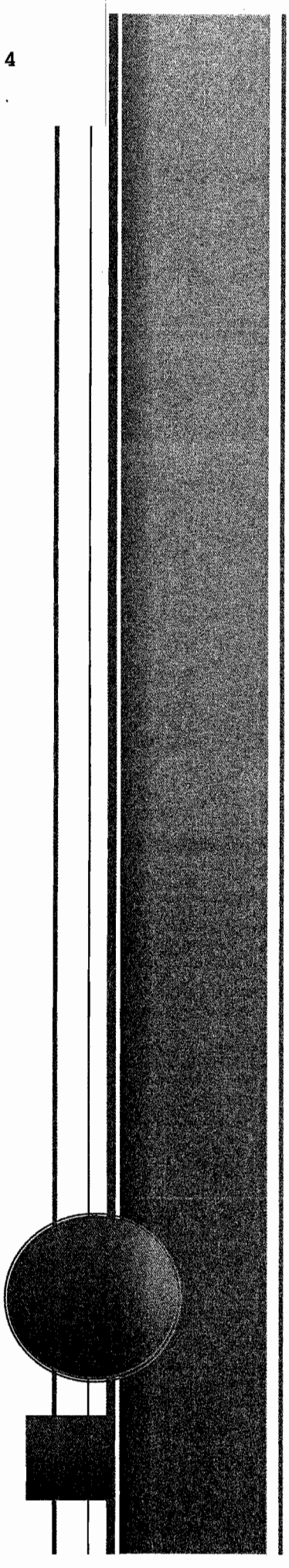
Agenda Item No. 1(D)4

May 6, 2008

Second Report and Initial Recommendations

Presented to
The Miami-Dade
Board of County Commissioners
April 2008



Miami-Dade County
Climate Change Advisory Task Force

MIAMI-DADE COUNTY

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Chairman's Letter

I want to express my sincere appreciation to the Board, the Mayor, and the Manager for the impeccable quality of their appointees to this effort. I am both honored and humbled to be working alongside such a knowledgeable, committed, and distinguished group of individuals.

The Climate Change Advisory Task Force's Initial Report (Appendix II) outlines how the Task Force Committees are organized and establishes its work plan. Since July 2007, the Committee members have met regularly in order to share research, listen to expert testimony, and deliberate on recommendations. The Recommendations presented in this report emerged from 48 meetings of the various committees, involving some 175 volunteers and stakeholders, and seven (7) meetings of the full Task Force itself - staff estimates over 5,000 person hours of in-depth presentations and robust discussion.

While resisting an attempt to paraphrase or summarize the specifics to follow (for each recommendation deserves separate focus), I would point out that the Science Committee's Report (Appendix I), which was designed to inform the process, established a clear sense of urgency that permeated the deliberations.

THE RECOMMENDATIONS COMING FORWARD AT THIS TIME ARE A MERE BEGINNING, WITH MANY TOPICS YET TO BE APPROACHED. BOTH THE RATHER DAUNTING ADAPTATION RESPONSIBILITY AND THE CHALLENGE TO FIND MORE AND MORE WAYS TO REDUCE OUR GREENHOUSE GAS (GHG) EMISSIONS ARE ONGOING TASKS. IN ADDITION, OUR EFFORTS WILL BE LINKING WITH THE FLORIDA ENERGY COMMISSION, GOVERNOR CRIST'S CLIMATE ACTION TEAM, AND NATIONAL AND INTERNATIONAL STAKEHOLDERS.

We have a critical duty to do everything we can to both manage the unavoidable as well as to help avoid the unimaginable. IMPLEMENTATION of these initial steps, as well as those to follow, may well prove to be the most important legacy the County can leave to the future.

Respectfully,

Harvey Ruvin

Harvey Ruvin, Clerk
Chair, Climate Change Advisory Task Force (CCATF)

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Appointed Members

Clerk Harvey Ruvin, Chairperson
Mr. Jim Murley, Vice-Chairperson

Mr. Leonard Abess, Chairman of the Board, President & Chief Executive Officer, City National Bank

Dr. Adriana Cantillo, Chemist, National Oceanic and Atmospheric Administration (Retired)

Ms. Carolyn Dekle, Executive Director, South Florida Regional Planning Council

Mr. Alan Farago, Executive Director, Everglades Defense Council

Mr. Marcus A. Frankel, President, Frankel Benayoun Architects, Inc.

Mr. Jose Fuentes, South Florida Director, The WREN Group

Dr. Hugh Gladwin, Director, Institute of Public Opinion Research, Florida International University

Ms. Cynthia Guerra, Program Director, Environmentally Endangered Lands, Miami-Dade County Department of Environmental Resources Management

Mr. Dan Kimball, Superintendent, Everglades National Park

Capt. Dan Kipnis, Director At Large, Florida Wildlife Federation

Dr. Stephen Leatherman, Chair Professor and Director, International Hurricane Research Center, Florida International University

Mrs. Nancy Liebman, Former Miami Beach City Commissioner

Mr. Sean McCrackine, Environmental & Land Use Policy Aide, Commissioner Katy Sorenson

Mr. Arsenio Milian, President, Milian, Swain & Associates, Inc.

Mr. Tony Moss, Esquire, Law Office of Tony Moss, Inc.

Mr. Jim Murley, Director, Center for Urban & Environmental Solutions, Florida Atlantic University

Mr. Guillermo Olmedillo, Urban & Regional Planner, OLMEDILLO X 5, Inc.

Dr. Jack Parker, Environmental Studies Department, Florida International University

Mr. Richard Pettigrew, Esq., Former Chair, Governor Chile's Commission on a Sustainable South Florida

Ms. Elizabeth Plater-Zyberk, Principal, Duany Plater-Zyberk & Company, LLC

Dr. Alfredo Ravinet, Research Scientist Asst. Professor, Applied Research Center, Florida International University

Mr. Rafael Rodon, Executive Vice President, Flagler Development

Mr. Manny J. Rodriguez, P.E., Miami Dade Regional Director, Florida Power and Light

Mr. Harvey Ruvin, Clerk of Courts, Miami-Dade County

Dr. Hal Wanless, Professor and Chair, Department of Geological Sciences, University of Miami

The Miami-Dade County Climate Change Advisory Task Force greatly benefited from professional guidance and early suggestions on organizational structure generously provided by the late Nick Bollman, Senior Research Fellow at the Center for Urban and Environmental Solutions at Florida Atlantic University. Nick was committed to engaging all parts of society in the challenge of addressing climate change. He inspired all of us to see the unlimited opportunities that might come from a united, committed effort by government, business, academia, and not-for-profit organizations.

Initial Recommendations

These initial recommendations were drafted at the committee level for review by the Miami-Dade Climate Change Advisory Task Force (CCATF). After extensive deliberations and further development, the recommendations were unanimously approved by the full Task Force on March 20, 2008. The items proposed focus on both mitigation activities and adaptation strategies. Mitigation efforts include activities that attempt to slow the process of global climate change by lowering the level of greenhouse gases [GHG] in the atmosphere, such as reducing fossil fuel consumption. Adaptation efforts include proactive steps we can take now to begin the process of making the County more resilient to the impacts that we are likely to experience.

A. Science

Initial Statement: The Science Committee was tasked with providing the Task Force and its Committees with a scientific assessment of the magnitude and timing of expected climate change impacts to Miami-Dade County. This assessment provided the basis for many of the Committees' recommendations. Human-induced global warming is real and has begun. Global warming will result in many types of changes, including changing atmospheric circulation and temperature patterns, changes in rainfall and severe weather, changes in biologic community distribution, increased extinction rates, changes in disease and pest distribution, and changes in sea level. While all these will significantly impact the United States in the coming century, the primary concern for South Florida and Miami-Dade County will be rising sea level. As explained in the attached Statement on Sea Level in the Coming Century (Appendix I), there is a very high likelihood that there will be at least a further 3-5 feet of sea level rise during this century. This rise will most certainly continue at an accelerated rate into the following century. Miami-Dade County will not be able to defend against such a rise and must begin a responsible and serious re-evaluation of all aspects of its present laws and approaches to growth, development, permitting, zoning, infrastructure, waste disposal and pollution, adaptation, and natural area preservation. The following two recommendations are the critical first steps in recognizing the reality of the future and providing a baseline map of elevations from which rational decisions and realistic planning for the future can be made.

Recommendation A.1:
The CCATF Science Committee's report, Statement on Sea Level in the Coming Century, is provided under Appendix I. The County should use the Science Committee's Statement on Sea Level in the Coming Century to guide future climate change mitigation and adaptation policy.

***Rationale**: The County must plan for, mitigate, and adapt to climate change even though uncertainty remains in determining which impacts may occur first and the type and severity of the changes. County executive staff and elected leaders need a basic scientific framework to guide them as they begin to formulate policy that properly addresses climate change and associated impacts.*

Recommendation A.2:
The County should commission detailed maps for all of Miami-Dade County created from calibrated LIDAR (Light Detection and Ranging) surveys (or other elevation survey technology that employs best

known practices). These maps will show mean high, high water (MHHW) levels for 1- foot through 6-foot rises in sea level. (MHHW level is the spring high tide level which occurs every 14 days around full moon and new moon.) The maps will allow identification of which areas will become flooded in association with different sea levels and will provide a basis for assessing risk to the County's development and infrastructure.

Rationale: *Light Detection and Ranging (LIDAR) is a remote sensing system used to collect topographic data. Data are collected with aircraft-mounted lasers capable of recording elevation measurements at a rate of 2,000 to 5,000 pulses per second and have a vertical precision of 15 centimeters (6 inches). After a baseline data set has been created, follow-up flights can be used to detect changes. Calibrated LIDAR maps will detail the elevations of infrastructure and roadway elements throughout the County, determine the susceptibility of coastal, wetland, and artificial fill areas to erosion; define areas of potential pollution and contamination release; determine changing drainage and storm surge risks; assess structural viability of buildings and levees with changing groundwater levels and saline water intrusion; help assess future fresh potable water sources; and define modifications necessary to maintain connectivity of roadways. Note: Some LIDAR mapping has already occurred in the region, undertaken by various entities. These maps need to be assessed for quality and proper calibration.*

B. Greenhouse Gas (GHG) Reduction

Initial Statement: The Greenhouse Gas Reduction Committee is tasked with identifying and promoting ways in which the County can further reduce its Greenhouse Gas (GHG) emissions. This effort was divided into two primary categories – energy conservation and transportation/fuel reduction. While developing recommendations, the GHG Committee took into consideration past and present County "sustainability" initiatives, including policies that facilitate GHG emission reductions. (For more details see the "1993-2006 Long Term Urban CO2 Reduction Plan Report" at:
http://www.miamidade.gov/derm/library/air_quality/CO2_Reduction_Final_Report.pdf
and Miami-Dade County's recent "Green Government Report" at:
http://www.miamidade.gov/govaction/matter.asp?matter=070355&file=true&yearFolder=Y2007 .

Due to Miami-Dade County's recent membership in the Chicago Climate Exchange, the Committee began by focusing on transportation and fuel reduction to develop recommendations related to Miami-Dade County fleet operations. In addition, two recommendations concerning the taxicab industry were included due to a related County Ordinance scheduled for consideration by the Board of County Commissioners in early 2008. The Committee will begin looking into emission reduction opportunities for energy conservation and green buildings in 2008.

While emphasizing efficiency and conservation, the integration of alternative fuels into County fleet operations, namely ethanol and biodiesel, was a major focus of this first set of recommendations. The Committee recognizes that cellulosic ethanol and biodiesel from algae and other more "sustainable" and locally produced crops, while currently unavailable, are preferable as they represent the greatest opportunity for overall greenhouse gas reductions and net environmental benefit. Recommendation B.3 addresses the desire of the Committee to scientifically assess the net environmental benefit of all fuel types. Keeping in mind that the most preferable alternative fuel is a moving target in the rapidly expanding fuel market, however, the recommendations call for the County to consider displacing fossil fuel with alternative fuels at this time, despite sourcing concerns.

Recommendation B.1:
The Climate Change Advisory Task Force recommends that Miami-Dade County ordinances related to the award/allocation of taxicab medallions include a requirement for all new medallions issued after January 1, 2008 to be allocated to hybrid or other vehicles having a combined average fuel efficiency of 28 MPG or higher.

Rationale: *The Climate Change Advisory Task Force supports the Consumer Service Department's (CSD) current efforts to link taxicab medallion issuance to more fuel-efficient vehicles. CSD's proposed ordinance is expected to be heard by the Board of County Commissioners in April 2008 and establishes an annual lottery of 38 taxicab medallions for a three-year period directed to the South Miami-Dade and underserved taxicab areas. The requirements of this ordinance are in support of one of the major goals of the taxicab reform effort to foster a system of owner-drivers to improve the quality of taxicab services and are designed to align with recent local environmental initiatives.*

The CCATF would like to encourage the CSD and BCC to strengthen its proposed medallion ordinance to incentivize a higher level of fuel efficiency. About 75 percent of Miami-Dade County's current fleet of taxicabs is made up of Ford Crown Victoria vehicles, which only get an estimated 17 miles per gallon (mpg) in city traffic. A 2008 Ford Escape hybrid gets 34 mpg and a 2008 Toyota Prius gets 48 mpg (in city traffic). Although a hybrid vehicle may cost more initially, the fuel cost savings and other benefits,

including tax credits and being able to use the High Occupancy Vehicle (HOV) lanes at all times, outweigh the drawbacks. Many new hybrids have been developed in the last few years, and not all of them are fuel-efficient; this is why the recommendation specifies a particular MPG rating.

There are several areas in the country with similar taxicab requirements including San Francisco and New York. In addition, on November 9, 2007, the City of Miami Commission approved a resolution urging the County to use hybrid vehicles as part of its taxi fleet. Upon implementation of this ordinance, the County would have the third largest number of hybrid taxicabs in the country.

Recommendation B.2:
Require that taxicabs being retired in accordance with Miami-Dade County's taxicab retirement schedule be replaced with new hybrid or other vehicles having a combined average fuel efficiency of 28 MPG or higher. Implementation of this recommendation is expected to affect 300 owners each year. The County should develop a financing mechanism to either subsidize the initial purchases or provide a revolving loan fund to assist owners to purchase new hybrids on reasonable terms and at reasonable interest rates. Such an assistance program is urgently needed to alleviate the harsh economic circumstances currently affecting taxicab owners and drivers.

Rationale: *Conversion of the entire taxicab fleet will achieve substantial emissions reductions and save taxicab operators an estimated $2,500 each year in gasoline costs. These savings can offset part of the cost differential of hybrid purchases. Individual medallion owners are often forced to obtain loans from non-bank sources under onerous terms, including elevated interest rates such as 12%. These costs are passed on to drivers. The recent increase in fuel prices is compounded by the use of older inefficient Ford Crown Victoria vehicles (EPA estimated 17/25 mpg). There is a need to provide individual medallion owners an alternative means of financing these new hybrid purchases. Due to the "pass on" of costs to drivers, many drivers are forced to work very long hours in an effort to realize a marginal profit above operational costs resulting from high costs per-mile-traveled. Miami-Dade County should consider further incentives for conversion to hybrids such as establishing an additional "hybrid-only" lane at the queue at the Miami International Airport. Upgrading our taxicab fleet would also benefit our tourist-dependent economy.*

Recommendation B.3:
It is recommended that Miami-Dade County regularly evaluate greenhouse gas emission reductions and the net environmental benefit of each fuel and vehicle under consideration for purchase and use in internal operations in order to ensure the use of the most efficient vehicles and sustainably-sourced alternative fuels, including those that are locally produced, and adjust investment accordingly. Net environmental benefit shall be determined through the consult of peer-reviewed nationally accepted studies and through the use of evaluation tools, available or to be developed, which will include the analysis of the overall environmental impact of the complete fuel cycle, including land use conversion, feedstock cultivation, raw material extraction, processing, transport, distribution, storage, and combustion. This will be compared to the net environmental impacts of the use of fossil fuels.

Rationale: *While Miami-Dade County is striving to reduce fossil fuel consumption and associated greenhouse gas (GHG) emissions through the use of alternative fuels, it is important to carefully evaluate these alternatives in order to achieve the most GHG emission reductions and net environmental benefits. From an environmental and sustainability perspective, not all alternative fuels are equal. While new federal energy legislation requires at least a 20% net GHG emissions reduction*

benefit from corn-based ethanol, the eventual objective must be to achieve much higher benefits such as those anticipated from using sugar cane, cellulosic materials, or algae. Decisions regarding alternative fuels should support Miami-Dade County's overall goal of sustainability.

Recommendation B.4:
The County's Procurement Management Department should take necessary steps to improve pricing and access to sustainably-sourced alternative fuels and high efficiency vehicles for County operations. This would include forming a joint committee or committees to pursue collective purchasing opportunities and to evaluate the costs and benefits of collective bids. Joint committee(s) could be formed with organizations operating large fleets such as federal, state, local municipal and county governments, airports, large corporations, public school districts, state agencies, universities and large non-profit organizations. GSA, Transit, and other Miami-Dade County departments should participate in collective purchasing committees, as needed, to best meet purchasing needs.

Rationale: *The purpose of this recommendation is two-fold:*

1. *To improve the pricing of and/or access to alternative fuels and high efficiency vehicles for the Miami-Dade County fleet.*
2. *To encourage the use and improve the accessibility of alternative fuels and high efficiency vehicles throughout the region.*

Recommendation B.5:
The Climate Change Advisory Task Force recommends that as Miami-Dade County fueling facilities are built, modified, or upgraded, they be designed and constructed to accommodate alternative fuels, including, but not limited to, E85 and B100. In addition, the County should consider dispensing E85 at two Miami-Dade County fueling stations within 6 months of it becoming locally available as determined by the process described in Recommendation B.3. It is recommended that Miami-Dade re-evaluate the use of E85 six months after dispensing is initiated to assess local availability, overall net costs and environmental impacts. Furthermore, new vehicles being purchased now and in the future by Miami-Dade County should have the capability of using ethanol and biodiesel, without the need for retrofit.

Rationale: *The Climate Change Advisory Task Force supports the County's General Services Administration Department's (a) recent decision to upgrade its fueling equipment at two stations in order to accommodate E85 fuel (in conjunction with required tank replacements that are taking place to comply with EPA 2009 double wall requirements) and (b) future plans to dispense E85 fuel at these two facilities once availability and fuel cost-differential issues are resolved. The CCATF recommendation expands the County's effort by requiring that all fueling facility upgrades incorporate equipment that can accommodate E85, B100, and other alternative fuels. Although only B20 blends are accepted by engine manufacturers at this time, equipment upgrades should be built to accommodate the highest biodiesel blend available, which is B100. In addition, the CCATF recommends that the County begin dispensing E85 fuel at the two upgraded facilities when it becomes locally available.*

Thirteen percent (940 vehicles) of the Miami-Dade County's light fleet is E85 Flex Fuel compatible. The use of E85 Ethanol in the flex fuel vehicles in the fleet would displace 994,500 gallons of gasoline. There is no firm pricing information available since local vendors don't supply ethanol at this time, but based on an unofficial quote in October 2007 of $2.49 from a vendor, it is estimated that Miami-Dade County would pay an additional $790,000 annually for using corn-based E85 transported from the Midwest United States, in the 940 flex fuel vehicles. Other feedstocks for ethanol, such as sugarcane

and cellulosic ethanol are reported to have less adverse environmental impacts than corn-based ethanol. Specifically, cellulosic ethanol, which can be made from the tough, fibrous material found in a variety of materials including herbaceous and woody perennials, wood chips, paper manufacturing sludge, etc. is projected to lower greenhouse gas emissions by 90.9 percent. In addition, cellulosic feedstock can be grown with less fertilizer and water and on poorer quality lands than those currently used to grow crops for conventional ethanol production. While currently there is no commercial production of cellulosic ethanol, there is a general consensus among Committee members familiar with the biofuel industry that cellulosic ethanol will be commercially available in the foreseeable future. In addition to this overall consensus on availability of cellulosic ethanol, Miami-Dade County's Agricultural Manager's Office is working on several local projects to assist in the local production of biofuels. Specifically, the office is assisting local farmers in forming a cooperative to grow and process crops into biofuels, the planting of test crops, and pursuing grants for the production and evaluation of fuel crops.

Recommendation B.6:
Require the use of sustainably-sourced biodiesel in all County diesel fleet vehicles and equipment (except standby equipment) as determined by the process described in Recommendation B.3, starting with B5 and increasing to B20 in 6 months. The Climate Change Advisory Task Force recommends that a portion of the local option gasoline tax be used to offset the cost difference for biodiesel.

Rationale: *Once sustainably-sourced biodiesel is available, this is perhaps the most economical, seamless, and immediately available option for Miami-Dade County to reduce its carbon emissions to meet its Chicago Climate Exchange emission reduction targets. The use of biodiesel, which has experienced a sharp increase in use over the past several years, does not require retrofits of vehicles or changes in fueling infrastructure for blends of up to B20 and is widely reported to provide similar fuel consumption, horsepower, torque, and haulage rates as conventional diesel fuel. Furthermore, there are more than 109 agencies using biodiesel in the southeast region (AL, FL, GA, KY, MS, NC, SC, TN) of the United States alone (http://www.southeastdiesel.org/Projects%20List/Biodiesel.pdf). More than thirty (30) of those organizations are county, city, or state vehicle fleets and at least ten (10) are transit bus fleets. A phased-in approach to a B20 blend should address the concerns of providers unfamiliar with handling biodiesel, as well as provide Miami-Dade County the opportunity to monitor and respond to any unexpected impacts of integrating a new fuel, without interruption to the services so essential to its residents.*

The issue of engine warranty coverage is an important concern always at the forefront of fleet managers' minds. Most major engine companies have stated formally that the use of blends up to B20 will not void their parts and workmanship warranties. This information can be found at http://www.biodiesel.org/resources/fuelfactsheets/standards_and_warranties.shtm under the "Summary Chart: OEM Biodiesel Statements" link. All diesel engine companies warranty the product they make - engines. Typically, an engine company will define what fuel the engine was designed for and will recommend the use of that fuel to their customers in their owner's manuals. Engine companies do not manufacture fuel or fuel components. Therefore, engine companies do not warranty fuel - whether that fuel is biodiesel or traditional fossil-fuel diesel. Therefore, the most important aspect regarding engine warranties and biodiesel is whether an engine manufacturer will void its parts and workmanship warranty when biodiesel is used, and whether the fuel producer or marketer will stand behind its fuels should problems occur.

Finally, it is recommended that Miami-Dade County use a portion of the local option gasoline tax to offset any cost difference for biodiesel. Miami-Dade County's fuel contract price for B20 averaged

fourteen (14) cents higher in 2007 than regular (#2) diesel. The prices quoted are provided by the fuel vendors currently under contract with the County. Recently, GSA worked to facilitate future procurement of biofuels by adding additional language to Section 2, Paragraph 2.37 of the Invitation to Bid (ITB) for Gasoline and Diesel fuel. The revised wording of the fuel solicitation allows for the addition of alternative fuels and blends and for the addition of vendors. These changes should result in decreasing the price differential between biodiesel and regular diesel. Biodiesel users have reported minor cost increases, no increase in cost, or actual savings in purchasing biodiesel.

Recommendation B.7:
Require that Miami-Dade County develop a vehicle procurement process, which ensures that vehicles owned by MDC increase their mpg by 5% annually per vehicle class (whenever higher MPG vehicles are available) and that the cost of carbon emissions is included in the life cycle cost analysis process.

Rationale: *It is the goal of the Climate Change Advisory Task Force to put forth recommendations that will ultimately result in the reduction of Miami-Dade County's greenhouse gas emissions. One way that these reductions may be undertaken is by increasing the fuel efficiency of the County's fleet vehicles. There are many existing fleet vehicles that do not have the top fuel efficiency ratings in their respective classes. When these vehicles have reached the end of their life cycles/years of service, they must be replaced with a vehicle that has a higher fuel efficiency rating than that of the expiring vehicle. The minimum increase in fuel efficiency must be 5% higher than the most efficient vehicle (within the same vehicle class) purchased in the previous year.*

This recommendation applies to all Miami-Dade County fleet vehicle classes. Based on information provided by GSA, the Miami-Dade Police Department (MDPD) has 39% of the County's light fleet vehicles, which use 58% of the County's total unleaded gasoline. Therefore, this recommendation shall apply to police department vehicles as well, with implementation starting with non-pursuit police vehicles.

Recommendation B.8:
The purchase of a hybrid SUV shall be an allowable alternative for Miami-Dade County fleet procurement if that vehicle is determined to be more fuel-efficient than a light truck or other comparable vehicle.

Rationale: *Currently, Miami-Dade County is restricted from purchasing SUVs. When this ordinance was passed, there were no hybrid SUVs available. While hybrid SUVs remain less fuel-efficient than other sedan alternatives, there are now several hybrid SUVs on the market with higher fuel efficiencies than the light trucks Miami-Dade County is currently purchasing. If a department justifies the need for a non-sedan vehicle for operational purposes, a hybrid SUV may offer a more fuel-efficient option compared to a light truck.*

Recommendation B.9:
Direct the Office of Sustainability to initiate an energy and fuel conservation incentive and awareness campaign for employees in conjunction with the Miami-Dade County's Resource Conservation Committee, DERM's Pollution Prevention and Environmental Education work groups, and the GSA Department. This campaign should use information from the Chicago Climate Exchange membership, the Climate Change Advisory Task Force (CCATF) Science Committee, and other pertinent sources to

highlight the environmental, health, and economic benefits of energy conservation and communicate the importance of conserving energy and fuel. The information about energy efficiency and fuel conservation currently provided as part of the Miami-Dade County's New Employee Orientation Program should be expanded to include the campaign components listed above. Funding needs and options shall be identified for the implementation of this recommendation.

Rationale: *According to the Alliance to Save Energy, a national leader in energy conservation initiatives, no-cost and low-cost behavioral and operational solutions can reduce energy and fuel consumption by 5-15%. With proper funding and organizational support, a County-wide awareness and incentive campaign will save costs and significantly reduce greenhouse gas emissions generated by the County. This initiative would include trainings for drivers on idling and proper tire inflation and for office workers on energy efficiency and conservation related to lights, computers, and other electronics. It would also include working with facilities, information technology, and fleet managers on operational changes that could improve energy efficiency.*

Recommendation B.10:
The Climate Change Advisory Task Force supports any recommendations put forth as a result of the most recent Miami-Dade County fleet analysis that lead to an increase in fleet fuel efficiency and a reduction in vehicle miles traveled (VMT). The Task Force recommends that the County further strengthen these recommendations by creating incentives to reduce VMT and by not excluding any departments or vehicle types in reduction initiatives. As an example, it is recommended that hybrid sedans be purchased for non-pursuit police vehicles at the time of replacement.

Rationale: *See Appendix IV, Miami-Dade County 2007 Review of County Owned Light Vehicles.*

C. Built Environment Adaptation

Initial Statement: The Built Environment Committee's task was to focus on adaptation rather than mitigation strategies. The Committee understands that an appropriate foundation and structure among governmental agencies is necessary before significant mitigation and adaption investments are made. An early list of the components of the built environment intended to be addressed by mitigation and adaptation actions was set aside in favor of laying the groundwork for the appropriate agencies to identify vulnerabilities and reactive strategies. Thus, topics such as seawalls, raising infrastructure, and private building retrofits among others, although discussed, were not reviewed in any depth. The Committee also discussed mitigation strategies that directly relate to the built environment and that might be good short term regulatory actions; these were documented for future discussions.

Recommendation C.1:
Require all County agencies (and entities that receive County funding for significant infrastructure or built investments) to assess climate change impacts on the agency's/entity's responsibilities. This assessment should be incorporated into their master planning agenda or such a planning process should be initiated if it does not exist. The assessment should include the impact of sea level rise on all public investments and identification of vulnerabilities in order to produce strategies for mitigation and adaptation. These assessments should utilize a 50-year planning horizon.

Rationale: *It is suggested this mandate utilize a 50 year window for planning (assuming at least 1.5 ft. sea level rise within that time frame and at least 3-5 ft. over 100 years) with interim benchmarks. There is an urgent need to incorporate climate change impacts into all basic planning and permitting. There is also a great need to coordinate action plans among related agencies. For instance, coordination of use and protection of the Biscayne and Floridan Aquifers (by the County's Water and Sewer Department (WASD) and the South Florida Water Management District (SFWMD)) is of critical importance to address the impact of salt water intrusion on the fresh drinking water supply and on vegetation, including agriculture, in the County. The protection of drinking water quality/purity implies increasing the groundwater level to maintain hydrostatic water pressure landside to counter the sea's rise. Higher groundwater changes stormwater drainage functionality and increases inland vulnerability to flooding. The Committee also began initial discussions about how some current capital projects could be impacted by sea level rise and targeted those issues for further discussion and possible future recommendations - for instance, the planning of the new Port Tunnel and how to incorporate the implications of sea level rise projections.*

Recommendation C.2: (Note: see also Recommendations D.4 and E.1)
Use County charter authority to establish minimum criteria and standards related to climate change (including sea level rise), for public investment for all municipalities in Miami-Dade County.

Rationale: *The County should engage and offer assistance to the municipalities and develop criteria and standards in consultation with them. This effort would encourage each municipality to assess its vulnerabilities and to propose strategies that incorporate climate change into all public investment processes and decisions, including those concerning infrastructure and buildings. Such criteria and standards might include establishing new street grade and building first floor elevation requirements that exceed current County and FEMA standards and would be required for both municipal and county projects.*

Recommendation C.3: (Note: see also Recommendation F.4)
Expand the mission of the County's Office of Sustainability (OOS), and thus its resources and staffing, to provide a centralized agency for climate change information, monitoring, analysis, and benchmarking. Three activities in particular were identified:

a.) Establish a base case of information at an identified current or recent past date, to which all ensuing data might be compared;

b.) Assist in integrating the activities of the various entities including the coordination of data collection so that it can be used across departments/disciplines for analysis and comparison; and determine the appropriate metrics for critical issues;

c.) Monitor the effects of climate change on Miami-Dade County using the evolving data base, and publish the results for use by elected leaders, public agencies, and the general public.

Rationale: *It is understood that a variety of entities and agencies are already collecting and will continue to collect information, but that the OOS would encourage the integration and distribution of this knowledge.*

The data to be tracked was not fully identified, but might be expected to include population change, emissions levels, salt water intrusion, groundwater levels, vehicle miles per household, total land area of impervious surface, tree canopy, etc.

D. Natural Systems Adaptation

Initial Statement: Based on the projected impacts of climate change to natural systems in Miami-Dade County, the NSA Committee prepared a Preliminary Draft Report that included recommendations related to the restoration of natural systems; the protection and management of natural, open, and agricultural lands, groundwater, and wildlife and plant species; the development and implementation of monitoring, modeling, and adaptive management approaches; and the establishment of climate change-related partnerships. The main initial recommendations proposed by the NSA Committee are listed below.

Recommendation D.1:
Fully support the Comprehensive Everglades Restoration Plan (CERP), and increase funding and resources for other regional and local habitat restoration and preservation efforts and initiatives.

Rationale: *Restored ecosystems will be more resilient and better able to adapt to climate change. As such, ecosystem restoration is a crucial component in mitigating and adapting to the effects of climate change in Miami-Dade County. Restoration needs to go beyond the current CERP and include additional degraded habitat and other open space in the County. CERP is expected to provide the proper quantity, quality, timing, and distribution of water to both reduce the potential for saltwater intrusion into the Biscayne Aquifer, the County's principal source of drinking water, as well as provide a healthier natural environment more capable of being resilient to climate change. Additionally, scientific experts have found that the Everglades contains some of the largest stocks of soil organic carbon per area in all of North America and that reductions of these carbon stocks can be minimized by maintaining hydroperiods and implementing an appropriate fire management scheme.*

Beyond CERP, restoration of additional lands in the County is needed. Remaining undeveloped coastal areas should be restored and preserved. This will allow for habitats to adjust and change with rising sea level and give coastal species the ability to adjust as habitat changes occur. Upland habitat needs to be restored and preserved as well. Fragmentation of upland habitat, such as pine rocklands, creates barriers to species movement. In addition, isolated parcels of these habitats frequently cannot provide all of the necessary components to support plant and animal populations, and are more susceptible to colonization by invasive species. These fragmented areas need to be reconnected.

Recommendation D.2:
Increase funding and resources for land acquisition and management programs of Miami-Dade County. Investigate new and creative mechanisms to boost funding, such as the creation of a County-administered "carbon credit purchasing" program, as a potential alternative to current development, industry, and government mitigation requirements.

Rationale: *The retention of natural and open land provides many critical public services such as replenishing drinking water supplies, protecting against saltwater intrusion, contributing to the implementation of regional restoration efforts, conserving native wildlife and habitats, providing recreational space, and sustaining agriculture as a viable industry. Open undeveloped lands, whether currently under some mechanism of protection or not, offer the greatest opportunities to provide for adaptation to the effects of climate change. Different preservation tools must be deployed to offer the greatest amount of protection to existing open lands in public and private ownership. By adopting a*

precautionary approach that maximizes the amount of open land retained over time, opportunities to adapt to the effects of climate change are preserved over the long-term.

Recommendation D.3:
Acquire all undeveloped lands needed for restoration purposes and for mitigation and adaptation to climate change effects. Secure strategic open lands to provide transition zones to accommodate retreat or spatial shifts in natural areas, such as coastal wetlands and freshwater marshes.

Rationale: *See Rationale under Recommendation D.2.*

Recommendation D.4: (Note: see also Recommendations C.2. and E.1)
Create a plan to locate infrastructure and development outside coastal or flood hazard prone areas using projections of sea level rise to identify those areas. Describe a transitional zone between the hazard area and the built area to be protected and prohibit incompatible land uses that would convert open lands in the transitional zone. Establish a comprehensive planning and zoning policy, such as development setbacks and limits on density and infrastructure in coastal and transitional zones to consider vulnerability to sea level rise and saltwater intrusion.

Rationale: *See Rationale under Recommendation D.2.*

Recommendation D.5:
Encourage the continued funding of the County Agriculture Purchase of Development Rights Program beyond the current funding levels to maintain open lands for aquifer recharge, habitat, and buffers.

Rationale: *See Rationale under Recommendation D.2.*

Recommendation D.6:
Provide incentives to study and develop best practices for agricultural management that contribute to carbon sequestration and reduce greenhouse gas emissions.

Rationale: *Adaptation to more tolerant tropical crops and crop varieties and migration of more sub-tropical or winter season crops out of the area could mitigate climate change impacts to the agricultural industry in Miami-Dade County. However, compounded with current economic challenges, pest and disease, and a sometimes conflicting regulatory environment, even minor climatic changes would have significant economic and social impacts on local agriculture. That said, agriculture can play a role in helping to mitigate climate change. Currently, Florida forest products and agriculture account for a relatively small percent of the state's overall CO2 emissions; however, these industries represent a great potential to sequester atmospheric CO2. While agriculture is a net producer of greenhouse gases, studies are emerging that show effective management practices such as no tillage or conservation tillage can increase crop yields and stimulate accumulation of soil organic carbon, thereby sequestering CO2 from the atmosphere.*

Recommendation D.7: (Note: see also Recommendation F.2)
Review current stormwater management operations, including the operation of canals and structures, in order to eliminate unnecessary over-drainage and limit the extent of saltwater intrusion into ground and surface water resources. Additionally, require water conservation measures for all users of the Biscayne Aquifer.

Rationale: *As sea level rises, there will be a further incursion of brackish water into the Biscayne Aquifer and into freshwater wetland systems. Incursion of brackish water into the Biscayne Aquifer will not only cause a change in habitats from fresh to brackish systems, and potentially cause degradation of habitats through colonization by invasive plant species, it will also endanger the potable water supply of Miami-Dade County. This will be exacerbated by brackish/salt water flowing into canals emptying into coastal waters. In addition, over-drainage of areas via secondary and tertiary canals will reduce the freshwater that is available to recharge the aquifer. Water conservation measures will also need to be part of the strategy. Reduced draws on the Biscayne Aquifer will allow more freshwater head pressure in the aquifer, slowing brackish water intrusion.*

Recommendation D.8: (Note: see also Recommendations D.2 and D.3)
Increase funding for County-administered management activities like those programs within Natural Areas Management and Environmentally Endangered Lands. Establish a multi-agency task force to expand County capacity and coordinate conservation activities. Develop a collaborative and integrated approach to conservation involving universities, government agencies, landowners, botanic gardens, zoos, and non-governmental organizations.

Rationale: *The natural habitats of Miami-Dade County hold populations of wild plant and animal species that are locally, nationally, and internationally important. As the surviving habitats of the County are increasingly influenced by climate change, we can expect the wild populations of many species to change in both distribution and abundance. Indeed, we can expect that some species will be lost from Miami-Dade County. The projected changes in global temperature will have a number of impacts upon wild species. This will include changes in the ecology of habitats, such as changes in sea level and storm impacts upon coastal strand-line species, the effects of fire on the pine rocklands, and the impact of new invasive species and pathogens on all habitats. Species-specific responses will include changes in behavior in reaction to changing climate. These can include changes in seasonal breeding behavior, changes in migration, and impacts on reproductive success.*

The importance of Miami-Dade County as habitat for an important range of wild species cannot be underestimated. Miami-Dade County holds important areas of unique Florida habitats such as pine rocklands and tropical hammock, coral reefs, mangrove wetlands, and important areas of a globally unique freshwater wetland ecosystem, the Everglades. Some of these surviving habitat areas are managed by Miami-Dade County (more than 84 natural areas), while others are managed by a wide variety of private owners, non-governmental organizations, and State and Federal agencies.

Recommendation D.9:
Develop a "Vital Signs" monitoring program, following the model of the National Park Service, to serve as a multi-parameter ecosystem monitoring program that will help track climate change effects. Expand current ongoing monitoring efforts, such as those within the Comprehensive Everglades Restoration Plan (CERP), to include specific areas of Miami-Dade County, to provide a better view of how natural areas are changing over time and what forces are responsible. Key parameters may

include: rate of sea level rise; saltwater intrusion boundary and monitoring wells; landscape-level vegetation patterns; percent coral cover in offshore reef zones; water temperature in reef areas; and occurrence and range of invasive exotic plant and animal species. Dedicate a source of funds to collect information and establish and maintain a long-term data management system.

Rationale: *Some of the potential consequences of climate change, such as sea level rise, are predictable, and can be directly monitored and compared to expected outcomes. Other potential responses, such as habitat alteration or loss of species, are less predictable, are poorly understood, or may also be affected by other human causes or natural events. That said, it is also recognized that monitoring everything that seems important is not feasible and that existing local monitoring programs, driven by regulatory requirements and fees, are not designed to address large space and time scales associated with climate change. Therefore, a refined approach, focusing on monitoring a suite of key indicators or "vital signs," used in conjunction with applied modeling and assessment, is recommended. The effort should build upon or be integrated with regional environmental programs led by State and Federal agencies.*

Recommendation D.10: (Note: see also Recommendations D.3, D.8, F.2, and F.3)
Miami-Dade County should establish partnerships, both formal and informal, with other governmental entities, including local, State, and Federal governments; the private sector; non-governmental organizations; and other stakeholders in the County. Partnerships should focus on cooperative efforts to restore existing natural ecosystems; protect natural and open lands; mitigate impacts; and monitor natural systems and indicators of climate change. Partnerships should also be undertaken to effectively practice adaptive management as we increase our understanding over time of the effects of climate change on natural systems in the County and implement management actions to restore and protect natural systems in the County.

Rationale: *Partnerships are integral to restoring and protecting natural systems in a time of climate change and to assure the effective implementation of the recommendations of the NSA Committee.*

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E. Economic, Social, and Health Adaptation

Initial Statement: A recent study was conducted by a number of international scientists with expertise in climate modeling, risk management, policy and economics. The associated report, *Ranking of the Worlds' Cities Most Exposed to Coastal Flooding Today and in the Future,* by the Organization for Economic Co-operation and Development, lists the metropolitan area of **Miami as the number one most vulnerable worldwide in terms of assets exposed if a 1 in 100 year surge-induced flood event were to happen today and predicts dramatic economic loss estimated at roughly $416 billion**. Economic losses are estimated to increase to **$3.5 trillion** by 2070 for this type of catastrophic event. When considering climate change and projected sea level rise, the report lists **Miami as one of the top ten** cities worldwide for population exposure related to coastal flooding for present day conditions. Another study published in November 2007 by Tufts University, *Florida and Climate Change: the Costs of Inaction*, projects **annual costs of inaction totaling $92 billion** by 2050 and **$345 billion** by 2100, figures that constitute 2.8 percent and 5.0 percent of the state's projected Gross State Product respectively. These estimates only include economic costs from loss of tourism revenue, increased hurricane damages, at-risk residential real estate, and increased electricity costs and would be even larger if they included other sectors like agriculture, fisheries, insurances, transportation, water systems, and ecosystem damages.
(Webpage URL to the OECD report is http://www.oecd.org/dataoecd/16/10/39721444.pdf and the Tufts report can be found via the following webpage URL:
http://www.ase.tufts.edu/gdae/Pubs/rp/Florida_hr.pdf?bcsi_scan_EAC41357C45D053C=0&bcsi_scan_filename=Florida_hr.pdf)

The projected impact of sea level rise and resulting coastal flooding will require all agencies and entities in the County involved in economic development, planning, public health, and water supply to develop a unified and comprehensive response to the challenges of climate change. A key issue is maintaining flexibility in the face of uncertainty about the magnitude of sea level rise. Flexibility conferred by maintaining undeveloped agricultural areas and other open space would be compromised by new development that would require future sea level rise mitigation or would put current and future investments in public infrastructure at risk. Unwisely building in at-risk areas will precipitate extreme financial losses in the event of projected sea level rise.

Developing comprehensive and effective mitigation and adaptation strategies to address climate change will also require the understanding and support of informed citizens, thus requiring the collaboration of media, educational institutions, environmental NGOs, and other groups, to focus on education and two-way communication with the public about choices that have to be made.

Recommendation E.1: (Note: see also Recommendations C.2 and D.4)
The Task Force recommends that the Miami-Dade County Comprehensive Development Master Plan (CDMP) be revised to include a new policy to restrict land uses in areas that would be at risk from sea level rise and associated impacts within the next 50 years as per the CCATF Science Committee's Statement on Sea Level in the Coming Century report and projections. A continuous 50-year planning horizon should be used.

Rationale: *Sea level is anticipated to rise at least 1.5 feet over the next 50 years and a total of at least 3-5 feet by the end of the century. It is possible that these estimates could be exceeded. The purpose of the policy will be to maintain land use flexibility to allow for future mitigation measures that may*

become necessary. Flexibility will be accomplished by restricting land uses that would require future sea level rise mitigation and/or put at risk current and future investments in public infrastructure. For example, this policy would encourage the retention of agricultural areas that may be prone to sea level rise in the near future. Since these areas are technically undeveloped open space, they could continue to be utilized and remain economically productive until a time that they can no longer be farmed. Maintaining these as agricultural areas pre-empts conversion to development, which would most likely necessitate mitigation or some type of financial assistance for property owners to be re-located, etc. Agricultural areas can also be used to begin locally growing and processing biofuels.

This policy would be in addition and complementary to the proposed Coastal High Hazard amendment to the CDMP, which is based on current estimates of hurricane storm surge and is being mandated by the State.

Note: Any proposed regulations that have potential impacts on agriculture need to be brought before the BCCs Agricultural Practices Advisory Board, which is an official review body for agricultural regulations.

Recommendation E.2:
Initiate an additional long-term CCATF advisory board committee composed of representatives from federal, state, and local environmental agencies (including Miami-Dade County DERM, WASD, Cooperative Extension), the Miami-Dade County Department of Health, local colleges and universities, and community leaders to address potential human infectious disease changes and increases that may accompany climate change and to make technical and funding recommendations to the Miami-Dade County Board of County Commissioners. With the goal of disease prevention, the advisory board would advocate for:

- Vector control programs that address mosquitoes, rodents, and other animals and that are adequately maintained and expanded as necessary.
- Chemical and biological monitoring programs within Biscayne Bay's waters and other surface waters to be expanded to detect potential pathogens before they cause illness.
- Adequate funding allocated to the Miami-Dade Water and Sewer Department's (MDWASD) budget to allow for research and planning of alternative water treatment systems that can manage additional pathogens.

***Rationale**: The Office of Epidemiology and Disease Control of the Miami-Dade County Health Department has the responsibility of doing surveillance and investigation of reportable diseases and conditions as well as investigation of outbreaks. In addition, the office does syndromic surveillance to detect increases in symptoms of diseases and discover outbreaks sooner. However, environmental monitoring may be more effective in detecting potential pathogens before they cause illness. Our recommendations are based on available knowledge of epidemiologic trends and distribution of diseases and their vectors. Sea level rise, an increase in average temperatures, salt water intrusion in fresh water bodies, and decrease in the level of fresh surface water bodies and wells may expand areas hospitable to disease-bearing organisms (vectors of disease), thus increasing the risk of infectious diseases.*

Recommendation E.3: (Note: see also Recommendations F.4, F.5, and F.6)
The County shall form an interdisciplinary, community-wide working group, including the media and institutions of higher education, which (a) focuses on public education and information regarding climate change and adaptation and (b) assesses public opinion regarding these subjects.

Rationale: *This working group would focus on increasing public awareness (education), assessing risk and adaptation preferences within the community, and providing comprehensive estimates of mitigation and adaptation costs. Assessing mitigation and adaptation costs, including social and environmental externalities, would provide a more accurate mechanism for comparing proactive proposed policies with the costs of inaction. The working group should actively work toward mainstreaming knowledge regarding climate change, increasing adaptive capacity and climate change resilience, and promoting cognitive and behavioral adaptation changes. It should create dialog (public discussion and participation) within broad social networks to share both problems and solutions and to promote individual and collective empowerment. The group should propose near and long-term alternative courses of action (at the individual and community level) to the business as usual (BAU) scenario, with respect to both GHG mitigation and adaptation strategies. The Commission should make certain that non-regulatory county agencies involved in public education (e.g., the Cooperative Extension) are part of such an advisory board or working group.*

Recommendation E.4:
The Task Force recommends that the County bring together all agencies and entities involved in economic development and planning in order to develop a unified and comprehensive response to the challenges of climate change, housing, economic development, and quality of life

Rationale: *Expert testimony at the ES&HA Committee meetings has made it clear that even without climate change, the County is facing serious challenges that require better coordination in planning. For example, the current housing market does not provide housing in the price range required for the workforce growth that successful economic development requires, particularly the homeowner housing essential to sustainability of neighborhood quality of life. Another example is water availability and quality, now critical for economic growth, household needs, and environmental sustainability. Planning for challenges like these in the County is now fragmented across different agencies at many levels of government — municipal, county, regional, state, and federal. Climate change will accelerate the need for coordinated planning to meet these challenges as it potentially limits resources like areas for workforce housing expansion and water supply free of saltwater intrusion. Although the County does coordinate planning for hurricane readiness among agencies and municipalities with its Local Mitigation Strategy Working Group, the Task Force has identified a coordination need that will involve agencies and planning in a much more fundamental way.*

F. Intergovernmental Affairs

Initial Statement: A primary focus of the IGA Committee's mission involves working with a broad range of public, private, civic, and non-profit organizations to identify opportunities for collaboration. The Committee has focused its initial efforts on developing strategies that will build support for climate change related initiatives within Miami-Dade County. To that end, the Committee's discussions have focused on how to: (1) engage and partner with the County's municipalities in efforts to mitigate and adapt to climate change; (2) engage local, regional, and state agencies in a discussion about their activities related to climate change; and (3) educate and reach the general public, particularly children and their parents.

Recommendation F.1:
Conduct a survey of Miami-Dade County municipalities to gauge their level of knowledge and engagement in climate change issues, learn about their activities, and begin the creation of an intergovernmental, learning network that allows members to work with each other and the County on adaptation / mitigation issues.

Once the survey has been completed, engage the cities in a dialogue about the survey findings and work of the Climate Change Advisory Task Force. This dialogue could happen in a number of ways including a meeting with the Miami-Dade League of Cities and/or a convening of Miami-Dade municipal and county leaders in a shared discussion of the issues and information exchange.

Rationale: *Fifty-five percent of the Miami-Dade County's population, approximately 1.4 million residents, resides within one of the County's 35 municipalities. Any effort to comprehensively address climate change, mitigation, and adaptation in Miami-Dade County will be well served through a collaborative partnership of County and municipal elected leaders and staff. Local governments around the country are leading the way in identifying and implementing strategies that reduce greenhouse gas emissions and create more climate change resilient communities. A partnership of the County and the municipalities will improve efficiency, conserve resources, reduce duplication of effort, and create synergies that will lead to better opportunities and outcomes than would otherwise be possible.*

Recommendation F.2: (Note: see also Recommendations D.7, D.10, and F.3)
Convene local and state agencies and water and sewer utilities around a discussion of climate change and impacts on water quantity, quality, and availability and implications for infrastructure planning and investment.

Rationale: *Communication and collaboration at all levels of government will improve efficiency, conserve resources, reduce duplication of effort, and create synergies that will lead to better opportunities and outcomes than would otherwise be possible.*

Recommendation F.3: (Note: see also Recommendations D.10, and F.2)
Convene a broader group of local and state agencies around a discussion of their activities related to climate change. Agencies / groups would include, but not be limited to, DOT 4 & 6, DEP, SFWMD, DCA, Health Planning Agencies, Ecosystem Restoration Task Force, etc. In this conversation we will gain a better understanding if there are issues or concerns that we need to be aware of and identify opportunities for collaboration moving forward.

Rationale: *See Rationale under Recommendation F.2.*

Recommendation F.4: (Note: see also Recommendations C.3 and E.3)
Develop a County internet website with up-to-date information about the work of the Miami-Dade Board of County Commissioners, the CCATF, and municipalities with links to information and best practices related to climate change, adaptation and mitigation efforts by individuals and organizations.

Rationale: *Miami-Dade County residents are more likely to support County and municipal efforts to reduce greenhouse gas emissions, conserve resources, and adopt adaptation measures if they are provided with balanced information about climate change and the steps they can take to reduce negative impacts on the environment and contribute to positive change. An internet site with up-to-date information about climate change related efforts in Miami-Dade County and beyond will be a resource for residents, elected officials, and a wide range of public, private, nonprofit, and civic partners. Educational efforts which help children understand the world around them, particularly the richness of South Florida's environment and the challenges and opportunities posed by global climate change, will contribute to the creation of a more informed and supportive citizenry, in this generation and beyond.*

Recommendation F.5: (Note: see also Recommendation E.3)
Work with the region's children's museums and foundations to create and fund educational exhibits on climate change, green technologies, clean cities, etc.

Rationale: *See Rationale under Recommendation F.4*

Recommendation F.6: (Note: see also Recommendations C.3 and E.3)
Identify and develop educational materials that can be incorporated into a Miami-Dade Public Schools curriculum on climate change, the environment, and sustainability. The materials should be shared with other educational institutions to facilitate the dissemination of information to Miami-Dade residents.

Rationale: *See Rationale under Recommendation F.4*

APPENDIX I

CCATF Science Committee Report:
Statement on Sea Level
In the Coming Century

HARVEY RUVIN
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DADE COUNTY COURTHOUSE
ROOM 242
73 West Flagler Street
Miami, FL 33130

January 17, 2008

Dear CCATF Colleagues:

RE: DISTRIBUTION OF THE CCATF'S SCIENCE COMMITTEE'S STATEMENT ON SEA LEVEL RISE IN THE COMING CENTURY

Pursuant to our work plan, the Science Committee is missioned to provide the Task Force and its other Committees with an assessment of the magnitude and timing of expected impacts to Miami-Dade County from Climate Change.

The sole purpose of this statement is to inform the deliberations now under way within the Committees which are working to develop recommendations for the Board of County Commissioners and the Mayor as to what proactive measures need to be taken to minimize the negative effects of and maximize resiliency to the coming scenario. In order to plan both adaptive and mitigation strategies, it is essential to have as clear a picture as possible of that scenario and how it might impact our built and natural environments as well as our economic, social and cultural interests.

The state of the science has become increasingly fluid since the United Nations' IPCC assessments earlier this year. Due to emerging knowledge concerning the "feedback" effects of melting polar ice caps and defrosting permafrost methane release, it appears that the IPCC's projection of two (2) feet of sea level rise by 2100 may be alarmingly conservative. Indeed, the IPCC report predicted that we may see "open seas" at the north pole by 2070. Recently, 63 years earlier than predicted, we were treated to the celebratory announcements from global shipping interests that the so called "North Passage" is imminent.

No one has a crystal ball so as to know with absolute certainty what the future will look like nor to know exactly when it will unfold.

What is clear, however, is that in the exercise of the Precautionary Principle our work should now take on the greatest sense of urgency.

As each Committee prepares their initial recommendations, I urge you to think out of the box and not be afraid to call for the bold actions that are required by both the nature of the challenge and the shrinking time needed to act effectively.

Mindful of our role as an advisory body to the Mayor and the Board of County Commissioners, I am furnishing each with a copy of this transmittal, so that they will be kept aware of the status of our work. It is our plan to have our initial recommendations to them by April of this year.

Respectfully,

Harvey Ruvin

Harvey Ruvin, Clerk
Chair, Climate Change Advisory Task Force (CCATF)

cc: Honorable Charlie Crist, Governor
Hon. Carlos Alvarez, Mayor
Members of Board of County Commissioners
Steve Adams, Executive Director, Governor Crist's Action Team
Hon. Ken Pruitt, Senate President
Hon. Marco Rubio, Speaker of the House
Alex Sink, Chief Financial Officer
Hon. Manny Diaz, Mayor, City of Miami
Hon. David Dermer, Mayor, City of Miami Beach
George Burgess, County Manager
All Members of the CCATF and its Committees

P.S. I am enclosing for your review a portion of a just released report entitled "Nation Under Siege" which graphically sounds a similar alarm for all of coastal America. NOTE: South Beach is "cover-girl".

STATEMENT ON SEA LEVEL IN THE COMING CENTURY

Science and Technology Committee
Miami-Dade County Climate Change Task Force.
January 17, 2008

Significant sea level rise is a very real threat to the near future for Miami-Dade County.

BACKGROUND: Over the past 2,500 years south Florida has experienced an average rate of relative sea level rise[1] of about 1.5 inches per century[a]. Over this time our sandy, mangrove and muddy coastlines were mostly stable or expanding seawards. The broad coastal wetlands and historically stable sandy coastlines of south Florida are a product of this prolonged period of very gradual sea level rise.

Since 1932, south Florida has had about a 9 inch relative rise of sea level[b]. This is a rate of one foot per century and is about 8 times the average rate over the past 2,500 years. Much of this accelerated rise is the result of warming (and expansion) of water in the western North Atlantic Ocean in response to global warming[c]. Our coastal and shallow-marine environments are now evolving in response to the stresses of this rising sea level.

EVALUATION: The 2001 report of the United Nations sponsored Intergovernmental Panel on Climate Change (IPCC) projected an additional sea level rise over the coming century of 1-3 feet (median level rise of 2 feet.). The 2007 IPCC report projected a somewhat lower level, but it did not incorporate the significantly accelerated melting being observed in the Greenland Ice Sheet (apparently because the results had not yet been published in peer-reviewed science journals)[d]. As a result, the IPCC report, which should be the guidance for the future, underestimates the amount of sea level rise that is likely to occur in this century[e].

Since 2000, rapid changes have been occurring to the Greenland Ice Sheet - changes that were projected to begin at the end of this century[f]. Over this past decade, there has also been rapid loss of multiyear pack ice in the Arctic Ocean, a phenomenon not projected to occur until 2070. Simply put, climate and glacial scientists now see that models failed to predict the rapidity and quickness with which these critical changes would occur.[g]

Both the Arctic Ocean and Greenland Ice Sheet have important 'positive feedback' effects that are driving these accelerated changes. Positive feedbacks are secondary effects that further reinforce and accelerate the primary changes. For the Greenland Ice Sheet, (a) summer melt water on the lower elevation margins of the ice sheet is forming surface pools on the ice which absorb incoming solar energy, thus accelerating melting; (b) the melted surface water is flushing down to the bottom through fractures and dissolved moulins (vertical holes) in the ice sheet, forming a lubricated layer over the rock which is dramatically accelerating the rate of the ice sheet breakup and movement towards the sea[h]; and (c) as the ice sheet margins melt and move towards the sea, the elevations on the ice sheet are lowering, placing the surface in yet warmer conditions.[i]

[1] Relative sea level rise for an area is a combination of the change in ocean level and local changes in response to uplift or subsidence of the land. For example, North Carolina has a greater relative sea level rise than south Florida because the land there is subsiding faster.

Melt effects are expanding northwards on both coasts of Greenland. Even the very northern portions of Greenland have seen increased melting over the past decade.[j]

Field observations from this summer in western Greenland have documented amazing acceleration of marginal glaciers. The Illulissat Icefjord, located 150 miles north of the Arctic Circle, is an outlet for about 7% of the Greenland Sheet. This marginal glacier had been receding in response to increased marginal glacier melt. Beginning in 2002, the ice has surged seaward and is presently moving seaward at over 9 miles per year with additional pulses as high as 3.1 miles in 90 minutes! Melt waters seeping down through the ice sheet have created a 1,600 foot thick layer of water on which the interior ice sheet is now floating, fracturing, and surging to the sea. Acceleration of melting of the Greenland ice sheet is the critical factor to the rise of global sea level in the coming century.[k]

The Arctic Ocean has historically been sufficiently blocked with thick floating pack ice that navigation through the 'Northwest Passage' has remained elusive until recently. The pack ice is floating on the water of the Arctic Ocean and its melting would not in itself change sea level (like a melting ice cube in your glass). However, the white pack ice surface reflects nearly all incoming solar energy back into the air and space. Melting of the pack ice leaves areas of open water which absorb nearly 90 percent of the incoming solar energy. This warms the water, which further accelerates the rate of melting in the Arctic summer and reduces cooling in winter. Historically, the pack ice covering much of the Arctic Ocean through the summer was made of large solid masses of ice that were 4-5 years old, thickening each year. In the past decade, the pack ice has become increasingly younger and thinner. Most of the pack ice this summer is only 1-2 years old. It is thin, highly fragmented and contains many open water areas. As of mid September, this year's summer melt has left 30% less pack ice than the previous record low (in 2005).[l] The large open water areas were 9 degrees Fahrenheit warmer than normal. Melting will continue until at least mid September. The pack ice is now so thin and fragmented that it could potentially float out of the Arctic into the Atlantic.

Climate projections had talked of the possibility of a summer ice-free Arctic Ocean in 40-80 years. Now it looks like that may happen within a decade if recent trends continue.[m] As the pack ice diminishes over the Arctic Ocean, the adjacent land will warm, vast areas of tundra permafrost will melt releasing potentially catastrophic amounts of methane to the atmosphere[2], and melting of the Greenland Ice Sheet will even further accelerate.

In short, the recent changes occurring in the Arctic and Greenland mean that global warming and sea level rise will happen much more rapidly than had been only recently projected. Even recent model projections of future ice melt for Greenland by 2040 have already happened in 2007.[n]

In the Antarctic, there is no inherent reason why the impacts of warming should follow the pattern of the Arctic Ocean. The Arctic is an ocean surrounded by land, whereas the Antarctic is a continent surrounded by ocean. Nevertheless, there has been a gradual loss

[2] Methane is another greenhouse gas. One molecule of methane captures 20 times the heat of a molecule of carbon dioxide. In the atmosphere, methane eventually will oxidize to carbon dioxide and water. This takes about 10 years.

of pack ice through the last half of the twentieth century, but a slight expansion in the past decade (as anticipated by climate models); about a 12% increase in the flow rate of 300 glaciers around the margin of Antarctica between 1993 and 2003°; and a significant increase in summer snow melt in both marginal and interior areas of the ice sheet since 2005. Antarctica is a critical unknown to future projections; however, it is showing distinctive early signatures of accelerated ice release.[p]

PROJECTION: A further 2-foot sea level rise by the end of the century, as projected in the 2001 IPCC report, would make life in south Florida very difficult for everyone. Spring high tides would be +4.5 to 5 feet above present mean sea level[3q]; storm surges would be higher; barrier islands, fill islands and low-lying mainland areas would be frequently flooded; salt water intrusion would restrict available freshwater resources; drainage would be more sluggish; Turkey Point would be an offshore island; and so on.

Unfortunately, it looks as though sea level in the coming century will rise significantly more than two feet. With what is happening in the Arctic and Greenland, many respected scientists[4] now see a likely sea level rise of **at least** 1.5 feet in the coming 50 years and a total of **at least** 3-5 feet by the end of the century, possibly significantly more (calculations used are provided at end of statement). Spring high tides would be at +6 to +8 feet[r]. This does not take into account the possibility of a catastrophically rapid melt of land-bound ice from Greenland, and it makes no assumptions about Antarctica.

The projected rises will just be the beginning of further significant releases from Greenland and possibly Antarctica[5]. Hopefully, the IPCC will quickly revisit the question of sea level rise and provide a more valid and meaningful projection; however, to date, that is not planned until about 2012. When they revisit the current estimates, we expect it will be at least in the 3-5 foot range for this century.[s]

Developed Miami-Dade County as we know it will significantly change with a 3-4 foot sea level rise. Spring high tides would be at about + 6 to 7 feet; freshwater resources

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[3] Elevations are relative to a zero, which is 'mean lower low water' (spring low tide) when originally established in the late 1920s. Some topographic maps use MLLW and some correct to mean sea level (MSL) which is about 1.5 feet higher. With the 0.8 foot relative sea level rise since about 1930, today's mean higher high water (MHHW) is +2.3 feet above 1929 MSL (3.8 feet above MLLW), exceptional tides may reach over +3.3 feet (4.8 feet above MLLW), and storm tides and surges are added on to that. For considering future sea level rise, add 2.3 feet to the projected increase for MHHW (average spring high tide). See also endnote 'q'.

[4] For example: Dr. Robert Corell, a key contributor to the IPCC and chair of the Arctic Climate Impact Assessment, said this September that there is a consensus that new data collected since the IPCC report (i.e., the last two years) shows a 'massive acceleration' in the loss of ice mass in Greenland, and the consequences are outstripping the capacity of scientific models to predict it. Dr. James Hansen, director of NASA's Goddard Institute for Space Studies, suggests that sea level could rise by one to several meters (1 meter = 3.25 feet) by the end of the century.

[5] Total melting of the Greenland ice sheet would add about 23 feet to global sea level. In Antarctica, the collapse of the West Antarctic Ice Sheet would result in another 20 feet. With the warming we have caused and will cause from greenhouse gas buildup, melting of both of these is a distinct possibility in the future. During the previous interglacial period 130,000 to 120,000 years ago, sea level was about 25 feet higher than present.

Were the ice on Antarctica to totally melt, sea level would rise over 200 feet, but that seems unlikely.

would be gone; the Everglades would be inundated on the west side of Miami-Dade County; the barrier islands would be largely inundated; storm surges would be devastating; landfill sites would be exposed to erosion contaminating marine and coastal environments. Freshwater and coastal mangrove wetlands will not keep up with or offset sea level rises of two feet per century or greater. With a five foot rise (spring tides at nearly +8 feet), Miami-Dade County will be extremely diminished.

REALITY FOR OUR FUTURE: Miami-Dade County, like all other coastal and low-lying counties, is now facing much more challenging decisions than ever imagined. We will work to provide more carefully documented projections, but we hope you see the urgency of reconsidering nearly every aspect of the county's management, zoning, infrastructure, and planning.

One urgent effort is to look at what Miami-Dade County will need to do to remain inhabitable and functional at benchmarks of a further 1, 2, 3, 4 and 5 foot rise in sea level – and at what point portions of the county will need to yield to the rising sea. This will require a detailed documentation of the elevations of infrastructure elements and roadways; susceptibility of coastal, wetland and artificial fill areas to erosion; defining areas of potential pollution and contamination release; determining changing drainage and storm surge risks; assessing structural viability of buildings and levees with changing groundwater levels and saline water intrusion; looking at the future of fresh potable water sources; defining the modifications necessary to maintain connectivity of roadways; and many other aspects.

It should be pointed out that the highly porous limestone and sand substrate of Miami-Dade County (which at present permits excellent drainage) will limit the effectiveness of widespread use of levees and dikes to wall off the encroaching sea.

Respectfully submitted,
Science and Technology Committee[6]

Co-Chairs

Dr. Harold R. Wanless	University of Miami, sedimentology/coastal processes
Dr. Stephen Leatherman	Florida International Univ., sedimentology/coastal processes

Committee Members

Dr. John R. Bethea	Community Consultant, conflict resolution and public policy
Dr. Adriana Cantillo,	Scientist, chemistry
Ms. Diana Cornley	Miami-Dade County, coastal ecosystem restoration
Dr. Will Drennan	University of Miami, ocean-atmosphere interaction
Dr. David Enfield	Scientist, climate variability
Mr. Peter Harlem	Florida International Univ., sedimentologist, wetlands ecologist
Dr. James S. Klaus	University of Miami, coral reef paleoecologist
Mr. Orestes Lavassas	South Florida Biodiesel, renewable energy
Dr. John F. Meeder	Florida International Univ., sedimentologist, wetlands ecologist
Dr. Georgio Tachiev	Florida international University, hydrology, water resources
Dr. John Van Leer	University of Miami, physical oceanography
Mr. Doug Yoder	Miami- Dade County

[6] All members of the committee have worked together to develop this statement, and all have signed on.

ASSESSMENT OF MINIMAL SEA LEVEL RISE IN THIS CENTURY

***IPCC 2007 numbers and explanations in italics*; this study's numbers and explanations in regular type.**

Thermal expansion of oceans
IPCC has expansion at over half of their projection for coming century
= 8 inches = 20 cm
But since they assumed a much lower rate of Arctic ice loss and subsequent warming than is happening, this should be at least half again as much
= 30 cm

Non-ice sheet glacial melt
=10-25 cm per century in coming century[t].

Greenland melt
Greenland dramatically increased its melting at the beginning of this century. IPCC comments on this but does not include a significant contribution in coming century.
Presently 150-250 km3 ice per year = a 1 mm thick layer 150,000,000-250,000,000 km2 extent
Area of oceans =~ 361,000,000 km^2. So presently Greenland melt is providing a 0.4-0.7 mm/year contribution to sea level rise (= 4-7 cm / century and is rapidly increasing}.
As present melt is just starting (mostly since 2000) and mostly restricted to the southern portions, one can project that this will increase at least by a factor of 12. This is justified by the rapid warming of the adjacent ocean waters and accelerated melting of Arctic summer pack ice, which will lead to further acceleration of Greenland ice sheet melt.
Minimal contribution this century should be 48-84 cm. There is the possibility that this could approach 200 cm. by the end of the century but probably not more (Pfeffer, 2007[i]).

Antarctica
IPCC 2007 says historical rises were 1961-2003 = 0.14 mm/yr = 1.4 cm/100 yrs
1993-2003 = 0.21 mm/yr = 2.1 cm/century
Current rate has increased to ~5 cm/century.
Antarctica has sort of been ignored even though 300 of the marginal glaciers have increased their forward speed by 12% since 1990, reducing stress on adjacent ice sheets.[o]
In addition, there is elevation reduction of significant areas, and increased upwelling is accelerating melt of the bottom floating ice shelves.[p]
This is a big unknown, but will certainly be at least 15 cm. (three times the current rate). There is the potential to be much, much more.

MINIMAL TOTALS

Glaciers	10 to 25 cm
Greenland	48 to 84 cm
Antarctica	10 to15 cm
Total	98 to 151 cm or 3.3 to 5.0 feet

So we project that we will have at least an additional 3-5 feet of global sea level rise over the coming century. This is a reasonable conservative assessment of what is likely to happen in the coming century. We are constantly seeing positive feedbacks that accelerate initially small forcings and changes. Scientists do not see Arctic warming or Greenland melting as reversible over the coming century.

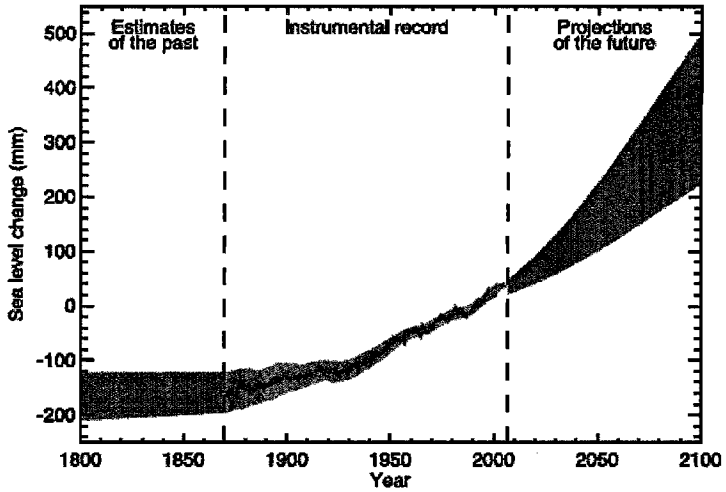
ENDNOTES and REFERENCES

[a] Wanless, H.R., Parkinson, R., and Tedesco, L.P. Sea level control on stability of Everglades wetlands, *in Proceedings of Everglades Modeling Symposium*. St. Lucie Press, FL, p. 199-223.

[b] Ibid. Data on historical sea level is archival tidal gauge data from Miami Harbor Entrance, Key West and Naples, collected and provided online by the National Oceanic and Atmospheric Administration, National Oceans Services (NOAA/NOS). With the advent of satellite altimetry, a global record of ocean level is now available over the past decade. Over that period, global sea level has risen 3 cm – a rate of 30 cm (one foot) per century (see Bindoff, N.L., et al., 2007 IPCC, Working Group 1: *The Physical Science Basis of Climate Change, Fourth Assessment Report 2007*, Chapter 5, report Chapter 5, Observation: Oceanic Climate Changes and Sea Level, page 411 and Figure 5.13.).

[c] Bindoff, N.L., et al., 2007 IPCC, Working Group 1: The Physical Science Basis of Climate Change, Fourth Assessment Report 2007, Chapter 5, report Chapter 5, Observation: Oceanic Climate Changes and Sea Level, page 391, Figure 5.2. Also, Levitus, S., J.I. Antonov, and T.P. Boyer, 2005a: Warming of the World Ocean, 1955-2003. *Geophys. Res. Lett.*, **32**, L02604, doi:10.1029/2004 GL021592).

[d] Bindoff, N.L., et al., 2007 IPCC, Working Group 1: *The Physical Science Basis of Climate Change, Fourth Assessment Report 2007*, Chapter 5, report Chapter 5, Observation: Oceanic Climate Changes and Sea Level, page 409, Figure 5.2., and Figure FAQ 5.1-1 (shown below with caption).



FAQ 5.1, Figure 1. *Time series of global mean sea level (deviation from the 1980-1999 mean) in the past and as projected for the future. For the period before 1870, global measurements of sea level are not available. The grey shading shows the uncertainty in the estimated long-term rate of sea level change (Section 6.4.3). The red line is a reconstruction of global mean sea level from tide gauges (Section 5.5.2.1), and the red shading denotes the range of variations from a smooth curve. The green line shows global mean sea level observed from satellite altimetry. The blue shading represents the range of model projections for the SRES A1B scenario for the 21st century, relative to the 1980 to 1999 mean, and has been calculated independently from the observations. Beyond 2100, the projections are increasingly dependent on the emissions scenario (see Chapter 10 for a discussion of sea level rise projections for other scenarios considered in this report). Over many centuries or millennia, sea level could rise by several metres (Section 10.7.4).*

[e] The above published IPCC 2007 diagram does not give a valid indication of sea level for the coming century of because (a) the median and lower projections begin at a lower level and lower slope (rate of rise) than is presently occurring (the green line is the global rate of sea level rise over the past decade); (b) the median rise for the end of the century is basically only a continuation of the current rate of se level rise, (c) is does not include the rapidly accelerated melting that is and will continue to occur in Greenland and

possibly in the Antarctic; (d) it ignores the fact that sea level rise has been rising at the upper limit of IPCC projections since they first were made; and (e) it does not include the various effects of the rapidly warming Arctic and Arctic Ocean. The climate scientists web site realclimate.org has a good discussion of this (http://www.realclimate.org/index.php/archives/2007/03/the-ipcc-sea-level-numbers/).

[f] The IPCC 2007 report comments that this is occurring but does not incorporate this acceleration into future projections.

[g] These are oral statements made by Dr. Robert Corell, Chair Arctic Climate Impact Assessment, and by Dr. Veli Albert Kallio, Finnish polar/ice scientist, at a meeting in Greenland on September 8, 2007)

[h] Zwally, H.J., Abdalati, W., Herring, T., Larson, K., Saba, J., and Steffen, K., 2007. Surface Melt–Induced Acceleration of Greenland Ice-Sheet Flow, *Science,* vol. 297, p. 218-222.

[i] These feedbacks are now a focus of study in order to better understand exactly to what extent they will drive accelerated melting. Results are emerging for specific aspects at presentations at scientific meetings and in rapid turnaround journals, but it will be some time until an improved understanding of these positive feedbacks become integrated into a coherent global picture. At the recent American Geophysical Union Meeting, there were several sessions on recent research on polar research and ice sheet dynamics. Pfeffer, for example focused on the subglacial rock topography and concluded that ice melt from Greenland could not cause more than about a 2 meter (7 foot) rise in sea level in the coming century (Pfeffer, W.T., 2007. *Kinematic constraints on Greenland Contribution to sea level rise in the next century*, American Geophysical Union, annual Meeting , abstract C53A-02, session on Glacier and Ice Sheet Hydrology).

[j] Ibid.

[k] Ibid.

[l] Widely publicized news with data being provided by NOAA, the National Snow and Ice Data Center and numerous foreign sources. See for example the NSIDC web site: http://nsidc.org/news/press/2007_seaiceminimum/20071001_pressrelease.html.

[m] The climate scientists web site www.realclimate.org has a prolonged discussion of this concern (http://www.realclimate.org/index.php/archives/2007/08/arctic-sea-ice-watch/) and the NSIDC site has maps and discussion of the progressive year to year thinning and loss of area of summer pack ice.

[n] Statement was made by Dr. Veli Albert Kallio, Finnish polar/ice scientist, at a meeting in Greenland on September 8, 2007. In Hansen (2007), cited below, leading climatologist James Hansen evaluates the inadequacy of glacial melt models, the IPCC 2007 sea level projection , the non-linearity of climate and glacial response, and the importance of short and long-term positive feedbacks that will dramatically affect global warming and sea level rise rates, but are not included in IPCC models.

Hansen, J.E., 2007. Scientific reticence and Sea Level Rise. Environmental Research Letters, Vol. 2, 024002. doi:10.1088/1748-9326/2/2/024002. Access at: http://www.iop.org/EJ/article/1748-9326/2/2/024002/erl7_2_024002.html#erl246875s4.

[o] From press release by British Antarctic Survey on June 5, 2007. Access at: http://www.antarctica.ac.uk/press/press_releases/press_release.php?id=91.

[p] Numerous journal articles and current research findings are finding that the Antarctic is responding to global warming because of slight atmospheric warming and the warming or water s reaching up under the floating ice shelves. Representative citation is: David G. Vaughan, D.G., Holt, J.W., and Blankenship, D.D., 2007. West Antarctic Links to Sea Level Estimation, *EOS, Transactions, American Geophysical Union,* Vol. 88, No. 446, p. 485-487.

Recent findings by NASA have documented widespread melting in west Antarctica in 2005 "up to 900 kilometers (560 miles) inland from the open ocean, farther than 85 degrees south (about 500 kilometers, or 310 miles, from the South Pole) and higher than 2,000 meters (6,600 feet) above sea level." (http://www.jpl.nasa.gov/news/news.cfm?release=2007-058; and http://winds.jpl.nasa.gov/publications/shelf_melting.cfm).

Most recently, Ringolt et al (2008) have reported dramatic increases in melting in the past decade primarily as a result of increased winds increasing ocean upwelling and circulation of warmer waters under the ice shelves. "In West Antarctica, widespread losses along the Bellingshausen and Amundsen seas increased the ice sheet loss by 59% in 10 years to reach 132±60 Gt yr^{-1} in 2006. In the Peninsula, losses increased by 140% to reach 60±46 Gt yr^{-1} in 2006." Reference: Eric Rignot, E., Bamber, J.L., van den Broeke, M.R., Davis, C., Yonghong Li, Y., van de Berg, W.J., and van Meijgaard, E., 2008. Recent Antarctic ice mass loss from radar interferometry and regional climate modeling. *Nature Geoscience,* doi:10.1038/ngeo102 (http://www.nature.com/ngeo/journal/vaop/ncurrent/abs/ngeo102.html).

[q] Committee co-chair Dr. Stephen Leatherman and member Peter Harlem provided a more detailed statement on sea level elevations as follows: For the International Hurricanes Research Center (IHRC) based LIDAR used locally (see reference below), its sea level is at datum NAVD88 which is the new standard and is corrected for problems with sea level in Florida and elsewhere which did not fit the old datum properly. NAVD88 is a fix for NGVD29 which was based on using a benchmark at Galveston, Texas as MLW (the old term for Mean Low Water). Generally, elevations here are actually lower than the old 29 standard found on most USGS maps and the difference can be close to a foot lower. The difference varies from location to location so you just cannot take a fudge factor and subtract it from the old maps to get the correct elevation.

For a description of datum used in the IHRC LIDAR data set see the descriptive document IHRC (2004), page 15. The elevations in IHRC LIDAR data are referenced to NAVD88. NAVD88 is a datum referenced to the terrestrial geoid and not directly translatable to general sea level. A general description of the difference between NAVD88 datum and the NGVD1929 datum is at: http://www.ngs.noaa.gov/PUBS_LIB/NAVD88/navd88report.htm.

National Hurricane Research Center, 2004. *Windstorm Simulation and Modeling Project: Airborne LIDAR DATA and Digital Elevation Models in Miami-Dade, Florida.* Final Report to the Miami-Dade County Enterprise Technology Services Department, 26p. Available online at: (http://www.ihrc.fiu.edu/lcr/data/data.htm) and the metadata of the online LIDAR data distribution site (http://gis.ihrc.fiu.edu/website/ihrclidar/metadata/miami_dade/metadata.htm).

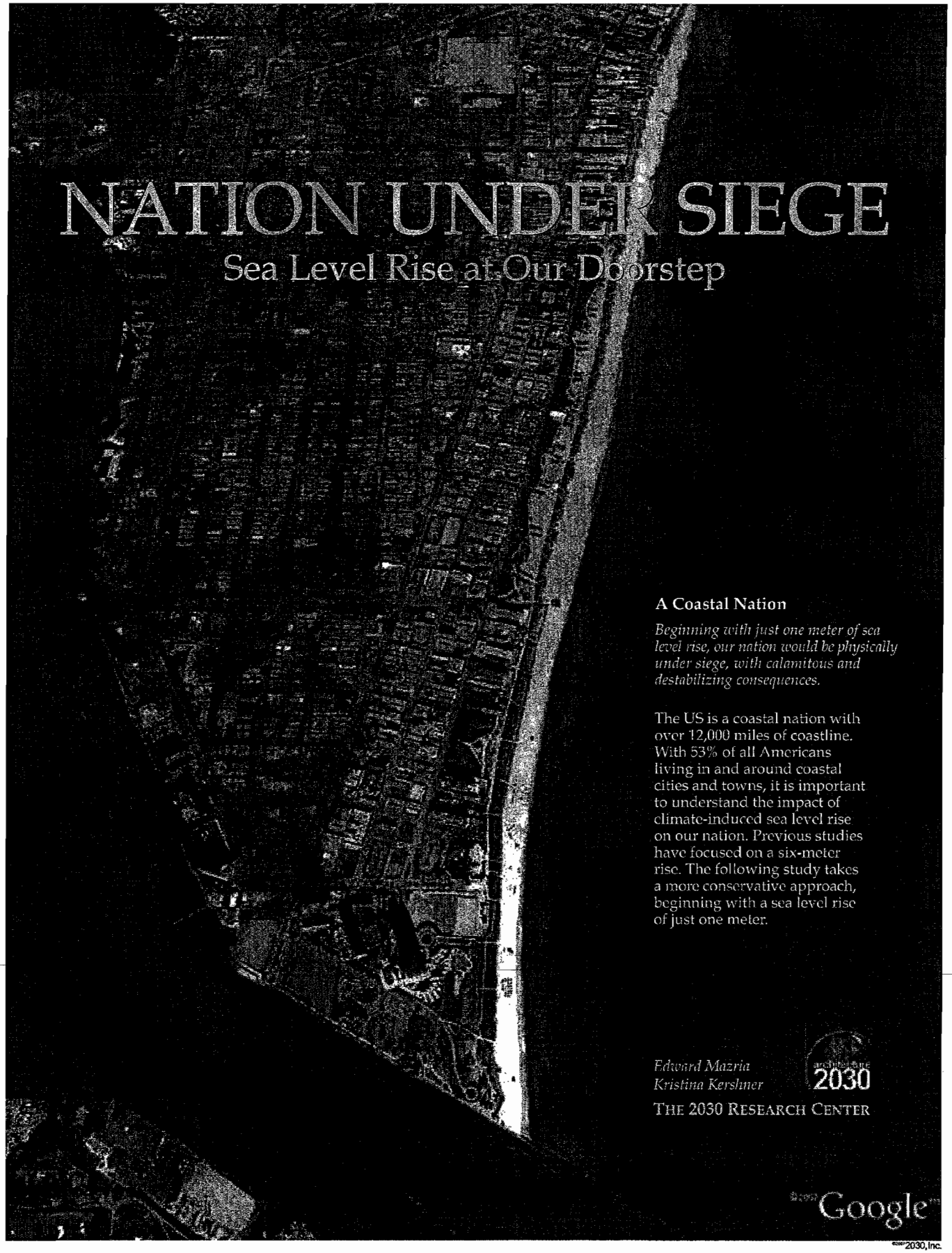
[r] The Science and Technology Committee was provided with a 'Climate Change Community Tool Box' by the South Florida regional Planning Council. We have looked at the maps to determine what they used to define elevations. Their +5 foot sea level rise map corresponds closely with the +5 foot contour on the topographic maps in which base level (zero elevation) is mean sea level relative to the datum of 1929 (NGVD 1929). In other words, it appears that their map for +5 foot sea level rise represents conditions at mean sea level prior to the approximately 0.8 feet of sea level rise since the 1929 datum was established. Mean higher high water (MHHW) today is about +2.5 feet above 1929 mean sea level, and with a two-foot rise in sea level would be about +4.5 feet. The +5 foot maps used by the SFRPC appear to reflect MHHW level only for about a sea level rise of about 2.5 feet.

This points out a general concern over mapping future projected sea levels. The maps should convey a number and level that is meaningful to the public and decision makers. Mean higher high water (MHHW) is a level that is reached on the average of twice a month. Some spring tides exceed this level by as much as a foot, but MHHW provides a level that is more meaningful than MSL when considering drainage, flooding, habitation, and wetlands.

[s] Since issuing this statement in September, 2007, several scientists of the IPCC have given very positive reviews of this statement (and none have criticized it). In addition, review articles in *Science* and elsewhere have made estimates similar to those in this statement. See also endnote 'n'.

Kerr, R.A., 2007. Pushing the scary side of global warming. *Science,* v. 316, p. 1412-1414.

[t] Meier, M.F., et al., 2007. Glaciers Dominate Eustatic Sea-Level Rise in the 21st Century, *Science,* vol. 317, p. 1064-1066; DOI: 10.1126/science.1143906



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Forward

We are at the crossroads of the most significant crisis of modern times. Two profound, life changing events are converging to create this crisis – the warming of the earth's atmosphere by burning fossil fuels, and the rapid depletion of global petroleum and natural gas reserves. We have all heard about the alarming planetary events that will occur if we fail to take decisive action to dramatically reduce greenhouse gas emissions, from species extinction and intensified weather events, to food and water shortages and rising sea levels. What we have failed to acknowledge is the severity with which this crisis will impact the United States.

Architecture 2030's mission is to examine the Building Sector, the single largest contributor to global warming, to construct and offer real, achievable, measurable solutions to the climate change crisis. Therefore, this study begins with a sober look at the impact of sea level rise on the US, and then provides a two-pronged solution that, if begun immediately, would avert dangerous climate change.

Edward Mazria
Executive Director
2030, Inc. / Architecture 2030

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NEW ORLEANS, LOUISIANA - 1-meter sea level rise
Population: Unknown Data Source: USGS 10M NED

Sea Level Rise

In order to accurately determine sea level rise along the US coast, base maps were constructed using United States Geological Survey - National Elevation Datasets (NED) for selected areas of interest. The NED is a seamless raster dataset of US elevations. Within the NED, the US is divided into 10 meter-by-10 meter squares, whose elevations correspond to the average elevation within a square. The NED is a compilation of elevation data from many sources, including LIDAR and USGS digital elevation models.

The Sea Level datum within the NED does not necessarily coincide with local mean sea level (MSL) along the US coastline. The elevations in the NED are based on the North American Vertical Datum, 1988 (NAVD88). The NAVD88 fixes Sea Level (zero elevation) at a particular point in Quebec, Canada. All US elevations within the NED are calculated relative to that zero point (adjusted for the curvature of the earth). For most purposes, the NAVD88 represents an acceptable standard for deciding elevations above Sea Level. Along a coastline, however, the level of the sea does not everywhere correspond to zero on the NAVD88. A correction was applied to the NED to bring it in line with actual local tidal conditions.

Once corrected sea levels were established, a flood-fill algorithm was used to determine contiguous inland access from the coastline for increased sea levels. For each area studied, the land-water edge, based on corrected sea level, was determined. The algorithm used this edge as the starting point of the flood-fill and moved inland. From each flooded point, the algorithm selected neighboring pixels that were at, or below, the corrected sea level. The algorithm continued from these neighboring points until no new points were selected.

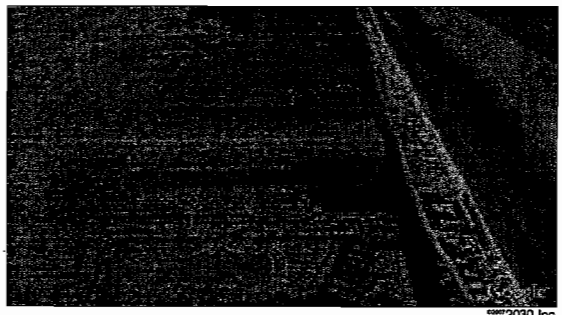
Flood maps generated using the flood-fill algorithm were then superimposed over Google Earth images to illustrate in detail how localities will be flooded on a calm, rain-free day at high tide at various increments of sea level rise [7].

Visual Imaging

It can be difficult to visualize and grasp the implications of sea level rise. This is due in part to the way mapping is presented, i.e. as a two-dimensional image. Two-dimensional maps provide little, if any, visceral connection for the viewer. To overcome this disconnect, we chose to present our data in a familiar format, that of looking out an airplane window at a city or town when making the approach for landing. By illustrating sea level rise mapping as an aerial, three-dimensional snapshot of a city or town, the images take on a sense of familiarity and immediacy, and by connection, gives the viewer a more realistic understanding of the physical impacts of sea level rise.

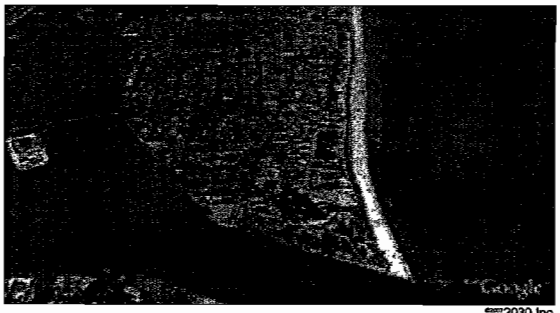
With a business-as-usual approach, where fossil-fuel consumption and GHG emissions continue to increase, we will likely see a warming of 2 °C to 3 °C this century with a planetary energy imbalance sufficient to melt enough ice to raise sea level by several meters.

HOLLYWOOD, FLORIDA
Population: 139,357

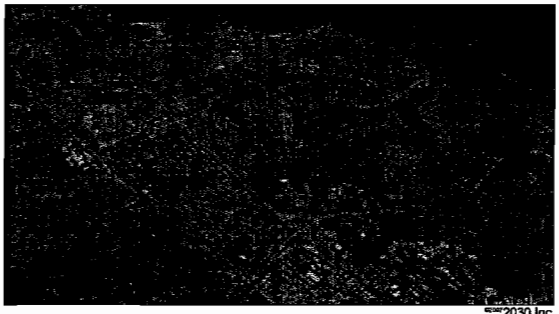


HOLLYWOOD, FLORIDA - 1-meter sea level rise
Population: 139,357 Data Source: LIDAR and USGS 10M NED

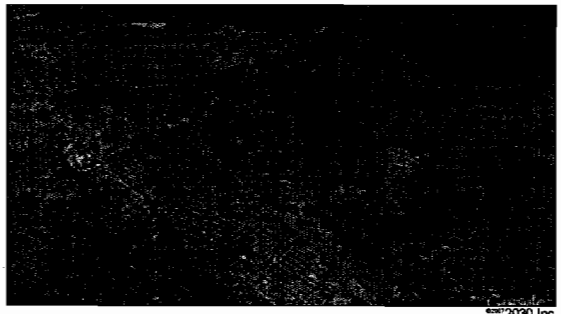
MIAMI BEACH, FLORIDA
Population: 87,933



MIAMI BEACH, FLORIDA - 1-meter sea level rise
Population: 87,933 Data Source: LIDAR IHRCS



FOSTER CITY, CALIFORNIA
Population: 23,803



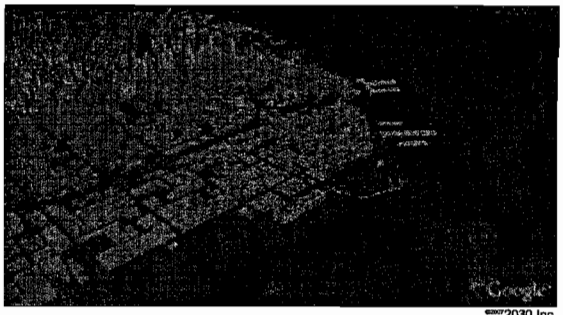
FOSTER CITY, CALIFORNIA - 1.25-meter sea level rise
Population: 23,803 Data Source: LIDAR 2M BCDC (USGS 10M verified)

MIAMI, FLORIDA
Population: 362,470

MIAMI, FLORIDA - 1.25-meter sea level rise
Population: 362,470 Data Source: LIDAR IHRCS

During the last interglacial period, 125,000 years ago, when the earth was this warm (2 °C to 3 °C warmer), sea level was four to six meters higher than today.

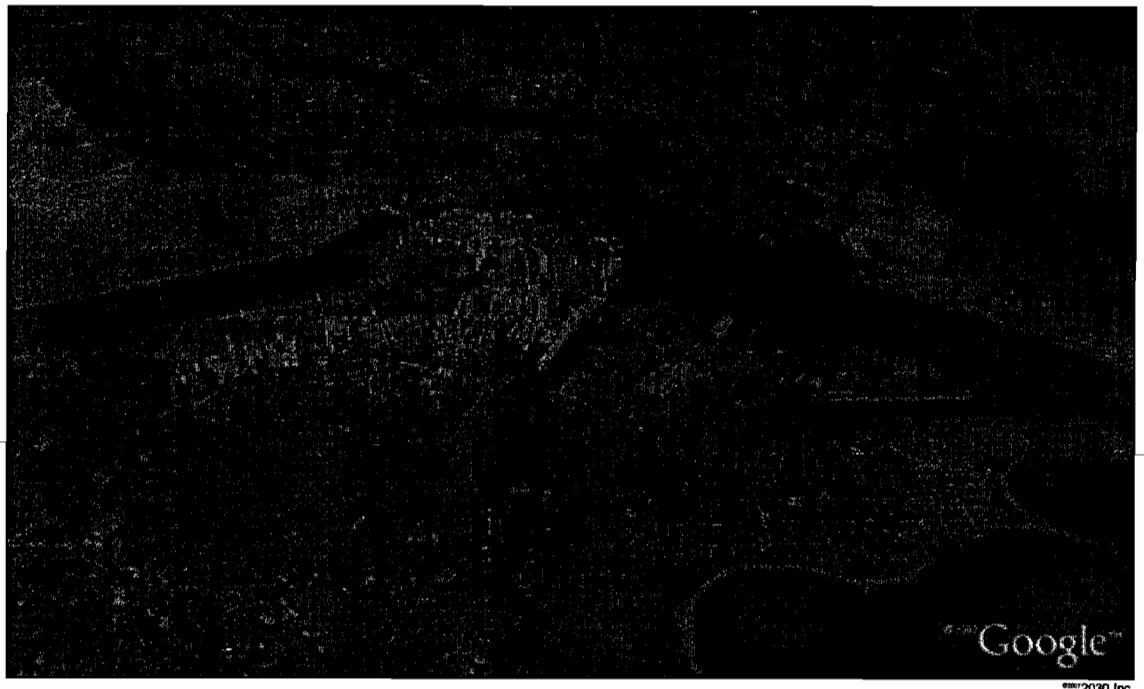
SAN FRANCISCO, CALIFORNIA
Population: 776,733



SAN FRANCISCO, CALIFORNIA - 2.25-meter sea level rise
Population: 776,733 Data Source: USGS 10M DEM

BOSTON, MASSACHUSETTS
Population: 589,141

BOSTON, MASSACHUSETTS - 3-meter sea level rise
Population: 589,141 Data Source: LIDAR and USGS 10M NED



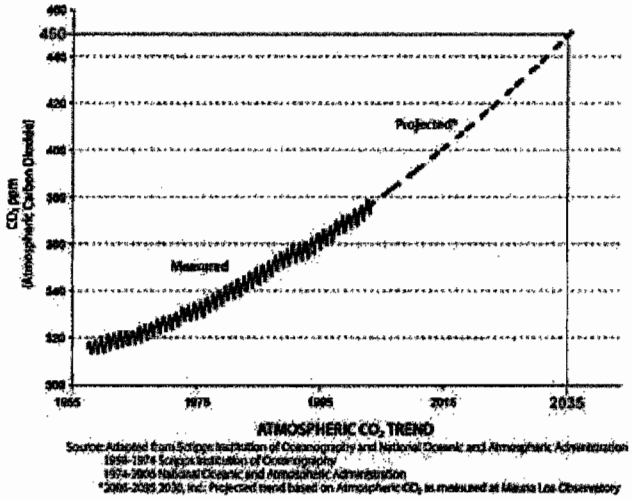
BOSTON, MASSACHUSETTS - 5-meter sea level rise
Population: 589,141 Data Source: LIDAR and USGS 10M NED

irreversible glacial melt and sea level rise "out of humanity's control". The amount of CO_2 in the atmosphere affects our planet's temperature. With concentrations of CO_2 currently at 383 ppm, the planet is now approximately 0.8 °C warmer than pre-industrial levels. Concentrations of 450 ppm corresponds to approximately 2 °C global warming above pre-industrial levels [8].

Timeline

Atmospheric concentrations of CO_2 are increasing at 2 ppm each year [9]. At this growth rate, we will reach 450 ppm in 2035.

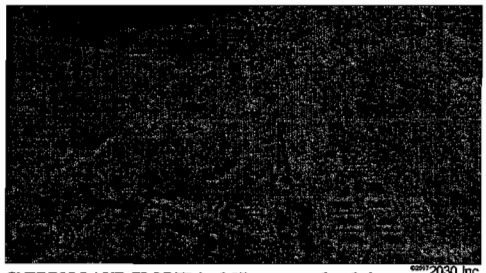
Continued growth of CO_2-producing infrastructure and emissions for another 10 years will make it impractical, and most likely impossible, to avert exceeding this threshold [10].



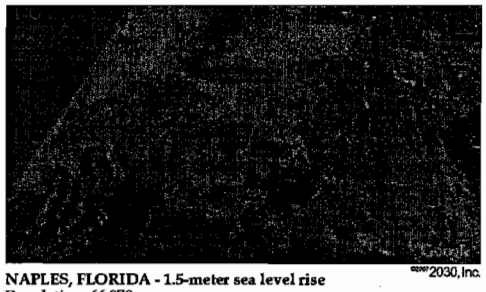
Fossil Fuels and Climate Change

During the "fossil fuel era", from ca. 1750 to the present, enough coal, oil and natural gas have been burned to increase CO_2 concentrations in the atmosphere from 260 ppm to 383 ppm. We are now reaching the peak in global oil production (US oil production peaked in 1970, natural gas in 1973). The global static lifetime of conventional oil is approx. 40 years, natural gas 60 years. As oil and gas peak their price will increase dramatically and alternatives will become more economically attractive. Oil and gas consumption will decline after the peak, being consumed more sparingly with their depletion rate stretching out over many years.

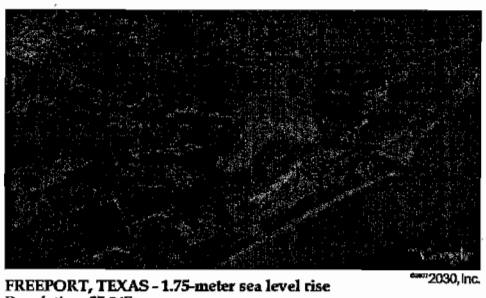
Because it is plentiful and inexpensive, the current trend is to meet the projected and increasing global demand for energy with coal. The US alone has 151 new conventional coal plants in various stages of development [11]. Globally, at least one new conventional coal-fired power plant is being added each week.



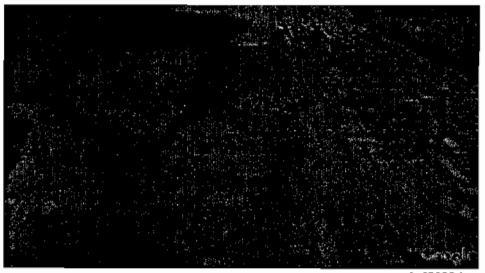
CYPRESS LAKE, FLORIDA - 1.25-meter sea level rise ©2007 2030, Inc.
Population: 12,072 Data Source: USGS 10M NED



NAPLES, FLORIDA - 1.5-meter sea level rise ©2007 2030, Inc.
Population: 66,878 Data Source: USGS 10M NED



FREEPORT, TEXAS - 1.75-meter sea level rise ©2007 2030, Inc.
Population: 57,247 Data Source: USGS 10M NED



SEATTLE, WASHINGTON - 3-meter sea level rise ©2007 2030, Inc.
Population: 563,374 Data Source: USGS 10M NED (LIDAR VERIFIED)

MARINA DEL REY, CALIFORNIA - 5-meter sea level rise ©2007 2030, Inc.
Population: 84,084 Data Source: USGS 10M NED

APPENDIX II

Climate Change Advisory Task Force
Initial Report

TO: Hon. Natacha Seijas
and Members of the GOE Committee

Hon. Bruno Barreiro
and Members of the Board
of County Commissioner

Date: July 10, 2007

Subject: **Initial Report of the Climate Change Advisory Task Force (CCATF)**

FROM: Harvey Ruvin, Miami-Dade County Clerk
Chair of the Climate Change Advisory Task Force

Pursuant to Ordinance No. 06-113, I am pleased to submit this initial report of CCATF to the Chair and Members of the GOE Committee and through them to the Chair and Members of the Board of County Commissioners.

This unanimous action by the Board of County Commissioners acknowledged what the overwhelming scientific evidence has confirmed - that the planet is warming, in fact accelerating, leading to a range of potentially devastating impacts; including sea level rise, more extreme climate events (i.e. hurricane intensities), forest fires, floods, droughts and extensions of tropical disease vectors to name just a few. There is a continuing discussion regarding both the pace of these impacts and what exact measures will be needed to address both the causes and effects.

Miami-Dade County's early and trailblazing efforts to reduce greenhouse gas emissions (GHG) through its "Long-Term Urban CO_2 Reduction Plan" developed in the early 1990's as a founding member of the International Council for Local Environmental Initiatives (ICLEI) and its Cities for Climate Protection Campaign successfully quantified the reduction/avoidance of over 34 million metric tons of carbon through a broad range of measures. A great deal more needs to be done, and it is clear that even if all global GHG emissions would cease now, we would still

be facing decades of climate change impacts as a result of emissions already released into the atmosphere.

It is, therefore, crucial that we begin planning now for these future impacts; to more clearly identify them and to begin taking the steps needed to prevent, minimize or mitigate them as best we can as soon as we can.

The creation of the CCATF and its adequate staffing was, I believe, a major step in this long term and challenging process. The Task Force's 25 members (appointed by the Board, the Mayor and the Manager) are a diverse, multi-disciplinary and highly knowledgeable group of individuals representing various sectors of the community. They are charged with identifying potential future impacts to Miami-Dade County, prioritizing these impacts, and then providing recommendations to the Board of County Commissioners regarding actions that should be taken to begin planning for and mitigating these impacts. This is an extremely challenging task because the potential impacts are so diverse, yet overlap and affect each other in many ways. The challenge also lies in determining which ones may occur first, which in turn may depend on the type and severity of climate change experienced in the southeastern United States. Furthermore, the Task Force must also identify potential options for addressing the impacts and determine which are more viable for recommendation and implementation; in addition to continuing the GHG reduction efforts initiated in the "Long-Term CO_2 Reduction Plan".

Once appointments were completed, the CCATF began its meetings. In just four (4) meetings, the Task Force has taken concrete steps forward. The first two meetings on February 23, 2007, and March 15, 2007, focused on general discussions of the Task Force's role and goals, and devoted time for providing information on climate change science. The first meeting included a general overview of the Task Force responsibilities and provided an open forum for the members and guests to introduce themselves and describe their expertise and what they feel they can contribute to the Task Force as well as to bring them current on prior actions. The following presentations were provided:

February 23, 2007

"Miami-Dade County Urban CO_2 Reduction Program" presented by Chairman Harvey Ruvin and Climate Change Program Coordinator Nichole Hefty.

March 15, 2007

"Considerations of Long-Term Climate Variability and Change in Hydrologic Planning and Operations" presented by Paul Trimble, Lead Engineer, South Florida Water Management District

"A Regional Perspective on Climate Change" presented by Rebecca Garvoille, Regional Planner, South Florida Regional Planning Council

April 19, 2007

"Global Warming and Sea Level in South Florida" presented by Dean Hal Wanless, University of Miami Department of Geological Science

In addition, several articles and web links have been provided to the Task Force members and invitees to further educate them on the science of climate change and provide information on current climate change developments. This information included the following:

List of Information Resources Provided to CCATF Members

- Web link to the complete The Stern Review Report: The Economics of Climate Change, published by the United Kingdom Government in October of 2006
- Copy of the "Summary of Conclusions" from The Stern Review Report: The Economics of Climate Change, published by the United Kingdom Government in October of 2006
- Copy of A Long Term CO2 Reduction Plan for Miami-Dade County, Florida; 1993 – 2006, published by Miami-Dade County in January 2007
- Copy of the "Executive Summary" of Confronting Climate Change: Avoiding the Unmanageable and Managing the Avoidable, published by the United Nations Sigma XI – Scientific Expert Group on Climate Change in February 2007
- A web link to the U. S. Supreme Court ruling that EPA must treat CO_2 as a pollutant
- A web link to the Intergovernmental Panel on Climate Change (IPCC) web site for access to recent reports published by the Working Groups in 2007, specifically the two most recent: February 2007 on State of Science and April 2007 on Vulnerability and Adaptation

The two subsequent meetings on April 19, 2007 and June 6, 2007, focused more on establishing a structure for the Task Force and taking certain steps forward. During the third meeting on April 19, 2007, Mr. Jim Yienger, Policy Director for the International Council for Local Environmental Initiatives (ICLEI) Local Governments for Sustainability, U.S.A., Inc., presented ICLEI's Climate Resilient Communities Campaign (CRC) to the Task Force and invited Miami-Dade County to become one of its key pilot communities. The Climate Resilient Communities Campaign includes a 5-milestone process similar to the Cities for Climate Protection Campaign that Miami-Dade County joined in the early 90's, which provided the framework upon which the County created and implemented its aforementioned Urban CO_2 Reduction Program. The CRC program establishes important steps for a community to take in their

climate change adaptation planning and helps the community measure their progress. In addition, ICLEI staff provides resources and technical assistance for implementation of the program. After listening to Mr. Yienger's presentation, the Task Force members agreed that participating in this program would support the County's efforts in adaptation and voted to accept the invitation of the Climate Resilient Communities Campaign. In addition, during this meeting, Mr. Jim Murley of the Florida Atlantic University and former Secretary of the Florida Department of Community Affairs, was elected unanimously as the Vice-Chair of the CCATF.

The County's support and commitment to climate change adaptation planning was demonstrated by introducing ten individuals present as the meeting who are employees of various county departments and would be serving as liaisons between these departments and the Task Force. The County Manager directed several departments to appoint a staff person to serve as a liaison to provide information and staff support to the Task Force and its committees. These departments are expected to be involved in the Task Force's recommendation development and implementation, and include Aviation, Seaport, Emergency Management, Transit, Public Works, Capital Improvements, Housing, Planning & Zoning, Water & Sewer, Environmental Resources Management, Solid Waste, Budget and General Services Administration. Additional departments may be asked to appoint a liaison if they are identified as being important in the planning and implementation process. Furthermore, Mr. Ruvin advised the meeting attendees that the establishment of an Office of Sustainability was being considered within the County Manager's Office that would further support and coordinate these efforts.

The fourth meeting on June 6, 2007, was kicked off by Mayor Carlos Alvarez and Commissioner Natacha Seijas expressing their support for the Task Force and its efforts, which was followed by the Mayor signing a Proclamation Endorsing the U.S. Conference of Mayors' Climate Protection Agreement. With this Agreement, the County agrees to strive to meet or exceed the Kyoto Protocol target of reducing global warming pollution levels to 7% below 1990 levels by the year 2012. This is a natural action for Miami-Dade County since it has been taking steps to reduce greenhouse gas emissions since 1993, and is already implementing many of the measures specifically mentioned in the Agreement. Nearly 500 Mayors nationwide and some 33 in Florida have signed. It is noted that ICLEI has entered into a formal agreement with the USCM to provide "tool box" consultant services.

The meeting then addressed the nitty-gritty of how we should organize ourselves and to an open discussion of a Work Plan and Timetable and the Mission Statements and memberships of the seven committees appointed by the Chair (all attached). While leadership of the committees must be Task Force members, membership will include other community stakeholders as needed and county department liaisons.

The Mission Statement document provides the committees with a focus in the areas tasked. Several committees have already held meetings and, given summer

schedules, all will begin the process with the aim of each committee bringing back to the full Task Force an initial list of priority recommendations by September. It is both our hope and anticipation to begin the more formal process of initial recommendations to the GOE and the Board in the final quarter of 2007.

In addition, we will soon be announcing the establishment of a CCATF Webpage to provide the highest level of interactivity and transparency to our work.

On behalf of the Task Force members and others that have committed their time and energies to this effort, I wish to thank the Mayor and the Board for its vision and support.

Attachments: Committee Lists
Committee Mission Statements
Work Plan and Timeline

cc: Honorable Carlos Alvarez, Mayor
George Burgess, County Manager
Roger Carlton, Assistant County Manager
Honorable Joseph P. Farina, Chief Judge
CCATF Members and other participants

CLIMATE CHANGE ADVISORY TASK FORCE COMMITTEES

Steering Committee
Mr. Harvey Ruvin, Chair , Miami-Dade Clerk of Courts
Mr. Jim Murley, Vice-Chair, FAU Ctr.for Environmental & Urban Sol'ns
Committee Chairs
Sustainability Officer
Mr. Nick Bollman

Intergovernmental Committee
Carolyn Dekle, Chair, Director of S. FL Regional Planning Council
Andy Gazitua, Vice Chair, Special Advisor to Mayor Carlos Alvarez
Jose Fuentes, Director, S. FL Water Mgmt Dist. Miami-Dade Regional Svc. Ctr.
Sean McCrackine, Aide to Commissioner Sorenson
Barry Heimlich, Broward Audobon
Annette Hughes, The British Consulate
Dr. Claudius Carnegie, Director II, M-D Cty. Public Schools Regulatory Compliance
Michael Amador-Gil, Emergency Mgmt. Coordinator, *M-D Ofc. of Emerg. Mgmt.*

Science Committee
Hal Wanless, Co-Chair, Professor, Univ. of Miami Dept. of Geological Science
Stephen Leatherman, Co-Chair, Director, Intnat'l Hurricane Ctr., FIU
Royce Burnett
Lyn Cardoch, MWH Americas, Inc.
Joe Siry, Associate Director, Rollins College
Rajiv, Srivastava, Assoc. Director, Arc Applied Research Ctr., FIU
Mary Doyle, Exec. Director, Leonard & Jane Abess Ecosystem & Policy Ctr., Univ. of Miami
David Letson, National Oceanic & Atmospheric Admin.
Georgio Tachiev, Associate Dir., Arc Applied Research Center, FIU
Rebecca Garvoille, Regional Planner, S. FL Regional Planning Council
Doug Yoder, Assistant Director, *M-D Water & Sewer Dept.*
(Jack Parker)

CLIMATE CHANGE ADVISORY TASK FORCE COMMITTEES

Natural Systems
Dan Kimball, Chair, Superintendent, Everglades National Park
Alan Farago, Vice Chair, Everglades Defense Council
Bob Wallace
Cynthia Guerra, M-D Dept. Environmental Resources Mgmt.
Antonio Llano-Montes, Chairman, Save the Everglades Water & Wildlife
Mark Kraus, Audobon of Florida
Leonard Abess, Chairman & CEO, City National Bank of Florida
Maria Nardi, M-D Parks & Recreation Dept.
Rod Jude

Economic, Social & Health Committee
Dan Kipnis, Chair, Florida Wildlife Federation
John Bethea, Vice Chair, Educator
Hugh Gladwin, Professor, FIU
Katie Edwards, Executive Director, Dade County Farm Bureau
Royce Burnett, Asst. Professor, Dept. of Accounting, UM
Adriana Cantillo, Physician
John Sarduy, *M-D Ofc. of Strategic Business Mgmt.*
Bill Talbert, Grtr. Miami Convention & Visitor's Bureau
Greg Bush
Tony Moss, Law Ofc. of Tony Moss, P.A.
Dr. Fermin Leguen, Chief Physician, M-D County Health Dept.
Don Pybas,
Paul Yavis, Green Committee, Surfside

Built Environment
Elizabeth Plater-Zyberk, Chair, Dean, Univ. of Miami School of Architecture
Guillermo Olmedillo, Vice Chair
Rafael Rodon, Flagler Development Group
Nancy Liebman
Marcus Frankel, Frankel Benayoun Architects, Inc.
Arsenio Millian, Millian, Swain & Associates
Alfredo Ravinet, Professor, FIU Engineering Center
Pedro Hernandez, *M-D Aviation Dept.*
Ada Bao-Garciga, *M-D Aviation Dept.*
Hugh Chen, *M-D Transit Authority*
Becky Hope, *M-D Seaport*
Ines Beecher, *M-D Public Works*
Luisa Millian Donovan, *M-D Ooffice of Capital Improvements*
Patrick Brown, *M-D Housing Authority*
Paula Church, *M-D Planning & Zoning*

Greenhouse Gas Reduction Committee
Richard Pettigrew, Chair
Manny Rodriguez, Vice Chair , Miami-Dade Regional Director, FPL
Morgan Levy
Jane Gilbert, Dream in Green
Ana Guiterrez, *M-D GSA*
Armando Cabrera, *M-D DSWM*
Nichole Hefty, *M-D DERM*
Charles Dusseau, Founding Director, Bank of Coral Gables
Roman Gastesi, Chair, Grtr. Miami Chamber of Commerce Nat. Resources & Mgmt. Committee
Sean O'Hanlon, American Biofuels Council
Mark Hamilton, *M-D GSA*
Jack Parker, Professor, Environmental Studies Dept., FIU
(Barry Heimlich)

MIAMI DADE COUNTY CLIMATE ADVISORY TASK FORCE

Committee Mission Statements
May 8, 2007

1. **Scientific and Technical Committee**
   To provide the Advisory Task Force and its Committees with the best possible scientific and technical information and analysis on the possible near-term and long-term impacts of climate change on the Miami Dade region; these impacts may include, but are not limited to, to sea level rise, saltwater intrusion, fires, and severe weather -- hurricanes, floods, droughts and heat waves. The information should address the efficacy and cost-benefit of strategies to mitigate these impacts through greenhouse gas emission reductions; to adapt and adaptively manage our natural systems and the built environment; and the potential economic, social and health impacts of climate change and climate change solution strategies. The Committee will assist the Task Force to interpret and communicate this scientific and technical information to policymakers and to the general public.

2. **Greenhouse Gas Reduction Committee**
   To provide the Advisory Task Force with recommendations for effectively mitigating climate change through greenhouse gas reductions in the near-term and long-term, building on existing Miami Dade policies and practices and drawing on the best practices from cities and regions across the United States and around the world. The Committee will recommend ways to foster equivalent and coordinate commitments and actions among businesses, communities, households and individuals to reduce greenhouse gas emissions.

3. **Natural Systems Adaptation Committee***
   To provide the Advisory Task Force with recommendations for adaptation and adaptive management of natural systems to predicted climate impacts. These systems include, but are not limited to, land and marine ecosystems, natural species, beaches and parklands, water supplies, agricultural lands and other natural resource systems. The Committee will develop standards and strategies for natural system "resiliency:" prevention of adverse consequences and response and recovery from future conditions and events. The Committee will identify effective tools for natural systems adaptation: goals, policies, programs, funding and measures of progress and success.

4. **Property and Infrastructure Adaptation Committee***
   To provide the Advisory Task Force with recommendations for adapting and adaptive management of the existing and future "built environment," to react to and mitigate predicted climate impacts. This includes, but is not limited to, all forms of public and private property: homes, office buildings industrial and commercial facilities, etc.; and infrastructure and modifications of

* The Advisory Task Force has agreed to become a "pilot" program in the "Climate Resilient Communities Campaign" of ICLEI, an international association of local governments that have made a commitment to sustainable development.

infrastructure systems -- roads, rail, ports and airports, bridges, waterways, and public works. The Committee will develop standards and strategies for property and infrastructure systems "resiliency:" prevention of adverse consequences and response and recovery from future conditions and events. The Committee will identify effective tools for property and infrastructure adaptation: goals, policies, programs, funding and measures of progress and success.

5. **Economic, Social and Health Issues Committee**
   To provide the Advisory Task Force with analysis and recommendations regarding the economic, social and health impacts of climate change. It is especially important that the Committee focus on the most important economic sectors of the Miami Dade region: tourism, development, trade, agriculture and others. On the one hand, the Committee will develop recommendations to minimize and ameliorate the possible negative impacts of climate change -- as well as considerations with respect to the recommendations for greenhouse reduction and adaptation policies and strategies - that take into account the economic, social and health interests of the businesses and people of Miami Dade County. In particular, the Committee will recommend ways to avoid disparities in the impact upon low-income, fixed-income or other potentially disadvantaged people and communities. On the other hand, climate change solutions, particularly in the realm of adaptation, may offer Miami Dade businesses, workers, financial institutions and investors, universities -- and other entities with an economic interest in this issue -- with an opportunity to develop and market products and services for the rest of the country and the world, and thereby represent an economic opportunity for the region. The Committee will provide the Task Force with recommendations to promote that opportunity.

6. **Intergovernmental Affairs Committee**
   To provide the Advisory Task Force with information and analysis about the climate change strategies and actions among other governmental entities: within the broader south Florida region, among communities across the state, within state government and at the national and international level. The Committee will pay special attention to opportunities for the Commission to add its voice to those of others to promote policies and programs that will help Miami Dade, Florida and the nation to address climate change more effectively. The Committee will also identify opportunities for collaboration with other governmental entities, where such action would enhance the ability of Miami Dade more effectively to address climate change. The Committee will also seek ways to communicate effectively the climate change issue and the recommended Advisory Task Force solutions.

Miami-Dade County Climate Change Advisory Task Force

Workplan Timeline

Draft 6.6.07

June-September 2007

Committees meet (suggested: monthly) to develop the following:

1. 3-5 critical - highest priority -- questions/issues on which the Committee (and the Task Force) should focus its work in the next year.
2. Key resources to assist the Committee with expert advice on these issues.
3. Key stakeholder sectors/organizations whose engagement with the issues would be useful for reaching a broad constituency for supporting recommendations; an outreach process for stakeholder involvement.
4. Preliminary framework for actions. Framework to include: basic principles for the policy approach; potential actions to be taken (by MDC, state or federal government, others); outcomes to be achieved (short-term, long-term). Staff will provide committees with a uniform outline for such a framework.

September 2007

Task Force meets, perhaps in a lengthened session (10 a.m. - 3 p.m., with lunch) to hear, discuss and affirm Committee frameworks and provide further direction to Committees.

September-November 2007

1. Committees conduct outreach with expert resources and key stakeholders to present and discuss framework proposal.
2. Committees develop specific draft recommendations.

November 2007

1. Task Force meets to review Committee draft recommendations and adopt draft Task Force recommendations.
2. Task Force draft recommendations presented for first review to Board of County Commissioners.

December 2007

1. As necessary, Committees meet to review and respond to Board of County Commissioners requests/suggestions.
2. As necessary, further Committee outreach to stakeholders.

January-February 2008

1. Committees meet to review and discuss revised draft recommendations.
2. Task Force meets to review and adopt revised Committee recommendations.
3. Task Force presents revised draft recommendations to Board of County Commissioners

March-April 2008

1 Task Force, Committees - and perhaps stakeholders - engage with public education, outreach, implementation of adopted recommendations.
2. Task Force, Committees - and perhaps stakeholders - present recommendations to other levels of government, private sector, etc.

April-May 2008

1. Task Force meets to review accomplishments from work-to-date and preview work priorities going forward, if authorized.
2. Committees meet to develop Workplan directions for 2008-09.

June 2008

Task Force meets to review and adopt 2008-09 Workplan.

APPENDIX III

Climate Change Advisory Task Force Committees

STEERING COMMITTEE

Mr. Harvey Ruvin, M-DC Clerk of Courts, *Climate Change Advisory Task Force Chair*

Mr. Jim Murley, FAU, Center for Urban & Environmental Solutions, *Climate Change Advisory Task Force Vice-Chair*

Dr. John R. Bethea, Miami-Dade County Resident

Ms. Carolyn Dekle, South Florida Regional Planning Council

Mr. Alan Farago, Everglades Defense Council

Mr. Luis "Andy" Gazitua, Office of the County Mayor

Ms. Nichole Hefty, M-DC Environmental Resources Mgmt.

Dr. Stephen Leatherman, International Hurricane Research Center, FIU

Mr. Dan Kimball, Everglades National Park

Capt. Dan Kipnis, Florida Wildlife Federation

Mr. Guillermo Olmedillo, OMEDILLO X 5, Inc.

Mr. Richard Pettigrew, Esq.

Ms. Elizabeth Plater-Zyberk, Duany Plater-Zyberk & Company, LLC

Mr. Manny J. Rodriguez, P.E., FPL

Ms. Susannah Troner, M-DC Office of Sustainability

Dr. Hal Wanless, Dept. of Geological Sciences, U of M

NATURAL SYSTEMS ADAPTATION (NSA) COMMITTEE

Mr. Dan Kimball, Everglades National Park, *Committee Chair*

Mr. Alan Farago, Everglades Defense Council, *Committee Vice-Chair*

Mr. Leonard Abess, City National Bank

Mr. David Anderson, Audubon of Florida

Dr. Ronnie Best, United States Geological Survey

Ms. Cynthia Guerra, M-DC Environmental Resources Mgmt.

Ms. Nichole Hefty, M-DC Environmental Resources Mgmt.

Mr. Roderick Jude, Sierra Club

Dr. Mark Kraus, The Everglades Foundation

Dr. Susan Markley, M-DC Environmental Resources Mgmt.

Mr. Mike Maunder, Fairchild Tropical Botanic Garden

Ms. Maria Nardi, M-DC Parks & Recreational Dept.

Mr. Matt Patterson, National Park Service

Mr. Don Pybas, U of F/IFAS, M-DC Cooperative Extension

Mr. Lanny Smith, The Earthman Project

SCIENCE COMMITTEE

Dr. Hal Wanless, Department of Geological Sciences, U of M, *Committee Co-Chair*

Dr. Stephen Leatherman, International Hurricane Research Center, FIU, *Committee Co-Chair*

Dr. John R. Bethea, Miami-Dade County Resident

Dr. Royce Burnett, School of Business, U of M

Dr. Adriana Cantillo, National Oceanic and Atmospheric Administration (Retired)

Dr. Lynette Cardoch, MWH Americas, Inc.

Ms. Diana Cornely, M-DC Parks & Recreation Dept.

Dr. Will Drennan, Applied Marine Physics & Undergraduate Ecosystem Science and Policy Program, U of M

Dr. David Enfield, Physical Oceanography Division, National Oceanic & Atmospheric Administration

Ms. Rebecca Garvoille, Graduate Student, Dept. of Sociology and Anthropology, FIU

Mr. Peter Harlem, Southeast Environmental Research Center, FIU

Ms. Nichole Hefty, M-DC Environmental Resources Mgmt.

Dr. James Klaus, Dept. of Geological Sciences, U of M

Mr. Orestes Lavassas, LAVA Corp.

Dr. David Letson, Rosenstiel School of Marine & Atmospheric Science, U of M

Dr. John Meeder, Southeast Environmental Research Center, FIU

Dr. Joseph Siry, Dept. of Environmental Studies, Rollins College

Dr. Georgio Tachiev, Dept. of Civil and Environmental Engineering, FIU

Dr. John Van Leer, Rosenstiel School of Marine & Atmospheric Science, U of M

Dr. Doug Yoder, M-DC Water & Sewer Dept.

BUILT ENVIRONMENT (BE) COMMITTEE

Ms. Elizabeth Plater-Zyberk, Duany Plater-Zyberk & Company, LLC, *Committee Chair*

Mr. Guillermo Olmedillo, OLMEDILLO X 5 Inc., *Committee Vice-Chair*

Dr. Ricardo Alvarez, Dept. of Construction Mgmt., FIU

Ms. Aida Bao-Garciga, M-DC Aviation Dept.

Mr. Gene Beck, FPL

Dr. John R. Bethea, Miami-Dade County Resident

Mr. Patrick Brown, M-DC Housing Authority

Mr. Spero Canton, Comcast Cable

Mr. Hugh Chen, M-DC Transit Dept.

Ms. Paula Church, M-DC Planing & Zoning Dept.

Mr. Marcus Frankel, Frankel Benayoun Architects, Inc

Mr. Andrew Georgiadis, Dover, Kohl & Partners

Ms. Nichole Hefty, M-DC Environmental Resources Mgmt.

Mr. Pedro Hernandez, M-DC Aviation Dept.

Ms. Becky Hope, M-DC Seaport

Mrs. Nancy Liebman, Miami-Dade County Resident

Mr. Octavio Marin, M-DC Public Works Dept.

Mr. Tom Marko, M-DC Ofc. of the County Manager

Ms. Jenny May, Coldwell Banker Residential R.E.

Mr. Sean McCrackine, Ofc. of Commissioner Katy Sorenson

Mr. Arsenio Milian, Milian Swain & Associates

Ms. Luisa Millan Donovan, M-DC Ofc. of Capital Improvements

Ms. Carolyn Mitchell, Zyscovich, Inc.

Mr. Lucia Perez, South Florida Water Mgmt. District

Dr. Alfredo Ravinet, Engineering Center, FIU

Ms. Alyce Robertson, M-DC Community Image Manager

Mr. Rafael Rodon, Flagler Development Group

Mr. Norbert Seals, The Ptolemy Group, Inc.

Mr. Fred Shields, M-DC Transit Dept.

Mr. Evan Skornick, South Florida Water Mgmt. District

ECONOMIC, SOCIAL & HEALTH (ES&H) COMMITTEE

Capt. Dan Kipnis, Florida Wildlife Federation, *Committee Chair*

Dr. John R. Bethea, Miami-Dade County Resident, *Committee Vice-Chair*

Ms. Colleen Ahern-Hettich, Miami-Dade College

Dr. Greg Bush, Miami-Dade County Resident

Ms. Sherry Capers, M-DC Emergency Mgmt. & Homeland Security

Dr. Samir Elmir, M-DC Health Dept.

Mr. Evan Flugman, Environmental Studies Dept., FIU

Dr. Hugh Gladwin, Inst. For Public Opinion Research, FIU

Mr. Jesse Glickstein, Faiths United for Sustainable Energy

Dr. Fermin Leguen, M-DC Health Dept.

Mr. Tony Moss, Law Office of Tony Moss, P.A.

Mr. Ned Murray, The Metropolitan Center, FIU

Mr. Joe Naroditsky, Faiths United for Sustainable Energy

Mr. Don Pybas, U of F/IFAS, M-DC Cooperative Extension

Mr. Lanny Smith, The Earthman Project

Mr. Juan A. Suarez, M-DC Health Dept.

Ms. Susannah Troner, M-DC Ofc. of Sustainability

GREENHOUSE GAS (GHG) REDUCTION COMMITTEE

Mr. Richard Pettigrew, Esq., *Committee Chair*

Mr. Manny J. Rodriguez, P.E., FPL, *Committee Vice-Chair*

Mr. Ray Abrahante, M-DC General Services Administration

Mr. Manuel Bazzani, M-DC Aviation Dept.

Dr. John R. Bethea, Miami-Dade County Resident

Mr. Derek Bradchulis, M-DC Env. Resources Mgmt.

Mr. Fred Cartaya, Biodiesel of South Florida

Mr. Rick Cartaya, Biodiesel of South Florida

Dr. Armando Cabrera, M-DC Solid Waste Mgmt.

Mr. Ken Capezzuto, Environmental Health & Safety, U of M

Mr. Charles Dusseau, Bank of Coral Gables

Mr. Roman Gastesi, Greater Miami Chamber of Commerce

Ms. Jane Gilbert, Dream in Green

Ms. Debbie Griner, M-DC Environmental Resources Mgmt.

Ms. Ana Gutierrez, M-DC General Services Administration

Mr. Glen Hadwen, Ofc. of Sust. Initiatives, City of Miami

Mr. Mark Hamilton, M-DC General Services Administration

Ms. Nichole Hefty, MD-C Environmental Resources Mgmt.

Mr. Barry Heimlich, Center for Urban & Env. Solutions, FAU

Mr. Pedro Hernandez, M-DC Aviation Dept.

Mr. Orestes Lavassas, LAVA Corp.

Ms. Edith McClintock, Ofc. of Sust. Initiatives, City of Miami

Mr. Sean McCrackine, Ofc. of Commissioner Katy Sorenson

Mr. Mike Moreno, Biodiesel of South Florida

Mr. Sean O'Hanlon, American Biofuels Council

Dr. Jack Parker, Environmental Studies Dept., FIU

Ms. Cathy Grimes Peel, M-DC Consumer Services Dept.

Mr. Km! Ra, M-DC Procurement Mgmt. Dept.

Mr. Fred Shields, M-DC Transit Dept.

Mr. Gustavo Suarez, M-DC General Services Administration

Ms. Susannah Troner, M-DC Office of Sustainability

Mr. Patrick Wong, M-DC Environmental Resources Mgmt.

INTERGOVERNMENTAL AFFAIRS (IGA) COMMITTEE

Ms. Carolyn Dekle, South Florida Regional Planning Council, *Committee Chair*

Mr. Luis "Andy" Gazitua, Office of the County Mayor, *Committee Vice-Chair*

Mr. Michael Amador-Gil, M-DC Office of Emergency Mgmt. & Homeland Security

Ms. Vanessa Brito, The Metropolitan Center, FIU

Dr. Claudius Carnegie, M-DC Public Schools

Ms. Isabel Cosio Carballo, South Florida Regional Planning Council

Mr. Jose Fuentes, The WREN Group

Ms. Nichole Hefty, M-DC Environmental Resources Mgmt.

Mr. Barry Heimlich, Center for Urban & Environmental Solutions, FAU

Ms. Annette Hugues, British Consulate - Miami

Mr. Sean McCrackine, Office of Commissioner Katy Sorenson

Dr. Dario Moreno, The Metropolitan Center, FIU

Mr. Jim Murley, Center for Urban & Environmental Solutions, FAU

Mr. Terry Murphy, Office of Commissioner Natasha Seijas

Mr. Lucia Perez, South Florida Water Mgmt. District

Mr. Evan Skornick, South Florida Water Mgmt. District

Ms. Susannah Troner, M-DC Office of Sustainability

APPENDIX IV

Miami-Dade County 2007 Review
Of County Owned Light Vehicles

MIAMI-DADE COUNTY

REVIEW OF COUNTY OWNED LIGHT VEHICLES

(2007)

EXECUTIVE SUMMARY

At the County Manager's request, the review of County light vehicles was conducted with the objective of right-sizing the fleet of cars and light trucks, to assess vehicle purchasing and assignment practices, opportunities for reduction in fuel usage, emissions and ultimately, fleet costs. Light vehicles are defined as cars, light trucks and sport utility vehicles and may or may not be outfitted with special tooling such as portable welding machines, compressors, pumps, tool boxes, computer mounting brackets and the like. The review was conducted with the assistance of the General Services Administration Department (GSA) and user departments. The Department of Environmental Resource Management (DERM) also provided emissions and pollution data.

As of March 2007, the County's light vehicle fleet consisted of 8,862 vehicles, including police vehicles, of which 8,052 (91%) are assigned to individual County departments, 701 (8%) are retained for the countywide vehicle Loaner Program managed by GSA, and 109 (1%) are assigned to other non-County agencies. It is recommended that the County reduce the fleet by 606 vehicles (8% of the County's fleet). Excluding the vehicles assigned to the Police Department, the recommended reduction represents an 10% reduction in the remaining County light fleet. It is also recommended that the County cease 379 (25%) of the 1,500 24-hour vehicle assignments. Together, these reductions will result in an estimated $3.9 million in fleet cost reduction (based on the average cost of ownership). It should be noted however, that actual savings will vary based on the specific vehicle types removed from the fleet.

These fleet reductions will also result in reduced fuel consumption of approximately 617,000 gallons per year or 7% of current annual purchase volume. County vehicle pollution will also be reduced by as much as 4,300 tons of carbon dioxide equivalent annually. Vehicle returns to GSA should be phased over a three to four-month period to allow departments to complete the change and to allow GSA to arrange appropriate and timely vehicle disposal. It is also recommended that departments be credited with any net revenues realized from vehicle disposal.

Typically, vehicle assignments include (documented and undocumented) 24-hour take-home vehicles, departmental assignments for specific vehicle pools (in addition to the general GSA-managed central vehicle pool), and day-to-day vehicle assignments to individual staff. The lack of consistent application of the rules and careful justifications for vehicle assignments coupled with less than rigorous monitoring in some departments, create inevitably higher fleet costs and large discrepancies in the vehicle inventory records. In light of these issues, the report includes several recommendations for revising current vehicle policies, a revised draft Administrative Order and associated forms and applications to support the recommended reforms.

Lastly, while it is not economical or advisable to immediately replace the current fleet with gasoline-electric hybrid vehicles, a total of 480 older vehicles were identified (the will be due for replacement within the next three years) for which hybrid equivalents are recommended. Going forward, as the more economic gasoline hybrid and other alternative fuel vehicles become available, the County is encouraged to continue its efforts to aggressively replace conventional gasoline vehicles where suitable.

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BACKGROUND

Miami-Dade County's more than 60 departments and 32,000 employees are spread across a large service area covering 2,420 square miles (1,985 square miles of land and 434 square miles of waterways). Many departments also operate multiple facilities in various geographic locations and therefore the nature of the County's operations requires a large light vehicle fleet to provide the myriad of public services to a population of more than 2.5 million residents.

As of March 2007, the County's light fleet consisted of 8,862 vehicles (Attachment 1). A total of 8,052 (91%) are assigned to individual County departments, while 701 vehicles (8%) are retained for the countywide vehicle Loaner Program pool managed by the General Services Administration Department (GSA). A total of 109 vehicles (1%) are assigned to other non-County agencies including Jackson Memorial Hospital (63 vehicles), the State Department of Health (44 vehicles), and one vehicle each to the State Attorney's Office and the Metropolitan Planning Organization. While the County provides maintenance and fueling services to these external clients and a majority of the vehicles bear the County's logo, their assignment, use and management are not under the purview of the County Manager.

As shown in Attachment 1, a total of 38 County departments are assigned light vehicles with the majority (3,625 vehicles) assigned to the Police Department. These 38 departments together have a total of 8,052 vehicles. As a result of this seemingly high number of vehicles and other fleet management concerns, in February 2007 the County Manager initiated a countywide fleet assessment. The review was to address right-sizing the fleet of cars and light trucks, assessing vehicle purchasing and assignment practices, identifying opportunities for fuel and emission reduction, and reducing fleet costs.

FINDINGS

1. Miami-Dade County Light Fleet Vehicles

Vehicle records were obtained from GSA's Fleet Management database and from individual departments' fleet inventory records. However, the vehicle inventory maintained by the GSA Fleet Management Division did not match the data maintained by departments or the inventory of vehicles recorded in the GSA Materials Management Fixed Assets System. Therefore, it took significant effort to analyze the inventory before the fleet review could be completed.

The records show that as of March 2007, seventeen County departments had 50 or more light vehicles and together accounted for 7,756 (96%) of all vehicle assignments (Table 1). The Police Department is assigned 3,625 vehicles (45 percent of the fleet) partially due to the number of vehicles (1,731 vehicles) earmarked for the Personalized Patrol Vehicles (PPV) program and the Letter of Understanding (LOU) for Captains and Lieutenants. Until December 15, 2006, police officers residing outside Miami-Dade County who participated in the PPV program were not allowed to legally take their assigned County vehicles home (Resolution R-841-9). However, on December 5, 2006, the Board of County Commissioners passed Resolution R-1392-06 allowing officers residing in Monroe, Broward and Collier Counties to take assigned PPVs home. This action will increase fleet costs as additional officers residing outside Miami-Dade County opt to participate in the PPV program.

Table 1
Distribution of County Light Vehicle Fleet as of March 2007
(Departments Assigned 50 or More Vehicles)

County Department	Number of Employees	Number of Vehicles	% of Total County-Owned Light Vehicles	24-Hour Vehicles	
				Number of Vehicles	% of Department's Vehicles
1 Police	4,998	3,625	45%	2,261	62%
2 Water & Sewer	2,702	857	11%	138	16%
3 Park & Recreation	1,272	471	6%	19	4%
4 Aviation	1,593	401	5%	16	4%
5 Fire Rescue	2,541	389	5%	126	32%
6 Transit	3,876	306	4%	-	-
7 Housing Agency	698	271	3%	4	1%
8 Corrections & Rehabilitation	2,695	261	3%	67	26%
9 Public Works	933	276	3%	135	49%
10 Solid Waste Management	992	144	2%	16	11%
11 Building Department	356	139	2%	112	81%
12 Environmental Resources Management	519	126	2%	27	21%
13 General Services Administration	858	147	2%	45	31%
14 Enterprise Technology Services	611	102	1%	60	59%
15 Seaport	387	96	1%	-	-
16 Team Metro	247	95	1%	87	92%
17 Human Services	1,034	50	1%	1	2%
Total	26,312	7,756	96%	3,114	
All other Departments*	3,453	296	4%	118	40%
Grand Total	**29,765**	**8,052**		**3,232**	**40%**

* Excludes vehicles in the County's Loaner Pool

A total of 3,232 vehicles (40% of the vehicles assigned to departments) are classified as 24-hour vehicle (take home) assignments. Aside from the 1,731 PPV and LOU assignments, the Police Department has an additional 530 vehicles designated as take home. Other departments with a significantly large number of take home vehicles include Water and Sewer (138), Fire Rescue (126), Building (112), Public Works (135), Enterprise Technology Services (60) and Corrections and Rehabilitation (67). Aside from police officers, some employees who reside outside Miami-Dade County are also take County vehicles home. However, no written policy was found that explicitly authorizes or prohibits this practice.

Approximately 26% of all light vehicles are classified as underutilized (driven less than 6,000 miles per year). However, no empirical basis was found to justify 6,000 miles as an effective threshold. It should be noted that departments with closed operations (Airport, Housing, Seaport, and sections of the Water and Sewer Department) will rarely meet this threshold. All departments, except the Building and Police Departments, underutilize more than 10% of their vehicles. For example, 79% of the vehicles assigned to the Seaport are classified as underutilized, 37% at the Housing Agency, 46% at Aviation, 46% at DERM and 38% at the Water and Sewer Department. Some departments have employed a vehicle rotation schedule that results in all vehicles, including spare/pool vehicles, exceeding the 6,000 mile threshold and therefore, indicate that their vehicles are not underutilized.

2. Cost of Vehicle Ownership

Total Cost of Ownership

The County's light fleet comprises sedans, scooters, motorcycles, all terrain vehicles, 2X4 and 4X4 pick-up trucks, jeeps and utility vehicles. At initial purchases prices ranging from $10,575 for a Chevrolet Colorado to more that $23,000 for a Honda Civic Hybrid, the capital acquisition cost of

the current fleet of light fleet exceeds $150 million. Coupled with the life cycle costs of fuel, maintenance and repairs, the County's light fleet has a significant budgetary impact. Table 2 shows the life cycle costs of owning selected vehicle types based on an average price of $2.73/gal of gasoline, expected gasoline consumption and the emission load on the environment.

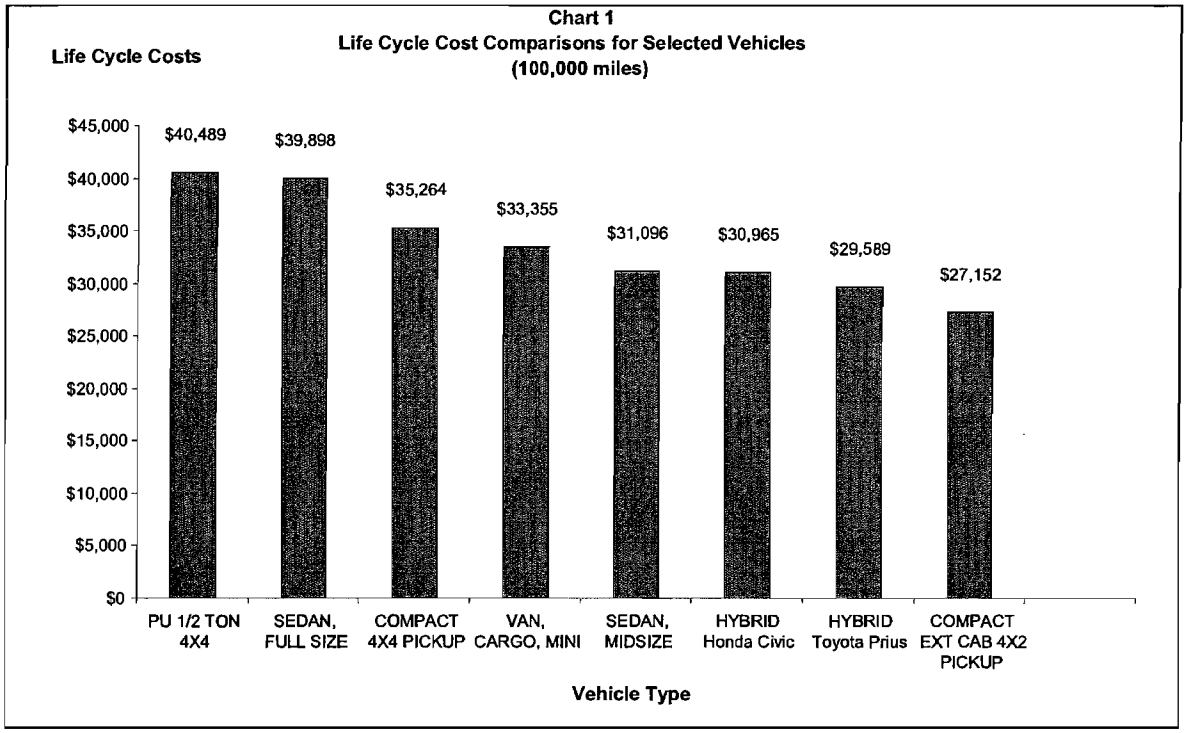
Table 2
Miami-Dade County
Life Cycle Cost for Selected Light Vehicles

Make	Model	Equipment Description	EPA City MPG (+/-3)*			Emissions per life cycle**	MPG per Transmitter	Pricing		Life Cycle Gasoline Consumption (Gallons)	Life Cycle Gasoline Consumption ($)	Lyfe Cycle *** Maintenance Charge ($)	LIFECYCLE COST (Price+Fuel+Maint)
			Min	Avg	Max			Year	Price				
DODGE	SPRINTER	VAN	20	23	26	88,787	-	2006	$ 24,121	4,348	$ 11,870	$ 11,302	$ 47,293
FORD	E-350	VAN LARGE	10	13	16	157,085	12	2007	$ 19,521	7,692	$ 21,000	$ 2,964	$ 43,485
FORD	E-350	VAN LARGE	11	14	17	145,865	12	2007	$ 18,103	7,143	$ 19,500	$ 2,964	$ 40,567
FORD	F-150	PU 1/2 TON 4X4	11	14	17	145,865	11	2007	$ 16,774	7,143	$ 19,500	$ 4,215	$ 40,489
FORD	VICTORA	SEDAN, FULL SIZE	14	17	20	120,124	11	2007	$ 20,520	5,882	$ 16,059	$ 3,320	$ 39,898
DODGE	2500	VAN CARGO	10	13	16	157,085	10	2006	$ 15,650	7,692	$ 21,000	$ 2,964	$ 39,614
FORD	E-250	VAN, CARGO	11	14	17	145,865	10	2007	$ 15,769	7,143	$ 19,500	$ 2,964	$ 38,233
CHVRLT	IMPALA	SEDAN, FULL SIZE	18	21	24	97,243	14	2006	$ 19,110	4,762	$ 13,000	$ 3,320	$ 35,430
CHVRLT	SILVERADO	COMPACT 4X4 PICKUP	14	17	20	120,124	-	2007	$ 16,489	5,882	$ 16,059	$ 2,716	$ 35,264
DODGE	CARAVAN	VAN, CARGO, MINI	17	20	23	102,105	14	2007	$ 16,396	5,000	$ 13,650	$ 3,309	$ 33,355
FORD	FRESTAR	VAN, PASSENGER, MINI	15	18	21	113,450	17	2007	$ 14,187	5,556	$ 15,167	$ 2,259	$ 31,613
FORD	RANGER	COMPACT 4X4 PICKUP	17	20	23	102,105	-	2007	$ 15,086	5,000	$ 13,650	$ 2,716	$ 31,452
FORD	TAURUS	SEDAN, MIDSIZE	17	20	23	102,105	18	2006	$ 13,472	5,000	$ 13,650	$ 3,974	$ 31,096
HONDA	CIVIC	HYBRID Honda Civic	46	49	52	41,676	28	2006	$ 23,199	2,041	$ 5,571	$ 2,194	$ 30,965
TOYOTA	PRIUS	HYBRID Toyota Prius	57	60	63	34,035	40	2006	$ 22,845	1,667	$ 4,550	$ 2,194	$ 29,589
CHVRLT	COLORAD	COMPACT EXT CAB 4X2 PICKUP	15	18	21	113,450	15	2007	$ 10,575	5,556	$ 15,167	$ 1,410	$ 27,152
DODGE	STRATUS	SEDAN, MIDDLE SIZE	19	22	25	92,823	-	2006	$ 12,098	4,545	$ 12,409	$ 2,080	$ 26,587

* The average City Miles Per Gallon (MPG) rating was obtained from the Environmental Protection Agency (EPA).
** Emissions are measured in pounds of CO2 equivalent computed by DERM.
*** Life Cycle Maintenance cost is based on an average cost per year per type of vehicle supplied by GSA.

Life cycle costs were computed based on historic maintenance costs, a lifecycle of 100,000 miles and the minimum Environmental Protection Agency (EPA) fuel consumption rating. The lower EPA consumption (MPG) rating was used because it generally corresponds with more reliable data obtained from GSA. GSA began installing electronic transmitters on County vehicles for model years 2004 and later to automatically record vehicle mileage and gasoline usage. In most cases, the MPG computed using GSA's Vehicle Information Transmitters (VIT) was equal to, or slightly higher than the posted minimum EPA rating. A review of vehicle records shows that where the VITs are not installed, the mileage data manually entered by employees when fueling vehicles was generally unreliable. Of concern however, is the fact that the reported EPA fuel economy for the Honda Civic Hybrid vehicle is between 46 and 52 MPG. GSA's data suggests 28 MPG average for 11 Hybrid Honda Civics, well below the posted EPA rate even when the ± 3 MPG error is considered. Similar concerns exist regarding the 73 County-owned Toyota Prius gasoline-electric hybrid units. Given the new technology being used by GSA the VIT data was considered as more appropriate for this analysis.

The total cost of owing a midsize sedan (Chart 1) is in excess of $31,000 over the 100,000 miles lifecycle excluding insurance, major parts replacements, collision repairs, and accrued capital replacement charges while the cost of pick-up trucks generally exceeds $40,000. The comparative cost of a full size sedan similar to those assigned to the police department exceeds $39,000, and excludes the cost of specialized police equipment (radios, light bars, stroboscopic lights and sirens). Gasoline-electric (hybrid) vehicles such as the Toyota Prius and Honda Civic cost approximately $29,500 and $31,000 respectively.



While gasoline-electric hybrid cars have lower fuel consumption and correspondingly lower emission loads, hybrid vehicles are becoming just as economical as like-sized traditional gasoline only vehicles for city driving. Initially, the price of hybrid vehicles was up to $10,000 higher than that of comparative gasoline-only vehicles, an expense that was not completely offset by lower fuel consumption. In recent years however, the sustained increases in fuel prices have made small gasoline-electric hybrid cars just as economical as gasoline-only vehicles over the operating life cycle provided there are no major replacement parts needed. Current estimates suggest that replacement of electric motors for hybrid vehicles may cost between $5,000 and $7,000 while battery packs cost approximately $2,000 to $3,000 each. Although the County has owned hybrid cars since fiscal-year 2002 when they became available, there is insufficient operating experience with the units to assess full life cycle (typically 8-10 years) performance. Consequently, reliability and durability of electric drive motors and battery packs that are integral to the operation hybrids have not been fully assessed in the current County operating environments.

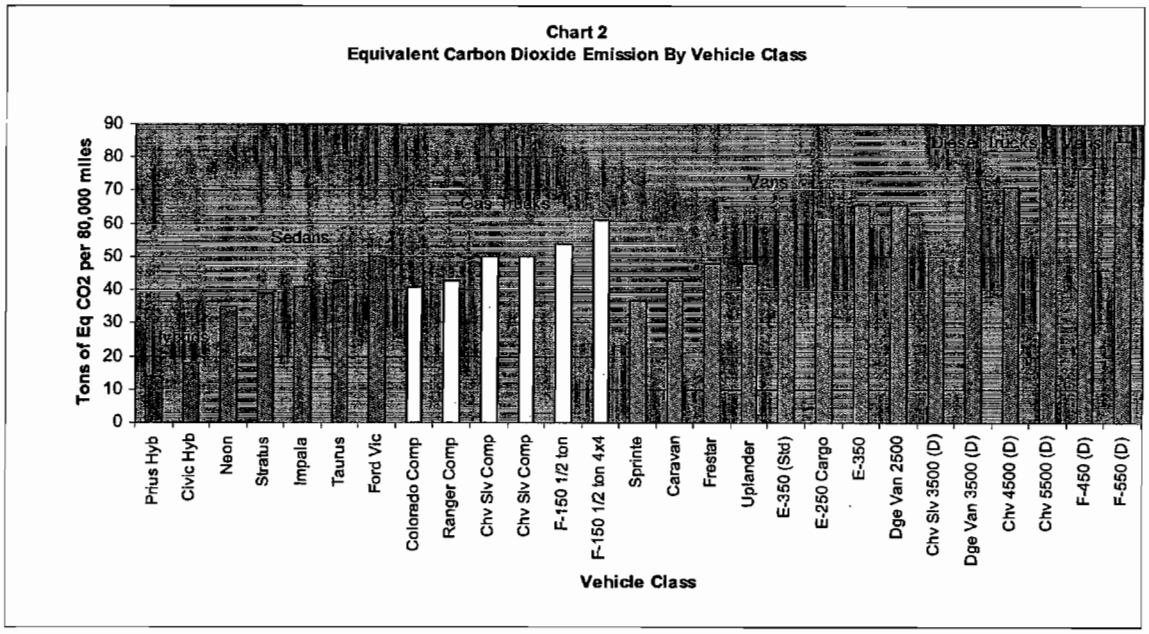
Some County employees who are eligible for car allowance benefits are assigned County vehicles in lieu of the benefits. A review of the historic costs associated with a sample of 17 cases assigned by various departments to employees who modestly use the vehicles during the workday shows it costs the County an average of $62,166 per vehicle over an eight year life cycle. This includes acquisition costs, monthly prepayments into the Vehicle Replacement Trust Fund for future vehicle replacement, vehicle tag, title and preparation charges, and operating expenses (fuel and maintenance). For the seventeen vehicles, annual payments into the Trust fund averages $3,585 per vehicle while operating costs averages $1,968 for a total annual expenditure of $5,553 per vehicle (excluding initial acquisition costs and the cost of any take home privileges). Conversely, annual car allowance and parking expenses for an employee with Level 3 Executive Benefits would be $2,670.

It is not practical to cease all 24-hour vehicle assignments and/or remove these vehicles from the fleet. However, significant savings can be achieved by reducing the number of employees

authorized to take County vehicles home. The savings that may be realized by ceasing some take home assignments is approximately $1,409 and 487 gallons of fuel per year per vehicle. This is based on an average round trip of 29 miles (home-work-home) as reported for this region by the U.S. Department of Transportation, Bureau of Transportation Statistics. The savings also assumes a price of $2.73/gal for gasoline, 235 working days per year and an average of 14 miles per gallon fuel consumption. Additionally, the reduction in miles driven would result in fewer preventive maintenance cycles each year.

Local Environmental Impact

Chart 2 shows the comparison of greenhouse gas emissions in equivalent tons of Carbon Dioxide (CO_2 Equivalent) over an 80,000 mile lifecycle. Emissions data was computed by the Department of Environmental Management (DERM) for the popular vehicle models shown. Greenhouse gas emissions are typically expressed in Carbon Equivalents so that the impacts of various compounds can be directly compared. Greenhouse gases are defined as the combination of Carbon Dioxide (CO_2), Methane (CH_4), Nitorous Oxide (N_20), and Hydro fluorocarbons (HFC). Each has varying capacities to adversely impact the environment and to trap heat, that is, their global warming potential. For example, methane is 21 times more efficient than carbon dioxide at trapping heat therefore, when calculating overall emissions, methane is multiplied by 21.



As shown in Chart 2, gasoline-electric hybrid vehicles emit significantly less greenhouse gases than traditional gasoline-only vehicles and have less devastating effects on the environment. DERM reports that the potential effects on global warming resulting from greenhouse gases include damage to coastal property and key tourist resources due to rising sea levels; damage to fresh water supplies and agriculture due to saltwater intrusion; increases in heat-related illness and possibly, the incidence of infectious diseases to more susceptible senior citizens and children. This suggests that the County must make every effort to reduce gasoline consumption and to adjust its business practices to reduce the adverse impacts on local ecosystems and the environment.

Commuting Practices

Employees frequently commute from their offices for face-to-face meetings and for training (sometimes multiple times per week). In fact, two of the most common uses listed for requiring County vehicles is to attend meetings (including Commission meeting) and for training. Videoconferencing and teleconferencing offer viable alternatives to commuting between locations. Videoconferencing is a set of interactive telecommunications technologies that allow two or more locations to interact via a simultaneous two-way (full duplex) audio-video transmission. Miami-Dade County owns 12 operational (though underutilized) videoconferencing facilities. The list of sites and design capacities are shown in Table 3. The Enterprise Technology Services Department (ETSD) is responsible for acquiring, installing, configuring and providing support and maintenance of video conference equipment. Set-up cost for a room-based system is approximately $5,000 with an annual ETSD maintenance fee of $1,200. A simple desktop application using a personal computer is $600. Therefore, where multiple employees need to commute by car to other locations for meetings, it may be more productive, expedient and less time consuming to teleconference or video conference in lieu of traveling.

Table 3
Miami-Dade County
Sites with Functional Videoconferencing Equipment
As of June 30, 2007

#	Departments Equipped with Videoconferencing Equipment	Location	Number of Rooms	Capacity (Persons)
1	SEAPORT	1015 N America Way	1	10 - 15
2	ETSD	10300 Sunset Drive Suite	1	15
3	ETSD, MDT, Mayor's Office	111 NW 1st Street	3	10 - 15
4	MDPIC	11805 SW 26 Street	1	10 - 15
5	Mayor's Office (West Dade)	1309-A SW 107 Avenue	1	10 - 12
6	Team Metro, SWM, MDHA, MDCR	2525 NW 62 Street	1	10
7	Elections	2700 NW 87th Ave.	1	10 - 15
8	WASD	3071 SW 38 Ave.	2	10 - 15
9	ETSD	5680 SW 87th Ave	3	10 - 25
10	DERM (Overtown)	701 NW 1st Court	2	10 - 15
11	EOC	9300 NW 41St.	1	10 - 15
12	PWD	9301NW 58th St	1	10
		Total	18	

3. Vehicle Assignment Practices and Opportunities for Vehicle Reduction

Detailed fleet assessments were conducted in 14 of the largest user departments. Actual vehicle assignments and use within individual business units were assessed in an effort to understand the nature and demands of the work function and the other factors surrounding the justification for vehicle assignments. Vehicle reduction and rightsizing potential was also evaluated based on the need for the vehicle, staff productivity impacts, and the potential for alternate approaches regarding work schedules and vehicle assignments within the context of established policies. Therefore, vehicle reduction potential was developed based on the opportunities to physically remove vehicles from the fleet, ceasing 24-hour assignments and the potential to replace conventional vehicles with gasoline-electric hybrids and/or other vehicle types as older units are replaced.

Prior to making recommendations for possible fleet reduction, it was necessary to review the inventory of vehicles assigned to departments. In the course of the review, it was discovered that the information maintained by GSA did not match the information maintained by departments and that the approval path for 24-hour vehicle assignments could be improved. In fact, in many cases where vehicles were to be assigned as take home vehicles, GSA had not received the final approved forms from the approving authorities. In addition to the differences noted between GSA Fleet Management database and the number of vehicles reported by departments, the number of vehicles recorded in GSA's Fixed Assets System (FAS) is higher than those recorded in the GSA Fleet Management database. Further efforts are needed to reconcile the total fleet inventory. A summary of the vehicle assignments for the 14 departments is shown in Table 4.

Table 4
Vehicle Assignment by Category as of June 2007

Department	24-Hour Assignment	Working Hours Assignment	Pool/Spares	Un-assigned	Total # of Vehicles	
HOUSING	4	248	19		271	
BUILDING	112	1	26		139	
PARKS	19	262	190		471	
SEAPORT	-	67	29		96	
ETSD	60	20	22		102	
TEAM METRO	87	-	8		95	
DERM	27	62	37		126	
PUBLIC WORKS	135	108	33		276	
TRANSIT	-	60	246		306	
WASD	138	400	319		857	
CORRECTIONS	67	40	154		261	
FIRE	126	96	167		389	
POLICE	530	-	879	485	1,894	*
AVIATION	16	94	291		401	
Total	1,321	1,458	2,420	485	5,684	

*Total department fleet is 3,625 vehicles. PPV and LOU Programs total 1,731 vehicles and are not included in this total.

Administrative Order (AO) 6-2 which became effective March 15, 1994 and the County Manager's December 15, 1989 memorandum dictate the criteria for assigning County vehicles, vehicle operation, acquisition, maintenance, and disposal. Per the AO, departments are responsible for determining the number and type of vehicles necessary for their operations. In turn, GSA acting essentially as the County's car dealer, acquires, distributes, maintains and replaces vehicles as needed for most departments. Vehicle assignments, further clarified by the Manager's memorandum, include options such as departmental assignments, full-time 24-hour assignments, temporary 24-hour assignments, and motor pools.

24-Hour Vehicle Assignments

Essentially, take home vehicles fall into one of two categories: those that are permanently assigned to employees who are allowed to take the vehicle home after normal working hours, and those that are assigned to employees who park the vehicles at another County or other facility nearest to their home rather than at their typical work headquarters. In either case, an assigned 24-hour vehicle is typically considered a County perquisite and must be approved by, the Director, County Manager and the Office of Strategic Business Management. The assignment must also be reported to the

Internal Revenue Service (IRS) through the payroll process. Additionally, all 24-hour vehicle assignments are to be reported to GSA for inventory and risk management purposes.

AO 6-2 also states that there are positions for which the employees' duties and responsibilities require the use of a vehicle on a 24-hour basis. These permanent 24-hour vehicle assignments should be formally justified and requested by the department, and submitted to GSA for processing. The request is submitted to the Office of Strategic Business Management for review and budgetary approval, and then sent to the County Manager for approval. The approval/denied request should be returned to GSA for processing. Permanent 24-hour vehicle assignments are to be reviewed and rejustified annually. Each department is also required to submit the information to the Human Resources Department for tax withholding purposes. The analysis shows that these procedures are not consistently utilized and has resulted in inaccurate and outdated information being recorded in the Fleet Management and other reporting systems.

To be eligible for a 24-hour vehicle, an employee must meet one or more of the following seven criteria as clarified in the County Manager's 1989 Memorandum:

1. Be a County employee receiving Group 1 Executive Benefits and who requires a County car in lieu of the car allowance provided in the benefits package.
2. Be a Miami-Dade County Police Department (MDPD) police officer assigned to the Personalized Patrol Vehicle Program participant as outlined in Resolution No. R-941-91.
3. Be eligible under the MDPD Captains and Lieutenants January 28, 1992 Letter of Understanding.
4. Be a County employee who is a member of a bargaining unit and contractually entitled to an assigned 24-hour vehicle.
5. Be a County employee who spends a minimum of 80% of their work shift in the field and is required to begin and end their work shift performing County business in the field.
6. Be a County employee who is required to respond to emergency situations occurring outside of regular working hours (call-outs) an average of three times per week throughout the year.
7. Be a County employee required to attend unscheduled meetings or events on County business that cannot be performed during regular working hours, during the daily work commute or using a temporary 24-hour assignment on an average of three or more times per week throughout the year.

Vehicles may also be assigned as take home vehicles if included in labor and other special business agreements. For example, Fire Inspectors and Investigators are assigned 24-hour vehicles per the collective bargaining agreement. Additionally, Arson Investigators required to regularly respond to alarms both during normal shift assignments and after hours may be assigned 24-hour vehicles provided they reside within a 60 mile radius of the Fire Department Headquarters Building.

Of the 8,052 vehicles distributed among County departments, 1,501 (19%) are reported to be represent permanent 24-hour vehicles assigned to individual employees in addition to 1,731 (21%) assigned to MDPD through the PPV Program and the LOU for Captains and Lieutenants. This excludes the high number of vehicles that are parked at locations that are not the employee's headquarters. Some departments have been diligent in explaining the justification for 24-hour vehicles while others provide very little information. In fact, in a large number of cases, the justification provided for vehicle assignments is simply "operational need" with no details to allow for an objective review of the need with respect to the criteria noted above.

Additionally, a significant number of 24-hour vehicles are assigned to staff who are seldom or never called out or who seldom attend after-hours events and therefore, do not meet three-times-per-week criterion stipulated above. The general explanation given by departments is that the employee may be called out, is required to respond if ever an incident occurs after hours, or to attend night meetings whenever they occur. In such cases, departments are sometimes assigning 24-hour vehicles based on the presumption that employees may be called out with no definitive proof or history or the frequency of call outs. Aside from a very limited number of cases, staff does not generally keep logs of their call-out/meeting attendance activity to allow directors to determine if they meet the applicable criteria to be assigned a 24-hour vehicle. Additionally, a large number of 24-hour assignments are simply based on classification as opposed to operational necessity.

Despite the requirements set out above, some departments such as Building, Solid Waste Management and Team Metro have assigned 24-hour vehicles to employees who report to their work headquarters every morning before going into the field. While this technically violates established procedures, the review found that in some cases the practice has operational merit. For example, in an effort to deliver increased levels of building inspection services to the community, building inspectors report to the office daily to meet with walk-in customers prior to going into the field. During the construction boom of recent years, it became necessary to spend as much time as was necessary to complete field inspections. To require vehicles to be returned at the end of the work shift would have been counter-productive. Other departments have public safety and rapid response directives and strategies that warrant 24-hour vehicle assignments even though the recipients do not respond as frequently as outlined in the criteria above.

Consequently, in order to require staff to return County vehicles instead of driving directly home requires consideration of the following service vs. cost issues:

a) Given current traffic patterns (estimated to be approximately 13 miles/hour headway) if staff is required to return vehicles at the end of the shift, service work would typically have to end between one and two hours earlier to return vehicles if overtime pay is to be avoided. This reduces staff productivity.

b) Certain classifications would attract overtime payments if vehicles are returned after the end of the normal work shift while no useful work is being performed.

c) In cases such as Team Metro, while staff should ideally return the vehicles, office locations are predominantly in open shopping centers. Requiring vehicles to be returned at the end of the workday could result in County vehicles remaining largely unprotected at nights and on weekends. Some departments cite vandalism and break-ins to justify why vehicles are assigned on a 24-hour. Allowing the employee to take these vehicles home places the burden on employees to safeguard the asset in return for the take-home privilege.

d) Special compliance and protection of life directives and response strategies

e) If staff is directed to park at another County facility en mass, employees would have to compete for space in these secured facilities. It should be noted however, that the practice technically subsidizes the employee's home commute and the benefit may have to be reported to the IRS.

During the review, the overnight locations of some vehicles were visited to ascertain where vehicles were being parked. Some departments including Building, Police, Corrections and Team Metro are exempt by Florida Statutes from disclosing employees' home addresses. This random effort was for general information only, and did not target specific vehicles or departments. In most cases, vehicles checked were in the locations specified. In some cases the overnight location given was

an incorrect address or the location given was the formal work address and not the address of the facility at which the vehicle was supposed to be parked. Several County vehicles were found parked in shopping plazas, on swales, medians, and sidewalks. Others were parked in neighborhood parking spaces, on lawns, and on employees' driveways. This in no way suggests that parking locations are inappropriate because available parking depends on the community and space available at employees' residence.

Random checks for inappropriate use of vehicles showed, although it was not prevalent, that some employees are using County vehicles to take children to schools and colleges, go to lunch, to purchase personal items at auto shops among other violations.

Departments reported a total of 107 24-hour assignments vehicles (excluding Police vehicles) were made to employees who do not reside in Miami-Dade County. The exact number of vehicles parked outside the County after hours is outside the scope of this review and was not determined. In several instances however, Members of the Board of County Commissioners inquired about the cost of allowing employees to take vehicles home. Departments report that vehicles are typically purchased for a service function and are not purchased solely for take home purposes. The average cost of the take home privilege would be the incremental cost for fuel and maintenance incurred per vehicle, per year, to drive from the employee's residence to work and back. The additional cost for the 1,501 24-hour assignments is estimated to be $2.1 million per year or $1,409 per vehicle. If however, the County purchased a vehicle solely for an employee to take home; the acquisition cost would be an additional $13,000 to $26,000 per vehicle, depending on vehicle type.

All 24-hour vehicle assignments must be reported to the Human Resources Department (HRD) to ensure appropriate IRS reporting. The IRS specifically defines the use of government owned vehicles as the value of the benefit which the IRS may include in the employee's income. Exemptions apply only when:

1. The vehicle assigned to the employee qualifies as non-personal use vehicle such as: a fire engine, a flatbed truck, school bus, or a police or fire vehicle marked with an insignia or words which clearly show it is a government public use vehicle (marking on a license plate is not a clear marking)
2. An unmarked police vehicle if all of the following circumstances apply:
    a. the employee is a licensed law enforcement officer who is employed fulltime in the capacity of a law enforcement officer and whose main responsibility is to prevent and investigate crimes involving injury to persons or property, is authorized by law to carry firearms, execute search warrants, and make arrests;
    b. any personal use of the vehicle must be authorized by the government agency or the department that owns or leases the vehicle; and
    c. the use must be specific to law enforcement functions such as being able to report directly from home to a stakeout, surveillance site or emergency.
3. For "Bona fide non-compensatory business reason", where the employee must be required to commute in the vehicle for the benefit of the employer, not for the benefit of the employee. A driver generally meets this requirement if the vehicle is generally used each workday to carry at least three employees to and from work in an employer-sponsored community pool. This would be the case if the employee was driving a specially outfitted vehicle with equipment the employee would need if on call 24-hours a day. Other possibilities might be the unavailability of parking at the workplace, and an employee in the field who would otherwise have to return to the workplace before going home and might be able to work longer if allowed to commute in an employer provided vehicle

All 24-hour vehicle assignments that do not qualify for a tax exemption as described in the above categories should be subject to review for payroll reporting. However, there is a plethora of IRS rules and opinions regarding when and how much employees are affected when a County vehicle is assigned. The light fleet review revealed that less than 600 employees are being taxed for take-home vehicles. In the absence of data to support the fact that all 24-hour assignments have been thoroughly reviewed for IRS purposes, it may be prudent to review all cases in light f the fact that more than 1,400 employees have take home vehicles outside of the PPV and LOU programs.

Workday Vehicle Assignments

Workday vehicle assignments are not permanent 24-hour assignments and these vehicles should always be returned to headquarters at the end of the workday. In such cases, employees receive no additional perquisite resulting from the workday vehicle assignment. However, as set forth in A.O. 6-2, if there is a need for a temporary 24-hour vehicle assignment, it should be preplanned and properly approved by the department director prior and these temporary assignments should not exceed five working days per month. Another common practice is to assign vehicles to a supervisor or vehicle custodian who in turn assigns vehicles to employees on a daily basis. Although these vehicles should be returned to the worksite at the end of the workday, employees on occasion take the vehicles home or park them overnight at another County facility.

Special Vehicles

In order to better respond to emergencies and to meet specific maintenance and service needs, departments sometimes outfit certain vehicles with special tools or machinery such as portable welding machines, compressors, pumps, tool boxes, lift gates and the like. Since some specially outfitted vehicles are typically only used only when special needs arise, it is expected that these vehicles will have lower mileage and cost more than vehicles routinely used for everyday jobs. Some departments have the capacity to reduce the number of rarely used "specialty" vehicles by using these vehicles for other purposes in addition to these specialized uses where practical.

Motor Pool

As part of the light vehicle inventory, GSA administers the vehicle Loaner Program, a motor pool of 701 loaner vehicles. The pool is accessed by staff that requires vehicles for limited periods ranging from a few hours to a full day or longer and for use while assigned vehicles are being serviced. The pool also forms a convenient stock of vehicles for disaster response and to support local, state, and national elections. Loaner vehicles represent 8% of the light fleet and are distributed among five locations countywide.

Several departments also maintain department specific loaner pools in addition to the countywide motor pool. Departments indicated that loaner vehicles are not always comparable to the vehicle returned for service to GSA. Several other explanations were offered by departments, including the fact that local pools are convenient and allow staff to avoid delays in requesting loaner cars from GSA. Notwithstanding these comments, departments are generally very complementary of GSA services and turnaround times. Many departments also state that vehicles are being held in a local pool because the department has unfilled vacancies. Of particular concern is the fact that some departments justify their pools by suggesting that the County's General Fund was not used to acquire the vehicles. While local vehicle pools are sometimes necessary and always convenient, there is no process to periodically assess the appropriateness and size of these department pools.

4. Vehicle Replacement and Purchasing Practices

GSA is charged with managing the County's vehicle purchase and replacement program including vehicle repairs and maintenance. GSA also processes and reviews vehicle requests from

departments, but has no final authority or control in determining County departmental needs or the ability to deny vehicle requests.

GSA also administers the County's Fleet Management Trust Fund for financing annual vehicle replacements in which most departments participate. Initially, when a department has been approved (through the budgeting process) to purchase a new, additional vehicle, the department pays GSA in full for the vehicle. Included in this acquisition cost is a preparation and delivery charge including decal and tag fees. Once the vehicle is placed in service the department begins to pay a monthly capital charge over a specific period of time (currently 96 months) to replace the new vehicle as it becomes due. Estimated auction/disposal expenses at end of life are charged monthly over the projected eight-year life of the vehicle. Capital replacement funds are deposited in the County's Fleet Management Trust Fund for the future acquisition of replacement vehicles. The monthly capital charge is calculated based on the vehicle purchase price, the projected preparation/disposal charges of the replacement vehicle (adjusted for inflation), less the expected residual value of the vehicle.

Samples of monthly capital charges are as follows:

1. 2005 Toyota Prius hybrid : $275
2. 2006 Honda Civic hybrid : $300
3. 2006 Ford E-350 15 passenger van : $275

Added to the above charges, each participating department pays an insurance premium computed by GSA Risk Management Division. This charge is to cover expected claims arising from accidents and is currently $41.67 for light vehicles.

If a vehicle is 96 months old and is in good operating condition, the department may retain the vehicle and the monthly capital replacement charge ceases. Each year GSA identifies vehicles eligible for retirement and notifies departments. Based on current practices, a typical vehicle may be eligible for replacement depending on mileage (typically 100,000 miles), vehicle age, operating and maintenance costs, body condition and other criteria. When a department returns a vehicle to GSA as a surplus vehicle, GSA reserves the amounts previously paid into the Trust Fund to replace the vehicle for up to an additional 24 months. If not used by the department within the 24-month period, the department forfeits the amount already paid into the fund. Additionally, surplus vehicles are usually auctioned however; auction proceeds are not returned or credited to the departments, as it is assumed that these costs and credits are already included in the total vehicle costs.

During the review, department staff complained (without exception) about the amounts charged by GSA for vehicle replacement and other services, and suggested that GSA charges are too high. Several departments also suggested they could buy vehicles cheaper on the open market instead of through GSA. However, current open market prices do not support this claim as GSA obtains fleet cars and enjoys volume discounts that individual departments may not receive. Departments are also concerned that over the first 8 years after purchasing an additional vehicle, they have essentially paid for the vehicle twice. However, this is not an issue and should be better explained to departments.

The above capital funding and vehicle acquisition procedures coupled with departments' understanding of current procedures has caused the following behaviors:

1. Some departments are holding vehicles well past the economic life to avoid paying into the capital fund.
2. Failure to return unwanted vehicles unless they are requesting replacements.

3. Several departments choose not to participate in the fund. Incidentally, these departments also have oldest light fleets.
4. Delay returning surplus vehicles even when vacancies are unfilled for extended periods.

5. Preventive Maintenance and Upkeep

Preventive Maintenance

In October 2005, GSA introduces a preventive maintenance (PM) program called EZCare3000 in response to manufacturers' maintenance requirements. This differs from the original program in that it doubles the frequency of PMs to every 3,000 miles from every 6,000 miles. The program applies to 4,835 vehicles or 55% of the light fleet maintained by GSA. The Police and the Aviation departments with 3,625 and 401 vehicles respectively, are on a less frequent schedule.

The new PM program includes three types of services with a progressively increasing number of PM tasks completed:

1. Express Service or PM "A": Completed every 3,000 miles for regular oil and filter change and other minor checks and inspections for a charge of $39.99 per vehicle.
2. Plus Service or PM "B": Completed every 9,000 miles for a fee of $189.95 per vehicle.
3. Ultimate Service or PM "C": This is completed every 27,000 miles for $269.95 per vehicle.

With the implementation of the new PM program, approximately 15 additional scheduled PMs are required per vehicle over the lifecycle. Consequently, over the 10-year life cycle of a light vehicle, departments pay a slightly increased amount for maintenance ($2,939 vs. $2,779 per vehicle). However, for a fleet of 4,835 vehicles, this increases total County vehicle maintenance costs by $777,360 per year. Such a seemingly small change in maintenance requirements effectively doubles the GSA PM workload and doubles the time department staff spend returning vehicles for PM calls. Not surprisingly, some departments complain about its impact on field productivity. Additionally, given that GSA may issue loaner vehicles while the PM is being conducted, the loaner pool could also be impacted. Despite the issues, departments report that GSA provides very good service, particularly the one-hour oil change service.

Vehicle Upkeep

The County vehicles inspected are generally in very good mechanical and operating condition. Random inspections and observations revealed that several issues need to be immediately addressed by user departments.

- Housekeeping was very poor in a number of cases. Several vehicles had piles of trash (food wrappers, bottles and cups) and had not been washed.
- The cabin of a number of vehicles did not appear to have been cleaned in a long time.
- Several employees were observed smoking in County vehicles. Administrative Order 8-6 prohibits smoking inside all County owned-vehicles.

It is the responsibility of individual drivers and their departments to ensure that vehicles are returned for PM as scheduled and for the proper care and custody of assigned vehicles. This includes keeping the vehicle free of trash and junk and maintaining the general appearance (interior and exterior) of assigned vehicles. In support of these efforts, departments must implement procedures to ensure vehicles are being cared for and are periodically inspected. For example, Team Metro and the Police Department have policies that require monthly vehicle inspections that check

equipment condition, cleanliness, proper vehicle upkeep, and the existence of any unreported damages to the vehicle. GSA also notes vehicle abuse when vehicles are returned for service.

6. Electronic Transponders

County departments routinely take advantage of Florida Department of Transportation SUNPASS program. Purchase, assignment, use and monitoring of SUNPASS transponders are not centralized and no general guidelines exist. Very few departments have clear guidelines for employees regarding the use of transponders. In most cases monitoring is performed by reviewing monthly bills and spotting "unusual" activity. Unusual activity is communicated to the employee's supervisor for further action. Table 5 shows the Sunpass expenditures by department for the 14 departments reviewed. Together these departments own 3,847 Sunpass transponders and spend more than $47,000 per month on tolls ($564,000 per year). Several departments have a higher number of transponders than light vehicles which this typically occurs because some heavy vehicles are also equipped with Sunpasses. In some cases, departments also have several non-functioning transponders that were never removed from the inventory.

Table 5
Vehicle SUNPASS Usage

County Department	Number of Vehicles	Number of transponders	Average Monthly Toll Expenditures
POLICE	3,625	1,566	$ 21,070
WASD	857	1,026	$ 12,400
PUBLIC WORKS	276	380	$ 5,159
TRANSIT	306	96	$ 2,000
ETSD	102	97	$ 1,680
CORRECTIONS	261	390	$ 1,565
DERM	126	164	$ 1,308
PARKS	471	36	$ 715
HOUSING	271	70	$ 538
BUILDING*	139	-	$ 400
AVIATION	401	9	$ 113
TEAM METRO	95	13	$ 72
SEAPORT	96	-	$ -
FIRE	389	-	$ -
Total	7,415	3,847	$ 47,020

* The Building Department reimburses staff for use of toll roads. No transponders are issued.

RECOMMENDATIONS

The following is a list of recommended changes to the County's fleet operations. The recommendations include suggest changes to vehicle assignment practices and highlights opportunities for department directors to better manage their fleets and to reduce vehicle inventories.

Vehicle Assignment Practices

1. Employees who qualify, should be directed to use car allowances and the County's mileage reimbursement process where it is reasonable to do so, before any vehicle assignment is contemplated.
2. Improve oversight of take-home vehicles and 24-hour assignments. In light of the current business environment and the need to reduce expenses, immediately re-justify all vehicle assignments and remove all vehicles that do not meet the appropriate criteria. Direct departments to assign County vehicles on an exception basis after all other alternatives have been exhausted. Staff should share vehicles where practical, request loaner vehicles from the GSA pool for infrequent users, or allow eligible staff to be reimbursed for use of personal vehicles. A revised 24-hour Vehicle Request Form is attached (Attachment 2).
3. Revise the approval process for 24-hour vehicle approval as follows:
    a. Division employee completes request and justification
    b. Employee signs the application acknowledging his/her responsibilities
    c. Department director approves/denies the application and verifies that the expenditure is budgeted
    d. Director forwards the approved application to the Assistant County Manager
    e. Approved requests are routed to the department, to GSA for inclusion in the database and for risk management purposes, and to the Human Resources Department for payroll processing
4. Share vehicles in lieu of assigning vehicles by classification or function. While all departments reviewed employ some vehicle sharing, in an effort to minimize fleet costs, departments should create rotating on-call rosters (weekly, monthly, etc.) allowing employees to take the vehicle home only on the days that they are on-call instead of all staff within the classification being assigned a take home vehicle.
5. To address the issue of staff residing outside the County who are assigned vehicles, it may be prudent to set an effective radius, (possibly from the downtown Government Center) within which an employee may be able to take a vehicle home. If employees were allowed to park the vehicle at the nearest County facility in lieu of returning to the worksite at the end of the shift, employees should not be allowed to park the vehicle outside the County if the parking location is not the employee's home address.

Vehicle Purchases

1. Limit the purchase of new vehicles and maximize the extent to which vehicles are shared among staff.
2. As economics permit and the County gains further operating experiences with hybrid vehicles, purchase hybrid vehicles as a first option in lieu of traditional gasoline-only vehicles where suitable. Purchase hybrid vehicles only when technology, vehicle application, and economics permit. To the extent possible, continue to push for fleet volume deals for hybrid vehicle purchases. Current market trends suggest however, that this is progressively more difficult as

general sales of hybrid vehicles increase. As a result, it is important for GSA to continue to closely assess the economy of hybrid and other alternate fuel vehicles going forward.

3. Departments must be more deliberate in matching vehicle types to vehicle application in order to request the most economical, safe and suitable vehicle for the function. It may be helpful for GSA to publish general information brochures to departments regarding fleet purchasing limitations and the County's pollution reduction efforts. Many departments complain about GSA's reluctance to purchase their desired vehicle however, in most cases where GSA disagrees with the request, the requests do not fully support the best use of the public's dollars.
4. GSA should continue to coordinate with departments to determine what are the most commonly used specially outfitted, possibly interchangeable, vehicles needed and include some of these vehicles in the motor pool to minimize the number of "special" light vehicles in departmental pools. All directors should then be notified that such vehicles are available on loan.
5. Minimize the number of specially outfitted vehicles that are rarely used and consider dual use vehicles, thereby reducing the number and cost of vehicles required.
6. Continue the capital replacement fund and the pay-in-advance method of acquiring replacement vehicles. The primary advantage of this approach is that it offers improved cash flow management and business planning as opposed to the budget fluctuations that would occur if departments purchased on demand. Some departments have opted out of this plan, due to a desire to a) manage their own funds, b) avoid paying perceived high fees to GSA, and c) a drive to manage their affairs independently. The following changes are also recommended for managing the GSA Vehicle Replacement Trust Fund:
   a. Upon purchasing a new additional vehicle, GSA should provide a detailed cost breakdown to departments (vehicle invoice, tag, title, preparation and disposal fees).
   b. Detailed breakdown of the replacement capital charges must be provided (computed replacement value, amortization in years, residual value, inflation rates and other charges).
   c. Upon return of the vehicle to GSA, departments should be credited the amount realized at auction less any auction fees and residual assumed in 2 above net of the residual computed in payments already made. Where the vehicle is transferred to another department the donating department should receive credit for value of the vehicle payable by receiving department if the vehicle was not donated by the department.
   d. When department returns a vehicle and does not require a replacement vehicle immediately, the total sum paid into the capital replacement fund should be returned to the department instead of being appropriated by GSA after 24 months.
   e. Alternately, once a car is returned to GSA, departments should be allowed to request a replacement car after the 24-month period and have the request treated as a replacement vehicle instead of a new, additional vehicle as is the current practice.
7. Consider alternatives to charging departments for <u>each</u> instance when pool loaners are issued ~~to temporarily replace department assigned vehicles returned for warranty repairs/PM.~~

<u>Fleet Cost Reduction</u>

Recommended vehicle reductions are made in three categories (Table 6). Additional fuel and pollution reduction impacts are presented in Attachment 3 for the 14 departments reviewed. Fleet cost savings can be achieved by a combination of removing vehicles from the feet, ceasing some 24-hour vehicle assignments and as vehicles become due for replacement, replace appropriate vehicles with gasoline-electric hybrids or other appropriate vehicles in the future.

Removing a vehicle from the fleet allows the department to avoid the capital replacement charges. Departments currently paying into the GSA managed Vehicle Replacement Fund will begin to

realize immediate savings for those vehicles for which they are now paying. Additional savings will be realized from reductions in fuel consumption and maintenance charges. Ceasing a 24-hour vehicle assignment will immediately result in fuel and maintenance savings for the portal-to-portal use of the vehicle. Over time, additional fuel savings will be realized by replacing conventional gasoline only vehicles with hybrid vehicles or other vehicles the employ other technologies not yet made popular.

Based on the assessment of departmental operations, it is recommended that the County reduce the fleet for the 14 department reviewed by 606 vehicles (8% of the total fleet or 10% of the fleet excluding vehicles assigned to the Police Department). The County should also and cease 24-hour vehicle assignments for an additional 379 vehicles. Together, this will result in and estimated $3.9 million in fleet cost reduction based on the average cost of owing and operating a County vehicle. Actual savings will vary based on the specific vehicles removed from the fleet, the actual charges associated with the vehicle and the cost of fuel. In addition to these savings, County fuel consumption will be reduced by approximately 617,000 gallons per year (7%) and associated vehicle emissions could be reduced by as much as 4,300 tons. Vehicle returns to GSA should be phased over a three to four-month period to allow departments to adjust and for GSA to arrange appropriate and timely vehicle disposal. Departments should also maintain appropriate logs to verify the reductions achieved. Several departments, as a result of this management review, began fleet reductions as early as May 2007. These reductions may generally be considered a part of the recommended changes made in Table 6.

Additionally, 480 vehicles (5% of the fleet) that are used in various applications are either due for, or will soon be eligible for replacement for which hybrid vehicles are suitable. It is recommended that these be replaced with hybrid vehicles as they become due. Over time, this will result in an additional fuel saving of approximately $468,000.

Notwithstanding these reductions operations in some departments are noteworthy. The savings assume that as a result of the service levels demanded in the Building Department as a result of the commitment to support the building industry, inspectors will continue to be assigned 24-hour vehicles even though they report to headquarters at 7:00 a.m. daily. Under the strict interpretation of the 24-hour vehicle assignments, inspectors should return vehicles to headquarters at the end of the workday which would reduce the level of field services to the industry. Regarding Team Metro, work procedures do not justify 24-hour vehicle assignments. Of primary concern however, is that some Team Metro offices are located in shopping plazas that may not provide adequate security for unattended County vehicles during nights and weekends.

Concerning the Fire Department, in order to ensure no impact on public safety response, ensure adherence to Presidential Order # 5 (regarding emergency response preparation) and the public response strategy, only 14 vehicles are being recommended to be removed from the 24-hour vehicle assignments. Lastly, in the case of MDPD the reductions recommended have no impact on current operations and only contemplates removing excess vehicles from the fleet. This still allows the department exceptional flexibility in vehicle assignments and to easily replace more than 100 vehicles per year and to also provide vehicles for more than 300 new recruits per year.

In addition to the above initiatives, it is also recommend that the County take the following steps:

1. Mandate that departments use existing video and teleconferencing facilities as a substitute to commuting for face-to-face meetings whenever feasible. Require departments equipped with the technology to cooperate in sharing locations as room schedules permit. However, in order to make this a preferred business practice, department staff must be trained to operate the equipment without ETSD's assistance and ETSD should minimize usage costs while keeping the technology current.

Table 6
Light Fleet Reduction Potential and Estimated Savings *

Department	Number of Employees	Number of Vehicles Assigned	Recommended Number of Units			Annual Estimated Savings					
						Realized from Fleet Reduction			Realized from Ceasing 24-Hour Assignments	Total Estimated Savings	Replace with Hybrid Vehicle (Future Savings)
			Remove from Fleet	Cease 24-Hour Assignment	Replace with Hybrid	Avoided Capital Payments (Vehicle Replacement)	Operating Costs	Total Cost Reduction Potential			
HOUSING	698	271	15	1	16	$ 53,775	$ 29,520	$ 83,295	$ 1,409	$ 84,704	$ 15,600
BUILDING	356	139	14	7	35	50,190	27,552	77,742	9,863	87,605	34,125
PARKS	1,272	471	24	6	13	86,040	47,232	133,272	8,454	141,726	12,675
SEAPORT	387	96	8	-	5	28,680	15,744	44,424	-	44,424	4,875
ETSD	611	102	13	53	1	46,605	25,584	72,189	74,677	146,866	975
TEAM METRO	247	95	5	85	54	17,925	9,840	27,765	119,765	147,530	52,650
TRANSIT **	3,876	306	82	-	33	293,970	161,376	455,346	-	455,346	32,175
CORRECTIONS	2,695	261	18	21	49	64,530	35,424	99,954	29,589	129,543	47,775
DERM	519	126	16	30	27	57,360	31,488	88,848	42,270	131,118	26,325
PUBLIC WORKS	933	276	14	60	24	50,190	27,552	77,742	84,540	162,282	23,400
WASD **	2,702	857	120	40	11	430,200	236,160	666,360	56,360	722,720	10,725
FIRE	2,541	389	32	14	68	114,720	62,976	177,696	19,726	197,422	66,300
POLICE ***	4,998	3,625	225	58	136	806,625	442,800	1,249,425	81,722	1,331,147	132,600
AVIATION **	1,593	401	20	4	8	71,700	39,360	111,060	5,636	116,696	7,800
Total	23,428	7,415	606	379	480	$ 2,172,510	$ 1,192,608	$ 3,365,118	$ 534,011	$ 3,899,129	$ 468,000
% Reduction (all departments)		% of Fleet	8%	5%	6%						
% Reduction (except PPV/LOU vehicles)		% of Fleet	10%	8%	9%						

Notes:

* Savings are based on the average cost of light fleets operations countywide and will vary by vehicle type and usage patterns, As a result of feedback from the review, several departments report that they have started to make changes in their fleet operations. The above saving/reductions should be viewed as the cumulative departmental target for changes as of May 2007. However, departments should provide adequate documentation to support reductions acchieved.

** This Department does not participate in the GSA Fleet Replacement Trust Fund, therefore the Avoided Capital Replacement Cost represent equvalent accruals for vehicle replacement.

*** Number of vehicles includes 1,731 vehicles under the PPV and LOU Programs.

2. Departments with a need to maintain a pool of vehicles should be required to periodically re-evaluate and minimize the size of their vehicle pools. This may require the County Manager to convene ad hoc management teams as necessary to assist departments, maintain objectivity.
3. Replace older vehicles with hybrids as replacement come due provided that hybrid vehicles continue to be economically attractive and are suited for the functions performed. Currently, replacing sedans with hybrid gasoline-electric cars for city driving can cut gasoline consumption by up to 40 % or more. However, the current hybrid vehicles in the County's fleet are ineffective for fuel savings at highway speeds and gasoline-electric full size trucks currently do not offer a significantly higher fuel economy. GSA should continue to aggressively monitor the industry and purchase economic alternate fuel and hybrid vehicles when they become available.

Controls

1. Reinforce the proper use and management of gas cards at the departmental level. Mileage data is frequently incorrect to justify fuel consumption and therefore significant improvements are required by staff assigned County vehicles. Transportation Coordinators must continue to locate, inventory, justify and monitor gas card usage, continue to report lost or stolen cards to immediately, and deactivate cards to avoid misuse or theft.
2. Implement procedures to ensure employees return gas cards as soon as their responsibilities change or the employee leaves the department. This action should be linked to other initiatives relating to employee separation/exit strategies for reclaiming County property (cell phones, ID cards, keys, etc.).
3. Within 60 days of rejustifying all 24-hour vehicle assignments, the Finance Department and HRD should review all 24-hour vehicle assignments (including cases where employees park at another County facility) and ensure appropriate payroll and IRS reporting are being done.
4. Modify AO 6-2 (See Attachment 2) to better align with current business necessities.
5. Centralized comprehensive software is recommended to manage and maintain records countywide. As GSA contemplates these tools, it is recommended that the application be web-based and allows departments to view vehicle data and update information about their vehicles. In order to ensure data integrity, GSA would control access, review and accept all requested changes before they can be permanently written into the database. GSA should reconcile the vehicle inventory at least once a year.
6. Departments must conduct periodic spot checks to ensure that County vehicles are not being used improperly with regards to the following:
    a. Taking children to schools and/or to camps
    b. Temporarily assigned 24-hour vehicles do not become "permanent"
    c. Supervisors are not unilaterally allowing staff to take County vehicles home
    d. Vehicles are not being used to inappropriately take staff to lunch or conduct any other activity than County business
7. Immediately re-justify all vehicle assignments and conduct a comprehensive field inventory to update and make corrections to the vehicle inventory. Using the data from the re-justification exercise, update and correct the current vehicle inventory, delete vehicles sold, written off, stolen or reassigned to other entities. Subsequently, departments should report only the exceptions to GSA. Reports are to be done in writing to ensure departments update their inventories and report changes to GSA and HRD within one pay period of the change. Also, at least once each year reconcile vehicle information recorded in the Fleet Management database with the Fixed Asset System and at least every three to five years, GSA should initiate a full field inventory of all County Vehicles.

8. While GSA is responsible for acquisition, maintenance, replacement and retirement of all County vehicles, departments individually determine the number and type of vehicles necessary to conduct day-to-day operations. Consideration should be given to establishing an ad hoc executive team to evaluate and approve vehicle requests prior to the proposed budget where a department's request is in excess of a fixed number or percentage of additional vehicles in any fiscal year.
9. Require all departments with assigned vehicles to conduct periodic vehicle inspections as necessary to improve housekeeping and to take action where employees fail to conform. A sample inspection form is presented in the recommended revisions to A.O. 6-2.
10. Department Directors should strictly reinforce the County's non-smoking policy.
11. Assessment of transponder use indicates that while it is not recommended that the function be centralized, departments must develop and issue general guidelines to their staff. Departments must also locate, inventory and periodically monitor transponder usage. Procedures must also be put in place to reclaim transponders when assignments change of employees separate from the County. When vehicles are removed from the fleet, ensure transponders are removed from the vehicle or immediately deactivated if stolen or lost.

Attachment 1

Distribution of County Light Vehicle Fleet as of March 2007

	County Entity	Number of Employees	Number of Vehicles	% of Total Light Fleet Vehicles Assigned to Departments	24-Hour Vehicles	
					Number of Vehicles	% Depatment's Assigned Vehicles
	County Department					
1	Police	4,998	3,625	45%	2,261	62%
2	Water & Sewer	2,702	857	11%	138	16%
3	Park & Recreation	1,272	471	6%	19	4%
4	Aviation	1,593	401	5%	16	4%
5	Fire Rescue	2,541	389	5%	126	32%
6	Transit	3,876	306	4%	-	-
7	Housing Agency	698	271	3%	4	1%
8	Corrections & Rehabilitation	2,695	261	3%	67	26%
9	Public Works	933	276	3%	135	49%
10	Solid Waste Management	992	144	2%	16	11%
11	Building Department	356	139	2%	112	81%
12	Environmental Resources Management	519	126	2%	27	21%
13	General Services Administration	858	147	2%	45	31%
14	Enterprise Technology Services	611	102	1%	60	59%
15	Seaport	387	96	1%	-	-
16	Team Metro	247	95	1%	87	92%
17	Human Services	1,034	50	1%	1	2%
18	Community Action Agency	681	38	0%	38	100%
19	Animal Services	120	30	< 1%	11	37%
20	Property Appraisal	283	26	< 1%	-	-
21	Building Code Compliance	79	25	< 1%	18	72%
22	County Commission	186	25	< 1%	5	20%
23	Library	571	25	< 1%	8	32%
24	Office of the Clerk	229	16	< 1%	3	19%
25	Planning & Zoning	183	13	< 1%	15	115%
26	Elections	120	9	< 1%	-	-
27	Office of the Mayor	40	8	< 1%	2	25%
28	Office of Capital Improvements	38	6	< 1%	5	83%
29	Judicial Administration	268	6	< 1%	-	-
30	Communications	59	5	< 1%	2	40%
31	Juvenile Services	120	5	< 1%	1	20%
32	Consummer Services	126	44	< 1%	2	5%
33	County Attorney's Office	147	3	< 1%	3	100%
34	Medical Examiner	70	3	< 1%	-	-
35	Office of the Inspector General	38	3	< 1%	3	100%
36	Vizcaya Museum and Gardens	49	3	< 1%	-	-
37	County Manager's Office	42	2	< 1%	2	100%
38	Historic Preservation	4	1	< 1%	-	-
	Total	29,765	8,052	100%	3,232	40%
	County Loaner Pool					
1	GSA Fleet Management Pool		701			
	Other Agencies					
1	Jackson Memorial Hospital		63			
2	State Department of Health		44			
3	Metropolitan Planning Organization		1			
4	State Attorney's Office		1			
	Total		109			
	Grand Total		8,862			

Attachment 2

Revised Draft Administrative Order 6-2

Vehicle Inspection Report

24-Hour Vehicle Assignment Request Form

A.O. No.: 6.2 ***DRAFT***
Ordered:
Effective:

MIAMI-DADE COUNTY
ADMINISTRATIVE ORDER

ASSIGNMENT, OPERATION, ACQUISITION, MAINTENANCE
AND DISPOSAL OF COUNTY VEHICLES

DRAFT DRAFT DRAFT

AUTHORITY:
Section 4.02 of the Metropolitan Dade County Charter.

SUPERSEDES:
This Administrative Order supersedes previous Administrative Order No. 6-2, entitled Use of County Vehicles, dated March 15, 1994.

POLICY:
A vehicle is often a necessary tool for conducting County business. It is the responsibility of each department to determine the appropriate number and type of vehicles necessary to meet their operational requirements. In order to provide these vehicles at the least cost, the acquisition, maintenance, distribution and replacement of County vehicles has been centralized. It is the responsibility of the General Services Administration Department (GSA) to administer this centralized effort and to provide departments with vehicles once proper approvals have been obtained. Departments and employees are responsible for the proper and safe operation of the County vehicles as outlined in this administrative order.

ASSIGNMENT OF VEHICLES:

A. Department Assignments
Departments will determine the number of vehicles necessary for their employees to carry out their job responsibilities. Additionally, it is each department's responsibility to conduct an annual review of vehicle requirements and assignments to take and report vehicle inventory.

B. Twenty-Four Hour Vehicle Assignments
There are positions and functions for which an employees' duties and responsibilities require the use of a vehicle on a 24 hour basis (take home vehicle). Full-time 24-hour vehicle assignments should recognize the need for emergency response, as well as operational requirements to improve the level of service to County residents.

There are two types of full-time 24-hour vehicle assignments. Vehicles that are permanently assigned to employees who are allowed to take the vehicle home after normal working hours; and vehicles that are assigned to employees who park the vehicles overnight at a location that is not the same as their work headquarters, usually closer to the employees' homes. Assignment of a full- time 24-hour vehicle must be justified in writing and requires the approval of the Department Director and the County Manager or designee. Requests for an assignment of this type should be made using the TWENTY-FOUR HOUR VEHICLE ASSIGNMENT APPROVAL/REQUEST FORM (see sample attached) and once approved, must be submitted to GSA for risk and inventory management processing, and to the human Resources Department for tax reporting purposes. This form lists those situations that warrant 24 hour vehicle assignments and the employee's responsibilities when assigned a take home vehicle.

To be eligible for a full-time 24-hour vehicle assignment, the employee must meet one or more of the following criteria:

1. Be a County employee receiving Group 1 Executive Benefits, who elects a vehicle assignment in lieu of the car allowance provided in the executive benefits package
2. Be a Miami-Dade County Police Department (MDPD) police officer participating of the Personalized Patrol Vehicle Program (Resolution No. R-941-91)

3. Be a MDPD Captain or Lieutenant eligible for a full-time vehicle assignment under the January 28, 1992 Letter of Understanding
4. Be a County employee who is a member of a bargaining unit and is contractually entitled to a full-time 24-hour vehicle
5. Be a County employee who spends a minimum of 80% of his/her work shifts in the field throughout the year and is required to begin and end the work shift performing County business in the field
6. Be a County employee who is required to respond to emergency situations occurring outside of regular working hours (call-outs or on-call) an average of three or more times per week throughout the year
7. Be a County employee required to attend unscheduled meetings or events on County business on an average of three or more times per week throughout the year and where these meetings/events cannot be performed during regular working hours, during the daily work commute or using a temporary 24-hour assignment

Prior to the beginning of each fiscal year, each department is responsible for the renewal of existing full-time 24-hour vehicle assignments. Renewals will be accomplished by verifying current information on full-time 24-hour vehicle assignments. The listing of approved take home assignments must be signed by the Department Director and approved by the County Manager or designee and subsequently forwarded to GSA for countywide inventory reporting and risk management assessments.

All new take home vehicle assignment requests and changes in assignments require the submission of a TWENTY-FOUR HOUR ASSIGNMENT APPROVAL/REQUEST FORM. However, where changes are minor and does not require County Manager's approval, changes must be reported to GSA as soon as they occur. Examples of such changes include address changes, vehicle replacements, etc.

Once a vehicle is assigned, to an employee and approved the department shall forward a copy of the approval together with a Personnel Change Document to the Human Resources Department so that appropriate income tax withholding may be applied to wage and salary.

C. Overnight Parking of County Vehicles
Department assigned County vehicles shall be parked at a department base of operation. Only full-time 24-hour assigned vehicles may be parked at the employee's residence on a regular basis or at the nearest County facility to the employee's residence.

Employees assigned take home vehicles shall return the vehicles to the department base of operations during a scheduled absence from work of 40 or more hours (e.g., vacation).

D Temporary Twenty-Four Hour Vehicle Assignments
A department director may temporarily assign a 24 hour vehicle to an employee for County business. However, this authorization shall be limited to a total of five (5) working days per month and must be approved in advance.

Vehicles shall only be used for official County business only, and transportation to and from the assigned work location. The written authorization must specify the reason for the temporary 24-hour vehicle assignment, the date the vehicle will be returned and the address at which the vehicle will be parked overnight. The approving department will maintain a log to document the authorized use of vehicles. The log shall indicate at a minimum, the name of the authorized employee, the vehicle number, the description of use, and the date and time the vehicle was assigned and returned.

E. Inter-Agency Pool
The GSA Fleet Management Division maintains an inter-agency motor pool for use by County departments. To control the use of vehicles and reduce fuel consumption, Department Directors or designees must approve pool vehicle requests in writing. Employees must present the written approval to the pool attendant to be able to sign out a pool vehicle.

Pool vehicles are intended for use between 7:00 a.m. and 6:00 p.m., Monday through Friday. A Department Director or designee, may authorize an employee to utilize a pool vehicle on an overnight basis by indicating in the written approval, the date and time the vehicle shall be returned and specifying where the vehicle will be parked overnight.

OPERATION OF COUNTY-OWNED VEHICLES:

A. Drivers Other Than County Employees
Only authorized County employees are approved to drive or operate County vehicles. Permission for non-county employees to operate County vehicles must be obtained from the Director of the Risk Management Division, General Services Administration.

B. Passenger Restrictions
County vehicles may be utilized to transport other County employees as passengers if the other County employees are on official County business. Also, non-County employees may be transported only if involved in County related business. However, non-County personnel may not be transported outside of Miami-Dade County without the written approval of the Director of the Risk Management Division.

County employees who have a 24-hour assigned vehicle shall not transport other County employees to and from work.

C. Unmarked Vehicles
In those instances where official County markings would be detrimental to the effectiveness of the work being performed, the Department Director shall obtain written authorization from the County Manager or designee to utilize an unmarked vehicle. In all other instances, County vehicles will bear official County markings.

D. Use of Vehicles for Out-of-County Business
If a Country vehicle is to be used for out-of-County business, a department may choose to use one of their assigned vehicles, or request a vehicle from the County's loaner pool. Additionally, GSA Fleet Management has available gasoline credit cards which may be used for out of town trips. In order to obtain these cards an approved travel request must be presented to the Fleet Management Division.

Due to special insurance restrictions, no County vehicle is to be used outside the State of Florida without the expressed written permission of the GSA, Risk Management Division. Permission to take the vehicle out-of-State must be obtained at least five (5) days prior to the date the vehicle is needed for out-of-state work.

E. Use of County Vehicles Generally
The use of County vehicles is restricted to County employees only and for County business only. No County vehicle is to be used for personal business. Additionally, in compliance with State law, all persons in a County vehicle are required to use their safety belts.

The following activities are prohibited in all County-owned and leased vehicles:

1. All smoking including County-owned vehicles
2. Transportation of alcoholic beverages of any type
3. Employees experiencing any type of impairment or condition that may adversely impact safety shall not operate a County vehicle
4. Employees shall refrain from eating while operating County vehicles
5. Driving erratically, recklessly, or in an otherwise unsafe manner
6. To conduct illegal acts or any action prohibited by the County, State or Federal regulations
7. Utilization of a County vehicle for any type of unauthorized personal compensation

The County is not responsible for actions resulting from the unauthorized use of County vehicles. Employees involved in crashes or other incidents resulting from unauthorized use of County vehicles are legally and

financially responsible for all damages and claims that result from such incidents, and are not eligible for Worker's Compensation benefits.

MAINTENANCE AND UPKEEP OF COUNTY VEHICLES:

A. Maintenance and Housekeeping
Employees who are assigned a County vehicle are responsible for the proper use, care, and proper housekeeping of the vehicle, and assuring that the vehicle is safe from vandalism or other damage. All overnight parking locations must be in accordance with County vehicle policies.

The GSA Fleet Management Division shall operate a countywide maintenance program and notify departments of required preventative maintenance checks. Departments must comply with these scheduled maintenance checks in order to maintain the condition of the fleet.

In addition to complying with Fleet Management's preventative maintenance schedule, employees with department and full-time 24-hour assigned vehicles are responsible for conducting periodic vehicle inspections and reporting any mechanical problem(s) immediately upon detection. Vehicle inspection should include cleanliness and daily vehicle inspections including but not limited to periodic checks of tire pressure, fluid levels, turn signals and general operation of vehicle lights. At least monthly, division or field supervisors shall conduct a throughout inspection of assigned vehicles and ensure that staff are adhering to County business policies. Where County policies are being violated, appropriate action must be taken to immediately correct the situation. Results of the inspections shall be recorded on a VEHICLE INSPECTION FORM and signed by both the employee to which the vehicle is assigned and his/her supervisor. Departments shall create a VEHICLE INSPECTION FORM that at a minimum captures the information requested in the sample VEHICLE INSPECTION FORM (Attached).

B. Availability of Loaner Vehicles During Scheduled Maintenance Checks
In order to minimize employee inconvenience when vehicles are being serviced, loaner vehicles may be made available from GSA Fleet Management. Employees requiring a loaner should request one at the time their servicing appointment is being made. The department will be notified upon completion of the repairs and servicing and will have three (3) days to return the loaner vehicle and pick up the departmental assigned vehicle. If the vehicle is not picked up after three (3) days, GSA Fleet Management will begin to assess time charges at the pool rate.

ACQUISITION OF VEHICLES:

A. Replacement of GSA Fleet Policy Vehicles
Vehicles have to be replaced periodically when they meet the necessary criteria. A vehicle may be eligible for replacement when it has been in service for eight (8) years, has 100,000 miles, GSA has determined that the vehicle is in poor working condition or the vehicle does not meet other established criteria. However, if a vehicle has met the age or mileage criteria, and is considered to be in good operating condition, a department may wish to retain the vehicle with the understanding that the monthly capital replacement fee will be eliminated. Each year the GSA Fleet Management Division will identify those vehicles eligible for retirement, and notify the appropriate departments.

B. Acquisition of New or Previously Assigned Vehicles
Departmental requirements for additional vehicles will be met by the purchase of a new vehicle, or, if available, a vehicle may be assigned from the loaner fleet or another department. If the purchase of a new vehicle is approved, the department will pay GSA in full for the vehicle. Included in this charge is a dealer preparation and delivery charge and any other necessary fees including but not limited to decal and tag fees. GSA shall hold title to the vehicle and once the vehicle is placed in service, begin charging the department a monthly capital charge over the projected life of the vehicle. The capital charges shall be deposited in the Fleet Management Trust Fund for the department's future acquisition of new and replacement vehicles.

C. Additional Vehicle Assignments
When a department wishes to add a vehicle to its existing fleet, a VEHICLE ASSIGNMENT REQUEST FORM must be completed. This request must be approved by the appropriate County authority and submitted to

GSA for review. The County Manager shall implement operational procedures to review and approve departmental requests to add vehicles to the fleet.

RETIREMENT OF VEHICLES:

The GSA Fleet Management Division shall be responsible for developing and implementing a vehicle retirement schedule based on replacement analyses. Once the GSA Fleet Management Division has determined that a vehicle should be retired, the vehicle shall be sold either by auction or through the solicitation of competitive bids or donated to non-profit organizations as provided in County legislation. Proceeds from the sale of retired vehicles shall be credited to the department, less any fees associated with the sale, and less any residual value as appropriate.

This Administrative Order is hereby submitted to the Board of County Commissioners of Dade County, Florida.

MIAMI-DADE COUNTY
Department Name
VEHICLE INSPECTION REPORT (Administrative Order 6-2)
For the Month/Quarter Ending _______________, 20___

Instructions: Where undesirable conditions are found, ensure corrective action is taken as appropriate. Include additional comments as necessary. Employee assigned custody of the vehicle shall initial that they are aware of the inspection and the results. Supervisor's signature attests that the inspection was carried out and the employee was made aware of any remedial actions necessary.

INSPECTED BY: ____________________ TITLE: ____________________ INSPECTION DATE: ________________

Employee Information		Vehicle Information	Damage Assessment											Cleanliness Interior / Exterior						Mandatory Supply Items (To be determined by Department)														
Name of Employee Assigned Gas Card Number (GC) and Sun Pass Transponder (If applicable) (SP)		County Vehicle Number and Odometer Reading (OD)	Chipped/Broken Glass	Body / Roof (scratches, dents)	Bumper (front)	Bumper (rear)	Doors	Fender	Faded Paint	Interior (include upholstery)	Hubcaps (missing/damaged)	Tires (visual condition only)	Trunk	Exterior Appearance	Interior Cleanliness	Floors, Panels, Upholstery	Garbage and Litter Present?	Evidence of Smoking in Vehicl	General Vehicle Cleanliness	2-Way Radio	Measuring Wheel	Business Cards	Emergency Strobe Light	Rain Coat	Rubber Boots	Flashlight	First Aid Kit	Clipboard	Pens/pencils	Latex Gloves	Battery Spare	Hammer	Paperwork	Employee's Initials
NAME		#																																
GC	SP	OD																																
Comments:																																		
NAME		#																																
GC	SP	OD																																
Comments:																																		
NAME		#																																
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These items to be determined by departments

I have conducted the vehicle inspections of the vehicles noted above in accordance with AO 6-2.

____
SUPERVISOR'S SIGNATURE

Miami-Dade County
TWENTY-FOUR HOUR VEHICLE REQUEST
Administrative Order 6-2

Instructions: This request must be completed by the employee to whom the County funded 24-hour (take-home) vehicle will be assigned as defined in Administrative Order 6-2. Approved Requests must be submitted the General Services Administration and Human Resources Departments for inventory, risk management and payroll processing. If this is a new 24-Hour Vehicle Assignment, complete all sections. For Change/Update or Discontinuation of an existing 24-Hour Vehicle Assignment, complete Sections "A" and "C"

O New 24-Hour Vehicle Assignment O Change/Update Information O Discontinuation of 24-Hour Vehicle Assignment

SECTION A: Employee and Vehicle Information

Employee Last Name	Employee First Name	Classification	Employee ID Number

Department	Division	Work Address

Home Address: (Street, City, Zip code).
If legally exempt from providing home address enter "Exempt", your County of residence and round trip mileage

	County of Residence	Round Trip Miles Portal-to-Portal

Vehicle Number	Old Vehicle Number (If applicable)	VIN#: (leased/rented vehicles only)

Vehicle Make/Model	Model Year	MSRP: (for leased vehicles only)	Vehicle Assignment Date

O County Owned Vehicle (Yellow Tag) O Marked Vehicle O Unmarked Vehicle O Rented/Leased Vehicle (County Contract)

SECTION B: Justification (new assignments only)

To be eligible for a full-time 24-Hour Vehicle Assignment, you must meet one or more of the following criteria: Please check all that apply.

- ☐ I am a County employee receiving Group 1 Executive Benefits, who requires a vehicle assignment in lieu of the car allowance provided in the executive benefits package
- ☐ I am a Miami-Dade County Police Department (MDPD) police officer participating in the Personalized Patrol Vehicle Program (Resolution No. R-941-91)
- ☐ I am a MDPD Captain or Lieutenant eligible for a full-time vehicle assignment under the January 28, 1992 Letter of Understanding
- ☐ I am a County employee who is a member of a bargaining unit and contractually entitled to a full-time 24-hour vehicle
- ☐ I am a County employee who spends a minimum of 80% of my work shift in the field and is required to begin and end his/her work shift performing County business in the field
- ☐ I am a County employee who is required to respond to emergency situations occurring outside of regular working hours (call-outs) on an average of three or more times per week throughout the year
- ☐ I am a County employee required to attend unscheduled meetings/events on County business that cannot be performed during regular working hours, during daily work commute or using a temporary 24-hour vehicle assignment on an average of three or more times per week throughout the year
- ☐ Other (Please Explain) _____

_____

_____

SECTION C: Change/Update

Provide detailed description of Change/Update for the existing 24-Hour Vehicle Assignment:

SECTION D: Employee Affirmation

I have reviewed Administrative Order 6-2 and fully understand all the requirements and provisions associated with the assignment, operation and maintenance of the assigned vehicle. I affirm that I will comply with the provisions of Administrative Order 6-2 and that I also fully understand and accept the following (Initial each statement to indicate you understand and accept the provision)

_____ I shall be the only person authorized and responsible for driving, operating, and maintaining the vehicle clean

_____ I shall use the vehicle for County business only, or as provided in my Collective Bargaining/Other Agreement, and shall not engage in prohibited activities

_____ I shall return the vehicle to the worksite upon scheduled leave of 40 or more hours

_____ I shall be responsible for actions resulting from unauthorized use of the assigned vehicle

Employee Signature _____ Date _____

SECTION E: Review and Approval

I reviewed this vehicle assignment request and the employee's eligibility to be assigned a County funded vehicle per Administrative Order 6-2. I approve ____/ do not approve ____ assignment ____ /discontinuation of _____ this 24-Hour Vehicle Assignment Request

Supervisor Signature	Print Name	Date
Department Director's Signature	Print Name	Date

County Executive Office

_____ Approved _____ Not Approved

County Manager or Designee Signature	Print Name	Date

Distribution Instructions: Forward one copy of the approved request to the Employee, Employee Relations Department (accompanied by a Personnel Change Document) and one copy to the General Services Administration Department, Fleet Management Division.

FOR HUMAN RESOURCES DEPARTMENT USE ONLY

Is this 24-hour vehicle assignment taxable per Treasury Regulations Section 1.274-5T and other applicable rules?

Taxable _____ Non-Taxable _____

Indicate applicable fringe benefit taxation method per Treasury Regulations Section 1.61-21 and other applicable rules:

Taxable Commuting Rule _____ Taxable Lease Value Rule _____

Verified By:

Signature _____ Print Name _____ Date _____

Attachment 3

Emission and Fuel Reduction Potential

Department	Number of Employees	Number of Vehicles Assigned	Estimated CO2 Emission Reduction (Equivalent Tons)			
			Fleet Reduction	Cease 24-Hour Assignment	Replace with Hybrid	Total Emission Reduction
HOUSING	698	271	75	3	40	118
BUILDING	356	139	70	24	88	181
PARKS	1,272	471	120	20	33	173
SEAPORT	387	96	40	-	13	53
ETSD	611	102	65	181	3	248
TEAM METRO	247	95	25	290	135	450
TRANSIT **	3,876	306	410	-	83	493
CORRECTIONS	2,695	261	90	72	123	284
DERM	519	126	80	102	68	250
PUBLIC WORKS	933	276	70	204	60	334
WASD **	2,702	857	600	136	28	764
FIRE	2,541	389	160	48	170	378
POLICE ***	4,998	3,625	1,125	198	340	1,663
AVIATION **	1,593	401	100	14	20	134
Total	23,428	7,415	3,030	1,291	1,200	5,521

* Tons of Carbon Dioxide Equivalent

Fuel Reduction Estimates

Department	Number of Employees	Number of Vehicles	Estimated Fuel Consumption Reduction (in Gallons)			
			Fleet Reduction	Cease 24-Hour Assignment	Replace with Hybrid	Total Fuel Consumption Reduction
HOUSING	698	271	10,714	487	5,714	16,916
BUILDING	356	139	10,000	3,409	12,500	25,909
PARKS	1,272	471	17,143	2,922	4,643	24,708
SEAPORT	387	96	5,714	-	1,786	7,500
ETSD	611	102	9,286	25,811	357	35,454
TEAM METRO	247	95	3,571	41,395	19,286	64,252
TRANSIT **	3,876	306	58,571	-	11,786	70,357
CORRECTIONS	2,695	261	12,857	10,227	17,500	40,584
DERM	519	126	11,429	14,610	9,643	35,681
PUBLIC WORKS	933	276	10,000	29,220	8,571	47,791
WASD **	2,702	857	85,714	19,480	3,929	109,123
FIRE	2,541	389	22,857	6,818	24,286	53,961
POLICE ***	4,998	3,625	160,714	28,246	48,571	237,532
AVIATION **	1,593	401	14,286	1,948	2,857	19,091
Total	23,428	7,415	432,857	184,573	171,429	788,859

APPENDIX V

Ordinance 06-113
Creating Climate Change Advisory Task Force

MEMORANDUM

Agenda Item No. 4(O)

TO:	Honorable Chairman Joe A. Martinez and Members, Board of County Commissioners	**DATE:**	April 25, 2006
FROM:	Murray A. Greenberg County Attorney	**SUBJECT:**	Ordinance creating the Miami-Dade County Climate Change Advisory Task Force

The accompanying ordinance was prepared and placed on the agenda at the request of Commissioner Natacha Seijas and Commissioner Jose "Pepe" Diaz.

Murray A. Greenberg
County Attorney

MAG/bw

MEMORANDUM

(Revised)

TO: Honorable Chairman Joe A. Martinez and Members, Board of County Commissioners

DATE: April 25, 2006

FROM: Murray A. Greenberg, County Attorney

SUBJECT: Agenda Item No. 4(O)

Please note any items checked.

_____	**"4-Day Rule" ("3-Day Rule" for committees) applicable if raised**
✓	**6 weeks required between first reading and public hearing**
_____	**4 weeks notification to municipal officials required prior to public hearing**
_____	**Decreases revenues or increases expenditures without balancing budget**
_____	**Budget required**
_____	**Statement of fiscal impact required**
_____	**Bid waiver requiring County Manager's written recommendation**
✓	**Ordinance creating a new board requires detailed County Manager's report for public hearing**
_____	**Housekeeping item (no policy decision required)**
_____	**No committee review**

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 4(O)
4-25-06

ORDINANCE NO. _____

ORDINANCE CREATING THE MIAMI-DADE COUNTY CLIMATE CHANGE ADVISORY TASK FORCE; PROVIDING FOR MEMBERSHIP, ORGANIZATION AND PROCEDURE, APPOINTMENT AND TENURE, FUNCTION AND RESPONSIBILITY; PROVIDING SEVERABILITY, INCLUSION IN THE CODE, AND AN EFFECTIVE DATE

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA:

Section 1. Climate Change Advisory Task Force; purpose.

In accordance with Sections 2-11.36 through 2-11.40 of this Code, there is hereby created and established an advisory board to be known as the Miami-Dade County Climate Change Advisory Task Force (hereinafter referred to as the CCATF) for the purpose of providing technical assistance and advice to the Board of County Commissioners as to mitigation and adaptation measures to respond to global warming climate change.

Section 2. Membership; appointment, staggered terms and removal.

(a) The CCATF shall have twenty-five (25) members. Each member shall be a resident and elector of Miami-Dade County unless the Board of County Commissioners, by a two-thirds vote of its membership, waives this requirement. Members should have reputations for integrity and community service and have

demonstrated an interest in a field or activity related to global warming climate change. The CCATF shall be composed of the following members:

1) Harvey Ruvin, who as a former member of the Board of County Commissioners sponsored Resolution No. R-335-91 adopting the County's "Urban CO2 Reduction Plan" (hereinafter referred to as the "adopted plan") and has chaired its implementation since, and who continues his service to the community as the Miami-Dade County Clerk of Courts;

2) One appointment for a member seat from each member of the Board of County Commissioners. In making the initial appointments preference should be given to those persons who have demonstrated a record of service by previous participation on the ad hoc committee on climate change adaptation chaired by Harvey Ruvin;

3) The County Manager shall recommend to the Board of County Commissioners candidates for nine (9) members' seats from governmental agencies and educational institutions on the basis of technical expertise in areas that will facilitate the work of the CCATF.

4) Two (2) appointments by the Mayor for two regular member seats.

(b) The initial appointment of those members appointed by individual commissioners shall be for a term of three (3) years. Those members not appointed by individual commissioners shall serve an initial term of two (2) years. The successors to the initial two-year appointments shall be appointed for three (3) years.

(c) Members may be removed in accordance with the provisions of Section 2-11.38 of this Code.

Section 3. Quorum; organization and procedures at meetings

(a) A quorum shall be a majority of the duly appointed and sitting members.

(b) Harvey Ruvin shall serve as the initial chairperson for a three (3) year term. Thereafter, the chairperson shall be elected annually by a majority vote of the duly appointed membership.

(c) At the initial meeting, the chairperson shall appoint another member to serve a one (1) year term as vice-chairperson, subject to approval by a majority vote of those members in attendance. Thereafter, the vice-chairperson shall be selected and approved annually in the same manner. The CCATF shall adopt rules of procedure for its own governance.

(d) The chairperson shall nominate and the CCATF shall appoint, by a majority vote of those members in attendance, a chairperson and members for such committees as the CCATF finds helpful to its mission. Each committee shall be chaired by a duly appointed member of the CCATF, however, the committee membership may include persons who are not members of the CCATF. A committee shall have no authority to act or speak on behalf of the CCATF. The CCATF may establish or eliminate committees at its discretion.

(e) The CCATF shall hold not less than four (4) regular meetings each year.

Section 4. Responsibilities of the Climate Change Advisory Task Force.

The primary responsibility of the CCATF is to advise the Board of County Commissioners as to strategies and policies with respect to the continued implementation of the adopted plan and its updates, as well as adaptation measures to be taken in response to the challenge of global warming climate change. The CCATF shall serve as a

clearinghouse for information and strategies and provide reports on a quarterly basis to the Infrastructure and Land Use Committee of the Board of County Commissioners, or such other committee designated by the Board. On or before the first day of June, the CCATF shall provide an annual report of its recommendations to the Board of County Commissioners.

Section 5. Limitation of Authority.

The CCATF shall have no authority to commit Miami-Dade County to any policies, to incur any financial obligations or to create any liability on the part of the County. The actions and recommendations of the CCATF are advisory only and shall not be binding upon the County.

Section 6. Physical facilities, staff and supplies.

(a) The County shall provide the CCATF with appropriate meeting facilities, together with necessary supplies and equipment.

(b) The County Manager shall provide necessary staffing assistance to the CCATF.

(c) The CCATF may request the Board to provide such other specialized consulting expertise as it may determine are necessary from time to time.

Section 7. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 8. It is the intention of the Board of County Commissioners, and it is hereby ordained that the provisions of this ordinance, including any sunset provision, shall become and be made a part of the Code of Miami-Dade County, Florida. The

sections of this ordinance may be renumbered or relettered to accomplish such intention, and the word "ordinance" may be changed to "section," "article," or other appropriate word.

Section 9. This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

Section 10. This ordinance shall stand repealed five (5) year(s) from its effective date.

PASSED AND ADOPTED:

Approved by County Attorney as to form and legal sufficiency:

Prepared by:

Robert A. Duvall

Sponsored by Commissioner Natacha Seijas and Commissioner Jose "Pepe" Diaz