectural and Engineering Guidelines, it is part of green building practices that are followed by all of the college's contractors. West Campus Building 11, a construction waste management company was hired to divert construction waste materials from the landfill. This company separated all construction waste at their facility based on the type of material and provided reports documenting the actual quantities. Out of a total of 321.32 tons, 94% was diverted in that project.*

The new Lake Nona Campus recycled 84% of construction waste, 153.80 tons out of a total 183.28 tons. West Campus Building 10 recycled 52.9% of its C&D waste, 185.15 tons out of a total of 350.32 tons.

4) **Adopt waste reduction policy**

Aside from the students on campus, a significant portion of the waste generated at Valencia College is comprised of the products that the institution purchases and uses. Where practical, Valencia College should develop and enforce the following policy guidelines:

1) Prioritize products that are made with recycled material or are recyclable

2) Hiring preference for companies that use minimal and/or recycled packaging to deliver their products

3) Default double-sided printing on all campus printers

4) Promotion of electronic submission and editing of documents for all courses

Progress: *These are ongoing efforts. For example the Custodial departments, in their Green Cleaning efforts, use concentrate solutions with dilution systems rather than individually packaged cleaners.*

Unfortunately, Procurement has not agreed to purchase recycled copier paper due to its higher costs.

Figure 2.22. Cleaning chemical dilution system used by Valencia College custodians reduces packaging and waste.

Water refilling stations have been installed on all campuses. These contribute to reduction in plastic waste on campuses and have been enthusiastically received by students and employees. One member of the Sustainability Committee has initiated an effort to publicize the stations on East Campus with a map and poster.

Figure 2.23. Students using water-refilling stations, which reduce plastic waste.

Green Events

In August 2012, the Office of Sustainability developed and distributed Green Event Suggestions (Fig. 2.25) aimed at reducing plastic waste at campus events as well as energy savings measures.

Figure 2.25 Green Event Suggestions Distributed to Event Organizers

VALENCIA

Green Event Suggestions

From the Valencia College Office of Sustainability, August 2012

Strategic Scheduling for Energy Savings

To save the college electricity costs for air conditioning or heating plus lighting, book the room only for the time of the event plus your set up and clean up time.

If an event needs to be cancelled, be sure to contact the appropriate campus room booking person.

Paperless

Far too much paper is wasted at events. Strive for the event to be paperless!

Electronic Registration & Correspondence

Provide your event information electronically via e-mail and websites.

Green Event Signage and Publicity

Flaunt your event's green focus in the event publicity.

Use the college's Sustainability web page to communicate the event's effort to minimize its environmental impacts - your "green commitment." We seek to recognize those who are contributing to the college's sustainability efforts.

Water

Provide pitchers of water and paper cups (Paper cups break down in the landfill; plastic cups do not and also are not generally recyclable). If the event is large, fill some cups in advance.

If using plastic water bottles (the less preferable option, due to the energy cost of water bottling), make sure there is a recycling bin at the event.

Food Service:

Talk with the food vendor you are using about having "lighter fare" and some vegetarian options. Our on-campus concessionaire has these options. You just have to request.

Avoid box lunches- unnecessary packaging and wastage of many food items.

Food is better served in a buffet style in which participants can choose what they do and do not wish to eat.

Provide condiments in bulk for less packaging.

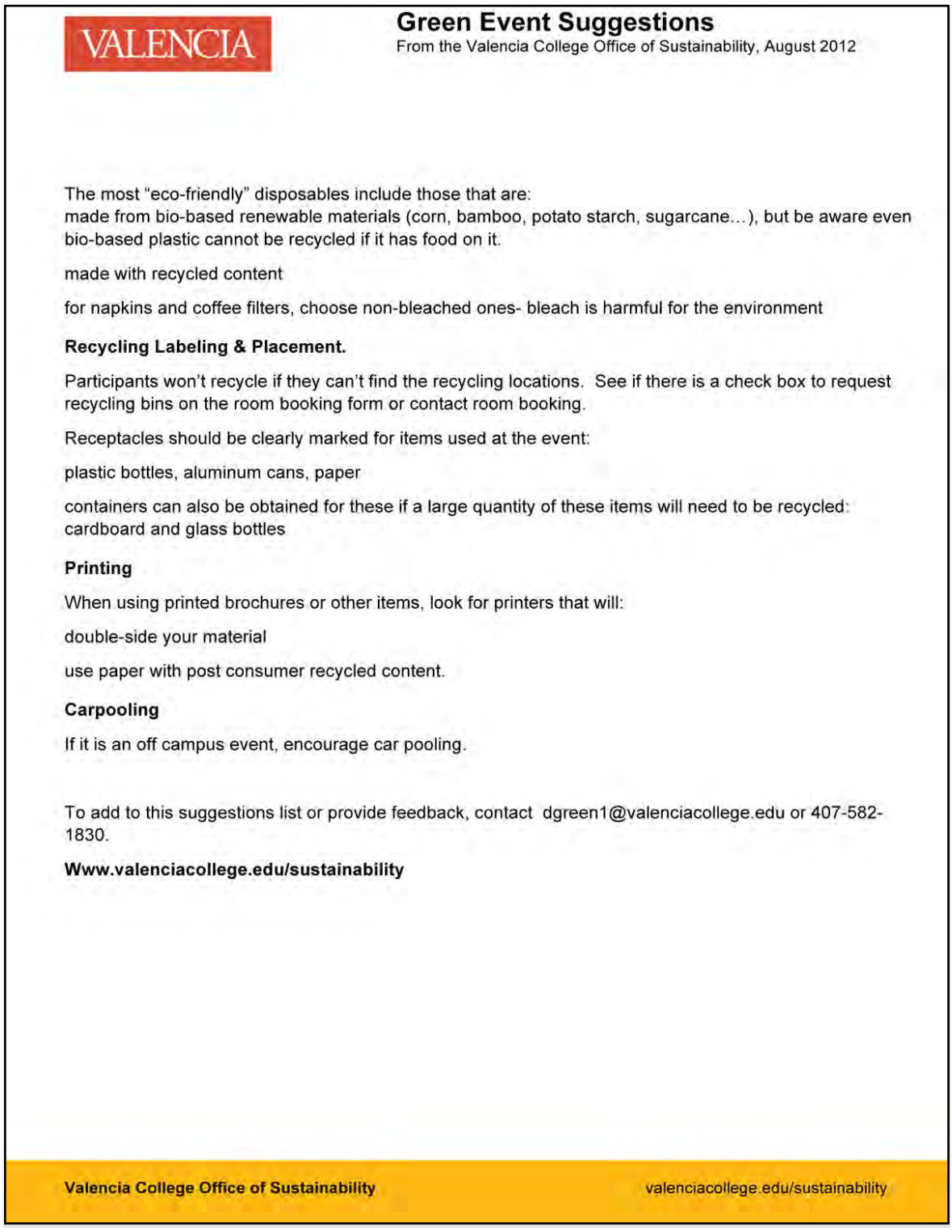
Reusable is the greenest: Dishes, glassware, silverware, tablecloths, and cloth napkins can be washed and reused.

When using disposables:

Use sturdy paper plates and cups (these break down in the landfill. Plastic plates -even if called "recyclable"-cannot be recycled if they have any food on them)

Valencia College Office of Sustainability valenciacollege.edu/sustainability

Figure 2.25 Continued. Green Event Suggestions Distributed to Event Organizers.



VALENCIA

Green Event Suggestions

From the Valencia College Office of Sustainability, August 2012

The most "eco-friendly" disposables include those that are:
made from bio-based renewable materials (corn, bamboo, potato starch, sugarcane…), but be aware even bio-based plastic cannot be recycled if it has food on it.

made with recycled content

for napkins and coffee filters, choose non-bleached ones- bleach is harmful for the environment

Recycling Labeling & Placement.

Participants won't recycle if they can't find the recycling locations. See if there is a check box to request recycling bins on the room booking form or contact room booking.

Receptacles should be clearly marked for items used at the event:

plastic bottles, aluminum cans, paper

containers can also be obtained for these if a large quantity of these items will need to be recycled: cardboard and glass bottles

Printing

When using printed brochures or other items, look for printers that will:

double-side your material

use paper with post consumer recycled content.

Carpooling

If it is an off campus event, encourage car pooling.

To add to this suggestions list or provide feedback, contact dgreen1@valenciacollege.edu or 407-582-1830.

Www.valenciacollege.edu/sustainability

Valencia College Office of Sustainability valenciacollege.edu/sustainability

Table 2.7 Solid Waste GHG Reduction Strategies

Strategy	Milestones	Goal	Target Date
1) Composting Program	1) Education program to educate staff and students 2) Composting pilot program on West Campus	1) Compost >20% of food waste on West Campus. 2) Expand program to all campuses by 2017.	June 2016
2) Waste Reduction Policy	Waste reduction policy draft for review by Valencia College Board of Trustees	Reduce MSW through responsible procurement and paper use policy	June 2017

Valencia Community College Environmental Procurement Procedure (March 2012)

Procedure Objective:

The College believes responsible environmental stewardship is an integral component of doing business. It is the objective of the College that the supplies, equipment, and services procured by the College support environmentally preferred products and services that have a lesser or reduced effect on human health and the environment when compared to other products and services that serve the same purpose. The purchase of these products is preferred when they perform satisfactorily and are available at a reasonable cost to the College.

Definitions

"Environmentally Preferred Products" means products that have a lesser or reduced impact on human health and the environment when compared with competing products. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and/or disposal of product.

"Compost Products" means mulch, soil amendments, ground cover, or other landscaping material derived from the biological or mechanical conversion of cellulose-containing waste materials.

"Practicable" means sufficient in performance and available at a reasonable cost.

"Reasonable Cost" means competitive cost.

Procedure

Raise staff awareness on the environmental issues affecting procurement by providing relevant information and training.

Encourage contractors, bidders, and suppliers to offer environmentally preferable products and services at a competitive price.

Encourage providers of services to consider environmental impacts of service delivery.

Comply with all environmental legislative and regulatory requirements established by the State, the County, and the Municipality.

Exemption: Nothing within this procedure shall be construed as requiring the purchase of products that do not perform adequately or are not available at a reasonable price.

2.4 EDUCATION AND OUTREACH

2.4.1 Background

Valencia College's CAP will fail without strong education and outreach. Educating and engaging Valencia College's students on sustainability and the consequences of their actions is a fundamental step in driving behavioral change, especially in those areas that the college has little control (i.e. commuting). Transforming technical information and action items into actual results is as important as the data itself.

The Facilities Department has been able to achieve significant improvements across Valencia College operations, ranging from recycling and landscaping and to water conservation and green cleaning. While the Sustainability Committee continues to make progress, they are full time staff and ultimately limited in their time and ability to organize, prioritize, and implement needed changes. In order to address the College's greenhouse gas reduction goals, the Committee cannot go it alone. It is the responsibility of the whole college community.

2.4.2 Challenges

Some of the challenges that Valencia College faces in implementing sustainability education and outreach:

1) Faculty, who have daily access to the students, need to be educated on sustainability.

2) A united vision across campus about sustainability needs to be fostered, and publicity continued about Valencia College's sustainability efforts and what students and employees can do to contribute to Valencia College's Sustainable future.

2.4.3 Stakeholder Feedback and Vision

VISION

Valencia College would be guided by an Office of Sustainability that would implement college-wide awareness and applications of Sustainable practices. Sustainable thinking would be integrated into every course and introduced to all incoming students at orientation. The environmental benefits for Valencia College's campuses will be evident to all student, staff, and faculty. Sustainability will part of the Valencia College Strategic Plan and will be promoted in external as well as internal publications.

As noted in Figure 2.2 above, a majority of students claimed that Sustainability education and community service opportunities were *important* or *very important*. About 48% of survey respondents replied that they would be interested in attending educational sessions regarding sustainability issues.

2.4.4 Education and Outreach Roadmap

GOAL

To increase student and employee involvement in Sustainability initiatives and provide meaningful learning experiences that result in cultural and behavioral change inside and outside of Valencia College.

While it is hard to quantify the impact of education on GHG emission reductions, it is well known that one of the largest barriers to behavioral change is education and awareness. While the Sustainability Committee has been hard at work changing internal efforts, Valencia College requires a much broader initiative that brings climate change and Sustainability into the daily lives of students and employees. The following strategies will ensure that the Valencia College student community is engaged around these issues inside and outside the classroom and provide them with valuable skills that they turn into job opportunities. Each strategy is described in detail below. The milestones, goals and target dates for each energy strategy are listed in Table 2.5.

1) **Expand the Sustainability Committee to include students**

The Sustainability Committee should engage more students to participate actively in the Committee. The Committee can use a variety of approaches to draw in more students, including partnering with the Student Development Office, establishing an ongoing presence at Valencia College events, and requesting 1-2 representatives from Student Government. Ultimately, the Committee should have equal representation of students, faculty and staff.

Progress: *Through participation at events and introducing new events (Campus Sustainability Day, Arbor Day, and Green Apple Day of Service), the Office of Sustainability is forming partnerships with Student Development and Student Government Association (SGA). Through these relationships student participation on the Sustainability Committee and Transportation Task Force is being secured. Professors who have completed the Sustainability Across the Curriculum class are also requested to recruit students for the committee, and Eco-Club representatives are requested to participate.*

2) **Employ a full time Sustainability officer**

Valencia College should hire a full time Sustainability Coordinator (SC) and establish an Office of Sustainability. The SC's responsibility will be to coordinate all efforts related to Sustainability, including the ongoing monitoring of Valencia College's GHG emissions and implementation of the CAP. The SC will also be fundamental in leading education and outreach efforts at the College and ensuring that Sustainability is integrated into campus operations, campus and community-wide events, and coursework. The Sustainability Coordinator will serve as a cross-cutting member of the Valencia College staff that can interface with faculty, staff, students and the community. Some of these responsibilities may include: Training of key staff; organizing environmental events and fundraisers; incorporating sustainability theme into campus events; incorporating sustainability into recurrent materials; work with marketing department to create conservation reminder signage; working with academic departments and faculty to ensure sustainability topics and projects are included in coursework; managing feasibility study and research results and transform them into action

plans; securing grant money and funding to support onsite sustainability initiatives; attending conferences, meetings, webinars, etc.; keeping current with other schools' environmental current events; developing relationships with community partners, programs, and groups; conducting waste and energy audits; managing pertinent student groups; securing environmental speakers to visit campus; holding others to imposed goals and deadlines; and implementing, maintaining, and updating this CAP.

Aside from the concrete value of this position, having a staff member that solely focuses on Sustainability is a clear indicator of Valencia College's commitment to a Sustainable Campus life.

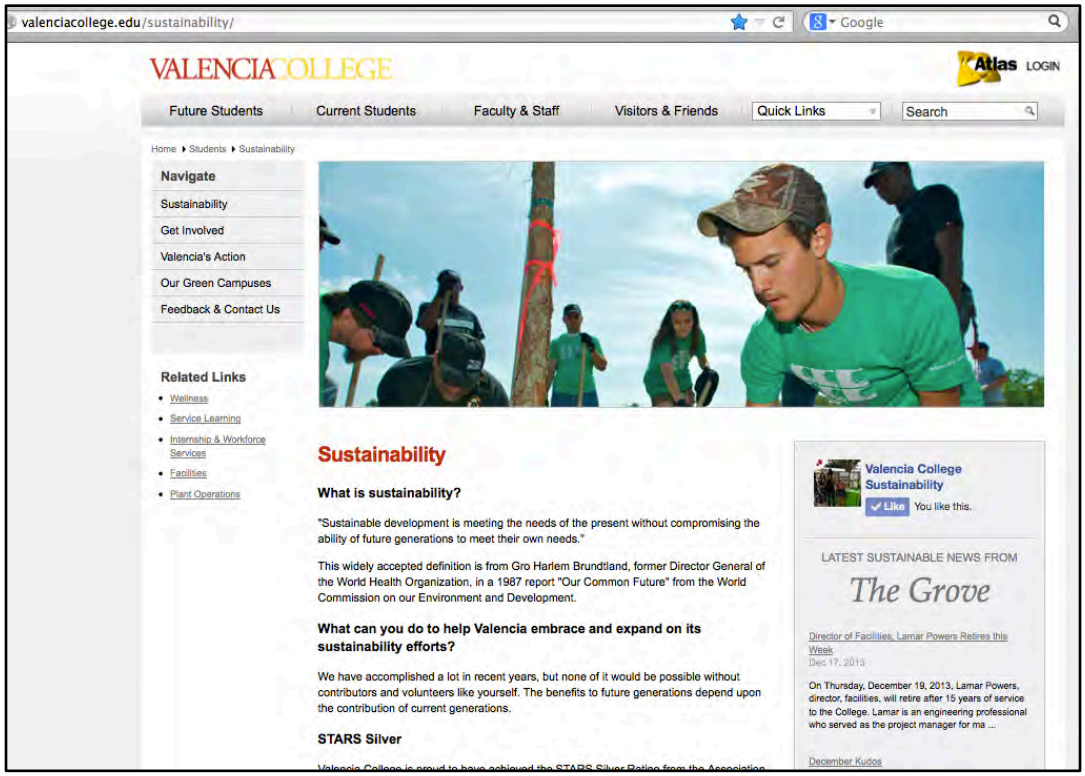
Progress: *Valencia' College's first Director of Sustainability was hired in November 2011 and carries out these duties. Further an Office of Sustainability has been created as a central point for these efforts.*

3) Establish Sustainability website

Valencia College has a lot to be proud of in the area of Sustainability and should continue to update the College community on its ongoing efforts. This website should serve a central place where students and employees can visit to learn more about Sustainability, provide ideas for discussion, and display Valencia College's progress in meeting its Sustainability goals.

Progress: *A Sustainability website www.valenciacollege.edu/sustainability was set up in 2011 and, with work by the Director in conjunction with Marketing, the website has become a functional place to share information on the college's Sustainability efforts. As part of the process of completing the College's rating under AASHE STARS for 2012, the Director uploaded a large number of documents to the website. The website features an RSS feed to sustainability articles in The Grove, the employee online newsletter. A recent addition is profiles of trees on campus that are accessed through QR codes on tree labels.*

Figure 2.26 Sustainability website includes an RSS feed of articles in the employee online newsletter, The Grove.



The Valencia College Sustainability Facebook page is an additional way to secure involvement and now has over 200 LIKES. *The Director and members of the Sustainability Committee post events and photos, occasionally requesting of Marketing that events be also posted also on the Valencia College Facebook page, which has over 12,000 LIKES. Student Sustainability Clubs also have Facebook pages that are linked to the* Valencia College Sustainability Facebook page.

4) **Train personnel that have a high impact on Sustainability initiatives**

Valencia College should select key leaders to receive training on incorporating Sustainability into their department and operations. These individuals may include Vice Presidents, Assistant Vice Presidents, Members of the governing councils, etc.

Progress: *The Director has had conversations on incorporating Sustainability into department and operations with several deans and Campus Presidents. Initiating a Green Office Program will be a way to secure more involvement. Administrative interest will be necessary to secure higher-level involvement.*

5) **Educate faculty and staff on the basics of Sustainability**

Before faculty can teach students about Sustainability, they need to receive training on sustainability and suggested learning outcomes. Valencia College should organize training for faculty through workshops and/or online courses. All faculty should be required to take the course and pass a basic test on sustainability. A similar program should be developed for employees.

Progress: *The Sustainability Across the Curriculum class is an optional Faculty Development class, now completed by 48 faculty members. Staff and faculty workshops on sustainability topics have been offered through the Edge training program.*

6) **Update Valencia College's mission statement**

Valencia College should update its mission statement to express a commitment to sustainability and environmental stewardship. Valencia College's current mission statement reads "Valencia College provides opportunities for academic, technical and life-long learning in a collaborative culture dedicated to inquiry, results and excellence."

An updated mission statement could read "Valencia College provides opportunities for academic, technical and life-long learning in a collaborative culture dedicated to excellence in inquiry, results, and **sustainability**."

Progress: *None so far. The Office of Sustainability is requesting through the Planning Council that the update of the Valencia College Strategic Plan include sustainability.*

7) **Add a statement about sustainability on all college materials**

Valencia College should create a new motto for Sustainability that would appear on College materials such as the orientation package, syllabi, newsletters, website, intranet, etc. It can be based on the updated mission statement, but should be no longer than one line.

Progress: *None so far.*

8) **Install conservation signage in appropriate areas**

Signage with reminder messages and sustainability facts need to be created and placed in key areas such as student common areas, waste receptacles, restrooms, computer laboratories, etc. This is more important for any materials that may be taken home and shared with friends and family who may not be fluent in English.

Progress: *None so far. The Director of Sustainability has been working on signage to explain aspects of the outdoor environment on West Campus. Signage is currently being developed for the college's water refilling stations.*

9) **Integrating Sustainability topics into courses**

The Chief Learning Officer should work with the head of each department to establish guidelines in integrating Sustainability topics into the curriculum. Due to the interdisciplinary nature of the Sustainability, courses can easily be tied to a variety of Sustainability concepts.

Professors are important role models for the students and do have an impact on college resources. They should be encouraged to demonstrate Sustainability through practices such as double sided printing, electronic submission of assignments, and turning lights off when room is not in use (if sensors have not been installed).

Progress: *The Sustainability Across the Curriculum class is an optional Faculty Development class, now completed by 48 faculty members in different fields. A Sustainability Colloquium might be offered in Summer Term for graduates of the course as a way to expand the effort.*

10) **Offer Sustainability training or certificate programs**

Valencia College should offer more options for student learning by offering new classes in Sustainability – a strongly growing professional sector. A more immediate addition to Valencia College's offerings should be certificate or training programs; an example would be to offer a LEED training course. If there are no available or qualified staff to accommodate this, partnerships should be created by reaching out to USGBC or similar groups to provide training.

Progress: *Architecture students have received training on the LEED features of Building 11 and have given tours on Earth Day. The Director has discussed with representatives of the Architecture Department starting a student chapter of USGBC but found that interested Architecture students are too busy participating in AIAS. Much more could be done with certificate training programs, including HVAC.*

11) **Create green partnerships within the community**

Valencia College should reach out to the local community to build relationships with environmental groups. The College can collaborate with these groups

Figure 2.27. Facilities Director Lamar Powers training Architecture Institute of America Students (AIAS) officers to lead LEED tours of Building 11. Below is tour hosted by Valencia for the USGBC Central Florida Chapter and Construction students

to develop volunteer opportunities and events that expose students to conservation issues and benefit the local ecosystem.

Progress: *Valencia College has hosted the local chapter of USGBC for a program and building tour and sends the chapter publicity on other events. The College's events on the annual Green Apple Day of Service are listed on the national website and bring participation by groups. The Office of Sustainability has coordinated with three local environmental groups for Learning Day activities.*

Figure 2.28 Learning Day 2012 Staff and Faculty volunteering on West Campus in projects with Orange Audubon Society (right), the Florida Native Plant Society (left top) and Cooperative Invasive Species Management Area (CISMA) (left bottom)

12) **Create green campus events and challenges**

Similar to the Recyclemania competition, Valencia College should involve themselves with other regional and/or national environmental competitions. The College can develop an internal student, faculty and/or staff competitions between the seven campuses and centers to reduce energy consumption, waste, increase recycling, raise money for charity, etc. For example, a fun way to promote energy conservation is to pool the annual energy savings from a building or department and use it to upgrade that building or reward the

occupants with recognition and prizes. Additionally, Valencia College's faculty should seek out professional speakers for presentations to expose students to Sustainability and possible opportunities.

Progress: *Regarding Green Campus events to create awareness, the Office of Sustainability works with Student Development to coordinate Green Apple Day of Service (late September), Campus Sustainability Day (late October), Arbor Day (late January), and Earth Day (April). Efforts are made to hold events on all five campuses. Aside from annual participation in Recyclemania, the Office of Sustainability has explored participation in Campus Conservation Nationals.*

Additional goals not listed in 2010 CAP

13) **Plant, maintain, inventory, and educate on trees and native plants**

Trees reduce a campus's energy use year round. In warm months trees shade buildings, provide evaporative cooling, and may significantly reduce HVAC use in that building. In cold months they block winds and, if deciduous, allow sun to hit buildings.

In 2011 Valencia College earned the prestigious Tree Campus USA status from the Arbor Day Foundation, and has received recertification of that status in 2012 and 2013. Only about 8 colleges and universities in Florida and about 200 colleges and universities nationwide achieve this certification.

Florida Arbor Day is celebrated in January. Tree planting events have been held for several years on East Campus. They began on West Campus in March 2012 with a Arbor Day Foundation grant for 100 large trees. Approximately 100 students participated in that event. In 2013 Arbor Day tree planting events were held on East, West and Osceola Campuses, and in 2014, these three campuses will be joined by the Lake Nona Campus.

For the Osceola Campus a master landscape plan was developed and small tree grants secured in 2012 and 2013 for planting events for Florida Arbor Day January 2013.

A study of tree populations in both the landscaped and natural areas of the four campuses was carried out in 2009. This data was used with the I-Tree Streets software suite to determine the potential for carbon sequestration and other environmental benefits provided by the various tree species.

Figure 2.29 Tree Inventory led by Biology Professor Patti Smith.

A sample or complete inventory of trees was developed and analyzed to quantify the number and types of species on East, West, Osceola, and Winter Park campuses. Data included measurements of the tree diameter, known as DBH (diameter at breast height), which is a forestry sampling measurement to determine the area that each tree occupies in the habitat or study area.

Figure 2.30. Tree labels have been installed with common name, scientific name and a QR code linking to information on the Sustainability website on the trees.

Data were incorporated into the I-Tree program, which assists in quantifying carbon dioxide reduction, energy conservation, air quality improvement, storm water control, and property value increases. The total quantity and type of tree species in the landscaped areas of East Campus, West Campus, Osceola Campus, and the Winter Park Campus were directly counted. The DBH of the trunk was measured for each tree.

Trees in the natural forested areas on East Campus and West Campus were counted and the DBH's were measured using the Point-Quarter Transect sampling method which provides a random sample of the tree population by measuring a smaller plot of the study area. The species counts and DBH's of the tree population of the natural area of the Osceola Campus was determined using a belt transect method. The total number of trees sampled from the landscaped areas and the tree population estimates from the field surveys were combined into one data set. The data was then entered into the I-Tree program, which determines the benefits of each of the tree species

Total number of trees inventoried in 2010 was 225 species and 21,143 individuals. Pounds of C02 sequestered by the college-wide trees are 3,966,991. The annual stormwater benefit of all trees total 58,280,728 gallons. Electricity saved as a result of these trees 749 (MWH) which is equivalent to $98,666.00. Other significant benefits include CO_2 sequestration of 45,524,614 pounds, and a variety of air quality exchanges.

- Total of 21,143 trees, comprised of a variety of 14 species.
- From this sample a total of 3,966,991 pounds or 1,799 metric tons of CO_2 was sequestered.
- The Annual Storm Water benefit of all trees totaled 58,280,728 gallons.
- Electricity saved as a result of these trees was 749 mega-watt hours (MWH), which equates to $98,666.00 in energy cost savings.
- Other significant benefits include CO_2 storage of 45,524,614 pounds.
- An extensive tree canopy of 9,961,070 square feet (approximately 228 acres).
- The total cost to replace these trees would be $30,017,290.
- Additional benefits include a variety of air quality exchanges that are derived for these trees.

14) **Maintain grounds with little fertilizer and pesticides**

Valencia recognizes the importance of stewardship of both the landscaped and naturally vegetated areas on the campuses, and that these areas can contribute to mitigation of the College's carbon footprint. Fertilizer application and runoff emits N2O, which is a potent GHG. The campuses have basically stopped applying any fertilizer by policy.

Table 2.8. Sustainability Education and Outreach Strategies, Milestones, Goals and Targets for Valencia College

Strategy	Milestones	Goal	Target Date
1. Student participation in the Sustainability Committee	Recruit 3-5 students to the Committee	Achieve equal representation of students, faculty and staff in Sustainability Committee.	December 2014
3. Continue Sustainability Website and Facebook page	1) Continually update 2) Make period posts for cross-posting of Facebook content on Valencia College Facebook page.	Maintain interactive educational website and Facebook page	Ongoing
4. Key Personnel Training and Certification	1) Identify key staff and outside training and certificate programs	Sign up staff signed up for appropriate training course(s) in 2012-2013 academic year.	December 2014
5. Basic Staff and Faculty Training	Internal training program for faculty and staff	100% of faculty and staff enroll and pass basic Sustainability course	December 2015
6. Sustainability curriculum integration	1) Develop curriculum standards 2) Research topic areas per department	Lesson plans submitted by 100% of departments for review and approval by VP Academic Affairs & Planning and Sustainability Committee.	June 2015
7. Update Strategic Plan and Mission statement to include Sustainability	Work with VP Academic Affairs & Planning	Modify Strategic Plan and mission statement to include commitment to Sustainability.	December 2014
8. Add a statement about Sustainability on all college materials	Sustainability statement or motto	Presence of motto in orientation materials, class syllabi and signs around campus.	June 2015

9. Install Conservation Signs	1) Choose focus areas 2) Create and post signs	Three focus areas and student participation in developing the signs	December 2014
10. Sustainability training/certificate programs	Program approval	Offer 1 training/certificate program at Valencia College beginning in academic year 2015-2016.	December 2016
11. Establish partnerships with local environmental organizations and government agencies	Event launch	Collaborate annually to develop 1-2 events with a local organization	Ongoing
12. Green Campus awareness week or competition	1) Planning Committee 2) Event Plan	Dedicate a minimum of one week annually to raising awareness around a Sustainability topic (i.e. energy, climate change, etc.)	Ongoing

2.5 MITIGATION SUMMARY

Valencia College has decided to adopt the goal to become climate neutral by 2060. To achieve this goal, Valencia College has set out a detailed roadmap with GHG reduction strategies that address transportation, energy, education and solid waste.

The GHG emission targets for the transportation, energy and solid waste categories are summarized in Table 2.7. Overall, Valencia College will aim to reduce its total baseline GHG emissions by 12% by 2015, 30% by 2025, 50% by 2040 and achieve 100% by 2060 (Table 2.12 and Figure 2.3). Note that carbon offsets will be critical to fully achieve climate neutrality by 2060.

Table 2.9. GHG Emission Reduction Targets for Transportation, Energy and Solid Waste at Valencia College

Year	Transportation Emissions Reduction Goal	Energy Emissions Reduction Goal	Solid Waste Emissions Reduction Goal
2015	10%	20%	15%
2025	25%	35%	50%
2040	45%	60%	75%
2060	85%	100%[8]	100%

Table 2.10. Overall GHG Emission Reduction Targets at Valencia College

Year	Emissions Goal [metric tons CO_2e]	GHG Reduction Goal from 2006 baseline
2015	46,571	12%
2025	36,950	30%
2040	25,337	52%
2060	4,751	100%*

[8] *Achieved with Carbon Offsets

2.4 TIER ONE and TWO GOALS

Table 2.11. Tier One and Two Actions Milestones, Goals, and Target Dates

Tier One Goals (These efforts contribute directly to GHG emissions reductions)

1) Transportation: Expand carpooling awareness with ReThink Your Commute and secure registrants and carpools, continue working toward safer bicycle and pedestrian access to campuses, support SunRail by working with ReThink to set up vanpools, and promote funding for a pilot East-West Campus Shuttle bus.
2) E-meeting Software usage: Encourage reductions in inter-campus commuting by training employees on Lync and GoToMeeting and encouraging utilization of these programs.
3) Greening of Fleet: Explore requiring departments to purchase only fuel efficient vehicles
4) Continue energy savings through Energy Education: Expand reduction in plug-load by the college community, with continued publicity and periodic competitions between offices or campuses over breaks. Continue strategic scheduling for room and building utilization. Continue recognition of Energy Heroes.
5) Lighting and other energy efficiency retrofits: Do calculations of ROI for all projects. Consider window retrofits and reduced hallway lighting.

Tier Two Goals (These efforts contribute to securing wider college-wide buy in for Sustainability efforts)

1) Expand Sustainability Across the Curriculum: Eventually all classes should contain some Sustainability content. Specific Sustainability classes can be developed, as the market for these grows.
2) Develop Green Office Program: This program recognizes departments or other office units that make BeyondBusiness As Usual efforts to reduce waste and energy.
3) Improve Sustainability of On-Campus Food Offerings: Request the College's food service to make changes toward more healthy options and more sustainable packaging. Work on RFP for new vendor or vendors that will start in June 2015.
4) Implement Green Revolving Fund: Savings from the Energy Education program, which is a low cost program involving a community wide effort, can logically go to salary increases. However, capital intensive technology-based energy efficiency measures need a stable source of funding. A grant from the Chevrolet Carbon Reduction Fund (a sale of carbon reduction credits) will provide $250,000 over 3 years and is intended as stimulus to create a Green Revolving Fund.

3.0 APPENDIX

3.1 Challenges of Obtaining Accurate Commuting Data

The number of parking permits, useful as an indicator of number of students driving to campus at many four-year schools, is not a valid measure at Valencia College. The College has no charge for a parking permit. Faculty and staff secure a parking permit to utilize marked Faculty/Staff Parking closest to the buildings, but student registration of vehicles is not actually required. Valencia College Security compiles counts of vehicles on each campus in the first three weeks of classes. However, many students drive to campus during the first three weeks and later adjust their schedules to visit less frequently, so to laboriously compile count data has not been considered productive.

To obtain commuting information, the 2010 Climate Action Plan utilized a student survey with 426 student respondents (approximately 1% of enrollment that semester). Only credit students were included in this analysis, since they were the main respondents to the survey. This commuting self-report information from 2009-2010 was used to estimate emissions for 2006-2008.

The following is an examination of the assumptions made in the 2010 CAP, and additional commuting information based on survey data, Institutional Research data, and anecdotal information:

Student trips to Campus

Valencia College students travel to campus mainly for classes, and often hold a job offsite. A limited number of students stay on campus during the day to use computers, study with classmates, and participate in club activities. Campus life at a community college like Valencia College is very different from that at a residential 4-year college or university.

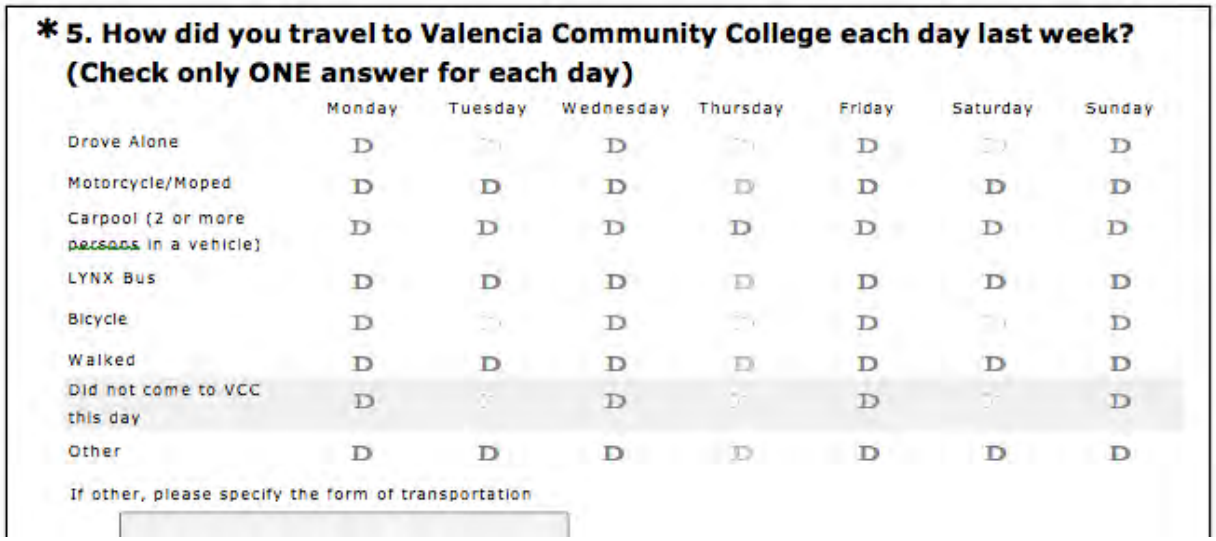
Tuesday and Thursday are days when the most students are on campus, followed by Monday and Wednesday, with least campus visits on Friday.

The student Transportation survey in 2010 included the answer possibility “Did not come to VCC this day”.

Based on the aforementioned limited survey data, EcoAsset Solutions estimated that 2.69 student trips were made to campus each week.

Valencia College students include Credit, Educator Preparation Institute, Postsecondary Adult Vocational, Continuing Workforce Education, and Continuing Education, all of which have different commuting patterns. For the 2010 CAP, only credit students were included in the commuting analysis since they were the main respondents to the survey.

Figure 3.1 Survey Question from 2010 Student Transportation Survey



*** 5. How did you travel to Valencia Community College each day last week? (Check only ONE answer for each day)**

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Drove Alone							
Motorcycle/Moped							
Carpool (2 or more persons in a vehicle)							
LYNX Bus							
Bicycle							
Walked							
Did not come to VCC this day							
Other							

If other, please specify the form of transportation

EcoAsset Solutions suggested that trips to campus (and the total emissions from commuting) would be higher than presented in the 2010 CAP, since data included only credit students.

Data from Institutional Research indicates a significant percentage of students *travel between campuses*, which adds additional vehicle miles traveled. There is currently no shuttle and it takes typically 2 hours to travel between East and West campus by bus. In 2013 24.3% of all students took courses on more than one campus within the same year (up from 21.5% in 2012).

At the same time, the number of course sections taught online had risen 5-fold by 2011 to over 20% and hybrid courses also are increasing, which reduces trips to campus by students and faculty.

With the many uncertainties involved and the need for consistency from year to year to show general trends, this CAP Update has accepted the earlier estimate of 2.69 student trips per week.

Student mode of travel

LYNX, the local bus company, provided ridership counts for the four bus lines serving the three largest Valencia College campuses. However, since all routes to Valencia College are not direct and include riders in addition to Valencia College students and employees, ridership data is difficult to use.

In 2013 two student surveys regarding commuting were developed using Qualtrics and administered through Atlas email by the Office of Sustainability. The first was in Summer Term 2013 administered only to East and West Campus students with 3000 respondents and another in Fall Term 2013 to all students (with 1275 respondents making up 3% of the approximately 40,000 Fall Term 2013 credit students). The survey included the question, "What is your usual mode of transportation to and from campus?"

Table 3.1. 2013 Student Survey responses: Usual Mode of Travel to and From Valencia College

#	Answer	Response May 2013	%	Response Aug 2013	%	Corrected Average Response
1	LYNX bus	331	10%	131	10%	10%
2	Driving Own Vehicle	2,387	75%	861	68%	73%
5	Dropped Off By Family or Friend	277	9%	186	15%	10%
3	Carpooling With Other Students	124	4%	70	6%	4%
4	Bike or Walk	56	2%	24	2%	2%
	Total	3,175	100%	1,272	100%	4,447

Combined results of the two 2013 surveys indicate that *73% of students drive their own vehicles to school,* 10% travel by LYNX bus, 4% carpool with other students, 2% bike or walk, and 10% are dropped off by family or friends.

Student Commuting Distance

EcoAsset Solutions used results of the 2010 survey and anecdotal information and came up with the average number of *20.8 miles traveled round trip* by students in their own vehicles and 4.6 by bus.

Valencia College's Institutional Research (IR) provided a map of student address coordinates, which shows that students attending Valencia College live at addresses scattered throughout Central Florida, including a surprising number in Seminole County.

Data from IR from Fall 2011 indicates an average 11.7 miles or round trip 23.4 miles. The estimate of 21 miles from the 2010 CAP has been considered adequate to use again for this CAP Update.

Table 3.2 Mean Distance and Time to Class at Valencia by Campus and College-wide, Fall 2011 (from Institutional Research)

Campus	Commuting Students	Average Miles	Average Minutes
West	15285	12.7	21.9
East	13805	11.2	19.7
Osceola	7904	11.1	22.2
Winter Park	1927	10.3	19.9
College	38921	11.7	21.1

To arrive at total annual vehicle miles, average mileage per week for students was multiplied by an estimated number of trips per week, by the total weeks per year for the semester, and by total student population per semester. Data is broken down by semester, and the weeks of each semester are 15 for Fall and Spring semesters and 12 for Summer Semester.

Table 3.3. Estimated Commuting Miles by Students 2006-2012

Semester	Student Enrollment	Trips/Week	Weeks/Year	Miles/Trip	Total Distance [Miles]
2012					
Fall	42,735	2.69	15	21	36,211,502
Summer	20,887	2.69	12	21	14,158,880
Spring	40,808	2.69	15	21	34,578,659
				Total	**84,949,041**
2011					
Fall	42,987	2.69	15	21	36,425,034
Summer	22,932	2.69	12	21	15,545,144
Spring	40,744	2.69	15	21	34,524,428
				Total	**86,494,607**
2010					
Fall	41,517	2.69	15	21	35,179,430
Summer	26,897	2.69	12	21	18,232,938
Spring	38,318	2.69	15	21	32,468,757
				Total	**85,881,126**
2009					
Fall	38,993	2.69	15	21	33,040,719
Summer	23,684	2.69	12	21	16,054,910
Spring	38,318	2.69	15	21	32,468,757
				Total	**81,564,386**
2008					
Fall	35,433	2.69	15	21	28,079,182
Summer	20,451	2.69	12	21	12,794,660
Spring	31,077	2.69	15	21	23,979,148
				Total	**64,852,990**
2007					
Fall	32,648	2.69	15	21	25,872,185
Summer	18,039	2.69	12	21	11,285,652
Spring	28,429	2.69	15	21	21,935,940
				Total	**59,093,777**
2006					
Fall	30,037	2.69	15	21	23,803,076
Summer	17,037	2.69	12	21	10,658,775
Spring	27,575	2.69	15	21	21,276,990
				Total	**55,738,841**

Employee trips to Campus

Estimates of trips to campus by employees per week (4.75) and weeks per year (42) from the 2010 CAP both have a significant degree of inaccuracy, as explained below; however, until additional data can be generated, these estimates have been carried forward in this CAP Update. In 2012, number of staff (1779) was approximately equal to faculty (1755). There were 946 full time and 833 part time staff members (including Work Study students) and 502 full-time and 1253 part-time faculty.

EcoAsset Solutions estimated 4.75 trips per week by employees (reduced from 5 to account for the staff members who work 4 days a week and faculty who also may work 4 days per week or less)

This estimate was based on results of a 2010 online survey with a 35% response rate including primarily Full-Time Employees. The percent of instruction delivered by part time (adjunct) faculty has continued to rise (to 71% in 2012), although Valencia College has recently renewed its commitment to reverse this trend. Adjunct faculty members do not hold office hours and are unlikely to commute to campus daily.

Consequently the 4.75 estimate for employee trips per week is high for faculty (when part-time instructors/adjuncts and online instructors are included). However, it appears fairly accurate for staff. Part time staff includes Work Study students, many of which fit in work along with class and would typically be on campus 4 days a week. Overall, the estimate of 4.75 trips per campus is high.

Weeks per year

Full-time faculty may not work in Summer term and if they do, they have several weeks of vacation after summer term ends. Faculty members also have nearly three weeks off at winter break. Therefore EcoAsset Solutions as an estimate of employee weeks/year used 42 weeks.

Non-instructional staff works all year except the two weeks at winter break and one week at spring break, i.e. 47 weeks. The 42 weeks appears accurate for faculty but is low for staff.

Miles per trip

Miles per round trip were estimated by EcoAsset Solutions based on the 446 employees who responded to the 2010 survey as 26 miles per round trip, and for consistency this estimate has been carried forward into this update.

Of the 1680 full or part time employees in 2013, 530 or about 32% of them live more than 15 miles from their home campus, according to Institutional Research data. Emails of these 530 employees were obtained from IR, and a Qualtrics survey was sent to them.

> Employees are estimated to visit campus 4.75 times per week (high for all categories of employees) for 42 weeks (low for staff) for 26 miles round trip. These estimates from EcoAsset Solutions are carried forward for the 2012 GHG survey and this CAP Update in absence of more accurate commuting data.

Employee Mode of Transportation

This 2013 survey generated the following information on Employee Commuting Habits (Table 3.3). Since this data set consisted of employees living 15 miles or more from their home campus, the number of respondents who Bike or Walk was artificially low. The survey was to benchmark experience and attitudes toward carpooling/ ride sharing, so all employees surveyed were staff members, not faculty. Faculty is

anticipated to have an even higher rate of single vehicle transport to campus than staff due to their irregular schedules.

Table 3.4. 2013 Staff Survey responses: Usual Mode of Travel to and From Valencia College

Drive Own Vehicle	96%
Carpool With Other Employees	2%
Dropped Off By Family Member or Friend	1%
LYNX bus	1%
Bike or Walk	0%
Total (225 Valencia College staff members)	100%

Estimating GHGs from vehicle miles traveled

Methodology from the Clean Air-Cool Planet Campus Carbon Calculator tool was used to estimate total greenhouse gas emissions for employees and students in the 2010 CAP. While that study separately calculated a percentage of emissions from diesel vehicles, this CAP Update finds the percent of diesel vehicles used by employees and students to be low enough to ignore in calculations.

Total miles traveled were multiplied by 22.1 mpg, the average fuel efficiency provided by the U.S. EPA website.

The calculation for total CO_2e emissions did not include methane and nitrous oxide. However, these emissions generally represent a very small fraction of the overall CO_2e emissions. The Clean Air Cool Planet methodology also does not differentiate between miles driven in the city versus the highway. Since Valencia College is located in an urban area, emissions are likely to be higher than a rural campus due to the fact that city driving takes more time and thus more gas to drive per mile.

Table 3.5 Employee and Student Commuting CO_2e emissions 2006-2012.

Population	Vehicle Miles Traveled	Fuel efficiency (MPG)	Gasoline consumption (gallons)	CO2e (Metric tons)
2012				
Employees	7,744,191	22.1	350,416	3115
Students	84,949,041	22.1	3,843,848	34,172
Total				37,287
2011				
Employees	7,168,434	22.1	324,364	2,884
Students	86,494,607	22.1	3,913,783	34,794
Total				37,678
2010				
Employees	6,997,263	22.1	316,618	2,815
Students	85,881,126	22.1	3,886,024	34,547
Total				37,362
2009				
Employees	6,841,653	22.1	309,577	2,752
Students	81,564,386	22.1	3,690,696	32,810
Total				35,562
2008				
Employees	6,587,490	22.1	298,076	2,650
Students	64,852,990	22.1	2,934,524	26,088
Total				28,738
2007				
Employees	6,380,010	22.1	288,688	2,566
Students	59,093,777	22.1	2,673,927	23,771
Total				26,337
2006				
Employees	6,260,709	22.1	283,290	2,518
Students	55,738,841	22.1	2,522,120	22,422
Total				24,940

Table 3.6. August 2013 Student Comments and Questions regarding ReThink Your Commute

Carpooling is a good thing.
Commuting with others is an awesome way of helping the environment and I agree with it 100%
Cost of program?
How can I know that I trust them? Is there a background check? ralston3
How does it work?
How safe and efficient is it
I am from Cali. So I know there is a lot of Carpool there. But my trust with a stranger is high up there.
old male student does not get matched up for carpool with a 19 year old female student just because they live near each other? What if the 19 year old student is a sex offender? What if the 19 year old student is part of a gang? What if the 19 year old student is carrying a weapon? What happens when the 19 year old student drives somewhere the 37 old male student does not want to go? What if the 35 year old student gets raped? Do they tell the organizer of the carpool so they get a new car group to ride with? Is Valencia College going to install a blue light emergency phone in each vehicle? What happens when a white student has to drive their nice car into a black neighborhood? Black people do not like white people in their neighborhoods and vice versa. Despite Valencia's effort to promote cultural competence, racial tension is prominent and neighborhoods are still segregated and when you send students into neighborhood's they are unfamiliar with and don't belong, problems can arise. The student government and Valencia College should be focused on what is going on inside the classrooms. Organizing carpools for outside the classroom is a waste of time and puts students at risk. Carpools increase the chances of assaults, rapes, and other violent crimes. This is the worst idea I have heard in a while and I am surprised Valencia college would even consider this idea given how much liability is involved.
I don't have a vehicle yet
I just think there should be more parking... This is ridiculous.
I think this is a great idea! Haven't heard much about it, but would like to get more information on it. -
I will check out the site to see if it's something I can do this semester
I will look into it before I decide if i am interested. I am attending 2 campus's and I work full time.
I will think about it and contact ReThink via their web site if I decide to use them.
I work full-time and will be coming from work. Also my daughter has volleyball games on some of the days I have class so my schedule is very hectic so there is no way I can car pool.
I would like to know more about ReThink.
Is this program safe?
Is this safe? Who will pay for transportation, gas?
It sounds like a good program, but since one is going to ride with a total stranger I don't feel secure. Do you run a background check on people that enroll on this program?
My problem is not getting from home to campus, as your questions imply, but from getting from West campus to East campus. If you were to set up carpooling between campuses, that would be more helpful.
My sisters goes to the same campus so we carpool with one another
No way!! I rather myself to make sure that I do get to school on time and I do not arrive here on campus completely stressed out from using a car pool!!
Not interested in depending on someone else
Possible commute to East campus on Wed afternoon
this is a great idea, especially if it's cheaper than taking the bus, but my parents won't be comfortable with me taking rides with other students. (So I wouldn't be allow. just something to think about.)
Under what program do we as a Valencia Student enroll in the program? What are the details?
Very interesting, good luck!
What do I have to do?
What is consisted an emergency ride?
What times does it (if it) goes through my area?
the east campus but many of my degree classes are at west campus and I do not have the transportation means to travel to the west campus.

Table 3.7. December 2013 Sustainability Across the Curriculum (Faculty) Graduates Suggestions

More with recycling
Last time I taught on East campus all of the rooms had a container for paper recycling, can we get that for Winter Park? Also, the students at Winter Park still throw most of their recycling into the classroom wastebaskets in the upstairs classrooms as there are few, if any recycling containers on their way out. Could we put a few more containers in the halls upstairs?
Take the junk out of the campus food service.
Each campus should have a sustainability coordinator who works directly with the director (Dr. Green) to help implement more localized and on-site initiatives.
Requiring the Environmental Science course for graduation
Perhaps utilize the same techniques that are used to roll-out the college's strategic plan. Also consider using "sound bites", twitter.com, or YouTube (for commercials).
More active involvement of all departments in some way or other.
Sustainability should be a separate course for those who have an interest.
I would welcome collaboration between division action plans and the concepts of sustainability. It's sad but true that a bit of requirements for accountability may be needed to foster more impact with the work.
Make all pertinent information about Sustainability available to all FSS (Faculty, Student, and Staff) and invite them to inform their communities about its importance to present and future generations

Table 3.7. Continued. December 2013 Sustainability Across the Curriculum (Faculty) Graduates Suggestions

Yes, how about having the Business department find businesses that do not utilize recycling, such as Payless Shoes. I just discovered that their shoe boxes are broken down but not recycled and thrown into regular trash instead of cardboard recycling. What if they did a project on what businesses were most "green" and which were the least "green?"
Possibly more advertising to students
I'd like to see roof gardens and converting to LED light fixtures. Battery recycling drop-offs at every campus.
Ban the sale of bottled water on campus.
It has recently been brought to my attention that several campuses across the U.S. say they support sustainable practices, yet have fossil fuels in their invest portfolios. Students are going to their academic presidents asking the schools to divest. I do not know what investments Valencia has in its portfolios, but if we have anything supporting fossil fuels, we should divest. Fossil fuel extraction degrades the environment, when burned, produce pollutants, destroys upper ozone (allowing UV light to penetrate), creates lower atmospheric ozone (causes lung lesions, asthma, cancer), and accelerates global climate change. Thus, if we are truly going to be sustainable, we need to do so in all aspects, including the more obscure element of investments.
I think continuing to include more faculty, staff and students as part of the data collection and dissemination ""team"" will help everyone think of Sustainability as just part of what Valencia does."
Composting and a student garden.