



# FOREWORD

When I was approached to sign the City of Naples on to the US Mayors Climate Protection Agreement, I knew this would be a turning point in the way the City looked at its energy use, its greenhouse gas emissions, and its assumed role as “the green jewel of Southwest Florida.” While I realized that being a part of this process would open us up to scrutiny, I welcomed that scrutiny and encouraged the initial energy audit of how and where the City utilizes energy. It was that energy audit that then led to the production of this Energy Savings Action Plan.

When the results of the energy audit were presented to the Naples City Council, that body responded by giving unanimous support to the development of this Plan. Where it eventually brings us depends on the ability of the City of Naples to lead the community in efforts to reduce energy use and to inspire others to follow our lead. At any rate, this is just the beginning of a long journey. Now that we have a plan, we must, and will, move forward by implementing the actions called for in the Plan.



Mayor Bill Barnett, City of Naples



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## Key Acronyms and Abbreviations

|       |   |                   |   |
|-------|---|-------------------|---|
| GHG   | Greenhouse gas(es)  | EPA               | Environmental Protection Agency           |
| MT    | Metric Tons   | IPCC              | Intergovernmental Panel on Climate Change |
| CFL   | Compact Fluorescent Light                                 | LGOP              | Local Government Operations Protocol      |
| AC    | Air conditioning  | CO <sub>2</sub> e | Carbon dioxide equivalent gas             |
| HVAC  | Heating, Ventilation and Cooling                          | FPL               | Florida Power and Light                   |
| DEP   | Department of Environmental Protection                    | kWh               | Kilowatt hour                             |
| ICLEI | International Council for Local Environmental Initiatives | SEER              | Seasonal energy efficiency rating         |
| CACP  | Clean Air and Climate Protection Software                 | LED               | Light emitting diode                      |

## I. Background

### a) The U.S. Mayors Climate Protection Agreement

Cities are important players in this era of concern over energy and carbon emissions; over 80% of our 300 million residents, nationwide, reside in cities or suburban areas and municipal governments provide basic services such as trash collection, water and in some cases power<sup>1</sup>, which contribute to greenhouse gas emissions. As large employers, City governments are also significant business energy users.

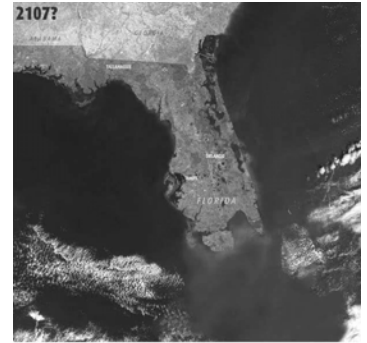
The potential negative consequences of climate change, particularly for low-lying coastally situated and tourism dependant communities, such as Naples, could be dramatic<sup>2</sup> (see Appendix I). Additionally, the economic downturn means that municipalities must stretch budgets and exercise the utmost prudence with expenditures.

In light of this, over 900 Mayors across the country have committed to a non-binding resolution called the U.S. Mayors Climate Protection Agreement, and pledged to address, and try to reduce, their city's impact on climate change<sup>3</sup>.

Mayor Bill Barnett signed the agreement for The City of Naples in June 2007. With the support of Collier County Audubon Society and The Conservancy of Southwest Florida, the City was able to take the next step and carry out an inventory of energy use and greenhouse gas (GHG) emissions. The work followed the guidelines and methodology prescribed by ICLEI (International Council for Local Environmental Initiatives). The audit included a detailed look at emissions resulting from City government operations and those resulting from the entire community, within Naples city limits.

On completion of the inventory, Naples City Council directed the City Manager to establish an Energy Savings Task Force to identify work efforts that would reduce energy use. The rationale is simple – minimizing waste and finding ways to save energy - cuts operating costs, is a responsible way to use tax dollars and offers the potential to save jobs in a tough economy. Reducing energy use also cuts greenhouse gas emissions, putting the City firmly on the path to sustainability and the realization of goals describe in the City's Vision Plan<sup>4</sup>.

This report presents the findings and conclusions of the Task Force work effort and is presented as part one of an energy action plan for the City of Naples. Part 2 will encompass energy savings measures for the wider community.



*South Florida is arguably the most vulnerable place in the nation to sea level rise.*



*In recognition of the threat poised to our state, Governor Crist signed Executive Orders in 2007 committing utilities and government to GHG reductions.*



*The City of Naples joins 900 in our country, pledging to reduce energy use.*

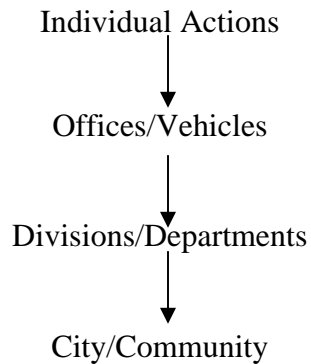


*This report marks milestone 4 - an action plan for government operations*

## b) City of Naples Energy Savings Task Force

The Task Force was charged with identifying practical ways the City could reduce energy use and operating costs. Monthly group meetings (November 2008 through March 2009) allowed exchange of news and ideas and discussion about the logistics of various actions. Meetings were co-managed by Cloe Waterfield and Mike Bauer and the format allowed on-going input on energy savings suggestions. Additionally, Dr. Bauer and Cloe Waterfield met with various task force members and City staff, as well as outside expertise, throughout the period. These smaller meetings provided not only considerable information on how various departments and operations at the City worked, but also elicited many good ideas about savings actions. These were presented to the task force via written minutes and at the group meetings.

To structure the work, discussion of reduction measures was scaled according to the following hierarchy:



Consideration began with what each employee could do on a personal level and towards the end of the project period, larger infrastructure projects such as HVAC upgrades and space consolidation, were considered. To mirror the inventory categorization, measures are framed per emission sector in this report.



*Naples City Council directed City Manager, Bill Moss, to establish the Energy Savings Task Force in October 2008.*



*Task Force meetings were held once a month to collaborate on energy saving ideas.*



*The Task Force began by considering what we can do to save money and resources on an individual level....*



*....and concluded with bigger picture, City-wide applications.*

### c) Greenhouse Gas Inventory Results

The GHG Inventory<sup>5</sup> was carried out for the City of Naples in 2008, funded by local conservation organizations. The work followed the ICLEI format and methodology, assessing emissions from the wider community (Naples City limits) and those related to government facilities and operations.

At the Community level, emissions data were analyzed within the *Residential*, *Commercial*, *Industrial*, *Transportation*, and *Waste* sectors. During 2006, Naples as a whole produced 757,323 metric tons of greenhouse gases. Transportation accounts for over half (51%) of these emissions.

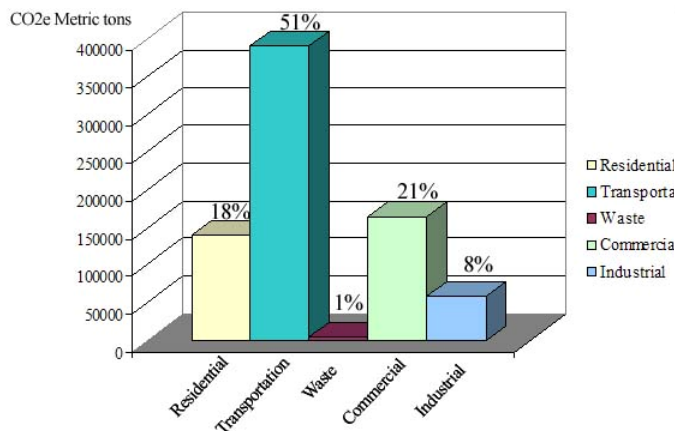


Figure (1): Community GHG emissions by sector, City of Naples, 2006

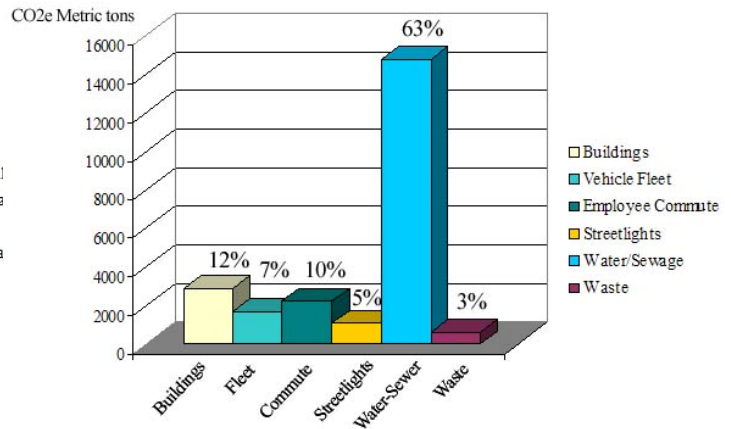


Figure (2): Government GHG emissions by sector, City of Naples, 2006

Government emissions were analyzed in more depth given the availability of detailed information for buildings and vehicles as well as the increased possibility for action internally. Sectors included *Buildings*, *Employee commute*, *Vehicle fleet*, *Water and Wastewater*, *Street lighting* and *Waste*. During 2006, Naples government operations produced 23,277 metric tons of greenhouse gases, 3% of the total community amount. The highest emitting sector, at 63%, is energy used in the production of water, sewer and irrigation services for the community. This sector includes energy-intensive drinking water treatment services as well as the electricity used in lift stations, waste-water treatment facilities, pumps and irrigation equipment. The City's vehicle fleet represents 7% of municipal emissions while the commute to and from work for City employees accounts for 10%. The operation of streetlights and traffic signals represented 5% of total operational emissions, and waste only 3%.

The quantification provided by the GHG inventory allows the City of Naples to document progress (in emission reductions) in every sector. The City may also choose to establish a target reduction and re-inventory at a later date to objectively measure progress.



#### d) City of Naples Facilities and Operations

This Energy Savings Plan covers City of Naples government facilities and operations. Per ICLEI's guidelines for local government GHG protocols<sup>6</sup>, any operation or facility over which the City Manager has direct operational control falls under the government sector. This plan thus includes the 500 or so current City employees and the facilities described below.

##### *Overview of City buildings and amenities*

Government facilities located in the downtown Naples area focus on 8<sup>th</sup> Street South with City Hall, (housing Naples City Council, the City attorney, City clerk's office, City manager, Finance, Human resources and CRA departments). Across the street are the Norris Center and Arthur J. Allen Tennis Center as well as Cambier Park. Adjacent to City Hall is Fire Station 1. Other nearby facilities include two parking garages (4<sup>th</sup> Avenue South and 8<sup>th</sup> Street South) and the City Dock. Recreational amenities also include the Naples Pier, Merrihue Park on 5<sup>th</sup> Avenue South, Rodgers park on 3<sup>rd</sup> Avenue South and the public boat ramp at Naples Landing.

The other main hub of City facilities is at Riverside Drive. Buildings here include; Equipment Services and the City's fleet maintenance area, Public Works with Utilities (wastewater, water distribution) and Streets and traffic departments, Solid Waste (part of Public Works but a separate building with associated equipment, storage, loading and parking of waste pick up vehicles), Purchasing offices, a warehouse and the Natural Resources Division offices, the headquarters of Police and Emergency Services, Community Development with Planning, Building, Construction management and Technology services, and Community Services, housing Parks and Parkways, Recreation and Waterfront operations. Also at Riverside Drive is the City's waste water treatment facility.

At Fleischmann Park facilities include Facilities Management offices, storage and work areas, the Skate Park, playground, ball fields and community center and the City's potable water treatment facility.

Other City facilities include Fire Stations 2 and 3 at 26<sup>th</sup> Avenue North and Citation Point (Naples Airport), respectively, and several recreational facilities including the River Park community center with basketball and pool facilities, tennis courts at 22<sup>nd</sup> Avenue North, Seagate park beach access, concession areas at Lowdermilk Park, Naples Preserve (resource center and natural area) and 5<sup>th</sup> Avenue North Park.

##### *Overview of key services*

It is not possible to fully describe the myriad of services, amenities and operations City government provides to residents, in this report. Key operations, of relevance in terms of energy use, include the aforementioned water treatment, delivery and disposal of waste water, solid waste and recycling pick-up, the operation of traffic signals and streetlights throughout the City and the maintenance of parks, public areas and street landscaping.

## II. Focus Areas and Action Items

The Task Force approach was scaled at level of action, from individual to department to City wide projects, to facilitate staff understanding of what could be done and by whom. As this Action Plan directly references the GHG Inventory, planned action items are categorized by inventory sector in the following discussion and summarized in Table 1.

| SECTOR AND MEASURE               | PROJECT DESCRIPTION   | POTENTIAL ANNUAL COST SAVINGS                 | POTENTIAL GHG REDUCTION (MT/YR) |
|----------------------------------|---|---|---------------------------------|
| BUILDINGS                        |   |   |                                 |
| Climate Control                  | City-wide policy of no less than 76F cooling, 68F heating                     | \$16,353.40                                   | 81                              |
| Office shutdown                  | Enforced override to send 30% more systems into sleep mode (scenarios B-C)    | \$12,577.95                                   | 60                              |
| Space consolidation              | Closure of offsite storage  | \$5,000.00                                    | N/A                             |
| Energy efficiency measures       | Occupancy sensors and energy efficient lighting                               | \$ 336.00                                     | 1.6                             |
| HVAC retrofit                    | Upgrades at three facilities on Riverside Drive (water and electric)          | \$156,971.00                                  | 52                              |
| COMMUTE                          |   |   |                                 |
| Commuter services                | One commute pp/week   | \$72,500                                      | 305.5                           |
| Four-day weeks                   | Hypothetical City-wide four day weeks   | \$36,076.62                                   | 482.5                           |
| STREETLIGHTING                   |   |   |                                 |
| 12th Ave. S. Pilot project       | Replacement of 12 streetlights with CosmoPolis bulbs                          | \$740.00                                      | 5                               |
| 5th Ave. S. re-design            | CosmoPolis bulb replacement (125 bulbs) on 5th Ave S.                         | \$3,492.50                                    | 16                              |
| FLEET                            |   |   |                                 |
| Fleet reductions                 | Retirement of 23 older vehicles   | estimated 5% reduction in fuel<br>\$26,766.90 | 130                             |
| No-idling policy                 | Engine shutdown if stationary for more than 3minutes                          |   |                                 |
| Driver education                 | Promoting fuel conscious driving habits and vehicle maintenance               |   |                                 |
| WASTE                            |   |   |                                 |
| Office Waste Management          | Recycling and waste reductions (5% total government waste reduction)          | \$12,226.00                                   | 30                              |
| Construction materials recycling | Dumpsters at Public Works for construction materials recycling                | \$200.00                                      | minimal                         |
| Water bottles phase-out          | Ending contracts for single serving plastic City water bottles                | \$1,500.00                                    | not known                       |
| Printing                         | Duplexing, paper and ink reductions, electronic billing..... min:             | \$750.00                                      | 1.3                             |
| WATER                            |   |   |                                 |
| Water conservation fixtures      | Low flow toilets at Community Services, Fleischmann Park and Naples Pier      | to be determined                              | to be determined                |
| Irrigation control               | Weather station and computer control of remote irrigation sites               |   |                                 |
| HVAC retrofit                    | Upgrades at facilities on Riverside Drive (see buildings for water savings)   |   |                                 |
| Gasification                     | Proposed regional biosolid treatment facility                                 |   |                                 |
| GENERAL                          |   |   |                                 |
| Employee training                | Including energy efficiency content in standard training sessions             | \$10,129.20                                   | 51                              |
| Performance appraisals           | Including assessment of individual employees efforts at reducing resource use |   |                                 |
| On-going education               | Using the intranet to provide information on energy efficiency measures       |   |                                 |
| TOTALS                           |   | \$355,619.57                                  | 1216                            |

Table 1: At a glance Summary of Measures, Costs and GHG Savings

## a. Buildings

City government buildings are powered wholly by electricity (with the exception of back-up generators running on propane or gasoline), and contribute 12.3% of the City's carbon footprint (2,871 metric tons CO<sub>2</sub>e in 2006)<sup>5</sup>. The bulk of this power goes towards cooling (estimated at around 50%) and lighting (typically 20%). In 2006, electricity charges for building operations, totaled \$490,601.82, those same accounts amounted to \$506,460.36 in 2008<sup>7</sup>. Some buildings used less, others more with variables including staff and usage numbers. Some of the facilities that showed clear increases or decreases are shown in Figure 3:

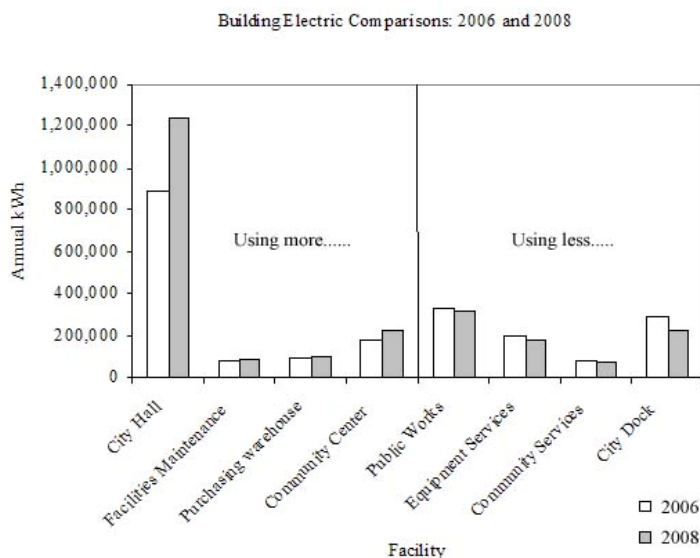


Figure 3: Key building electricity consumption

It is important to note that overall, while some building use increased, City electricity usage did decrease (by 2,398,019 kWh and \$307,324.18) over the two year comparison period<sup>7</sup>. Additionally, data received from FPL for power at City Hall during the first four months of 2009 show a clear drop in consumption (463,440 kWh Jan-Apr 2008, compared to 261,060 for the same period in 2009, a reduction of 43% and 109 metric tons CO<sub>2</sub>e). We postulate that this is in part due to climate control and increased attention to energy use. Incorporating some of the changes described in this report will help continue to reduce costs. Energy efficiency improvements at City facilities have been on-going for several years; about 80% of the City's light bulbs are low wattage CFL's or electronic ballast strip bulbs<sup>8</sup>. However, a number of additional and expanded projects are adopted as part of this Energy Savings Plan and are described below.



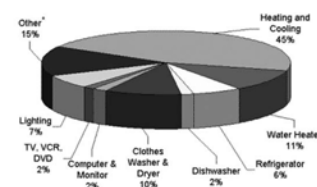
*Naples City Hall was built quickly in 1978 (with the aid of federal stimulus money). Energy efficiency improvements are needed and on-going.*



*As electricity costs continue to rise, governments must find new ways to conserve energy.*



*The simplest and cheapest solution to energy savings is to instill the ethos in everyone to turn off the switch!*



*In Florida, cooling can require up to 60% of a buildings electric needs.*