Delta College

sustainability

Delta College master plan for climate action

January 2010

index

from the president

Delta College's colors are two shades of green. With these school colors we have always felt our founders provided us with a philosophy.

It's a philosophy that says taking a campus-wide approach to sustainability is doing the right thing for future generations. It's a philosophy that can be seen in the new 600 carbon dioxide-absorbing trees that have been planted across campus, in the solar-powered pedestrian crossing signs, in the LED parking lot lights that use less energy, and in the walnut grove where students can gather in an outdoor classroom. It's a philosophy that has worked its way into everything we do from how we approach building projects and how we develop academic programs to how we interact with our community.

For Delta College this philosophy has long been a guiding standard. We trace its beginning to actions taken when doing such things was called conservation or eco-friendly, and sustainability was a trend of the future.

For years we have been gathering data on recycling and other actions we've taken in this direction, but this is the first comprehensive report we've complied measuring our actions that both directly and indirectly impact carbon output. Through the process we've developed a keen awareness of the interconnectedness of the social, environmental, and economic aspects of sustainability. We look forward to sharing this knowledge with our campus community and our community of neighbors because we continually look to expand our efforts.

One area we're expanding that gives Delta College great pride is the student component of our sustainability efforts, because we believe in the multiple effect of a single action. Does one student carpooling with another make any difference? Does devising a beyond-compliance system to filter storm water on its way to the Great Lakes truly have an effect on our communities? Does interaction between students and clients during a service learning visit to a local woman's shelter open minds? Yes! Working together we can change the world.

I invite you to review our plan, contact us with input or questions, and to take a moment to consider how you might make a change for the better.

Sincerely,

Jean Goodnow, Ph.D.
President

executive summary

The campus community at Delta College has embraced sustainability. As an educational institution, we are aware of our unique position not only to provide by example, but to act as a leader to future generations. We have the opportunity to share our knowledge and recognition that the choices we make have an impact on the environment and our own health and quality of life.

Long before greening and sustainability were buzzwords, conservation, efficiency, and recycling were standard operating practices based on efficiency, cost savings, and environmental awareness. This history of successful environmentally-conscious ventures has evolved into a holistic approach to campus sustainability. Our goal is to systematically incorporate sustainable practices and decision processes throughout our operations and academic curriculum and to serve as a catalyst for awareness and education throughout the College community.

As a signatory to the American College & University President's Climate Commitment (ACUPCC), Delta College has agreed to initiate activities designed to move the campus towards climate neutrality. A climate neutral institution acts proactively to offset its activities that produce carbon releases into the atmosphere.

This Sustainability Report Plan for Climate Action is a dynamic document intended to provide a roadmap toward a sustainable campus. Delta College is committed to reducing its carbon footprint while planning for future growth and development. This plan will specifically target our campus carbon footprint with consideration for the improvement of the local environment and the quality of life in Michigan.

This document focuses on activities, practices, and processes which directly impact campus greenhouse gas emissions and those which indirectly may influence its carbon footprint including:

- **Operations** - buildings, transportation, waste management, dining services, grounds, energy, and purchasing
- **Education** – curriculum, co-curricular education, and faculty/staff development and training
- **Administration & Finance** – sustainability infrastructure, investment, and planning
- **Community Relations & Partnerships** – student outreach and community partnerships

Because these areas are interconnected individual elements may be referenced in different context throughout this document. This plan also considers:

- Reports and data compliant with the requirements and recommendations of ACUPCC
- Summary and details of our baseline reports
- Development of sustainability across all areas of campus life
- Initiatives, progress, and goals for areas of indirect CO_2 influence

This report tracks initiatives that reflect sustainability's Triple Bottom Line of economic, environmental, and social aspects on the one square mile of the Delta College main campus property over a nine-year period from FY00 through FY08.

Long before greening and sustainability were buzzwords, conservation, efficiency, and recycling were standard operating practices at Delta.

Key findings include:

- Through the nine year greenhouse gas (GHG) inventory, building space grew by nearly 195,000 square feet (20%) and our student population increased by 21%. Even with this steady growth, our campus carbon footprint increased only minimally—about 2,000 metric tons or 8%. This can be attributed to energy-conscious building renovations, greater reductions and diversion of waste materials, campus outreach campaigns, and the increased environmental awareness of our campus community.
- Delta College Scope 3 emissions (commuting, air travel, solid waste, and waste water) for FY08 totaled 9,369 MT CO_2 . This is comparable with the average emissions for other Associate Degree institutions (9,325 MT CO_2).
- Delta College FY08 gross emissions per 1,000 square feet were calculated at 25.8 MT CO_2. This is comparable with the average gross emissions for other Associate Degree institutions (27.26 MT CO_2).

The Sustainability Report for Climate Action has been designed to allow for growth of our infrastructure, flexibility to meet the needs of our student and staff population, and the ability to embrace new technologies as they emerge in this expanding and exciting industry. Achieving sustainability will be ever changing and will evolve as we develop an increased awareness of social, economic, and environmentally friendly practices both within the college and throughout the communities in which we live.

Delta incorporates environmental research into it's class structure. Here, students collect water samples to take back to the lab.

our profile

Delta College is a comprehensive community college located on a 640 acre campus in Bay County, Michigan. Since opening in 1961, Delta College has provided educational opportunity to residents primarily located in three counties, Saginaw, Midland and Bay. This tri-county area is one of the major concentrations of population within the state. The most recent census reports indicate an area population of approximately 400,000. The College is centrally located within the district and the main campus lies midway between the three counties' major cities. This triangle forms the heart of the Saginaw Valley area and is adjacent to the Saginaw Bay. In addition to the main campus, Delta College also has a major center in each county including the Planetarium and Learning Center in Bay City, the Ricker Center in Saginaw, and the Midland Center.

Over 16,000 students attend classes each year, producing over 230,000 credit hours. There is no typical Delta College student. Students differ considerably in their ethnic, social, and economic backgrounds and their educational goals. Most students (84%) reside in the tri-county district and they typically work full or part time and attend college on a part time basis. Our campus does not operate residential housing and is essentially, a commuter campus.

Delta's campus is surrounded by miles of trails in 436 acres of woodlands.

	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Building Space									
Gross Square Feet of Building Space	773369	868720	868720	868331	868331	965505	966099	966826	967823
Population									
Total Full-Time Student Enrollment	5607	5576	6100	6284	6446	6537	6632	6648	7123
Full-Time Commuter Students	4467	4421	5028	5289	5393	5634	5663	5867	6318
Part-Time Commuter Students	9625	9571	9759	9444	9547	9231	9124	8912	8796
Non-Credit Students	1724	1521	772	986	1093	925	755	1001	924
Full-Time Faculty	203	205	215	215	218	223	211	215	211
Part-Time Faculty	260	239	276	259	255	279	300	289	300
Full-Time Staff	371	366	363	371	326	318	315	3612	306
Part-Time Staff	50	74	89	105	106	114	211	119	120
Notes									
2000/01 Major campus renovation increased square footage by 95,351.									
2002/03 Removed campus out building; added new Process Training Plant resulting in -389 sf.									
2004/05 Major campus renovation increased square footage by 97,174 which included significant energy conservation updates.									
2006/07 Renovations resulting in additional 727 sf.									
2007/08 Added 99 square feet (A Wing and Farmhouse Garage)									

our commitment

The College's commitment to a sustainable campus is evident by its inclusion of sustainability in its principles and strategic process.

Guiding Principle

With our educational resources and power of influence over future generations, Delta College is an ideal environment from which to live and promote sustainability. In May 2009, the Delta College Board of Trustees supported a recommendation by the Delta College Senate to revise Senate Policy 1.007 to incorporate sustainability into our Guiding Principles.

Delta College is committed to promoting learning, actions and practices that incorporate social, environmental, and economic sustainability in our communities.

- Socially focused education develops student understanding of social justice and equity, encouraging involvement at the local level while considering the global population.
- Environmentally focused education ensures that students understand the ecological processes and how our choices affect the environment.
- Economically focused education teaches that business can be structured to be sufficiently profitable without generating financial profit at the expense of the ecosystem or local and world communities.

Academic Quality Improvement Process (AQIP) Action Plan

The AQIP Strategic Planning Steering Committee has adopted sustainability as a Strategic Priority under the 3.1 Strategic Focus Area 'Using all resources in an efficient and sustainable way' with the specific strategic initiative to implement a comprehensive institutional effectiveness program; proactively increase the efficiency of resource use to financially support the achievement of our mission; and to develop a comprehensive plan to achieve climate neutrality. In doing so, it was assigned as an Action Project for both the 2008/09 and 2009/10 academic years.

Academic Quality Improvement Process (AQIP) Distinctive Objective

The AQIP Strategic Planning process adopted sustainability as a Distinctive Objective for its Systems Portfolio. Sustainability is one of nine categories the college is in the process of developing for review by the Higher Learning Commission in October 2010. This portfolio constitutes the first step toward an official request for reaccreditation with the eventual submission of a second systems portfolio by October 2013.

our planning tools

In seeking to establish a firm foundation upon which to build a sustainable campus, Delta College relies on three components on which to base decisions, projects, and process.

The Triple Bottom Line

Consideration for Social, Environmental, & Economic Factors

The three legged stool metaphor is often used to illustrate the interdependence of the three main aspects of sustainability. The legs represent the environmental, social, and economic factors. If the stool is to function over the long term, each leg must be of equal length. If one of the factors does not have equal consideration, the stool will fail.

At Delta College, we've adopted the Triple Bottom Line model to lead us in making sound sustainable decisions. For many people, sustainability translates into being "environmentally friendly", but it is broader than that. It represents much more than reducing waste, protecting wildlife or recycling. The Triple Bottom Line reminds us that finance intersects with the environment and with the best interest of society. In other words, it reminds us of the connection between people, planet, and profit. The closer we move to true sustainability—the centerpiece of the Triple Bottom Line-the more just, healthy, and prosperous we are as a society. The Triple Bottom line is recognized and respected by both ACUPCC and STARS.

American College & University President's Climate Commitment (ACUPCC)

Long-Range Planning Toward Climate Neutrality

ACUPCC is a high-visibility effort to promote campus sustainability and address global warming. The goal of ACUPCC is to elicit institutional commitment to reduce campus gas emissions and to accelerate research and educational efforts to equip society to re-stabilize the earth's climate. ACUPCC partners, Clean Air-Cool Planet and US Green Build, have also been instrumental in helping Delta College to achieve our goals. The College joined ACUPCC as a Charter Signatory in September 2007 with the pledge to:

- Establish an institutional structure to oversee the development and implementation of the college's program in compliance with ACUPCC requirements.
- Complete an emissions inventory within one year of signing.
- Establish a climate action plan.
- Take immediate steps to reduce greenhouse gas emissions with tangible actions.
- Integrate sustainability into the curriculum and make it a part of the educational experience.
- Make our climate action plan, inventory, and progress reports publicly available.

Sustainability Tracking & Rating System (STARS)

Framework for Gauging Sustainability Progress

STARS is a tool offered by AASHE with guidelines by which institutions may measure themselves and qualify for levels of recognition of accomplishment. The program is a voluntary, self-reporting framework for gauging relative progress toward sustainability among higher education institutions. STARS is designed to:

- Provide a guide for advancing sustainability in all sectors of higher education, from education and research to operations and administration.
- Enable meaningful comparisons over time and across institutions by establishing a common standard of measurement for sustainability in higher education.
- Create incentives for continual improvement toward sustainability.
- Facilitate information sharing about higher education sustainability practices and performance.
- Build a stronger, more diverse campus sustainability community and promote a comprehensive understanding of sustainability that includes its social, economic, and environmental dimensions.

our progress

Practices, projects, and decision processes based on sound environmental practices, efficiency and cost savings—the 'right thing to do—have been incorporated throughout our operations for many years. In recent years, increased institutional support has offered opportunity for our campus to progress steadily toward a sustainable campus.

2007

- Delta College shares the distinction as one of five Michigan signatory colleges to the American College & University President's Climate Commitment (ACUPCC). The first year requirement is fulfilled by adopting two policies—Sustainable Business Design Policy Guidelines and Sustainable Purchasing Policy.
- To guide the development of a sustainable plan, a Sustainability Task Force is convened. The group of faculty and staff, assigned by the President, bring forward 26 recommendations to instill a culture of sustainable long-range planning and forward-thinking design.

2008

- Task Force recommendations are presented at a campus community Green Summit during which sustainability is introduced and ideas are invited.
- A Sustainability Office, a partnership between Administration/Operations and Academics, is established.
- AQIP Steering Committee elects sustainability as a 2008/09 Action Project.
- A comprehensive GHG Inventory for the main campus spanning 1999-2008 is completed.
- Participation in the STARS pilot which will assist in benchmarking our progress toward a sustainable campus.
- As a method to reduce our campus carbon footprint, a four-day work week (Green Fridays) is piloted.

2009

- The Academic Sustainability Team, a faculty resource group, is convened to begin the development of a sustainable curriculum.
- Sustainability is added as a college Guiding Principle.
- AQIP Steering Committee elects sustainability as a 2009/10 Action Project.
- AQIP Strategic Planning process adopts sustainability as a Distinctive Objective for its Systems Portfolio.
- The four-day work week is expanded beyond the pilot to a ten week program.

2010

- Sustainability Report for Climate Action is crafted.
- GHG inventory to be completed for 2008/09 and 2009/10.
- Benchmark our progress via STARS 1.0 as a Charter Participant.
- Development of courses that incorporate sustainable concepts and establish sustainable curriculum.
- Wind Energy Program to be expanded to encompass broader scope of an alternative energy curriculum.
- A four-day work week established for 11 weeks through Spring / Summer semester.

sustainability office

Sustainability & Risk Mgmt Coordinator

- Administrative
- Operations
- Auxiliary Services

Academic Sustainability Officer

- Curriculum Development
- Academic Sustainability Team

Student Employees

- Student Outreach
- Office Support
- Eco Rep Program

The Sustainability Office, established in July 2008, is staffed with representation from administration, academics, and the student population. Our sustainability website, www.delta.edu/sustainability, includes academic, operations, student leadership, campus-wide, and community endeavors.

Delta College maintains membership with several organizations specifically focused on sustainability in higher education including:

- American College & University President's Climate Commitment (ACUPCC)
- Association for the Advancement of Sustainability in Higher Education (AASHE)
- Michigan Business Pollution Prevention Partnership (MBP3)
- US Green Building Council (USGBC)

Delta's Sustainability Office is staffed with administration, academics and the student population.

Additionally, because a greater number of organizations are incorporating sustainability into their existing structure, many of the College's memberships have elements of sustainability including:

- Association of Higher Education Facilities Officers (APPA)
- College University Personnel Assn (CUPA)
- Fair Labor Association (FLA)
- International Print Management Association (IPMA)
- Michigan Association of Physical Plant Administrators (MiAPPA)
- Michigan Public Purchasing Officers Association (MPPOA)
- National Association of College Auxiliary Services (NACAS)
- National Association of College Stores (NACS)
- National Association of College & University Business Officers (NACUBO)
- National Association of College & University Food Services (NACUFS)
- National Association of Educational Procurement (NAEP)
- Responsible Purchasing Network (RPN)
- Society for Human Resources Management (SHRM)
- Used Textbook Association (UTA)

our baseline reports

Our baseline reports, data gathering initiatives which best reflect the current environment of our campus as it relates to sustainability, include:

- Sustainability Task Force Priority Report (2007/08)
- Spring/Summer Four Day Work Week Schedule (2008 & 2009)
- Sustainability Tracking & Rating System Pilot (2008)
- Greenhouse Gas Inventory (FY00 – FY08)

Each of these reports is made transparent to the public at www.delta.edu/sustainability.

Sustainability Task Force Priority Report (2007/08)

In 2007, a Sustainability Task Force, a representative group of faculty, staff, and students, was charged with advising the President on matters pertaining to the environment and sustainability as it directly relates to Delta College in order to:

- engage the college in an ongoing dialogue about environmental sustainability.
- integrate sustainability with campus programs in education, operations, and community service.
- instill a culture of sustainable long-range planning and forward-thinking design.

To encourage a thorough evaluation of the broad spectrum of sustainability and to consider its implications to the triple bottom line, the Task Force employed STARS categories as a template. Each category was reviewed to determine existing programs, initiatives in the planning process, and areas of potential future development.

In Spring of 2008, the Task Force prepared a series of recommendations including strategies for implementation. Following is a summary of those recommendations. The status recorded is per the date of this Sustainability Report. The category code is reflective of those included in the STARS Pilot initiative.

(See recommendations by priority on next page).

Sustainability Task Force 2007/08 - Recommendations by Priority

Category: GF=Governance/Finance, ER=Education/Research, FM=Facilities Mgmt/Operations, SR=Social Responsibility/Community, PB=Purchasing/Business, IN=Innovation

Status: I=In Progress, C=Complete, F=Future, O=On Going

Status	Category	Recommendation
Priority 1		
C	GF	Establish an Office of Sustainability with representation from administration and academics.
C	GF	Establish permanent funding for sustainability office.
O	GF	Develop Sustainability Implementation Plan for each initiative (determine baseline statistics, set goals, track progress, establish measurement criteria, report progress).
C	FM	Conduct comprehensive greenhouse gas emission inventory.
C	ER	Make baseline student survey more widely available to the student body and develop follow up surveys to illustrate trends.
C	GF	Expand Facilities EverGreen website to include all academic, student, campus-wide, and community endeavors.
F	GF	Establish a Sustainability Advisory Board whose function will be to insure adherence to the sustainability recommendations and implementation plan.
I/O	ER	Provide resources for the development of a course(s) in sustainability that encompasses social, environmental, financial aspects.
O	ER	Develop professional opportunities through COS to teach sustainability concepts to faculty and staff. Offer sessions to faculty to illustrate methods and strategies for incorporating sustainability into academic courses.
O	IN	Promote best practices and highly recognized programs by seeking opportunity for sharing through presentations, papers, and other opportunities to allow Delta College to grow as a leader in the community, among other educational institutions, and in the sustainability movement.
Priority 2		
C	ER	Develop a comprehensive marketing plan and method of delivery.
I	FM	Investigate funding and in-kind donations to continue current University Center Trail development. Continue planning to add future routes to surrounding tri-city communities.
	GF	Reserve proceeds as a direct result from sustainability initiatives for application toward future sustainability projects.
C	FM	Install bike racks as indicated by master landscape plan.
C	GF	Create and adopt college specific definition of sustainability which also incorporates established global parameters to guide all college endeavors as we engage sustainable concepts and projects.
Priority 3		
I/O	ER	Provide funding for student-based activities that support the college's goals for sustainability
I/O	ER	Promote research in the area of sustainability with the aid of Administrative Services for project funding opportunities.
F	SR	Investigate Bookstore products bearing the college's logo or identification for verification to ensure production under fair conditions.
F	SR	Investigate all goods purchased for special promotions and service area use which bear the college's logo or identification for verification to ensure production under fair conditions.
I/O	PB	Investigate current servery materials and product packaging for recovery and recycling opportunity. As industry becomes more receptive to the demands of consumer needs and products become more available, evolve towards a more sustainable servery product line.
I/O	FM	Conduct a comprehensive evaluation of waste stream for all recyclable materials to strive for maximum material transfer from waste stream to recycling. Each material for associated costs (need, procurement, JIT inventory, disposal) and analyzed for reducing quantity vs. recycling greater quantity.
I/O	FM	Evaluate all project construction materials for recycling and reuse. We further recommend review of purchasing, procurement, inventory, and storage policies. Analyze division, service area, and department buying trends and promote reduced consumption of goods and materials.
F	PB	Establish a baseline percentage of goods purchased by the Bookstore that conform to fair labor practices and work to increase this percentage annually.
Priority 4		
F	GF	Consider incorporating sustainability as criterion within existing award structure.
I/O	FM	Evaluate office design and reconfigurations to incorporate product reuse to the greatest degree with consideration for the triple bottom line. As sustainable products become more available, evolve towards purchasing relationships with companies supporting sustainable manufacture and delivery of product and who employ the triple bottom line.
I/O	FM	Evaluate and continue to incorporate green cleaning process, product, and policy into current program. Consider application as in-house green cleaning team to benefit point accumulation for potential and future LEED construction projects. Certification would also serve as professional development for the custodial staff.
I/O	PB	As industry becomes more receptive to the demands of consumer needs and products become more available, evolve Business Services policy to more stringently adhere to the triple bottom line.
I	FM	Consider replacement of campus fleet vehicles with hybrid vehicles as budget permits.
I	FM	Investigate shuttle/bus or other mode of transport for students in tri-county area.

Spring/Summer Four Day Work Week Schedule (2008 & 2009)

A four day work week during Spring/Summer semesters was a campus initiative to reduce our campus carbon footprint, without decreasing the level of education and services provided. First piloted for four weeks in the summer 2008 (July 11 – August 3), the initiative was a result of analysis that showed Fridays had the fewest visitors to campus. The College adjusted its hours to a four day, 10-hour work week. Some areas of the campus remained open on Fridays including the Fitness and Recreation Center and our corporate training center. In all other areas, utilities were reduced. The program was repeated for a longer duration in 2009 from May 18 – July 31.

To gain an understanding of the true impact of our carbon emissions, an energy savings and use analysis was conducted. Additionally, surveys were distributed to faculty and staff regarding commuting habits.

Energy Savings/Usage Analysis

Following is a summary of our energy savings/usage analysis for the 2009 Spring / Summer sustainability schedule. This analysis includes the time period from Monday, May 18th through Sunday, August 2nd compared to the same 2008 time frame. Data from all campus utilities (electric, gas, water, sewer) was reviewed. Because gas, water, and sewer usage were not significantly different from 2008 to 2009, the final analysis considers only electricity.

Electrical usage for 2008 was 3,115,662 kWh and 2,792,915 kWh in 2009. This was a total reduced usage of 322,747 kWh or 10.36%.

Adjustments considered in the analysis included:

- Q TV Analog Transmitter shutdown on June 12th

  Electrical consumption was reduced by approximately 2,300 kWh per day, 51.25 days @ 2,300 kWh/day

  Total reduction adjustment: 117,875 kWh

- J Wing shutdown for Spring / Summer cluster scheduling

  MacMillan Associates engineering analysis estimated the total kWh reduction for the eleven week period.

  Total reduction adjustment: 33,718 kWh

- Variable Weather Conditions

  Because weather conditions vary from year to year, historical degree day information was extracted from our weather station and assembled to match our same usage time periods. Degree day information is provided in two formats.

  - Cooling Degree Days (361 in 2008, 220 in 2009) resulted in 39.06% fewer CDD
  - Heating Degree Days (161 in 2008, 239 in 2009) resulted in 48.45% more HDD

This data confirmed that 2009 was significantly cooler than 2008. After reviewing all of the weather and usage data, it was determined that 20% would be a reasonable adjustment to our energy usage to compensate for the cooler weather. This resulted in an additional reduction of 34,231 kWh.

Based on the above information, an estimated total energy savings for the 2009 Spring/Summer Sustainability Schedule follows:

Total kWh reduction vs. 2008	322,747 kWh	
Adjustment: Q TV Analog Transmitter Shutdown 6/12/09	-117,875 kWh	
Adjustment: J Wing Shutdown for Cluster Scheduling	-33,718 kWh	
Subtotal (before weather adjustment)	171,154 kWh	
Adjustment for cooler weather @20% of subtotal	-34,231 kWh	
Final adjusted kWh reduction vs. 2008	136,923 kWh	(4.39% reduction)
Average cost of electricity	$0.07 / kWh	
Total savings	**$9,584**	
Average savings per week for 11 weeks	**$ 871**	
Reduction in CO_2 emissions	**102.4 MT CO_2**	

A four-day work week for spring/ summer semester was piloted in 2008 in an effort to reduce our campus carbon footprint, without decreasing the level of education and services provided to students and the community.

Surveys

To gauge the affect on carbon emissions as a result of commute habits, surveys distributed among faculty and staff asked questions such as:

- Did you have a reduction in the number of commutes to campus during this time period?
- How did the four-day schedule affect your ability to use alternative transportation (bus, etc.)?
- How did the four-day schedule affect your ability to ride share?
- Did you leave campus more often for lunch, appointments, and personal errands?

Most faculty did not see a reduction in their normal summer commute schedule. The majority of the 43 respondents either did not teach during these time periods or on Fridays in general. None of the respondents participated in ride share programs or alternative modes of transportation; so, therefore, it did not have an effect.

Of the 186 staff who responded, 92% reported having a reduction in the number of trips to and from campus due to one less commute day. The majority did not leave campus for lunch and only 14% did so once a week—which, for most was the same commute schedule as a five day work week. Like faculty, limited respondents participated in ride share programs or alternative modes of transportation; therefore, the effect was minimal.

To calculate the CO_2 reduction for commuting, it was assumed that 426 staff (part and full time total headcount) did not commute on ten Friday's (11 excluding 4th of July holiday). Since faculty did not teach during these time periods or on Fridays in general, they were not included in the calculation. The estimated reduced emissions for commuting was 20.2 MT CO_2 during the 2009 four day work week time period.

Combined Emissions Reduction

kWh Emissions Reduction	102.4
Commute Emissions Reduction	20.2
Total Reduction	122.6 MT CO_2

This reduction is equivalent to the total annual energy consumed by about 10 average American homes for heating, cooling, cooking, electricity use, and other energy needs*. Applying the 122.6 MT CO_2 directly to our campus carbon footprint, this reduction would offset the CO_2 emissions created annually by campus mobile combustion. Mobile combustion refers to the burning of fuels by campus-owned transportation devices such as cars, trucks, tractors, and buses.

*Source: U.S. EPA Energy Resources Calculator

Sustainability Tracking & Rating System Pilot (STARS) - 2008

Delta College participated in the 2008 STARS pilot program to test and evaluate the proposed rating system. STARS considers sustainable processes, actions, and initiatives in governance and finance, social responsibility and community engagement, education and research, curriculum, operations, and innovation. Participating institutions gathered and reported data on existing sustainability initiatives to create a baseline from which to target specific areas with potential for feasible short and long-term program introduction and improvement. STARS promotes the interconnectedness and interdependence of the social, economic, and environmental components of sustainability. It also serves to:

- Provide a guide for advancing sustainability in education, operations, and administration.
- Enable meaningful comparisons over time and across institutions by establishing a common standard of measurement for sustainability in higher education.
- Create incentives for continual improvement toward sustainability.
- Facilitate information sharing about higher education sustainability practices and performance.
- Build a stronger, more diverse campus sustainability community and promote a comprehensive understanding of sustainability with a focus on the Triple Bottom Line.

Reporting categories were comprised of two types of credits including Tier One which are based on sustainability outcomes and Tier Two which recognize strategies institutions can adopt to move toward sustainability. The pilot phase covered FY2007/08. The report is based on the square mile of main campus including the farmhouse and farmland rentals. Final text summaries can be accessed at www.delta.edu/sustainability.

Although the pilot program was intended as an evaluation of the rating system, Delta College chose to use it as a preliminary benchmark of campus sustainability. The summary which follows includes points earned by the college and points available by STARS. 'Rating Comments' provides an explanation for unearned and non-applicable (NA) credit and 'Post-Pilot' provides an update of progress made through 2009.

Delta's Triple Bottom Line

Social

- In a single year, over 400,000 student hours contribute to sustainable community service projects.
- Book donations create library literacy program at Kenya sister college.
- Students contribute to hands-on design and building of homes for Habitat for Humanity.
- Peace poles placed at exchange program institutions symbolize global commitment.
- Food Service surplus redistribution feeds people in need.
- Bookstore suppliers required to comply with the Fair Labor Association.

Environmental

- Junk mail program eliminates unwanted mail and junk faxes by 76% in a single year.
- Green Cleaning Award recognizes custodial staff for eco-conscious products, processes, and equipment.
- Landscape master plan incorporates native plantings and 700 trees to aid with carbon absorption.
- FSC Mixed Sources label supports the development of responsible forest management worldwide.
- Proactive measures for stormwater management collect, clean, and return runoff to the natural environment.

Economic

- Equipment for alternative energy programs made possible through community grants.
- Entrance drives upgraded using recycled content save $35,000 in project costs.
- Purchasing and procurement policy considers economically and environmentally-conscious choices
- LED lot lighting equates to an annual cost savings of 45% over traditional metal halide lamps.
- Community Research Institute assists non-profits in gathering and analyzing data to assess communities' needs.

STARS Pilot Summary - FY07/08

- ● Directly impacts campus GHG, CO2 emissions
- ○ Indirectly impacts campus GHG, CO2 emissions

Category	Points Earned	Points Available	Rating Comments	Post-Pilot Progress
Education & Research				
Co-Curricular Education				
○ Student Sustainability Educators Program	1	1	Credit earned based on Sustainability Office student outreach	Eco Rep Program established
○ Student Sustainability Outreach Campaign	0	1	Credit requires cumulatively reaching/measuring 50% of student body	New initiatives, more frequent outreach
○ Sustainability in New Student Orientation	0	1	In progress at time of Pilot	Program established in 2009
○ Co-Curricular Education	1	11	Credit relates to residential students	
Total Co-Curriular	**2**	**14**		
Curriculum				
○ Sustainability Course Identification	0	1	Credit requires formal identification on public website	Formal process developed; test in Winter 2010
○ Sustainability-Focused Academic Courses	0	6	No classes formally labeled as sustainabilitiy focused	At least three courses since developed
○ Sustainability Related Academic Courses	2	6	At time of pilot, faculty/course content survey was in process but not yet completed	Formal process developed; test in Winter 2010
○ Sustainability Courses by Academic Department	2	3	At time of pilot, faculty/course content survey was in process but not yet completed	Formal process developed; test in Winter 2010
○ Academic Sustainability Courses -Student Cr Hrs	4	6	At time of pilot, faculty/course content survey was in process but not yet completed	Formal process developed; test in Winter 2010
○ Sustainability Learning Outcomes	0	5	Classes not identified or developed	At least three courses have since been developed
○ Sustainability-Focused Undergraduate Program	0	2	No undergraduate program in place	Certificate program in development stage
○ Sustainability-Focused Graduate Academic Program	NA	NA	Credit applies to graduate institutions	
○ Sustainability Immersive Experience	NA	NA	No immersive experience; No student housing	
○ Non-Credit Sustainability Courses	0	3	No classes documented	Lifelong learning courses offered Winter 2010
○ Non-Academic Sustainability-Focused Certificate	NA	NA	No program	
○ Sustainability Literacy Assessment	1	2	Credit earned for annual Student Sustainability Survey; Non-earned credit requires individual student assessment from admission thru graduation	
○ Curriculum	0	2	Non-earned credits relate to common assigned academic yr reading and first yr theme immersion in sustainability	
Total Curriculum	**9**	**36**		
Faculty & Staff Development & Training				
○ Incentives for Developing Sustainability Courses	1	1		Academic Sustainability Team initiated
○ Staff Professional Development in Sustainability	1	1	COS program, Delta 101 new employees, Support Staff Conference	Maintain / improve status
○ Sustainability in New Employee Orientation	0	1		Brochure, website intro, Fall Learning Days session
○ Employee Sustainability Educators Program	0	1		Program development targeted for Winter 2010
Total Faculty & Staff Development & Training	**2**	**4**		
Research				
○ Sustainability Research Inventory	NA	NA	Applies to institutions where research is a core component of activities	Consider non-traditional research activities
○ Faculty Involved in Sustainability Research	NA	NA	Applies to institutions where research is a core component of activities	Consider non-traditional research activities
○ Departments Involved in Sustainability Research	NA	NA	Applies to institutions where research is a core component of activities	Consider non-traditional research activities
○ Internal Funding for Sustainability Research	NA	NA	Applies to institutions where research is a core component of activities	Consider non-traditional research activities
○ External Funding for Sustainability Research	NA	NA	Applies to institutions where research is a core component of activities	Consider non-traditional research activities
○ Sustainability Research Incentives	NA	NA	Applies to institutions where research is a core component of activities	Consider non-traditional research activities
○ Interdisciplinary Research in Tenure & Promotion	NA	NA	Applies to institutions where research is a core component of activities	Consider non-traditional research activities
Total Research	**0**	**0**		
Total Education & Research	**13**	**54**		

STARS Pilot Summary - FY07/08

● Directly impacts campus GHG, CO2 emissions ○ Indirectly impacts campus GHG, CO2 emissions	Points			
Operations				
Buildings				
● New Construction, Renovations, & Commercial Interiors	0	5	Recognizes LEED certification	No LEEDS certification
● Building Operations & Maintenance	0	5	Recognizes LEED certification	No LEEDS certification
● Potable Non-Irrigation Water Consumption Reduction	2	3	2 pts awarded for >25% (28% actual)	Continue comsumption reduction as possible
● Green Cleaning Service	0	1	Program not GS-42 Green Seal Certified	Custodial handbook rewritten to document Green Cleaning. Continue to monitor & upgrade program to incorporate GS products and eco paper/bags
○ Buildings	1	2	Systems in place but not posted to websites	Post to Sustainability website
Total Buildings	**3**	**16**		
Dining Services				
○ Local Food	0	3	Credits applicable to residential dining service	Discussions to develop tracking
○ Food Alliance and Organic Certified Food	0	3	Credits applicable to residential dining service	Exploring options for food alliance and organic certified
○ Fair Trade Coffee	1	1	Difficult to track products other than coffee (vanilla, cocoa, etc)	Discussions to develop tracking
○ Dining Services	2	7	Non-earned credits pertain to written policy for food buying	Discussions to develop policy
Total Dining Services	**3**	**14**		
Energy & Climate				
● Energy Intensity Trend	3	3	Credit based on >4% (actual 4.08%) energy intensity reduction	
● Renewable Electricity	NA	NA	No renewable energy sources utilized	Discussing options
● On-site Combustion with Renewable Fuel	NA	NA	No on-site combustion w/renewable fuel	
● Greenhouse Gas Emissions Reductions	0	5	Must have at least 5% GHG reduction (actual 2.3%)	Instituting energy reduction methods
● Energy & Climate	8	11	Non-earned credits pertain to geothermal, energy related performance contracting, cogeneration	Contracted w/CE Retro-Commissioning Project
Total Energy & Climate	**11**	**19**		
Grounds				
● Organic Campus	0	1	Do not maintain against official organic standards	Working towards incorporating greater organic practices
● Irrigation Water Consumption	0	2	Must meet 50% irrigation (actual is 10%)	Delta supplements with natural rainfall
○ Grounds	8	10	Non-earned credits apply to pervious pavement and Arbor Day Program	Investigating Arbor Day Program details
Total Grounds	**8**	**13**		
Materials Recycling & Waste Minimization				
● Recycling Program	12	17	Xtra credit earned for transparencies, cell phones, phone directories/books. Missing credits include metal can, plastic bottles/bags/film, glass bottle & jars	Introduced greater materials to recycle stream
● Waste Minimization	0	1	Error---should have been awarded this credit	Monitor waste stream. Incorporate additional materials
● Waste Diversion	1	3	Credit based on 15-35% diversion rate (actual 27.17%)	Monitor waste stream. Incorporate additional materials
● Construction and Demolition Waste Diversion	1	1	Aggressive diversion program but not tracked. Credit based on est 75% diversion	Increase diversion; develop tracking mechanism
● Electronic Waste Recycling Program	1	1	Full credit earned	Maintain / improve as opportunity presents. Green IT initiatives
● Hazardous Waste Minimization	1	1	Full credit earned	Maintain and improve program as opportunity presents
● Materials, Recycling, & Waste Minimization	6	10	Non-earned credits relate to pre & post-consumer food waste composting, limiting of labs/library free printing, and resident hall move-out disposals	
Total Materials, Recycling, & Waste Minimization	**22**	**34**		
Purchasing				
● ENERGY STAR Purchasing	0	1	No tracking mechanism to report actual numbers	Discuss possibility of tracking mechanism
● EPEAT Purchasing	0	1	Not an EPEAT participant	Researching EPP guidelines, discuss using as purchaisng standard
○ Purchasing Green Cleaning Products	0	1	Do not purchase GS37 or GS40 products exclusively; no purchase tracking mechanism	Continue to upgrade program to incorporate GS products
○ Environmentally Preferable Paper Purchasing	1	1	Full credit earned	FSC Mixed Source Certfied
○ Environmentally Preferable Furniture Purchasing	1	1	Full credit earned	Coordinate tracking mechanism; Request vendor/mfg info w/ea order
○ Vendor Code of Conduct	1	1	Full credit earned	Maintain status
○ Purchasing	1	3	Reduced credit relates to underutilized businesses and local products	Sustainable purchasing policy addressses all categories
Total Purchasing	**4**	**9**		

STARS Pilot Summary - FY07/08

- ● Directly impacts campus GHG, CO2 emissions
- ○ Indirectly impacts campus GHG, CO2 emissions

Category	Points Earned	Points Available	Rating Comments	Post-Pilot Progress
Transportation				
● Fleet Greenhouse Gas Emissions	0	2	Credit requires 0-.5 lbs CO2e per passenger miles (actual is .93)	
● Commute Modal Split	0	3	Relates to non-motorized transportation; more applicable to residential campuses	Promote ride share and mass transportation
● Commuter Options	0	1	Requires recognition by 'Best Workplaces for Commuter' programs	Investigate programs/incentive opportunity for alternate commuter options
● Air Travel	1	1	Recognizes institutions tracking institution-funded air travel	Maintain tracking mechanism; research potential reduction of air travel
○ Transportation	0	4	Not applicable at this time	
Total Transportation	**1**	**11**		
Total Operations	**52**	**116**		
Administration and Finance				
Investment				
○ Investment Transparency	1	1	Full credit earned	Maintain status
○ Committee on Investor Responsibility	1	1	Full credit earned	Maintain status
○ Screening for Negative Investments	0	1	No recent screening	
○ Positive Sustainability Investments	0	4	Did not meet minimum % for sustainable investments	Research potential investments
○ Shareholder Engagement	NA	NA	NA	
○ Investment	0	2	Requires signatory status w/UN Principles for Responsible Investment	
Total Investment	**2**	**9**		
Planning				
○ Strategic Plan	1	1	Full credit earned	Maintain status
○ Master Plan	1	1	Full credit earned	Maintain status
○ Sustainability Plan	1	1	Reported plan / recommendations by Sustainability Task Force	Formal plan In progress
○ Climate Plan	0	1	Climate Plan targeted for completion in 2009	In progress; to be submitted Jan 2010
Total Planning	**3**	**4**		
Sustainability Infrastructure				
○ Sustainability Committee	1	1	Reported Sustainability Task Force plan and recommendations	Maintain status
○ Sustainability Officer	3	3	Full credit earned	Maintain status
○ Sustainability Recognition Program	1	1	Full credit earned	Maintain status
○ Inter-Campus Collaboration on Sustainability	1	1	Full credit earned	Maintain status
○ Specialized Sustainability Staffing	0	1	Credit relates to specialized staff beyond those recognized in AF10	
○ Sustainability Infrastructure	0	5	Credit relates to alumni, student government, payroll deduction, Tallaoires Declaration	Investigate developmnet of alumi network; possibly incroporate into existing network thru Foundation
Total Sustainability Infrastructure	**6**	**12**		
Community Relations & Partnerships				
○ Community Service Staffing	1	1	Full credit earned	Maintain / improve status
○ Student Participation in Community Service	0	3	No official coordinating body; no tracking mechanism	Community Learning Service office established
○ Student Hrs Contributed in Community Service	0	3	No official coordinating body; no tracking mechanism	Community Learning Service office established
○ Financial Incentives for Public Service Careers	NA	NA	Not applicable for community college graduates	
○ Community Sustainability Partnerships	1	1	Full credit earned	Maintain / improve status
○ Public Policy Engagement	1	1	Full credit earned	Maintain / improve status
○ Community Relations & Partnerships	7	9	Non-earned credits relate to recording community service on transcript and hosting of farmer market	Maintain / improve status on all other credits
Total Community Relations & Partnerships	**10**	**18**		

STARS Pilot Summary - FY07/08

- ● Directly impacts campus GHG, CO2 emissions
- ○ Indirectly impacts campus GHG, CO2 emissions

Category	Points Earned	Points Available	Rating Comments	Post-Pilot Progress
○ Support Programs - Underrepresented Groups	1	1	Full credit earned	Maintain / improve status
○ Support Programs for Future Faculty	NA	NA	Applicable only to doctoral degree programs	
○ Affordability & Access Programs	1	1	Full credit earned	Maintain / improve status
○ Diversity, Access, & Affordability	5	6	Non-earned credit applies to residential campus	Maintain / improve status on all other credits
Total Diversity, Access, & Affordability	**11**	**12**		
Human Resources				
○ Sustainable Compensation	1	1	Full credit earned	Maintain / improve status
○ Faculty & Staff Health Care	1	3	Requires offering health care to less than FT employees	
○ Graduate Student Employee Health Care	NA	NA	NA	
○ Family Leave	1	1	Full credit earned	Maintain / improve status
○ Domestic Partner Benefits	NA	NA	NA in states prohibiting provision of equivalent domestic partner benefits	
○ Employee Satisfaction Survey	1	1	Full credit earned	Maintain / improve status
○ Human Resources	4	7	Requires on-site child care, whistle-blower policy, job sharing, flexible schedules	
Total Human Resources	**8**	**13**		
Trademark Licensing				
○ Independent Monitoring of Logo Apparel	1	1	Full credit earned	Maintain / improve status
○ Designated Suppliers Program	0	1	No program in place	Investigate program potential
Total Trademark Licensing	**1**	**2**		
Total Administration & Finance	**41**	**70**		
Innovation				
Innovation				
● Innovation Credit One (University Ctr Trail)	1	1	Full credit earned; Innovative projects are optional	Expand on Pilot Innovations
○ Innovation Credit Two (Stormwater Mgmt)	1	1	Full credit earned; Innovative projects are optional	Consider Community Research Project
Innovation Credit Three	NA	NA	Innovative projects are optional	Consider Habitat for Humanity Sustainable
Innovation Credit Four	NA	NA	Innovative projects are optional	Consider Innovation Incubator
Total Innovation	**2**	**2**		
TOTAL CREDITS EARNED / AVAILABLE	**108**	**242**	**(not including 'NA' categories)**	

STARS 1.0

To build on our past commitments and move forward with new initiatives, Delta College signed on as a Charter Participant with STARS 1.0 in September 2009. Institutions registering as Charter Participants will be acknowledged as STARS pioneers with opportunities to benefit from various publicity venues. Delta's early participation with the pilot program has assured us a head start on a well-structured means of gathering and documenting the necessary data.

STARS 1.0 takes into account the full range of sustainability's Triple Bottom Line achievements and recognizes highly ambitious, long-term goals. It is the first version to allow campuses to achieve a sustainability score. A STARS rating is good for three years with the ability to update profile information once a year to qualify for a new rating. It is our goal to conduct our first 1.0 inventory in 2010 followed by an annual STARS evaluation each year thereafter.

Greenhouse Gas Inventory (GHG) – FY00-FY08

In 2008, a comprehensive, campus-wide GHG was completed. This inventory also fulfilled the Year Two ACUPCC commitment. The inventory, a compilation for fiscal years 1999/00 to 2007/08, creates a baseline from which to target specific areas with potential for feasible short-term and long-term reduction of emissions. It also allows for comparing data over the years both internally and with other institutions.

Operational boundaries were set at the maximum to capture the most comprehensive data for consistent comparison in future years. The report is based on the square mile of main campus including the farmhouse and farmland rentals. Clean Air Cool Planet (CACP) V.6 software was used to calculate our campus carbon footprint. Budget, population, and physical size were reported to normalize emissions for comparison with other institutions and for projecting future emission trends.

ACUPCC required reporting in the following categories:

- **Budget, Population, Physical Size**
- **Scope 1 Emission Sources**
  - Stationary Combustion (heating fuels)
  - Mobile Combustion (fuels burned by college-owned vehicles such as tractors, cars, and trucks)
  - Fugitive Emissions (agriculture / farmland and refrigeration / AC releases)
- **Scope 2 Emission Sources**
  - Purchased Electricity / Steam / Chilled Water
- **Scope 3 Emission Sources**
  - Commuting
  - Directly Financed Outsourced Travel

Additionally, to provide a more comprehensive base year, Delta College also reported in the following categories:

- Air Travel, Solid Waste, Waste Water, Mitigation, Endowment, and Heat / Cool Days

Final text summaries can be accessed at www.delta.edu/sustainability.

Summary

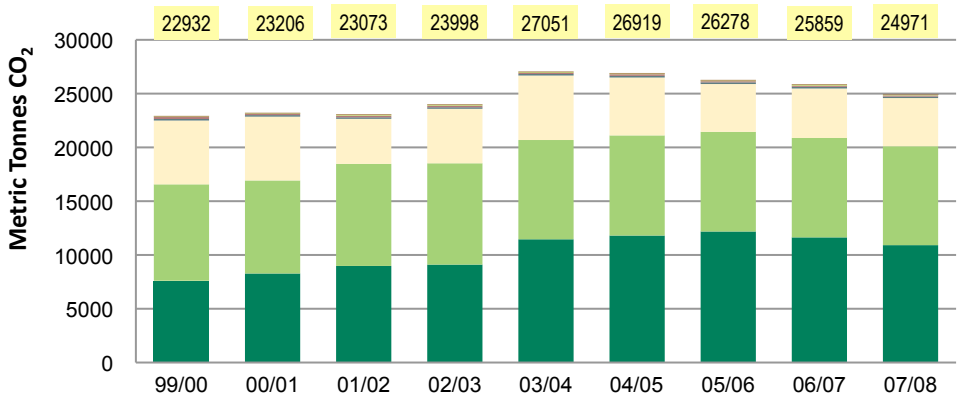
The GHG inventory conducted in 2009 encompassed the FY00-08. During this period building square footage grew by nearly 195,000 square feet (20%) and our campus population by over 1,500 (21%). Even with this steady growth, our campus carbon footprint increased minimally—about 2,000 metric tons (8%) over nine years. This can be attributed to energy-conscious building renovations, greater reductions and diversion of waste materials, avenues for developing sustainable initiatives and projects, student outreach campaigns, and the increased environmental awareness of our campus community. The data findings for each of the major emission categories are as follow:

- Even with the growth in building square footage and increased student enrollment over the past three years, the combined efforts of the college community has helped to realize a 12% reduction in **electric consumption.**
- The carbon footprint of **commuting to and from campus** by our community of students, faculty, and staff accounts for twice the emissions required to heat our 40 buildings year round.
- Since 2000, the college has realized a 25% reduction in carbon emissions attributed to **natural gas consumption**.
- Over the nine year GHG inventory, a shift from air **travel** to land transportation for employee business trips has been recognized.
- Comparing the first three years to the final three year period of the GHG, the average gallons of fuel used to power **campus vehicles** fell by nearly 4,000 gallons.
- Although fertilizer application increased by 10 tons over the past three years, the percentage of nitrogen content (weighted avg) fell from 32% to 29% due to resource responsible farming and **grounds management.**
- From FY06 to FY08, about 15% more materials were diverted toward recycling or reuse. Per person that translates into about three pounds less waste generated and 12 pounds more diverted from our landfills.
- Potable **water** gallons per square foot remained relatively unchanged from FY05 (21.1) to FY08 (20.8), despite an increase in building square footage and student population. In the overall picture of carbon emissions by category, **waste water** contributes the lowest percentage of CO_2.

GH1

GHG Summary
FY00-FY08

MT CO_2

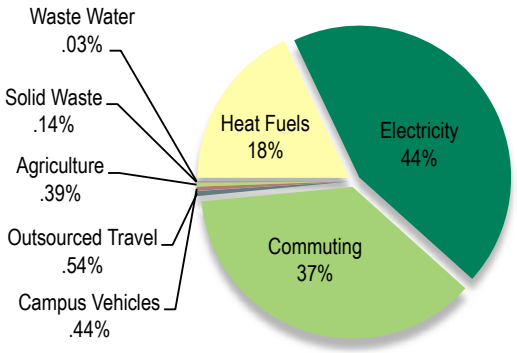


	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Waste Water	12	11	12	9	6	7	7	7	7
Solid Waste	28	29	31	32	38	36	42	33	35
Agriculture	70	71	82	81	82	75	76	86	97
Campus Vehicles	181	107	149	144	101	153	106	104	109
Travel	143	143	143	143	143	151	156	153	135
Heat Fuels	5932	5932	4186	5066	5995	5382	4447	4601	4481
Commuting	8964	8649	9489	9418	9229	9309	9262	9240	9193

*Electricity & Heat Fuel consumption dependent on heat/cool degree days

GH2

Carbon Emissions By Category
FY08



Metric Tonnes CO_2	
Electricity	10914
Commuting	9193
Heat Fuels	4481
Outsourced Travel	135
Campus Vehicles	109
Grounds	97
Solid Waste	35
Waste Water	7
Total Emissions	24971

*Electricity & Heat Fuel consumption dependent on heat/cool degree days

GHG Inventory: 1999/00-2007/08

Emissions Data	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Scope 1 Emissions									
Heat Fuels	5932	5932	4186	5066	5995	5382	4447	4601	4481
Campus Vehicles	181	107	149	144	101	153	106	104	109
Agriculture	70	71	82	81	82	75	76	86	97
Total - Scope 1	6183	6110	4417	5291	6178	5610	4629	4791	4687
Scope 2 Emissions									
Electricity	7602	8278	8981	9105	11457	11806	12182	11635	10913
Total	7602	8264	8981	9105	11457	11806	12182	11635	10913
Total Scopes 1 + 2	13785	14374	13398	14396	17635	17416	16811	16426	15600
Scope 3 Emissions									
Commuting	8964	8649	9489	9418	9229	9309	9262	9240	9193
Travel	143	143	143	143	143	151	156	153	135
Solid Waste	28	29	31	32	38	36	42	33	35
Waste Water	12	11	12	9	6	7	7	7	7
Total	9147	8832	9675	9602	9416	9503	9467	9433	9370
Total Scopes 1 + 2 + 3	22932	23206	23073	23998	27051	26919	26278	25859	24970
Mitigation Data									
Sequestration and Carbon Storage									
Carbon storage due to composting	-3	-3	-3	-3	-3	-3	-3	-3	-3
Normalization and Contextual Data									
Building Space									
Gross Square Feet of Building Space	773369	868720	868720	868331	868331	965505	966099	966826	967823
Net assignable sf - lab space	182702	182703	187410	187410	239848	239848	239814	239819	239819
Net assignable sf - residential space	8150	8150	8150	8150	8150	8150	8150	8158	8158
Population									
Total Full-Time Student Enrollment	5607	5576	6100	6284	6446	6537	6632	6648	7123
Full-Time Commuter Students	4467	4421	5028	5289	5393	5634	5663	5867	6318
Part-time commuter students	9625	9571	9759	9444	9547	9231	9124	8912	8796
Non-Credit students	1724	1521	772	986	1093	925	755	1001	924
Full-time faculty	203	205	215	215	218	223	211	215	211
Part-time faculty	260	239	276	259	255	279	300	289	300
Full-time staff	371	366	363	371	326	318	315	312	306
Part-time staff	50	74	89	105	106	114	211	119	120
Other Contextual Data									
Endowment size	8325266	7269196	6405850	6695222	7995685	8642895	10356416	12601242	12327952
Heating Degree days	7163	7280	6785	7971	7358	7439	6720	7045	7120
Cooling Degree Days	794	590	818	778	676	722	829	881	848

Notes

For all years: Residential space is historical farmhouse occupied by College President; Fugitive Emissions include agriculture which is college-owned farmland, within organizational boundary, and which is rented for local farming.

1999/2000: Cogeneration Plant in use

2000/2001: Cogeneration Plant in use; Major campus renovation increased by 95,351 sf.

2001/2002: Cogen taken offline after 2000/2001 FY and no longer utilized.

2002/2003: Removed campus out building; added new Process Training Plant resulting in -389 sf.

2004/2005: Major campus renovation increased by 97,174 sf; Renovation included significant energy conservation updates.

2006/2007: Renovations resulting in additional 727 sf.

2007/2008: Added square footage of 997)A Wing, Farmhouse garage); CACP did not directly calculate data for 2008 (07/08 FY).

our steps toward a sustainable campus

- Electricity
- Commuting
- Heating Fuels
- Travel
- Campus Vehicles
- Grounds Management
- Solid Waste
- Waste Water
- Mitigation

Electricity

Scope 2 Emission: Purchased Electricity

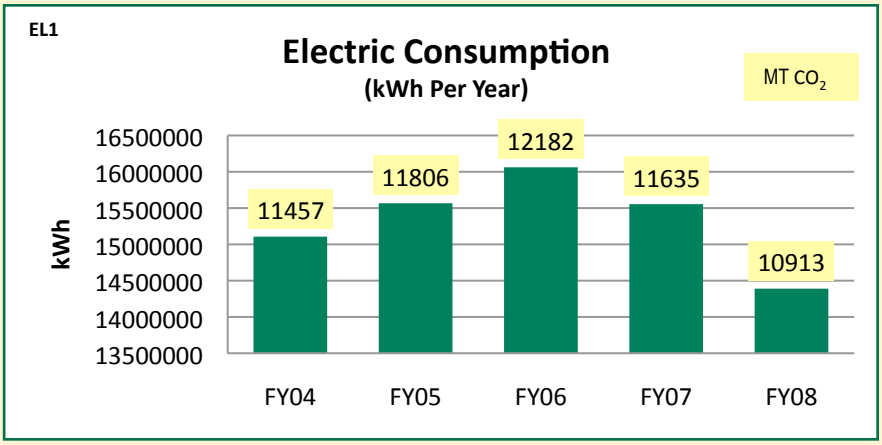
The total indirect GHG emissions resulting from the generation of electricity purchased and used by the college.

Electricity is used for many purposes in campus buildings, in the maintenance of our exterior landscape, and for lighting our roads and parking lots. Greenhouse gas emissions are emitted from the fossil fuel used to generate electricity for the electric grid. In FY08, 44% of the college's emissions arose from the use of electricity.

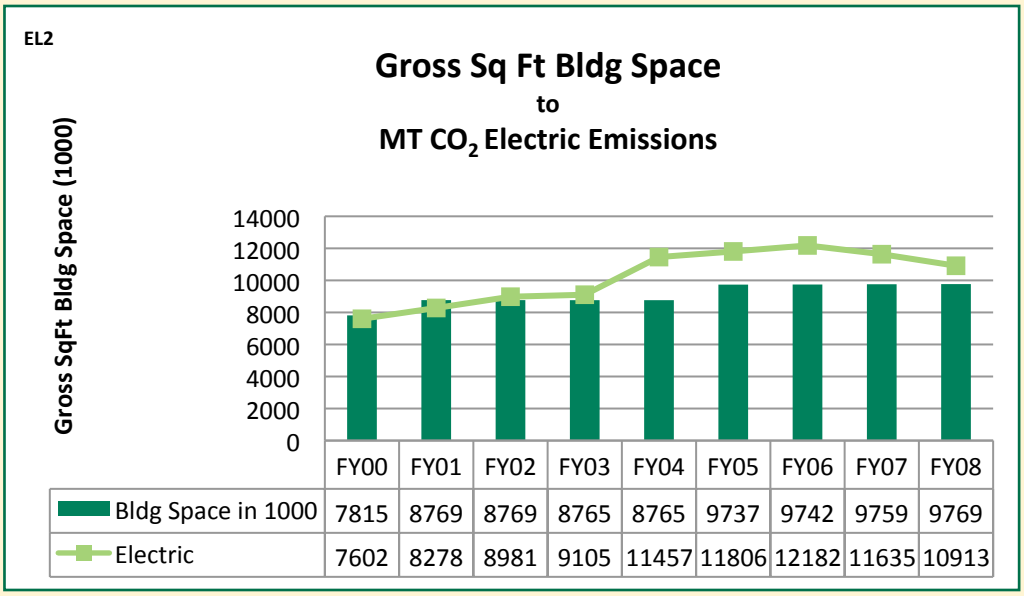
The total square mile of Delta College property consists of 40 buildings including a historical farmhouse, home to our College President. During FY08, those buildings collectively consumed 14,389,562 kWh and contributed 10,914 metric tons of carbon to our footprint. (EL1)

What is noteworthy about these figures is they represent a downward trend in our consumption. Even with the growth in building square footage and increased student enrollment over the past three years, the combined efforts of the college community has helped to realize a 12% reduction in electric consumption. Conserving these nearly 2 million kilowatts are equivalent to providing electricity to 183 average households for an entire year. Translated to stepping softer on the planet, that means our campus carbon footprint is a lighter shade of green by 1,628 metric tons. (EL2)

EL1



EL2



The role of Facilities Management in campus operations imparts responsibility and provides opportunity to consider, develop, and implement processes and practices intended to improve the quality of our environment. By incorporating sustainable practices throughout operations, it is our intention to serve as an example and a catalyst of environmental awareness to the College community.

As technology has advanced, sustainable energy practices have become more viable and cost effective. At Delta College, we've incorporated conservation initiatives into building and renovation projects designed to save energy while improving comfort for building occupants.

- A chilled water system has proved itself as a load-shifting method which has significantly lowered demand charges and, therefore, operating and energy costs. The system produces solid ice at night during 'off-peak' utility periods when the building's electrical needs are minimal. The ice is stored in tanks to help meet the building's cooling comfort the following day.
- An energy management system is programmed to automatically turn off heating/ventilation/air conditioning systems and lighting during unoccupied hours.
- Energy saving initiatives incorporated into classrooms, offices, and campus open spaces save energy while upgrading both the work and learning environments. Occupancy sensors in classrooms and offices ensure lights are on only when occupied. In windowed, corridor areas photocell sensors record light levels to automatically shut off lights when incoming natural light meets minimum lighting levels.
- Low mercury fluorescent lamps provide energy efficient office ceiling lighting while reducing the high cost of hazardous waste disposal. Replacing incandescent lighting with fluorescent bulbs requires 75% less energy. T12 fluorescent light fixtures were replaced with T8 electronic ballasts to provide a higher light output with less wattage.
- Induction motors were fitted with reduced-voltage starters requiring less electricity to start operating. Because the motor starts slower, there is less wear and consumption of the belts, bearings, and other components.
- Constant-Volume Reheat systems were upgraded to Variable Air Volume (VAV) systems. The former system required supply and return fan motors to run at full load continuously. The VAV system applies only the amount of air flow and temperature to a space based on occupancy or usage.
- Motor-driven systems, in which loads vary with time, were fitted with variable frequency drives allowing for improved continuous process speed control, energy savings, and reduced maintenance.
- LED lighting in parking lots reduces electric demand while the extended lamp life reduces maintenance costs.
- Solar array panels demonstrate solar generated electricity and produce about 10 kilowatts of power.
- Solar powered crosswalk signals rely on renewable energy and require no outside energy source.

Information Technology & Server Virtualization

The Office of Information Technology (OIT) provides centralized computing services and college-wide technical support for Delta College faculty and staff. OIT is embracing greener technologies by seeking out more energy-efficient equipment and processes like thin clients, document imaging and storage, centralized print solutions, paper to online forms, and server virtualization.

Server virtualization allows the college to do more work with fewer servers without impacting the level of service to the college community. Virtualization frees up data center hardware space and lowers campus energy bills. In 2006, OIT implemented a server virtualization pilot for the Dell server environment. The pilot was highly successful; and, in 2007, a four year implementation plan to convert the remainder of the Dell server environment was adopted.

This grid provides the active consumption for each category as it transitions from year to year.

	Constant Energy Consumption	Constant Weight Consumption	Constant Cooling Consumption
Before Virtualization	12942.3 watts	4044.6 lbs	3.6 Tons Sensible
2007	11422.4 watts	3390.2 lbs	3.2 Tons Sensible
2008	10867.3 watts	3234.8 lbs	3.0 Tons Sensible
2009	10809.5 watts	3117.0 lbs	3.0 Tons Sensible
2010	8675.7 watts	2889.7 lbs	2.4 Tons Sensible
Values calculated using Dell Energy Consumption Calculator			

Students play an integral role in events such as Global Awareness, Earth Day, and SCUP Sustainability Day.

Based on 2007 energy costs, the four year server virtualization plan will reduce the number of servers from 25 to 10 resulting in:

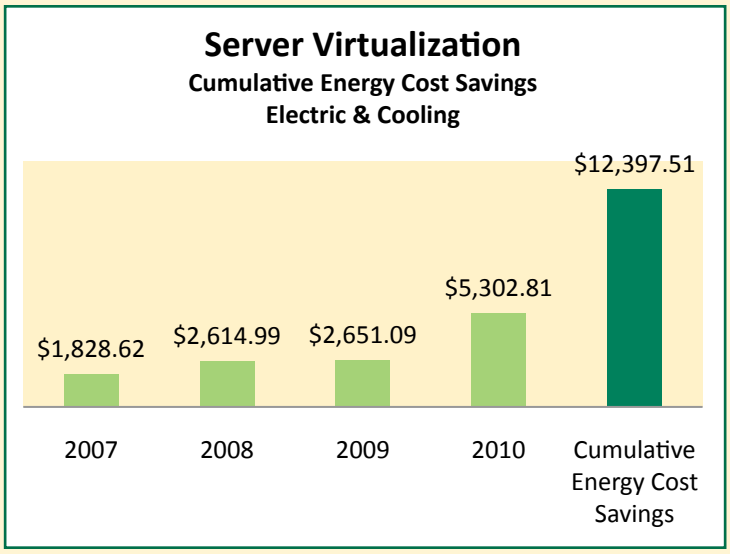
- **Total Cost Avoidance**

  $37,500 Replacement Hardware
  $12,400 Energy

- **Constant Energy Consumption Reduction**

  4,267 watts constant energy
  1,154.3 lbs constant weight
  1.2 tons of cooling consumption

Additional green IT energy saving initiatives include a reduction in printers, consolidating copying/printing hardware, and promoting electronic file storage. In the one year, over 10,000 hardcopy forms were submitted for conversion to web forms while more than 60 forms were converted to forms management solutions. Equipment life-cycle is practiced through cradle-to-grave management, comprehensive e-waste reuse and recycling and the procurement of energy and component-efficient hardware.



Energy Audit

In late 2009, Delta College was selected by Consumers Energy to participate in an energy retro-commissioning audit. Our facilities will be investigated to identify deficiencies that prevent the facility from performing at its best. The Facilities Management team is currently involved in Phase One, a thorough review of operations and maintenance practices. Phase One focuses on identifying low and no cost facility improvement measures that can result in reduced energy consumption and improved facility performance. After implementing any deficiencies identified in this phase, an average of 15% energy savings with a project payback of less than 1.5 years is anticipated.

Phase Two utilizes performance testing, trending and metering and will consider repairs, upgrades, and capitol planning that will allow existing systems to operate within the required parameters. Phase Three, systems optimization, builds on the work done in the prior phases to introduce cutting edge practices created and introduced for today's high performance buildings.

Spring/Summer Schedule

A four-day work week adopted for Spring/Summer semesters was a campus initiative to reduce our campus carbon footprint without decreasing the level of education and services provided. First piloted for four weeks in the Summer 2008 (July 11 – August 3), the initiative was a result of analysis that showed Fridays had the fewest visitors to campus. The College adjusted its hours to a four-day, ten-hour work week. Some areas of the campus remained open on Fridays including the Fitness and Recreation Center and our corporate training center. In all other areas, utilities were reduced. The program was repeated for a longer duration in 2009 from May 18 – July 31.

To gain an understanding of the true impact of our carbon emissions, an energy savings and use analysis was conducted. Refer to page 14-15 for details.

Marketing & Outreach

Energy saving practices are communicated via campus outreach vehicles such as professional development workshops for employees and online notices, information tables, displays, and distribution materials to the campus community.

Evolving Toward a Sustainable Campus: Electric Goals

- Implement projects identified by the Consumers Energy retro-commissioning audit that are feasible under the Triple Bottom Line.
- Investigate the feasibility of purchasing a percentage of energy needs in the form of Renewable Energy Certificates or other similar energy source.
- Strive to meet the next level of credit in STARS 1.0 for reduction in energy intensity which considers kWh, BTU, heating and cooling degree days, and gross square footage.
- Expand installation of occupancy sensors in all areas of the campus.
- Continue the installation of high intensity fluorescent lighting to replace high intensity discharge in the P Wing Gymnasium, Powerhouse, Process Training Lab, and racquetball courts.
- Implement time-of-day lighting usage to reduce electrical loads based on occupancy.
- Continue to monitor and implement OIT initiatives that have direct impact on electrical consumption.
- Continue outreach to students, faculty, and staff on the impact of our actions on electrical consumption.

Commuting

Scope 3 Emission: Commuting

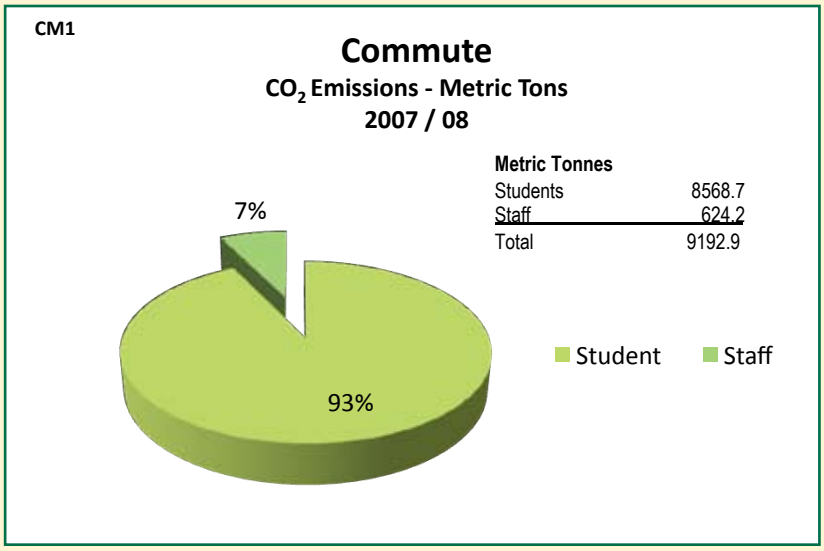
The total indirect GHG emissions resulting from regular commuting to and from campus by students and employees.

Delta College is a commuter campus whose faculty, staff, and students overwhelmingly use the automobile for their primary means of transportation to and from campus. This translates into significant emissions—the second highest between electricity and heating fuels. In FY02, the percent of MT CO_2 was as high as 41%. More recently, commuting emissions remains at an average 36% of the total campus emissions even while the student population (and their vehicles) grew by 21%.

Over 9,000 metric tons were emitted in FY08 (CM1). That same year, 83% of the institution's population relied on single-occupancy vehicles for the majority of their daily trips. Fifteen percent adopted a ride share plan, and 2% used the bus as their primary mode of transportation.

Delta is a commuter campus, and while we promote ride sharing and bus usage, the primary means of transportation is the automobile.

CM1



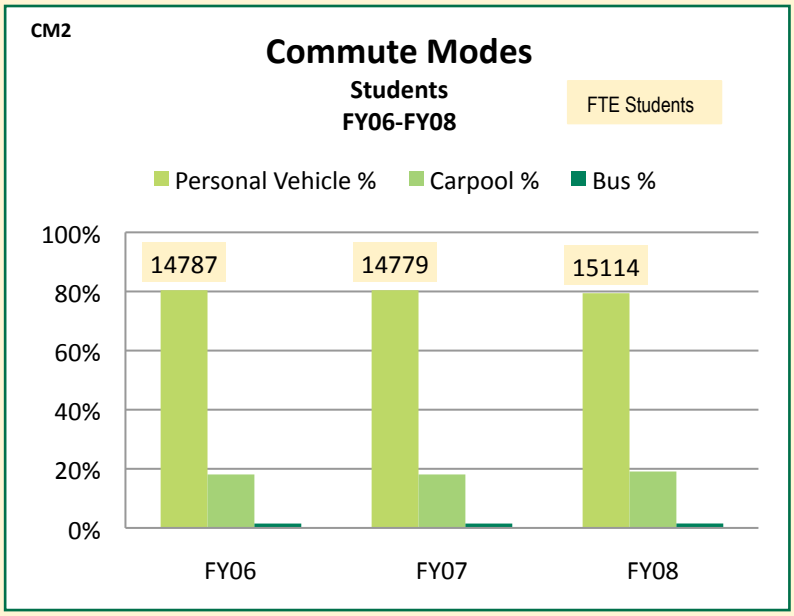
Student Commutes

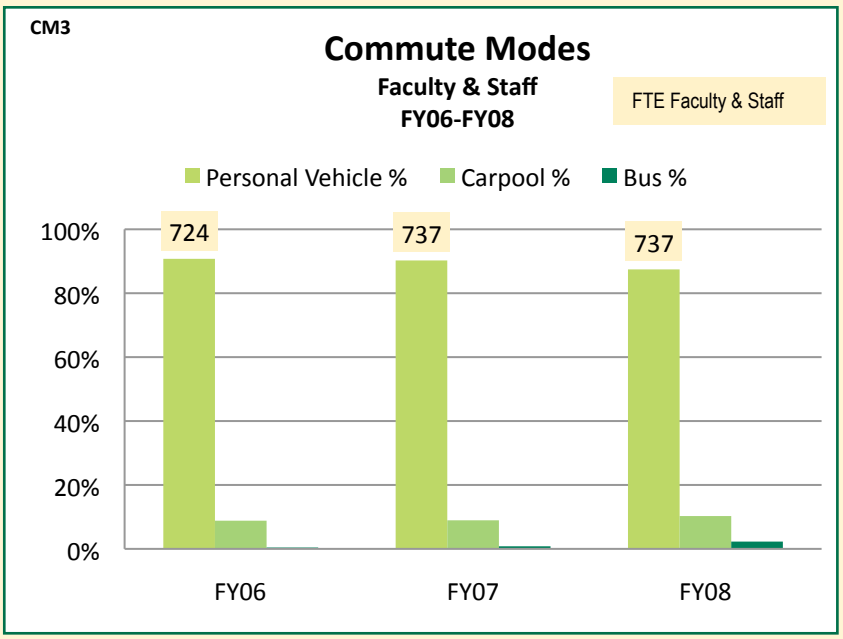
An initial student commute survey conducted in Fall of 2008 will provide for baseline comparison over the coming years. Over 100 surveys were completed with inquires about the number of trips per day/ week, estimated miles to campus, the mode of transportation, and the county from which they commuted. Full-time students who came to Delta College for classes and activities traveled an estimated 3.3 times per week for 43 weeks/year. Their average round trip is about 24 miles.

In the most recent three GHG years (FY06-FY08), the split among commute options has remained consistent—about 79.5% preferring their personal vehicle, 19% choosing to car pool, and 1.5% boarding the bus (CM2). Few students arrived on campus by bike or foot. Over the nine years included in the GHG, students are increasingly choosing to share their commute with fellow students 7% overall. Students make ride share their number one choice—about 9% more often than employees.

General comments revealed that students were open to learning more about alternate transportation options. Students reported being motivated by the idea of saving money—both in gas and vehicle maintenance. They were also drawn to the social benefit of meeting other students. Students who were ride sharing are using the 'ride wait time' for study opportunity. The greatest barrier to ride sharing and mass transit was convenience. Many students hold jobs off campus and have families which require them to be more flexible with their commute. A follow-up survey to allow the first comparison will be completed in early 2010.

Moving the student community in the direction of alternative forms of transportation requires offering incentives for ridesharing like discount fares, assistance to connect with others who desire ride share accommodations, and exploring cooperative ventures with the local metro bus systems.





Faculty & Staff Commutes

While it is difficult to get precise figures on the exact number of miles and number of commutes each day, estimated numbers were extracted from employee geographical locations provide by Human Resources. The local bus transit system, Bay Metropolitan Transit Authority, contributed to the GHG collection by providing ridership data.

The choice of transportation, commuting patterns, and the associated carbon savings from reduced vehicle traffic is gathered by conducting annual surveys each fall, making comparisons with previous years, and analyzing ridership data from local bus transport.

Faculty commutes were calculated at 3.4 trips/week for 43 weeks/year, while FTE staff commutes were estimated based on a five-day work week for 45.6 weeks/year. Like students, the average round trip for both faculty and staff is approximately 24 miles.

The first survey conducted in the Fall of 2008 elicited information from about 250 faculty and staff. Over the two previous years, ride sharing rose in popularity by almost 4%, bus ridership increased about 1.75%, and a small number reported biking or walking to campus (CM3). Employees equate the use of alternative transportation and ride sharing to carbon savings rather than financial. Those who opted for public transportation commented on the benefit of catching up on reading trade journals and meeting preparation.

The greatest potential for carbon reductions associated with commuting to and from and our campus fall to ride sharing and mass transportation. Over the past two years, Delta College has organized significant outreach activities to students and staff to increase the awareness of greenhouse gases created by commuting.

United We Stand, Divided We Stall

In an effort to reduce our commuting footprint, a ride share program 'United We Drive, Divided We Stall' was launched in 2008. It is primarily geared toward the student body. Public area posting boards dedicated to ride share connections were installed in a highly visible public area in the East Commons Lounge. As the program gains broader participation, it will be evaluated for the potential of transitioning to an online posting board.

Student Eco Reps installed visual displays in campus display cases to engage student interest. They conduct outreach campaigns twice each semester with informational tables and marketing materials. To create dialogue, Eco Reps distributed lapel and book bag stickers announcing 'I Take Rides with Strangers'. The associated promotional costs compared to the number of students seeking shared ridership are minimal.

To provide a benchmark comparison of commuting habits to satisfy the requirements of STARS and to gather data for the College's annual GHG inventory, student commuting surveys are conducted over several months each year. This also creates additional opportunity to create dialogue for increased awareness.

Mass Transit Programs

Delta College is served by three local transit operators—Saginaw Transit, Bay Metropolitan Transit Authority (BMTA), and the City of Midland Dial-A-Ride. This regional group is dedicated to providing a system that meets the needs of its Tri-County riders and is mindful of the environmental health of our communities.

Last spring, Delta College collaborated to promote 'Take the Bus to Work / School Week' a green initiative launched by the Mayor of Bay City. To continue building a cooperative relationship between college officials and the public transit systems, Delta has partnered with BMTA to explore more frequent service and extended hours to cover early a.m. and late p.m. class schedules. To better coordinate the four Great Lakes Bay Region transit operators, the prospect of incorporating more public and private entities has been introduced. BMTA will explore contracts for park-and-ride lots.

Over the next year, Delta College will partner with BMTA to support their goals. Already in the planning stage are student outreach programs to grow awareness of transit schedules and connectivity and to offer incentives such as discounted introductory rates.

"United We Drive, Divided We Stall"—a ride sharing program was launched in 2008. Here students check out their commuting options.

Spring/Summer Schedule

A four-day work week during Spring / Summer semesters was a campus initiative to reduce our campus carbon footprint, without decreasing the level of education and services provided. To gauge the affect on carbon emissions as a result of commute habits, surveys were distributed among faculty and staff. (Refer to page 14-15 for details.) Although the impact on commuting was not substantial, the benefit was increased awareness.

Bike Racks

In 2008, bike racks were upgraded with new installations at four major building entrances. Manufactured locally in Kalamazoo MI, the racks are 100% recyclable, contain no heavy metals or chemicals on the Hazardous Air Pollutants (HAP) list, and are extremely low in VOC's (volatile organic compounds).

Non-Motorized Trails

In a few years, students will be able to ride their bikes on a trail between the campuses of Delta College and Saginaw Valley State University. The University Center Trail will provide benefit and enjoyment for many generations to come, preserve natural habitat, and create opportunity for curriculum exploration and environmental education. The campus has much to offer as a hub, anchor, and destination for students, visitors, and the community by providing safe, close-to-home recreational and educational opportunities. The 4-mile long, 12-foot wide, asphalt trail, will serve as a non-motorized transportation route between our communities.

It will also play an important role in the course offerings by the college's Health & Wellness Division. Delta College offers over 20 course offerings of fitness walking each year. Another 30 sections of circuit and weight training, athletic conditioning, and jogging would bring 1,500 students to utilize the trails. Delta College looks forward to being an integral link in the network of existing public trails.

The University Center Trail is a model of collaboration for a sustainable goal. The first link to connect two different counties, it has brought together representatives from the state, counties, townships, foundations and colleges. The trail was identified as a priority in a 2005 "Vision of Green" report by the Saginaw Bay Greenways Collaborative. Early on, the project was granted $50,000 by the Saginaw Bay Watershed Initiative Network. Delta College, on behalf of its green trail partners, is leading a campaign to fund a share of the trail. To its credit, additional donations have recently been realized.

Evolving Toward a Sustainable Campus: Commuting Goals

- Continue development of University Center Trail to incorporate opportunity for curriculum exploration and environmental education.
- Create follow up surveys for students utilizing the Ride Share program to gauge success and to elicit suggestions for improvement. Investigate the transfer to a web-based networking system.
- Grow partnerships with regional transit systems for the continued development of routes and transit schedules that assist students and staff in adopting alternative modes of transportation.
- Create additional opportunities and incentives for increased student and staff outreach on the benefits of ride share.
- Consider installation of electric car charging stations on campus.

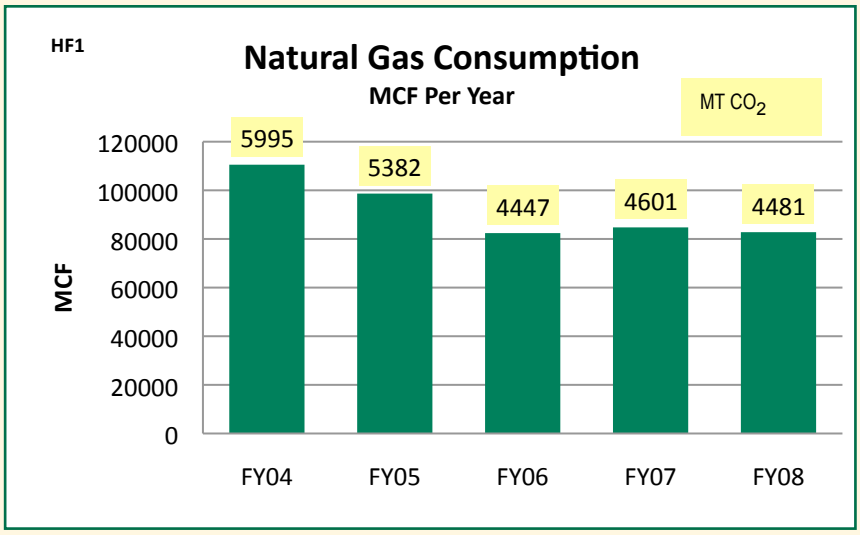
Heating Fuels

Scope 1 Emission: Stationary Combustion

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.

As of FY08, nearly 70% of the college's emissions arose from energy consumed to operate its 40 campus buildings. Natural gas is used both directly for cooking, water and space heating and in the central boiler plant. Our consumption of natural gas is responsible for the third largest percentage of campus CO_2 emissions. During FY08, 4,481 metric tons of carbon could be attributed to the 82,789 MCF of natural gas consumed. (HF1)

The good news is the downward trend reported for electricity also holds true for natural gas. Even though building square footage grew by 195,368 in the years from FY00 to FY08, consumption increased by only 2,355 MCF. Per building square footage, this equates to a near 25% reduction in carbon emission—from 5,932 to 4,481 metric tons. We can attribute this to building renovations that address energy conservation and to increased awareness of natural resource conservation by the college's staff and student body. (HF2)

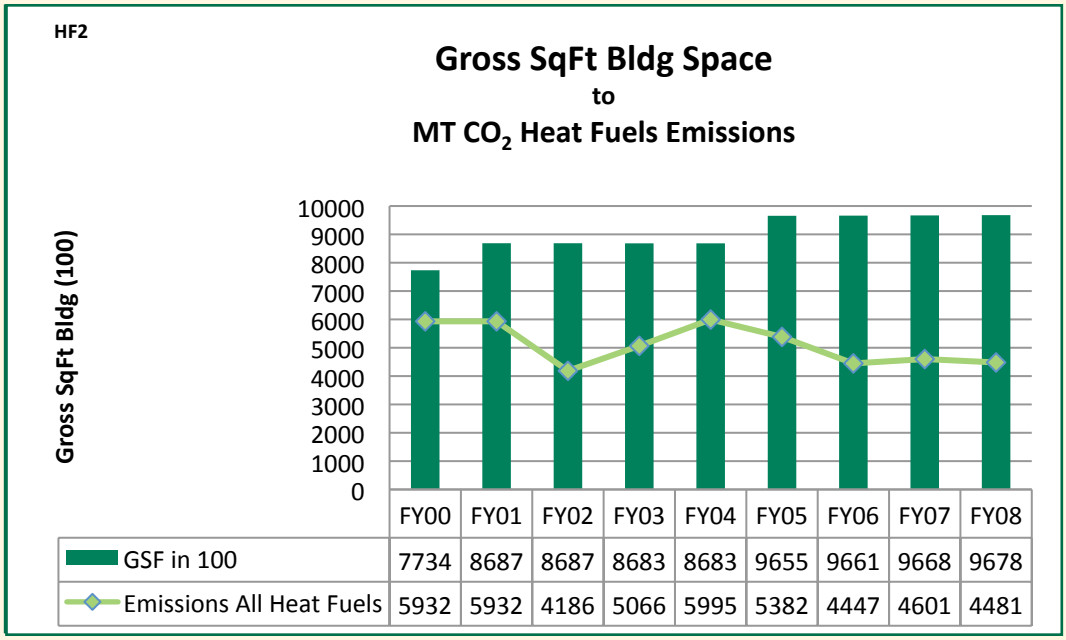


Delta College has taken considerable steps and accomplished measurable gains in reducing its building energy use. In the recent past, the college has implemented practices, projects, and strategies to better utilize space, to incorporate energy-wise equipment, to build to high efficiency standards, and to bring greater awareness of energy reduction measures to the campus community.

- Original boilers were replaced with equipment sized to better match current and projected loads.
- Heat recovery systems recapture discharged warm air into make-up air units through heat recovery coils. By reintroducing the heat back into the building, energy is conserved through less temperature loss.
- Vestibules at door entrances, a standard campus building design, reduce air inflow while the primary door is open. Vestibules save building energy by reducing the loss of warm air in winter and cooled air in summer.
- Conducting building use studies to utilize energy equipment in the most industrious and efficient manner.
- Continually gaining knowledge and employing greater aspects of the building control system for improved energy management.

Farmhouse

The buildings considered in this report include a historical 1800's farmhouse which was unoccupied for many years. In 1999, the structure was upgraded for occupancy which included energy efficient equipment and fixtures such as a new furnace, windows, and complete insulation. It has since served as the home to our College President. Although the improvements were completed just prior to this report, the energy conservation measures are reflected in the consumption data and carbon footprint.



Energy Audit

In late 2009, Delta College was selected by Consumers Energy to participate in an energy retro-commissioning audit. Our facilities will be investigated to identify deficiencies that prevent the facility from performing at its best. The Facilities Management team is currently involved in Phase One, a thorough review of operations and maintenance practices. Phase One focuses on identifying low and no cost facility improvement measures that can result in reduced energy consumption and improved facility performance. After implementing any deficiencies identified in this phase, an average of 15% energy savings with a project payback of less than 1.5 years is anticipated.

Phase Two utilizes performance testing, trending, and metering and will consider repairs, upgrades, and capitol planning that will allow existing systems to operate within the required parameters. Phase Three, systems optimization, builds on the work done in the prior phases to introduce cutting edge practices created and introduced for today's high performance buildings.

Evolving Toward a Sustainable Campus: Heating Fuel Goals

- Implement projects identified by the Consumers Energy retro-commissioning audit that are feasible considering the Triple Bottom Line.
- Investigate the opportunity for the use of fuels from renewable sources.
- Implement energy management factors such as:
  - Integrating CO_2 sensors to monitor make-up air requirements
  - Establishing a morning warm up routine to reduce the intake of colder temperatures while still meeting building occupancy requirements
  - Installing occupancy-sensor ventilation controls
- Strive to meet the next level of credit in STARS 1.0 for reduction in energy intensity which considers kWh, BTU, heating and cooling degree days, and gross square footage.
- Continue outreach to students, faculty, and staff on the impact of our actions on heat fuel consumption.

Travel

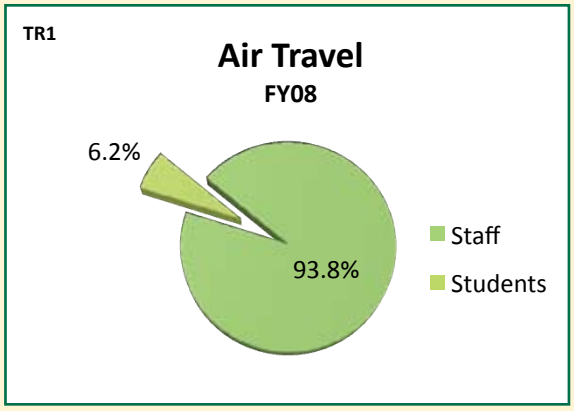
Scope 3 Emission: Directly Financed Outsourced

The total indirect GHG emissions resulting from travel paid for, by, or through the college.

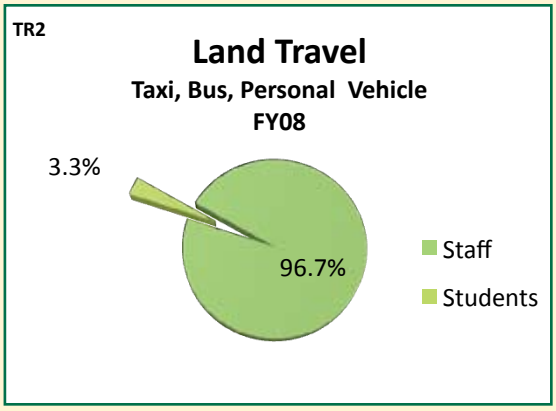
Delta College faculty, staff, and students travel by air, automobile, and mass transportation in their pursuit of professional development, in the support of college initiatives, and to participate in field trips, sporting events, and academic extra-curricular activities. Because this section reflects travel that is financed by the college, the greater percentage of miles is generated by employees. (TR1, TR2) (Note: The graphs in this section do not include fleet vehicle travel which is addressed in the Campus Vehicles section).

Significant over the nine year GHG inventory in relation to employee travel, were shifts from air travel to land transportation and from the use of personal vehicles to fleet vehicles for business travel.

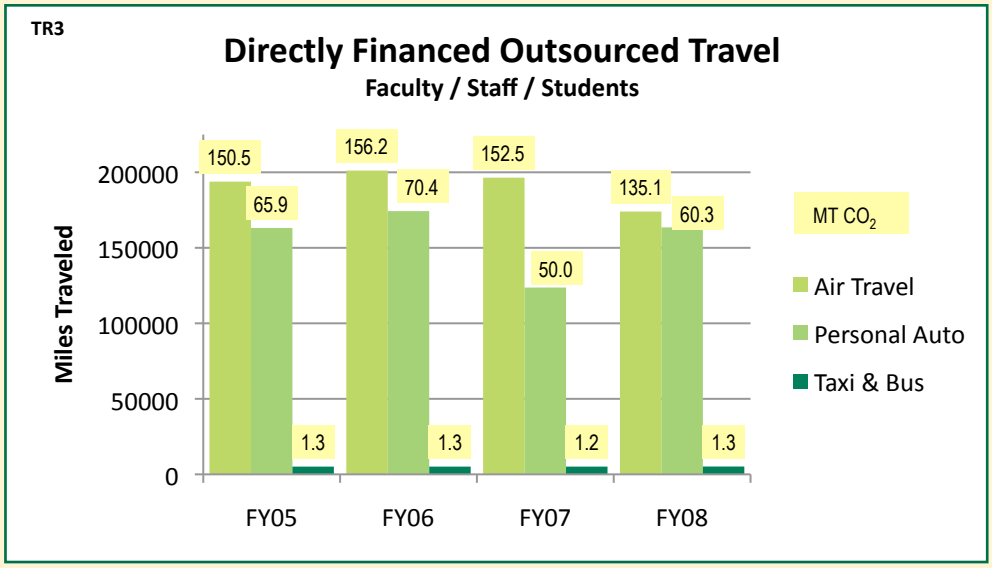
TR1



TR2



TR3



*College vehicles not included; refer to Campus Vehicles category

Air travel is tracked through the College's business office. Institution-funded air travel for students is minimal and is tracked per sponsoring department. The college makes every effort to minimize air travel and has consistently reduced the number of miles traveled over the last three years (TR3). Air mileage for FY08 indicates the lowest air travel recorded in nine years.

Mileage for fleet vehicles is tracked by Facilities Management Operations. Personal vehicle travel is tracked and reimbursed to the traveler by the Business Office. The last three years of the GHG inventory shows college staff shifting from use of their personal vehicle to that of fleet vehicles. Mileage for fleet vehicles increased by approximately 13,488 miles while personal vehicles decreased by nearly the same number, 10,682 miles. Overall, the reduction in land travel miles (2,806) was minimal.

Trading air travel for land travel is a great start in the reduction of our campus carbon footprint. On average, land transportation emits roughly half of the metric tons CO_2 than does air travel. The increased mileage tracked for personal and fleet vehicle travel may indicate participation in local vs. out-of-state professional development activities. Video conferencing and virtual meeting technologies as a means of conducting college business may also be a trend that helped to reduce and shift mileage.

Evolving Toward a Sustainable Campus: Travel Goals

- To gain a more clear picture of the total land travel (personal and campus fleet vehicles) during the next GHG, track fleet vehicles in both the Travel and Campus Vehicle categories.
- Create greater awareness of the carbon footprint of travel among employee groups with tips for carbon saving alternatives.
- Encourage videoconferencing and virtual meeting technologies as a means toward reduced travel.
- Seek ways to conduct college business via non-travel methods such as conference calls and virtual meetings.
- Encourage ride share opportunities when feasible for group travel.
- Investigate the purchase of carbon offsets to neutralize the pollutants caused by air travel.

Campus Vehicles

Scope1 Emission: Mobile Combustion

Mobile combustion refers to the burning of fuels by campus-owned transportation devices such as cars, trucks, tractors, and buses.

Transportation produces greenhouse gas emissions and other pollutants that contribute to health and environmental problems. Campus vehicles refer to all college owned vehicles including grounds maintenance equipment, fleet vehicles, a passenger bus, training program motorcycles, Campus Safety vehicles, and Criminal Justice training vehicles.

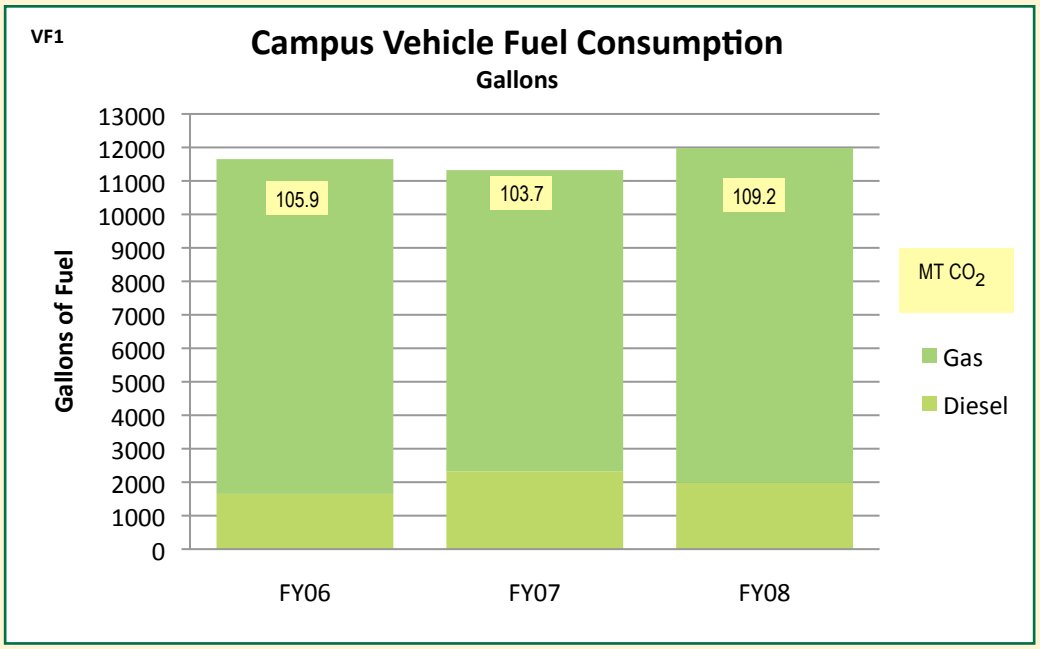
Departments and training areas are conscientious of the impact of vehicle emissions and employ reduction measures in their operations such as:

- Promoting trade labor consolidation when traveling to campus centers for maintenance and grounds keeping.
- Maintaining emission filters and fuels at or before manufacturer recommended intervals.
- Reducing mowing area coverage and intervals.
- Developing snow barriers such as tree windrows and snow fences to reduce snowplowing.
- Encouraging runner service to reduce the number of trips to off campus destinations. Coordinated by geographical area, the service provides a reliable, efficient, cost effective, and environmentally-conscious way to move packages and documents to and from main campus, campus centers, and Tri-City locations.

In the more recent years of the GHG inventory, the college invested in the following energy conscious replacement vehicles and equipment:

- Global Electric Mobile vehicle to conduct routine Campus Safety rounds
- Four fleet automobile models offering 20% improved fuel economy.
- Utility tractor equipped with E-PTO (economy power take off). This feature allows the engine to run at half throttle while generating full throttle performance; thereby, reducing fuel consumption and emissions.
- Pickup truck model with double fuel economy and less emissions.
- Mower with improved fuel economy and reduced emissions.
- Two-cycle string trimmer designed to re-burn exhaust to reduce the emissions.

In the more recent years of the GHG inventory, the college has invested in energy conscious replacement vehicles and equipment.



In the graph VF1, carbon emissions are calculated by combining the consumption of gasoline and diesel fuel. Note also that fuel consumption can be influenced by weather conditions such as snowfall, rain, heat, and sun. Fuel consumption is dependent on the frequency of grounds maintenance equipment used for snow removal and grass mowing.

A campus bus, included in the report, was used primarily for the transport of athletes, field trips, and special events. It has since been retired from the fleet and the college now contracts with a local transportation firm for bus/van rental only as needed. Renting on an as-needed basis reduces the maintenance, financial, and risk incurred through ownership. CO_2 emissions for future rentals will be included in the Outsourced Travel category.

During the three year period FY00 to FY02, an average 14,740 gallons of fuel was used to power campus vehicles. Compared to the average 11,651 gallons of fuels consumed during the last three years of the GHG inventory, FY06-FY08, consumption fell by nearly 4,000 gallons. Although a slight increase in fuel consumption was recorded in FY08, the quantity of diesel fuel during this same period was reduced. This helped to keep the CO_2 emissions relatively consistent since gasoline emits .1% less metric tons of CO_2 per gallon than that of diesel fuel.

During the fiscal years 2007 and 2008, the College operated a fleet of five standard passenger vehicles and one 15-passenger van. In FY07, the miles traveled totaled 69,000 miles equating to about .93 MT CO_2 per passenger mile traveled. The following year, FY08, the miles traveled fell to 66,400.

Evolving Toward a Sustainable Campus: Campus Vehicles Goals

- Establish a schedule of vehicle purchasing to increase our combined average fleet efficiency.
- Test the use of higher fuel efficiency blends and transition to alternative fuels as feasible.
- Maintain vehicles on a regular preventative maintenance schedule.
- Consider replacement of campus fleet vehicles with hybrid vehicles as budget permits.

Grounds Management

Scope 1 Emission: Fugitive Emissions

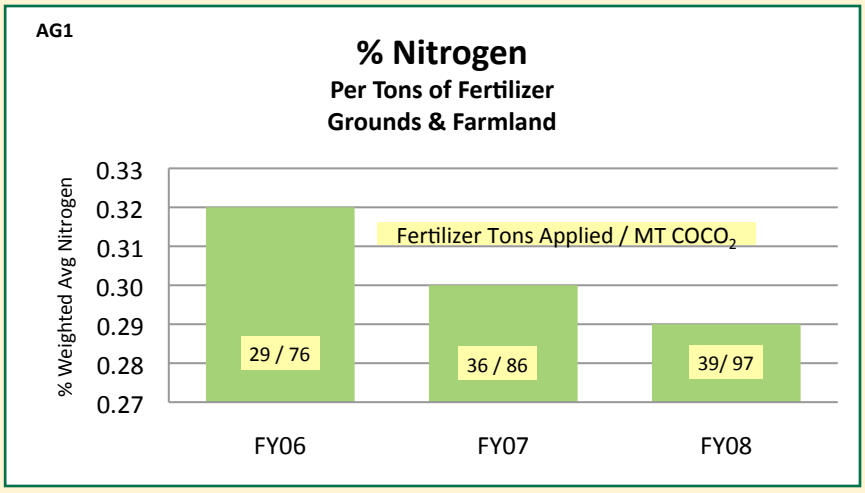
The total direct GHG emissions due to the intentional or unintentional release of GHG's in the production, processing, transmission, storage, and use of fuels or other substances. Specific to Delta College, it refers to the application of fertilizers on property owned by the college and rented for crop production farmland.

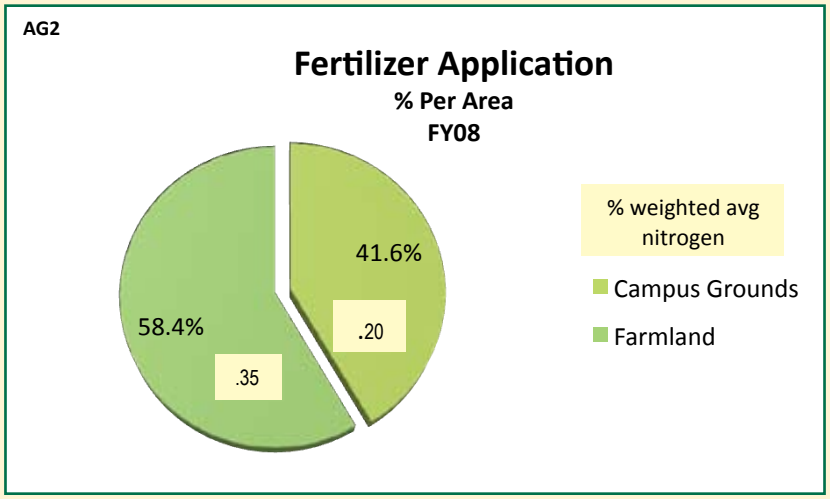
Delta College's one square mile of campus grounds stretch across 148 acres of maintained mowed grass and planted beds, nearly 61 developed acres, and 436 undeveloped natural acres of trees and fields. Within the square mile of Delta College property lie approximately 218.3 acres of land rented for crop production. Grounds Management employs a wide range of sustainable practices which are noted in this section.

The GHG emissions data focuses on nitrogen—the fertilizer component directly contributing to toxic emissions. Resource responsible farming, sustainable ground covers, and native plantings have had a positive impact on emissions over the past three years. Although fertilizer application increased by 10 tons during this period, the percentage of nitrogen content (weighted avg) dropped from 32% to 29%. The ratio of tons of fertilizer applied to the quantity of CO_2 emitted remains relatively consistent with only a 3% variance (38%-41% metric tons). (AG1)

The quantity of fertilizer applied to the 218.3 acres of farmland exceeds that applied to areas of landscaped campus grounds by about 17% (AG2). The component of nitrogen in fertilizer required for managing the campus landscaped areas is .15% (weighted avg) less than that required for crop production. Additionally, by incorporating more sustainable ground cover and native plantings, the metric tons of CO_2 emitted by landscaped areas has decreased by .02% (weighted avg) over the last three years.

AG1





Master Planning

In 2002/03, Delta College, in collaboration with JJR LLC, embarked on a landscape master plan intended to provide a solid landscape development framework from which the college can implement site projects in a coordinated manner. The master plan addresses:

- Strengthening and expanding agriculture and forested lands
- Developing a complete loop road
- Relocating and expanding athletic areas
- Modifying the entry, parking, and pedestrian areas
- Reinforcing central axis and courtyards
- Developing clear levels of maintenance
- Integrating the historical farmstead
- Integrating native landscapes into contemporary environments

The Landscape Master Plan suggests a reallocation of resources aimed at reducing the overall amount of mowed lawn. This will allow for the focus of landscape treatment and maintenance resources to the detailed campus core, rather than allocating precious resources to maintain large lawn areas on the periphery.

Following the landscape master plan, 770 new trees have been planted. Many areas that were formerly mowed lawn have been converted to no-mow or low-mow biannual groundcover. The result was a reduction in the use of lawn mowers and fertilizer application and, thus, a reduction in fuel consumption and air pollution.

Details of the Landscape Master Plan can be reviewed by contacting Delta College Facilities Management.

Campus Grounds Maintenance

The College's Ground Maintenance Department sees to it that Delta's defining color reaches beyond the building and into the outdoor space. The staff has increasingly incorporated natural products and processes to maintain our lawns, courtyards, trees, and foliage.

Fallen leaves and grass clippings are mulched back into soil to provide up to 25% of the lawn fertilization needs. Excess clippings (4% nitrogen, 2% potassium, 1% phosphorus) are compost-piled to serve indirectly as a food source for the bacteria in the soil during the decomposition process. The composted material is later returned as humus to landscaped beds to further provide healthy turf such as decomposing thatch.

Campus shrub trimmings and tree limbs are ground through a chipper to produce valuable plant material. The fine, even textured organic material, which will eventually compost naturally, is used in a variety of ways to enhance the campus landscape. When waste is ground and diverted, there is potential for 16% reduction in landfill disposal.

In FY08, 2,600 pounds of organic fertilizer replaced the traditional synthetic compound on a test plot. Milorganite, a natural fertilizer produced from Milwaukee wastewater sludge, is a slow-release fertilizer containing virtually no chemical salts, so it never burns. Studies show Milorganite will not leach from the root-zone with frequent watering—that means no groundwater contamination. The test plot of Milorganite yielded .05 less nitrogen emissions but was not financially feasible for broad use.

About 18.41 acres of campus grounds area are irrigated. Water is supplied by the City of Saginaw and used only in amounts to supplement natural rainfall. Irrigation water use decreased by approximately 10% from FY07 to FY08 due to better established turf and more mature plants.

Fallen leaves and grass clippings are mulched back into soil to provide up to 25% of the lawn fertilization needs.

Resource Responsible Farming

Within the square mile of Delta College property lies approximately 218.3 acres of land which are divided among three rental contracts to local farms for the production of agriculture.

The Delta College Grounds Manager maintains ongoing communication with the each of the leasers. Although each farmer manages the leased property according to their production needs, both the college and the leasers support resource responsible farming practices which allow for the use of fertilizers and chemicals that are appropriate to standard farming practices. Improving nitrogen use efficiency and reducing nitrogen fertilizer in crop production is an important goal given the energy and greenhouse gas costs of its manufacturing and the potency of nitrous oxide which is 310 times that of carbon dioxide.

Each farm exercises 'minimal' to 'no tillage', leaving stalks and stubbles on the surface of the soil. This practice reduces soil erosion by the wind and provides wildlife refuge. It also minimizes the potential for the soil to enter local drain systems via surface water and creates a filter which aids in preventing fertilizer and pesticides from entering the watershed.

Because the cost of fertilizer is closely linked to the cost of energy, the farmers have the soil analyzed and use only the necessary fertilizers for the crops being produced. Phosphorus and potassium are required to maintain the natural levels of these minerals in the soil. The quantity of nitrogen is determined by the ability of the plant to utilize it before the plant matures. For example, the following fertilizer is required per acre:

- Soy Beans – generally do not require fertilizer
- Corn – 150 lbs N, 30-40 lbs PH, 50 lbs P
- Sugar Beets – 120 lbs N, 30-40 lbs PH, 50 lbs P
- Wheat – 100 lbs N, 0 lbs PH or P

(N)itrogen, (PH)osphorous, (P)otassium

Fertilizers are applied using modern technology. Computers control the application rate, radar determines ground speed, and applicators are guided by a global positioning system.

"No tillage" farming practices are used on the 218 acres of Delta College property available by contract to local farms.

Stormwater Management

Natural habitat, a wet meadow, and bioswales reduce the amount of unfiltered stormwater from Delta College campus parking lots. With Federal government placing more stringent mandates on the discharge and filtering of stormwater, Delta College took the forward-thinking initiative to transform our exterior space with the environment in mind. We're capitalizing on land assets to establish a stronger identity, to create a sense of "place and learning", and to provide guidelines for maintenance and land stewardship. The project incorporates proactive measures for responsible stormwater management by adopting new approaches to collecting, cleaning, and returning the runoff water to the natural environment.

Mimicking a natural hydrologic process, rainwater is conveyed from parking lot bioswale islands into detention ponds. Eventually it flows into an adjacent wet meadow before discharge into the regional drainage system. Native seed and aquatic plantings aid in attracting water habitat like frogs, toads, and spring peepers creating a living laboratory for Delta College environmental and science students.

Highlights of the project also include:

- Deep-rooted native groundcovers requiring little or no mowing and no irrigation
- Significant improvements to 2,000 lineal feet of county drain to mitigate flooding
- Reuse of more than 15,000 cubic yards of bituminous pavement and aggregate
- High efficiency, cost-effective LED lighting reduces energy use by 45%
- Use of local materials manufactured and shipped from within a 250 mile radius

Evolving Toward a Sustainable Campus: Grounds Management Goals

- Incorporate sustainable agriculture standards into the contracts issued for rental of Delta College farmland to encourage farming a single area that produces food indefinitely. This would include standards related to erosion and other irreversible changes to the land. It would also address withdrawing no resources from the environment that cannot be replenished such as using more water than can be replaced regularly by rainfall.
- To capture the benefit of 'on the spot' mulching of grass clippings during mowing, develop a tracking mechanism that documents mowing schedules, area mowed, and estimated natural fertilization and compost.
- Develop a tree mapping project to calculate the sequestration of CO_2 by campus trees. The project would document the variety of tree, measure the tree size, and estimate sequestration over time.
- Develop and install interpretive signage in the South campus stormwater management area to create an outdoor learning space and to promote land stewardship. Signage would be utilized by students and faculty for field observation and laboratory study of various aquatic habitats and micro systems. It would also serve as an interpretive learning center for visitors and community groups.
- Installation of a sculpture series that encourages the community to engage in the environmental and social aspects of sustainability.

Solid Waste

Scope 3 Emission: Solid Waste

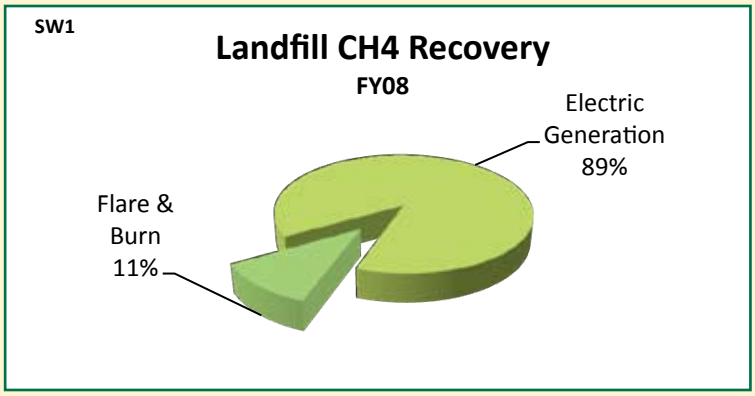
The total direct GHG emissions resulting from decomposition of campus solid waste.

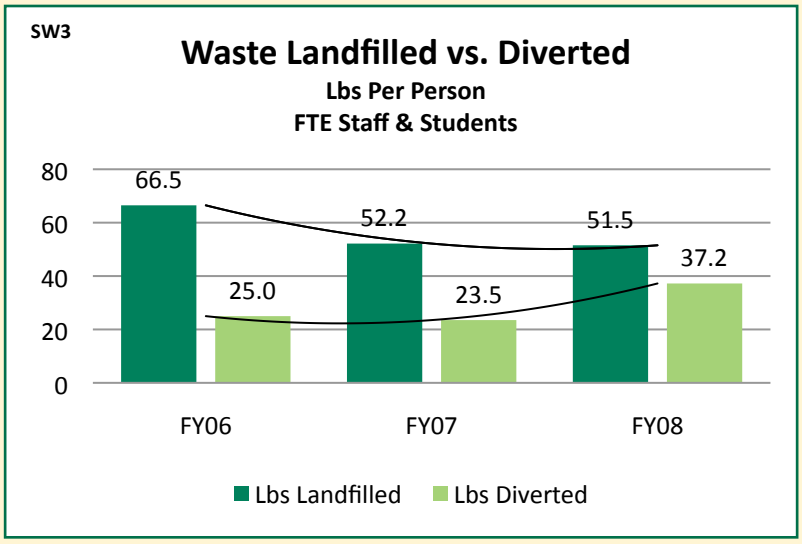
Delta College is committed to the safe and efficient management of all materials in the waste stream. A large number of varied materials are diverted for reuse, recycling, and repurposing. A comprehensive evaluation of the waste stream is conducted periodically including associated life-cycle costs such as need, procurement, inventory, and storage. Facilities Management monitors, tracks, and evaluates new materials to strive for maximum diversion of materials from general waste stream.

Waste Management

Delta College contracts with a local waste hauling company for the transfer of waste to a local landfill. Methane (CH_4) is a natural occurring greenhouse gas emitted from the decomposition of organic waste in municipal solid waste landfills. It escapes from the landfill either directly into the atmosphere or by diffusion into cover soil. CH_4 recovery systems can reduce emissions to the atmosphere by more than half. Sometimes the recovered CH_4 is simply flared off which is referred to as 'Flare & Burn'. The landfill with which Delta contracts provides an economically viable energy source by collecting the methane from our campus waste to generate electricity, referred to as 'Electric Generation'. Eleven percent of the methane generated by our campus waste is 'flared off' while the remaining 89% is used as fuel to generate electricity. (SW1)

SW1





Waste Diversion

We generate, on average, about 88.7 pounds of waste per person on campus per year. Of that amount, 37.2 pounds are recycled while 51.5 are disposed (SW2). Carbon emissions created through the processing of solid waste are calculated by reporting the tons of materials disposed in the landfill. With this in mind, Delta College strives for maximum diversion of its materials from landfilling by recycling, refurbishing, repurposing, and sales of assets.

The quantity of diverted materials from the waste stream has been steadily increasing. From FY06 to FY08, about 15% more materials were diverted toward recycling or reuse. Per person, that translates into about three pounds less waste being generated overall and about 12 pounds more diverted. The College is about 50 tons per year away from realizing an equal amount going to landfill as to diversion. (SW3)

The College recycles a large number of varied materials including automotive batteries and tires, mixed paper, cardboard, box board, magazines and catalogues, newspapers, telephone directories, food service bulk servery containers, cell phones, i-pods, PDAs, MP3s, packing materials, lamps, overhead transparencies, junk and fax mail, beverage containers, print cartridges, universal waste (e-waste), masonry, metals, and asphalt.

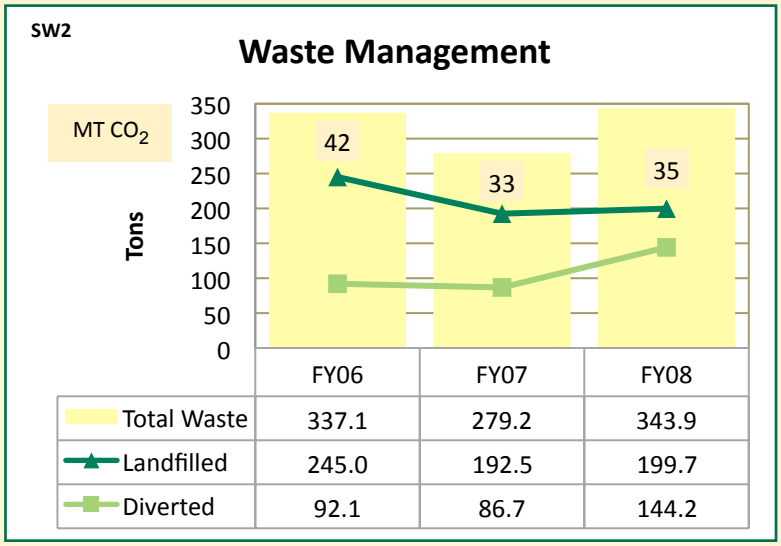
Mixed Paper

Our paper program was introduced in 1991, with materials, equipment, process, and projects phased in over the years. Collection totes can be found in every office, classroom, conference room, and lab. Mixed paper is collected from 30 central areas campus-wide and three community campus centers. The program has evolved from storage in 55 gallon containers to a 40-yard compactor fully dedicated to mixed paper collection.

Students are introduced to recycling with the 'It's Not Just a Brown Box' campaign. The posters listing acceptable materials are installed in all labs and classrooms to encourage students to look for the brown cardboard collection tote next to the wastebasket.

In 2006, seven tons of campus archival documents were shredded and recycled. In 2007, an improved archival and retention process reduced that quantity by half. The following year, an additional 25% reduction was realized. To ensure the security of confidential records and to promote environmental responsibility, the college contracts with a document destruction company to provide shredding services once each year. Shredded documents are transferred to a paper processing company and eventually returned to the marketplace as recycled paper. Delta's convenience copiers are stocked with post-consumer content paper, creating a closed-loop program.

SW2



Servery & Packaging Materials

Food Services currently utilizes unbleached napkins and paper products that are post-consumer recycled content. Catering services use biodegradable hot beverage containers and corn-based plastic cups. An aggressive recycling plan for bulk servery items like oversized plastic pickle containers and extra large metal ketchup cans was kicked off in April 2009. In September, non-returnable beverage containers were added to the waste diversion plan. In less than a year, over one ton of containers were collected for recycling.

Mixed Metals

In three years, nearly 33 tons of mixed metals have been sold to a local processer for recycling. Materials are collected from Technical Trades academic areas including the machine shop, automotive service center, and welding and residential construction labs. Facilities Management staff adds to the mix with non-ferrous material from obsolete equipment and furniture and fixture components collected during maintenance operations. Contractors and vendors are encouraged to deposit materials, as well. The materials are sorted and delivered to OmniSource, a local recovery industry. To date, material collection rebates total over $12,500.

Environmental Health & Safety Compliance

Delta College tracks and safely disposes of all hazardous, universal (e-waste), and non-regulated chemical waste with Michigan processing companies. The college is compliant with each known regulation and regulatory agency at the operations level. A Mercury Reduction Program was established with Bay County. We have developed baseline assessments and documentation for environmental health and safety compliance and their reporting structures through each campus area to avoid duplication of processing.

Electronic waste contains toxic components such as lead and mercury that can contaminate soil and groundwater and have detrimental human health impacts if handled improperly. At the same time, e-waste contains recyclable components. The Office of Information Technology seeks electronic equipment with less hazardous components and more adaptability toward recycling and end-of-life disposal options. The College has a documented process by which our electronic equipment is managed throughout its life cycle until it can be safely disposed. The first step is redistribution throughout campus service areas. When it can no longer be assigned, it is made available to the public through asset sales. The remaining equipment is donated to the Goodwill ReConnect program or our Kenya, Africa computer lab development. Unacceptable equipment is palleted for reclamation and recycling by a local company.

Other Noteworthy Waste Stream Diversions

- In 2½ years, nearly one ton of junk mail and unwanted faxes have been processed for elimination.
- Since 1991, 1,200 tons of mixed paper has been collected with a cost avoidance of over $200,000. (Cost avoidance are savings realized through a combination of lengthening intervals between trash removal and reduced tip fees.)
- 85 pounds of college-generated batteries have been safely disposed.
- 283 pounds of cell phones have been repurposed or recycled.
- An average of 6.5 tons of e-waste per year has been processed since 2004.
- Nearly 15 tons of concrete and brick materials have been crushed for reuse.
- In less than a year, over one ton of bulk food containers and non-returnable beverage containers have been recycled.

Evolving Toward a Sustainable Campus: Solid Waste Goals

- Investigate current servery materials and product packaging for greater recovery and recycling opportunity. As industry becomes more receptive to the demands of consumer needs and products become more available, evolve towards a more sustainable servery product line.
- Conduct a comprehensive evaluation of waste streams to strive for maximum material diversion. Evaluate each material for associated costs (need, procurement, inventory, and disposal) and analyze for reducing quantity vs. recycling greater quantity.
- Evaluate all project construction materials for recycling and reuse. Track sustainable aspects of each project.
- Review purchasing, procurement, inventory, and storage policies. Analyze division, service area, and department buying trends and promote reduced consumption of goods and materials.
- Evaluate office design and reconfigurations to incorporate product reuse to the greatest degree with consideration for the triple bottom line. Maintain and grow purchasing relationships with companies who support sustainable manufacturing and delivery of product.

Waste Water

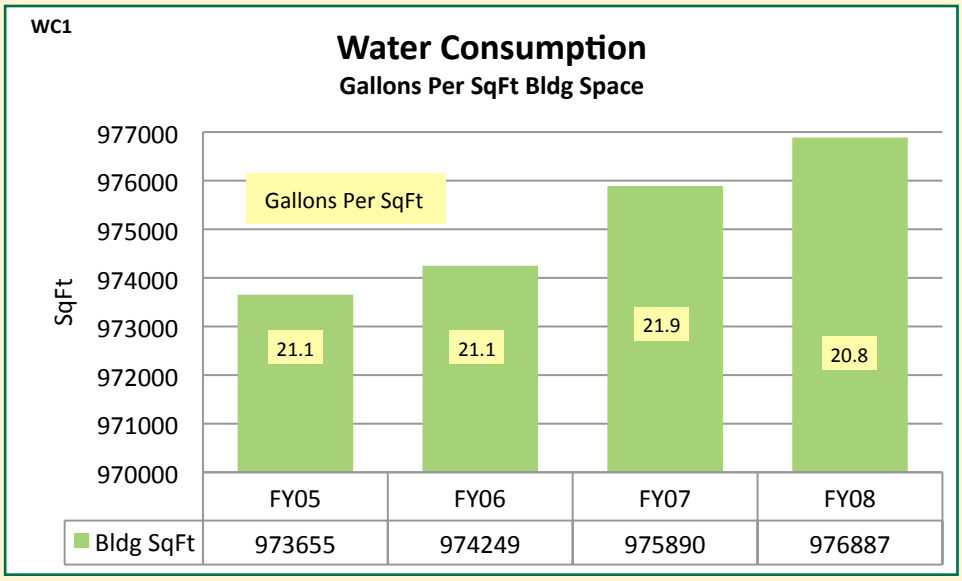
Scope 3 Emission: Custom Sources

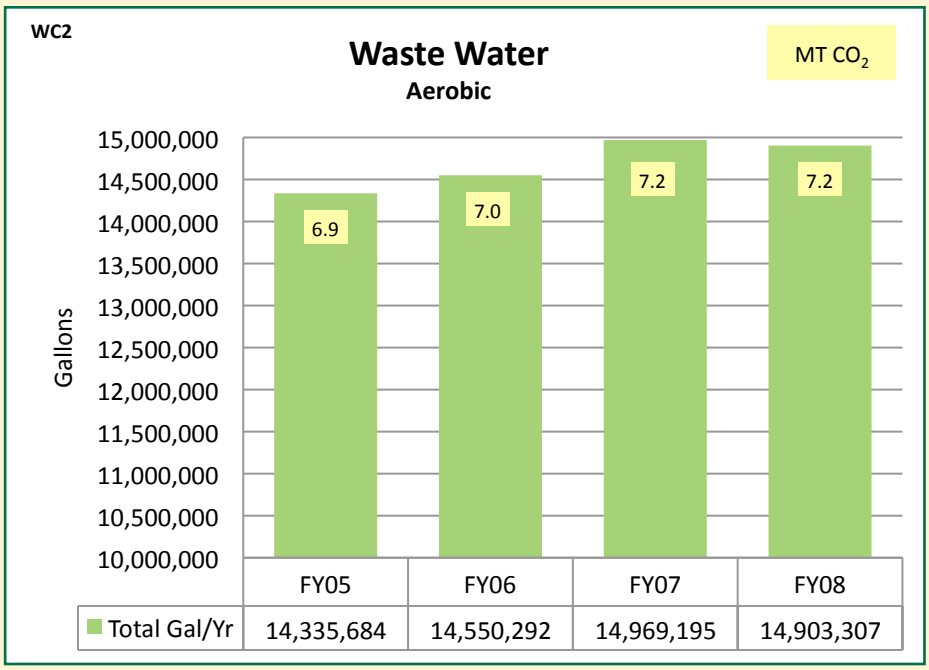
The total direct GHG emissions resulting from the processing of campus waste water.

The Delta College water system is maintained primarily by the Facilities Management operation. The incoming domestic water feed is provided by a local waterworks plant with Facilities Management responsible for the distribution system on the college's property.

Delta College is proactive in its conservation of our natural resources. Over the past several years, the college underwent major upgrades during which renovated areas were fitted with low flow water fixtures and shower heads and, in some office areas, self-flush toilets. Facilities Management Operations staff performs routine preventative maintenance on the water system to ensure reliability and to monitor the efficiency and conservation of use. Preventative maintenance activities for each of the 68 toilet rooms include plumbing inspection, leak detection, and replacement of parts. Backflow prevention devices are inspected annually.

In the years FY05-FY08, the college realized a decrease in potable water consumption by 297,000 gallons, or 1.68%. Despite an increase in building square footage and student population, the FY08 gallons per square foot remained relatively unchanged from FY05 (21.1) to FY08 (20.8). (WC1)





Waste water is processed off-site by the Bay County Department of Water & Sewer. All waste water is processed by an aerobic, activated sludge process which requires air to break down the waste components. The quantity and, therefore the carbon emissions of discharged waste water, remained relatively consistent through the last four years of the GHG inventory. In the overall picture of carbon emissions by category, waste water contributes the lowest percentage of CO_2. (WW2)

Evolving Toward a Sustainable Campus: Waste Water Goals

- Expand the installation schedule of low flow fixtures
- Increase outreach and awareness programs for water reduction to the campus community

Mitigation: Sequestration & Carbon Storage

Offset

Refers to the removal of carbon dioxide from the atmosphere and its storage.

Composting

Properly managed composting does not emit CH_4 but does act as a vehicle for carbon storage. Compost returns organic matter to soils, increasing its water holding capacity and improving soil structure helping to create healthier landscaped areas. An estimated eight tons of fallen leaves, branches, and prunings are composted on campus each year. Composting removes materials from the waste stream and landfill as well as mitigating an estimated three metric tons of CO_2 annually.

Fallen leaves and grass clippings are mulched back into soil to provide up to 25% of the lawn fertilization needs. Excess clippings are compost-piled to serve indirectly as a food source for the bacteria in the soil during the decomposition process. The composted material is later returned as humus to landscape beds where they provide further healthy turf such as decomposing thatch.

Campus shrub trimmings and tree limbs are ground through a chipper to produce valuable plant material. The fine, even textured organic material, which will eventually compost naturally, is used in a variety of ways to enhance the campus landscape.

Leaving clippings on landscaped lawn areas allows them to act as a natural fertilizer and lets nature manage the composting. With this in mind, a plan will be developed to track grounds mowing to calculate 'on the spot' mulching and related carbon offset.

Four hundred thirty acres of campus grounds are left natural and undeveloped. Additionally, 770 new trees have been planted since 2000. Trees hold potential as carbon offsets, as well as offering shade to lower summer energy costs. A tree mapping project, currently being researched, will help to identify the offsets from existing campus landscape area trees.

Evolving Toward a Sustainable Campus: Mitigation Goals

- Implement carbon reduction actions until maximum emissions have been eliminated.
- Develop purchasing guidelines to assure offset purchases are substantive, local, and real in terms of long-term carbon reduction.
- Look for partnership opportunities to create and/or support local offset projects.
- Provide education to employees about offset programs for travel and other initiatives.
- Continue to track the potential for carbon sequestration offsets.

spreading the word

Communicating Sustainability

Delta College engages its community in the evolution of a sustainable campus with a comprehensive, ongoing outreach plan. We announce our commitment to sustainability even as you arrive on campus with our series of road banners. 'Sustain the Difference' greets each arrival.

A poster series, installed at the start of each semester, introduces the range of environmental, economic, and social projects and programs to students, employees, and visitors. Point-of purchase placards announce sustainable choices, tips, programs, and goals in the Bookstore, Food Services, Printing Services, and Business Service areas. Table-top flyers and display cabinets invite students to participate in outreach activities, surveys, and adopt a leadership role. Menus publicize sustainable food and beverage choices.

The Delta College Sustainability website which includes academic resources, student leadership functions, strategic planning, and building and energy projects can be found at www.delta.edu/sustainability. Faculty and staff share our sustainable efforts in the classroom, at civic engagements, and at state and national conferences with students, colleagues, and other institutions of higher learning.

Communicating sustainability aims at providing education, direction, and a distinct role for the individual. Our campaign 'Power of a Single Action' announces new and ongoing initiatives. It stresses the detrimental effect of a particular environmental scenario and what Delta College is doing to help remedy situation. It invites the individual to participate with the goal of multiplying the results. It's an approach that allows people to see the benefit of their actions—personally and for the good of the local and global environment.

Education is ongoing—especially in a community college, non-residential setting. Communication pieces are a part of:

- New employee packets
- Adjunct faculty orientations
- Student orientation
- Community events
- Campus special events

Evolving Toward a Sustainable Campus: Marketing/Communication Goals

- Interactive Web Map
- Social Networking Venues
- Online Newsletter
- Campus Radio Spots
- Employee Outreach Teams

green inside & out

Green has always been our color at Delta College. It's been a part of yesterday's heritage, today's practices, and tomorrow's ideas. Our role as an educational institution imparts responsibility to consider, develop, and implement processes and practices throughout our operations.

We've adopted a triple bottom line approach that incorporates economic, environmental and social benefits as major decision-making components. Students, staff, and visitors can engage in sustainable practices from the moment they arrive on campus.

We promote health, productivity, and safety of the campus community through the planning, design, construction, and maintenance of our buildings and grounds. We are steadfast in incorporating environmentally-conscious choices into purchasing and procurement processes.

On the pages following, you'll find highlights of programs, policy, and processes that underline our commitment and dedication to the economic, environmental, and social benefits of sustainability.

More than 20 departments and 60 courses offer students opportunities for sustainability related or focused studies.

Sustainability in Academics

Our academic programs reflect the importance of the principles of sustainability to our students and our community. We engage our students as active participants in the solution of climate change. We seek to deliver sustainable skill sets to ensure our students succeed in their professional and private lives.

- Select group of faculty, charter members of the Academic Sustainability Team (AST), endeavors to develop curricula to bring sustainability to the forefront of our programs, activities, and courses.
- Comprehensive survey identifies sustainability-focused and sustainability-related courses to create a foundation for advancing sustainability in the curriculum.
- Development of criteria to assist in the determination of sustainable course components.
- Database tracking of sustainability courses and content include:
  - Over 20 departments and 60 courses offering sustainability-related or focus courses
  - State-wide recognition for the Science Division small scale chemistry program
  - Environmental art featured in community and campus events
  - Science that introduces eco-tourism, national park projects, and pollution prevention
  - Humanities courses that incorporate reflection on economic, environmental, and social implications
  - Service Learning courses partnering students with social and environmental businesses
  - Learning community courses connecting disciplines for collaborative sustainable study
  - Sustainable concepts in alternative energy, green building, and heating and cooling
- Development of a certificate program in sustainability with Introduction to Sustainability as the program foundation.
- Technical Division offers new courses including Sustainable Building Principles and Energy Auditing & Weatherization.
- Grants received to purchase equipment including residential solar array and wind turbine for alternative energy programs, student projects, and community outreach.
- Webpage and online resources dedicated to faculty to request, to develop, and to implement sustainable courses
- Professional development offered through orientations, training sessions, and special event presentations.
- Innovation Incubator Program offers funding for sustainable initiatives including:
  - Virtual tour of the campus flora landscape to engage students in sustainable landscape design.
  - Platform upon which a sustainable modular home can be constructed for demonstration purposes.
- President's Speakers Series brings high-profile interdisciplinary speakers to engage students in sustainable change, diversity, and social activism.
- Global Peace Studies Program prepares students to understand the complexity of issues and become agents of positive change in the 20th century.
- Sustainability incorporated into student campus orientation.

Sustainability in Campus Services

Delta College auxiliary departments create shopping, dining, and printing services in which the customer can be confident they are supporting the environment and contributing to the Triple Bottom Line of sustainability. Each area routinely offers promotions and tips on how to employ the Power of a Single Action in our everyday campus routines to help contribute to a brighter shade of green.

Bookstore

- Suppliers are required to comply with the Fair Labor Association.
- Promotes and increases its commitment to purchasing sustainable products.
- Online textbook ordering.
- Retired editions and out-of-print texts are donated to Kenya Literacy Program.
- Printed course pack materials are transferred to electronic format.
- Unbound, loose leaf texts reduce the manufacture of cover materials and eliminate the binding process.
- Since 2008, plastic bag consumption has been reduced by 25% thanks to the 'Say No To Plastics' program and donations in support of local wildlife and refuge centers.
- Products include World of Good® which are sourced from a global network of more than 6,000 artisans in 34 countries. They promote fair wages, clean and safe work environments, support of small scale manufacturing, the use of locally harvested and sustainable raw materials, and social services.

Business Services & Purchasing

- Committed to incorporating environmentally-conscious choices into purchasing and procurement processes.
- Requests for quotation, proposals, and bids require vendors provision of their company's sustainable initiatives and purchasing practices.
- Product choices consider energy efficiency, recycled content, solid waste reduction, life-cycle, and locally grown or manufactured goods and services.

In our bookstore plastic bag consumption has been reduced by 25% thanks to the "Say No To Plastics" program. Check-out clerks ask if they want a bag, students say no. It's as easy as that.

Food Service

- Surplus food redistribution feeds people in need.
- Vegetarian dishes and organic dining options.
- Biodegradable service ware and unbleached, dioxin-free paper napkins.
- Serving plates are 100% recycled fiber, 100% biodegradable, and made in the USA.
- All-natural, organic smoothies served in 100% renewable resource containers.
- Catered event eco-container coffee cups made from 100% renewable resources.
- Serving over 6,300 cups of organic and fair trade coffee each year.
- Food waste outreach conducted to measure knowledge of sustainable dining and food waste.
- Refillable mug program for both hot and cold beverages.
- Beverage container recycling collection.
- Bottled water eliminated from catered events by serving from water pitchers.
- Vending machines utilize sleep modes for reducing energy consumption.
- Provides table tent education about waste reduction.
- Tracks kitchen waste for more efficient use of resources.
- Bulk condiments replaced with individual packets.

Printing Services

- Convenience copiers use 30% post-consumer waste recycled content.
- Coin-operated copiers use processed chlorine-free paper.
- Press jobs utilize vegetable-based inks whose production requires only a small amount of energy.
- Paper choices available as 5% recycled, 20% post-consumer recycled content, and processed chlorine-free paper.
- Waste from the process of de-inking vegetable based ink is non-hazardous.
- Electronic submission of print jobs eliminates hard copy print orders or original documents for reproduction.
- Identification of FSC Mixed Sources label to support the development of responsible forest management worldwide.

Food Service has implemented a variety of sustainability measures including:

- *Surplus food redistribution feeds people in need*
- *Biodegradable service ware and unbleached, dioxin-free paper napkins*
- *Serving over 6,300 cups of organic and fair trade coffee each year*

Sustainability in Community Partnerships

We value our reputation as an integral part of the community and are proud to be a part of the vision to enhance its education, health, and well-being.

- In partnership with the Bay City Downtown Development Authority, an existing parking space at the Delta College Planetarium was designated for the installation of an electric vehicle charging station to park and recharge electric powered vehicles.
- University Center Trail, a four-mile long, non-motorized greenway route to connect Delta College with Saginaw Valley State University, was identified as a priority in a 2005 "Vision of Green" report by the Saginaw Bay Greenways Collaborative. The College, on behalf of a number of partners, is seeking assistance to fund a share of the trail. The trail project is a model of collaboration between Bay Area Community Foundation's Riverwalk / Railtrail Committee, Bay County Road Commission, Bay County Transportation Planning Division, Bay Region Michigan Department of Transportation, Frankenlust Township, Kochville Township, MDOT Bay City Transportation Service Center, Saginaw Bay Watershed Initiative Network, Saginaw County Metropolitan Planning Commission, and Saginaw Valley State University.
- With Federal government placing more stringent mandates on the discharge and filtering of storm water, Delta College took the forward-thinking initiative to incorporate proactive measures for responsible storm water management by adopting new approaches to collecting, cleaning, and returning the runoff water to the natural environment.
- An eight year student project results in the historical restoration of Bay County's oldest church, the Ogaucawning Indian Mission Church.
- Over 500 students contributed to hands-on design and building of home projects with the Construction Technology curriculum Habitat for Humanity program.
- Construction Technology students used reclaimed wood from gymnasium bleachers to construct peace poles. Peace poles were placed at exchange program institutions and in the Delta signature courtyard as an enduring symbol of the college's global commitment.
- Faculty-based Community Research Institute (CRI) is currently pursues research on the awareness of sustainability within our communities. CRI assists organizations in gathering and analyzing data to assess their communities' needs to ultimately gain a better understanding of how to best serve their specific community.
- *Hey Buddy, Ken-Ya Spare a Book?* book donation project toward library literacy with our sister college in Africa.
- Service Learning programs utilize student leadership and sponsoring organizations to create positive, healthy relationships with our communities.
  - *Nike Reuse-A-Shoe* to create sport surfaces and playgrounds
  - Alternative Spring Breaks assists with hurricane cleanup and rebuilding
  - Tutoring elementary and middle-school students
  - Volunteer work with the Boy & Girls Clubs
  - Serving meals in soup kitchens and shelters
  - Community-based automotive safety presentations
  - Storytelling at elementary schools

Sustainability in Operations

Facilities management focuses on sustainable development in areas such as energy and resource management, waste reduction, recycling and similar strategies. We measure, target, monitor, implement and report on sustainable activities as a part of our normal functions and role. Our role in the wider community endeavors us to demonstrate our commitment to future generations by ensuring that our practices do not contribute to the deterioration of the environment at either the local or global level. We strive to provide a solid development framework from which the College can implement sustainable projects in a coordinated manner. Our blueprint provides for improving the physical appearance of the campus, tools for enhancing its enjoyment and educational opportunity to visitors, students, and staff, and a functional mechanism for streamlining maintenance efforts.

Energy Conservation

- Variable Air Volume systems apply only the amount of air flow and temperature to a space as needed based on occupancy or usage.
- Motor-driven systems were fitted with variable frequency drives to allow for improved continuous process speed control and reduced maintenance.
- Low energy argon windows boost energy efficiency and reduced utility costs.
- Occupancy sensors ensure lights are on only when a space is occupied.
- Photocell sensors record light levels to automatically shut off lights when incoming natural light meets minimum lighting levels.
- White roofs reflect summer heat to reduce peak cooling demand by 15% and have a longer life expectancy.
- An Energy Management System efficiently controls many variables including humidity, temperature, ventilation, lighting, exhaust fans, and heat recovery.
- Solar array panels, producing about 10 kWh of power, demonstrate solar generated electricity and produce about 10 kilowatts of power.
- Chilled water system produces solid ice at night for comfort cooling during on peak hours reducing energy consumption.
- Green areas around the building and parking lots help to reduce building cooling loads in the summer and improve indoor air quality.
- Heat recovery systems conserve energy by allowing discharged warm air to be recaptured into the air units through a coil system.
- Solar powered crosswalk signals rely on renewable energy and require no outside energy source.
- LED parking lot lighting provides greater light for safety while using less energy equating to an annual cost savings of 45% over traditional metal halide lamps.
- Electronic ballasts and T8 lamps help to conserve energy.
- All construction projects since 1993 have specified T8 or T5 linear lamps and compact fluorescent lamps. All non-dimmed light fixtures are supplied with fluorescent equivalents.
- Auto-flush toilets and low flow fixtures conserve water.

In 2009, the College began offering an Alternative Energy – Wind Turbine Technician program. Solar array panels located on the Technical Trades Building roof demonstrate solar generated electricity and produce about 10 kilowatts of power.

Students used wood from replaced gymnasium bleachers to build peace poles. One of the poles was installed at Delta College's sister college in Kenya.

Planning, Design, & Construction

- Restored seating extended the life of theatre and public area chairs while saving the production of new materials.
- Building materials are reclaiming for use to divert construction debris from landfills and to reduce the economies of a project. Existing concrete, brick, and asphalt are reused as aggregate material base for driveways and parking lots. Copper, steel, and aluminum are melted for reuse.
- Eco-conscious RetroPlate flooring is installed in maintenance shops and corridors.
- Open office design requires less material to create space thus eliminating non-reusable construction materials required for fixed wall construction.
- Wood from renovated gymnasium bleachers was reused by the Technical Division to construct commemorative plaques, peace poles, and special awards.
- Mackinaw & Delta entrance drives, upgraded using recycled content, saved $35,000 in project costs and 2,000 tons of debris materials from landfilling.

Grounds Management & Land Use

- A landscape master plan incorporates native plantings and is responsible for the planting of over 700 trees since 2000 which aid in the absorption of carbon.
- Leaves & grass clippings are mulched into the soil to provide up to 25% of fertilization needs. Grass clippings are composted for landscape bed humus. Shrub & tree trimmings are ground to product organic landscape material.
- Snow windrows diminish the amount of snow blowing across entrance drives. Salt as a ice/ snow removal process, is applied only along the centerline contour of campus roads. As traffic passes, it moves the salt across the entire road. These practices reduce salt application which can adversely affect the aquatic ecosystem and roadside vegetation.
- Barley straw is substituted for chlorine algaecide in the campus signature waterfall pond.
- Crushed organic red clay brick provides the ground application for the softball infield & warning track.
- Proactive measures for stormwater management like bioswales, a wet meadow, and improved drainage, collect, clean, and return runoff water to the natural environment.

Delta College was the first community college to earn The Green Cleaning Award by American Schools & Universities.

Maintenance & Cleaning

- Green Cleaning Award by American Schools & Universities recognizes Delta College as the first community college in the nation to receive the honor.
- Toilet tissue is 100% recycled content and Green Seal approved.

Waste Stream Management

- Comprehensive recycling program includes automotive batteries and tires, mixed paper, magazines, cardboard, box board, magazines and catalogues, newspapers, telephone directories, food service bulk servery containers, cell phones, I-pods, PDA, MP3, packing materials, lamps, overhead transparencies, junk and fax mail, beverage containers, print cartridges, universal waste (e-waste), masonry, metals, and asphalt.
- Phone books ground and mixed with seed to produce hydro seed mulch for use on newly landscaped lawns.
- Delta Contributes approximately six tons of metal to local metal processing companies in the form of fleet license plates, aluminum, iron, copper wire, and cast metals from our trades program and facilities operations.
- Campus centers collectively recycle about 1 ½ tons of mixed paper materials each year.
- Main campus mixed paper collection totals over 2000 tons since 1991. The program was been recognized as a state-wide best practice in 2005.

Campus Design

- Space planners maintain high standards of office design while incorporating sustainable materials and features in furnishing and fixtures whenever financially feasible. Reuse is practiced with each design and reconfiguration. Delta College contracts with companies committed to strong environmental stewardship who manufactures eco-preferable furniture & fixtures.
- Vestibules are standard in campus design at building entrances to reduce the loss of warm air in winter and cooled air in summer.
- Worn carpet tiles are returned to the manufacturer for recycling into new tiles.

Sustainability in Student Leadership

We recognize the value of student involvement to create positive and healthy relationship between people and the natural environment upon which we all depend. Our students fill a critical need in society, while learning through real-life volunteer experience. Delta College students are presented with exciting options to engage in service learning, community partnerships, alternative spring breaks and student leadership throughout their college experience. Students benefit from personal life skills development, civic engagement, critical thinking, and sensitivity to diversity.

- Eco Reps help to increase environmental awareness and inspire behavior change through promotions and educational initiatives on campus and in the community.
- *United We Stand, Divided We Stall* program encourages ride sharing.
- *It's Not Just a Brown Box* advances student-driven paper classroom recycling program.
- The Environmental Club has promoted rainforest protection, pine tree planting, and partnerships with nature conservancy.
- In a single year, over 400,000 student hours contributed to sustainable community service projects.
- *Nike Reuse-A-Shoe* campaign helps to create sport surfaces and playgrounds.
- Students play an integral role in events such as Global Awareness, Earth Day, and SCUP Sustainability Day.
- Students sign pledges to commit to lead a sustainable lifestyle on campus and in their communities.
- Over 3,000 students participated in service learning activities in a single year.
- Students compete in Chill Out for global warming by creating videos to showcase projects and people making a difference.
- Student surveys measure attitudes and perceptions about campus sustainability.
- Recycled bleacher lumber was used to construct 'Sustain-A-Ville' for student outreach events.
- Scavenger Hunt creates awareness with the installation of 50+ posters each highlighting a sustainable campus initiative.
- Student-managed junk mail program eliminated unwanted mail and junk faxes by 76% in a single year.
- Classroom waste audits performed to increase awareness of recyclable materials.
- Surveys conducted to promote sustainable food service options and bring attention to reducing food waste.

More than 400,000 student hours contributed to sustainable community service projects. Here students help build homes for flood victims in New Orleans as part of an Alternative Spring Break trip.

1961 Delta Road
University Center, MI 48710
www.delta.edu