Florida State Government Carbon Footprint

July 1, 2006 through June 30, 2007

prepared by
Florida Department of Management Services
Florida Department of Environmental Protection

October 1, 2007

DEPARTMENT OF
MANAGEMENT SERVICES
ADMINISTRATIVE AGENCY FOR FLORIDA GOVERNMENT

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Executive Summary

On July 13, 2007, through Executive Order 07-126, Governor Charlie Crist committed that Florida become a leader in reducing greenhouse gas (GHG) emissions. Because Florida's state government is the largest employer in the state with 114,756 authorized employees, more than $1 billion in annual commodity purchases, and 16.8 million square feet of office space statewide, Governor Crist wants state government to lead by example in the fight against global climate change. For agencies and departments under the governor's purview, he established GHG emission reduction targets from current emission levels of 10 percent by 2012, 25 percent by 2017, and 40 percent by 2025. To determine the current GHG emission levels, Executive Order 07-126 directed each governor's agency and department to conduct an immediate Carbon Footprint of their GHG emissions during the July 1, 2006 through June 30, 2007 fiscal year (FY 06-07). The Department of Management Services (DMS), in consultation with the Department of Environmental Protection (DEP), coordinated activities across the state agencies[1] to produce this Carbon Footprint.

> *"I am persuaded that global climate change is one of the most important issues that we will face this century. With almost 1,200 miles of coastline and the majority of our citizens living near that coastline, Florida is more vulnerable to rising ocean levels and violent weather patterns than any other state…I will bring together the brightest minds to begin working on a plan for Florida to explore groundbreaking technologies and strategies that will place our state at the forefront of a growing world-wide movement to reduce greenhouse gases. Florida will provide not only the policy and technological advances, but the moral leadership, to allow us to overcome this monumental challenge*."
> Florida Governor Charlie Crist

Key findings of the Carbon Footprint for FY 06-07:

- State agencies produced 899,107 metric tons of carbon dioxide (CO_2) in FY 06-07, or .34 percent of the 265 million metric tons of total statewide CO_2 emissions in 2004
- The total CO_2 emissions from state agencies is equivalent to the annual CO_2 emissions from 194,612 passenger cars, electricity usage for 115,418 households, or consumption of 2,090,947 barrels of oil.
- Of the total CO_2 emissions from state agencies, 84 percent came from facilities and 16 percent from vehicles.
- Of the CO_2 emissions from facilities, 85 percent is due to the generation of purchased electricity. The remaining 15 percent is from the use of fuels like natural gas, diesel and liquefied petroleum gas (LPG).
- Over 80 percent of the total reported CO_2 emissions are produced by nine of the state agencies participating in this Carbon Footprint.
- Of the 899,107 metric tons of CO_2 emissions in FY 06-07, 818,774 metric tons (91 percent) were from state agencies' vehicles and facilities under their *operational control* and will be the focus of GHG emission reduction efforts.

[1] See Appendix for listing of state agencies participating in this Carbon Footprint

This Carbon Footprint represents a critical first step in Florida's journey to reduce GHG emissions. Although it is based on the best available data, it does not represent a 100 percent complete inventory of all GHG emissions for the state agencies. As required by the GHG Protocol methodology for Service Organizations, this Carbon Footprint includes state agencies' estimated GHG emissions from their vehicles and facilities. It excludes GHG emissions from other activities, such as employee commuting, employee use of their own cars, waste generation, and purchase of construction and other materials. DMS and DEP will expand the scope of the GHG emissions measurement in the future should additional reliable data and resources become available.

DMS and DEP expect that as state agencies develop their processes and systems to measure and report GHG emission causing activities, the comprehensiveness and accuracy of the reported GHG emissions will increase. This may result in an actual rise in reported GHG emissions over the next few years as Florida strives to accurately measure and reduce GHG emissions. With the importance of tracking and measuring improvements, DMS and DEP also hope that others in Florida government will choose to track and report their GHG emissions.

When reviewing carbon footprints, it is important to acknowledge that variations between reporting periods may impact the level of GHG emission causing activities within state agencies. These variations include the weather, natural disasters, capital projects and special governmental programs. This variation of activities that state agencies do to achieve their mission and deliver the various services to their constituents should be taken into account when reviewing GHG emission data.

DMS and DEP explored ways to help state agencies and other stakeholders compare this baseline with external benchmarks. However, with the relatively small number of public and private sector entities calculating GHG emissions, and a lack of common standards on benchmarking, understanding how Florida's FY 06-07 emissions compare with others is difficult. There are several states that published an inventory of their GHG emissions. However, based on the different geographic size, climate and timing of reports, comparing Florida's GHG emissions to other state's emissions may not produce accurate conclusions.

It is more common to relate overall GHG emissions in terms that most stakeholders understand. DMS and DEP estimate that the total FY 06-07 CO_2 emissions from state agencies of 899,107 metric tons is equivalent to the annual CO_2 emissions from 194,612 passenger cars, electricity usage for 115,418 households, or the consumption of 2,090,947 barrels of oil.

To help state agencies develop and document plans to reduce their GHG emissions, DMS will provide a GHG Emissions Reduction Action Plan template to state agencies and assist them in identifying opportunities to reduce their facility and vehicle GHG emissions.

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GHG Emissions Measurement Methodology

DMS and DEP used the GHG Protocol methodology for corporate GHG accounting to determine the GHG emissions for the state agencies. Developed by the World Business Council for Sustainable Development, this methodology is the most widely used framework globally for measuring GHG emissions and is aligned with the International Organization for Standardization (ISO) standard for GHG emissions measurement, ISO 14064. For more information about the GHG Protocol Initiative visit **www.ghgprotocol.org**.

DMS and DEP followed the GHG Protocol Guiding Principles (right) during the planning, execution, documentation and reporting of the Carbon Footprint.

GHG PROTOCOL GUIDING PRINCIPLES

Relevance: Define boundaries that reflect the GHG emissions of your business and the decision-making needs of the inventory users.
Completeness: Account for all emissions sources and activities within your chosen organizational and operational boundaries. Justify specific exclusions.
Consistency: Allow a comparison of emissions performance over time. State any changes in the basis of reporting to make sure the comparison remains valid.
Transparency: Address all relevant issues, based on a clearly marked audit trail. Disclose any important assumptions, and cite the calculation methodologies used.
Accuracy: Ensure that your GHG calculations are accurate, and provide reasonable assurance of the GHG information's integrity.

Following the GHG Protocol's *Hot Climate, Cool Commerce: A Service Sector Guide to Greenhouse Gas Management*, DMS and DEP organized the Carbon Footprint around the two major sources of GHG emissions from service-oriented organizations like state government: vehicles and facilities. The Appendix includes more about the process, the sources of activity data and the major assumptions included in the Carbon Footprint.

DMS and DEP, following the GHG Protocol principle of operational control, determined GHG emissions from activities directly controlled by the state agencies that need to be included in the Carbon Footprint. These emissions will be the primary focus of the state's reduction efforts. Although not explicitly required by the GHG Protocol, we also included the estimated GHG emissions from leased facilities to allow for a more comprehensive estimate of GHG emissions. Refer to the Appendix for more details of the sources of GHG emissions included in the Carbon Footprint.

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Carbon Footprint

The state agencies participating in this Carbon Footprint (see table below) produced an estimated 818,774 metric tons of CO_2 emissions in FY 06-07 from the vehicles and facilities *under their operational control.* The table below breaks out CO_2 emissions for facilities centrally managed by DMS, referred to as Pool Facilities - DMS, since DMS has operational control of these facilities versus the state agencies occupying them.

Figures in Metric Tons of CO2	Emissions from Vehicles	Emissions from Owned Facilities		Total Baseline Emissions
Participating State Agency		Facility Fuels	Electricity	
Total	**142,458**	**116,321**	**559,995**	**818,774**
Dept. of Corrections	15,409	73,124	216,080	304,613
Pool Facilities - DMS	No Vehicles	4,091	88,175	92,266
Dept. of Transportation	36,244	2,450	53,143	91,837
Dept. of Juvenile Justice	2,987	873	48,457	52,317
South Florida Water Management District	5,198	23,514	15,802	44,514
Dept. of Children and Families	1,961	9,301	26,597	37,859
Dept. of Agriculture and Consumer Services	16,935	729	9,284	26,948
Fish and Wildlife Conservation Commission	18,250	31	7,760	26,041
Dept. of Highway Safety and Motor Vehicles	14,557	144	9,202	23,903
Agency for Persons with Disabilities	901	504	17,064	18,469
Dept. of Health	1,237	59	13,784	15,080
Dept. of Environmental Protection	9,196	3	2,869	12,068
Dept. of Military Affairs	376	695	10,277	11,348
Dept. of Education	132	3	10,652	10,787
Dept. of Veteran Affairs	58	521	8,189	8,768
St Johns River Water Management District	2,467	80	5,692	8,239
Southwest Florida Water Management District	2,892	-	4,779	7,671
Agency for Workforce Innovation	55	26	5,694	5,775
Florida Dept. of Law Enforcement	3,832	2	1,709	5,543
Dept. of Management Services (includes Div. of Administrative Hearings)	1,704	3	2,400	4,107
Dept. of Financial Services (includes Office of Financial Regulation and Office of Insurance Regulation)	2,514	168	1,094	3,776
Dept. of Business and Professional Regulations	2,340	-	-	2,340
Dept. of Lottery	1,396	-	-	1,396
Northwest Florida Water Management District	482	-	338	820
Dept. of Legal Affairs	776	-	-	776
Suwannee River Water Management District	245	-	369	614
Dept. of State	97	-	188	285
Dept. of Citrus	4	-	209	213
Executive Office of the Governor	6	-	188	194
Public Service Commission	115	-	-	115
Dept. of Revenue	86	-	-	86
Agency for Health Care Administration	3	-	-	3
Dept. of Community Affairs	1	-	-	1
Dept. of Elder Affairs	No Vehicles	-	-	-
State Board of Administration (includes Division of Bond Finance)	-	-	-	-

NOTE: CO_2 emissions from facilities centrally managed by DMS are listed under Pool Facilities – DMS in above table since DMS maintains operational control, not the occupying state agencies. Agencies that occupy DMS-managed Pool Facilities include: Dept. of Children and Families, Florida Dept. of Law Enforcement, Dept. of Environmental Protection, Dept. of Health, Dept. of Financial Services (includes Office of Financial Regulation and Office of Insurance Regulation), Dept. of Education, Dept. of Revenue, Dept. of Management Services, Dept. of State, Dept. of Legal Affairs, Public Service Commission, Agency for Persons With Disabilities, Dept. of Community Affairs, Agency for Health Care Administration, Executive Office of the Governor, Dept. of Business and Professional Regulations, Dept. of Corrections, Dept. of Elder Affairs, Dept. of Juvenile Justice, Agency for Workforce Innovation, Dept. of Agriculture and Consumer Services, Fish and Wildlife Conservation Commission, Dept. of Veteran Affairs, Dept. of Transportation, Dept. of Highway Safety and Motor Vehicles, Dept. of Military Affairs, and State Board of Administration (includes Division of Bond Finance)

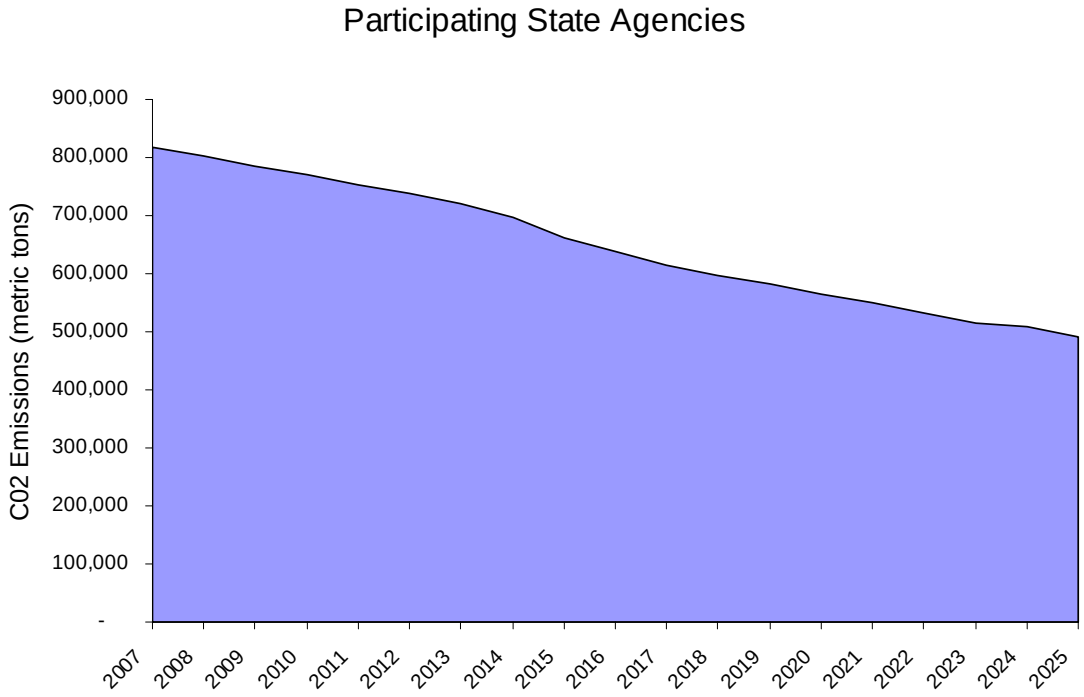
Although outside of their operational control and not the primary focus of future GHG emissions reduction efforts, the participating state agencies produced an additional 80,333 metric tons of estimated CO_2 emissions in FY 06-07 from their leased facilities (see table below). This brings the total FY 06-07 estimated CO_2 emissions for the participating state agencies to 899,107 metric tons.

Figures in Metric Tons of CO2	**Emissions from Leased Facilities**
Participating State Agency	Electricity
Total	**80,333**
Dept. of Corrections	8,479
Pool Facilities - DMS	-
Dept. of Transportation	2,537
Dept. of Juvenile Justice	3,642
South Florida Water Management District	-
Dept. of Children and Families	21,398
Dept. of Agriculture and Consumer Services	1,042
Fish and Wildlife Conservation Commission	573
Dept. of Highway Safety and Motor Vehicles	864
Agency for Persons with Disabilities	172
Dept. of Health	6,437
Dept. of Environmental Protection	2,070
Dept. of Military Affairs	152
Dept. of Education	4,061
Dept. of Veteran Affairs	-
St Johns River Water Management District	7
Southwest Florida Water Management District	-
Agency for Workforce Innovation	462
Florida Dept. of Law Enforcement	1,055
Dept. of Management Services (includes Div. of Administrative Hearings)	1,428
Dept. of Financial Services (includes Office of Financial Regulation and Office of Insurance Regulation)	3,245
Dept. of Business and Professional Regulations	2,822
Dept. of Lottery	2,841
Northwest Florida Water Management District	-
Dept. of Legal Affairs	2,295
Suwannee River Water Management District	-
Dept. of State	502
Dept. of Citrus	-
Executive Office of the Governor	-
Public Service Commission	-
Dept. of Revenue	9,436
Agency for Health Care Administration	3,334
Dept. of Community Affairs	374
Dept. of Elder Affairs	126
State Board of Administration (includes Division of Bond Finance)	979

When reviewing CO_2 emissions at the agency level, it is important to understand that the missions of the agencies vary. As a result, the types of vehicles and facilities they deploy are different and cannot be directly compared with one another. For example, the Department of Transportation requires a significant number of vehicles and facilities to manage the state's transportation infrastructure, so their CO_2 emissions will be higher than the Department of Community Affairs with fewer vehicles and facilities.

What's Next

Statewide participation in reducing GHG emissions from facilities and vehicles will help meet the governor's targeted reductions. The graph below shows the state agencies' current CO_2 emissions *under their operational control* and the governor's target reductions through 2025.



To help state agencies develop action plans to reduce their GHG emissions, DMS will provide a GHG Emissions Reduction Action Plan template and potential opportunities for agencies to reduce their facility and vehicle GHG emissions. Examples of potential opportunities include:

Vehicles

- Perform scheduled maintenance for all vehicles to maximize fuel efficiency
- Increase use of biofuels or other alternative fuels where available
- Increase use of telecommunications and video conferencing to reduce travel
- Investigate replacing older, larger vehicles with more fuel efficient vehicles surplused by other state agencies
- Replace older, larger vehicles with smaller, more fuel efficient new vehicles, including hybrids

Facilities

- Consult DMS Facilities' Energy Conservation Guides to identify steps to improve building energy efficiency. Guides for facility managers and employees are available on http://dms.myflorida.com/business_operations/real_estate_development_management/facilities_management/energy_initiatives.
- Consolidate facilities to reduce total square footage
- Investigate using the Comprehensive Energy Strategy State Term Contract. Vendors on this contract can help agencies design and implement self-funding energy conservation projects to reduce their GHG emissions.
- Replace state-owned or leased space with more energy efficient space that meets the US Green Building Council's Leadership in Energy and Environmental Design (LEED) standards, where viable
- Investigate telecommuting and hoteling[2] to reduce overall space needed to support state agency resources

The above actions may require various degrees of additional funding, which is one of the most significant challenges to achieving the objective of reducing GHG emissions. DMS' Action Plan template includes space for agencies to document their estimated budget and resource needs for inclusion in the annual budget request process.

This Carbon Footprint, and future versions, will help state agencies identify and prioritize GHG emission reduction activities. In addition, the Carbon Footprints will provide a report on the progress that Florida will make in achieving the targeted reductions over the long term.

Key Contacts

For questions related to this Carbon Footprint, please contact the Department of Management Services.

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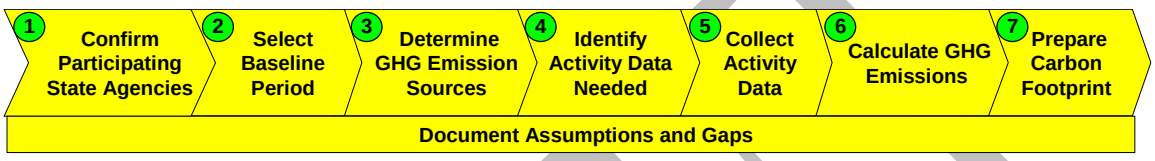
[2] Hoteling is a method where employees that are frequently out of the office are not assigned specific space, but can reserve unassigned space as needed when in the office.

Appendix:

GHG Protocol Methodology

DMS and DEP determined GHG emissions for the state agencies using the GHG Protocol Initiative methodology for corporate GHG accounting.

The diagram below outlines the steps that DMS and DEP followed to build the Carbon Footprint.



Step 1: Confirm Participating State Agencies - We confirmed which state agencies would participate in the Carbon Footprint. Under Executive Order 07-126, Governor Crist directed all agencies and departments under his purview to be included in the Carbon Footprint. However, the Executive Order encouraged others in Florida government to participate. The table below lists all the state agencies that participated in this initial Carbon Footprint.

Governor's Agencies and Departments	
Dept. of Transportation	Dept. of Elder Affairs
Dept. of Management Services (includes Div. of Administrative Hearings)	Dept. of Community Affairs
Dept. of Children and Families	Agency for Workforce Innovation
Dept. of Juvenile Justice	Dept. of Citrus
Dept. of Health	Dept. of Military Affairs
Dept. of Environmental Protection	Dept. of Education
Dept. of Corrections	Dept. of Business and Professional Regulation
Dept. of Lottery	Executive Office of the Governor
Agency for Persons with Disabilities	Dept. of State
Agency for Health Care Administration	Fish and Wildlife Conservation Commission
Governor and Cabinet Agencies and Departments Participating in Carbon Footprint	
Dept. of Law Enforcement	Dept. of Highway Safety and Motor Vehicles
Dept. of Revenue	Dept. of Veterans' Affairs
State Board of Administration (includes Div. of Bond Finance)	
Non-Governor's Agencies and Departments Participating in Carbon Footprint	
Dept. of Financial Services (includes Office of Financial Regulation and Office of Insurance Regulation)	Dept. of Agriculture and Consumer Services
Public Service Commission	Dept. of Legal Affairs
South Florida Water Management District	Suwannee River Water Management District
Southwest Florida Water Management District	St Johns River Water Management District
Northwest Florida Water Management District	

Step 2: Select Baseline Period - For the state agencies, the established baseline period is the 2006-2007 fiscal year, which was July 1, 2006 through June 30, 2007. For the Florida Water Management Districts, the established baseline period is October 1, 2005 through September 30, 2006 since they operate on the federal fiscal year for most of their reporting.

Step 3: Determine GHG Emission Sources - To govern what sources of GHG emissions would be included in the scope of the Carbon Footprint, DMS and DEP applied the operational control principle of the GHG Protocol methodology when appropriate. Based on materiality and measurement feasibility, there were two major categories of GHG emissions included in the Carbon Footprint: vehicles and facilities (see table below). All other GHG emissions activities were deemed by DMS and DEP as not material or were not technically feasible or cost effective to quantify for inclusion in the Carbon Footprint.

It is important to note that within the facilities category, only facilities owned by state agencies are under their direct operational control and will be the primary focus of the state's reduction efforts.

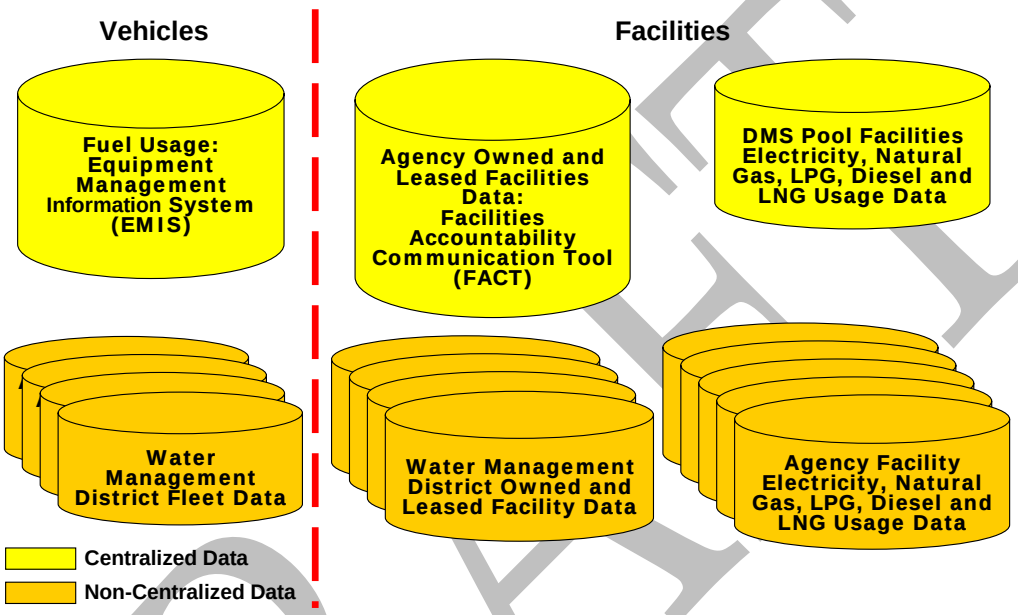
Source of GHG Emissions	Degree of Agency Control	Activity Data	Source of Activity Data
Vehicles	Agency Has Operational Control	Fuel (e.g., gasoline, diesel, aviation fuel) consumed by state-owned cars, truck, boats and aircraft	Equipment Management Information System (EMIS)
Facilities	Agency Has Operational Control	Fuel (e.g., natural gas, LPG, diesel) consumed in state facilities with 5,000 or more square feet	Facility Accountability Communication Tool (FACT) for listing of facilities and agency records for fuel / electricity usage
	Agency Has Operational Control	Electricity (in kWh) consumed in state owned facilities with 5,000 or more square feet	
	Agency Does Not Have Operational Control	Electricity (in kWh) consumed in leased facilities with 5,000 or more square feet	Facility Accountability Communication Tool (FACT) for listing of leases and square footage

Step 4: Identify Activity Data Needed - DMS and DEP identified the sources of activity data required to estimate the GHG emissions for the in-scope state agencies (see above table). For facilities, DMS and DEP needed to collect the following:

- Fuel (e.g., natural gas, diesel) consumed in state facilities 5,000 square feet or more
- Actual electricity consumption by state facilities with 5,000 or more square feet
- Square footage and occupancy type for all leased facilities with 5,000 or more square feet

For vehicles, DMS and DEP needed to collect total fuel (e.g., gasoline, diesel, aviation fuel) consumed by state-owned cars, truck, boats and aircraft

Step 5: Collect Activity Data - Wherever possible, DMS and DEP pulled activity data from central sources (see diagram below) to provide consistent data across the participating state agencies and to streamline future GHG emissions reporting. These central databases are the most complete, consistent and accurate sources of required activity data. However, actual electricity and facility fuel consumption that was directly paid for by state agencies was collected manually from the agencies.



For vehicles, the GHG Protocol emissions calculation tool accepts quantity of fuel consumed by fuel type. This information is collected by the DMS-administered Equipment Management Information System (EMIS) for most of the state agencies. For facilities, the GHG Protocol emissions calculation tool accepts quantity of fuel consumed to produce heat, steam, hot water or back-up electricity. For increased accuracy purposes, DMS and DEP captured the actual annual facility fuel consumption data when available. This detailed information is not currently collected in a central database, so state agencies pulled this data for FY 06-07 where available. For facilities centrally managed by DMS, referred to as Pool Facilities, DMS pulled the actual facility fuel consumption where available. Because DMS maintains operational control of the Pool Facilities versus the state agencies occupying these facilities, we reported CO_2 emission for Pool Facilities under a separate category in this report.

To capture the emissions from the generation of electricity purchased by state agencies' facilities, DMS first pulled data from the DMS-managed Facilities Accountability Communication Tool (FACT) to produce an inventory of state-owned and state-leased space. FACT includes key information like facility address, ownership type (e.g., owned or leased), space description (e.g., office, warehouse) and facility square footage. This detailed information is not currently collected in a central database, so participating state agencies pulled this data for FY 06-07 when available. DMS pulled the actual electricity consumption for all DMS-managed Pool Facilities and reported related CO_2 emissions under a separate category in this report. In some cases, only a single electricity usage figure was available for a group of buildings within a campus. When this occurred, the total campus consumption was manually allocated across the various buildings within the campus using the buildings' individual square footage as a percent to the total campus square footage.

DMS created data templates with agency-specific vehicle and facility data that was centrally available. The individual spreadsheets were then distributed to the appropriate state agencies for validation that all vehicles and facilities in operation during FY 06-07 were listed. The state agencies also provided FY 06-07 facility fuel and electricity consumption for non-DMS Pool Facilities 5,000 square feet or larger when available. State agencies made any necessary changes to vehicle fuel consumption directly in EMIS.

State agencies that do not use EMIS or FACT (primarily the Water Management Districts) provided DMS with their total vehicle fuel consumption (by fuel type), total facility fuel consumption (by fuel type) and total electricity purchased during their baseline period.

Step 6: Calculate GHG Emissions - The validated / completed activity data from state agencies was consolidated by DMS into a master database. Following the GHG Protocol for Service Organizations, DMS entered all reported vehicle and facility activity data into the appropriate GHG Protocol calculation tools (see table below):

Source of C02 Emissions	Activity Data	GHG Protocol Scope*	GHG Protocol Emission Calculation Tool Used
Vehicles	Fuel (e.g., gasoline, diesel, aviation fuel) consumed by state-owned cars, truck, boats and aircraft	Direct – Scope 1 (Mobile)	Mobile Combustion CO2 Emissions Calculation Tool, Version 1.2, June 2003
Facilities	Fuel (e.g., natural gas, LPG, diesel) consumed in state facilities with 5,000 or more square feet	Direct – Scope 1 (Stationary)	Stationary Combustion CO2 Emissions Calculation Tool, Version 3, October 2006
	Electricity (in kWh) consumed in state owned facilities with 5,000 or more square feet	Indirect – Scope 2 (Purchased Electricity)	Indirect CO2 Emissions from Purchased Electricity, Version 2.1, December 2006
	Electricity (in kWh) consumed in leased facilities with 5,000 or more square feet	Indirect – Scope 3 (Purchased Electricity)	

* Note: Scope 1, 2 and 3 are specific terms used by the GHG Protocol methodology. For more information about the GHG Protocol Initiative visit www.ghgprotocol.org.

To estimate the optional Scope 3 GHG emissions from indirectly purchased electricity, DMS identified the leased facilities with 5,000 or more square feet. When actual facility electricity usage for the baseline period was not provided by the state agencies, DMS and DEP estimated the annual electricity usage by multiplying the leased square footage by the average electricity consumption per square foot rates from the United States Energy Information Administration for similar type facilities.

The entered activity data for vehicles and facilities was then converted into CO_2 emissions using generally accepted emission conversion factors specified within the GHG Protocol tools. Listed in the table below are the emission factors by fuel types that were used to calculate CO_2 emissions for the Carbon Footprint.

Fuel Type	Unit of Measure	CO_2 Emission Factor (kg of CO_2 / unit of measure)
Aviation Gasoline	gallon	8.83
Diesel Fuel	gallon	10.15
Jet Fuel	gallon	9.57
Liquefied Natural Gas (LNG)	gallon	13.37
Liquefied Petroleum Gas (LPG)	gallon	5.81
Motor Gasoline	gallon	8.87
Natural Gas	cubic foot	0.05
Propane	gallon	5.57

Source: United States Energy Information Administration (EIA). Voluntary Reporting of Greenhouse Gases Program, Emission Coefficients, http://www.eia.doe.gov/oiaf/1605/factors.html.

Fuel Type	Unit of Measure	CO_2 Emission Factor (kg of CO_2 / unit of measure)
Electricity	kilowatt hour	630.522

Source: eGRID: Emissions and Generated Resource Integrated Database, Data Years 1996-2000, Version 2.01. US EPA Office of Atmospheric Programs. Prepared by E.H. Pechan & Associates, Inc. May 2003. http://www.epa.gov/cleanenergy/egrid.htm. Used CO_2 emission factor from 2003 for North American Electric Reliability Corporation's (NERC) Florida Reliability Coordinating Council (FRCC) Region.

Step 7: Prepare Carbon Footprint - The resulting output of the GHG Protocol tools was the estimated CO_2 emissions in metric tons related to the reported activity data. DMS summarized the outputs for vehicles and facilities by state agency to create the Carbon Footprint contained in this report.

Major Assumptions

Throughout the development of this Carbon Footprint, DMS and DEP carefully documented all major assumptions, which are listed below to adhere to the GHG Protocols guiding principle of Transparency.

Vehicles

1. CO_2 emission calculations for vehicles are based on agency-entered data in EMIS, which is assumed to be as complete as possible.
2. CO_2 emissions from vehicle fuel that was purchased by state agencies with miscellaneous fuel cards that are used across multiple vehicles (e.g., tractors, ATVs, mowers, outboard motors) may not be included in the Carbon Footprint if not entered into EMIS.
3. CO_2 emissions from aircraft may not be fully represented in the Carbon Footprint since not all state agencies track their aviation fuel usage in EMIS. The Department of Management Services and the Department of Highway Safety and Motor Vehicles provided total FY 06-07 aviation fuel consumption for aircraft that were not listed in EMIS for inclusion in the Carbon Footprint.
4. Since most commercial fuel merchants' systems cannot report when biodiesel is sold to state vehicle operators, DMS assumed that all reported diesel fuel usage data in EMIS was diesel when calculating CO_2 emissions, even though an undetermined amount was actually biodiesel. This results in reporting higher CO_2 emissions where biodiesel was actually used.
5. Since supply and use of ethanol (E85) fuel was extremely limited in the State of Florida during FY 06-07, EMIS reported fuel used by Flex Fuel / Ethanol capable vehicles was assumed to be gasoline for CO_2 emission calculation purposes.
6. The Division of Forestry within the Department of Agriculture and Consumer Services (DOACS) previously used their own fleet management system, approved by DMS, which better met their needs at the time. They did not transition to EMIS to track their vehicles and associated fuel consumption until October 2006. Since the reported CO_2 emissions from vehicles are based on EMIS data, DOACS' actual CO_2 emissions may not be fully represented in the Carbon Footprint.
7. For vehicle GHG emission calculations, only CO_2 emissions were included in the Carbon Footprint. The combustion of hydrocarbon fuels produces CO_2, water vapor, trace amounts of methane (CH_4), nitrous oxide (N_2O) and ash or soot (from incomplete combustion). The GHG Protocol methodology makes two simplifying assumption:
    a. The combustion of carbon is 100 percent complete, whereby all the carbon in fuel is converted to CO_2
    b. The emissions of CH_4 and N_2O from mobile combustion are so small and uncertain that they may be ignored in the calculation and there is little benefit in calculating their global warming impact

    The combined effect of these assumptions is likely to alter results by less than 0.5 percent, a variance that will in most cases be negligible.

Facilities

8. Only state-owned and leased facilities 5,000 square feet or more were included in the Carbon Footprint. This is consistent with Chapter 255.257 of the Florida Statutes, which states "Each state agency shall collect data on energy consumption and cost. The data gathered shall be on state-owned facilities and metered state-leased facilities of 5,000 net square feet or more." The GHG Protocol methodology does allow for organizations to set appropriate thresholds for measuring GHG emissions causing activity data. DMS and DEP deemed that GHG emissions from facilities less than 5,000 square feet to be immaterial to the overall GHG emissions.
9. GHG emissions from any mobile or modular facilities were not included in the Carbon Footprint since FACT contains only fixed structures.
10. GHG emissions from state investments in real estate were not included in the Carbon Footprint.
11. GHG emissions from state-owned facilities leased out to entities that maintain operational control of the facility and generally receives and pays the electricity bills are not included in the Carbon Footprint. This includes facilities assigned to Prison Rehabilitative Industries and Diversified Enterprises, Inc. (PRIDE).
12. Square footage in FACT is measured by paving under eave, not bearing wall to bearing wall. Unoccupied buildings are also included in square footage estimates. The FACT square footage was used when needed to estimate facility electricity consumption.
13. Based on the lack of centrally available, consistent data concerning the consumption of fuel in facilities to produce heat, hot water, back-up electricity, etc. for FY 06-07, these emissions may not fully be represented in the Carbon Footprint. DMS and DEP calculated GHG emissions from fuels consumed in facilities where the state agencies were able to provide actual facility fuel usage for FY 06-07.
14. DMS and DEP used 2003 annual electricity consumption per square foot rates from the United States Energy Information Administration (EIA) to estimate annual electricity consumption for state owned and leased space when actual electricity consumption data was not available. DMS and DEP selected standard rates that were as similar as possible to facilities' listed occupancy types (e.g., Office, Warehouse) in FACT.
15. For parking garages that have their electricity consumption included in an adjacent state-owned building's electricity consumption (no separate electricity usage meter), all electricity consumption was reported under the building in the Carbon Footprint. Although parking garages consume electricity for elevators, escalators and lighting, the amount is relatively small compared to the electricity consumed in an office building.
16. For surface parking lots where no electricity consumption was provided by state agencies, it was assumed there were no GHG emissions to report.
17. At DMS' Operations Control (OPCON) facility, there is no electricity meter to track actual electricity consumption. Therefore, the GHG emissions from this Pool Facility are not included in the Carbon Footprint.
18. The following Facility Occupancy Codes, provided by the Department of Agriculture and Consumer Services, were not included in Carbon Footprint since they generally contain less than 5,000 square feet of conditioned space and have minimal electricity consumption: Agriculture, Animal, Maintenance Shop, Manufacturing Plant, Market Farmers, Processing Plant and Tool & Equipment Shelter. Other state agencies were allowed to exclude facilities with these Occupancy Types if they also had less than 5,000 square feet of conditioned space and had minimal electricity consumption.
19. GHG emissions from United States government-owned buildings used by state agencies (e.g., Department of Military Affairs) are not included in the Carbon Footprint.

General

20. The GHG Protocol methodology requires GHG emissions to be reported in both metric tons and in tons of CO_2 equivalents[3]. However, this initial Carbon Footprint reports only CO_2 emissions in metric tons. Of the six main GHG (CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6), CO_2 represents 95 percent of the nationwide GHG emissions in the United States, according to the United States Environmental Protection Agency (EPA (2003). EGRID 2002 version 2.01. United States Environmental Protection Agency, Washington, DC. http://www.epa.gov/cleanenergy/egrid.htm). DMS and DEP deemed that the non-CO_2 GHG emissions were immaterial to the total GHG emissions calculations.
21. Water Management Districts reported their baseline year for this initial Carbon Footprint as October 1, 2005 through September 30, 2006
22. DMS extracted vehicle and facility activity data from Water Management Districts' Carbon Footprint submissions and applied the same emission factors as the rest of the state agencies.
23. DMS may add others in Florida government that request to be included in the Carbon Footprint and future GHG emission reports
24. DMS may adjust this Carbon Footprint as additional vehicle and facility activity data for the baseline period is provided by participating state agencies.
25. DMS and DEP obtained the GHG equivalent figures from the United States Climate Technology Cooperation website (http://www.usctcgateway.net/tool/), which is sponsored by the United States Environmental Protection Agency and the United States Agency for International Development

[3] Carbon dioxide equivalent (CO_2e) is the universal unit of measurement to indicate the global warming potential of the six main greenhouse gases. It is used to evaluate releasing (or avoiding releasing) different greenhouse gases against a common basis.