FLORIDA

SERIOUS RISK. BOUNDLESS POTENTIAL.

“I WILL BRING TOGETHER THE BRIGHTEST MINDS TO BEGIN WORKING ON A PLAN FOR FLORIDA TO EXPLORE GROUND-BREAKING TECHNOLOGIES AND STRATEGIES THAT WILL PLACE OUR STATE AT THE FOREFRONT OF A GROWING WORLD-WIDE MOVEMENT TO REDUCE GREENHOUSE GASES.”

GOVERNOR CHARLIE CRIST, STATE OF THE STATE ADDRESS, MARCH 6, 2007

INTRODUCTION

Florida is the fourth most populous state in the USA with over 18 million permanent citizens. The attractiveness of Florida's environmental amenities and economic opportunities has fueled a rapidly growing population and thus a booming real estate and construction industry. In addition to permanent residents, more than 84.6 million people visited Florida in 2006 according to the state's tourist development agency, contributing $65 billion to the state economy (more than 10% of state GDP), establishing Florida as the top travel destination in the world. Florida also remains an agricultural stronghold, as the state's number two economic sector. This influx of residents and tourists make tourism, agriculture and real estate three of Florida's primary economic drivers.

At the same time, the mean elevation of the state of Florida is 100 feet above sea level and the highest natural point is only 345 feet. Approximately 95% of the population lives within 35 miles of the over 1,300 miles of coastline. Due to this geography and the fact that approximately 17% of the population is over 65 years old, the state is highly vulnerable to two possible consequences of global climate change: rising sea levels and the health concerns related to rising temperatures.

Three of Florida's largest economic engines—tourism, agriculture and real estate development—can play a leadership role in climate change solutions to reduce Florida's vulnerability. These business sectors are highly influential in the international business community and have unexplored potential for leadership on climate change. By combining established best practices on energy efficiency and renewable energy, Florida can lead in tackling the greenhouse gas (GHG) emissions stemming from tourism, agriculture and buildings.

PERCENTAGE OF FLORIDA'S POPULATION LIVING WITHIN 35 MILES OF THE COAST: 95%

NUMBER OF FLORIDA TOURISTS IN 2006: 84.6 MILLION

FINANCIAL CONTRIBUTION OF TOURISM TO FLORIDA'S ECONOMY IN 2006: $65 BILLION

GROWTH IN FLORIDA'S POPULATION 2005 TO 2006: 13.2%

RANK OF FLORIDA AMONG USA STATES IN PER CAPITA ENERGY CONSUMPTION: 3

THE CHALLENGE

Lying at the intersection of tourism and real-estate GHG emissions is electricity use in residential and commercial buildings. Approximately 76% of the electricity consumed in the USA is used in buildings, primarily for lighting, heating and cooling. Florida is uniquely positioned to set an important precedent for highly energy-efficient new building construction. Without a change in course, Florida's electricity consumption is expected to rise faster than the rate of population growth. Agriculture can lead the renewable energy development of Florida's energy use through biofuels in transportation and biogas in the electrical grid. As the third largest energy consumer in the USA, there is an enormous potential for Florida to utilize the existing energy efficiency and renewable energy ideas that have already been successfully implemented at a handful of electric utilities globally.

The American Council for an Energy Efficient Economy (ACEEE) analyzed the potential for these options to meet Florida's increasing energy needs and estimated that a plan of energy efficiency and renewable energy use could satisfy 30% of Florida's projected demand for electricity by 2023, avoiding 54 million metric tons of carbon dioxide emissions. ACEEE's efficiency policies alone would reduce projected demand growth by over 19% by 2023, saving customers almost $57 billion on their electricity bills and reducing carbon dioxide emissions by over 37 million metric tons. Today, Florida has no state-wide net electrical metering program but does have the nation's only state-wide incentive program for utilities to

reduce overall energy use. However, the focus of Florida utilities' has traditionally been on managing customer load rather than emphasizing energy efficiency. Over the past decade, Florida utilities have sponsored many programs to install more efficient central air conditioners and heat pumps.

There are easy wins in demand-side management of energy for Florida. For example, swimming pool/spa pumps and heaters use 20% of the total electricity consumed in Florida homes, but researchers at the Center for Energy Conservation at Florida Atlantic University found that some pool owners saved as much as 75% of their original pumping bill when they used energy conservation measures. Additionally, a study by the Florida Solar Energy Center showed that, on average, 37% of annual household electricity was used for cooling. It also showed that a 20-40% saving in energy consumption can be achieved by replacing less efficient air conditioning systems with higher efficiency systems.

Another opportunity for Florida is to utilize automated gas and electric metering systems, or Smart Meters, which offer the benefits of reducing peak load during summer months, reducing electricity bills and reducing energy use. The City of Tallahassee Utility is preparing to implement Florida's first Smart Metering program. Today, it is estimated that there are 70 million advanced electric, gas and water meters deployed in the United States. Approximately two-thirds are Smart Meter networks. There is some evidence that when households receive feedback on their energy consumption, 10-15% energy savings can be achieved.

Automated gas and electric metering systems work by showing energy use in dollars rather than kWh and are reported in real time; this technology will eventually be accessible online to better allow customers to manage when and what energy they consume. Smart Metering benefits utilities by supporting better load control, avoids extra utility generation and reduces transmission capital costs. In the UK, EDF Energy has trial programs with Severn Trent, Seeboard and British Gas to expand the use of net-metering. In Italy, Enel has installed Smart Metering for 23 million customers at the cost of €2.1 billion and with a return on investment of less than five years. California utilities and Puget Sound Energy are also instituting Smart Metering programs.

Florida can and must do its part to mitigate climate change to protect its coastlines and its citizens. As Governor Crist said in his State of the State address, "Florida is more vulnerable to rising ocean levels and violent weather patterns than any other state." The best practice examples demonstrated here show there is a tremendous opportunity for the state to benefit both its economy and environment by leading on climate mitigation activities.

FACT: PERCENTAGE OF RESIDENTIAL ELECTRICITY USED FOR POOL PUMPS AND HEATERS: 20%

FACT: PERCENTAGE OF ENERGY SAVED FROM POOL PUMPS WHEN USING ENERGY CONSERVATION TOOLS: 75%

FACT: AVERAGE PERCENTAGE OF HOUSEHOLD ELECTRICITY USED FOR COOLING: 37%

FACT: PERCENTAGE OF ELECTRICITY SAVED WITH ENERGY-EFFICIENT AIR CONDITIONERS: 20-40%

RENEWABLE ENERGY GENERATION FROM AGRICULTURE

Florida is home to 26 million poultry, 1.5 million beef cattle, 500,000 horses, 140,000 dairy cattle, 100,000 swine, 30,000 goats, 10,000 sheep, and millions of companion animals whose direct sale and related product sales accounted for $1.48 billion or approximately 22% of cash receipts for Florida's farms and ranches in 2004. Along with the economic contribution of livestock to Florida's economy, come the environmental effects, especially air and water pollution. From cattle in particular come methane emissions from manure management. Methane emissions account for approximately 7% of Florida's total greenhouse gas emissions. However, thanks to research and demonstration work at the University of Florida Dairy Extension and over 125 farms across the country, this seemingly negative environmental impact of cattle is a potential source to produce renewable energy, eliminate manure odor, improve ground-water quality and provide an extra source of income to farmers. The potential lies in the integration of anaerobic digestion with manure management. Anaerobic digestion relies on microorganisms to transform animal manure into biogas, a mixture of mostly methane and carbon dioxide. The two types of anaerobic digesters practical for Florida dairy farms are covered lagoon and fixed-film digesters. A large-scale anaerobic digester at UF's 500-cow Dairy Research Unit is currently generating biogas from manure. The most advantageous aspect of anaerobic digestion is its many co-benefits.

Anaerobic digestion reduces the potential emission of greenhouse gases in two ways. Firstly, anaerobic digestion captures the methane gas normally released during storage of manure and secondly, reduces the need for a farm to purchase fossil fuels when utilizing the captured gas from anaerobic digestion for electricity or heating hot water. A second benefit of anaerobic digestion is the useful by-products of the process, liquid fertilizer and compost. The by-products reduce the need for synthetic fertilizer and soil conditioners that are typically petroleum-based products. The approximately 40 cubic feet of methane per day that can be produced from the waste of each dairy cow provide an electricity source that dairy farmers can use directly, offsetting the cost of purchasing electricity from the grid and potentially producing excess electricity that can be sold back to electric utilities, creating a new income stream. Also, because the waste is enclosed to keep oxygen out, anaerobic digestion keeps odors in. In fact, odors, flies and pathogens are reduced by as much as 95%. Finally, many of the existing 125 (as of 2006) anaerobic digesters in the United States are earning farmers carbon credits which can be sold for additional income. Dairyman Darryl Vander Haak, sold the carbon credits from his farm's $1.2 million anaerobic digester on the Chicago Climate Exchange (CCX) for $26,000 with the assistance of Environmental Credit Corp.

The University of Florida Dairy Extension has already analyzed the economic feasibility of anaerobic digestion for Florida dairy farmers. Both the value of carbon credits and the cost of energy are expected to increase, improving the economics for commercial implementation of anaerobic digestion in Florida.

FACT: PERCENTAGE OF TOTAL GREENHOUSE GAS EMISSIONS THAT COME FROM METHANE EMISSIONS: 7%

NUMBER OF WAL-MART STORES IN FLORIDA: 254

NUMBER OF FLORIDIANS EMPLOYED BY WAL-MART: 97,188 (AS OF MAY 2007)

PERCENTAGE OF FLORIDA'S LABOR FORCE EMPLOYED BY WAL-MART: 1%

ENERGY REDUCTION EXPECTED IN ALL NEW WAL-MART STORES: 30%

PERCENTAGE REDUCTION IN ENERGY LOAD FROM LIGHTING AT GRADY PRIDGEN INC.: 22.4%

WAL-MART TEAMS WITH ARUP

Nearly 100,000 Floridians work in Wal-Mart's 254 stores, accounting for more than 1% of all Florida jobs. Its Florida stores collected $790 million in sales tax in 2006 and support over 130,000 in-state supplier jobs. Wal-Mart understands that energy use affects the bottom line and has teamed with Arup, a global firm of designers, engineers and business consultants, to work on sustainable building techniques in the stores.

Arup is the creative force behind many of the world's most innovative and sustainable buildings, as well as transport and civil engineering projects. Arup's leadership on sustainable building has been instrumental in helping Wal-Mart meet its sustainability goals, and Arup's ongoing energy reduction initiatives for Wal-Mart will be visible as the retailing giant works to reduce energy use in its Florida stores. Wal-Mart has embraced sustainable solutions, and will be an example of what can be done in building technologies to mitigate climate change and create business.

Wal-Mart's current experimental stores in the USA, designed by Arup and LPA, are located in McKinney, Texas and Aurora, Colorado. They utilize many sustainable technologies including biofuel boilers, wind turbines, radiant floor heating, indirect-evaporative cooling, energy-efficient LED lighting, solar-powered traffic lights and xeriscaping. The McKinney, Texas stores are expected to reduce energy use by 30-50% and save five million gallons of water per year. After a three-year period, the results of the experiment will be

evaluated and applied to the construction, maintenance and operation of other Wal-Mart facilities. These results will be shared with the industry, the general public and relevant government agencies.

Arup is working with Wal-Mart to realize a 30% energy reduction in all new stores and a 20% reduction in existing stores leading to carbon neutral operations in the future. The "Design Development Collective" is a group of designers and Wal-Mart staff who have been researching, developing, and integrating sustainable systems, strategies and materials into the new and existing stores.

GRADY PRIDGEN INC.

Grady Pridgen, Inc. is a full-service industrial, office, retail and residential marketing and management company. The company is developing the nation's first zero-carbon, mass-transit and pedestrian-oriented, urban infill project on a brownfield redevelopment site. The site for the 'La Entrada' project covers 133 acres in St. Petersburg. Initially, Pridgen began retrofitting a number of his firm's existing properties with energy-efficient HVAC systems, fluorescent lighting, and programmable thermostats and established an education program to encourage the firm's tenants to conserve energy. The results were compelling as the energy load from lighting alone was reduced 36% at the Atlantis property and 22.4% at Grady Pridgen Inc. As a result, Pridgen has developed a passion to create a true model for green living. His plans will incorporate Leadership in Energy and Environmental Design (LEED) standards and maximize sustainable building practices through an innovative partnership with Progress Energy that will provide fiber-optic lighting from the sun. The company's properties will include solar hot water heating, cool roof systems, energy-efficient construction, fluorescent lighting and highly-efficient HVAC systems. The ultimate goal is to reduce electricity, water, sewer and waste demand by 75% through solar energy production, energy-saving appliances and construction, water conservation fixtures and recycling programs.

FACT: A 20% REDUCTION IN ENERGY COSTS IS EQUIVALENT TO A 5% INCREASE IN SALES FOR HOTELS

TYPICAL PERCENTAGE REDUCTION IN ENERGY USE IN THE HOSPITALITY SECTOR USING SIMPLE ENERGY EFFICIENCY: 20%

FLORIDA GREEN LODGING PROGRAM

The energy use in hotels, restaurants, airlines, car rental and other businesses underscores the need for the tourism sector to take a leadership role in reducing greenhouse gas emissions. The tourism industry also has a unique opportunity to shape the energy use habits of its customers. Hotels can educate guests about the carbon footprint embedded in heating and cooling, lighting and water use.

The Florida Department of Environmental Protection's Green Lodging Program represents one of Florida's first efforts to encourage the conservation of Florida's natural resources used in tourism, its largest economic sector. The program focuses on partnerships, with Florida's clean technology and service businesses providing technical assistance to hotels seeking to improve the quality of each guest's hotel stay and reduce energy costs.

The tourism sector is extremely sensitive to rising fuel prices which affect both transportation and electricity costs. Reducing energy costs can directly increase profits, as the cost savings go straight to the bottom line, making businesses more competitive. A 20% reduction in energy costs is on average equivalent to a 5% increase in sales.

The hotels involved in the Florida Green Lodging Program range in size and the number is expanding as they recognize what James Grosso, General Manager of the Hilton in the WALT DISNEY WORLD® Resort has found: "While initially driven by the rising

energy costs and a heightened awareness of global warming and its impact, the hotel and Hilton Hotels Corporation are taking into account the triple bottom line of People, Planet, and Profit as a measure of our success." The Carbon Trust, set up by the UK government to accelerate the move to a low carbon economy, found that some hotels have experienced as much as a 40% reduction in energy use where energy efficiency opportunities have been maximized during remodeling. An establishment can typically achieve a 20% reduction in energy use by implementing simple efficiency measures.

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THE °CLIMATE GROUP

USA (EAST COAST):

C/O 245 FIFTH AVENUE
SUITE 2401
NEW YORK, NY 10016-8728
USA

T: +1 (212) 545 5421
F: +1 (212) 545 5462

HEAD OFFICE:

THE TOWER BUILDING
YORK ROAD
LONDON SE1 7NX
UNITED KINGDOM

T: +44 (0)20 7960 2970
F: +44 (0)20 7960 2971

WWW.THECLIMATEGROUP.ORG

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The Climate Group is an independent, non-profit organization dedicated to driving the expansion of the new low-carbon economy by accelerating the international uptake of best corporate and government practice in emissions reductions. We have offices and charitable status in the UK, USA, Australia and China and we operate internationally.

Since the organization's founding in 2004 we have developed an interlocking program of sectoral leadership groups and coalitions, research and publication, media engagement, and high-impact events. Our programs have helped demonstrate that action on climate change can be profitable as well as essential, inspired further action and outreach through strong international communications and events and mobilized business to support effective strategies and policies that mitigate climate change.

Proactive companies, states, regions and cities around the world are demonstrating that cuts in greenhouse gases required to stop climate change can be achieved whilst growing the bottom line. Using the work of these leaders as a catalyst, The Climate Group works to accelerate international action on global warming with a new, strong focus on practical solutions.

We promote the development and sharing of expertise on how business and government can lead the way towards a low carbon economy whilst boosting profitability and competitiveness. The Climate Group has a collaborative and positive approach in the effort to combat climate change.