

SARASOTA COUNTY GREENHOUSE GAS EMISSIONS ANALYSIS REPORT

**2005 Community Emissions Inventory
&
2005 Government Operations Emissions
Inventory**

February 2008



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List of Acronyms and Abbreviations

| | |
|-------|---|
| BCC | Board of County Commissioners |
| CCP | Cities for Climate Protection |
| FY | Fiscal Year |
| GHG | Greenhouse Gas |
| ICLEI | International Council for Local Environmental Initiatives/ Local Governments for Sustainability |
| IPCC | Intergovernmental Panel on Climate Change |
| MMBTU | One Million British Thermal Units (thousand thousand Btu) |
| NOAA | National Oceanic and Atmospheric Administration |
| SCAT | Sarasota County Area Transit |

Emissions

Greenhouse Gases:

| | |
|-------------------|---|
| CH ₄ | Methane |
| CO ₂ | Carbon dioxide |
| CO ₂ e | Carbon dioxide equivalent (combines greenhouse gases of differing impact on the earth's climate into one weighted unit) |
| HFCs | Hydrofluorocarbons |
| N ₂ O | Nitrous oxide |
| PFCs | Perfluorocarbons |
| SF ₆ | Sulphur hexafluoride |

Criteria Air Pollutants:

| | |
|------------------|----------------------------|
| CO | Carbon monoxide |
| NO _x | Nitrogen oxides |
| PM ₁₀ | Coarse particulate matter |
| SO _x | Sulfur oxides |
| VOCs | Volatile Organic Compounds |

Sarasota County Business Centers

| | |
|--------|---|
| ASBC | Administrative Services Business Center |
| CSBC | Community Services Business Center |
| EITBC | Enterprise Information Technology Business Center |
| EnvSBC | Environmental Services Business Center |
| EmSBC | Emergency Services Business Center |
| HHSBC | Health and Human Services Business Center |
| OFPBC | Office of Financial Planning Business Center |
| PDSBC | Planning and Development Services Business Center |
| PWBC | Public Works Business Center |
| TPMBC | Talent and Performance Management Business Center |

Executive Summary

Sarasota County has made a commitment to address climate change under its Cities for Climate Protection Resolution (Resolution 96-115) and the 2030 Challenge Resolution (Resolution 2006-157). The first step in addressing climate change is to conduct a greenhouse gas emissions inventory to determine where a community stands and which sectors represent the largest contributors to climate change. This report presents the results of such an inventory for Sarasota County in the base year of 2005.

Based on the ICLEI Cities for Climate Protection Campaign guidelines, information was collected on energy use in various sectors at both the community and government operations levels. That information was analyzed and converted into an assessment of greenhouse gas emissions in 2005 using the Clean Air and Climate Protection Software.

At the Community level, emissions data was analyzed within the Residential, Commercial, Industrial, Transportation, and Waste sectors. During 2005, Sarasota County as a whole produced approximately 5,878,829 tons of greenhouse gases. Transportation accounts for almost half (48.9%) of these emissions, however it should be noted that when residential (29.9%) and commercial (20.4%) energy use are combined, buildings contribute just slightly more to the overall emissions portfolio than transportation. Solid waste is actually a net sink of greenhouse gas emissions due to the recycling and composting techniques applied in Sarasota County.

The Government Operations Inventory represents a subset of the Community Inventory. Government emissions were analyzed in more depth given the availability of detailed information for buildings and vehicles as well as the increased opportunity for action internally within the enterprise. During Fiscal Year (FY) 2005, Sarasota County government operations produced a total of 75,498 tons of Carbon dioxide equivalent, which cost over \$11.3 million in energy expenditures. The highest emitting sector at 36 percent is buildings. Electricity used in the production of water and sewer services for the community follows at 27 percent. This sector includes energy-intensive drinking water treatment services as well as the electricity used in lift stations, waste water treatment facilities, and pumps. The county's vehicle fleet represents only 17 percent of municipal operational emissions, but includes fuel used in the provision of public transportation services as well as that used by county vehicles. The commute to and from work for county employees accounts for at least 13 percent of operational emissions. The operation of streetlights and traffic signals cost the county over \$1.3 million in 2005 and represented eight percent of total operational emissions. Finally, as in the Community Inventory, the solid waste generated by Sarasota County employees was estimated to represent a net emissions sink (-1%), removing greenhouse gases from the atmosphere through sequestration.

With the analysis in this report, a baseline has been established against which future trends can be compared and possible reduction measures can be assessed. The next steps under the Cities for Climate Protection process involve: 1) quantification of existing and future policies and measures to reduce emissions; 2) the development of an emissions forecast in a target year; 3) the setting of a reduction target below that forecasted projection; 4) community and staff involvement in the development of a Local Climate Action plan; 5) implementation of that plan; and 6) reporting and measuring the progress toward meeting the stated goals. As Sarasota

County pursues these steps, this baseline emissions inventory will facilitate a quantifiable comparison of the effectiveness of possible policies and measures and a benchmark against which to measure progress in the future.

Sarasota County is already a leader in sustainability and has implemented numerous projects and policies that have resulted in decreased energy use across the community and the enterprise. This inventory and the proposed plan development process will translate that commitment into a quantified analysis of greenhouse gas emissions and a fact-based assessment of the options for further reductions. With the increased attention being paid to climate change at the state and national levels, Sarasota County will be in a strong position as an early adopter of these procedures to take advantage of upcoming policy changes and business opportunities.

Report on Greenhouse Gas Emissions for Sarasota County

1.0 Background

In recent years, increasing attention is being paid to the issue of climate change in the United States. Local governments in particular are increasingly analyzing their impact on and vulnerabilities to climate change, as they recognize the threats and opportunities involved. Sarasota County has taken a leadership role in Sustainability initiatives both locally and nationally. With this report, Sarasota County will take the next step by analyzing the county's greenhouse gas emissions and beginning the process of developing a local Climate Action Plan.

1.1 Climate Change Science

The gases that make up the Earth's atmosphere are in a delicate balance that determines the temperature of the Earth's surface. By trapping the sun's heat, those gases create a natural "greenhouse effect" that makes the earth hospitable. Scientific evidence indicates that an imbalance in these gases could cause an enhanced greenhouse effect, resulting in rising temperatures and other changes in the climate.

In its most recent report, the Nobel Prize winning Intergovernmental Panel on Climate Change (IPCC) found that "warming of the climate system is now unequivocal" and made its strongest statement yet as to the cause of climate change: "Most of the observed increase in globally-averaged temperatures since the mid-20th century is *very likely*¹ due to the observed increase in anthropogenic GHG concentrations." (IPCC 2007) That statement represents the consensus of climate change scientists around the world that human contributions of greenhouse gases are changing the climate through the burning of fossil fuels, industrial activities, and changes in land use and land cover. While some uncertainty remains within the public consciousness and media reports, a scientific study of peer reviewed literature on global climate change between 1993 and 2003 found a unified consensus among scientists. The results of that analysis determined that "all but a tiny handful of climate scientists are convinced that earth's climate is heating up and that human activities are a significant cause." (Oreskes 2007)

Since 1750, the temperature of the Earth has risen approximately 0.8 degrees C (1.44 F), with the majority of this change in the 20th Century and the most rapid change since 1970. Under a moderate emissions projection, temperatures are expected to rise between 3 and 5 degrees C (5.4 to 9 degrees F) over pre-industrial conditions by 2100. These changes have the potential to impact not only temperature, but also precipitation, wind patterns, and water levels. A growing number of scientists have warned that temperature increases beyond 2 to 2.5 degrees C (3.6 to 4.5 degrees F) could lead to intolerable impacts on human well being and the global environment. To avoid this scenario, urgent action is needed to begin to achieve the steep emissions reductions that will be necessary over the next century (SEG 2007). As discussed below, the Sarasota County Board of County Commissioners has recognized this need for action and has adopted a wide range of policies to begin to address the issue at the local level.

¹ "Very Likely" is defined by the IPCC as greater than 90% certainty.

1.2 Climate Change Impacts on Florida

Florida is particularly vulnerable to the impacts of climate change. Scientists have already observed changes that are consistent with the early effects of climate change, including dying coral reefs, saltwater intrusion into freshwater aquifers, retreating or eroding shorelines, and warmer air and sea surface temperatures. These impacts are expected to intensify and increase in frequency under future climate projections. Among the predicted impacts are:

- **Temperature Increases:** An increase in average temperature by 4 to 10 degrees F, and an increase in the summer heat index, which takes into account temperature and humidity, of 8 to 15 degrees, the most dramatic in the nation.
- **Rising Sea Levels:** Due to the gradual slope of most shorelines in Florida, valuable tourist resources and coastal property within 200 to 250 feet of the current shoreline could be directly affected by an anticipated sea level rise of between 8 and 30 inches by 2100. This projected advance exceeds the width of most recreational beaches and translates into a 20-25 percent increase in the 100-year floodplain. Additional properties inland could also be affected by the increasing frequency and severity of flooding from storm surges.
- **Coral Reefs:** Florida's coral reefs are surviving at the northern extent of their range and increases in temperature and changes in salinity are expected to exceed the narrow range of conditions under which corals can survive.
- **Precipitation:** Rainfall is expected to become more intense when it occurs, combined with longer and more intense periods of drought. The predictions for total annual rainfall for specific regions vary significantly, which will result in great difficulties in predicting water availability.
- **Human Health:** Increases in heat-related illnesses, decreases in air quality, and increases in the incidence of infectious disease are all possible under climate change scenarios. These are particularly problematic for vulnerable populations such as the elderly and children.
- **Agriculture:** Most scenarios indicate that cash crops like sugar cane, tomatoes, and citrus will face declining yields over the long run.
- **Wildfires:** With higher temperatures and more intense drought cycles, wildfires are likely to increase.
- **Hurricanes:** While the data is still incomplete, recent studies have indicated that higher sea surface temperatures may result in more intense hurricanes in the future. Scientists at NOAA's Geophysical Fluid Dynamics Laboratory have stated that hurricanes "near the end of the 21st century are expected to be stronger and have significantly more intense rainfall than under present day climate conditions." In addition, the effect of sea level rise on storm surges will mean a greater economic impact by hurricanes of any size.
- **Natural Habitats:** Coastal wetlands could be lost to sea level rise and an inability to migrate inland due to development, reducing the habitat for wildlife and fish. Warmer coastal waters can also increase the intensity and duration of harmful algal blooms (Twilley 2001 & Fiedler 2001).

1.3 The Role of Local Government

Given the atmospheric lifetime of greenhouse gas emissions, impacts from climate change could be expected even if emissions were halted immediately. While climate change is a global issue, the impacts will be felt first by local communities. Local governments must therefore consider adaptation techniques and incorporate the possible impacts into infrastructure, water, development, and hazard mitigation planning². Local governments also control many of the day to day activities that determine the amount of energy used and waste generated by their communities and can therefore greatly impact local emissions. The scale of the potential impacts from climate change necessitates urgent action at all levels and local governments around the world are leading the way.

In addition to the benefits from doing its part to reduce its contribution to global climate change, Sarasota County can also benefit from emissions reduction measures through:

- **Reduced Costs:** Energy efficiency improvements will result in reduced energy bills for government and citizens alike. Reduced energy consumption also reduces a community's vulnerability to fluctuations in the market price of energy.
- **Improved air quality and public health:** In addition to greenhouse gases, fossil fuels also cause a variety of pollutants known to have negative health effects including sulfur dioxide (SO₂), nitrogen oxides (NO_x), ozone (O₃), particulate matter (PM) and carbon monoxide (CO). Sarasota County in particular has a high percentage of older citizens who are particularly vulnerable to the impacts of these pollutants.
- **Community Leadership:** Sarasota County is already a leader in many aspects of Sustainability. Broadening that effort to include climate change leadership will provide a strong example for the community and other governments in the region to follow.
- **Co-Benefits:** Many of the available options to reduce emissions also achieve other goals that have been set by the community. Public transportation, bike paths, and walkable communities reduce vehicle emissions while improving a community's livability and promoting active lifestyles. Green building achieves energy efficiency goals while also improving indoor air quality and worker productivity.
- **Economic Development:** By inspiring a transition to a low emissions society, climate change leadership will result in new opportunities for business development and technological innovation. Businesses that provide "green" products or services have already flourished in Sarasota County due to the green building incentives; this expanded program will strengthen that sector of the economy and allow room for others to grow.

² Adaptation will be discussed further in the Climate Action Plan. Additional information on adaptation and climate change planning is available in "Preparing for Climate Change: A Guidebook for Local, Regional and State Governments," written by the Center for Science in the Earth System, University of Washington and King County, Washington in association with ICLEI, Sept 2007. Available at: <http://www.iclei.org/index.php?id=7066>.

2.0 Sarasota County's Commitment to Action

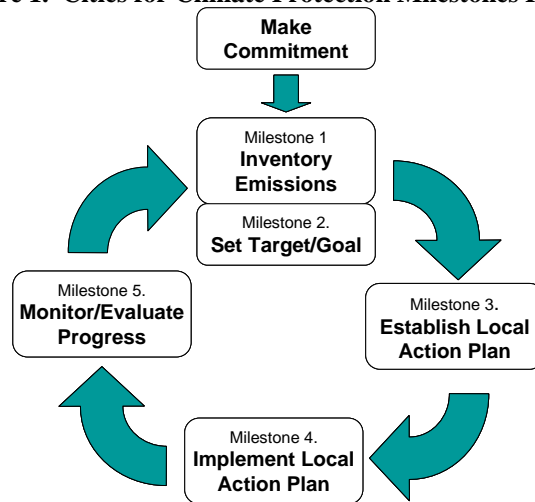
Sarasota County has established itself as a leader in Sustainability in Florida and across the nation with green building, water conservation, energy management, and many other policies setting the standard for local government action. On climate change, Sarasota County was the first county in the nation to sign the 2030 Challenge, committing to build and renovate buildings that use no net fossil fuel emissions by 2030 (Resolution 2006-157). Sarasota County also became a member of ICLEI- Local Government for Sustainability's Cities for Climate Protection Campaign (CCP) with Resolution 96-115.

2.1 The Cities for Climate Protection Campaign

Through the CCP program, communities around the world are following a systematic and standardized process to assess their greenhouse gas emissions contributions and to develop a target and plan to reduce them. The Cities for Climate Protection Campaign sets forth five milestones:

1. **Greenhouse Gas Emissions Inventory:** The first milestone is the development of a greenhouse gas emissions inventory to calculate how much the community and its government are contributing to the global emissions budget in a base year. This report represents the completion of that first milestone and sets the foundation for future climate action allowing for a scientific assessment of options and a benchmark against which to evaluate progress and quantifiable results.
2. **Set a Target:** The second milestone involves assessing the options for action and setting a reduction target or goal for the community and for government operations. That target commits the community to a long term goal and helps develop a path forward to its achievement. In setting a target, a community must consider what is representative of an aggressive goal, but also achievable given the powers and resources of the local government.
3. **Local Action Plan:** The Local Action Plan describes the policies and measures that the local government will take to reduce greenhouse gas emissions and engages the community in the development process to establish ownership and inspire action.
4. **Implementation:** Implementation of the plan's policies and measures involves actions by both the county government and local citizens. Typical policies and measures implemented by CCP participants include energy efficiency improvements to municipal buildings and water treatment facilities, streetlight retrofits, public transit improvements, installation of renewable power applications, methane recovery from waste management, and education and outreach programs within the community.
5. **Monitor and Verify Results:** Through a regular evaluation of progress and reassessment of goals and actions, communities ensure their programs are effective and continue to reflect the goals of the people (ICLEI 2007).

Figure 1. Cities for Climate Protection Milestones Process



The Cities for Climate Protection Campaign allows the county to strategically assess its greenhouse gas emissions and to develop a holistic plan that includes all relevant existing and future programs that reduce emissions. Many of the county’s existing programs will be included in the Local Action Plan including the 2030 Challenge, green building policies, and energy savings from water conservation and other measures.

2.2 The Context for Action: Municipality, State, and National Action

Sarasota County is one of 17 communities in Florida and over 300 communities nationwide to join the Cities for Climate Protection Campaign. Locally, the City of Sarasota has done so and is currently working on its greenhouse gas inventory and the Cities of Sarasota and Venice have signed the US Mayors Climate Protection Agreement, committing to strive to reduce emissions 7 percent below 1990 levels by 2012. This movement by local municipalities presents significant opportunities for information sharing and collaboration on emissions reduction strategies.

In 2007, Governor Crist made a strong commitment to climate change action by the state of Florida with a high profile conference and a series of Executive Orders outlining significant steps to reduce state emissions. Those Executive Orders call on the state agencies to take a leadership role in green building and green fleets, committed to adopt California’s cleaner vehicle standards upon completion of the legal battle with the federal government, and called for a Renewable Electricity Standard for utilities and for net metering to facilitate localized renewable energy. In addition, the Governor established an Action Team on Energy and Climate Change that will create a Climate Change Action Plan for Florida to go beyond the initial steps of the Executive Orders (DEP 2007). These significant commitments, when implemented, will greatly facilitate the efforts of Sarasota County to reduce its own emissions by eliminating some regulatory barriers to action and applying state-wide policies that will increase energy efficiency of buildings and vehicles, reduce costs and improve the availability of emerging technologies.

Given the scale of the challenge of climate protection, federal and international action will ultimately be necessary to achieve the necessary global emissions reductions. Internationally, the United Nations Framework Convention on Climate Change continues to progress toward a global commitment to action, with an expanded and more aggressive successor to the Kyoto Protocol expected upon its expiration in 2012. Federal policy in the United States has been slow to develop, but in 2007 the momentum built significantly. A bill mandating a cap and trade structure for greenhouse gas emissions passed the Senate Environment and Public Works Committee and the President signed an energy bill that will increase vehicle fuel efficiency standards for the first time in decades in addition to biofuels and energy efficiency mandates. Even more than the state policies, the energy bill provisions and any future climate change legislation will facilitate emissions reductions at the local level by implementing national policies requiring reductions in the carbon intensity of American technologies and processes. Once the federal government decides upon a comprehensive climate change policy, Sarasota County will be in the position of an early adopter and may be able to benefit from any Carbon trading opportunities created if significant enough emissions reductions are achieved.

3.0 Greenhouse Gas Emissions Inventory Results

3.1 Background and Methodology

In September of 2007, Sarasota County began the process of collecting information for an analysis of greenhouse gas emissions as part of its obligations under the Cities for Climate Protection Campaign and 2030 Challenge. Based on the availability of data, a base year of Fiscal Year 2005 (October 2004- September 2005) was established and information on energy use within the county was collected for that year. The community emissions were calculated for the full county, including municipalities and unincorporated areas. While this extends the data beyond the area directly administered by the county government, it allows for an assessment of the community as a whole and for an examination of opportunities for cooperation with the various municipalities.

The available information was entered into the Clean Air and Climate Protection software system provided by ICLEI as a part of membership in the CCP program. This program contains conversion factors to translate energy used into greenhouse gas emissions based on a regional profile of electricity sources, on average fuel efficiency numbers, and detailed data on greenhouse gas and criteria air pollutant emissions as a result of energy use. The program translates greenhouse gas emissions results into a standardized unit of “Carbon dioxide equivalent” (CO₂e), which takes into account the strength of the various greenhouse gases and their differing residence times in the atmosphere to present emissions from all six categories of gases (CO₂, methane, Nitrous Oxide, HFCs, PFCs, and SF₆) in one unit. For example, methane is 21 times more potent a greenhouse gas than Carbon dioxide, so when calculating emissions involving methane, the full global warming potential is considered and converted into the standard equivalency of CO₂e.

The results of the analysis are only an estimate, however. Several of the data sources could only estimate the energy used and the emissions are therefore only as accurate as the underlying

assumptions of the data. In addition, significant sectors of greenhouse gas sources and sinks are not included in the ICLEI inventory software or CCP protocol due to data limitations and uncertainties. The inventory includes information on the majority of emissions from energy use, transportation, and waste, but excludes emissions from certain other sources such as agriculture, deforestation, cement production, paving, air and marine traffic. Agriculture and deforestation, for example involve complicated calculations of soil composition changes, vegetation types, maturity, etc. that are beyond the scope of this analysis. Most of the areas not covered in this analysis are also out of local government control and are accounted for in state and national inventories.

3.2 Community Greenhouse Gas Analysis for 2005

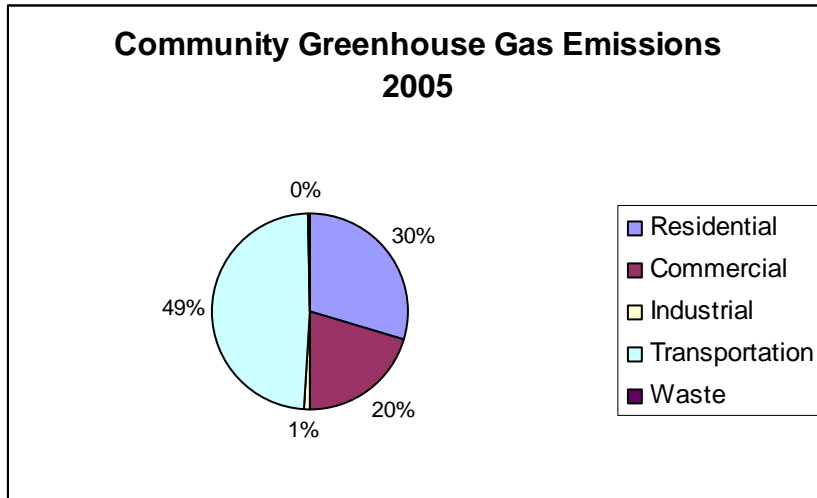
The Community Inventory provides an estimate of all of the greenhouse gas and criteria air pollutant emissions produced within Sarasota County, both by residents in their homes and by businesses and agencies as they carry out their operations. According to the CCP protocol, five sectors are analyzed in the Community Inventory: Residential, Commercial, Industrial, Transportation, and Solid Waste.

During 2005, Sarasota County as a whole produced approximately 5,878,829 tons of Carbon dioxide equivalent. Table 1 provides a breakdown of those emissions by sector and the associated energy use. Transportation accounts for almost half of these emissions, however it should be noted that when residential (29.9%) and commercial (20.4%) energy use are combined, buildings contribute just slightly more to the overall emissions portfolio than transportation. Solid waste is actually a net sink of greenhouse gas emissions due to the recycling and composting techniques applied in Sarasota County. Table 1 and Figure 2 provide additional detail about the estimated emissions.

Table 1. Community Greenhouse Gas Emissions in 2005

| | CO₂e (tons) | % of Total CO₂e | Energy (MMBtu) |
|-----------------------|-----------------------------------|---|---------------------------|
| Residential | 1,757,392 | 29.9 | 10,102,378 |
| Commercial | 1,201,491 | 20.4 | 7,769,341 |
| Industrial | 61,906 | 1.1 | 414,105 |
| Transportation | 2,876,153 | 48.9 | 33,526,883 |
| Waste | -18,113 | -0.3 | |
| Total | 5,878,829 | 100 | 51,812,707 |

Figure 2. Community Greenhouse Gas Emissions in 2005 by Sector



3.2.1 Community Criteria Air Pollutants

While Sarasota County is in compliance with the Federal Clean Air Act, it remains important to continue to monitor these pollutants and to understand the associated sources within the community. The emissions analysis software also calculates the relative contribution of each of the sectors to the Criteria Air Pollutants under the Clean Air Act. Those results are included in Table 2. As with greenhouse gases, transportation represents the greatest portion of NO_x, Carbon monoxide, and Volatile Organic Compounds, but building energy use (primarily power plant emissions) represents the largest portions of SO_x and Particulate Matter emissions. The data is not available for the calculation of criteria air pollutant emissions from solid waste.

Table 2. 2005 Community Energy Use, Criteria Air Pollutants, and GHG Emissions (tons)

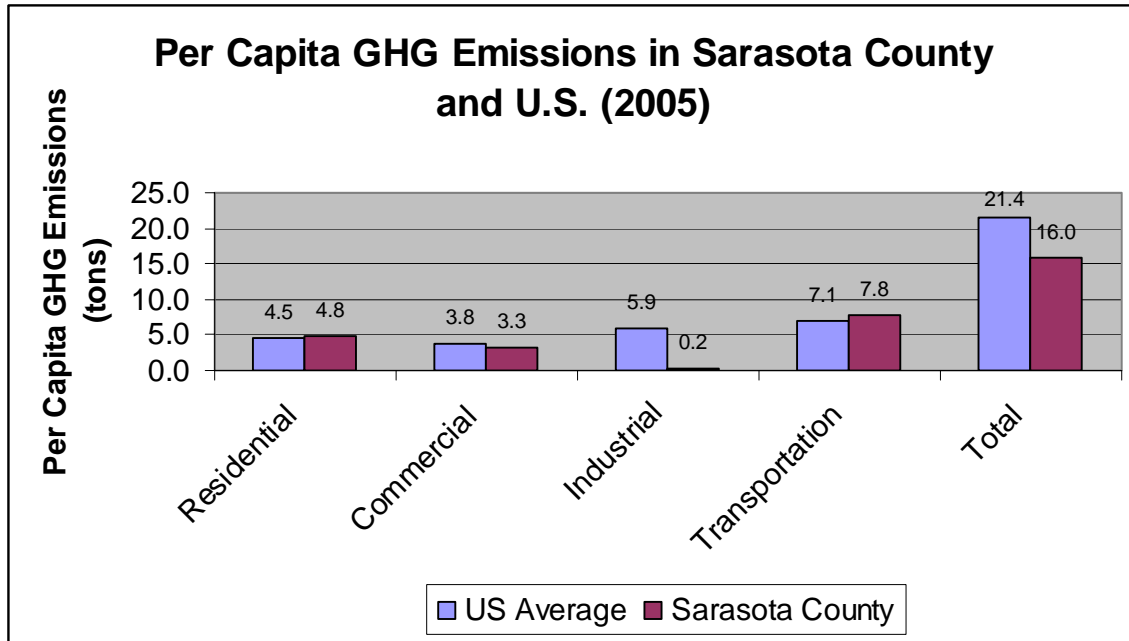
| | Energy (MMBtu) | NO _x | SO _x | CO | VOC | PM ₁₀ | CO ₂ e |
|-----------------------|----------------|-----------------|-----------------|--------|-------|------------------|-------------------|
| Residential | 10,102,378 | 2,836 | 3,058 | 1,042 | 118 | 899 | 1,757,392 |
| Commercial | 7,769,341 | 1,913 | 1,947 | 690 | 81 | 574 | 1,201,491 |
| Industrial | 414,105 | 99 | 95 | 34 | 4 | 28 | 61,906 |
| Transportation | 33,526,883 | 9,843 | 530 | 76,170 | 7,939 | 285 | 2,876,153 |
| Waste | | | | | | | -18,113 |
| Total | 51,812,707 | 14,691 | 5,629 | 77,935 | 8,142 | 1,786 | 5,878,829 |

3.2.2 Comparative Emissions Analysis

It is often difficult to understand the significance of such large numbers, but comparisons to other communities and analyses also come with complications. Comparing per capita emissions between communities is complicated by differences in fuels used to generate electricity, the availability of alternative fuels in the community and the type and pace of business and land development in the region. In addition, the data available at the national level is far more inclusive than the protocol for local level inventories, so comparisons must recognize those

discrepancies. With those caveats understood, it is still useful to review these numbers in comparison to others, as shown in Figures 3 and 4.

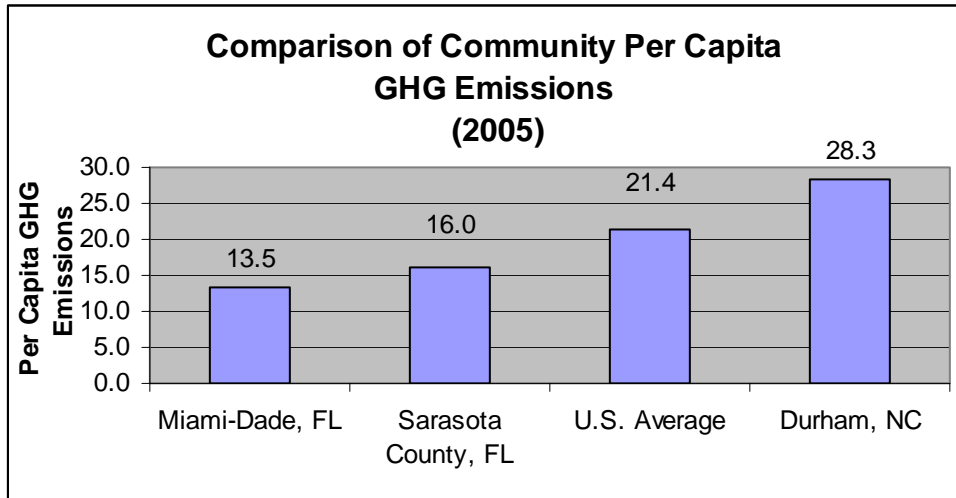
Figure 3. Per Capita Greenhouse Gas Emissions: Community vs. National Average



Sarasota County was responsible for less than 0.1 percent (0.092%) of the national greenhouse gas emissions in 2005 with just over 0.1 percent (0.12%) of the national population. As a result, Sarasota County’s total per capita greenhouse gas emissions are somewhat below the national average. But, it is important to note that this would not likely be the case if agriculture, land clearing, and other sources of emissions were included in the analysis locally. Within the residential and transportation sectors, Sarasota County residents produce somewhat higher levels of emissions than the national average, as would be expected given the community’s economic profile and the low density development that is predominant. Commercial and industrial sector emissions are lower than the national average, again reflective of the service-focused economy.

Comparing to other communities who have also completed their greenhouse gas emissions through the CCP process, Sarasota comes out more emission-intensive than Miami-Dade County, but less so than Durham, North Carolina. Miami-Dade, however, completed their 2005 inventory as a reevaluation following the application of a Local Action Plan between 1993 and 2005, so their lower contributions could be partially attributable to reduction measures put in place prior to the inventory.

Figure 4. Comparison of Community Per Capita Greenhouse Gas Emissions



3.2.3 Emissions By Fuel Type

Within each sector, different fuel types contribute different levels of emissions. While the data was most reliable for building electricity and transportation fuel use, data was also collected where possible for natural gas use and propane purchases. That information is presented in Table 3. Electricity is by far the greatest emissions source in residential, commercial, and industrial buildings and operations. The vehicle fuel use is primarily represented by gasoline, but it is important to note this allocation between gasoline and diesel is only an extrapolation from national averages of vehicle types. Solid Waste greenhouse gas emissions do result from the paper and food wastes that end up in the landfill, but they are offset by the emissions saved through yard waste and wood/ textile diversion and recycling efforts, resulting in a net savings from that sector. Other recycling and landfill gas to energy measures will be calculated in the Reduction Measures analysis of the Local Climate Action Plan and represent additional emissions savings from Solid Waste Management efforts.

Table 3. Community Greenhouse Gas Emissions by Sector and Fuel Type 2005

| Sector | Fuel Type | CO2e (Tons) | CO2e (% Total) | Energy (MMBtu) |
|----------------|----------------|-------------|----------------|----------------|
| Residential | Electricity | 1,719,748 | 29.3 | 9,527,231 |
| | Natural Gas | 23,234 | 0.4 | 376,059 |
| | Propane | 14,410 | 0.2 | 199,088 |
| | Subtotal | 1,757,392 | 29.9 | 10,102,378 |
| Commercial | Electricity | 1,092,548 | 18.6 | 6,052,608 |
| | Natural Gas | 89,282 | 1.5 | 1,445,113 |
| | Propane | 19,660 | 0.3 | 271,619 |
| | Subtotal | 1,201,491 | 20.4 | 7,769,341 |
| Industrial | Electricity | 53,309 | 0.9 | 295,328 |
| | Natural Gas | NA | NA | NA |
| | Propane | 8,597 | 0.1 | 118,777 |
| | Subtotal | 61,906 | 1.1 | 414,105 |
| Transportation | Gasoline | 2,387,367 | 40.6 | 27,895,514 |
| | Diesel | 488,786 | 8.3 | 5,631,369 |
| | Subtotal | 2,876,153 | 48.9 | 33,526,883 |
| Waste | Paper Products | 13,647 | 0.2 | |
| | Food Waste | 21,907 | 0.4 | |
| | Plant Debris | -11,016 | -0.2 | |
| | Wood/Textiles | -42,651 | -0.7 | |
| | Subtotal | -18,113 | -0.3 | |
| Total | | 5,878,829 | 100 | 51,812,707 |

3.2.4 What is Not Included

As mentioned above, this community analysis does not include significant sources such as agriculture, soils, land clearing, boats, airplanes, or off-road fuel use such as in lawnmowers, or generators. Given the portion of the economy represented by agricultural sector and the significant growth in residential development of previously undeveloped lands, it is likely that agriculture and land clearing activities represent significant additional emissions. Unfortunately, the calculation of those emissions is beyond the scope of this analysis given complexities of the Carbon cycle within the natural environment and the differences in values based on geographic and ecosystem variations.

Boats, airplanes, and off-road fuel use are not calculated due to data limitations, but with additional research, the emissions contributions by those areas may be able to be estimated. Emissions from boats, for instance, are likely to be high given the significant use of recreational watercraft in Sarasota County. In 2005, approximately 21,549 motorized recreational vessels³ were registered in Sarasota County and 371 commercial vessels were registered. A recent survey

³ This approximation was derived from the “County Base Tax by Vehicle Type- July through June 2005.” A total of 23,479 recreational vehicles were registered. The 308 canoes were removed from the total and the remainder was reduced by an estimated 7% sailboats to reach the stated number of motorized vessels.

of boating in Sarasota County found that boaters average 45 trips per year with an average duration of five hours each (Sidman 2006). Assuming about half that time is spent at a destination, that would translate to 2,424,265 hours per year of boat motor use. Using very rough calculations, that could contribute over 140,000 tons (over 2%) of additional CO₂ to the total already calculated in the Community Inventory. Similarly, off-road fuel use in heavy equipment, lawn mowers, all terrain vehicles, etc. is likely another significant emissions source, but the data on how much fuel is used by this equipment is not available at the county level.

Airline travel is significant for Sarasota County citizens, but the CCP protocol calls for the calculation of airplane emissions based on fuel use at airports and only counts airports within the jurisdictional boundaries of the community. Because the only active airports in Sarasota County are fairly small, the emissions would not likely reflect the true impact of Sarasota citizens' air travel. The fact that these sectors are not included in the inventory due to data limitations does not mean, however, that efforts to reduce these sources would not be beneficial. Any reductions in fuel use through more efficient boat or lawn mower engines or reduced mower use through additional Florida Friendly landscaping, for instance, would reduce emissions and should be encouraged through public education.

3.3 Municipal Operations Greenhouse Gas Analysis for 2005

The Operations Inventory provides an estimate of all of the greenhouse gas and criteria air pollutant emissions produced by Sarasota County government as they carried out operations in FY2005. According to the CCP protocol, six sectors are analyzed in the Operations Inventory: Buildings, Vehicle Fleet, Employee Commute, Streetlights and Traffic Signals, Water/ Sewage and Waste. This analysis does not include the emissions due to School Board operations, but attempts to capture as much as possible of the operational emissions from the remaining elected officials at the county level. It is important to note that these emissions are a subset of, and therefore also included in the total Community emissions presented above.

The Operations Inventory is presented in more detail than the community analysis. This is due both to additional data availability and to the fact that governments have more direct control over their own operations. Local governments are more likely to be able to directly implement major emissions reductions within their own operations and can use their own emissions reductions and resulting cost savings to set an example for the rest of the community to follow. The additional detail will, therefore, facilitate the identification of the greatest opportunities for improvements.

As a part of Sarasota County's commitment to sustainability, numerous operational enhancements have been implemented to reduce related energy use and resulting greenhouse gas emissions in Sarasota County. While not yet quantified, the reductions afforded by initiatives such as more efficient streetlights and traffic signals, lift station power management efforts, and green buildings are anticipated to improve the County's operational emissions profile. The results of changes that were implemented prior to the FY2005 base year are reflected in the inventory in the form of lower emissions than would have occurred in the absence of those policies. Additional initiatives implemented since FY2005 will be quantified as a part of the development of the Local Climate Action Plan and included as the beginning steps of its implementation.

During FY 2005, Sarasota County government operations produced a total of 75,498 tons of Carbon dioxide equivalent. As evident in Table 4, those emissions cost Sarasota County over \$11.3 million in energy (electricity and fuel) costs. Figure 5 shows the relative contribution of each of these sectors. The highest emitting sector at 36 percent is buildings, focusing on energy used in government occupied facilities. The next most emitting sector is the electricity used in the production of water and sewer services for the community (27%). This sector includes the high-energy drinking water treatment services as well as the electricity used in lift stations, waste water treatment facilities, and pumps. The vehicle fleet represents only 17 percent of municipal operational emissions. The fleet sector includes fuel used in the provision of public transportation services as well as that used by county staff in vehicles during day to day operations.

The commute to and from work for county employees accounts for 13 percent of operational emissions. It is important to note that this is an estimate of the commute for the 2168 employees working for the Board of County Commissioners at the end of FY2005⁴. While the other sectors include emissions for operations of the other elected officials, the employee commute data was only available for BCC employees. If a full accounting were possible, it is likely that the employee commute numbers would be much higher. BCC employees represent about 60 percent of the employees, so if the remainder of employees traveled the same average distance per day, their commute might represent an additional 6,391 tons of CO₂e, for a total of 15,967 tons CO₂e. In that case, employee commutes would represent 19.5 percent of the new total greenhouse gas emissions, more than that of the vehicle fleet. The high average commute distance is indicative of a broader community pattern of disbursed development and high costs of living. In FY2007, for instance, one quarter of Sarasota County employees lived outside the county.

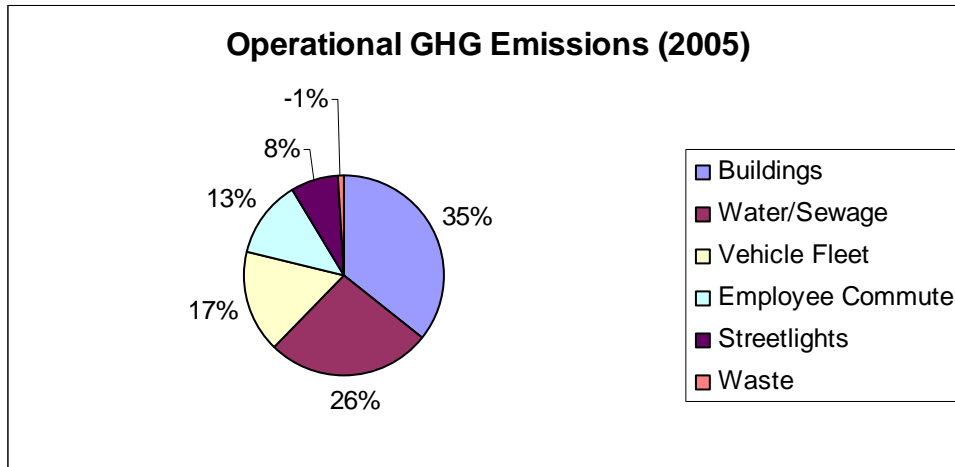
The operation of streetlights and traffic signals cost the county over \$1.3 million in 2005 and represented eight percent of total operational emissions. The solid waste generated by Sarasota County employees was estimated to represent a net sink of emissions (-1%) due to the capture of emissions in the landfill and diversion of bio-based waste such as paper and woody debris.

Table 4. Operational Greenhouse Gas Emissions in 2005

| | Energy (MMBtu) | Cost (\$) | CO₂e (tons) | CO₂e (%) |
|-------------------------|---------------------------|----------------------|-----------------------------------|--------------------------------|
| Buildings | 158,464 | 4,670,289 | 27,183 | 36 |
| Water/Sewage | 113,585 | 3,248,855 | 20,503 | 27 |
| Vehicle Fleet | 146,014 | 2,006,395 | 12,657 | 17 |
| Employee Commute | 112,000 | | 9,586 | 13 |
| Streetlights | 33,798 | 1,388,694 | 6,101 | 8 |
| Waste | | | -532 | -1 |
| Total | 563,860 | \$11,314,082 | 75,498 | 100 |

⁴ Average commute was estimated based on a study of employee commutes in FY07 to and from four buildings: BOB, Cattlemen, Cattlebridge, and Little Bob. Due to data limitations, this estimate was applied to the full set of BCC employees at all county locations. The estimate therefore comes with many assumptions and uncertainties.

Figure 5. Operational Greenhouse Gas Emissions by Sector in 2005



3.3.1 Criteria Air Pollutants

As explained in the Community Inventory above, Sarasota County is not required by federal law to implement measures to reduce Criteria Air Pollutants because it is in compliance with the Clean Air Act, but these pollutants and their sources are still important to understand. Table 5 provides an analysis of the implications of operational energy use on criteria air pollution levels in the community.

As would be expected, mobile sources (vehicle fleet and employee commute) contribute most to the levels of Carbon monoxide and volatile organic compounds. The county’s stationary sources (buildings, streetlights, and water/ sewer) are primarily responsible for the emissions of NOx, SOx, and particulate matter.

Table 5. Operational Criteria Air Pollutants and Greenhouse Gas Emissions in 2005 (tons)

| | Energy (MMBtu) | Cost (\$) | NOx | SOx | CO | VOC | PM10 | CO ₂ e |
|-------------------------|----------------|--------------|--------|-------|--------|-------|-------|-------------------|
| Buildings | 158,464 | 4,670,289 | 62.91 | 47.72 | 20.11 | 3.39 | 15.04 | 27,183 |
| Vehicle Fleet | 146,014 | 2,006,395 | 58.68 | 3.17 | 107.29 | 13.77 | 3.17 | 12,657 |
| Employee Commute | 112,000 | | 25.37 | 1.58 | 287.02 | 29.60 | 0.55 | 9,586 |
| Streetlights | 33,798 | 1,388,694 | 9.89 | 10.84 | 3.66 | 0.41 | 3.18 | 6,101 |
| Water/Sewage | 113,585 | 3,248,704 | 33.24 | 36.44 | 12.30 | 1.38 | 10.70 | 20,503 |
| Waste | | | | | | | | -532 |
| Total | 563,860 | \$11,314,082 | 190.08 | 99.76 | 430.37 | 48.55 | 32.64 | 75,498 |

3.3.2 Detailed Analysis: Top Emitters

The detailed breakdown available for the emissions sources in the Operations Inventory presents an opportunity for a more in depth analysis of high energy users and for the identification of possible improvements and cost savings. Among the most useful assessments is an identification of the highest emitting sources. It is useful to note that the top ten sources represent close to half of all operational emissions as outlined in Table 6. In addition to specific buildings, several of

these sources represent categories of collected users, but they are considered as single sources for these purposes to identify common types of energy users that might involve similar technologies and opportunities for grouped improvements. The Central Energy Plant represents 11.2 percent of county emissions, but is not included in Table 6 due to a lack of data on the distribution of energy use among the seven buildings it serves.

Table 6. Top Ten Operational Greenhouse Gas Emitters (2005)

| Sector | Building/ Energy Account Name | CO ₂ e (tons) | CO ₂ e (%) | Energy (MMBtu) | Cost (\$) |
|----------------------|-------------------------------|--------------------------|-----------------------|----------------|-------------|
| Water/ Sewage | Lift Stations (All) | 11,046 | 14.6 | 61,190 | 1,867,688 |
| Water/ Sewage | Carlton Water Treatment Plant | 6,598 | 8.7 | 36,554 | 919,271 |
| Vehicles | SCAT Transit Operators | 4,303 | 5.7 | 49,608 | 810,755 |
| Streetlights | Traffic Street Lights | 3,437 | 4.6 | 19,043 | 523,321 |
| Buildings | Admin Building | 2,352 | 3.1 | 13,029 | 331,021 |
| Vehicles | Vendor-Provided SCAT Services | 2,045 | 2.7 | 23,380 | |
| Streetlights | Tax Light Districts | 1,360 | 1.8 | 7,535 | 655,043 |
| Buildings | BOB Building | 1,334 | 1.8 | 7,390 | 218,475 |
| Water/ Sewage | Venice E Blvd WWTP | 1,312 | 1.7 | 7,268 | 194,932 |
| Streetlights | Traffic Signals | 1,303 | 1.7 | 7,220 | 210,330 |
| Total | | 35,090 | 46.40% | 232,217 | \$5,730,836 |

The top two greenhouse gas emitters are within the Water/ Sewage sector. The electricity used in the numerous lift stations around the county represent over 14 percent of greenhouse gases and cost the county over \$1.8 million per year to power. The Carlton Water Treatment Plant represents another 8 percent of the county's operational greenhouse gas emissions and cost \$919,271 to power in 2005. This one building represents an abnormally high proportion of the total emissions due to the high energy intensity of the treatment technology being used. In 2005, the Carlton Water Treatment Plant provided a total water output of 2,000,500,000 gallons of drinking water. It therefore produced over 3 tons CO₂e per million gallons of output and cost over \$459 in energy costs per million gallons output. Also within the top ten is the Venice East Boulevard waste water treatment plant whose energy use in 2005 represented 1.7 percent of the total emissions and cost \$194,932.

Within the vehicle fleet sector, SCAT transit is responsible for two of the top ten emitters in the Government Operations Inventory. Fuel used in directly operated SCAT transit buses accounts for 5.7 percent of county greenhouse gas emissions and cost \$810,755 in 2005. An estimate of fuel used in vendor-provided transit services under contract to SCAT represents another 2.7 percent of operational emissions. While the public transit system clearly is a significant emissions contributor and warrants continued efficiency improvements, it is also important to remember that this service contributes to reduced emissions within the community as a whole. In the calculation of reduction measures, SCAT will get credit for expansions of service and resulting reduced community vehicle miles traveled going forward.

The Streetlights sector fills the fourth, seventh, and tenth positions in the list of top ten emitters. The traffic street lights, tax light districts, and traffic signals together account for over 8 percent

of county operational emissions as a result of their electricity use. This collection of numerous traffic and street lights throughout the community collectively cost over \$1.3 million in 2005. In FY2007, Sarasota County had 253 traffic signalized intersections and 6736 street light poles. Assuming a similar number in 2005, that would mean each intersection emitted over five tons of CO_{2e} and cost over \$831 to power in 2005. Each street light emitted 0.55 tons of CO_{2e} and cost over \$77 to power.

The two most emitting office buildings are the Administration building at 1660 Ringling (3.1%) and the BOB building at 1001 Sarasota Center Boulevard (1.8%). These large office buildings house numerous county employees and understandably represent a significant portion of operational energy use. In 2007, for instance, BOB held 254 employees. Assuming a similar headcount in 2005, that would translate to emissions of just over 5 tons CO_{2e} per person in the building. In addition to these two buildings, the following buildings round out the top ten emitters within the building sector alone: Selby Library (1.7%), RL Anderson (1.2%), Englewood Sports Complex (0.7%), SCAT Pinkney (0.6%), Twin Lakes Building A (0.4%), Fruitville Library (0.4%), North Sarasota Library (0.4%) and Venice Library (0.4%).

3.3.3 Detailed Analysis: Emissions by Business Center

In addition to this detailed look at the highest emitters, it may be useful to look at the data from the perspective of who pays. The following analysis breaks the emissions into which Business Center budget was responsible for the energy bills. This is not necessarily indicative of which Business Center *used* the energy due to a billing system that in FY2005 pooled building energy use for many Business Centers into one account within Facilities Management (Public Works). This system limits the financial accountability of those Business Centers for their energy use and removes the incentive for efficiency improvements. At the writing of this report, that accounting policy was being reassessed.

The analysis by Business Center does, however provide an opportunity to compare those Business Centers that are directly responsible for their energy use and to encourage assessments of opportunities for improvements within each unit. Figures 6, 7 and 8 outline the general breakdown between Business Centers, but the full detail is presented in the Appendices. Appendix A summarizes the emissions profile within each sector by Business Center and Business Unit. Appendix B goes down to the level of individual billing accounts to detail electricity or fuel use and the resulting emissions for each building, operation, or set of vehicles.

Figure 6. Total Operational Greenhouse Gas Emissions By Business Center in 2005

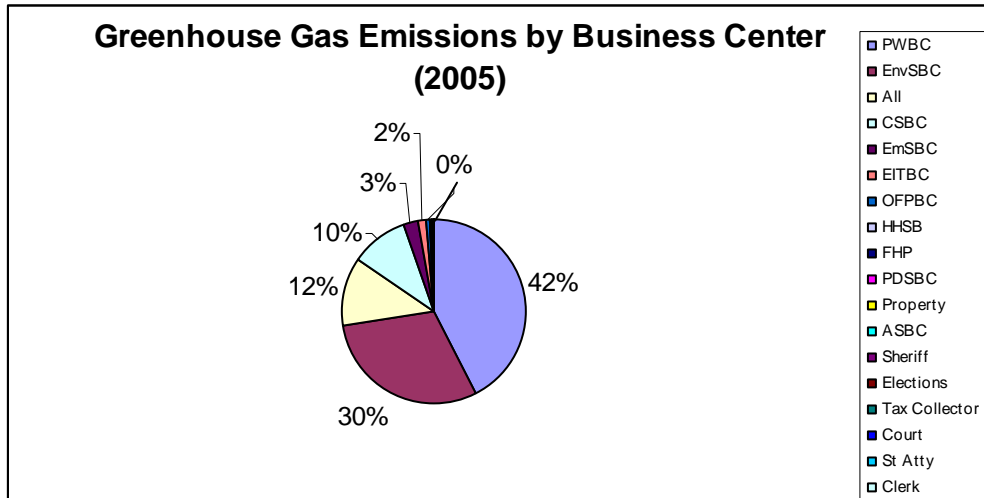


Figure 7. Operational Greenhouse Gas Emissions from Buildings by Business Center

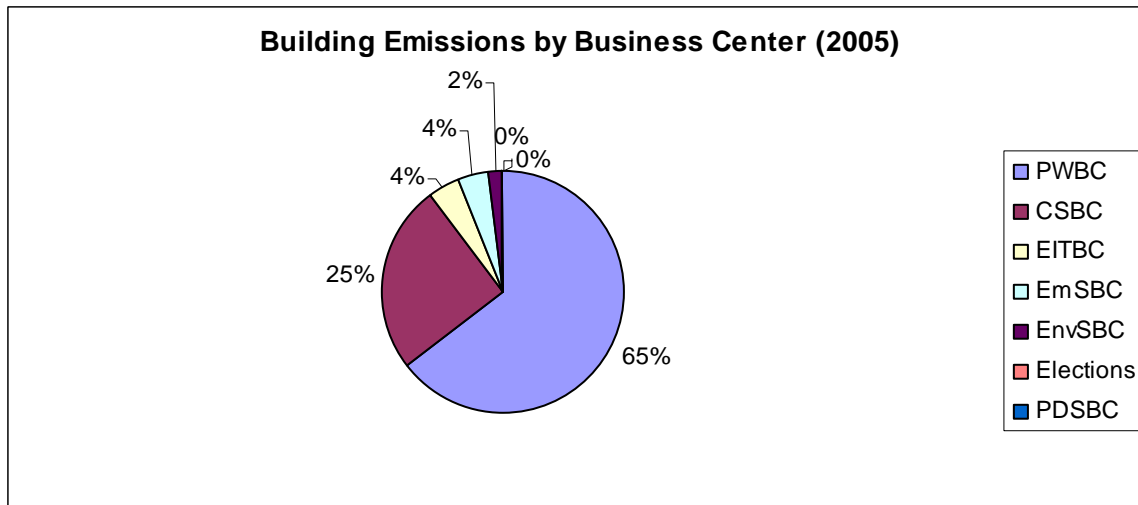
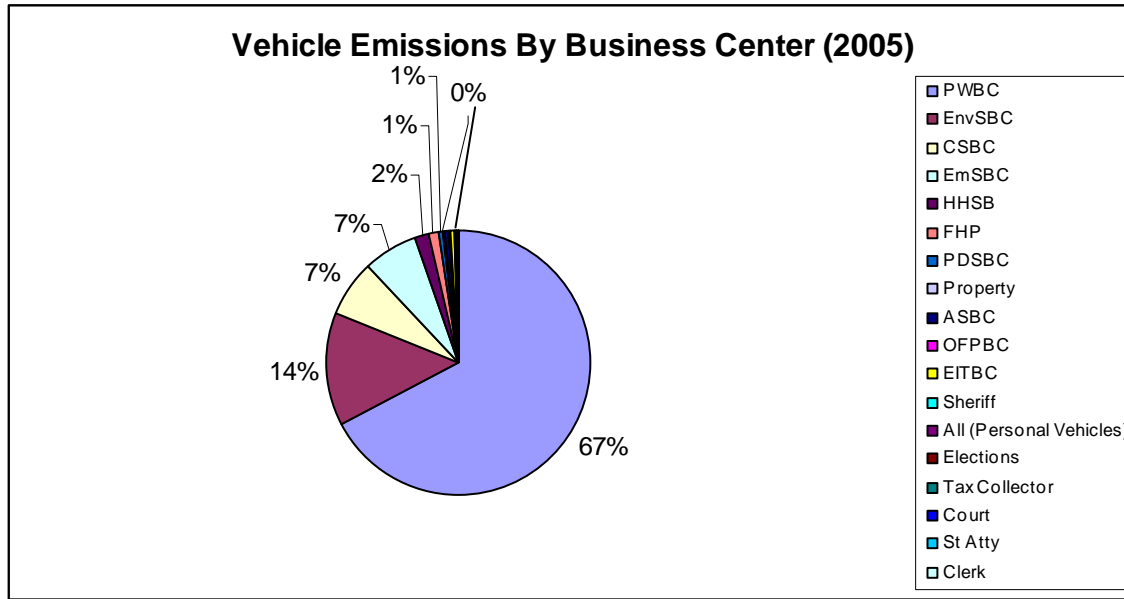


Figure 8. Operational Greenhouse Gas Emissions from Vehicles by Business Center



3.3.4 What Is Not Included

This data, while detailed, is far from complete. The largest gap in the operational analysis is an accounting for the emissions of contracted operations. The CCP Protocol calls for the inclusion of all county operations regardless of whether it is a service provided directly by county staff or by contractors. The additional emissions from contracted services are no doubt substantial, but difficult to track. Sarasota County contracts out any number of services including mowing right of ways, conducting construction operations, and providing engineering or other professional services. Each of these activities comes with the same vehicle and electricity emissions that would occur if county staff provided the services. Sarasota County is therefore responsible for that portion of the emissions profile and would benefit from any reduction efforts. Due to the significant number of contractors doing work for Sarasota County in 2005, it was not deemed feasible to account for those emissions in this inventory. It is recommended, however, that improved accounting be investigated to determine if reporting of emissions from contractual services could be possible in the future. It is also important to remember that while any future increase in outsourcing may appear to show a reduction in operational fuel or electricity use, that reduction would misrepresent the actual emissions profile for county operations.

In addition to contracted services, this Operations Inventory does not account for the emissions from the Sarasota County School Board operations or from those of the other municipalities within the county. Those emissions are estimated within the Community Inventory, but other government entities are encouraged to conduct similar analyses of their own operations as a part of a collective effort to become a more climate-friendly, sustainable community. Sarasota County is willing to share experiences and information with these other entities if requested and to work cooperatively toward developing a community-wide strategy for addressing climate change.

Finally, as with the Community Inventory, the Operations Inventory does not account for emissions from land clearing, soils, or off-road fuel use such as heavy equipment, mowing equipment, boats, airline travel or helicopters that result from government operations. The data on these emissions sources is difficult to obtain and is therefore not estimated in the inventory. Similarly, the Carbon sequestration benefit of Sarasota County’s Forestry and land protection programs is also not included in this inventory. The CCP protocol does not recommend the calculation of the greenhouse gas impact of tree protection because the remainder of the natural sector is not calculated and the information on the positive benefits of protection efforts would therefore not be within the context of the broader land use/ land use cover change context. The effect of agricultural operations in the county and of the effect of land clearing for development would likely have a significant emissions contribution, for instance, so it is misrepresentative to present the positive benefits of natural sinks when the full accounting of the land-based emissions is unavailable. That said, estimates of the Carbon sequestration benefits of Sarasota County’s land and tree preservation programs are estimated in Table 7 just as a point of reference and an item for future discussion. This area will also be discussed in the quantification of reduction measures to be undertaken as part of the development of the Local Climate Action Plan.

Table 7. Estimate of Carbon Sequestration Benefit Provided by County-Owned Trees (as of 2007)

| | Estimated Number of trees | Carbon Sequestration (tons/year) | CO2 Removal from atmosphere (tons/year) |
|---------------------------------------|---------------------------|----------------------------------|--|
| Right of Way trees | 54,000 | 83.7555 | 308 |
| Parks trees | 200,000 | 624.96 | 2,355 |
| Other Govt Facilities | 9,720 | 42.277 | 138 |
| ESLPP and other public lands | | 3115.6875 | 9606.7035 |
| Total All Publicly owned Trees | | 3866.68 | 12407.6945 |

4.0 The Path Forward

The data collection involved in this Greenhouse Gas Emissions Inventory was only the first step along the path to addressing climate change within Sarasota County. It was important to identify where we are in terms of greenhouse gas emissions before identifying where we want to go and how we will get there. By following the Cities for Climate Protection Milestones, it will be possible to implement a scientifically based climate strategy going forward. This section outlines the remaining steps in developing and implementing that strategy.

1) Forecast Emissions Growth

Now that the base year emissions have been quantified, it will be necessary to analyze the pattern going forward and to project growth in greenhouse gas emissions in our community in the future. Using energy use and transportation growth projections, the CACP software provides a tool to

develop an emissions inventory forecast for a specified target year. A forecast will need to be developed for both the community and operational levels and can be used as a benchmark against which any reduction measures would be evaluated. By developing an estimate of where we would be going without any emissions reduction effort, it will be possible to compare the effectiveness of measures going forward. Initial data collection efforts have led to a likely forecast date in Sarasota County of 2015.

2) Quantify Reduction Measures

Following the forecast process, a detailed analysis will be necessary of all the emissions reduction measures that have already been achieved and of those that are possible in the future. By quantifying the reductions that are planned or that have already been implemented, we will know how far from the forecasted business as usual projection we will be given current efforts. For example, this will involve quantifying the effect of:

- At the Community level: the existing green building incentive program, reduced vehicle miles traveled from public transportation improvements or changes in development patterns, vehicle fuel efficiency improvements, increases in the use of renewable energy, home energy efficiency incentive and education programs, etc.
- At the Operational level: the green building and 2030 Challenge commitments, hybrid fleet and transit vehicles, employee commute reduction programs, technology retrofits increasing energy efficiency of buildings, streetlights, and traffic signals, landscaping changes that reduce the amount of mowing necessary, etc.

Information on these programs and others will provide a menu from which to choose the most effective and financially responsible emissions reduction measures available.

3) Set a Target

Based on the information of the inventory, forecast, and measures available, it will be possible to set a target for reductions below the forecast year. The available information will be presented to the Board of County Commissioners for consideration and guidance. The Board can consider what reduction measures are already planned, what else is possible, and what is necessary given the context of climate change and community demand. Many communities have already set their targets and can serve as examples.

- ICLEI recommends that their Cities for Climate Protection Campaign participants commit to a minimum of 15% below baseline emissions within 15-20 years with interim targets to serve as milestones.
- The US Mayors Climate Protection Agreement sets a goal of striving to achieve the Kyoto Protocol target for the U.S. of 7% below 1990 levels by 2012.
- Brookline, MA set a goal in 2000 of achieving 20% below 1995 levels by 2010;
- Austin, TX set a goal in 1996 of 20% below 1990 levels by the year 2010;
- Fort Collins, CO set a target in 1999 of 30% below predicted business as usual levels in 2010;
- In 1993, St. Paul, MN set a reduction target of 20% from 1988 levels by 2005, with an intermediate goal of 7.5 percent by 1997;
- In 1993, Miami-Dade County, FL committed to reduce to 20% of 1988 levels by 2005, but despite their efforts, a reinventory found that emissions had actually increased by 36% over this time period;

- In 2007, Orange County, FL set targets from a 2005 base year of 15% by 2010, 28% by 2015, and 40% by 2020;

4) Community and County Staff Involvement

Following guidance by the Board of County Commissioners, a draft concept for a reduction target and the menu of measures available will then be taken out into the community for input and discussion. This outreach is necessary given that any community emissions reductions will require leadership from within the community and its businesses for implementation to be successful. Input will also be sought from a group of community representatives in the form of an Advisory Group to ensure a broad and inclusive review process.

Similarly, the possible operational changes will be taken to the county staff in each subject area as part of the County Energy Plan development process. A process will be developed that involves the leadership of the Business Centers as well as the end users of the energy to provide input on the policies and measures that make sense for the county to implement. Without such ownership and a clear process for accountability, such a plan will not succeed. To ensure that the county is headed in a direction supported and led by its citizens and its staff, the strategy must be developed in a cooperative way.

5) Develop a Climate Action Plan

The collective input from the Board, the community, and the county staff will be considered in the development of a final Climate Action Plan. That plan will set forth the decided upon reduction target, the agreed upon reduction measures, a timeline and project management outline for implementing the necessary policies and projects. It may also include recommendations for increasing the accountability of operational energy users through such strategies as lifecycle costing, budget changes providing incentives for energy savings, and changes in mechanisms for reporting and tracking project energy and cost savings.

The Climate Action Plan should likely also include a process for implementing adaptation measures. Many communities have already begun climate change adaptation and vulnerability planning processes to respond to the unavoidable climate change impacts. This part of the plan could involve, for example, changes to infrastructure and development planning to consider anticipated sea level rise, or an additional layer of disaster response mechanisms incorporating scenarios of more intense storms or additional areas of flooding.

6) Implement the Climate Action Plan

Upon finalization of the Climate Action Plan, it should of course be implemented. The implementation process should be clearly outlined in and tracked through project management tools with identified responsibilities among the Business Centers and through community partnerships and education. Adhering to strict timelines will be crucial to achieving the goals; many of the projects will take time to show results on the scale visible on community-level emissions analysis so must be started early. Creative financing may be necessary to ensure that projects with reasonable payback periods but high upfront costs can be implemented without undue financial burden at the beginning. Several communities have implemented revolving loan funds, required lifecycle costing in procurement contracts, and other tools to balance the financial equation to the bigger picture.

7) Report and Monitor: As the plan is implemented, it will be important to assess progress through interim emissions inventories and regular reporting of energy savings and project progress or barriers. ICLEI recommends a reinventory of emissions at least every five years.

Through following these steps, Sarasota County will develop a community-led, quantitatively based strategy for addressing climate change and the community's impact on greenhouse gas emissions. As the world prepares to develop a new international agreement, the federal government comes closer to passing mandatory climate legislation, and Governor Crist begins to implement his climate change plans, Sarasota County will be well positioned to play a leadership role in actions to reduce climate impacts.

5.0 Appendices

Appendix A. Operational Greenhouse Gas Emissions By Sector and Business Unit (2005)*

| Sector | Business Center | Business Unit | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|----------------------|---------------------------|---------------------------------|-------------|---------------|----------------|----------------|
| Buildings | CSBC | Cooperative Extension | 12 | 0.0 | 64 | 2,223 |
| | CSBC | Historical Resources | 106 | 0.1 | 585 | 19,102 |
| | CSBC | Library | 3,129 | 4.1 | 17,337 | 480,712 |
| | CSBC | Parks & Recreation | 3,617 | 4.8 | 22,989 | 997,789 |
| | CSBC | Sustainability | 5 | 0.0 | 30 | 1,095 |
| | EITBC | IT | 1,152 | 1.5 | 6,384 | 170,572 |
| | EmSBC | Fire | 1,038 | 1.4 | 5,783 | 181,927 |
| | EmSBC | Ambulance | 47 | 0.1 | 259 | 8,487 |
| | EnvSBC | Resource Management | 6 | 0.0 | 32 | 1,529 |
| | EnvSBC | Solid Waste | 236 | 0.3 | 1,305 | 42,066 |
| | EnvSBC | Stormwater | 35 | 0.0 | 196 | 14,039 |
| | EnvSBC | Utilities | 249 | 0.3 | 1,377 | 49,121 |
| | EnvSBC | Air Quality | 9 | 0.0 | 52 | 1,992 |
| | PDSBC | Growth Management | 3 | 0.0 | 15 | 1,328 |
| | PWBC | Facilities Maintenance | 16,022 | 21.2 | 93,652 | 2,446,013 |
| | PWBC | Facilities/ Fire | 194 | 0.3 | 1,075 | 31,021 |
| | PWBC | Forestry | 687 | 0.9 | 3,805 | 119,132 |
| | PWBC | Highway Maintenance | 22 | 0.0 | 120 | 4,189 |
| | PWBC | Road and Bridge | 21 | 0.0 | 116 | 4,234 |
| | PWBC | SCAT | 577 | 0.8 | 3,197 | 90,119 |
| | PWBC | Transport | 7 | 0.0 | 40 | 1,749 |
| | Elections | Supervisor of Elections | 9 | 0.0 | 50 | 1,850 |
| | Subtotal Buildings | | | 27,183 | 36.0 | 158,464 |
| Vehicle Fleet | All | Personal Vehicle Reimbursements | 15 | 0.0 | 174 | 11,860 |
| | ASBC | Communications | 46 | 0.1 | 536 | 8,706 |
| | City | City of Sarasota | 0 | 0.0 | 2 | 35 |
| | Clerk | Clerk of Court | 4 | 0.0 | 43 | 719 |
| | Court | Court Administration | 5 | 0.0 | 60 | 902 |
| | CSBC | Cooperative Extension | 9 | 0.0 | 101 | 1,532 |
| | CSBC | Parks and Recreation | 848 | 1.1 | 9,849 | 156,914 |
| | EITBC | Tech Support | 31 | 0.0 | 359 | 5,458 |
| | EmSBC | Fire/ EMS | 841 | 1.1 | 9,723 | 155,217 |
| | EmSBC | Lifeguard Operations | 7 | 0.0 | 77 | 1,201 |
| | EnvSBC | Natural Resources | 66 | 0.1 | 772 | 12,067 |
| | EnvSBC | Solid Waste | 219 | 0.3 | 2,558 | 40,244 |
| | EnvSBC | Water Operations | 1,052 | 1.4 | 12,113 | 192,915 |
| | EnvSBC | Water Planning and Reg | 421 | 0.6 | 4,867 | 77,831 |
| | FHP | Florida Highway Patrol | 129 | 0.2 | 1,509 | 22,122 |
| | HHSB | Health | 87 | 0.1 | 1,020 | 15,466 |
| | HHSB | Mosquito Management | 141 | 0.2 | 1,655 | 25,821 |
| | OFPC | Asset Management | 43 | 0.1 | 494 | 8,348 |

| Sector | Business Center | Business Unit | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|-------------------------|----------------------------------|-------------------------|---------------|--------------|----------------|---------------------|
| | PDSBC | Land Development | 45 | 0.1 | 522 | 8,322 |
| | PDSBC | Permitting | 19 | 0.0 | 226 | 26,332 |
| | Property | Property Appraiser | 55 | 0.1 | 640 | 9,759 |
| | PWBC | Facilities Services | 290 | 0.4 | 3,396 | 52,404 |
| | PWBC | Mobility | 63 | 0.1 | 740 | 11,324 |
| | PWBC | Mobility Ops and Maint | 614 | 0.8 | 7,078 | 113,555 |
| | PWBC | Mobility Planning | 83 | 0.1 | 948 | 15,391 |
| | PWBC | Transit | 7,466 | 9.9 | 85,878 | 1,020,588 |
| | Sheriff | Sheriff | 29 | 0.0 | 333 | 6,000 |
| | St Atty | State Attorney | 5 | 0.0 | 64 | 983 |
| | Elections | Supervisor of Elections | 14 | 0.0 | 169 | 2,619 |
| | Tax Coll | Tax Collector | 9 | 0.0 | 111 | 1,761 |
| | Subtotal Vehicle Fleet | | 12,657 | 16.8 | 146,014 | \$2,006,395 |
| Employee Commute | All | Employee Commute | 9,586 | 12.7 | 112,000 | |
| | Subtotal Employee Commute | | 9,586 | 12.7 | 112,000 | |
| Streetlights | PWBC | Tax Light Districts | 1,360 | 1.8 | 7,535 | 655,043 |
| | PWBC | Traffic | 4,741 | 6.3 | 26,263 | 733,651 |
| | Subtotal Streetlights | | 6,101 | 8.1 | 33,798 | \$1,388,694 |
| Water/ Sewage | EnvSBC | Utilities | 20,503 | 27.2 | 113,585 | 3,248,855 |
| | Subtotal Water/ Sewage | | 20,503 | 27.2 | 113,585 | \$3,248,855 |
| Waste | All | Waste | -532 | -0.7 | | |
| | Subtotal Waste | | -532 | -0.7 | | |
| | | | | | | |
| Total | | | 75,498 | 100.0 | 563,860 | \$11,314,082 |

* As explained in the text, the Business Centers listed within the Buildings Sector represent the entity billed for the energy use, not necessarily the end-user of the energy. Facilities Services is therefore more heavily represented, as they are responsible for the energy bills of many facilities. Zeros represent a value below 0.1%.

Appendix B. Operational Greenhouse Gas Emissions By Sector and Business Center: Building/ Account Level Details (2005)

| Business Unit | Building/ Energy Account Name | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|-------------------------------------|--------------------------------|-------------|----------|----------------|-----------|
| Buildings | | | | | |
| CSBC- Cooperative Extension | | | | | |
| | Florida House | 12 | 0 | 64 | 2,223 |
| | Subtotal | 12 | 0 | 64 | 2,223 |
| CSBC- Historical Resources | | | | | |
| | Historical Resources | 4 | 0 | 21 | 2,422 |
| | Historical Resources- Chidsey | 102 | 0.1 | 564 | 16,680 |
| | Subtotal | 106 | 0.1 | 585 | 19,102 |
| CSBC- Library | | | | | |
| | Library Elsie Quirk | 148 | 0.2 | 817 | 24,862 |
| | Library Fruitville | 335 | 0.4 | 1,858 | 53,933 |
| | Library Gulf Gate | 232 | 0.3 | 1,283 | 39,532 |
| | Library Jacaranda | 290 | 0.4 | 1,607 | 45,110 |
| | Library N. Sarasota | 337 | 0.4 | 1,868 | 49,125 |
| | Library North Port | 264 | 0.3 | 1,462 | 44,493 |
| | Library Selby | 1,255 | 1.7 | 6,952 | 177,452 |
| | Library Venice | 269 | 0.4 | 1,491 | 46,205 |
| | Subtotal | 3,129 | 4.1 | 17,337 | 480,712 |
| CSBC- Parks & Recreation | | | | | |
| | 12th St Maintenance | 10 | 0 | 53 | 1,889 |
| | 12th St Pump | 7 | 0 | 41 | 1,439 |
| | 17th St Ball Park Entrance | 0 | 0 | 2 | 176 |
| | 17th St Restroom | 9 | 0 | 52 | 1,830 |
| | Adams Lane Park Lights P&R | 28 | 0 | 156 | 11,303 |
| | Arlington Park Pool- Heating | 277 | 0.4 | 4,488 | 42,970 |
| | Arlington Rec Center | 129 | 0.2 | 716 | 23,122 |
| | Arlington Tennis | 14 | 0 | 79 | 2,712 |
| | Ballfield Lights 17th St | 109 | 0.1 | 604 | 38,477 |
| | Ballfield Lights Miss Sarasota | 7 | 0 | 37 | 1,338 |
| | Ballfield Lights North Port | 51 | 0.1 | 282 | 19,860 |
| | Ballfield Lights Tennis- Pineb | 14 | 0 | 80 | 2,871 |
| | Ballfield Lights Wellfield | 82 | 0.1 | 456 | 21,998 |
| | Bay Street Park | 0 | 0 | 2 | 172 |
| | Bee Ridge Park Recreation | 30 | 0 | 168 | 6,281 |
| | Bee Ridge Pk 1 | 14 | 0 | 76 | 3,348 |
| | Bee Ridge Pk 2 | 18 | 0 | 101 | 4,075 |
| | Blind Pass Rd Lights | 0 | 0 | 0 | 114 |
| | Boat Ramp- Manasota Key Rd | 1 | 0 | 4 | 465 |
| | Butler Park Pavilion # 1 | 4 | 0 | 24 | 917 |
| | Butler Park Soccer w Concessio | 10 | 0 | 56 | 1,892 |
| | Casperson Beach Bathhouse RR | 2 | 0 | 13 | 535 |
| | Centenial Park | 4 | 0 | 25 | 931 |

| Business Unit | Building/ Energy Account Name | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|---------------|---------------------------------|-------------|----------|----------------|-----------|
| | Cockrill Irrigation | 5 | 0 | 26 | 972 |
| | Colonial Oak Rec | 88 | 0.1 | 485 | 15,651 |
| | Dallas White Pk N Port | 18 | 0 | 98 | 3,389 |
| | Engelwood Baseball- Orange Ave | 15 | 0 | 82 | 4,222 |
| | Engelwood Beach Storage- Manas | 1 | 0 | 7 | 324 |
| | Engelwood Pk Rec Ctr | 22 | 0 | 120 | 4,447 |
| | Engelwood Sports Complex Rec C | 560 | 0.7 | 3,104 | 129,882 |
| | Engelwood Sports Pump | 28 | 0 | 156 | 6,917 |
| | Engelwood Sports Soccer | 23 | 0 | 125 | 9,950 |
| | Engelwood Sports Softball | 35 | 0 | 195 | 14,100 |
| | Engelwood Sports Tennis | 29 | 0 | 161 | 8,101 |
| | Engelwood Tennis Courts- Wentw | 17 | 0 | 94 | 4,387 |
| | Fruitville Pk Sarasota | 2 | 0 | 13 | 528 |
| | Fruitville Soccer | 1 | 0 | 8 | 373 |
| | George Mullen Pk Comm | 5 | 0 | 27 | 981 |
| | Gillespi Park | 2 | 0 | 12 | 496 |
| | Higel Park | 1 | 0 | 6 | 301 |
| | Hyde Park Air Pump | 19 | 0 | 108 | 3,666 |
| | Indian Mound Pk | 10 | 0 | 54 | 1,892 |
| | Irrigation Adams Lane | 1 | 0 | 4 | 219 |
| | John Chidsey Bayfront Ctr | 2 | 0 | 8 | 387 |
| | Ken Thompson Irrigation | 0 | 0 | 0 | 115 |
| | Ken Thompson Lights | 21 | 0 | 118 | 4,211 |
| | Knight Trail Care Taker Trailer | 1 | 0 | 6 | 315 |
| | Knight Trail Maint Bldg | 1 | 0 | 6 | 332 |
| | Knight Trail Public Range | 30 | 0 | 168 | 7,828 |
| | Knight Trail Rifle Range | 7 | 0 | 37 | 1,430 |
| | Lakeview Paw Pk | 3 | 0 | 19 | 744 |
| | Laurel Park | 145 | 0.2 | 801 | 26,051 |
| | Lawn Bowling | 1 | 0 | 6 | 311 |
| | Lemon Bay Park | 1 | 0 | 6 | 296 |
| | Lido Bch N | 6 | 0 | 32 | 1,150 |
| | Lido Bch S | 1 | 0 | 4 | 409 |
| | Lido Pool | 32 | 0 | 179 | 5,837 |
| | Longwood Park | 96 | 0.1 | 532 | 18,101 |
| | Longwood Run Rec Ctr | 29 | 0 | 161 | 5,842 |
| | Manasota Bch RR | 8 | 0 | 45 | 1,600 |
| | Myakkahatchee Park | 1 | 0 | 4 | 213 |
| | N Metro Park Restroom | 0 | 0 | 0 | 115 |
| | N Port Concession Stand | 7 | 0 | 37 | 3,873 |
| | N Port Pool Office | 0 | 0 | 1 | 26 |
| | N Port Pool Pump | 38 | 0.1 | 212 | 7,050 |
| | N Port Soccer | 13 | 0 | 73 | 7,048 |
| | N Port Sports Field | 6 | 0 | 32 | 5,988 |
| | Nassau St Irrigation | 5 | 0 | 29 | 1,014 |
| | Newtown Estates Park | 6 | 0 | 31 | 1,125 |

| Business Unit | Building/ Energy Account Name | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|---------------|---------------------------------------|--------------|------------|----------------|----------------|
| | Newtown Gym | 202 | 0.3 | 1,119 | 34,535 |
| | Nokomis Bch Bath House | 1 | 0 | 4 | 941 |
| | Nokomis Bch Cottage | 1 | 0 | 4 | 983 |
| | Nokomis Bch Pavilion | 1 | 0 | 4 | 1,644 |
| | Nokomis Beach Restroom | 4 | 0 | 23 | 901 |
| | Nokomis Comm Pk Main Bldg | 44 | 0.1 | 245 | 7,746 |
| | Nokomis Life Guard Bldg | 6 | 0 | 31 | 1,142 |
| | Outside Light - Lynnhurst | 1 | 0 | 4 | 195 |
| | Outside Light P & R - Manasota Key Rd | 1 | 0 | 7 | 283 |
| | Outside Light P & R- Cocoanut | 33 | 0 | 184 | 8,275 |
| | Park Facilities | 32 | 0 | 175 | 100,130 |
| | Park Lights | 1 | 0 | 4 | 378 |
| | Payne Park Fountain | 0 | 0 | 2 | 192 |
| | Phillippi Estate Pk Mansion | 106 | 0.1 | 590 | 18,352 |
| | Pioneer Park | 9 | 0 | 50 | 1,757 |
| | Restroom Manasota Bch | 4 | 0 | 20 | 778 |
| | Rexrode Tennis | 25 | 0 | 140 | 6,323 |
| | Ronald Foxworthy Maint & Rest | 122 | 0.2 | 678 | 42,846 |
| | S Lido Nature Ctr | 6 | 0 | 35 | 1,247 |
| | Sarasota Basketball | 0 | 0 | 1 | 528 |
| | Sarasota Little League | 16 | 0 | 87 | 3,914 |
| | Shamrock Pk E Wing | 25 | 0 | 139 | 5,487 |
| | Siesta Bch Lifeguard #1 | 22 | 0 | 120 | 4,107 |
| | Siesta Dr Irrigation | 0 | 0 | 0 | 107 |
| | Siesta Dr Phone | 0 | 0 | 0 | 107 |
| | Siesta Street Lights | 27 | 0 | 150 | 8,155 |
| | Snook Haven | 56 | 0.1 | 312 | 10,954 |
| | Turtle Bch | 8 | 0 | 43 | 1,522 |
| | Turtle Bch ConferMaint | 0 | 0 | 1 | 146 |
| | Tuttle Tennis Courts | 12 | 0 | 69 | 2,407 |
| | Twin Lakes Restrooms | 4 | 0 | 25 | 929 |
| | Twin Lakes Baseball Lights | 40 | 0.1 | 224 | 33,883 |
| | Twin Lakes Bldg A | 321 | 0.4 | 1,780 | 55,478 |
| | Twin Lakes Maint Bldg B | 48 | 0.1 | 268 | 9,497 |
| | Twin Lakes Pump | 35 | 0 | 193 | 6,852 |
| | Venice Baseball Fields | 26 | 0 | 145 | 5,930 |
| | Venice Bch Pavilion | 6 | 0 | 34 | 1,232 |
| | Venice Bch Shed | 0 | 0 | 2 | 186 |
| | Venice Comm Ctr | 44 | 0.1 | 242 | 77,248 |
| | Venice Hecksher Park ADA RR | 17 | 0 | 95 | 4,676 |
| | Venice Heckssher Tennis Court | 23 | 0 | 130 | 7,218 |
| | Venice Rec Ctr | 0 | 0 | 2 | 158 |
| | Venice Restroom- Harbor Dr | 0 | 0 | 1 | 134 |
| | Venice Soccer Fields- Pinebrook | 17 | 0 | 94 | 7,846 |
| | Woodmere Pk Gymnasium | 103 | 0.1 | 569 | 19,516 |
| | Subtotal | 3,617 | 4.8 | 22,989 | 997,789 |

| Business Unit | Building/ Energy Account Name | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|------------------------------------|--------------------------------|-------------|----------|----------------|-----------|
| CSBC- Sustainability | | | | | |
| | Sustainability | 5 | 0 | 30 | 1,095 |
| | Subtotal | 5 | 0 | 30 | 1,095 |
| EITBC- IT | | | | | |
| | IT- Arthur Anderson | 1,152 | 1.5 | 6,384 | 170,572 |
| | Subtotal | 1,152 | 1.5 | 6,384 | 170,572 |
| EmSBC- Fire | | | | | |
| | Fire Station 1 | 137 | 0.2 | 761 | 22,723 |
| | Fire Station 11 | 81 | 0.1 | 448 | 13,218 |
| | Fire Station 12 | 30 | 0 | 168 | 5,649 |
| | Fire Station 13 | 29 | 0 | 163 | 5,507 |
| | Fire Station 14 | 31 | 0 | 174 | 5,874 |
| | Fire Station 18 | 22 | 0 | 122 | 4,160 |
| | Fire Station 19 | 23 | 0 | 130 | 4,435 |
| | Fire Station 2 | 91 | 0.1 | 504 | 15,428 |
| | Fire Station 20/15 | 93 | 0.1 | 513 | 16,836 |
| | Fire Station 21 | 60 | 0.1 | 333 | 10,333 |
| | Fire Station 26 | 51 | 0.1 | 281 | 8,987 |
| | Fire Station 3 | 34 | 0 | 189 | 6,915 |
| | Fire Station 4 | 92 | 0.1 | 509 | 15,584 |
| | Fire Station 5 | 75 | 0.1 | 418 | 12,607 |
| | Fire Station 6 | 42 | 0.1 | 233 | 7,783 |
| | Fire Station 7 | 37 | 0 | 204 | 6,906 |
| | Fire Station 8 | 100 | 0.1 | 556 | 16,547 |
| | Outside Light- Fire | 5 | 0 | 27 | 1,274 |
| | Suburban Propane- Fire Depart | 4 | 0 | 51 | 1,161 |
| | Subtotal | 1,038 | 1.4 | 5,783 | 181,927 |
| EmSBC-Ambulance | | | | | |
| | Ambulance Station 33 | 46 | 0.1 | 255 | 8,294 |
| | Outside Light - Ambulance | 1 | 0 | 4 | 193 |
| | Subtotal | 47 | 0.1 | 259 | 8,487 |
| EnvSBC- Resource Management | | | | | |
| | Resource Management Facilities | 6 | 0 | 32 | 1,529 |
| | Subtotal | 6 | 0 | 32 | 1,529 |
| EnvSBC- Solid Waste | | | | | |
| | Solid Waste Facilities | 152 | 0.2 | 842 | 26,977 |
| | Solid Waste Office- Knights Tr | 84 | 0.1 | 463 | 15,089 |
| | Subtotal | 236 | 0.3 | 1,305 | 42,066 |
| EnvSBC- Stormwater | | | | | |
| | Stormwater Facilities - Beach | 35 | 0 | 196 | 14,039 |
| | Subtotal | 35 | 0 | 196 | 14,039 |
| EnvSBC- Utilities | | | | | |
| | Backflow Meter- Bliss Rd | 0 | 0 | 0 | 107 |
| | Jacaranda Fountain | 6 | 0 | 35 | 1,265 |
| | MPO | 0 | 0 | 0 | 107 |
| | Outside Light- Utilities | 3 | 0 | 17 | 794 |

| Business Unit | Building/ Energy Account Name | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|-------------------------------------|--|-------------|----------|----------------|-----------|
| | Utilities Admin Bldg H- 2817 | 26 | 0 | 144 | 5,567 |
| | Utilities Admin Bldg A- 2817 | 36 | 0 | 198 | 6,559 |
| | Utilities Admin Bldg B | 30 | 0 | 169 | 5,558 |
| | Utilities Admin Bldg C | 30 | 0 | 164 | 6,647 |
| | Utilities Admin Bldg D- 2817 | 20 | 0 | 110 | 4,299 |
| | Utilities Admin Bldg E- 2817 | 35 | 0 | 192 | 6,603 |
| | Utilities Admin Bldg F- 2817 | 47 | 0.1 | 262 | 8,773 |
| | Utilities Office G- 2817 | 15 | 0 | 85 | 2,842 |
| | Subtotal | 249 | 0.3 | 1,377 | 49,121 |
| EnvSBC-Air Quality | | | | | |
| | Air Monitoring Station | 9 | 0 | 52 | 1,992 |
| | Subtotal | 9 | 0 | 52 | 1,992 |
| PDSBC- Growth Management | | | | | |
| | Growth Management | 3 | 0 | 15 | 1,328 |
| | Subtotal | 3 | 0 | 15 | 1,328 |
| PWBC- Facilities Maintenance | | | | | |
| | 17th St Sheriff Bldg A | 165 | 0.2 | 916 | 26,514 |
| | 17th St Storage Bldg B | 10 | 0 | 53 | 1,764 |
| | Admin Building | 2,352 | 3.1 | 13,029 | 331,021 |
| | Auto Resources | 86 | 0.1 | 474 | 15,667 |
| | BOB Building | 1,334 | 1.8 | 7,390 | 218,475 |
| | Cattlemen Rd Bldg A | 248 | 0.3 | 1,372 | 41,078 |
| | Cattlemen Rd Bldg B | 49 | 0.1 | 270 | 8,874 |
| | Cattlemen Rd Bldg C | 79 | 0.1 | 439 | 13,196 |
| | Cattlemen Rd Bldg D | 142 | 0.2 | 787 | 23,897 |
| | Cattlemen Rd Bldg E | 81 | 0.1 | 450 | 14,027 |
| | Cattlemen Rd Bldg F | 8 | 0 | 45 | 1,617 |
| | CEP Bldg all Buildings- 2090 Main St | 8,446 | 11.2 | 46,790 | 1,186,190 |
| | Clerk of Court Leases | 176 | 0.2 | 977 | 31,794 |
| | Closed Accounts | 14 | 0 | 76 | 50,017 |
| | Comm Tower Engelwood Rd | 0 | 0 | 0 | 107 |
| | Comm Tower Indiana Ave Engelwood | 17 | 0 | 95 | 3,209 |
| | Comm Tower North Port | 5 | 0 | 25 | 935 |
| | Communication Tower EOC | 85 | 0.1 | 471 | 16,000 |
| | Communication Tower Sheriff | 21 | 0 | 116 | 4,170 |
| | Generators or Heating- Diesel | 795 | 1.1 | 9,168 | 137,068 |
| | Hummingbird House | 12 | 0 | 65 | 2,253 |
| | Irrigation Facilities Maint Paine Pkwy | 0 | 0 | 0 | 85 |
| | Law Library Adams Lane | 65 | 0.1 | 361 | 10,879 |
| | Little BOB | 109 | 0.1 | 604 | 15,900 |
| | Loveland #1 | 0 | 0 | 0 | 107 |
| | Loveland #2 | 0 | 0 | 0 | 107 |
| | Loveland #3 | 0 | 0 | 0 | 107 |
| | Loveland #4 | 0 | 0 | 0 | 107 |
| | Orange Ave Lease Vacant | 1 | 0 | 4 | 227 |
| | Outside Lights Facilities Maint | 28 | 0 | 155 | 7,469 |

| Business Unit | Building/ Energy Account Name | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|----------------------------------|--|-------------|----------|----------------|-------------|
| | Parking Garage Ringling | 179 | 0.2 | 990 | 27,353 |
| | Parking Lot Lights - Avenida D | 0 | 0 | 0 | 107 |
| | Pinkney Cmplx Mosq Control | 63 | 0.1 | 350 | 11,053 |
| | Pinkney Cmplx Mosq Hanger | 5 | 0 | 28 | 1,048 |
| | Pinkney Mosq Control Admin | 1 | 0 | 4 | 231 |
| | Print Shop | 82 | 0.1 | 453 | 13,602 |
| | RL Anderson | 907 | 1.2 | 5,026 | 147,832 |
| | S.C. Fleet/ Road & Bridge Garage | 21 | 0 | 114 | 3,922 |
| | Sheriff Animal Control | 33 | 0 | 182 | 6,428 |
| | Sheriff Animal Shelter | 170 | 0.2 | 941 | 27,848 |
| | Sheriff PHQ Maint | 126 | 0.2 | 701 | 21,661 |
| | South County Fleet Admin Garage | 58 | 0.1 | 323 | 10,670 |
| | South County Paint Shop | 31 | 0 | 174 | 5,821 |
| | Suburban Propane- Facilities Mngmt | 5 | 0 | 65 | 1,477 |
| | Suburban Propane- Facilities Radio | 4 | 0 | 60 | 1,361 |
| | Suburban Propane- Fleet heating | 2 | 0 | 28 | 633 |
| | Suburban Propane- Sheriff & Radio Shop | 5 | 0 | 63 | 1,424 |
| | Venice Train Depot | 3 | 0 | 17 | 681 |
| | Subtotal | 16,022 | 21.2 | 93,652 | 2,446,013 |
| PWBC- Facilities/ Fire | | | | | |
| | South County Safety Bldg | 194 | 0.3 | 1,075 | 31,021 |
| | Subtotal | 194 | 0.3 | 1,075 | 31,021 |
| PWBC- Forestry | | | | | |
| | Forestry Trailer | 7 | 0 | 40 | 1,442 |
| | Pumps - Beneva Rd | 680 | 0.9 | 3,765 | 117,690 |
| | Subtotal | 687 | 0.9 | 3,805 | 119,132 |
| PWBC- Highway Maintenance | | | | | |
| | Bridge Osprey- Blackburn Pt Rd | 8 | 0 | 43 | 1,533 |
| | Bridge Venice Ave | 14 | 0 | 77 | 2,656 |
| | Subtotal | 22 | 0 | 120 | 4,189 |
| PWBC- Road and Bridge | | | | | |
| | Road and Bridge Facilities | 21 | 0 | 116 | 4,234 |
| | Subtotal | 21 | 0 | 116 | 4,234 |
| PWBC- SCAT | | | | | |
| | SCAT 1st St | 35 | 0 | 192 | 6,487 |
| | SCAT New Pavillion | 3 | 0 | 19 | 731 |
| | SCAT Pinkney Admin & Maint | 484 | 0.6 | 2,681 | 73,478 |
| | SCAT Venice | 55 | 0.1 | 305 | 9,423 |
| | Subtotal | 577 | 0.8 | 3,197 | 90,119 |
| PWBC- Transport | | | | | |
| | Transport- Gentian Rd Pump | 7 | 0 | 40 | 1,749 |
| | Subtotal | 7 | 0 | 40 | 1,749 |
| Supervisor of Elections | | | | | |
| | N Port Elections Office | 9 | 0 | 50 | 1,850 |
| | Subtotal | 9 | 0 | 50 | 1,850 |
| Subtotal Buildings | | 27,183 | 36 | 158,464 | \$4,670,289 |

| Business Unit | Building/ Energy Account Name | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|------------------------------------|--|-------------|----------|----------------|-----------|
| Vehicle Fleet | | | | | |
| All Business Centers | | | | | |
| | Personal Vehicle Mileage Reimbursement | 15 | 0 | 174 | 11,860 |
| | Subtotal | 15 | 0 | 174 | 11,860 |
| ASBC- Communications | | | | | |
| | 800 Trunk Radio Maintenance | 4 | 0 | 46 | 741 |
| | Access Sarasota | 3 | 0 | 29 | 508 |
| | Mail Distribution | 40 | 0.1 | 461 | 7,457 |
| | Subtotal | 46 | 0.1 | 536 | 8,706 |
| City of Sarasota | | | | | |
| | City of Sarasota | 0 | 0 | 2 | 35 |
| | Subtotal | 0 | 0 | 2 | 35 |
| Clerk of Court | | | | | |
| | Clerk of Court - Record Center | 1 | 0 | 8 | 145 |
| | Clerk of Court- Operations | 3 | 0 | 36 | 574 |
| | Subtotal | 4 | 0 | 43 | 719 |
| Court Administration | | | | | |
| | General Admin/ Court Admin | 5 | 0 | 60 | 902 |
| | Subtotal | 5 | 0 | 60 | 902 |
| CSBC- Cooperative Extension | | | | | |
| | Cooperative Extension | 9 | 0 | 101 | 1,532 |
| | Subtotal | 9 | 0 | 101 | 1,532 |
| CSBC- Parks and Recreation | | | | | |
| | Internal Operations | 613 | 0.8 | 7,139 | 113,921 |
| | Natural Areas | 82 | 0.1 | 943 | 14,976 |
| | North Athletics | 122 | 0.2 | 1,404 | 22,318 |
| | North County | 11 | 0 | 125 | 1,915 |
| | Parks & Rec- Administration | 4 | 0 | 45 | 727 |
| | Parks Operations | 7 | 0 | 79 | 1,261 |
| | South Athletics | 5 | 0 | 58 | 915 |
| | Tourist Development | 5 | 0 | 57 | 881 |
| | Subtotal | 848 | 1.1 | 9,849 | 156,914 |
| EITBC- Tech Support | | | | | |
| | Application Hosting | 3 | 0 | 38 | 567 |
| | Infrastructure & Ops- Voice | 15 | 0 | 180 | 2,770 |
| | Infrastructure & Ops- Workstn | 12 | 0 | 141 | 2,122 |
| | Subtotal | 31 | 0 | 359 | 5,458 |
| EmSBC- Fire/ EMS | | | | | |
| | Emergency Operations | 7 | 0 | 84 | 1,304 |
| | EMS Operations | 154 | 0.2 | 1,777 | 28,586 |
| | EMS Training Division | 4 | 0 | 42 | 728 |
| | ESBC Training | 26 | 0 | 304 | 4,729 |
| | Fire Marshall | 20 | 0 | 232 | 3,688 |
| | Fire Public Education | 10 | 0 | 115 | 1,753 |

| Business Unit | Building/ Energy Account Name | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|------------------------------------|--------------------------------|-------------|------------|----------------|----------------|
| | Firewise Program | 28 | 0 | 323 | 5,097 |
| | Logistics | 130 | 0.2 | 1,512 | 23,125 |
| | MTT Medical Transport Team | 60 | 0.1 | 691 | 11,152 |
| | SCFD Operations | 354 | 0.5 | 4,082 | 66,371 |
| | SCFD Special Operations | 33 | 0 | 381 | 6,043 |
| | SCFD Volunteers Rural | 9 | 0 | 109 | 1,593 |
| | SCFD Volunteers Urban | 6 | 0 | 71 | 1,049 |
| | Subtotal | 841 | 1.1 | 9,723 | 155,217 |
| EmSBC- Lifeguard Operations | | | | | |
| | Beach Lifesaving | 7 | 0 | 77 | 1,201 |
| | Subtotal | 7 | 0 | 77 | 1,201 |
| EnvSBC- Natural Resources | | | | | |
| | Air Quality Management | 5 | 0 | 56 | 864 |
| | Coastal Resources | 11 | 0 | 127 | 2,025 |
| | Environmentally Sensitive Land | 23 | 0 | 265 | 4,142 |
| | General Land Management | 24 | 0 | 276 | 4,281 |
| | Local Air Program | 3 | 0 | 31 | 512 |
| | Petroleum Cleanup | 1 | 0 | 16 | 243 |
| | Subtotal | 66 | 0.1 | 772 | 12,067 |
| EnvSBC- Solid Waste | | | | | |
| | Code Enforcement | 72 | 0.1 | 840 | 12,769 |
| | Customer Service | 18 | 0 | 204 | 4,012 |
| | Hazardous Waste | 49 | 0.1 | 563 | 8,809 |
| | Land Management | 57 | 0.1 | 663 | 10,271 |
| | Operations Administration | 16 | 0 | 184 | 2,794 |
| | Recycling and Education | 9 | 0 | 104 | 1,588 |
| | Subtotal | 219 | 0.3 | 2,558 | 40,244 |
| EnvSBC- Water Operations | | | | | |
| | Admin Ops & Maint Field | 70 | 0.1 | 799 | 12,720 |
| | Aquatic Plant Control | 80 | 0.1 | 921 | 15,015 |
| | Bee Ridge WRF | 4 | 0 | 50 | 754 |
| | Carlton Water Plant | 24 | 0 | 284 | 4,281 |
| | Central County Wastewater | 5 | 0 | 64 | 982 |
| | Lift Station Maintenance | 145 | 0.2 | 1,679 | 26,493 |
| | Manhole Maintenance | 116 | 0.2 | 1,337 | 21,349 |
| | Meadow Wastewater | 1 | 0 | 13 | 241 |
| | Meter Maint- Customer Service | 101 | 0.1 | 1,165 | 18,583 |
| | Meter Reading | 186 | 0.2 | 2,124 | 33,621 |
| | Pipeline Water Maintenance | 231 | 0.3 | 2,647 | 42,613 |
| | Utilities Administration | 4 | 0 | 49 | 720 |
| | Utility Inspection | 27 | 0 | 312 | 4,934 |
| | Venice Gardens Wastewater | 7 | 0 | 87 | 1,284 |
| | Venice Gardens Water | 8 | 0 | 93 | 1,431 |
| | Warehouse | 10 | 0 | 117 | 1,818 |
| | Wastewater | 13 | 0 | 155 | 2,528 |

| Business Unit | Building/ Energy Account Name | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|---------------------------------------|--------------------------------------|--------------------|-----------------|-----------------------|------------------|
| | Water Plant Operations | 19 | 0 | 214 | 3,547 |
| | Subtotal | 1,052 | 1.4 | 12,113 | 192,915 |
| EnvSBC- Water Planning and Reg | | | | | |
| | Resource Permit Monitoring | 4 | 0 | 46 | 692 |
| | Stormwater Maintenance | 386 | 0.5 | 4,456 | 71,451 |
| | Stormwater Management | 17 | 0 | 198 | 3,081 |
| | Water Res- Wastewater Inspect | 14 | 0 | 167 | 2,607 |
| | Subtotal | 421 | 0.6 | 4,867 | 77,831 |
| Florida Highway Patrol | | | | | |
| | Florida Highway Patrol | 129 | 0.2 | 1,509 | 22,122 |
| | Subtotal | 129 | 0.2 | 1,509 | 22,122 |
| HHSB- Health | | | | | |
| | Health Dept | 27 | 0 | 312 | 4,750 |
| | Health-Direct | 60 | 0.1 | 707 | 10,716 |
| | Subtotal | 87 | 0.1 | 1,020 | 15,466 |
| HHSB- Mosquito Management | | | | | |
| | Mosquito Management | 141 | 0.2 | 1,655 | 25,821 |
| | Subtotal | 141 | 0.2 | 1,655 | 25,821 |
| OFPBC- Asset Management | | | | | |
| | AR Car Pool | 7 | 0 | 83 | 1,498 |
| | Automotive Res - Operations | 35 | 0 | 407 | 6,788 |
| | Automotive Res- Acquisitions | 0 | 0 | 1 | 15 |
| | Sold At Auction | 0 | 0 | 3 | 46 |
| | Subtotal | 43 | 0.1 | 494 | 8,348 |
| PDSBC- Land Development | | | | | |
| | Land Development Services | 7 | 0 | 80 | 1,223 |
| | Surveying and Mapping | 39 | 0.1 | 442 | 7,099 |
| | Subtotal | 45 | 0.1 | 522 | 8,322 |
| PDSBC- Permitting | | | | | |
| | Inspection Services | 14 | 0 | 167 | 25,441 |
| | Plan Review and Permitting | 5 | 0 | 59 | 892 |
| | Subtotal | 19 | 0 | 226 | 26,332 |
| Property Appraiser | | | | | |
| | Property Appraiser | 55 | 0.1 | 640 | 9,759 |
| | Subtotal | 55 | 0.1 | 640 | 9,759 |
| PWBC- Facilities Services | | | | | |
| | Facilities Maintenance | 287 | 0.4 | 3,355 | 51,781 |
| | Facilities Master Planning | 3 | 0 | 41 | 624 |
| | Subtotal | 290 | 0.4 | 3,396 | 52,404 |
| PWBC- Mobility | | | | | |
| | Real Property Office | 1 | 0 | 11 | 197 |
| | Road Program Construction | 62 | 0.1 | 729 | 11,127 |
| | Subtotal | 63 | 0.1 | 740 | 11,324 |
| PWBC- Mobility Ops and Maint | | | | | |
| | Forestry | 89 | 0.1 | 1,026 | 16,351 |
| | Road and Bridge- Fund 101 | 229 | 0.3 | 2,632 | 42,680 |

| Business Unit | Building/ Energy Account Name | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|----------------------------------|-------------------------------|-------------|----------|----------------|-------------|
| | Road and Bridge- Fund 440 | 156 | 0.2 | 1,794 | 28,635 |
| | Traffic Operations | 141 | 0.2 | 1,626 | 25,889 |
| | Subtotal | 614 | 0.8 | 7,078 | 113,555 |
| PWBC- Mobility Planning | | | | | |
| | Transportation Administration | 83 | 0.1 | 948 | 15,391 |
| | Subtotal | 83 | 0.1 | 948 | 15,391 |
| PWBC- Transit | | | | | |
| | CTC Operators | 1,039 | 1.4 | 11,961 | 194,734 |
| | CTC Operators- Contracted | 2,045 | 2.7 | 23,380 | 0 |
| | SCAT Maintenance Vehicles | 26 | 0 | 300 | 4,836 |
| | SCAT Operators | 4,303 | 5.7 | 49,608 | 810,755 |
| | SCAT Ride Share Van | 10 | 0 | 115 | 1,655 |
| | SCAT Veteran Bus | 45 | 0.1 | 513 | 8,608 |
| | Subtotal | 7,466 | 9.9 | 85,878 | 1,020,588 |
| Sheriff | | | | | |
| | Sheriff | 29 | 0 | 333 | 6,000 |
| | Subtotal | 29 | 0 | 333 | 6,000 |
| State Attorney | | | | | |
| | State Attorney | 5 | 0 | 64 | 983 |
| | Subtotal | 5 | 0 | 64 | 983 |
| Supervisor of Elections | | | | | |
| | Elections | 14 | 0 | 169 | 2,619 |
| | Subtotal | 14 | 0 | 169 | 2,619 |
| Tax Collector | | | | | |
| | Tax Collector | 9 | 0 | 111 | 1,761 |
| | Subtotal | 9 | 0 | 111 | 1,761 |
| Subtotal Vehicle Fleet | | 12,657 | 17 | 146,014 | \$2,006,395 |
| Employee Commute | | | | | |
| | Employee Commute | 9,586 | 12.7 | 112,000 | |
| Subtotal Employee Commute | | 9,586 | 13 | 112,000 | |
| Streetlights | | | | | |
| PWBC- TLD | | | | | |
| | Tax Light Districts | 1,360 | | 7,535 | 655,043 |
| | Subtotal | 1,360 | 1.8 | 7,535 | 655,043 |
| PWBC- Traffic | | | | | |
| | Traffic Signal | 1,303 | | 7,220 | 210,330 |
| | Traffic Street Lights | 3,437 | 1.7 | 19,043 | 523,321 |
| | Subtotal | 4,741 | 4.6 | 26,263 | 733,651 |
| Subtotal Streetlights | | 6,101 | 6 | 33,798 | \$1,388,694 |

| Business Unit | Building/ Energy Account Name | CO2e (tons) | CO2e (%) | Energy (MMBtu) | Cost (\$) |
|-------------------------------|-------------------------------|-------------|----------|----------------|--------------|
| Water/Sewage | | | | | |
| EnvSBC-Utilities | | | | | |
| | Carlton WTF Plant | 6,598 | 8.7 | 36,554 | 919,271 |
| | Lift Stations | 2,355 | 3.1 | 13,044 | 477,673 |
| | Pump 2 | 20 | 0 | 108 | 4,533 |
| | Pump 6 | 18 | 0 | 101 | 3,369 |
| | Pump 7 | 18 | 0 | 99 | 3,505 |
| | Sewer 17th St | 13 | 0 | 73 | 1,820 |
| | Sewer Bahia Vista | 622 | 0.8 | 3,445 | 104,086 |
| | Sewer Beneva Rd | 1 | 0 | 6 | 320 |
| | Sewer Plant Lights | 6 | 0 | 32 | 1,762 |
| | Sewer Plant- Worcester Rd | 511 | 0.7 | 2,833 | 79,709 |
| | Sewer US 41 Bypass | 0 | 0 | 3 | 192 |
| | Utilities Accounts | 8,691 | 11.5 | 48,146 | 1,390,015 |
| | Venice E Blvd WWTP | 1,312 | 1.7 | 7,268 | 194,932 |
| | Water Plant Venice Jac RO #1 | 331 | 0.4 | 1,834 | 66,435 |
| | Water Plant Venice Jac RO #2 | 4 | 0 | 22 | 477 |
| | Water University Parkway | 2 | 0 | 13 | 541 |
| | Well Reject Venice | 1 | 0 | 3 | 215 |
| | Subtotal | 20,503 | 27.2 | 113,585 | 3,248,855 |
| Subtotal Water/ Sewage | | 20,503 | 27 | 113,585 | \$3,248,855 |
| Waste | | | | | |
| | Waste Aggregate | -532 | | | 0 |
| Subtotal Waste | | -532 | -1 | | 0 |
| Total | | 75,498 | 100% | 563,860 | \$11,314,082 |

Appendix C. Works Cited

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ICLEI. 2007. Cities for Climate Protection: How it Works. <<http://www.iclei.org/index.php?id=1120>> (Accessed January 3, 2007)

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Sidman, Charles et al. January 2006. A Recreational Boating Characterization of Sarasota County. University of Florida Sea Grant Program.

Scientific Expert Group on Climate Change and Sustainable Development. February 2007. Confronting Climate Change: Avoiding the Unmanageable and Managing the Unavoidable. <<http://www.unfoundation.org/SEG/>> (Accessed January 2, 2008)

Twilley, R. et al. 2001. Confronting Climate Change in the Gulf Coast Region. Union of Concerned Scientists. <<http://ucsusa.org/gulf/>> (Accessed December 31, 2007)

The following Inventories and Local Action Plans were consulted in depth during the development and writing of this inventory:

Austin, TX: City of Austin Carbon Dioxide Reduction Strategy. February 1997.

Denver, CO: City of Denver Climate Action Plan: Final Recommendations to Mayor Hickenlooper. October 2007.

Durham, NC (City and County): Greenhouse Gas and Criteria Air Pollutant Emissions Inventory and Local Action Plan for Emission Reductions. September 2007

Fort Collins, CO: Fort Collins Local Action Plan to Reduce Greenhouse Gas Emissions. 1997.
Marin County, CA: County of Marin Cities for Climate Protection Campaign Greenhouse Gas Emissions Analysis Report. June 2003.
Miami-Dade County, FL: A Long Term CO2 Reduction Plan for Miami-Dade County, Florida 1993-2006. December 2006.
Orange County, FL: Climate Change Plan for Orange County Government. September 2007.
Sommerville, MA: Greenhouse Gas Emissions Inventory Report. Summer 2001.
Sonoma County, CA: Greenhouse Gas Emissions Inventory for all sectors of Sonoma County, California. January 2005.

Appendix D. Acknowledgements and Data Sources

In the collection of the data behind this analysis, many people and organizations provided significant support through data provision and time for questions and consultation. The list of data sources is provided here both as a means of acknowledgement and appreciation for their help as well as a resource for duplicating the process for inventories.

Community Inventory

Demographics and Economics:

- Population information provided by Anthony Vallone, Sarasota County Planning. Source: Bureau of Economic and Business Research, University of Florida
- Economic Sector data was provided by Scott Moore at the Economic Development Corporation. Source: NAICS code

Energy Data:

- Electricity use information was provided by Russ Chamberlin at Florida Power and Light. Source: 2005 FPL net KWh billed (electricity use) by Sarasota County customers
- Natural Gas information was provided by Lance Horton at TECO People's Gas. Source: 2005 TECO gas use (Therms and Revenue) by Sarasota County customers
- Propane use was estimated based on calls to the propane dealers listed in the phone book within Sarasota County (Respondents included: Suburban Propane, Detweiler's Propane, and Amerigas). Source: reported sales from responding companies in Sarasota County for 2005.

Transportation:

- Vehicle Miles Traveled estimates provided by Florida Department of Transportation. Source: Public Road Mileage and Mileage Traveled 2005 (<http://www.dot.state.fl.us/planning/statistics/mileagereports/public05.pdf>). Additional information provided by Kwamena Sankah in Sarasota County Planning and the Mike Maholtz at the Sarasota/ Manatee Metropolitan Planning Organization, but FDOT data was used for this analysis. FDOT data was more inclusive of rural roads and therefore more representative of the full set of vehicle miles traveled.
- Boat Registration information was provided by Laurie Dupuy of the Sarasota County Tax Collector's Office. Source: County Base tax by vehicle type July through June 2005.

Waste:

- Solid Waste data and analyses provided by Larry Alexander, Environmental Services, Solid Waste. Source: Sarasota County annual report to FDEP

Government Operations Inventory

Employee Information:

- Employee numbers were provided by Hilary Anderson-Ayres, Talent and Performance Management. Source: Sarasota County Total Employees FY97-FY07 and Benefit-receiving employees active as of 1/4/08 by Agency.

Buildings:

- Building Occupancy Estimates were provided by Rick Miller and David Stern, Public Works, Facilities Services. Source: Analysis of Employees by Building, BOB, October 2007.

- Electricity Use data for buildings, water/ sewer operations, and streetlights/ traffic signals, was provided by Gary Patton of Public Works, Facilities. Source: Utility Manager System, FY 2005 electricity bills.
- Stationary Diesel data was provided by Ethel Betz and Gayle Newton at Petroleum Traders, the diesel vendor for Sarasota County. Source: Delivered quantities of diesel High Sulfur #2 and Low Sulfur #2 Dyed.
- Natural Gas data was only available for Arlington Park Pool and was provided by Sue Whetzel, Community Services, Parks and Recreation. Source: Gas bills for Arlington Park Pools FY05
- Water Output data was provided by Jim Conley and Jennifer Ryan, Environmental Services, Utilities and Planning and Regulatory.

Vehicle Fleet:

- Vehicle fleet fuel use information was provided by Karen Yeo, Office of Financial Planning, Automotive Resources. Source: Fuel Use by vehicle type and business unit, FY 2005
- Vehicle fleet fuel use for the Sheriff was supplied by Odie Burton, Sarasota County Sheriff. Source: Total fuel use by Sheriff fleet in FY2005
- SCAT annual vehicle miles traveled data was supplied by Phillip Lieberman, Public Works, Mobility/ Transit. Source: Bus Transit annual VMT, directly operated and contracted services, from information collected for annual report
- Reimbursable personal vehicle mileage estimates were provided by Kim Humphrey, Public Works, Facilities. Source: Facilities survey of staff locations office/ field tendencies, and driving habits as part of Facilities Master Plan analysis. Part of that analysis involved an estimate of personal mileage reimbursement expenses that was converted into miles traveled in personal vehicles for county business.

Solid Waste:

- Solid Waste data calculated by Larry Alexander, Environmental Services, Solid Waste. Source: Estimation of Sarasota County's portion of total community Solid Waste based on county as 3% of total Waste Management commercial customers and calculation of resulting percentage of total solid waste generated. Additional information on plant debris disposal is from Landfill scale reports of county charges.

Employee Commute:

- Employee Commute information was provided by Kim Humphrey, Public Works, Facilities. Source: Facilities study of employee addresses and work location for four county buildings as part of Facilities Master Plan analysis provided average commute distance. Average employee commute was calculated based on those work locations and that average was then multiplied by the total number of employees at the end of FY2005. As noted above, this calculation involves the significant assumption that the commuting patterns of the employees at the remaining county locations are the same as those at the four buildings studied. The total number of employees living outside the county was calculated from data presented on the map of Employee Residences, prepared by Sarasota County Geomatics on November 13, 2007.

Additional support on inventory accounting protocols and software use was provided by Wesley Look and Alex Ramel at ICLEI. Jody Smith Williams of Key West also provided support based on their inventory process.

Appendix E. Sarasota County Climate Change Resolutions

BOARD RECORDS
FILED FOR RECORD

RESOLUTION NO. 2006-150
2006 JUL 12 AM 10:24

RESOLUTION OF THE BOARD OF COUNTY
COMMISSIONERS OF SARASOTA COUNTY, FLORIDA
CLERK OF CIRCUIT COURT
SARASOTA COUNTY FL

RE: A resolution pledging Sarasota County's commitment to extending its leadership in clean energy standards by developing building standards that require fossil fuel reduction for meeting energy needs. By the year 2030, new construction projects undertaken by the County would use no fossil fuel greenhouse gas-emitting energy to operate under this resolution.

WHEREAS, Sarasota County has already demonstrated its commitment to become a leader in clean energy technology that reduce greenhouse gas emissions; and

WHEREAS Sarasota County has established policies and programs that promote sustainability and conserve energy through Sustainability Resolution No. 01-119, Green Building Resolution No. 05-048, and Plug-in Hybrid Electric Vehicle Resolution No.05-278; and

WHEREAS, the Inter-Governmental Panel on Climate Change (IPCC), the international community's most respected assemblage of scientists, has found that climate disruption is a reality and that human activities are largely responsible for increasing concentrations of global warming pollution; and

WHEREAS, the U.S. building sector has been shown to be the major consumer of fossil fuel and producer of global warming causing greenhouse gases; and

WHEREAS, the U.S. Department of Energy estimates, as a whole, U.S. buildings use 36% of U.S. energy demand, 68% of the country's electricity, and nearly 40% of the U.S. natural gas consumption, and as a result, are responsible for 48% of the nation's SO₂ emissions, 20% of the nation's NO_x emissions, and 36% of the nation's CO₂ emissions ; and

WHEREAS, the federal government through programs fostered within many of its key agencies and numerous state governments as well as municipalities across the U.S. have adopted high performance green building principles; and

WHEREAS, a recent study completed by Lawrence Berkeley National Laboratory, the most definitive cost-benefit analysis of green buildings ever conducted, concluded that the financial benefits of green building are more than 10 times the additional 2% cost associated with building green; and

WHEREAS, the large positive impact on employee productivity and health gains suggests that green building has a cost-effective impact beyond just the utility bill savings; and

WHEREAS, studies have indicated that student attendance and performance is higher in high-performance school buildings; and

WHEREAS, recognizing that a building's initial construction costs represent only 20-30 percent of the building's entire costs over its 30 to 40 year life, emphasis should be placed on the "life cycle costs" of a public building rather than solely on its initial capital costs; and

WHEREAS, the construction industry in the U.S. represents a significant portion of the economy and a significant portion of the building industry is represented by small business and an increase in sustainable building practices will encourage and promote new and innovative small business development throughout the nation; and

WHEREAS, the American Institute of Architects (AIA), the national professional organization representing architects has adopted a position statement calling for the immediate energy reduction of all new and renovated buildings to one-half the national average for that building type, with increased reductions of 10% every five years so that by the year 2030 all buildings designed will be carbon-neutral, meaning they will use no fossil fuel energy.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF SARASOTA COUNTY, FLORIDA, to adopt the following "2030 Challenge" for building performance targets:

- New construction of County buildings shall be designed to achieve a minimum delivered fossil-fuel energy consumption performance standard of one-half the U.S. average for that building type as defined by the U.S. Department of Energy.
- Renovation projects of County buildings shall be designed to achieve a minimum delivered fossil-fuel energy consumption performance standard of one-half the U.S. average for that building type as defined by the U.S. Department of Energy.
- All other new construction, renovations, repairs and replacements of County buildings shall employ cost-effective, energy-efficient, green building practices to the maximum extent possible.
- Policies will be implemented to reduce fossil fuel used to power buildings, outdoor lighting, transportation, etc., utilizing energy conservation and energy generated from clean, renewable sources such as solar, wind, hydropower, geothermal, biofuels, methane recovery and the integration of new clean energy technologies, including hydrogen for a diversified, clean and secure energy future.

NOW, THEREFORE, BE IT FURTHER RESOLVED that Sarasota County will work to increase the fossil-fuel reduction standard for all new buildings to carbon-neutral by 2030, in the following increments:

60% in 2010
70% in 2015
80% in 2020
90% in 2025

And ultimately, carbon-neutral by 2030, with the result that new buildings will use no fossil fuel greenhouse gas-emitting energy to operate; and

BE IT FURTHER RESOLVED, that Sarasota County will urge local governments around the nation to join this effort by developing plans to fully implement the above mentioned targets as part of their procurement process and by establishing policies to ensure compliance and measure results; and

BE IT FURTHER RESOLVED, that Sarasota County will urge local governments from around the nation to develop plans to fully implement the above mentioned targets for all new and renovated buildings within their jurisdictions; and

BE IT FURTHER RESOLVED, that Sarasota County will work in conjunction with ICLEI (International Council for Local Environmental Initiatives) Local Governments for Sustainability and other appropriate organizations to join this effort to develop plans to fully implement similar targets as mentioned above.

PASSED AND DULY ADOPTED BY THE BOARD OF COUNTY COMMISSIONERS OF SARASOTA COUNTY, FLORIDA, this 11th day of JULY, 2006.

**BOARD OF COUNTY COMMISSIONERS
OF SARASOTA COUNTY, FLORIDA**

By: 
Chairman

ATTEST:
**KAREN E. RUSHING, Clerk of the
Circuit Court and Ex-Officio Clerk
of the Board of County Commissioners
of Sarasota County, Florida**

BY: 
Deputy Clerk

RESOLUTION NO. 96-115

**RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS
OF SARASOTA COUNTY, FLORIDA**

Resolution in Support of Joining the Cities for Climate Protection Campaign

WHEREAS, the burning of fossil fuels (i.e. coal, oil, and gas) accounts for more than 85% of greenhouse gas emissions; and

WHEREAS, local governments greatly influence their community's energy usage by exercising key powers over land use, transportation, building construction, and waste management; and

WHEREAS, local government actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, reducing energy expenditures, and saving money for the County government, its businesses and its citizens; and

WHEREAS, the Cities for Climate Protection Campaign, sponsored by the International Council for Local Environmental Initiatives and the U.S. Environmental Protection Agency will provide cities/counties in the Campaign with:

- a framework for determining the sources of local greenhouse gas emissions;
- information and assistance in developing a local action plan that will reduce energy demand and greenhouse gas emissions and provide tangible community benefits, and;
- publications such as the *Climate Action Tool Kit for Municipal Managers*, and *Profiting from Energy Efficiency*.

NOW THEREFORE, BE IT RESOLVED, that Sarasota County pledges to join with cities all over the world in the Cities for Climate Protection Campaign; and

BE IT FURTHER RESOLVED that as a participant in the Cities for Climate Protection Campaign, Sarasota County pledges to:

1. Take a leadership role in increasing energy efficiency and reducing greenhouse gas emissions from County operations.
2. Continue to operate a Local Air Pollution Control Program providing for the regulation of air pollution sources which contribute greenhouse gas emissions throughout the County.
3. Develop a local action plan which establishes a greenhouse gas reduction goal and outlines a County-wide program for the reduction of greenhouse gas emissions.

R96-115

PASSED AND DULY ADOPTED by the Board of County Commissioners of Sarasota County, Florida, this 9th day of July, 1996.

BOARD OF COUNTY COMMISSIONERS
OF SARASOTA COUNTY, FLORIDA

By: [Signature]
Chairman

ATTEST:
KAREN E. RUSHING, Clerk of Circuit Court
and Ex-Officio Clerk of the Board of County
Commissioners of Sarasota County, Florida



By: [Signature: Susan Kay Garland]
Deputy Clerk