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Florida's Energy Future: Opportunities for Our Economy, Environment and Security

– *Executive Summary*

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Energy Future:

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A Report to the Florida Department of Environmental Protection

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The Florida Solar Energy Center

and

CPI Consulting

Executive Summary

The full report can be downloaded at **www.fsec.ucf.edu**

Executive Summary

The future of Florida's economy, environment and security is inextricably intertwined with our energy use decisions. Our state has one of the nation's fastest growing populations, promoting rapid expansion of an energy industry that imports its fuel supplies. Florida exports approximately $32 billion per year for these energy fuels. Moreover, the Florida economy depends critically on tourism and agriculture, and the fuels and energy products that maintain them. Our pristine environment is the primary natural resource supporting this unique economic engine, and the adverse effects of our rapidly growing energy use now stress it. Our State's economic well-being and security lie in the balance.

The events of September 11, 2001 and the "blackout of 2003" in the northeast have made energy security a national priority. The nation imports more than 55 percent of its petroleum products from foreign sources. Fully 65 percent of the world's known petroleum reserves lie in the oil-rich Middle East, an unstable region which we continue to depend on for a large and growing portion of our energy supplies. Sudden interruption of these petroleum supplies would surely wreak havoc upon Florida and the rest of the nation. Yet, in too many ways, we have chosen to ignore these realities.

We have options. We can invest in high-efficiency technologies that pay us back for decades into the future, or we can invest in commodities whose low first cost benefits us in the short term but mortgages the lives of our children and grandchildren. We can build homes the way we have always built homes, with limited regard for their resource impacts, or we can build high-quality homes that pay us back for years into the future with increased disposable income. We can build minimum-efficiency schools that cost Floridians many millions of dollars each year to operate, or we can build high-quality energy-efficient schools and use the savings to hire more and better teachers for our children. Computed over the school life, the cost is the same. The same holds true for our government facilities. We can use the taxpayers' money to pay operating costs or return it in public services. We can choose to aggressively invest in indigenous alternative and renewable energy resources that create greater security, enhanced economic activity and job growth, or we can continue to invest our limited capital in imported energy supplies, which deplete, rather than enhance, our long-term economic security.

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This report sets forth solutions for the future. It also details the interrelationships between energy and our environment. The fact – poorly known to most – is that 99 percent of atmospheric carbon dioxide emissions are caused by the combustion of fossil fuels. A carbon dioxide molecule resides in the upper atmosphere as a greenhouse gas for a full century. The accumulation of these "greenhouse gases" in the upper atmosphere is causing the average global land temperature to rise at alarming rates. Global warming is projected to result in significant global climate change, including melting of glaciers and polar ice caps. What will Florida do to accommodate a five-foot rise in sea level?

This report on Florida's energy future is also a report on Florida's economy. The current state budget crisis requires innovative solutions. Florida spends more than $500 million each year on energy for state-owned buildings alone. By making better decisions about energy, much of that money can be better spent on public services. On a broader level, if less money leaves Florida for energy supplies, can we put our capital to better use to build a thriving Florida economy? If we improve our environment through more efficient and wiser energy use choices, might we achieve improved health and business productivity as well?

Findings

This report on Florida's energy future presents a number of important findings:

- **State energy policy remains fragmented and uncoordinated.** Despite more than 50 Florida Statutes related to energy use and policy, and repeated recommendations from experts, consultants and official government commissions, Florida does not have a coherent energy policy. There is no central entity with the responsibility, authority and funding to focus on state energy policy. As a result, various agencies that have statutory responsibilities are often working at cross-purposes and are not coordinated. Implementation duties for other energy policies are unassigned and not acted upon. In addition, Florida's statutory energy policy requirements are mostly "unfunded mandates," making them largely ineffective.

- **Imports of energy supplies to our state result in approximately $32 billion in Florida dollars per year being exported from the state's economy.** Florida's electric utilities represent a $16 billion per year industry. Add to that the amount spent on motor fuels in Florida and the total doubles to approximately $32 billion per year. More than two-thirds of this amount immediately departs from the Florida economy, resulting in little economic activity within the state. On the other hand, if indigenous resources are used to meet energy needs, including manufacturing, installation and services of energy-efficient and renewable energy technologies, then the dollars are re-spent in the local Florida economy. This creates what economists refer to as the "multiplier effect," whereby money that is spent in the local economy is worth much more (two to three times more) than money that is sent outside the local economy. Thus, every dollar spent on increased efficiency or indigenous renewable energy is worth more than twice its value and results in real job growth, additional revenues and enhanced economic activity within the state.

- **Rapidly increasing energy use in Florida is adversely impacting Florida's air and water quality.** Florida will continue to see rapid population growth. As a result, increasing energy supplies will be required to meet the needs of this growth. As the number of automobiles and trucks using Florida's highways and the number of needed power generation plants increase, the burden on Florida's environment becomes greater. Now, for the first time, Florida is beginning to experience air quality non-attainment in some of its densely populated areas and to experience levels of mercury (a power plant emission and persistent toxic) in its waters that are beyond established safe limits.

- **Cost-effective energy efficiency and renewable energy technologies are under-utilized in Florida.** Energy efficiency and renewable energy technologies have undergone significant technological advances during the past 20 years. However, their use in Florida lags far behind the available technology. Market and regulatory barriers, inertia and lack of awareness by consumers and decision-makers at all levels are primary factors, yet these technologies offer considerable benefits. For example, life cycle cost analysis conducted during this study shows that 25-35 percent energy savings are readily achievable at net cost savings to consumers in both the new and retrofit buildings market – the largest single segment of energy use in Florida. Additionally, virtually every economic study that has been commissioned on this subject has shown that significantly enhanced economic activity and new job growth accompany these energy and cost savings.

- **The public requires more and better information on which to base energy decisions.** Generally speaking, consumers desire to make more responsible energy decisions, to save money, to support a larger social goal or both. Driven by environmental concerns, consumers will often make more responsible energy choices when equipped with the right information. However, they usually don't take time to seek it out. In general, the two most common sources of consumer energy

information are product salespeople and utilities. Utilities are in the business of selling energy so the best available energy savings options can be counter to their business interests. Thus, consumers tend to "stick with what they know," hoping they are making the right choice while often ending up with products that do not serve their best economic interests.

- **State government energy managers need better resources to improve energy efficiency in state operations.** Florida has several statutes aimed at state facility and fleet energy use reduction. However, facility and fleet managers are faced with significant budget constraints and a lack of energy efficiency incentive programs that would allow for greater investments in efficiency improvements. Thus, even though the long-term economics favor greater investment in energy efficiency, it rarely occurs. Where state facilities are leased, matters are complicated further as public energy managers currently have little if any influence over building design and operations.

- **Growth and development patterns in Florida are often resource-inefficient.** Florida is a state dominated by patterns of sprawl development. Opportunities for efficient land use are often overlooked. These include compact development, redevelopment and re-use, neo-traditional design and walkable communities. Transit systems and transportation demand reduction strategies are generally under-utilized. Energy has not been a priority in the planning process at the state and local levels and generally is not addressed in Florida's growth management strategies.

- **The prime source of funds to support advances in energy efficiency and renewable energy resources in Florida is controlled by private utilities, whose business objective is to maximize profits rather than to conserve scarce energy resources.** The Florida Energy Efficiency and Conservation Act (FEECA) has been implemented by the Florida Public Service Commission to allow utilities to conduct incentive programs aimed at reducing demand for electricity. Utility customers throughout Florida are subject to a charge on their monthly electric bills to recover the costs of these programs. These Demand Side Management (DSM) programs totaled $267 million in ratepayer proceeds in 2002 and $3.8 billion since their inception in 1980. However, due to lost revenues, energy efficient products that produce significant energy savings, which outweigh their demand reduction savings, are not included in utility DSM portfolios. As a result, many highly cost-effective energy-efficiency options like compact fluorescent bulbs, high efficiency refrigerators and solar water heating are not included in utility DSM programs. During the past decade, Florida's utility DSM programs have cost ratepayers more than $0.12 per saved kWh and more than $1,000 per avoided peak kW.

- **Building energy codes and appliance standards are highly cost-effective.** However, they lag the marketplace. Market intervention at earlier stages can provide significant additional savings and smooth the transition process. This makes regulatory measures like codes and standards much more effective and leads to more opportunities for "best practice" outcomes.

- **Florida and the nation are in a new era where energy security and reliability are in the forefront.** Florida consumes an enormous amount of energy in all end-use sectors and, as with the nation, is vulnerable to fuel price volatility and the disruption of energy supplies. Florida's vulnerability is particularly severe in that virtually all of the energy we consume is imported, much of it coming from unstable foreign markets. Moreover, interruption of the fuel supply would be economically devastating to Florida as the economy is dependent on car-bound tourism. New actions are needed to address the changing geo-political climate for the immediate and long-term security of our state and the public welfare.

Recommendations

Recommendations to secure Florida's energy future include the following:

- **Create or designate an entity to oversee state energy policy.** Give it the authority, responsibility and appropriations it needs, and hold it accountable for accomplishing its mission. The head of the entity should report directly to the Governor. A State Energy Policy & Planning Council, comprised of the agencies most responsible for implementing state energy policies or who are major consumers,[1] could be called on to work with and assist the entity in achieving its mission. The short-term goal should be to reduce Florida's primary energy use per capita to 85 percent of its year 2000 level by the year 2010 with long-term goals that provide for a continuing reduction in per capita energy use in Florida beyond that date. The entity should develop a Florida Energy Policy and Strategic Plan. The Energy Policy should be based upon an analysis of the Florida energy market, should be largely market-driven, and should adopt quantifiable goals upon which success of the strategic plan may be measured.

- **Create a fund that can be used to provide market incentives and encourage economic development as prescribed by a state energy plan.** This fund should be administered by a party independent of the state policy development and coordinating entity and be subject to its oversight for purposes of meeting current and future funding needs. Consider all funding alternatives, including use of current Florida Energy Efficiency & Conservation Act cost recoveries, and utility and gasoline "taxes." Require that incentives be based on independently verified energy performance rather than on product price. Use this fund to leverage federal funding opportunities for research, development, demonstration and deployment that require non-federal funding participation and to encourage energy-based economic development.

- **Create and fund a statewide energy management program modeled after the U.S. Department of Energy's Federal Energy Management Program and lead by example.** New state facilities should be required to be 15 percent more efficient than Florida's minimum code requirements, and commissioning, monitoring and evaluation, building tune-up and retrofit programs should be actively pursued. Government fleets and facilities can cost-effectively save substantial quantities of energy. This program should offer annual training and peer group support for government officials and employees responsible for energy management. It should also provide for easy to read energy scorecards for governmental managers based on the state's management accounting and budgeting system to remove duplication of effort and provide audited information. This program should include local governments and school boards to encourage energy-efficient local actions through incentives and education and by creating cooperative programs with appropriate state agencies and city and county organizations.

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- **Support and expand the use of energy efficiency and renewable energy.** Adopt and maintain strong energy codes and appliance standards, bounty programs and bulk purchasing

[1] Department of Environmental Protection (DEP), Department of Community Affairs (DCA), Public Service Commission (PSC), Department of Management Services (DMS), Department of Transportation (DOT), Department of Education (DOE), and others.

programs, and develop working relationships with industry, federal, private and other state entities actively engaged in these areas. Recognize solar energy systems, including hot water, as energy generators rather than energy savers (in the state's regulatory mechanism) and accord them the same benefits as other energy-generating facilities receive. Provide meaningful incentives for the use of existing technologies and wise energy practices. Support research and development of other indigenous renewable resources. Remove barriers to small-scale generation from renewables and Florida-preferred generation technologies or replacements. Capture supply side efficiency savings, particularly in energy transmission and distribution.

- Develop energy-efficient transportation options in Florida. Florida has 7.4 million automobiles, 3.8 million trucks and 43,000 buses on the road. These vehicles, plus those of our tourists, consume 7.4 billion gallons of gasoline and 1.2 billion gallons of diesel fuel each year. Florida must set a goal to reduce vehicle miles traveled through improved land development patterns and transit options. Florida needs to improve the efficiency of tourism transportation including the development of energy-efficient rental car fleets and transit options.

> *"The public needs high-quality, independent information verifying the accuracy of energy claims."*

Private-vehicle purchase sales tax and rental-vehicle taxes should consider vehicle fuel efficiency to influence purchase decisions. Government agency purchasing procedures should encourage both alternative fuel vehicles and highly energy-efficient conventional models.

- Support a prosperous economy through strategic energy choices. Expand Florida's existing renewable energy and energy efficiency economy by establishing an active recruitment program that seeks out industry leaders in the manufacture of these products. Position Florida as a national leader in the production of energy-smart goods and services, and promote their use in the state.

- Provide for education through marketing programs designed to encourage better consumer choices. The public needs high-quality, independent information verifying the accuracy of energy claims. An information marketing campaign can make an enormous difference in purchasing habits. Expand information and education outreach to include energy decision-makers at all levels, including within government and the private sector. Offer technical assistance to end-user groups with high savings potentials. Educate and credential professionals in our universities and through continuing education programs for professions and trades.

- Design and foster energy-smart communities. Expand efforts to curb sprawl and promote compact and transit-oriented development to reduce transportation needs and achieve efficient resource use. Update planning and growth management policies with an eye for efficiency. Promote communities with walking and bike paths. Incorporate energy in local comprehensive plans and regional strategic plans, and incorporate energy into metropolitan indexing schemes. Assist local government with implementing energy efficiency measures.

- Expand energy initiatives through environmental programming. Incorporate energy with other Department of Environmental Protection (DEP) goals of efficient water use and pollution prevention. Partner with existing programs such as the Florida Green Building Coalition's Green City and County Designation Program, Green Development Designation and Green Home Designation to help recognize good environmental stewardship.

Recommendations

- Safeguard the public and public investments. Recognize energy as a critical component of domestic security and public service reliability. Expand energy reliability planning beyond utility capacity and include distributed energy resources as an integral part. Ensure energy source diversity and pursue opportunities to make the highest and best use of fossil fuel supplies. Incorporate solar electric and water heating technologies in the state's emergency preparedness and response programs. Inform end-users of security needs and options, along with other measures for protecting people, the environment and capital resources.

Specific energy-use sector implementation suggestions are included in Chapter 7 of this report and policy implementation strategies are provided in Chapter 9.

Florida Solar Energy Center

The Florida Solar Energy Center (FSEC) is the state of Florida's energy research institute. Created by the Florida Legislature in 1975, FSEC is a research institute of the University of Central Florida, and is the largest and most active state-supported energy research center in the United States.

The center conducts research in solar water heating, photovoltaics, building energy efficiency, hydrogen and fuel cells, and other advanced technologies.

FSEC also tests and certifies solar equipment sold in the state, and conducts statewide education and training programs. Visit **www.fsec.ucf.edu** for complete information on the center's programs and activities.

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