Alachua County Energy Conservation Strategies Commission

Executive Summary and Final Report

Updated for May 2009





Creating an energy efficient and resource resilient community over the next 100 years.

http://energy.alachuacounty.us

December 2, 2008

"Alachua County strives to engage the public through public hearings, during the citizen concerns segment of Board meetings, by hosting informational meetings, encouraging involvement on the many County citizen boards and committees, by conducting surveys and receiving email and website communications."

From "**Alachua Excels—Public Engagement**"

Alachua County takes to heart the words of Dr. Martin Luther King, Jr. "Everyone can be great, because anyone can serve." Advisory boards provide citizen input and expertise to the Alachua County Board of County Commissioners on the many multifaceted issues facing society. In addition, advisory boards provide a cost-effective way of deliberating on complex issues, while ensuring that citizen input reflects the community's overall values.

Awards and Recognition

Winner of the Florida City and County Management Association Program Excellence Award for Community Sustainability

http://www.fccma.org/

Selected for a case study presentation at the May 2009 Transforming Local Governments Conference

http://www.transformgov.org/

Bike photo on the cover: http://www.pedbikeimages.org/repository/intersection.linda_at_fsu.jpg / photographer : Dan Burden

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Email: energy@alachuacounty.us Website: http://energy.alachuacounty.us

Preface

ECSC Members from left to right: Bill Shepherd; Erich Christian; Pattie Glenn; Dwight Adams; Chris Fillie; Eduardo Vargas; Harry Kegelmann; Ed Brown; Ruth Steiner; Fred Depenbrock; Penny Wheat

Local governments are increasingly taking a leadership role in response to growing concern about rising fuel costs, climate change and the need for more aggressive local actions to reduce greenhouse gas emissions. With well over a decade of leadership on this, at their March 27, 2007 meeting the Alachua County Board of County Commissioners stated that [they] "want to do their part to reduce or mitigate the effects of Global Climate Change and promote the long-term economic security of [our] citizens through the implementation of policies that enhance energy efficiency."

Contained within this report is the answer to that challenge. While conservation is the anticipated outcome of this advisory board's recommendations, the means and methods used to derive the recommendations are part of an overarching transformative strategy within Alachua County government that will accomplish three greater goals of: 1) empowering its citizens; 2) implementing technology that serves the greater community; and 3) improving the overall systems of local government.

It must be noted that none of these initiatives occurred without the support of our leadership. Both the Alachua County Board of County Commissioners and the County Manager empowered this innovative use of a citizen advisory board.

At the broadest perspective, the Energy Conservation Strategies Commission answers the Commission's goals of enhancing and preserving quality of life, creating community partnerships and striving for excellence in county government.

The content of the ECSC's work easily lends itself to the first Commission goal (quality of life). Of equal importance (and perhaps less obviously), is how these recommendations also enhance participatory democracy by empowering citizens and other community stakeholders to communicate and formulate a response to the critical energy challenges facing us.

This community conversation on energy conservation moves us all toward a healthy democracy. As Christopher Gates and Drew O'Connor relate, creating the opportunity to move from a purely representative political decision-making practice to an active, more muscular democracy that relies upon the informed judgment of its citizens[1], is a critical outcome of creating a more energy efficient resource resilient community.

For the Future,

The Alachua County Energy Conservation Strategies Commission
November 2008

1) Toward a Healthy Democracy, Gates and O'Connor, National Civic Review, vol 89, no 2, Summer 2000

Message from Randall H. Reid, Alachua County Manager

Randall H. Reid, County Manager

Dear Commissioners,

Few issues in recent decades have presented local government with a magnitude of challenge and the potential of significant opportunities to willfully create more sustainable communities than those related to energy management. Author Thomas Friedman in the recently published work "Hot, Flat and Crowded" has termed the time we are living in as the Energy/Climate Era.

We are confronted daily, both as individuals and communities, with the impacts of climate change, global competition for resources and an erratic but continually upward trend in energy prices. The issue of peak oil is real. Resource scarcity, inequities in distribution, disruption of distribution systems and the higher costs of oil appear to be the realities of our energy future.

This reality is a clarion call for the development of a more locally secure and lower cost energy future based upon more efficient building designs, transportation alternatives, and energy sources and fuels that can create an energy resilient and sustainable community. This is not simply an environmental issue or simply the important effort to reduce our carbon footprint as a community, but provides a more secure future for our people and the quality of life the local community may provide.

As County Manager, I am therefore pleased to introduce and publish the Executive Summary and Final Report of the Alachua County Energy Conservation Strategies Committee (ECSC). The report is an analysis of how Alachua County can be made a more energy resilient and sustainable community. It is written in such a manner to both raise awareness of the problems facing our communities as well as propose solution and implementation strategies. It was researched and prepared by a dedicated group of citizens, academics and professionals who made up the ECSC.

This Committee, which was chaired by former County Commissioner Penny Wheat, has produced a comprehensive report that outlines an alternative future for energy use, conservation, and distribution of alternative energy sources in our community. The highly skilled citizens involved in the preparation of this report inventoried existing practices within the County and utilized the talents and knowledge of existing County personnel and community partners to develop both an organization and community strategy for meeting the needs for energy in our County.

This effort resulted in a report that is on the leading edge of those reports prepared by local government agencies that I have read from across the Country. Its recommendations will assist both residents and the community to reduce our carbon footprint. More importantly, the sustainable solutions outlined within the report will foster revitalization of our economy, improve our environment, and increase the well-being of our citizens through the provision of lower costs and locally derived energy sources.

An implementation of this report will require funding and a multi-year commitment by County elected officials and staff in a prioritized manner that recognizes that, in these times of economic scarcity, each expenditure, or investment in conservation or technology, must provide the maximum return on investment possible. In some cases this will require the use of life cycle cost estimating to determine the real cost of our expenditures. The improvements implemented as a result of the report in the form of new energy sources, greater conservation efforts and better building design will provide long term savings to our organization and community.

The committee has already embarked on a large scale community awareness and civic education program through presentations to community groups and through the publication of this report. I salute the committee's effort and applaud the huge civic footprint the members of the ECSC have left on the energy future of our community.

Respectfully,

Randall H. Reid
County Manager

Contents

Long before the Spaniards arrived in Florida, Alachua County's unique combination of fertile soil, broad prairies, clear lakes and abundant game had spawned a complex Indian civilization called *Timucuan*. Throughout the 16th century, Desoto and other Spanish explorers plundered the region; Franciscan priests founded missions; and finally, ranchers established a large cattle ranch on Paynes Prairie.

Set among the rolling hills of north central Florida, Alachua County is a center of education, medicine, technology, transportation and government. The University of Florida is located here, along with Santa Fe College; Gainesville, the county seat of government; four hospitals and numerous medical facilities; and many academically-associated research and development centers.

(Continued on page 12)

Payne's Prairie Sunrise

Payne's Prairie Preserve State Park September 28, 2008

Photo Credit: Michael Drummond, Alachua County Environmental Protection Department

Alachua County, Florida

Total County Population : 247,561

Area (sq/miles): 961

County Seat: Gainesville

Municipalities and Population

Alachua:7,854

Archer: 1,229

Gainesville 122,671

Hawthorne: 1,401

High Springs: 4,739

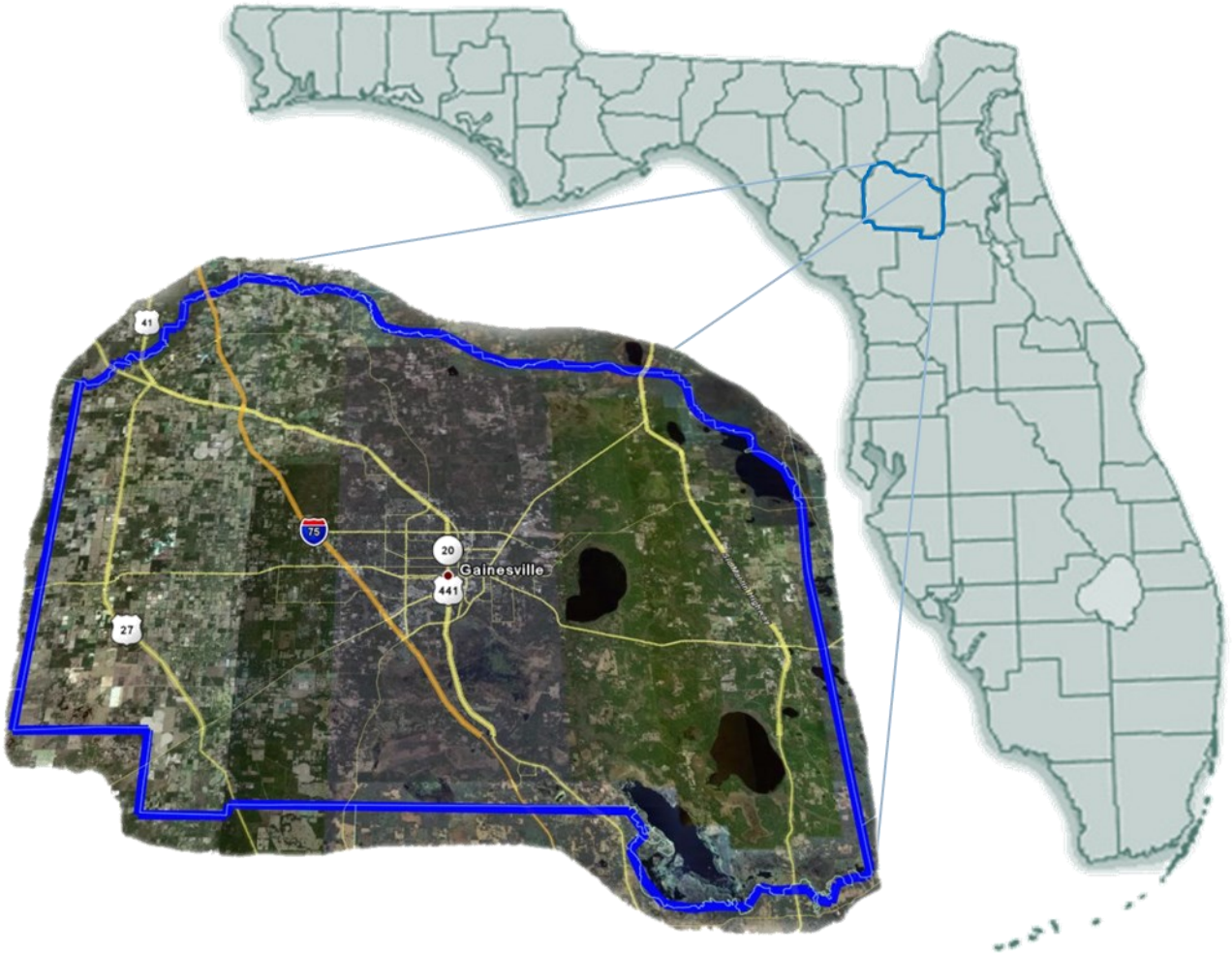
LaCrosse: 195

Micanopy: 637

Newberry: 4,787

Waldo: 831

UNINCORPORATED Population: 103,217



Becoming an energy efficient and resource resilient community

(Continued from page 10)

The elected Board of County Commissioners is the governing body for Alachua County government, and the County Manager provides professional management and policy recommendations. Alachua County was established as a charter county by public referendum in 1987.

Key Concept: Alternative Energy and Photovoltaic Panels

Dec 31, 2008 installation of a 26kW photovoltaic array at the Alachua County Waste Transfer Station

Pictured above is Alachua County's 25kw (enough to power four homes) solar array at the Leveda Brown Environmental Park which became operational on March 3, 2009 and is the first government owned array to be part of Gainesville Regional Utilities' (GRU) Feed-in Tariff program. With the tariff, energy produced by the solar array feeds directly into the GRU grid. GRU then pays Alachua County 32 cents per kilowatt hour produced by the array.

Expected energy output of the array is an average of 150 kw per day. This represents 15% of the total energy usage of the Transfer station facilities or the energy used by 4 average homes.

As of May 2009, Alachua County has deployed at total of 36kw in photovoltaic systems. Community-wide, the financial incentives of GRU's *Feed-in Tariff* for solar energy will fuel up to 4 megawatts per year of solar installations in the City of Gainesville area alone. This local support in Alachua County for solar energy has attracted the attention of solar manufactures who are considering locating a factory in our community.

Mission Statement:

It is the mission of Alachua County government to provide responsive, quality service to our citizens and to assure the sustainability of our County and its communities by balancing the concerns for economy, environment and social well being within all of our programs.

Commission Goals:

Quality of Life: To enhance and preserve Alachua County's quality of life by integrating environmental, economic and social equity principles in county decision making.

Partnerships: To increase confidence in County government by enhancing citizen participation and forging new partnerships with public and private organizations.

Excellence in County Government: To excel in all areas by focusing on performance, accountability and customer service.

Vision Statement:

Alachua County government is a value-driven organization dedicated to responsive, respectful and courteous customer service. Alachua County is viewed as an innovative and progressive leader in the provision of effective and efficient County services, recognizing the needs of its diverse community.

The County provides an environment that encourages mutual respect, open communication and sharing of ideas in the decision making process. This process includes partnerships with public and private organizations, neighborhoods and employees of Alachua County.

Alachua County government works with the community to effectively plan for growth, with the goal being to balance environmental, social and community development need.

Alachua County Commission

Mike Byerly, Chair

Cynthia Moore Chestnut, Vice-Chair

Commissioner Paula DeLaney

County Guiding Vision

1. The County will, in accordance with our Comprehensive Plan, attempt to slow sprawl in the County's rural areas and western Gainesville while encouraging higher density infill within Alachua County municipalities. Vital to this effort is the joint planning and promotion with the City of Gainesville of east Gainesville redevelopment, in accordance with the Plan East Gainesville Report.

2. Concepts of traditional neighborhood design and compact development will be encouraged and implemented within the urban area and coordinated through the MTPO, as part of the Livable Communities Reinvestment Plan and our Comprehensive Plan.

3. Annexations into municipalities will not be opposed or discouraged by Alachua County, providing the Boundary Adjustment Act criteria are followed, the annexing jurisdiction shows evidence that it is including low income and minority areas within its annexation planning and specific transition plans including service delivery and fiscal impacts are adopted prior to the annexation referendums.

4. The Countywide Visioning Process will continue to develop intergovernmental coordination, allowing implementation of local municipal planning and visioning that could be formally incorporated into the County's Comprehensive Plan and the plans for each municipality.

5. Environmental lands will be protected by purchases through the Alachua County Forever program and by the monitoring and regulation of development in sensitive environmental areas. The County will continue to facilitate and acquire new park lands and open space in cooperation with our municipalities for the enjoyment of our citizens. Further, the County acknowledges its role in protecting the health of our citizens by ensuring an adequate supply of clean air and water.

6. Future transportation improvements within urban areas will be pedestrian friendly and multi-modal in nature. Rural roadway expansions will be oriented towards public safety improvements and the inter-connectivity of collector road systems. The County will not encourage widening of rural roadways or the paving of dirt streets within the proposed rural reserve areas outside the Urban Cluster. Where dirt streets are paved within the urban cluster, assessment policies should mandate that local residents will bear a proportionate share of the cost. A fiscal policy and annual funding shall be established as is financially feasible to match dirt street assessments agreed to by citizens. The County shall establish a pavement management plan and develop adequate funding.

7. A separate MSTU will be maintained for a portion of the Sheriff patrol services in the unincorporated areas. The County will continue to work with the Sheriff to determine a base level of service countywide. Municipalities should contract with the Sheriff if they wish patrol services beyond the base level, as they have the option of establishing municipal police departments.

8. A two-tier level of service and taxation methodology will be developed to recognize urban and rural levels of service. Rural services in unincorporated areas outside of the Urban Cluster, should be at a lower level of service than those provided in urban areas which will permit rural area residents to maintain and expect a rural lifestyle and service levels.

9. The County desires to transition from

Guiding Vision

Commissioner Rodney Long

providing direct urban service delivery by encouraging and facilitating municipalities to provide municipal services. Emergency Services, with the exception of Emergency Management functions assigned to county governments by State law, and recreational programming should be services provided by municipalities as urban services. The County should facilitate the transition of these services on an equitable basis for all County residents. In situations where the County funds urban programs, the County will discourage fee structures and policies that differentiate between municipal and unincorporated residents.

10. Sustainable economic development will be encouraged through a written economic development plan focusing on strengthening existing small businesses, growing diversified industries locally, implementing an aggressive poverty reduction plan, introducing economic empowerment strategies, improving public infrastructure as our principle economic incentive and assuring new industries. These economic development strategies will be evaluated utilizing a comprehensive matrix detailing how each contributes to our quality of life.

11. Alachua County suffers from a significant level of poverty. Therefore, the County Commission desires to facilitate, foster and enter into partnerships with other agencies to alleviate the long term structural and multi-generational causes of poverty. The County Commission recognizes that government alone cannot meet this challenge and that the root causes of poverty, and not just the symptoms, must be addressed within the community. Viable educational and entrepreneurial programs designed to assist non-college bound youths are needed in Alachua County to break this cycle of poverty.

Commissioner Lee Pinkoson

12. The County recognizes the fundamental role of county government regarding the provision of health and human services. The citizens of Alachua County are best served through a preventative approach to the root causes of criminal justice and public health problems.

13. The County encourages and supports innovative programs that contribute to the improved overall health of the community. The County will implement the CHOICES healthcare program providing improved health for the adult working uninsured through provision of direct healthcare, disease management and education.

14. The County supports the provision of social services to those in need in the community through direct provision of services by the County and partnerships with non-profit agencies. The County will develop a social services master plan that will take a comprehensive look at the types of service provided and methods of delivery; determine areas of duplication as well as evaluate unmet needs; and recommend methods for providing the services in a more efficient and effective manner.

15. Homelessness is a community-wide problem. The County will seek dialogue on potential solutions to the problem through the Homelessness Summit and work towards implementing its recommendations. Partnerships with municipalities and community organizations are vital to finding and implementing possible solutions to this problem. County staff will work with an ad hoc committee created by the City of Gainesville to address immediate issues regarding homeless services within the City of Gainesville.

Adopted April 12, 2005
Reviewed December 6, 2005

Alachua County Energy Conservation Successes to Date

- 1991 County Energy Management Program
- 1998 Resolution Establishing Air Quality Commission
- 1999 County Commission joins ICLEI Cities for Climate Protection
- 1999, County Commission adopts resolution allowing Alachua County to join the Cities for Climate Protection (CCP) campaign. The CCP program is a global campaign to reduce greenhouse gas. Achieved four of five stars.
- 2000 Hybrids purchased for County Fleet
- 2001 County Greenhouse Gas Inventory
- 2001 Sustainable Operations Team
- 2001 County Employee RTS Bus Passes
- 2002 Greenhouse Gas Reduction Plan
- 2002 Comprehensive Plan specifies Conservation Element Policy 4.1.3.7

Alachua County Accomplishments

- 2003 Alachua County Landfill Gas to Energy Project
- 2003 Alachua County Energy Reduction Policy
- 2003 New Criminal Courthouse built to LEED standards
- 2006 County representative to ICLEI North American Congress; Receive ICLEI Award; Recognition of 4 of 5 Stars for CCP Campaign.
- 2007 Resolution establishing Energy Conservation Strategies Commission
- 2008 NACO Green Infrastructure Award
- 2008 Alachua County becomes full ICLEI member
- 2008 Water Conservation Project – County Jail Retrofit: It is estimated that the ICON Water Reduction System will conserve between 16 and 17 million gallons of water per year, lowering utility bills by over $109,000 per year
- 2009 Alachua County first local government to sign on to a Feed-in Tariff for 36 kw of photovoltaic power
- 2009 ECSC awarded FCCMA Program Excellence Award: Community Sustainability

Alachua County Energy Reduction Policy, Adopted 2003

Purpose: This program implements the best energy management and cost effective practices in all of Alachua County Facilities. It consists of an energy and resource use reduction plan that is designed to reduce consumption without detriment to the work environment.

The Alachua County Energy Management Program can enhance the prestige of our local government and indirectly enhance local tax revenue. Hotter temperatures in summer, fewer freezes in winter, drought, stronger storm surges, floods, increases in utility rates, a continual reliance on foreign resources and an unstable economy, will have a direct impact on how we address and manage energy consumption in County facilities.

Energy management is not a separate function but rather an activity that spans every facility system. Modern energy management had its genesis in the oil crisis of the early 1970s. Two results came from that crisis: remarkably more efficient (and smaller) energy-consuming equipment and an understanding that energy is a major cost element and needs to be contained.

Improving energy performance can save surprising sums of money; as much as 30 percent of current costs.

Background: On December 12, 2000, the Alachua County Board of County Commissioners directed the staff to develop a proposal to cut 1/3 of energy use in all County-buildings in a five year period and report back to the Board.

Starting in 2003, the Energy Reduction Policy set a goal of reducing energy consumption and utility costs by 1/3 over the next five years.

A PowerPoint presentation was provided by staff and approved by the Board on May 9th, 2001. The mobilization of Energy Management staff, office renovations, equipment, vehicle and tools for the 5-year 1/3 energy reduction effort was initiated March 2002.

Energy Reduction Policy Update to the ECSC, June 2008

From Charlie Jackson, Alachua County Facilities Manager:

In 2002, the Alachua County Commission adopted an Energy Reduction and Conservation Resources Program. Energy management and conservation are keys to using fuel and electrical energy in the most energy efficient way. Effective energy management can lead to substantial savings in the operating cost of a building.

Alachua County views operating energy efficient buildings as a valuable means of conserving our essential natural resources. Money savings and conservation are two major benefits of energy management. Alachua County uses best practices when exercising concepts associated with "GREEN" buildings and sustainability.

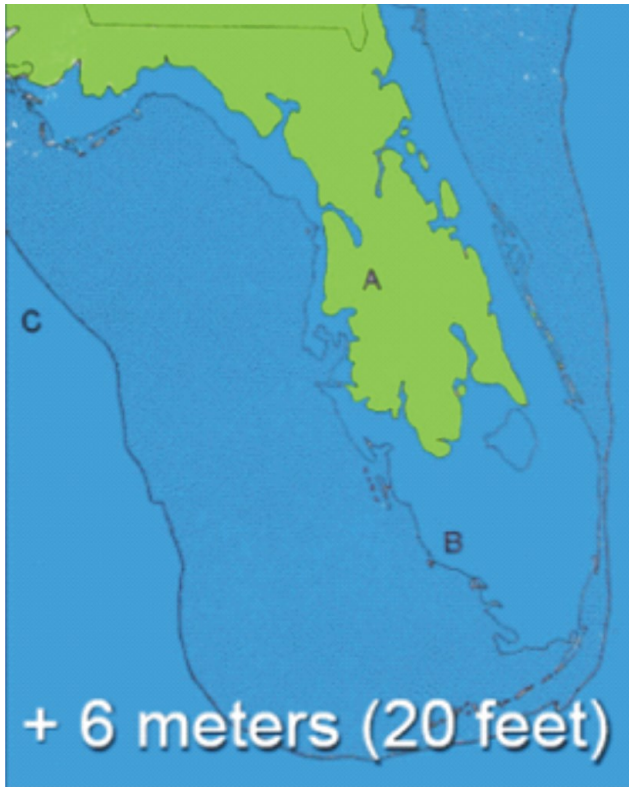
Sustainability and energy management go hand in and are both embedded throughout Alachua County, as we must think through the decisions we make and how those decisions impact the County's "bottom line". The bottom line, meaning the financial impact on employees and government spending, includes the environmental impact on the air, water, global climate, health and productivity, as well as the impact on the community. We exercise every opportunity to purchase green building material and products, even down to cleaning and chemical products for janitorial services.

Alachua County has adopted a strategy of designing and building "green" buildings that conform to the ratings specified under the Leadership in Energy and Environmental Design standards (LEED). Some examples of building "GREEN" include installing energy efficient heating and cooling systems, improving air and water quality, lowering water consumption, purchasing of material and supplies in the local area, reducing operating cost, improving employee productivity and satisfaction, and implementing innovative processes, ultimately minimizing strain on the local infrastructure.

The Alachua County Commission has committed to designing and constructing new County buildings that meet "GREEN" standards. To achieve these standards, Facilities and Purchasing staff include language in the Request for Proposals (RFP) that requires architectural and engineering firms, as well as construction management (CM) companies to have certified LEED professionals on their staff who understand the LEED process. The terms in the project document would require the CM and/or A&E Firm to actually submit the completed LEED packet to the USGBC for processing.

(Continued on page 22)

In 2003, the Alachua County Commission completed the construction of its first green building, the **Alachua County Criminal Courthouse**. This building is approximately 119,000 sq ft and the total project cost was an approximate $28M. Features of this facility include energy efficient heating and cooling units, construction on a brown field redevelopment site, location on a commercial bus route, bicycle storage and changing rooms, and maximization of open space. Use of native vegetation for landscaping and low-flush toilets reduces the need to irrigate and lowers water consumption. The local purchase of materials and supplies reduces the negative impact on the environment. Implementation of an IAQ plan before, during and after construction, use of low emitting material such as paints, carpets, adhesives, sealants, composite woods and agrifiber products are all affirmative aspects associated with this building.



Key Concept: Climate Change and Sea Level Rise in Florida

"If we do not stop human-induced warming , this is our likely future by 2200 or before."[1]

1. Statement and Image from: Statement on Sea Level in the Coming Century; Science Committee Miami-Dade County Climate Change Advisory Task Force Presented by Dr. Wanless Aprill 22, 2008

Alachua County Criminal Courthouse

In 2006, the Alachua County Commission approved the following new construction and renovation (bond) projects:

Jonesville Fire Station: This building is being constructed in the most northern side of the Jonesville Soccer Park Complex. The size of the building is 8,546 sq. ft. and the approximate project cost is $2.9M. We have completed a LEED score card for new construction, v2.2 project checklist, and confirmed a total of 31 points. Since that time, we have decided to make some minor revisions to the design, enhancing energy efficiency and adding a solar heating panel and solar tubes for lighting. The station will feature the most energy efficient heating and cooling units, low flush fixtures, showers, and water free urinals.

EMS#1: This building is being constructed in Gainesville, Florida. The total project cost is approximately $1,825,066 and is scheduled for completion around February/March 2009. We are processing the LEED score card on this facility and have confirmed over 33 points, qualifying this building with a rating of Silver. It will include the most energy efficient heating and cooling systems, offer alternative transportation, maximize open space, use low emitting materials, reduce cost and impact on the environment by purchasing material and supplies locally, include low-flush fixtures and water-free urinals, and will also use solar energy for water heating.

Court Support Building (Phase III-Downtown Master Plan): On March 8, 2008, Alachua County and DLR Group conducted the first design charrette with the user groups to be housed in this approximate 140,000 sq ft building. This building will house the State Attorney, Public Defender, Guardian Ad Litem, Supervisor of Elections, Sheriff/Civil and several of the County's Court Services functions. We have recently begun the design phase and our goal is to insure that this building receives at least a Silver USGBC rating. It, too, will include many of the same features as noted in the above projects.

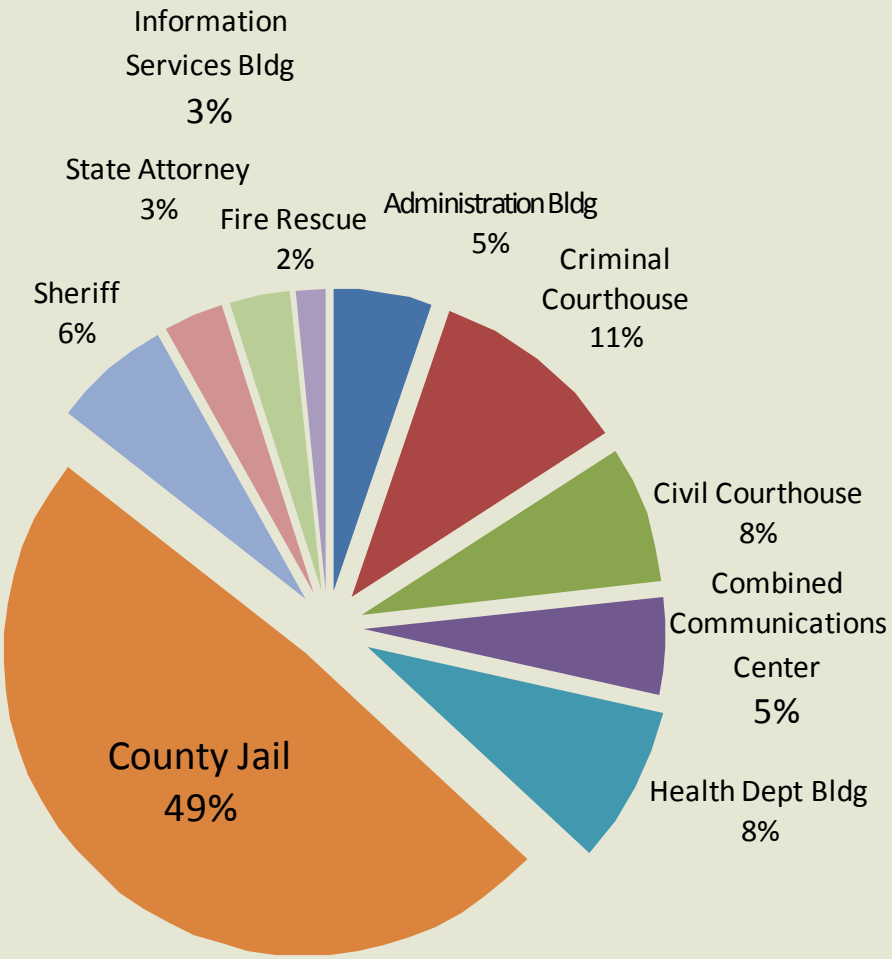
Renovation of the State Attorney's Building: Around the 2010 time period the County anticipates performing a major renovation of this 34,000 sq ft building. During the design process, Alachua County plans to qualify this building under the LEED green building standards for existing buildings. We anticipate that it will include state of the art building control systems, a green roof, energy efficient heating and cooling systems, rain water harvesting, use of gray water to flush toilets, solar energy for heating and possible power, occupancy sensors, and low emitting materials such as paints, carpets, coating and sealants.

Alachua County Energy Management Program

The highlights of this program include the following phases:

- **Phase I** Datalog and audit buildings to determine energy use and consumption. Upon completion of the audit, a list of energy efficient material and supplies are submitted to County Purchasing for acquisition.
- **Phase II** Develop and implement design/ recommendations involving energy saving, water reduction initiatives, and improve building envelopes.
- **Phase III** Create project timelines to implement those major initiatives in Phase II
- **Phase IV** Acquire the necessary material/labor/contract through a bulk requisition process
- **Phase V** Complete installation/implementation/ construction datalog/monitor results
- **Phase VI** Maintain implementations and conduct ongoing evaluations ensuring anticipated savings and reductions are achieved

Top Ten County Government Energy Users



The County jail facility, is the single largest energy consumer of all Alachua County facilities. The chart above represents 10 months' of utility bills as of Facilities Management June 2008, presentation to the ECSC.

Total utility costs for this chart in all sectors is approximately $1.6 million. Water and energy efficiency upgrades at the County Jail are expected to result in considerable long term savings and conservation of natural resources.

Buildings in Alachua County Government

In 2006 there were 48 Alachua County facilities (not counting leased space) totaling approximately 980,000 square feet. For that space, 19,257,309 kW-hours electricity was needed which was a 2.9% increase over 2004 consumption. The electricity was purchased at a total cost of $1.5 million.[1]

Energy Management research and development investigations:

- Use of green roof systems to lower the building temperature, requiring less energy to cool the building
- Installation of dual-flush toilets creating a 40% water saving each flush

Bringing the Global Perspective Home: Creating a case for high performance green buildings in Alachua County government. http://www.alachuacounty.us/assets/uploads/images/epd/documents/ECSC/GreenBldg_12-08-06.pdf

Reducing Energy Consumption

Listed below are several other initiatives and/or projects that the County has implemented to minimize energy consumption:

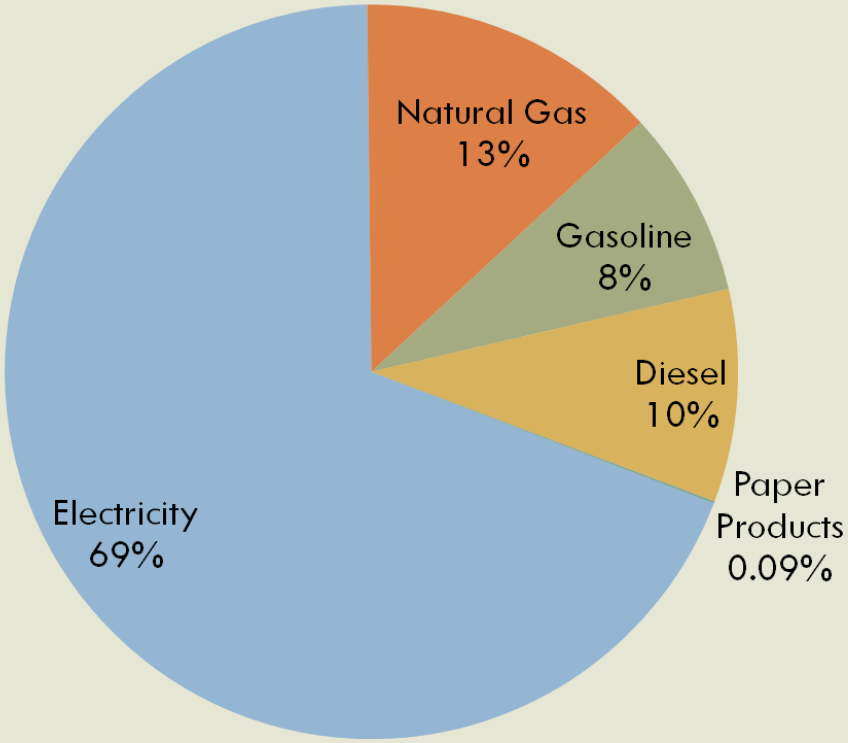
- In 2002, the County consolidated utility accounts county-wide under the County's Facilities Management Division. This proved to be very beneficial, as it stream-lined the billing process, provided visibility over utility use, and reduced labor and material cost associated with processing utility invoices. In 2006, electricity and gas prices increased substantially; due to the consolidation of accounts, it was detected immediately, enabling the County to make fiscal adjustments at mid-year.
- Implemented a County-wide energy management policy endorsing processes, procedures and initiatives for achieving energy reduction and conservation measures. Some of the features include:
- Implemented an energy management and reduction policy
- Provided education session during new hire orientation
- Involved employees in energy conservation measures
- Established Energy Management Coordinators
- Developed awards and incentive programs
- Provide leadership with annual energy-saving recommendations review and analyze monthly utility bills, assessing rate structures and categories of charges (electric, gas, water, waste water, etc.) ensure that new constructions are designed and constructed in the most energy efficient manner

Alachua County Carbon Emission Liabilities

Carbon emissions from County Government operations and facilities were estimated as part of the County's 2001 Greenhouse Gas Inventory. For all sectors of energy and resource consumption in 1998 alone 17,525 tons of CO_2 was emitted.

1998 Greenhouse Gas Emissions from Alachua County Government Operations by Source

- Electricity 12,090 Tons CO_2
- Natural Gas 2,332 Tons CO_2
- Gasoline 1,445 Tons CO_2
- Diesel 1,642 Tons CO_2
- Paper Products 16 Tons CO_2



1998 Greenhouse Gas Emissions from Alachua County Government Operations by Source

Total Equivalent CO_2 Emitted: 17,525 Tons

Alachua County's GHG reduction goal: By the year 2010, reduce GHG emissions by 20% from 1990 levels.

ICLEI Participation

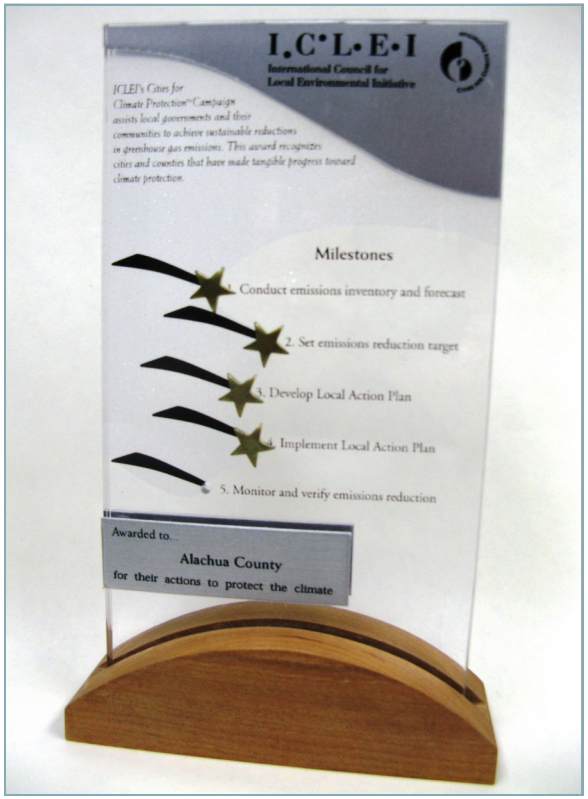
Originally known as the International Council for Local Environmental Initiatives, ICLEI represents a coalition of more than 1000 local governments from countries across the globe which are dedicated to creating a more sustainable future. By 2003, the membership changed the name of the organization to ICLEI-Local Governments for Sustainability so as to better reflect the challenges of environment, economy and social equity. Climate change, however, remains a critical issue within the organization. Alachua County became a formal member of ICLEI in 2008.

Prior to 2008, Alachua County has shown regional leadership in addressing climate change by voluntarily participating in ICLEI programs. In April 1999, the Alachua County Commission adopted a resolution allowing the County to join the Cities for Climate Protection (CCP) campaign. The CCP program is a global campaign to reduce greenhouse gases (GHG).

As part of the county's participation in the campaign, the County has voluntarily committed to undertake the five following tasks:

- **Conduct an energy and greenhouse gas emissions inventory**
- **Establish an emissions reduction target**
- **Develop and obtain approval for the Local Action Plan**
- **Implement policies and measures**
- **Monitor and verify results**

In 2006, Alachua County was awarded four out of five milestone stars by ICLEI for meeting Cities for Climate Protection Campaign commitments.



In June 2001, the Alachua County Environmental Protection Department (EPD) in conjunction with the Sustainable County Operations Team (SOT) completed a GHG Inventory for Alachua County governmental operations which also included data for the entire Alachua County community. This baseline inventory will serve as the reference against which the success of County efforts to reduce GHG emissions will be measured. Baseline information from the years 1998-1999 is presented in the inventory. In order to be consistent with CCP guidelines, limited available data and estimates were used to calculate emissions in the year 1990. Both the 1998 and 1990 data will be used to track future reduction progress.

(Continued on page 30)

As part of the overall 2002 comprehensive plan update process for Alachua County, the Board of County Commissioners established a GHG reduction goal for Alachua County. By the year 2010, Alachua County would reduce GHG emissions by 20% from 1990 levels. This goal is contained in Policy 4.1.3.7 of the Conservation Element of the Alachua County comprehensive plan.

In 2006, Alachua County was awarded four out of five milestone stars by ICLEI for meeting Cities for Climate Protection Campaign commitments.

Alachua County joined as a full member of ICLEI in July 2008.

Key Concept: High Performance and Energy Efficient "Green" Buildings

High performance buildings also known as "green" building is often meant construction designed to maximize energy efficiency, and eliminate the use of toxic materials and maximize the use of recycled materials. Alachua County is currently retrofitting many of its existing structures to enhance their energy efficiency. Recent upgrades as of April 2009 to lighting systems has saved 22% in energy costs.

New facilities have been constructed to a Leadership in Energy an Leadership in Energy and Environmental Design (LEED) such as the recently completed, Gold Standard Fire Rescue Station. This $1.8 million, 5,521 sq. ft. facility includes a high efficiency HVAC System projected to save 20% on annual energy cost. Solar is incorporated for day lighting and for hot water heating which should provide 70% of the buildings needs.

Additionally, rainwater harvesting cisterns at the site will save 60,000 gallons a year in irrigation water. Waterless urinals, low flow shower heads and low flow faucets will further reduce water heating and consumption by 50%.

Alachua County Investing in Energy Efficiency

Aerial of Alachua County Jail

In 2007, with 50 percent of the County's energy dollars supporting the jail system, Facilities Management staff recognized early on that incorporating enhanced energy efficiency upgrades would pay long-term dividends to the tax payers and the environment. Then on December 2008, a mere week after the issuance of the ECSC Final Report, the Board of County Commissioners committed $7.7 million to the Jail Energy Conservation Project Phase II.

For Phase II, Facilities staff anticipated a reduction in energy consumption by 50% with a corresponding cost-saving of well over $900,000 per year. Project scope included the replacement of 76 Roof Top Units (RTUs), installation of water reduction icon systems and the roof replacement at the County Jail.

Alachua County Jail

To achieve this, the County chose direct financing rather than a performance contract and capital lease arrange to significantly reduce project borrowing costs. Direct financing also allowed the County more flexibility in the design of the project and a better return on investment. The energy savings were also used as the pledge to pay-back the $7.7 million loan at 4.09%. Energy savings from the project are expected to payback the debt service on the loan over a 15 year period. The County should realize an Internal Rate of Return (IRR) on this project of between 5% - 10%.

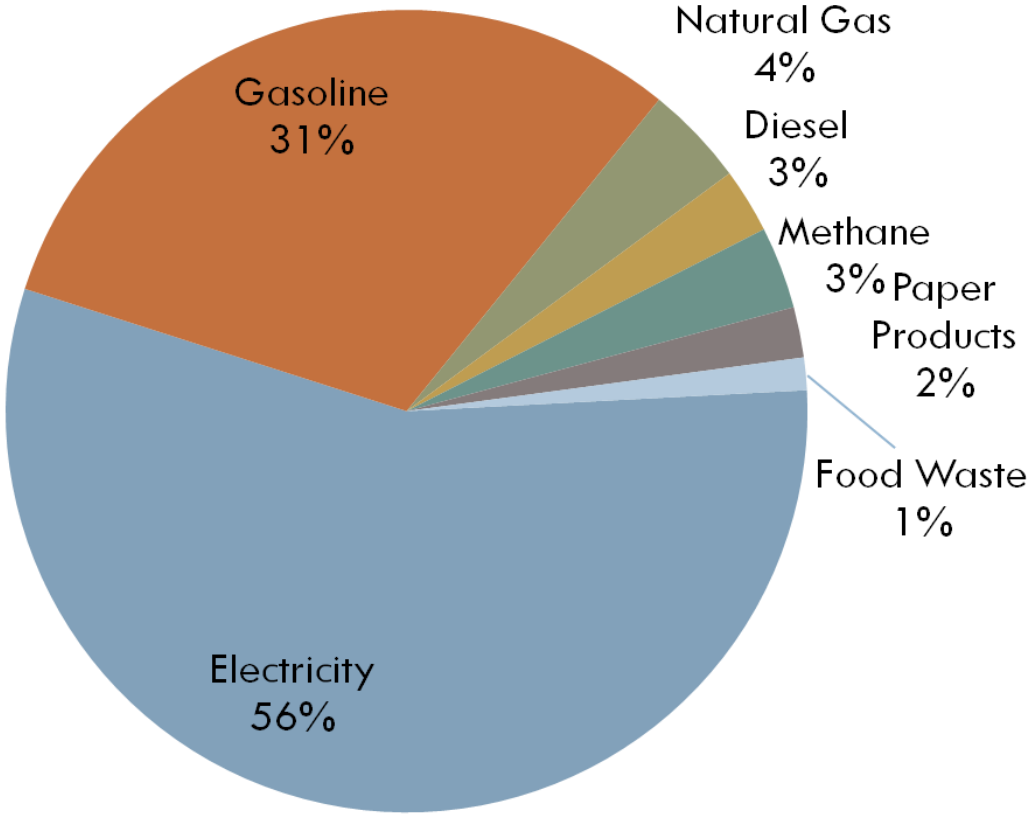
Charlie Jackson, Alachua County Facilities Manager stated, "Building green makes very good business sense as it reduces operating cost over the life of the building and ultimately provides the County with another high performing and sustainable building."

2001 Greenhouse Gas Inventory

To the right is a chart showing our County-wide Greenhouse Gas emissions by source for 1998. This analysis was part of the 2001 Greenhouse Gas Inventory. Note the total tons of CO_2 emitted was 2.8 million.

Electricity represents 56% of the total. It is the largest segment of the pie, closely followed by liquid fuel consumption for transportation. We anticipate that ongoing County efforts promoting energy efficiency for buildings will be overwhelmingly positive for our community, as it will reduce emissions, spur job growth and save our citizens' money.

For example, the American Council for an Energy-Efficient Economy estimates a 29% reduction in Florida's electricity demand over 15 years if strong energy efficiency standards are put into practice. Furthermore, these policies would reduce statewide consumer costs by $28 billion and create 14,000 energy efficiency, trade-related jobs all while reducing CO2 emissions by an estimated 37 million metric tons.



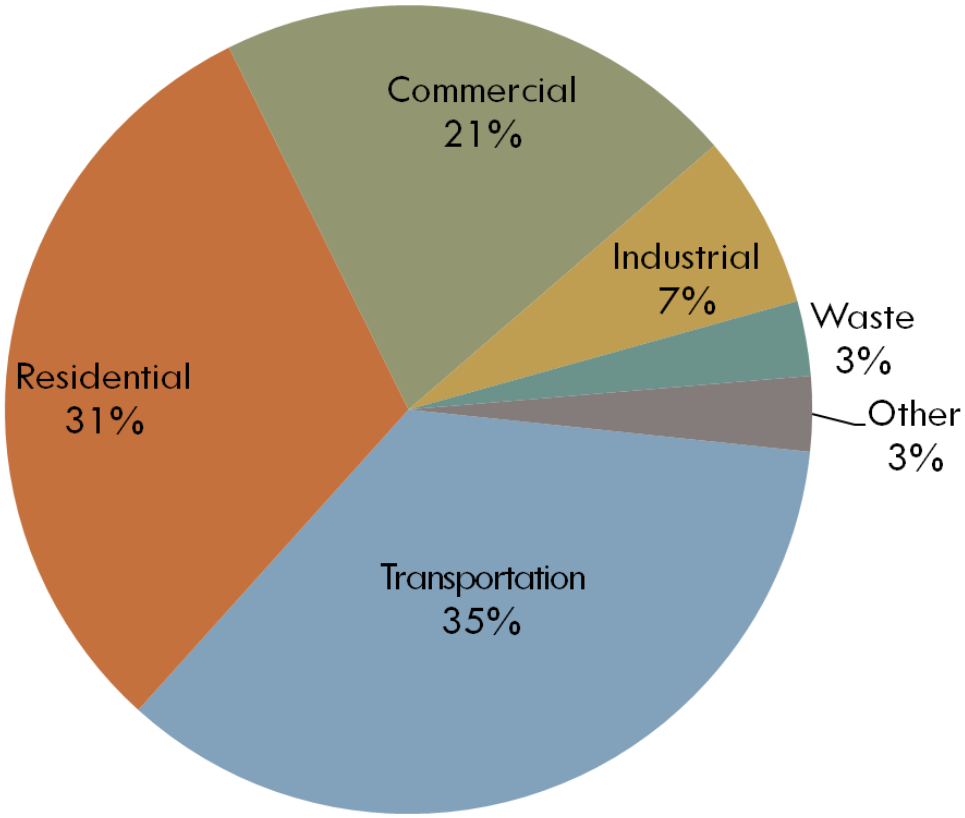
1998 Alachua County Community Greenhouse Gas Emission Inventory by Source
Total Equivalent CO2 Emitted: 2.8 Million Tons

See Alachua County 2001 Greenhouse Gas Inventory http://www.alachuacounty.us/assets/uploads/images/epd/polution/GHG-Inventory2001.pdf

Looking at the numbers another way, the chart to the right shows that the built environment (Residential and Commercial) represents 52% or 1.4 million tons of emissions.

Buildings are, of course, massive consumers of electricity: hence, the relative equivalence of these two sectors emissions to the previous chart.

The American Institute of Architects', Architecture 2030 campaign goes so far as to estimate that 76% of all power plant electricity goes towards building operations. Alachua County has recognized this for some time and has created a green building policy to counteract the emissions and expense of rising energy costs. LEED Silver standards are now a common benchmark for all new and major renovations for County-owned facilities.



1998 Alachua County Community Greenhouse Gas Emission Inventory by Community Segment
Total Equivalent CO_2 Emitted: 2.8 Million Tons

See Alachua County 2001 Greenhouse Gas Inventory http://www.alachuacounty.us/assets/uploads/images/epd/polution/GHG-Inventory2001.pdf

A GHG reduction of 62% versus 1990 levels was projected for 2010 if all plan initiatives and projects were fully implemented beginning in 2002.

Greenhouse Gas Action Plan

A Local Action Plan for GHG Reduction was developed and adopted in 2002 to meet the next milestone of the County's CCP campaign commitment. The strategy was formulated by the Alachua County Sustainable Operations Team and Alachua County Environmental Protection Department. The intent was to first develop a plan for Alachua County Governmental Operations to reduce GHG emissions (Phase I), and then to follow that with the development of a Local Action Plan for the Alachua County Community. This would involve coordination and cooperation with the University of Florida, the City of Gainesville, GRU, the smaller municipalities, local businesses and community groups to promote GHG reduction projects in the community (Phase II).

Local Action Plan for Alachua County Government Operations- Phase I

The GHG Reduction Local Action Plan for Alachua County Government Operations has the following objectives:

- **Define targeted general focus areas for reductions in greenhouse gas (GHG) emissions ;**
- **Describe action items in each focus area to be implemented to achieve GHG reduction goal;**
- **Identify the operating units, individuals or groups that will implement action items;**
- **Identify the minimum data needed to calculate GHG reductions;**
- **Describe proposed data collection procedures;**
- **Estimate GHG reductions from each action item;**

Budget constraints in 2003 led to the elimination of programs dedicated to the implementation of the GHG strategy.

- **Serve as a model for collaboration and coordination with other municipalities, the University of Florida and community groups for countywide GHG reduction efforts**

Community-wide Local Action Plan for Development Strategy—Phase II

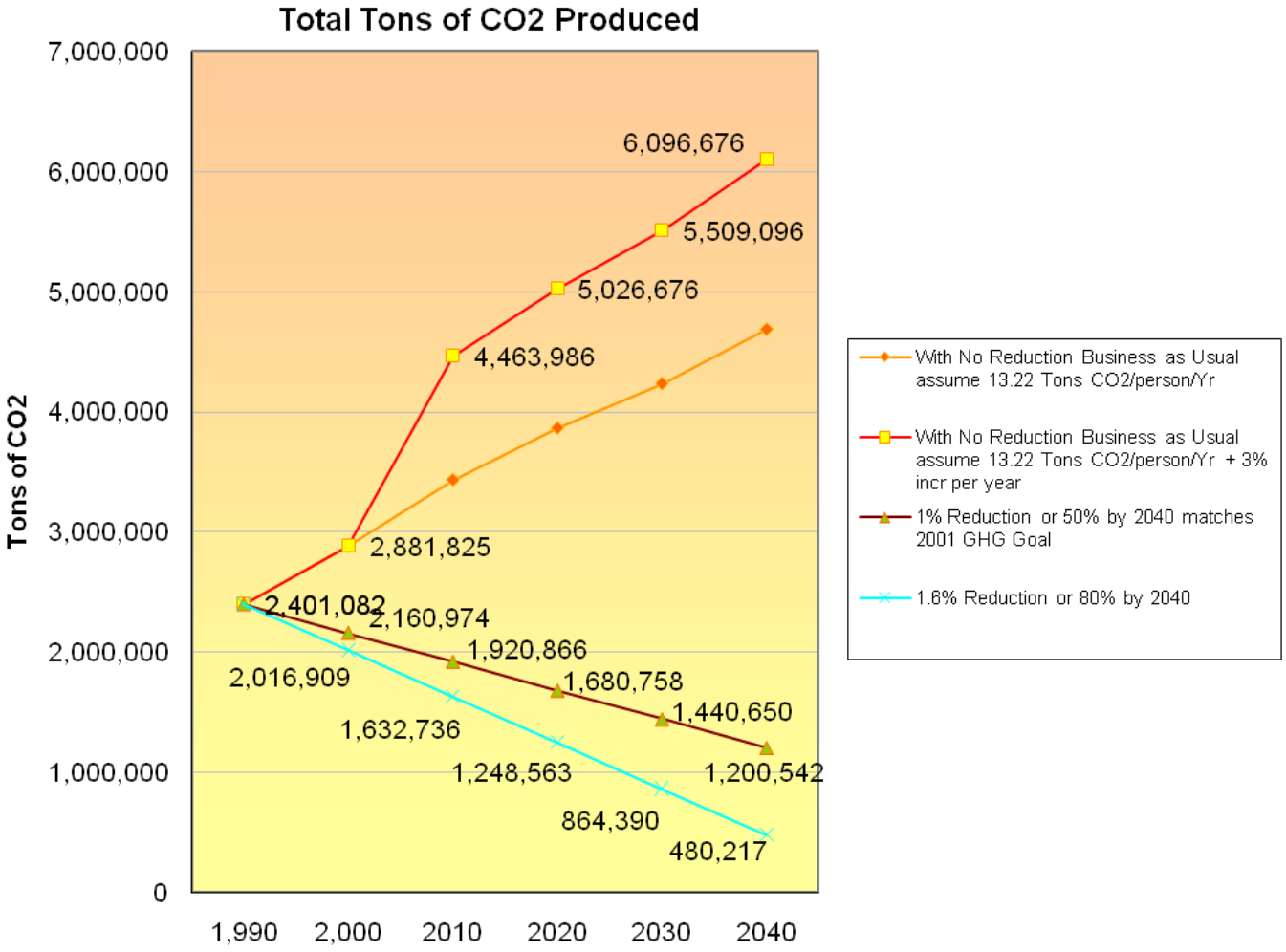
The process of development of a Community Wide Local Action Plan for GHG Reduction by the Board of County Commissioners was to be initiated in the fall of 2002 after approval of the Program Strategy and the GHG Reduction Local Action Plan for County Governmental Operations. The key elements and milestones of this strategy are outlined below.

- **Conduct Education and Information Campaign for Public and County Employees**
- **Identify, Contact and Educate Potential Stakeholders and Interested Parties**
- **Form Common Interest Task Force Groups to Develop Potential Action Items**
- **Develop the Community Local Action Plan**
- **Adoption of the Plan by Alachua County and the Community Stakeholders**
- **Implement and Track the Community Local Action Plan**

Unfortunately, budget constraints in 2003 led to the elimination of programs dedicated to the implementation of the GHG strategy. It is hoped that the work of the ECSC will lead to community partnerships and opportunities to address climate change in the immediate future. Added emphasis from the Federal and State governments for mitigation and adaptation to climate change is anticipated to be an issue of critical interest starting in 2009. Furthermore, Governor Crist's, "Serve to Preserve" summits of 2007 and 2008, as well as HB 7165, might provide greater community support to fund implementation and monitoring programs.

The full 2002 GREENHOUSE GAS REDUCTION LOCAL ACTION PLAN PROGRAM STRATEGY may be read at:
http://www.alachuacounty.us/assets/uploads/images/EPD/Polution/GHG-Reduction-Strategy-2002.pdf

Linear Projections of Alachua County Carbon Emissions



Linear projection of total tons of carbon emissions based on 2001 GHG inventory.
1990 base year is estimated to be 2.4 million Tons CO_2e

ICLEI Participation

Carbon Emission Forecasting for the Alachua County Community

The chart on the left represents four possible scenarios projecting Alachua County's community wide Carbon Dioxide equivalent emissions from 1990 to 2040. The current trajectory is assumed to be on the second from the top line. The 1990 base year is roughly calculated to be 2.4 million tons of CO2 equivalent. By 2010 to meet Alachua County's emissions reduction goal of 20% there should only 1.9 Million tons of emissions.

Notes on the table:

The calculations are based on a linear growth of emissions based on population growth. The numbers are approximate and the future projections require periodic monitoring and assessment to take into account reduction programs. Greenhouse Gas (GHG) emissions may also be correlated to economic output, which could translate into exponential rather than in a linear growth of emissions.

Without emission reduction, conservation programs and enhanced energy efficiency Alachua County's emissions could almost double by 2010 to 4.5 tons of CO_2e.

Globally, The National Academy of Sciences concluded that the annual rate of increase for emissions of the main greenhouse gas in 2004 was 3 percent; triple the 1 percent rate during the 1990s.

Alachua County Energy

Conservation Strategies Commission

Purpose and Scope

The Alachua County Commission, at its December 8, 2006 meeting requested the creation of a citizen commission to be known as the Alachua County Energy Conservation Strategies Commission (ECSC). Established under the rules of a citizen advisory board, it was tasked with creating a “menu of options" of a short and long term nature for an effective and efficient community-wide energy conservation program, as well as implementation recommendations.

Composed of 15 citizens plus an alternate member, the advisory board had 12 energy expert positions; 1 former Alachua County Commissioner; 1 former City of Gainesville Commissioner; and a representative of the University of Florida.

To be appointed as an energy conservation expert the applicant had to possess demonstrated expertise and or advanced training in the areas of energy demand side management, LEED or Green Building Code standards, renewable energy technologies, or a related field.

Their report and recommendations on energy use, its relationship to climate change and local socio-economic impacts, including actions that can be implemented by the Board of County Commissioners and the community at large, was developed over 17 months of weekly (and sometimes daily) public meetings and community outreach events. Special focus areas were created by establishing four subcommittees: Land Use and Transportation; Locally Applicable Alternative Energy; Residential; and Waste and Energy Implications.

On November 30, 2008 the ECSC sunset.

Board of County Commissioners History, Resolution and Direction to the ECSC

October 2006, the Alachua County Board of County Commissioners received a presentation from Dr. Stephen Mulkey (University of Florida) on the coming impacts of Climate Change to Florida and its implications for Alachua County.

The following direction was given to staff:

1. To direct staff to develop a report with recommendations including a summary of the status of existing initiatives on ways the County Government can reduce fossil fuel consumption including, but not limited to energy conservation measures in County facilities: both existing and potential measures.
2. Evaluate the use of renewable energy in County facilities at the time of scheduled equipment replacement or upgrades.
3. Evaluate the utility of a conservation audit for the County similar to that being undertaken by the Alachua County School Board.
4. Evaluate potential revisions to the County Code that would improve energy efficiency of new growth.
5. Refer to the Environmental Protection Advisory Committee the issue of an energy conservation initiative in Alachua County and seek cooperative efforts with the University of Florida to develop a long-term energy strategy for Alachua County and ask the county staff to provide an initial reaction to what the Board approves in this motion and how it can be implemented in the short term.

December 2006, the Board of County Commissioners requests the creation of a citizen commission to be known as the Alachua County Energy Conservation Strategies Commission to develop a strategy for energy conservation in Alachua County.

March 2007 Resolution: The Alachua County Board of County Commissioners wishes to do its part to reduce or mitigate the effects of Global Climate Change and promote the long-term economic security of its citizens through the implementation of policies that enhance energy efficiency. The responsibilities of the Advisory Board shall be to develop an exhaustive "menu of options" implementable by local government, with the goal of reducing per capita energy consumption in Alachua County.

Topics for consideration should include, but not be limited to: energy efficiency standards for new County construction;

County operations and maintenance; incentives for energy efficiency in private sector construction; County Land Development Regulations; land use planning; transportation; renewable energy options; and public education.

August 2007, The ECSC recommends that the Alachua County Commission hear Gainesville Regional Utility's updated presentation of the "red dot report" that included a map and some data depicting an energy intensity overlay of some census blocks in GRU's territory. Presented by GRU to the 2006 University of Florida Sustainability Conference, and at a Gainesville City Commission meeting.

December 2007, The ECSC recommends that the Alachua County Commission work with the City of Gainesville to promote the use of life-cycle greenhouse gas emission analysis as the primary decision criteria for any waste to energy process that Alachua County or the City of Gainesville considers. The ECSC requests that the Commissions use the life-cycle greenhouse gas emissions data from the U.S. EPA report – Solid Waste Management and Greenhouse Gases (3rd edition, 2007), when performing any waste to energy life-cycle analysis. Cost, economic potential and job creation should be secondary considerations in the waste to energy decision making process.

February 2008, The County Commissioners through the MTPO direct its staff to include in the consultant Scope of Services (for 2035 & future Transportation Plan updates) a requirement that peak oil production and decline variables be reviewed and tested so as to: (1), determine potential future transportation and land use scenarios necessary to mitigate local effects of peak oil production and decline; and (2), recommend alternatives to accomplish transportation and land use mitigation strategies.

April 2008, the Alachua County Commission directs the County Manager and his Finance Team to meet with the ECSC and/or relevant ECSC subcommittees to develop, for Commission consideration, potential financing mechanisms to implement energy efficiencies on a county-wide scale. The ECSC also requests that Alachua County Clerk of Court Buddy Irby participate in development of this financing mechanism.

July 2008, Alachua County becomes a full member of ICLEI-Local Governments for Sustainability

Members and Qualifications

ENERGY EXPERTS

E. Dwight Adams, Ph.D.
Subcommittee chair, Waste & Energy Implications
Member, Locally-applicable Alternative Energy Options subcommittee

A Professor Emeritus in the University of Florida (UF) Department of Physics, Dr. Adams' interests include magnetic and thermodynamic properties of solid helium-3 using sensitive pressure measurements and nuclear magnetic resonance; and neutron scattering from magnetically ordered solid 3He (in collaboration with colleagues at Hahn-Meitner Institut Berlin). He received a PhD from Duke University, and is a long-time member of the Suwannee-St. Johns Group of the Sierra Club.

Ed Brown
Member, Waste & Energy Implications subcommittee
Member, Residential Buildings subcommittee

Ed Brown works with senior citizens to create independent living environments that enable them to age-in-place. He has worked as a finance manager, a manufacturing/engineering manager, and a property manager. Ed was a research assistant at the Oak Ridge National Laboratory, where his work and published papers focused on building integrated solar electric systems and energy efficient building design. He has undergraduate and graduate degrees in business, and is a graduate of a one-year solar electric system design and installation program. Ed is a former Florida Home Energy Rater and has engaged in over 25 years of self-directed study in the fields of sustainable living, renewable energy, energy conservation and efficiency, sustainable retirement, universal design and aging.

Erich Christian

An eleventh grade student at Oak Hall School in Gainesville, Erich is the founder of the Oak Hall School Biodiesel project. He has been active with his biodiesel fuel science projects in school, county and state science fairs, and has received science awards from Oak Hall School and Alachua County, and AgriScience Awards from the Florida Farm Bureau. Erich became interested in biodiesel following a marine science summer experience at The Island School on Eleuthera, Bahamas. A member of the Junior Academy of Science since 2007, Erich's hobbies include swimming, surfing and scuba diving.

Fred Depenbrock
Subcommittee chair, Locally-applicable Alternative Energy Options

Presently conducting a transmission analysis for wind power projects in the American Southwest, Fred Depenbrock is a semi-retired electric utility planning consultant (Siemens Power Technologies International LLC) with over 25 years of world-wide experience in electric utility planning and operations. He was a major contributor to the Gainesville Regional Utilities (GRU) Integrated Resource Plan. Fred is also an ordained Presbyterian minister, and was a parish associate at First Presbyterian Church in Gainesville.

Christopher Fillie
Member, Land Use & Transportation subcommittee
Member, Residential Buildings subcommittee

A consultant at Vibrany LLC, Chris Fillie is a LEED-accredited professional who has been involved for 13 years in residential and commercial remodeling. He obtained a Master of Building Construction with a Sustainability Concentration (UF); and undergraduate degree in IDS Environmental Studies, concentration in Systems Ecology (UF).

Ken Fonorow

An energy analyst, technical advisor, and President of Florida HERO, Ken Fonorow's pioneering work in the development of software for energy auditing, blower-door technology and "Green" construction codes has resulted in some of the nation's most successful examples of energy efficient and healthy homes. Ken received the 2002—2007 EPA Energy Star Outstanding Achievement Award. He is a member of the Advisory Committee for Building Construction Technology at Santa Fe College in Gainesville, Florida.

Levin Gaston
Member, Waste & Energy Implications subcommittee

The Chief Operating Officer of Wood Resource Recovery LLC, Levin Gaston produces a locally-sustainable boiler fuel. An arborist by training, he is a member of the International Society of Arboriculture, the Florida Arborist Society, the National Storm Water Association, and the Florida Renewable Resource Conservation and Development Council.

Pattie Glenn
Subcommittee chair, Residential Buildings

President/CEO/MGRM/Broker of The Green$mart Companies, Pattie Glenn is a founding FGBC Board member who served a seven-year term limit, and has since been reelected. She has also helped found Green Development, and chaired the founding Awards & Recognition committees. of the Florida Green Building Coalition. She received the 2000 DOE/USEPA award for ENERGY STAR Ally of the Year for special recognition of Green$mart education and training; and was the nation's first Realtor recognized for outstanding dedication to steering the market to energy efficiency, saving natural resources and reducing pollution. She is developer of RiverCreek Preserve, a 439-acre Conservation riverfront community of 99 lots in northern Alachua County.

Harald W. Kegelmann
Vice-chair, Locally-applicable Alternative Energy Options subcommittee

Born in Bamberg, Germany, Harry Kegelmann is a founder of SolarCity Gainesville, a non-profit group that advocates for the transition to resource-efficient communities; and co-owner of Advanced Solar Technologies, Inc., an installation company for solar photovoltaic systems. After teaching computer science at FSU and Florida A&M University (Tallahassee), and Santa Fe College (Gainesville), in 1995 Harry established one of the area's first Internet businesses. He served for two years in the German Army, obtained an M.S. and ABD in computer science from FSU, and is a member of the Gainesville Energy Advisory Committee.

Tom Lane
Member, Locally-applicable Alternative Energy Options subcommittee

The owner of ECS Solar Energy Systems, Inc. in Gainesville, Tom Lane has been a solar contractor since 1977, specializing in solar pool heating; hot water heating; and electric systems for remote and grid-connected systems. Currently an editorial advisor for Home Power magazine, he previously served in that capacity for Solar Engineering and Contracting , and Solar Energy Today. Tom currently conducts seminars on solar hot water heating at Solar Energy International in Carbondale, CO. He has MA degrees in Education (UF) and Forestry (UTennesse), and was elected to the 2007 Solar Hall of Fame.

Bill Shepherd (Alternate)
Member, Commercial Buildings subcommittee
Member, Residential Buildings subcommittee

The Energy & Business Services Manager for the local municipally-owned Gainesville Regional Utilities (GRU), Bill Shepherd is certified as an energy manager, building energy professional and flight instructor. Bill, who obtained an MBA from the University of Florida, co-authored "Assessing the Financial Feasibility of Utility Provided Backup Power during Project Site Planning" for the ASCE Journal of Energy Engineering (April, 2006.) He was involved in the early adoption of Electric Vehicles (EV) for GRU. In 1999, he was able to negotiate a lease agreement with Ford Motor Company. As a result, GRU took delivery of the first all electric Ford Ranger in Gainesville; it had a range of 70 miles and a top speed of 90 mph. During its 5 year service with GRU, Bill used the Ford EV to educate school children on the benefits of Alternative Fuel vehicles and resources, and displayed it at various GRU and community events.

Ruth Steiner, Ph.D.
Member, Land Use & Transportation subcommittee

A UF Professor of Urban and Regional Planning, Ruth Steiner focuses on the connection between land use and transportation planning. She has previously served with a state public service board, investigating various issues at the intersection of utility regulation and urban planning; and at the Lawrence Berkeley National Lab on the project entitled "Global Energy Use in the Transportation Sector in an Environmentally-constrained World." Recipient of her department's UF Student Planning Association Teacher of the Year Award (2002, 2006), Ruth is also a member of the Citizens Advisory Committee to the Gainesville Metropolitan Transportation Planning Organization (MTPO).

Eduardo Vargas
Member, Residential Buildings subcommittee

An energy efficiency inspector for Archstone Inspections LLC of Gainesville, Eduardo Vargas has a background in operations management and telecommunications. He is a certified Home Inspector; energy efficiency inspector; and certified indoor air consultant.

FORMER GAINESVILLE CITY COMMISSIONER

Warren Nielsen, Ph.D.
Subcommittee chair, Land Use and Transportation

A Professor of Chemistry at Santa Fe College, Dr. Nielsen is a former Gainesville City Commissioner (2000-2006), and founder and past president of Sustainable Alachua County, Inc. (SAC) For over a decade, he participated in SAC's ongoing analysis of energy conservation strategies. During his City Commission tenure, Warren strongly supported demand side energy management as a primary strategy for GRU customers, and focused on the connection between land use and transportation.

FORMER ALACHUA COUNTY COMMISSIONER

Penny Wheat
Chair, Energy Conservation Strategies Commission

A citizen advocate who served 16 years (1986-1994; 1996-2004) as an Alachua County Commissioner, Penny Wheat was known for her support of neighborhoods, public health and natural resources. She worked with County functional groups and on teams that spearheaded Alachua County's energy reduction policies and program. Penny is also a member of the Gainesville Police Department's District 3 Council, and was recently appointed by the Alachua County School Board to the school sales tax oversight committee.

FORMER ECSC MEMBERS

Stephen S. Mulkey, Ph.D. (University of Florida representative)
Member, Land Use & Transportation subcommittee
Member, Waste & Energy Implications subcommittee

A former Associate Professor of Botany and research associate in the School of Forest Resources and Conservation at the University of Florida, Stephen Mulkey recently served as Director of Research and Outreach/Extension for the UF School of Natural Resources and Environment, and as science advisor to the Century Commission for a Sustainable Florida. A scholar of the scientific literature on sustainability, climate and energy systems, he received a PhD in biology/ecology from the University of Pennsylvania.

Dr. Mulkey co-founded and directed the International Center for Tropical Ecology, the graduate training and conservation program at the University of Missouri. He also worked for many years as a research associate for the Smithsonian Institution, Tropical Research Institute. His most recent work, Opportunities for Greenhouse Gas Reduction Through Forestry and Agriculture in Florida , points to the evolving challenges and opportunities of climate change. In Florida alone, managing lands for carbon sequestration could be valued at $340 million per year in a functioning carbon market. His current research focuses on landscape resources for climate mitigation and carbon markets. Stephen now resides in Moscow, Idaho, where he is Director of the University of Idaho Environmental Science program.

Wendell Porter, PhD (Energy expert)
Member – Residential Buildings subcommittee.

A mechanical engineer and faculty member of the University of Florida Agricultural & Biological Engineering department, Wendell Porter specializes in energy and resource efficient building and process systems, IEQ and sick building investigations, heat and mass transfer. Dr. Porter also serves as the AOM Undergraduate Coordinator. He was selected as a 2006 Outstanding Educator (UF College of Agricultural and Life Sciences), an award that recognizes faculty whose support and guidance helped students accomplish their academic goals. Wendell is Chair of the non-profit Community Weatherization Coalition, and was a member of the Gainesville Energy Advisory Committee.

Mark Spiller (Energy expert)
Subcommittee chair, Commercial (non-Residential) Buildings

Formerly GRU's energy conservation planner, Mark Spiller has more than 27 years of public and private sector experience as a strategic planner and energy analyst. He served as GRU project manager for the Alachua County Southwest Landfill gas-energy project, and co-authored chapters on energy auditing and lighting design for engineering textbooks. The American Society of Civil Engineers-Florida awarded him their 2005 *Chapter Project of the Year* (Landfill Gas-Energy project); and USDOE and USEPA awarded him the 2005 'Green Power Beacon' for the GRUgreen *Green* Energy Program.

STAFF

Sean McLendon
Sustainability Program Manager – Alachua County

An Environmental Protection Department staff member for seven years, Sean McLendon formerly researched green building, design, deconstruction and construction waste issues at the University of Florida, Center for Construction and Environment. He obtained a B.A. in Architecture from the University of Florida.

Arden Herrin, Intern
Intern-Alachua County Environmental Protection Department

A returning University of Florida civil engineering student, Arden Herrin is the proud father of two boys and is dedicated to providing them with a bright future.

Bob Hoot, Volunteer
Volunteer-Alachua County Environmental Protection Department

Bob Hoot is a volunteer whose responsibilities include editing, document design, and electronic typesetting with LaTeX.

Kristine Schiavone, Intern
Intern-Alachua County Environmental Protection Department

Acknowledgements:

A task of this magnitude doesn't just happen by itself.

Thanks are due to my ECSC colleagues -- and their families. Each member volunteered an incredible amount of time, and their best professional efforts, to develop a set of recommendations that - if implemented – will help secure the future for the Alachua County community, all our children, and their grandchildren. None of us expected that we would also share medical hardships, and the joy of a wedding and a birth.

Individuals and organizations throughout the Alachua County community (and beyond), listed on pages 48 through 52, readily shared their expertise with us. We are grateful to have shared time with all of them, and to have begun a conversation about increasing community resilience in the face of energy ***in***security.

At the outset, we told the County Commission we would find best practices and successful models in other communities to adapt for local use. Thus, we are also indebted to those whose work we reference in this report.

We could not have completed the County Commission's task without the support of Alachua County Manager Randy Reid. Randy and his staff embraced our advisory board process, and assisted us in ways too numerous to mention them all. In particular, however:

At our first meeting 17 months ago, ECSC members discussed methods to engage the public in this time-limited advisory board process. Advisory board history (including all documents considered in the process of adopting recommendations for the County Commission) is not always easy to access. The "traditional" form of public engagement with advisory boards allows read-only Internet access to agenda and meeting minutes. And with a volunteer committee of 15 members, all reading diverse materials and conducting research in preparation for weekly public meetings, a technological solution for the storage of documents was critical.

Working with their Microsoft partners, Alachua County IT staff acquired the software, and developed and maintained the infrastructure, for an external SharePoint site for the ECSC.[1] We thank County IT Director Kevin Smith and his staff for providing this venue to manage and provide public access to our work. One result is that the ECSC SharePoint site has also become a significant resource for County staff.

Karen Deeter, Assistant Public Works Director-Waste Management and Sally Palmi, Waste Alternatives Manager, were regular attendees at Waste and Energy Alternatives subcommittee meetings, providing invaluable suggestions for development of our recommendations. They also smoothed the way for Dr. Neil Seldman's presentations on "Waste to Wealth". Kathleen Pagan, Senior Planner-Growth Management, shared her expertise as an adjunct member of Land Use and Transportation subcommittee meetings. Mark Sexton, Public Information Officer, and his staff provided media releases and suggestions for the report format. In addition,

1. http://energy.alachuacounty.us

they developed numerous ECSC *Alachua County Talks* programs, which can be viewed on the County "Video on Demand" website.[2]

Juna Papajorgji, the County's GIS Director, developed the "Alachua County Geogreen Mapper", a database-driven participatory web mapper.[3] It includes a map of low speed roads that can accommodate neighborhood electric vehicles, and provides for public input in registering and mapping of Green buildings, connecting live to the Alachua County's building permits database. Roland Loog, Director-Alachua County Visitors and Convention Bureau, and his staff sponsored a highly successful "green" conference for the lodging industry, and provided their results to us. Holly Banner-Growth Management and Laura Kane-County Manager's Office also provided help when we needed it.

In addition, Alachua County Property Appraiser Ed Crapo and his staff developed information for use by the ECSC. Larry Christian, a local financial consultant, coordinated a roundtable conversation with bank presidents and other financial professionals. Brent Christensen, President and CEO-Gainesville Area Chamber of Commerce, twice opened his doors to our meetings. Ted Jackrel, President and Gary Rhodes, Sales Coordinator of GatormotoUV, provided the Neighborhood Electric Vehicles (NEVs) for our demonstration of "alternative" vehicles.

Jerry Kidder, Nancy Sever, and the local chapter of the League of Women Voters provided excellent insight and refreshments at ECSC events.

Dr. Amir Varshovi, President of Green Technologies, coordinated with staff of the Jacksonville Electric Authority for an ECSC field trip to the JEA Buckman Wastewater Treatment plant. David Richardson and Gainesville Regional Utilities staff provided a tour of the GRU Kanapaha WTP.

Ed Regan, Assistant General Manager for Strategic Planning for GRU, inspired by the ECSC's Harry Kegelmann, traveled to Germany on professional tour of their renewable energy economy. He brought back a vision for the future of energy supply by starting a discussion of a feed-in tariff. When enacted by the City of Gainesville in 2009, this community will be the first in the United States to offer this pay for production financing mechanism to owners of renewable energy systems.

We were honored that Dr. Barney Capehart agreed to review ECSC recommendations. Recognized in the Energy Hall of Fame and recipient of the Palladium Medal, Dr. Capehart taught for 32 years at the University of Florida, where he also worked with industry to increase productivity through energy efficiency, waste reduction and process improvements.

Sean McLendon, ECSC County staff liaison, provided exemplary support to our advisory committee for 17 months, in addition to keeping up with his "regular" job at the County's Environmental Protection Department. This couldn't have hap-

2. Energy & Environmental Issues: http://alachua.granicus.com/ViewPublisher.php?view_id=3#energy

3. Geogreen Mapper: http://maps.alachuacounty.us/geogreen and for further description: http://www.govtech.com/dc/articles/565657

pened without the support of his boss – EPD Director Chris Bird – and all EPD staff. Sean's dedication to public service and citizen participation is a model for us all.

The author and management consultant Russ Linden talks about the necessity of working across boundaries to accomplish the goals we share. The ECSC's journey is a shining example of Linden's message of collaboration: with transparency, an open, credible process and shared leadership, members faced head-on the complex challenges of climate change, resource depletion and peak oil production and decline.

This final report is only the beginning of the conversation. It will take all of us in our communities working together, certainly outside our 'comfort zones', to secure the energy self-sufficient future we desire.

Penny Wheat – Chair,
Energy Conservation Strategies Commission

Presentations & Roundtable Discussions

ECSC & SUBCOMMITTEE MEETINGS

Chris Bird, Director-Alachua County Environmental Protection Department; 07.16.2007 Presentation to ECSC about Florida Gov. Crist's Climate Change summit 2007

Harry Kegelmann; 07.30.2007 Presentation to ECSC about Florida Farm-to-Fuel conference; Peak Oil production & decline; & German solar incentives

King County TeleBriefing; 08.13.2007 Telebriefing (ECSC) on King County (WA) Climate Change Regulatory Ordinance

Dwight Adams, Ph.D. ; 08.27.2007 Presentation to ECSC - USEPA 3rd edition, Solid Waste Management & Greenhouse Gas Report

Martin Gold & Ruth L. Steiner, PhD; 09.24.2007 ECSC - Architecture; and Land Use-Transportation Mix

Randall Reid, Alachua County Manager; 11.05.2007 Presentation to ECSC of Alachua County Sustainability & Climate Change initiatives

Dr. Sam Brody, Texas A&M University; 11.19.2007 ECSC - "Distribution of Risk from Climate Change" Alachua County Video on Demand

Marlie Sanderson, Director - Transportation Planning, Gainesville Metropolitan Transportation Planning Organization (MTPO); 12.11.2007 Presentation to LU&T about MTPO 2035 Transportation plan update

Dr. Ann Wilkie, Dr. Dave O'Keefe & Dr. Amir Varshovi; 12.11.2007 Roundtable conversation with WEIS about anaerobic digestion

Steve Lachnicht – Director, Alachua County Growth Management; 01.07.2008 Presentation to ECSC about LEED-ND (Neighborhood Development)

Mayor Pegeen Hanrahan; 01.08.2008 City of Gainesville Greenhouse Gas (GHG) reduction initiatives

Stan Smith; 01.09.2008 Director, Bureau of Economic and Business Research (BEBR), University of Florida. Presentation to LUAT subcommittee on population projections and methodology.

Pattie Glenn, ECSC member; 01.24.2008 Presentation to ECSC – "Beyond energy efficiency – what is green?"

Construction & Demolition Debris Roundtable; 01.29.2008 WEIS roundtable conversation with local construction & demolition debris contractors and "deconstruction" firms about challenges & opportunities in the field.

Dr. Neil Seldman, President & Co-Founder, Institute for Local

KEY: ECSC=Energy Conservation Strategies Commission; LU&T=Land Use & Transportation subcommittee; WEIS=Waste & Energy Implications subcommittee; RES=Residential Buildings subcommittee; ALT=Locally-applicable Alternative Energy Options

Self-Reliance; 02.15.2008 "Waste to Wealth" (community re-investment, green-collar jobs & waste-based industry). Presentations to Alachua County Waste Management staff; "brown bag" lunch at Gainesville Area Chamber of Commerce; presentation to ECSC; and community presentation (at Alachua County Health Department site.)

Rick Henn, Special Projects Mgr. – City of Norfolk (VA) Department of Development; 02.18.2008 Presentation to ECSC & Florida Community Design Center: "Light rail in 10 Years"

Ken Zeichner, Principal Planner Alachua County Growth Management; 02.18.2008 Alachua County Comprehensive Plan Evaluation & Appraisal Report (EAR)

Ken Fonorow, ECSC member & HERS certified rater; 03.17.2008 Presentation to ECSC about Home Energy Rating System (HERS)

DeDee DeLongpre-Johnston Director- University of Florida (UF) Office of Sustainability; 04.07.2008 Presentation to ECSC about UF sustainability, energy conservation & climate change initiatives

Jeff Hays, Alachua County Growth Management; 04.01.2008 Presentation to LU&T - Long-Term Concurrency Management System – Alachua County

Anaerobic Digestion – special ECSC-WEIS meeting with Sierra Club; 04.03.2008 Panel discussion about anaerobic digestion with Dr. Ann Wilkie; Dr. Dave O'Keefe; and Dr. Amir Varshovi

Jonathan Paul, Alachua County Growth Management; 04.07.2008 Presentation to ECSC - Long-Term Concurrency Management System – Alachua County

Field Trip to Gainesville Regional Utilities (GRU) Kanapaha Wastewater Treatment Plant; 04.11.2008 WEIS special meeting, field trip & tour of GRU facility

Field trip to Jacksonville Electric Authority (JEA) Buckman Wastewater Treatment Plant; 04.14.2008 WEIS special meeting, field trip & tour of JEA facility – Jacksonville, FL

Elaine West, Alachua County SHIP Coordinator; 04.16.2008 RES discussion with Elaine West regarding the SHIP programs efforts to promote energy efficient affordable housing.

Martin Guttenplan, Florida Department of Transportation; 04.16.2008 Presentation to LU&T about Florida Department of Transportation/Multi-Modal Transportation Districts (MMTD) and Transportation Concurrency Exception Areas (TCEA)

Sally Palmi, Waste Alternatives Manager - Alachua County Public Works/Waste Management; 04.22.2008 Presentation to WEIS about "Zero Waste" and commercial recycling in Alachua County

Tom Webster, Alachua County Housing Programs Manager – SHIP program presentation; 05.14.2008 Residential Subcommittee Presentation from Tom Webster regarding the SHIP programs efforts to promote energy efficient affordable housing.

ECSC Presentations & Roundtable Discussions

Brian Becker, Ph.D. candidate - UF; 05.15.2008 Grad. Student, UF School of Natural Resources & the Environment, presented to ECSC: "Overview of an Alachua County Carbon Sequestration Rapid Assessment Methodology"

Erich Christian, student – Oak Hall School (Gainesville, FL); 06.02.2008 Presentation to ECSC about Oak Hall School Biodiesel project

Michael LeBoeuf, AIA & Office Leader, DLR Group-Orlando, FL; 06.02.2008 Presentation to ECSC - Alachua County consultant explained LEED certification levels for new Alachua County Court Support building

Charlie Jackson, Facilities Manager – Alachua County; 06.02.2008 Presentation to ECSC – "Energy conservation and County facilities"

David Reed; 06.06.2008 County Government's Role for Reducing Energy Usage and Encouraging Local Agriculture

Wendell Porter, Ph.D., Chair-Community Weatherization Coalition (CWC); 06.16.2008 Presentation to ECSC about CWC weatherization and energy conservation activities in local low-income & substandard housing

Ken McGurn; 06.17.2008 Local investor/developer explained his solar energy proposal to ALT.

Ron Fuller, University of Florida Transportation and Parking Services; 06.17.2008 Presentation to LU&T about the University of Florida's Sustainable Transportation Program

Matt Vargas, Florida Organic Growers (FOG); 06.30.2008 Presentation to ECSC about FOG application for a USDA community food project

Ed Regan, PE Assistant General Manager, Gainesville Regional Utilities; 07.29.2008 ; presentation on Germany's solar initiatives & policies

Neighborhood Electric Vehicle demonstration; 10.22.2008 Sponsored demonstration & 'test-drives' of NEVs with GatormotoUV (http://www.gatormotouv.com/)
Alachua County map of 35MPH streets is located at:
http://www.greenmap.org/greenhouse/en/user/946

Presentation of draft EAR Issue papers ; 11.03.2008 Draft EAR (Evaluation & Appraisal Report) issue papers were presented by Steve Lachnicht, Director – Alachua County Growth Management; & Ken Zeichner, Jonathan Paul & Jeff Hays.

Builders Association of North Central Florida; 11.10.2008 Presentation to BANCF Local Government committee & roundtable conversation.

Financial community; 11.13.2008 Roundtable conversation with bank presidents, financial consultants, venture capitalists, & others.

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ECSC PRESENTATIONS TO OTHERS

Alachua County Tourist Development Council (TDC); 11.28.2007 Requested that the TDC consider the effects of Peak Oil production & decline on Alachua County tourism; & provide the ECSC with recommendations for energy & resource-efficient lodging .

Alachua County Commission; 1.08.2008 Interim ECSC report

American Association for Retired Persons (AARP); 02.04.2008 Gainesville chapter, AARP

Gainesville Metropolitan Transportation Planning Organization (MTPO); 02.14.2008 Recommended that the MTPO require its consultant for the 2035 Transportation Plan update be required to review Peak Oil production and decline variables; and make transportation and land use recommendations in the 2035 Transportation Plan update on how to mitigate those effects. MTPO adopted this recommendation.

Countywide Visioning and Planning Committee (CVPC); 04.17.2008 CVPC amended its Conceptual Plan Objectives to include the following policy: "Promote the creation of local renewable energy and energy efficiency policies and goals, as well as implementation plans to achieve them."

Downtown Rotary Club; 04.30.2008

Sunrise Rotary Club; 05.01.2008

East Gainesville Community Development Corporation; 07.10.2008 Discussion included the opportunity to invite Van Jones to speak about "green-collar" jobs and community reinvestment in energy security infrastructure.

Alachua County Planning Commission; 07.16.2008 Planning Commission requested a copy of all materials sent by the ECSC to County Growth Management staff re: the Comprehensive Plan Evaluation & Appraisal Report Process (EAR). ECSC materials emailed to the Planning Commission Secretary on July 18th.

Alachua County Community Planning Group; 08.05.2008

Citizens Advisory Committee (CAC) & Technical Advisory Committee (TAC) - MTPO; 09.03.2008 Two advisory committees which develop transportation recommendations for the Gainesville Metropolitan Transportation Planning Organization (MTPO)

Alachua County Leadership Team; 09.10.2008 Includes County Manager & his executive team.

Alachua County Rural Concerns Committee; 09.16.2008 Committee advises the Alachua County Commission on rural & agricultural issues.

Alachua County Attorney's Office; 09.29.2008 Advises the Alachua County Commission.

District 3 Council, Gainesville Police Department; 10.09.2008

North Central Florida Regional Planning Council; 10.23.2008 Planning Council comprised of 11 north-central Florida counties - http://www.ncfrpc.org/ - coordinates growth management, protects regional resources, promotes economic development & provides technical services to member local governments.

Alachua County School Board; 11.25.2008

Final Presentation to the Board of County Commissioners; 12.02.08

OPPORTUNITIES for FUTURE ROUNDTABLE CONVERSATIONS & ECSC PRESENTATIONS

- **Transportation of commodities into Alachua County**; Roundtable conversation.
- **Food Security**; Roundtable conversation.
- **Alachua County Medical Society, Shands Hospital, North Florida Regional Medical Center**; Energy issues & impacts to medical systems
- **Santa Fe College**; Opportunities for collaboration include training & certification to provide energy audits; installation of energy-efficiency materials; and alternative energy systems.
- **Alachua County Constitutional Officers;** Clerk of Court; Property Appraiser; Public Defender; Sheriff; State Attorney; Supervisor of Elections; Tax Collector; & Judiciary, County & Circuit Court.

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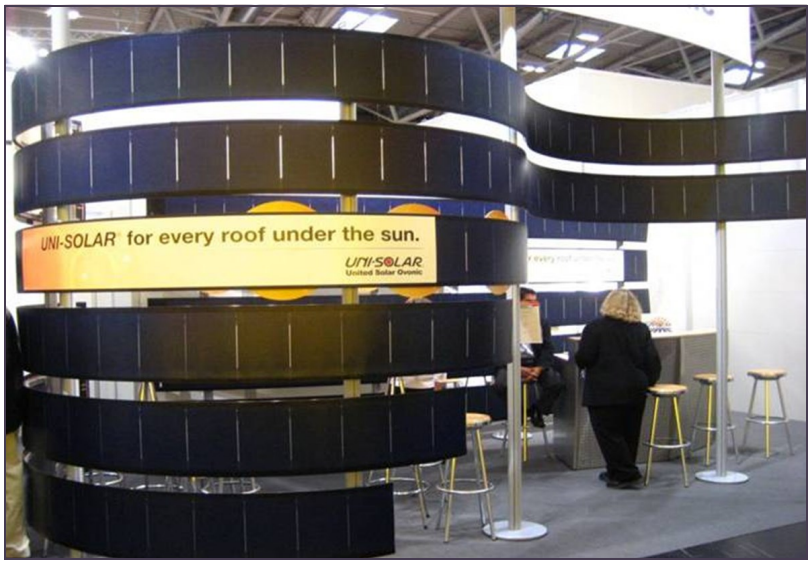
Key Concept: "Green Collar" Jobs and a Sustainable Economy

Van Jones, noted green jobs author and civil-rights activist, points out that the future of the US economy depends on "green-collar" jobs.

These jobs would address the ECSC's major community challenges (rising energy costs, climate change and Peak Oil production and decline). A green-collar job would not necessarily be within engineering or higher education, but would instead be found within the manufacturing and installation sectors for renewable energy.

Waste to Wealth lecturer Dr. Neil Seldman has recommended to Alachua County green collar jobs with the opportunity to take advantage of a local resource management program. This program would divert large amounts of materials from disposal, create small businesses and job opportunities for residents, and reduce energy consumption.

Jobs that are both good for the economy and the environment will be a future area of growth for local communities looking to increase employment, reduce energy consumption, enhance energy efficiency and recycle the local wealth rather than export dollars out of the Country.



At a German renewable energy expo, flexible pv panels on display. Photo by: Ed Regan, GRU

At the same German renewable energy expo, new solar collector technology on display. Photo by: Ed Regan, GRU

Report Structure & use of SharePoint

To assist the community discussion, an online library of resource documents, articles and work-in-progress was accumulated by advisory committee members during the June 2007-November 2008 period, when a report and recommendations were developed for the Alachua County Commission.

To facilitate this, the ECSC used an external Microsoft SharePoint site for its advisory committee work. Each ECSC member was able to upload to this site documents, pictures, links, and articles of interest.

In order to comply with the Florida Sunshine Law that governs advisory boards appointed by a legislative body, the uploaded information was 'read-only': discussion about the information and draft documents occurred

ECSC Report: Methodology

only during publicly-advertised ECSC or subcommittee meetings.

Creativity, Alachua County staff support, and use of this software tool allowed the ECSC to obtain reading materials and “blue sky” ideas from each member and staff. Thus, the links, ideas and articles you find on this site are part of the community’s conversation about energy efficiency and carbon reduction. However, they do not reflect endorsement by the Alachua County Commission or staff; the ECSC; or its individual members.

ECSC SharePoint site and work page.
http://energy.alachuacounty.us

Bike photo on the left: http://www.pedbikeimages.org/repository/intersection.linda_at_fsu.jpg / photographer : Dan Burden

Thoughts on Our Energy Past, Present, and Future

"If a path to the better there be, it begins with a full look at the worst."

-Thomas Hardy (1840-1928), English novelist & short story writer

In the 20th century, inexpensive and abundant fossil fuel catapulted gasoline into 1st place as the world's dominant fuel supply. The industrial revolution was thus powered, giving rise to the "American Dream", a term first coined by James Truslow Adams in his 1931 book, The Epic of America. Although the phrase's meaning has evolved in the course of national history, the concept encompassed the freedom that allows all citizens and residents of the United States to achieve their goals through hard work.

Collectively, we in the US (and the world) have relied on a plentiful, cheap and ever-present supply of gasoline to fuel our economies. Consumption of energy, specifically liquid fossil fuels, has spiraled upward, such that, collectively, the world uses 85 million barrels of oil per day and growing. And of that the US, the world's largest consumer, uses 20.7 million barrels every day and growing. That rate of consumption is geologically unsustainable.

Now, at the beginning of the 21st century, ever-increasing energy prices, concerns about the security of our fuel supplies (particularly for transportation), and the effects of climate change are forcing residents, businesses and governments to reduce reliance on fossil fuels and alter their habits. Particularly for us in America, replacing our reliance on "foreign oil" is increasingly viewed as a national security issue. Our lifestyles, our pocketbooks, our expectations – and yes, our dreams – are rapidly facing change in the face of significant economic uncertainty.

How do we insure that our Alachua County community thrives while we, collectively, transition through this time of continually increasing energy prices, potential scarcities and effects of changes in climate? What challenges – and opportunities – might we encounter in this process? If we proactively plan for current and future energy uncertainties, what benefits might accrue to our county population? Can we use these strategies to rebuild our economy? To answer these questions, the Alachua County Commission created the Energy Conservation Strategies Commission (ECSC).

James Woolsey, a veteran of 40-plus years in Washington, has served in four administrations, both Republican and Democratic. In the twilight of the Cold War, Woolsey - a self-described "Scoop Jackson/Joe Lieberman Democrat" - found himself increasingly identifying with Republicans on national security, and spent three years as a member of then-defense secretary Donald Rumsfeld's Defense Policy Board. Known for his support of Iraqi exile Ahmad Chalabi and the Iraq War, Woolsey is a former undersecretary of the Navy (Carter) and former CIA director (Clinton).[1]

Woolsey has also become an ardent advocate for energy independence. “Being a green neoconservative is becoming less lonely,” Woolsey says, “especially as more hawks come to see energy as a security issue.” He tells a story about an argument with a friend who is a global warming skeptic. When Woolsey explained how improvements to the electrical infrastructure could also make it safer from terrorists, his friend replied, "Oh, well, that's fine, then—we can do all that as long as it's not because of this fictional global warming."

Former House leader Newt Gingrich recently came out in support of renewable energy, and the members of Woolsey's Set America Free Coalition include such prominent hawks as Daniel Pipes, Frank Gaffney, and Cliff May. "It's less that hawks are going green as that hawks and greens have some common interests," May explains.[2]

Fuel Price Increases

- Natural Gas prices increased 93.9% between May 2000 and May 2008.
- Coal prices doubled between July 2007 and July 2008.
- Gasoline prices increased 148% between June 2000 and June 2008.

Source: EIA

1. *James Woolsey, Hybrid Hawk,* Mother Jones May June 2008 Issue http://www.motherjones.com/news/outfront/2008/05/balance-of-power-the-hybrid.html
2. Ibid

Key Concept: Peak Oil Production and Decline

In February 2007, the United States General Accountability Office released the report, *Crude Oil: Uncertainty about future oil supply makes it important to develop a strategy for addressing a peak and decline in oil production* . It laid out a sobering assessment of the United States' vulnerability to this geologic phenomena and lack of a national, state or local plan to deal with the economic and social consequences.

The US GAO Report covered the following:

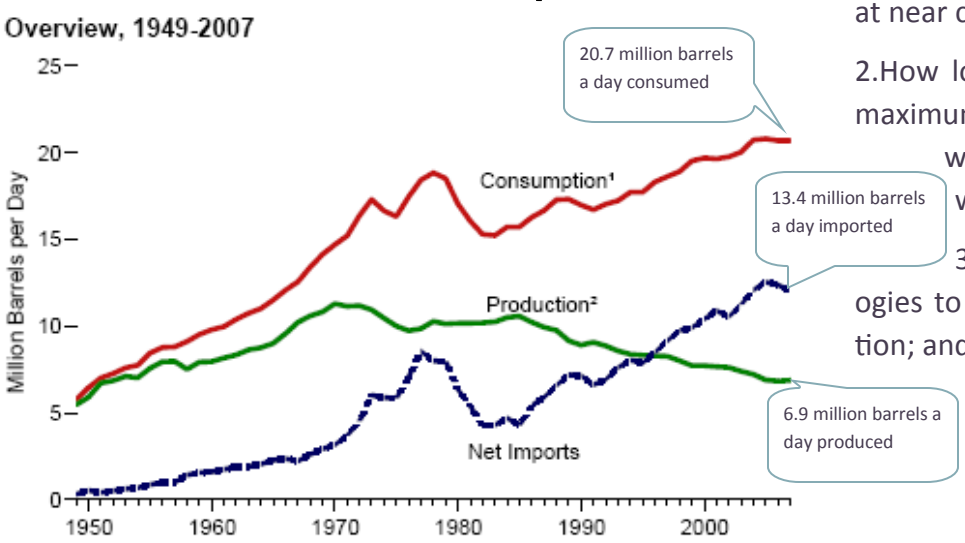
1.The U.S. economy depends heavily on oil, particularly in the transportation sector. World oil production has been running at near capacity to meet demand, pushing prices upward.

2.How long can world oil supply expand before reaching a maximum level of production also known as a "peak", from which it can only decline? The study also examined when oil production could 'peak'.

3.It assessed the potential for transportation technologies to mitigate the consequences of a peak in oil production; and

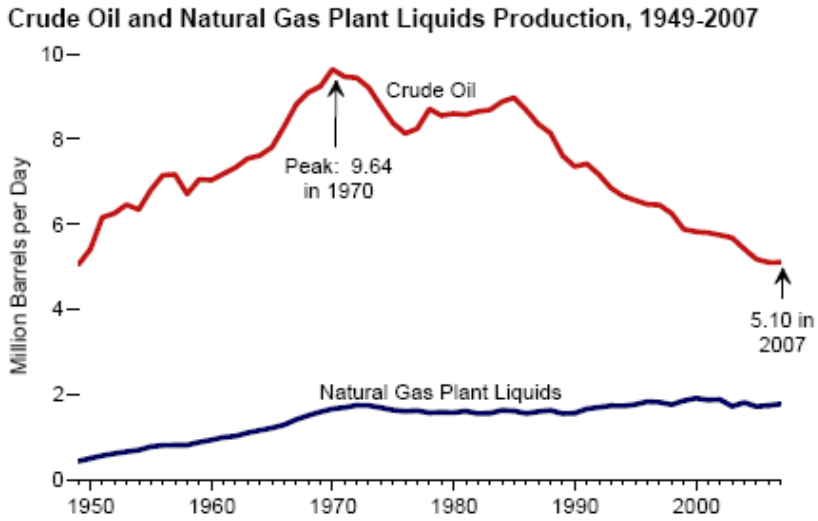
4.It reviewed studies, an convened expert panel, consulted agency officials, and examined federal agency efforts that could reduce uncertainty about

United States oil consumption: 2007



All charts from the Energy Information Administration; Official Energy Statistics from the US Government: http://www.eia.doe.gov/emeu/aer/pdf/pages/sec5_4.pdf

In 1970, the United States peaked in oil production at 9.64 million barrels per day



the timing of a peak or mitigate the consequence.

According to the report, "...without a plan, the United States, perhaps more than any other nation, will be the most seriously harmed economically...This lack of a strategy makes it difficult to gauge the appropriate level of effort or resources to commit to alternatives to oil and puts the nation unnecessarily at risk. "(p.39)

The Departments of Energy and the Interior generally agreed with the report and recommendations.

Key Findings:

- Peak oil is real.
- Decline in oil production will occur sometime between February 2007 and 2040.
- No one is sure of the exact date, because there is a wide variance in the data and methodology used by various research entities.
- Alternative energy sources, particularly for transportation, are not yet available in large quantities.

Selected Findings:

- Key alternative [fuels] currently supply the equivalent of only about 1 percent of U.S. consumption of petroleum products.
- USDOE projects that even under optimistic scenarios, by 2015 these alternative fuels could displace only the equivalent of 4 percent of projected U.S. annual consumption.

Crude Oil: Uncertainty about future oil supply makes it important to develop a strategy for addressing a peak and decline in oil production
http://www.gao.gov/new.items/d07283.pdf

Guiding Principles

First, practice conservation (reduce consumption).

Second, weatherize building envelopes and upgrade mechanical equipment & appliances.

Third, invest in renewable power generation

(GO SOLAR).

Recommendations: Community Re-investment & Energy Security

Recommendation Charts

- Major Strategic Policies
- Invite and Engage Our Public & Communities
- Alachua County Government
- Waste and Energy Implications
- Maximize Local Food Production and Processing
- Land Use and Transportation
- Residential Buildings
- Innovative Energy Systems and Renewable Energy
- Legislative Items

Recommendation Charts

- ## Major Strategic Policies

  The ECSC recommends to the Alachua County Commission 21 aggressive policy goals and specific programs to create a more energy efficient and resource resilient community.

- ## Invite and Engage Our Public & Communities

  27 Recommendations, with the goal of instituting a comprehensive, long-term, continuous and action-oriented energy planning and public engagement strategy which places a high priority on citizen involvement.

- ## Alachua County Government

  41 Recommendations to enhance and build upon past energy conservation efforts, with an emphasis on a long-term return on investment and community leadership.

- ## Waste and Energy Implications

  19 Recommendations to reduce the community-wide cost of waste disposal and resource depletion, with an emphasis on "Waste to Wealth" program initiatives.

- ## Maximize Local Food Production and Processing

  To improve self-sufficiency; reduce food costs and fuel consumption associated with transportation of food products; and to increase the quality of life of Alachua County residents, Alachua County shall encourage the cultivation of produce gardens and value-added food production on public and private land .

- ## Land Use and Transportation

  16 Recommendations to mitigate and adapt to rising energy costs, climate change and peak oil production and decline. Asks the fundamental question on land use decision: "Is a given policy decision viable if the cost of gasoline is $5, $10 or more per gallon?"

- ## Residential Buildings

  14 Recommendations to improve the energy efficiency of Alachua County's existing building stock, 90% of which was built before Florida required minimum energy codes.

- ## Innovative Energy Systems and Renewable Energy

  21 Recommendations promoting innovative energy conservation and production systems along with local job creation and manufacturing facilities.

- ## Legislative Items

  21 Recommendations for enactment by the Board of County Commissioners, or requests to the Legislative Delegation for State and Federal action.

Major Strategic Policies (adopted 08.25.2008), Chart NOT ranked

Title	Recommendations
Energy and Sustainability	Acknowledge that energy issues will, in perpetuity, affect Alachua County residents' financial security, and the economy and livability of our countywide community. Add energy security & sustainability to the Alachua County Commission-adopted Comprehensive plan and vision statement.
Reduce fossil fuel use: establish timeline	Establish a timeline for County government to reduce use of fossil fuel, consistent with the goal of a 50% Greenhouse gas (GHG) reduction by 2030, and an 80% GHG reduction by 2050. Use 1998 as the base year (2001 Alachua County Greenhouse Gas report.) Encourage others within the community to meet the same or similar targets.
Energy and Water: Consumption & Conservation Principles	Reduce energy and water consumption on a per capita basis through effective education, programs, marketing and sustainable policies, and legislation. Establish specific goals and target dates by which to achieve them. Adopt a strategy of (1), practicing energy and water conservation; (2), achieve maximum efficiencies in building envelopes, machinery, and appliances; and then (3), effect optimum use of local renewable energy resources.
Maximize Carbon Sequestration	Maximize carbon sequestration throughout all County operations. Additionally, Alachua County government should develop the organizational capacity to participate in carbon markets as a source of revenue, while minimizing the carbon credits that must be purchased for government operations and power production.
Local Food Shed: Maximize Food Production & Processing	Maximize local resource & energy-efficient food production and processing within Alachua County's local food shed.
Business Development: Energy Conservation	As a primary economic development strategy, encourage within Alachua County the location and development of businesses and industry clusters that create, manufacture and install conservation materials; provide other energy and conservation-related services; and those which upgrade the operational efficiency of structures. Support existing local businesses engaged in same.
Business Development: Alternative Energy	As a primary economic development strategy, encourage the location within Alachua County of businesses and industry clusters that create, manufacture and install innovative and alternative energy technologies. Support existing local businesses engaged in same.

Timing	Comments & Collaboration Opportunities
Short Term (1-3 years)	Alachua County Comprehensive Plan Commission Vision
Immediate Term (within 1 year)	Alachua County Comprehensive Plan Re-envision public service delivery
Short Term (1-3 years)	
Mid Term (4-10 years)	Alachua County Comprehensive Plan Re-envision county operations. Source of revenue for County government, & economic development opportunity for local businesses; green-collar jobs.
Mid Term (4-10 years)	Economic development opportunity; green-collar jobs.
Short Term (1-3 years)	Economic development opportunity; green-collar jobs. Consider whether, and how, the cost of permit fees may affect new business development opportunities.
Short Term (1-3 years)	Economic development opportunity; green-collar jobs. Consider whether, and how, the cost of permit fees may affect new business development opportunities.

Major Strategic Policies (adopted 08.25.2008), Chart NOT ranked

Title	Recommendations
Business Development: Waste-Based Industries	As a primary economic development strategy, further develop the Alachua County Transfer Station for use by clusters of waste-based industries. Issue Request for Proposals (RFP) for industry to use Alachua County waste & discards in manufacturing or related activity.
Optimize Conservation Programs	Provide educational information about energy and conservation to effect the optimum conservation of energy use within Alachua County. Promote efficient use and management of non-fossil fuel energy resources, through a series of incentives, initiatives, and mandates. Promote the use of energy audits, rebates & energy-efficiency programs offered by private businesses and utility providers.
Increase Demand Management: Reduce Electricity Consumption	Aggressively cut our community's electricity consumption. Match (or exceed), on a per capita basis, the energy efficiency of Austin, Texas; Portland, Oregon; Burlington, Vermont; and California. Create a measurable plan with benchmarks to achieve these goals. Request that the Gainesville City Commission & other utility providers adopt an expanded portfolio of demand management programs; and a peak/non-peak hour electric rate structure.
Locally Based Weatherization Bank	Create property tax-based and other local financing mechanisms to encourage, promote and effect the optimum use of insulation, weatherization, energy-efficiency upgrades (to building envelopes and machinery), and other energy saving measures to all existing structures.
Rental Property Energy Efficiency	Create incentives and/or legislation to encourage owners of rental properties to effect the optimum use of insulation, weatherization, energy-efficiency upgrades (to building envelopes, machinery and appliances), and other energy saving measures. Require full disclosure (using an approved energy rating system, such as Home Energy Rating System - HERS) of total monthly costs, including rent and all utilities. Consider adoption of a County landlord licensing program, with requirements for energy efficiency upgrades to obtain license; and eliminate or reduce licensing fee for a specified period, if the landlord upgrades the property to a set of minimum energy standards.

Timing	Comments & Collaboration Opportunities
Short Term (1-3 years)	Economic development opportunity. Create green-collar jobs, reduce GHG, and avoid landfill disposal costs.
Short Term (1-3 years)	See www.energysmackdown.com for example of an energy-conservation "reality TV" program offered over the Internet. Alachua County can develop one and also show it on Channel 12.
Short Term (1-3 years)	Also consider policies and programs implemented in Denmark, Japan, and Germany. Potential partners: all utilities which serve County customers; banks and financial institutions; business, non-profit and neighborhood organizations, Gainesville City Commission
Short Term (1-3 years)	90% of structures in Alachua County were built prior to 1999; Florida minimum energy standards first required in 1993. Expect significant efficiencies, community reinvestment & "green-collar" jobs to be achieved by retrofitting existing structures.
Short Term (1-3 years)	Rentals comprise almost 50% of all residential structures in Alachua County. [US Census data] Currently, HERS- Home Energy Rating System - is the only nationally recognized rating system. The HERS Index is a scoring system established by the Residential Energy Services Network (RESNET) in which a home built to the specifications of the HERS Reference Home (based on the 2006 International Energy Conservation Code) scores a HERS Index of 100, while a net zero energy home scores a HERS Index of 0. The lower a home's HERS Index, the more energy efficient it is in comparison to the HERS Reference Home. http://www.energystar.gov/index.cfmc=bldrs_lenders_raters.nh_HERS

Major Strategic Policies (adopted 08.25.2008), Chart NOT ranked

Title	Recommendations
Energy Efficient Land Use and Transportation	Adopt land use & development policies that maximize energy efficiency. Make energy security & sustainability the primary consideration in decisions about land use mix, density with amenities, and design – that will at the same time improve affordability and livability. Develop land use projects and patterns in the County that result in reduced community and countywide energy consumption.
Transportation and Energy Goals	Reduce use of, and dependence on, liquid fossil fuels. By 2020: • Increase vehicle occupancy/ridership by at least 25%. • Double (at least) the fuel consumption efficiency (mpg) of the Alachua County government fleet. Encourage commercial & private fleets located within Alachua County to accomplish the same. Move to non-fossil fuel fleets as soon as possible. • Reduce by half the approximately 13, 5000 annual (2008) miles driven by each registered Alachua County driver. • Multimodal Transit: Maximize opportunities for use of other modes of transportation through intervention at the neighborhood and regional scale. Expand the regional cycle network and mass transit system with the goal of reducing single occupancy vehicle trips by 25%-2020. Encourage the MTPO to also adopt these policies and goals.
Liquid Transportation Fuels	Support within Alachua County the production of a minimum of 5.0 million gallons per year of **non-fossil** fuel based transportation fuels, with feedstock grown in a certified sustainable manner. Ensure feedstock does not compete with food production. Sustainable growth of energy crops on environmentally damaged lands, like closed County landfills, could provide revenue or liquid fuel for Alachua County government.
Life-cycle analysis of Greenhouse Gas Emissions (GHG)	Life-cycle analysis of Greenhouse Gas Emissions (GHG) should form the basis of any decision on use or generation of fuel sources. Equal consideration should be given to minimizing toxic pollutants and strict enforcement of US EPA guidelines.

Timing	Comments & Collaboration Opportunities
Short Term (1-3 years)	County Commission can amend the Comprehensive Plan to include these & other energy policies over the two-year Evaluation & Appraisal report process.
Mid Term (4-10 years)	Use of van pools; car pools; ridesharing; car share companies; increased public transit; use of hybrid and electric vehicles; flexible operating hours; telecommuting. Economic opportunities for private transport providers and other business ventures.
Mid Term (4-10 years)	The Energy Crop Plantation is growing about 250,000 eucalyptus and cottonwood trees on a closed phosphate mine in central Florida. The project is currently the largest tree biomass energy crop plantation in the U.S.
Short Term (1-3 years)	Transportation fuels

Major Strategic Policies (adopted 08.25.2008), Chart NOT ranked

Title	Recommendations
Renewable Energy Production: Guiding Principles	The guiding principles for renewable energy production should be development of distributed residential and commercial power generation, and development of a countywide smart grid. Evaluate and institute fair and equitable net metering and feed-in tariffs, which have as their primary goal the creation of distributed power production.
Renewable Energy	Increase use of solar energy and other renewable energy resources in new and existing development within Alachua County. Alachua County government should enter the renewable energy market, either through distributed production (for example, solar panels on roofs of Alachua County government buildings), or utility-scale production (development of a large-scale solar site.)
Life-cycle analysis of GHG Emissions: County Purchasing	Life-cycle analysis of Greenhouse Gas Emissions (GHG) and energy costs should be adopted and required as the basis of all County government decisions, particularly: • any decision on use or generation of fuel sources. Equal consideration should be given to minimizing toxic pollutants and strict enforcement of US EPA guidelines. • all County building construction and purchasing decisions. • waste management policy. Such an analysis precludes incineration (burning) of solid waste for power generation.
Funding Sources: Energy Conservation & Sustainability Activities	Direct that County staff identify, and become familiar with, potential funding sources for energy conservation, energy efficiency, renewable energy and sustainability activities. Establish priority to continuously identify & mobilize potential private sector & foundation grants & other funding sources. Add this issue to both State and Federal legislative efforts. Consider use of Interlocal Agreements to accomplish county-wide energy self-sufficiency goals, carbon credit trading, countywide purchasing, and other opportunities.
Amend Comprehensive Plan: Add Major Energy Strategies	Amend the Alachua County Comprehensive Plan to include, in the appropriate locations, the goals, objectives and policies included in this chart. Amend the Comprehensive Plan to add an Energy Element.

Timing	Comments & Collaboration Opportunities
Mid Term (4-10 years)	Work with utility providers and State government to accomplish.
Short Term (1-3 years)	Accomplish through distributed and/or utility-scale solar generation.
Short Term (1-3 years)	The County should reevaluate its purchasing policies for life cycle GHG emissions and begin asking its vendors to supply this information about their products.
	Form strategic partnerships with energy-efficiency and sustainability-related businesses, local industry, non-profit organizations, community leaders, and employers in Alachua County. Ecivis software & partnership program is critical to accomplishing this goal.
Immediate Term (within 1 year)	

Invite & Engage the Public & Our Communities

Title	Recommendation
Annual Public Summit on Energy Security	Beginning with an annual countywide summit on “Energy Security in Alachua County”, develop and sustain a cooperative process in which Alachua County consumers, energy providers, and local governments plan and execute actions designed to achieve a secure and affordable energy future.
Contingency Plan: Emergency Energy Curtailment	In cooperation with local governments and energy suppliers, prepare and adopt an ‘emergency energy curtailment and contingency plan’ that delineates priority cutbacks in energy use that can be put into effect in the event of critical energy shortages. Include steps that can immediately be implemented in the public sector, and steps that can be encouraged in the private sector. Annually update.
"Energy Smackdown" TV Show & Ch. 12 Energy Programming	Develop and film (for broadcast on Channel 12) an Alachua County program similar to www.energysmackdown.com, in which homeowners, businesses and towns compete against each other to lower their electricity bills. Channel 12 energy programming - Develop 30 minute or 1 hour tv shows that discuss energy, sustainability, food production & transportation issues, and broadcast them at a set time each day. Initially use 10 programs in rotation. Use "Alachua County Talks" to go in depth on issues.
Educational Materials for the Public: Resource Conservation	Wide distribution of an easy to read and understand text that explains how to save energy & water when building a new home, or renovating an existing one, is critical if we are to increase the energy & resource efficiency of our homes. Such a text is available. The book is called Building, Buying, or Remodeling Your Florida Home: A Guide to Energy and Water Savings. Alachua County should purchase 2,000 ($12,000) of these books and distribute them to churches, high schools, libraries, government offices, architects, real estate agents, landscapers, light stores, HVAC contractors, plumbers, electrical contractors, interior designers, other building professionals, and any other organization that can help educate the public about how to reduce energy and water consumption.

(adopted 08.25.2008), Chart NOT ranked

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	Invite as a presenter Mr. Van Jones, founder & president of Green for All, who works to build an inclusive, green economy that lifts people out of poverty. A Yale law school grad, he also co-founded the Ella Baker Center for Human Rights. Promotes green-collar jobs. http://www.vanjones.net/page.php?pageid=3&contentid=29 One outcome could be a Sustainable Energy Plan adopted by Alachua County and all municipalities. One model to consider is that of Boulder County,CO & its municipalities. See it at: http://www.bouldercounty.org/sustain/energy/sustainable_energy_plan.htm
Short Term (1-3 years)	Do all the utilities that serve Alachua County residents already have such a plan? Do you know what GRU's plan says, or how it will affect Alachua County residents & businesses? How it will affect Alachua County government? In the event that such a plan ever needs to be implemented, its success will depend on participation of residents. It would be helpful if we all were able to participate in the plan's development.
Short Term (1-3 years)	Seewww.energysmackdown.com for how each category competes against others within the same category. This program is now in its second season. Available for viewing over the Internet. Dependent upon Commission direction of the program's final form, it will require significant staff time to videotape & produce. May require shift in priorities of existing staff, or the addition of new staff. Consider also a partnership with UF Journalism School & other organizations.
	IFAS Extension was responsible for creating this book, which was the result of collaboration among many organizations and individuals. It was revised & retitled in March, 2003. A letter from the Alachua County Commission should be included with each book.

Invite & Engage the Public & Our Communities

Title	Recommendation
Alachua County Energy Information Center	Create an Alachua County energy office & information center; develop an informational website; & with partners, promote educational events on a regular basis. Consider partnership with UF &/or Santa Fe College. Promote new & existing events that raise awareness of energy conservation, energy efficiency & green technologies: example is annual Green Building week held in May. Organize regular events such as "bike-ins", in which individuals & families arrive by bus, bike or a means of transportation other than cars. Close 2nd Avenue between campus & downtown for a Friday night roller blade event. Organize a Speaker's Bureau for public events & school programs. Annually each spring, dedicate a week to advocate energy conservation, and showcase Alachua County, as well as individual & community initiatives. Annually each spring, facilitate the development of an "Energy Security" (or other name) month to be held throughout the ACLD. Invite local organizations & businesses to participate & provide educational information.
Strategic Partnerships	Form strategic partnerships with energy-efficiency and sustainability-related businesses, local industry, organizations, community leaders, and employers in Alachua County. Include existing partnerships between schools and the Alachua County Division of Waste Management.
Coalition of Hospitals & Medical Facilities: Energy Savings	Encourage & facilitate creation of a coalition of local hospitals & medical facilities to discuss reductions in energy use, technologies & strategies for new construction, & associated cost savings. Model this coalition after the US Dept. of Energy (USDOE) EnergySmart Hospitals initiative. The USDOE's comprehensive EnergySmart Hospitals initiative & the industry-driven Hospital Energy Alliance are working to provide resources, tools & strategies for existing & new hospitals to identify clear pathways to cost & energy savings through efficient & renewable energy technology applications. http://www1.eere.energy.gov/buildings/energysmarthospitals/

(adopted 08.25.2008), Chart NOT ranked

Timing	Comments & Collaboration Opportunities
	Residents are searching for more information than just that which is provided by utilities (that also sell electricity.) With access to many resources not readily available to the general public, Alachua County can serve as a facilitator & information clearinghouse. Work with other local governments, UF, Santa Fe College, businesses & non-profit organizations to accomplish these goals.
Short Term (1-3 years)	Builders Association of North Central Florida, Gainesville-Alachua County Association of Realtors, Gainesville Area (& all community) Chambers of Commerce, Business Alliance of Greater Gainesville
	Hospitals are among the nation's most complex, diverse & energy-intensive facilities.The US' 8,000 hospitals must be fully operational 24/7, & also be able to maintain services during power outages, natural disasters & emergencies that could force other facilities to close. US hospitals spend over $5 billion annually on energy, & produce over 30 lbs. of CO2 emissions per sq. ft.

Invite & Engage the Public & Our Communities

Title	Recommendation
Business Coalition: Peak Energy Reduction	Encourage, & facilitate creation of, a coalition of businesses in Alachua County to proactively manage & reduce their energy use during times of peak demand.
Coalition of Commercial Building Owners & Managers: Energy Savings	Encourage & facilitate creation of a coalition (of commercial building owners & managers, and Real Estate professionals) that educates members & others about energy conservation & efficiency. Energy use represents the single, largest controllable operating expense for office buildings.
Updated Library and School Resources	Request that the Alachua County Library District (ACLD) & Alachua County School District (ACSD) update & increase information sources (books & videos) on energy-related issues and sustainability in public and school libraries.
ECSC Report - place in all libraries	Insure that at least one printed copy of this ECSC report is placed in all ACLD & ACSD libraries.
Annual Student Competition	Hold a competition and offer some type of scholarship or other prize(s) to a middle- or high-school student (in Alachua County) for best project or paper on local implications of climate change, sustainability and/or energy-related issue. Identify partners and/or sponsors for funding & prizes.
Annual School Competition	Annually, hold a competition between schools in energy conservation. Each elementary, middle, and high school would compete with schools in the same category. Assess the per capita and per sq. ft. energy consumption. Winner is the school with the best improvement compared to last year; and the school with the best overall reduction in consumption since Day 1. Each school would get 10% of the savings compared to year 1 as a budget for school activities and events.

(adopted 08.25.2008), Chart NOT ranked

Timing	Comments & Collaboration Opportunities
	The Business Energy Coalition, located in California, (http://www.energycoalition.org/bec/), is a project that includes Pacific, Gas & Electric; major businesses; & civic leaders. To date, the BEC has enrolled over 130 members; the group's goal is to deliver up to 50MW of demand response electrical reduction capacity by summer, 2008.
	The Building Owners & Managers Association (http://boma.org/TrainingAndEducation/BEEP/) offers a web-based audio program that provides information for commercial real estate professionals about how to reduce energy consumption and costs with proven no- and low-cost strategies that optimize equipment, people & practices.
	ACLD has already updated many resources, and has committed to continue to do so in the future.
	Example of a local student initiative which deals with energy issues is the Oak Hall School biodiesel project. Perhaps some of these students could help define each year's theme and competition, and also serve as judges. In future years, students who participate could continue to serve in this way, and perpetuate the program. Consider partnership with the Alachua County Science Fair (http://tlc.sbac.edu/scifair/), which has established competition & judging; Sierra Club; and Women for Wise Growth.

Invite & Engage the Public & Our Communities

Title	Recommendation
Annual Green Summit of Florida's Counties	Host an annual green summit of Florida's counties. To be held in Alachua County, this summit would be dedicated to the exchange of information and best practices which represent how local governments are working toward new sustainability goals. Elicit and share effective ways to pursue long-term principles of sustainability, and further develop relationships among local government decision-makers. Coordinate public information efforts to communicate a coherent message. This requires identification of, & input from, existing governmental & non-governmental organizations that currently produce educational & marketing material related to energy conservation & sustainability. This process should also include substantive input from the public and other stakeholders, who may be affected by new sustainability measures.
Energy Advisory Committee	Establish a standing Energy Conservation Advisory Committee to provide the Alachua County Commission with recommendations on energy-related matters that may affect Alachua County residents: and to serve as a forum for public discussion about energy-related matters.
Community Teaching	As a way to contribute to our community and to participate in civic education, encourage residents with expertise on energy efficiency and building sustainability to teach a free or low-cost community education course. Encourage residents to take advantage of these community education courses.
Informed Choices: Food & Energy	Give shoppers the opportunity to make informed choices about low-energy and low-emissions food. Work with grocers to develop a system that shows the approximate energy content & GHG emissions associated with all food products.
Informed Choices: Lower Energy & Water-use Diets	Collaborate with partners to provide educational programs that teach residents about, & encourage a transition to, lower-energy & water-use diets.

(adopted 08.25.2008), Chart NOT ranked

Timing	Comments & Collaboration Opportunities
	Coordinate with the Alachua County Visitors & Convention Bureau about best time of year to hold this event in Alachua County; and to take advantage of additional opportunities and events. GRU & other utility providers; UF Sustainability Office.
	Include in creating resolution a requirement for specific subcommittees or "working groups", such as a Food Policy Council.
	Economic development opportunity for local grocers & others to develop an information or labeling system that could be marketed throughout the US. Japan recently adopted a labeling system - see more at: http://news.yahoo.com/s/afp/20080819/sc_afp/ japanenvironmentwarmingconsumer;_ylt=ApOgHxa4IkU87PhWUWP1Wh5pl88F
	Simple example: purchase local foods in-season to reduce energy costs & GHG emisions associated with long-haul transportation of food. Economic development opportunity for local chefs, bakers, grocers & other food professionals to develop &/or expand businesses that create new & exciting local food products. A plant based diet achieves lower energy and water usage. A meat-based diet contributes 18% of the earth's GHG emissions.

Invite & Engage the Public & Our Communities

Title	Recommendation
Informed Choices: Food-Buying Clubs	Encourage residents to develop food-buying clubs in order to shop wisely & select nutritious foods.
Promote Retrofits: Shading	Promote the use of external shading devices (that could include deciduous trees) to retrofit existing buildings that have more than 24 sq. ft. of south, southwest &/or west-facing windows.
Promote Retrofits: Solar Tubes for Day Lighting	Promote the use of "solar tubes" to bring daylighting into dark areas of existing buildings.
Promote Community "No-Idle" Policy	Introduce and encourage the use of “no-idle” policies for all public & private fleet vehicles. Measure the community results.
Coalition of Private Landowners: Carbon Mitigation & Offset Programs	Facilitate, & encourage conversation about, creation of carbon mitigation and/or offset programs on private land. Identify & link potential partners to implement this opportunity.
Consumer Awareness: HVAC Systems & Duct Leaks	Promote the importance of establishing performance standards in a contract for new or replacement mechanical systems (e.g., HVAC) in residential construction. Encourage independent, 3rd-party performance testing for verification of performance standards established in the contract.
Promote Purchase of Products with Recycled Content & Recycled Packaging	Promote increased use of products with recycled content; and promote purchases of durable goods rather than one-use, throwaway ones.
Businesses: Promote Carbon Credits for Landfill Diversion	As an incentive to recycle, promote the opportunity for businesses to sell carbon credits for materials that they divert from landfills. Insure the Florida legislature "counts" diversion of recyclables from landfills in a carbon credit system.
Promote awareness of FL law: use of clotheslines, etc.	Promote recognition that -- under Florida law -- deed restrictions, covenants, declarations or other agreements MAY NOT prohibit use of solar collectors, clotheslines or other energy devices based on renewable resources.

(adopted 08.25.2008), Chart NOT ranked

Timing	Comments & Collaboration Opportunities
	Reduce heat load in existing buildings.
	Reduces energy consumption necessary for lighting dark areas of existing buildings.
	"No-idle" policies usually require that vehicles be turned off when stationary longer than 2 minutes; & include emergency vehicles, unless they are parked in traffic at an emergency & must have power for emergency lighting. (Instead of vehicle idling, compact generators & battery packs can be used for emergency vehicles that provide emergency lighting.) Significant differences in fuel costs per mile between emergency vehicles or buses & standard fleet vehicles is largely
	Encourage farmers, ranchers, conservation organizations & forestry operations to discuss opportunities for development of renewable energy & other "offset" programs that also achieve cost savings.
	Would be helpful if consumers had access to sample contracts & performance testing criteria to understand what they should expect from an HVAC vendor & new or replaced equipment & system.
Short Term (1-3 years)	See WEIS section, p.19.
	F.S. 163.04 Energy devices based on renewable resources: "Notwithstanding any provision of this chapter or other provision of general or special law, the adoption of an ordinance by a governing body, as those terms are defined in this chapter, which prohibits or has the effect of prohibiting the installation of solar collectors, clotheslines, or other energy devices based on renewable resources is expressly prohibited." http://www.leg.state.fl.us/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=solar&URL=CH0163/Sec04.HTM

Alachua County Government

Title	Recommendation
County Government: Reduce Fossil Fuel Use and GHG Emissions	Establish a timeline for reduction of fossil fuel use, consistent with the goal of a 50% GHG reduction by 2030, and an 80% GHG reduction by 2050.
County Government: Interlocal Agreements to Accomplish Energy Goals	Consider the vital importance of Interlocal Agreements to accomplish county-wide energy self-sufficiency goals, carbon credit trading, countywide purchasing, and other opportunities.
County Government: Low-Income Weatherization Materials	Develop County bulk purchasing method to provide lower-cost materials to be used by local non-profit groups in their low-cost energy efficiency improvement activities in low-income areas. Accomplish dual public purpose of promoting energy security for our neighbors with lower incomes, & increased safety in currently substandard homes.
County Government Public Service Delivery: Peak Oil Production & Decline	Direct the County Manager to conduct a review & analysis of peak oil production & decline issues (inc. higher fuel prices), & their potential effects on the public & County public service delivery. Include a discussion of this analysis in the FY 2010 budget deliberations or earlier. Annually update review & analysis.
Transportation Analysis: Peak Oil Production & Decline	That Alachua County include in all analyses of transportation needs the requirement that peak oil production & decline variables be reviewed and tested so as to: (1), determine potential future transportation & land use scenarios necessary to mitigate local effects of peak oil production & decline; & (2), that County staff recommend alternatives to accomplish transportation & land use mitigation strategies.
County Government Capital Improvement Program: Energy Management Funds	Reserve a percentage of the annual Alachua County CIP budget for energy conservation & energy efficiency projects for County buildings. Use funds for the purchase of energy conservation equipment, building materials & programs that demonstrably reduce energy consumption.
County Government: Weatherize County Buildings	Weatherize all County buildings to the maximum extent practical & cost-effective.

(adopted 09.03.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
Short Term (1-3 years)	Short-term goal - establish timeline. Long-term goal - Implementation from now-100 years.
Mid Term (4-10 years)	Cities, small municipalities, GRU, UF
Short Term (1-3 years)	Existing example is that of composting bins, purchased by County Waste Management & offered to the public every spring at a less-than-retail price. Public purpose is to encourage backyard composting & soil supplementation, reduction of wet-stream waste co-mingled with trash, & reduction of trash volume.
Immediate Term (within 1 year)	In his 2009 Budget Message, County Manager Reid recommends that each County department prepare a report (to be presented January, 2009, the beginning of the budget process) on one or more proposals that "fundamentally change business plans" to enhance revenues or reduce the cost of County government, while maintaining or expanding an acceptable level of service. Review & analysis of peak oil production & decline should be included as part of the Manager's recommended process.
Immediate Term (within 1 year)	City of Albuquerque, New Mexico adopted a resolution (FSO-02-70 & Council Resolution 329) that reserves 1% of its general fund CIP in 2003, 2005 & 2007 bond elections, & establishes a renewable energy source. See http:www.cabq.gov/energy/

Alachua County Government

Title	Recommendation
Pursue Florida Green Building Coalition Green Government Designation	Recommend to the Board of County Commissioners to pursue a Florida Green Building Coalition, Green Government designation and encourage other local governments to do the same.
Adopt the Model Green Building Ordinance	In an effort to recognize and integrate various local, state, and national sustainability building programs, the Florida Building Commission developed the recently-released Model Green Building Ordinance (see Residential, Appendix A), which was developed by its Florida Green Building Workgroup comprised of local and state governments, building officials, industry representatives and conservation advocates. The first Green Building Ordinance in Florida was adopted by the City of Gainesville in 2001 and served as a model for the Model Green Building Resolution (http://consensus.fsu.edu/
County Government: Staff Expertise in Energy Conservation & Energy Efficiency	Develop the organizational capacity within Alachua County government to develop, implement & measure energy efficiency & energy conservation programs for Alachua County government operations, buildings & fleet.
County Government: Staff Expertise in GHG Emissions & County Carbon Liability	Develop the organizational capacity within Alachua County government to measure & evaluate Greenhouse Gas Emissions (GHG), emissions reductions, & scoping of lands (public & private) for offset potential.

(adopted 09.03.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	The Florida-recognized sustainability rating systems include the FGBC ratings: Green Government, Green Commercial, Green Development, and Green Homes Standard; FDEP's Green Lodging; Green Communities; U.S. Green Building Council's LEED™ ratings: New Construction, Commercial Interiors, Core and Shell, Existing Buildings, Homes and Neighborhood Development; Green Globes, Green Building Initiative®, and NAHB National Green Building Program.
	County staff expertise needed NOW to develop & implement energy conservation & energy efficiency programs across the entire County operation - buildings. day-day operations, & fleet management. After first year, position should more than pay for itself through utility savings.
Short Term (1-3 years)	**New Cost Issue** - Federal legislation within the next 2-5 years expected to require governments to reduce GHG emissions. To avoid significant additional costs associated w/ GHG emissions, County must demonstrate reduced GHG emissions; develop & implement programs that "offset" GHG emissions; & use renewable energy. Include reductions that accrue from meeting ECSC-recommended Waste Management goals. County development of expertise **now** will put it in a better position to measure & monitor GHG emissions, determine Alachua County government liabililty (& costs), & develop "offsets" & other programs to reduce GHG emissions. Public Private Partnerships

Alachua County Government

Title	Recommendation
County Government: Staff Expertise in Carbon Markets	Alachua County should develop the organizational capacity to participate in carbon markets as a source of revenue, while minimizing the carbon credits that must be purchased for government operations and power production.
County Government: Staff Expertise as Carbon Aggregator & Broker	Develop the organizational capacity within Alachua County government to facilitate the trading of carbon credits and offsets with carbon credit aggregator or broker for local agriculture & forestry operations, & conservation and preservation lands. Establish a carbon offset aggregator list to facilitate awarding carbon offset credits for actions that reduce carbon emissions. (See www.chicagoclimatex.com/content.jsf?id=64)
County Government: Staff Expertise in Sustainable Forestry	Develop the organizational capacity within Alachua County government to certify sustainability of forest lands used in production of woody biomass for power generation. County or other third-party certification shall be a requirement for all woody biomass sold for power generation.
County Government: Carbon Mitigation & Offset Projects on Govt.-Owned Lands	Identify resources & potential partners needed to create and maintain carbon mitigation and/or other offset projects on County lands.
County Government: 4-Day Work Week	Adopt a 4-day work week & additional telecommuting if a review & analysis demonstrates a total reduction in energy consumption & GHG emissions. Promote & encourage increased use of telecommuting & teleconferencing.

(adopted 09.03.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
2 - 5 years	**Revenue & New Cost Issue** - Carbon markets (& carbon liability) expected to become a reality in the US sometime with-in the next 2-5 years. County development of expertise **now** will put it in a better position to take advantage of future markets & potential revenue source for County government & the public. Public Private Partnerships
Mid Term (4-10 years)	**Revenue Issue** - Carbon markets (& carbon liability) expected to become a reality in the US within the next 2-5 years. Carbon "credits" will be sold on the market. Alachua County government & private landowners will, if the land is properly maintained & certified, be eligible to "sell" carbon credits & receive revenue. County development of expertise **now** will put it in a better position to take advantage of future markets & potential revenue source for County government & the public. If the Alachua County Commission does not have the authority to enact, lobby the State &/or Federal government to obtain authority to accomplish this task. Public & Private Partnerships
Mid Term (4-10 years)	Work with the Property Appraiser to explore the legal, technical & practical possibilities of adding to the Appraiser's "menu" an item called *sequestered carbon. The objective would be to utilize an existing process to routinely & cost-effectively begin to capture terrestrial carbon data. This could be a means by which the County can determine total greenhouse gas emissions & reductions for potential sale of carbon credits.*
Short Term (1-3 years)	
Immediate Term (within 1 year)	Consider development (in strategic areas of the County) of a "teleconferencing site", which can be funded & used by multiple parties. This could reduce need for staff travel, & also increase training opportunities.

Alachua County Government

Title	Recommendation
County Government: Reduce Street Light Electrical Use	Within County jurisdiction – outside of core city areas & intersections - require that ½ of all street lights turn off at midnight; turn off the other ½ of street lights at 2AM.
County Government: LED "Road Lights" Pilot Project	Establish a pilot project to locate solar LED “road lights” along a section of County roadway. After 1 year of testing, if data & analysis demonstrates the safety & efficiency of these solar LED road lights, adopt an ordinance with a timeline to replace all existing electric streetlights with solar LED road lights. Include a provision for FDOT to install only solar LED road lights in Alachua County. Recommend that MTPO adopt same policy.
County Government: Convert to LED Traffic Lights	Convert all signaling & traffic control devices in unincorporated area to LED lamps. Recommend that MTPO adopt a policy that requires FDOT to install only LED fixtures on any new traffic control or other devices in Alachua County.
County Government: LDR - Lighted Outdoor Signs	Adopt an ordinance that - by a date certain - requires all lighted outdoor signs and billboards in Alachua County jurisdiction to use only renewable energy systems (for example, solar) and LED fixtures for existing permitted lighting. Require that Alachua County be allowed to lease space on only those lighted outdoor signs & billboards that use solar power & LED light fixtures.
County Government: Adopt Internal CAFE Standard	Develop an internal CAFÉ standard and timeline for implementation of higher fleet MPG.

(adopted 09.03.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	Most western US states & Canada have no lighted street lights at night outside of core city areas. Also, New York City has contracted to install & test L.E.D. street lighting. If successful, the city's entire stock of 300,000 street lamps could one day be replaced with L.E.D. versions. http://bits.blogs.nytimes.com/2008/08/20/lighting-the-big-apple-with-leds/index.html
Short Term (1-3 years)	Expect significant reduction in costs associated with energy use of streetlights. Disneyworld is currently testing these solar LED road lights. See http://astucia.co.uk/catalog_category.aspx?cat_id=2 Reconstruction of the I-25 corridor through the City of Trinidad, Colorado: Highway lighting will be LED guidance lighting mounted on the inside face of guard rail in lieu of the traditional high mast lighting. This is first instance in US of LED guidance lighting utilized on an interstate highway. http://www.i25trinidad.com/design.html
Short Term (1-3 years)	GRU converting all traffic signals in City of Gainesville to LED fixtures. Conventional wattage per unit=150 LED wattage per unit=9-15 Conventional kWh per year=499,953 LED kWh per year=36,623 Expected savings per year= $115,119.88 Expected payback=3.60 years
Short Term (1-3 years)	For an example, see picture of Pacific Gas & Electric solar billboard, "This isn't a billboard. It's a power plant" at: http://www.livescience.com/environment/071204-solar-billboard.html
Immediate Term (within 1 year)	

Alachua County Government

Title	Recommendation
County Government: Alternative Vehicle Fuel	Develop partnership with the US Department of Energy (US DOE) & other local partners to help "jumpstart" local development & local use of alternative fuels, vehicles, fuel blends, & fueling infrastructure. Direct Public Works to investigate biodiesel production for use in Alachua County government (see St. Johns County, FL biodiesel programhttp://www.jacksonville.com/tu-online/stories/062708/met_296112224.shtml and http://www.co.stjohns.fl.us/BCC/Administration/FridayLetter051608.aspx)
County Government: Alterative Fuel - Use Low-carbon intensity ethanol	Where possible, the County will endeavor to use ethanol produced by a means that minimizes the life cycle carbon emissions of its production, distribution & consumption, until such time as this fuel source provides at least a 50% reduction in life cycle GHG emissions relative to petroleum. Direct Public Works to investigate biodiesel production for use in County government.
County Government: Fuel CO-OP	Create one purchasing entity and combine all fuels for local government (at least Alachua County, City of Gainesville, Alachua County School Board) into one purchasing and distribution system. Use computerized ID cards to apportion cost based on consumption by agency.
County Government: Conversion of Fleet & Equipment	Develop a timeline by which to implement conversion of government fleet to PHEVs (plug-in hybrid electric vehicles), PEVs (plug-in electric vehicles), biodiesel and biogas; & development of supporting fuel infrastructure. Consider same for non-vehicular County machinery. Encourage other local governments & private fleets to do the same.

(adopted 09.03.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
	In 1994, the City of Albuquerque (N.M.) joined with the USDOE Clean Cities program, which develops public/private partnerships to promote alternative fuels and vehicles, fuel blends, fuel economy, hybrid vehicles, and idle reduction. See: http://www1.eere.energy.gov/cleancities/
Short Term (1-3 years)	The intention is to avoid marginal benefit from ethanol produced with a high carbon life cycle cost. Link the amount of ethanol, or possibly the source, to a low carbon means of production and distribution.
Short Term (1-3 years)	Use this opportunity to "jumpstart" local manufacture & local use of alternative fuels in local government vehicles & equipment.
Short Term (1-3 years)	Adoption of a timeline, and partnerships with other governments & private fleets to accomplish the same, will help spur local development of businesses that retrofit & support alternative vehicles.

Alachua County Government

Title	Recommendation
County Government: LED-only Vehicle Lights	Change incandescent lights in County fleet vehicles & vehicle light bars to LED lights. Require that all new County fleet vehicle purchases be equipped with LEDs & LED light bars.
Public Transit: Additional Investment	Allocate an amount equivalent to at least an additional ½ cent gas tax (from whatever sources are available) to improve public transit. Request that the MTPO consider this issue a priority in annual prioritization of projects.
Life-Cycle Energy Analysis Purchasing Decisions	Adopt policies that require all County purchasing decisions to be based on a life-cycle energy analysis.
County Government: Purchase only Resued & Hi-Content Recycled Products	Purchase only products that have a high content of recycled materials (for example, toilet tissue, paper towels, printing paper, etc.) Adopt purchasing ordinance that requires this. In the County purchasing policy, adopt method to award additional 'points' for those vendors which demonstrate & certify use of high-content reused or recycled materials.
County Government: "Green" Building Material COOP	Establish a central purchasing entity and/or co-op for "green" building materials (compact fluorescent lights, rain barrels & cisterns, recycled building materials, solar or PV products, etc.) to significantly drive down the cost of these items for use in public buildings. If possible, also relay these savings to Alachua County residents.
County Government: LDR - Fast Track Specific Building Permits	Fast track building permits for energy-efficient buildings & renewable energy systems, with a tiered system of cost savings and permitting (depending on the degree of renewable energy & energy-efficient design of the proposed construction.) Mandate maximum fees for energy-efficient buildings & renewable energy systems, and expand fees for buildings that use conventional design.

(adopted 09.03.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	L.E.D.s can last more than 50,000 hours, obviating the need to have workers change the lights. Primarily emergency service & public safety vehicles.
Short Term (1-3 years)	
Short Term (1-3 years)	"Walk the talk." Help to "jumpstart" new local businesses & markets for additional recycled materials. Review types of items purchased by County to determine whether markets exist for items with recycled content.
Short Term (1-3 years)	Work with public & private partners to accomplish, perhaps at the Alachua County LBP materials recycling center.
Immediate Term (within 1 year)	Public purpose=moving to renewable energy systems ASAP.

Alachua County Government

Title	Recommendation
County Government: Allow & Encourage Solar Alternatives	Enact a County-wide ordinance that prohibits neighborhood associations, condominium associations & other such associations from passing rules that restrict owners or renters from installing solar & other renewable energy devices such as solar collectors or clothes lines.
County Government: LDR - Shade tree location & solar access	**Existing development:** Adopt an ordinance to resolve conflicts that can occur between neighbors re: shade tree location & solar access. **New development:** Adopt an ordinance that resolves conflicts between current & future solar access, & location of new shade trees & landscaping. Also consider issues of reflective roofs & "green" roofs.
County Government: LDR - Solar Design for All New Construction	Require that all new buildings & subdivisions be designed with the appropriate orientation to optimize active & passive solar design & solar (day) lighting.
County Government: Allow & Encourage 'Alternative' Yards	Enact a county-wide ordinance that preempts prohibitions against xeriscaping; composting of yard waste & vegetable matter; & vegetable gardens. Encourage the maintenance of natural areas around all buildings rather than high-maintenance, high-water use turf lawns that require herbicides, pesticides, fertilizers, watering, & expenditure of fuels for mowing & other maintenance operations that consume fossil fuels. Allocate carbon credits for such natural yards.
County Government: Automatic Sprinkling of Lawns	Enact a county-wide ordinance that follows State law: require moisture sensors that can override timers or other automatic sprinkling devices in case soil moisture is adequate & lawn sprinkling is not necessary. This would allow Alachua County to enforce State law & prohibit unnecessary watering of lawns.

(adopted 09.03.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
	See F.S. 163.04 Energy devices based on renewable resources: http://www.leg.state.fl.us/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=solar&URL=CH0163/Sec04.HTM The new ordinance should over-ride any such existing rules. If the Alachua County Commission does not have the authority to enact, lobby the State &/or Federal government to obtain authority to accomplish this task.
	Participate with the City of Gainesville committee currently studying this issue, which arose from a conflict between a City of Gainesville tree requirement & developer solar access in the new Forest Ridge development - Gainesville's first US DOE certified "net-zero" energy neighborhood. Create County process that involves builders, solar installers, neighborhood residents, County staff & other stakeholders.
Short Term (1-3 years)	
	See F.S. 125.568 Conservation of water; xeriscape at: http://www.leg.state.fl.us/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=125.568&URL=CH0125/Sec568.HTM This recommendation will also require a review of local codes that have specific requirements for types & heights of vegetation in yards, etc. The new ordinance should over-ride any such existing rules. If the Alachua County Commission does not have the authority to enact, lobby the State &/or Federal government to obtain authority to accomplish this task.
	If the Alachua County Commission does not have the authority to enact, lobby the State &/or Federal government to obtain authority to accomplish this task.

Alachua County Government

Title	Recommendation
County Government: Regulate Fertilizer Application (Lawns)	Enact a county-wide ordinance that regulates fertilizer application on lawns, similar to that of Sarasota and other counties. (See www.sarasotagov.com/InsideCityGovernment/Content/CAC/PDF/City%20Code%20Ords/07-4768.pdf).
County Government: LDR - Energy Efficiency Training	Require training and licenses in energy-efficient construction for government plans examiners, codes enforcement and building inspectors building contractors and sub-contractors; require at least 1 day of training in energy efficiency installation for all workers involved in HVAC and insulation installation.
County Government: LDR - Efficiency Standards	Increase efficiency of materials, components & systems. A few examples: 1) To encourage passive design: Limit east- or west-facing windows that do not have external shading devices to not more than two/ 12 sq. ft. apiece. Require Low-E window systems in all new construction. 2) Increase efficiency of materials, components and systems: Require non-hardening caulking around light switches and other air-leakage pathways in new construction. Prohibit recessed fixtures into unconditioned spaces that are not sealed against air leakage. Proscribe appropriate sealing methods to prevent air leakage. Require that all new buildings pass duct-blaster or equivalent test for air leakage. Evaluate for cost-effectiveness, practicality & energy efficiency a requirement for at least two HVAC "zones" with programmable thermostats in all new residential construction of 2 or more floors & 1500 sq. ft. in size or greater. If review & analysis demonstrates greater efficiency of 2 HVAC "zones" under certain conditions, adopt LDR to require them. 3) Increase efficiency through occupant education and appropriate control systems: Require programmable thermostats in all new & renovated conditioned construction.

(adopted 09.03.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
	If the Alachua County Commission does not have the authority to enact, lobby the State &/or Federal government to obtain authority to accomplish this task.
Short Term (1-3 years)	
Short Term (1-3 years)	If the Alachua County Commission does not have the authority to enact, lobby the State Building Commission to change the Building code, &/or the State Legislature &/or Federal government to obtain authority to accomplish this task. Florida building code requires ducts to be "leak free." Difference in temperature usually due to a "leaky" building.

Alachua County Government

Title	Recommendation
County Government: Residential Energy Efficiency Project (REEP)	Develop an Alachua County Residential Energy Efficiency Project (REEP), like that of the Cambridge Energy Alliance (Cambridge, MA) and in Canada. [5,6,7], in which energy experts recommend cost-effective energy efficiency and conservation repairs or retrofits. Provide technical information about the link to personal energy consumption. Include a 1-page summary of low-cost energy-saving modifications that can be made to the home. This allows residents to address many energy efficiency issues by making one phone call.
Amend Comprehensive Plan	Amend the Alachua County Comprehensive Plan to include in the appropriate location the goals, objectives and policies that are included within this recommendation chart.

(adopted 09.03.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
	Insure that future County Commissions and the County Manager will continue to develop and review this data; consider these issues; and take appropriate action.

Waste and Energy Implications

Rank	Title	Recommendation
1	Waste Management Policy: Life-cycle GHG Analysis	Life cycle analysis of GHG emissions should form the basis of all waste management policy. The Alachua County Commission should work with the City of Gainesville to promote the use of life-cycle greenhouse gas emission analysis as the primary decision criteria for any waste to energy process that Alachua County or the City of Gainesville considers.
2	Increase Diversion Rate to 75%	Establish a goal for Alachua County (including municipalities) to attain a diversion rate from disposal of 65% by 2013, increasing to 75% by 2020, consistent with FS 403.7032.2. The ultimate goal is “zero waste” (considered to be 90% diversion or better) by 2025. Amend the Comprehensive Plan to include the goal of at least a 75% diversion rate by 2020 for Alachua County (including its municipalities.)
3	MSW: Anaerobic Digestion & Composting	Develop a facility to manage the biodegradable portion of MSW through either anaerobic digestion (to produce methane) or composting. Materials to be processed separately or in the same facility could include wet stream MSW; non-woody yard waste; food wastes from sources such as institutions, grocery stores & restaurants; & sewage sludge.
4	MSW: Organic Component	Submit a Request for Qualifications (RFQ) to obtain technical advice on details of anaerobic and aerobic composting of organic components of MSW and sewage sludge; & proceed to implement one or both of these technologies (must establish before source separation of organics can begin); **OR** Issue a Request for Proposals (RFP) for construction & operation of such a facility. Appoint a citizen's committee with technical expertise to provide input into this process.
5	Wastewater Treatment: Anaerobic digestion is preferred method	Anaerobic digestion should be the preferred method of wastewater treatment. Existing facilities for aerobic digestion should be phased out as anaerobic digestion is phased in. Request that the Gainesville City Commission end land-spreading of sewage sludge within at least three years, to be replaced by anaerobic digestion for methane gas production.

(adopted 08.25.2008), Chart IS ranked

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	Use the life-cycle greenhouse gas emissions data from the U.S. EPA report – Solid Waste Management and Greenhouse Gases (3rd edition, 2007), when performing any waste to energy life-cycle analysis. Cost, economic potential and job creation should be secondary considerations in the waste to energy decision making process. [Such an analysis precludes burning of solid waste for power generation.]
Immediate Term (within 1 year)	Alachua County current diversion (recycling) rate is 32%; San Francisco's is 70%; Portland's is 60%.
Short Term (1-3 years)	See: Institute for Local Self-Reliance; A scenario for resource management in the State of Delaware. www.awm.delaware.gov/SiteCollectionDocuments/AWM%20Gallery/AWM-DelawareILSR060407.pdf)
Short Term (1-3 years)	
	Facilities in the US & Europe (i.ei, Bern, Switzerland) should be reviewed for appropriate technology.

Waste and Energy Implications

Rank	Title	Recommendation
6	Sewage sludge: Use Methane Gas as Energy Source	Encourage the Gainesville City Commission to adopt a goal of using methane gas from sewage as an energy source first (for WWTP power generation, or as a fuel for buses), and secondarily, as a fertilizer or product to be sold or spread on agricultural lands. Encourage the Gainesville City Commission to set a date certain for GRU to develop this alternative.
7	MSW: Separate & Develop Three Streams	Separate all municipal solid waste (MSW), both residential and commercial, into three-streams: 1., "dry stream" recyclable materials; 2., "wet stream" biodegradable materials; and 3. other materials (only portion of MSW that should go to a landfill, if no other use can be determined.)
8	Prohibit Disposable Containers for Yard Waste	Prohibit the use of disposable containers (or plastic bags) for curbside yardwaste pickup.
9	Environmental Park: Expand Materials Recovery Facility	Expand the materials recovery facility (MRF) at Alachua County's Leveda Brown Environmental Park (or other suitable location) as needed to process recovered recyclable materials.
10	Commercial Recycling: Strengthen	Alachua County and the City of Gainesville should strengthen commercial recycling ordinances, and vigorously enforce them.
11	Business Development: Promote Waste-Based Industries	Promote the location of clusters of waste-based industries near the Leveda Brown Environmental Park (LBEP) to make useful products from recycled materials. Direct Alachua County economic development efforts toward establishing waste-based industries. Request that other local governments and agencies support the same economic development policy.
12	Recyclables: Prohibit Disposal	Enact a county-wide ordinance that prohibits disposal of all recyclable materials.
13	Joint City County Anaerobic Digestion Project	Develop a joint Gainesville-Alachua County program to make beneficial use of anaerobic digestion byproducts: to grow plants for landscaping; use in landscaping public places; grow trees in Balu Forest or elsewhere; and to make available for use by the public, either for free or for sale through a third party.

(adopted 08.25.2008), Chart IS ranked

Timing	Comments & Collaboration Opportunities
Short Term (1-3 years)	
Immediate Term (within 1 year)	Wood Resource Recovery estimates that six tons of plastic garbage bags are disposed of every week just from their facility. Yard waste should be collected in containers similar to those used for MSW curbside collection.
Immediate Term (within 1 year)	Environmental Protection Agency. Multifamily recycling: A national study, 2001. www.epa.gov/epaoswer/non-hw/recycle/multifamily.pdf EPA530-R-01-018.
Short Term (1-3 years)	Expand sorting and recovery of products from transfer stations to provision the development of such industries. Add wet/organic component and buy-back center.
	Additional recyclable materials increases the stream of MSW that can provision waste-based industries. Save transportation & disposal costs by recycling materials now disposed of in landfill. Supports recommendations #2,7,9 & 11.
Short Term (1-3 years)	Pursue grant funding to accomplish this goal.

Waste and Energy Implications

Rank	Title	Recommendation
14	Enhance Recycling Communication	Develop and test enhanced communication techniques to improve recycling compliance at non-compliant multi-family buildings.
15	Animal Waste & Farm Operations: Renewable Power	Evaluate potential for on-site power generation (e.g., anaerobic digestion) using animal waste, to serve as carbon "offset" programs, & generate electricity for the farmer/rancher. Encourage deployment of technologies as practical.
16	Recycling Containers in Public Places	Place recycling containers in public places along with/where there are trash containers.
17	Recycling Programs: Further Promote	Further promote Alachua County recycling programs, especially the CFL program.
18	Disposable dishware: reduce use	Encourage a reduction in, or elimination of, the use of disposable plates, containers, etc. in lodging facilities, restaurants and Alachua County government. Encourage instead the use of biodegradable or compostable dishware.
19	Building Deconstruction	Instead of demolition, encourage and facilitate the deconstruction of buildings, and the recycling of buildings and their material components.

(adopted 08.25.2008), Chart IS ranked

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	
	See www.nativeenergy.com for examples of "offset" programs that use anaerobic digestion on farms.
	Increase # of public places where there are both recyclable containers & trash receptacles.

Maximize Local Food Production & Processing

Title	Recommendation
Coordinate information needed for healthy market system	Coordinate the availability of information needed for a healthy market system: this includes maps & GIS, marketing statistics, & analysis needed for production planning, demographics and regulatory information. In addition, there is a critical need for technology exchange regarding crop selection, growing methods, and other types of knowledge base. Finally, a central web portal that provides links to all other online resources serving the local food system would be a major stimulus.
Land for Calories	For planning purposes, determine the recommended daily caloric allowance needed to sustain Alachua County's population; and determine the amount of arable land required to grow food crops to meet that caloric requirement. Update data annually. Consider partnership with University of Florida to develop and update this information.
Local Food Shed: Determine Extent	Determine the volume and extent of Alachua County's "local" food shed, and consider purchasing agricultural land within the local food shed (& in adjacent counties) to meet future food needs within Alachua County. Sustainably manage this agricultural land with other crops until needed for food production. If necessary in the future, lease Alachua County-owned land to farmers at low rates to encourage farming.
Business Development: Food Processing Facilities	Determine the food processing facilities needed to process locally-grown foods. Identify other food-related infrastructure needs and local (or regional solutions.) As an economic development strategy, encourage the development and/or location of food processing facilities within Alachua County.

(adopted 08.25.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	Lack of information puts small and 'alternative' growers at a serious disadvantage. Most of this information is maintained in the public sector, but is not readily available to smaller-scale interests. Data serving agencies, such as the Florida Department of Agriculture & Consumer Affairs & IFAS, will be responsive to data requests that are made or endorsed through local government. Public agencies, notably IFAS, can help accomplish this goal.
	Preparation for less frequent transport of food commodities into Alachua County, significantly increased fuel prices, peak oil production & decline, potential future food shortages. University of Florida, North Central Florida Regional Planning Council.
	North Central Florida Regional Planning Council, City of Gainesville, University of Florida, Conservation Trust for Florida, Florida Farm Bureau, food banks
	Increases demand for labor in agriculture & related fields; may also increase migrant labor population, with associated social service & other needs. ECSC 08112008 Gainesville Area Chamber of Commerce, Gainesville Regional Airport, other transportation & social/community service providers

Maximize Local Food Production & Processing

Title	Recommendations
Local Land Use, Food System & Public Policy: Identify & Remove Barriers	To develop a more robust food system in north Florida, support a process to identify, and work to correct, local & regional public policy barriers to local food security. Create a forum for growers & other stakeholders to raise & resolve regulatory issues. Review the Comprehensive Plan and land development regulations (LDRs) to remove any prohibitions or obstacles to planting backyard vegetable & fruit gardens, use of backyard laying hens, and to on-site composting. Require all new multi-family construction to provide on-site areas for vegetable & fruit gardens and composting.
State Land Use, Food System & Public Policy: Identify & Remove Barriers	To develop more robust local food systems in Florida, support a process to identify, and work to correct, State public policy barriers to local food security. Support creation of a Statewide forum for food growers & other stakeholders to raise & resolve regulatory issues. Forum should address: o Reform of the regulatory system to apply to sustainable production; o Encourage fair market practices (i.e., avoid monopolies, external controls;) and o Encourage proper application of subsidies.
Farmland Preservation & Food Supply	Adopt public policies which encourage farmland preservation, with the goal of increasing the amount of land used (& available) for food production in Alachua County.
Support: Local, Sustainable and Organic Agriculture	Adopt Comprehensive Plan and other public policies that explicitly support, encourage, and perhaps provide incentives for, local, sustainable and “organic” agriculture. Encourage permaculture and low-water farming methods to reduce energy & water consumption.

(adopted 08.25.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
	On-site composting allows residents to reduce water & garbage costs, and create a waste-stream for development of soil amendments. See backyards gardens (below) for further information. Builders Association of North Central Florida, GACAR, architects, Florida Organic Growers, Alachua County Growth Management
	Some resources are: §www.ftcldf.org - farm to consumer legal defense fund §www.nationalaglawcenter.org - national agricultural law center
	Lobby the Florida legislature to encourage farmland preservation tied to the specific goal of increasing the amount of land used for food production within the State of Florida.
	4H, Future Farmers of America Increasingly, there is recognition that farmers are an aging group; and there are apparently significant barriers to young people entering farming. With the adoption of the attached policies, goals & objectives, this recommendation chart can help provide a coordinated path to accomplish this goal.

Maximize Local Food Production & Processing

Title	Recommendations
Compost for Gardens	Reduce the use of, and dependence on, synthetic fertilizers. Insure that food waste, roadside brush cuttings and other suitable materials can be segregated and composted as a soil fertility amendment. Make this product available to community gardeners & county farmers.
Purchasing Policies: Local Food	Determine which foods served in Alachua County & local government facilities can be produced within the local foodshed. Define the volume needed & other procurement specifics in order to shift local government food procurement to local sources. Adopt the goal of serving local foodshed-grown & processed foods in all Alachua County government facilities. Encourage the School Board and other local governments to do the same. Direct that an agricultural operation be established at the Alachua County jail, to grow food & to teach farming methods.
Backyard, Community & Rooftop Gardens	Encourage (and consider appropriate incentives for) residents to plant backyard vegetable & fruit gardens, & perennial food plants (edible landscaping); & to compost on-site to assist in food waste management & soil supplementation. Encourage residents to cultivate community gardens, and encourage and allow rooftop gardens, where feasible.
Public Lands for Gardens	Inventory Alachua County's unused, publicly-owned tracts of land and rights-of-way suitable for cultivation and, after a site assessment, make suitable land available to residents. Emulate the University of Florida's "organic garden plot" program; & partner with a local organization to administer the program. Create 'edible commons' (including orchards) by landscaping public lands with perennial food plants. Plant edible fruit/nut trees & bushes – not ornamentals - in public spaces.

(adopted 08.25.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
	Nitrogen fertilizers are made from natural gas, which is currently transported from Russia, other Eurasian and Middle Eastern countries, & has risen dramatically in price over the last year. Waste Management and energy-resource issue: yet another opportunity to avoid costs associated with transporting these materials to a landfill; and instead, turn this "waste" into a locally-needed resource. The Intervale in Burlington, VT (www.intervalecompost.org) is an example of such a program.
	Purchase of locally-grown & processed food products stimulates & creates additional markets, and keeps $$ "at home." North Central Florida Regional Planning Council, University of Florida, UF IFAS, Santa Fe College, School Board, Alachua County Sheriff, local governments
	Backyard & community gardens, and edible landscaping, hedges against skyrocketing fuel and food costs, are ways to beat inflation. They save money, insure food availability, & reduce one's 'carbon footprint'. Even in large cities, those who have grown extra food are selling it at their local farmers markets. Economic development opportunity: in some states, individual growers have developed businesses that build and maintain other people's backyard gardens. Florida Organic Growers, neighborhood organizations, Alachua County/UF Cooperative Extension/Master Gardener Program, food banks, growers
	All local governments, Florida Organic Growers, neighborhood organizations, University of Florida, Florida Department of Transportation, Edible Plant Project, private sector edible landscapers, Florida Native Plant Society

Maximize Local Food Production & Processing

Title	Recommendation
Renewable Farm Energy	Encourage use of solar and other forms of renewable energy (animal waste-methane gas) to produce needed energy on farms. Partner with farmers to develop carbon "offset" programs in Alachua County.
Support: Master Gardener Program	Enhance the capability of the Alachua County/UF Cooperative Extension Service to provide, or collaborate with non-profit organizations to provide, technical assistance and research in the form of educational materials and Master Gardener programs for resident gardening and other food production efforts. Insure that information on pest control, water use & storage, & similar items is included.
Enhance Gardening Groups	Enhance the capability of private, nonprofit community gardening & grower organizations to provide technical assistance in the organization and development of community gardens.
Farmers' Produce Markets	Encourage the creation and maintenance of debit/credit card-capable Farmer's/produce markets in all quadrants of the County to provide outlets for community gardens and other producers. Encourage linked entrepreneurship between gardeners, farmers and mobile produce markets that could reach underserved communities. Encourage public (including Gainesville City Commission & Regional Transit System, RTS) & private transportation providers to provide "express" routes to Farmer's Markets on days of market operation.
Community-Supported Agriculture (CSA)	Work in concert with, and encourage the creation of, more local community-supported agricultural operations, so as to promote continued fruit and vegetable production within Alachua County.
Summer Farm & Gardening Jobs	Encourage summer youth employment programs to participate in local farm & community gardening projects. Encourage the School Board of Alachua County (SBAC) to adopt Farm-to-School policies and to include school gardens/orchards in Farm-to-School programs.

(adopted 08.25.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
	See www.nativenergy.com for examples of voluntary business investment in anaerobic digesters that use animal waste to create methane gas, which powers farm operations. To encourage distributed generation, support State legislation that allows farmers to sell this renewable energy back to utility providers &/or third parties.
	UF, Alachua County Extension Service, collaborating non-profit organizations
	Florida Organic Growers, Farmer's Market growers
	Farmer's Market growers and administrators, City of Gainesville and RTS, private transportation providers
	USDA, Florida Organic Growers, farmers markets & producers
	Prepare students for agriculture-related businesses, such as future farming, value-added food production, & food supply for grocery stores & restaurants. Director, Food & Nutrition Services - School Board of Alachua County, Santa Fe College, UF, Florida Organic Growers

Maximize Local Food Production & Processing

Title	Recommendation
Farm Mentors	Encourage & facilitate development of a mentoring program in which local non-profit grower organizations pair experienced sustainable (or organic) farmers, with new, young farmers. Include mentoring opportunities for people with "land tenure" (for example, a person who has enrolled in, or leased a plot in, a community gardening program.)
Schoolground Gardens	Encourage the SBAC to make appropriate portions of all buildings and grounds available for school/community gardens and edible orchards, and to use buildings and grounds for instructional programs in science and gardening classes.
Food Policy Council	Establish a standing Alachua County advisory committee called the "Food Policy Council." If the County Commission creates a standing Energy Conservation Advisory Committee, include a 'Food Policy Council' as one of the required "working groups" or subcommittees of the Energy advisory committee.
Community Service Gardens	Encourage the Court system to use community garden projects for those with community service requirements.
Private Sector Garden Support	Identify & mobilize private sector and foundation support for community gardening projects.
Amend Comprehensive Plan: Maximize Local Food Production & Processing	Amend the Alachua County Comprehensive Plan to include, in the appropriate location, the goals, objectives and policies included within this recommendation chart.

(adopted 08.25.2008), Chart is NOT ranked

Timing	Comments & Collaboration Opportunities
	Increasingly, there is recognition that farmers are an aging group and there are apparently significant barriers to young people getting into farming. The Intervale (Burlington, VT at www.intervale.org) has an example internship program. Alachua County School Board, Florida Organic Growers, 4H, FFA
	SBAC, grocery store and restaurant owners, Loften High School Academy of Agriculture & Environmental Science
	Bring diverse food system stakeholders together to create linkages among people, agencies and institutions; serve as a public forum to discuss food security issues; and to identify and craft suggestions for recommendation to the Alachua County Commission.
	Alachua County Courts, Alachua County Court Services
	ECivis software program partnership & local partner agencies
	Insure that future County Commissions and the County Manager will continue to develop and review this data; consider these issues; and take appropriate action.

Land Use and Transportation

Title	Recommendation
Adopt Energy Element	Amend the Comprehensive Plan to add an Energy Element. To save energy & financial resources, include in the Energy Element the following recommendations for Future
Land Use & Transportation mix	**Development Location**: To save energy & financial resources, encourage development within existing cities & towns, along transportation corridors, in business-employment centers, & in civic and cultural centers. **i. Encourage** new development in (ranked order): 1. Remediated brownfield sites; 2. Greyfield sites with reuse of intact structure; 3. Greyfield sites with reuse and recycling of demolished structures; 4. Infill sites with appropriate density & amenities; 5. Transit-oriented development with amenities; 6. Sites adjacent to existing developed areas with appropriate density & amenities; 7. High-density sites within the exiting urban services area (require amenities); 8. Outlying sites with habitat and agricultural restoration. **ii. Discourage** all new development in (ranked order): 1. Land that can be used for agricultural purposes (e.g. food production); 2. Sites of hydrological and ecological significance; 3. Floodplains; 4. Sites of historic significance (while allowing adaptive reuse); 5. remote areas (discourage conventional development.) **iii. Restrict new development to areas served by Bus Rapid Transit (BRT.)** **Continued on next page**

(adopted 11.03.2008), Chart NOT ranked

Timeline	Comments & Collaboration Opportunities
Short Term (1-3 years)	
	Brownfield= Property that has already been used and that might have some problems such as debris or pollution that would need to be corrected before building new projects on that land. Developing on these lands can relieve the pressure to build on unspoiled land. Remediated brownfield= A brownfield site that has had pollution problems reduced to acceptable levels based on the proposed types of use, for the community to use for redevelopment. Greyfield= A developed site that may have obsolete or declining use of commercial, or residential uses and is typical in inner-suburban and urban neighborhoods. Greenfield= A greenfield is a site, usually suburban or rural, that has never been used for residential industrial or commercial purposes. Density with amenities= Urban design that results in development patterns with a mixed use of residential, commerical and sometimes industrial applications all interconnected by multimodal transportation; parks, greenspace, and public areas; & attention to design detail. It is defined chiefly by its walkability.

Land Use and Transportation

Title	Recommendation
Land Use & Transportation mix	Continued from previous page: **Planned Urban Development**: Develop urban neighborhoods & communities that incorporate the principles of traditional city design, including: 1. Mix of land uses that integrates variety of residential units in a variety of types (condos, multilevel apartments, attached & unattached homes on small lots); 2. First-floor retail, including goods & services used on a frequent basis; 3. Greenspace – pocket parks & playgrounds, greenbelts that protect natural areas, & habitat between urban clusters; 4. Ecological design of the public realm to achieve attractive, safe, accessible, and adaptable streets, preserved view shed, parks, & public places; 5. Easy access to police, fire, & health services; 6. Well-planned intra-modal transportation – wide sidewalks and walking/bicycling trails, and bus shuttle; 7. Choice of efficient intermodal transportation – dedicated, transit lanes for BRT, transit with frequent headways, carpooling, in-street and off-street bicycle lanes and trails, high-occupancy vehicle (HOV) lanes, & commuter rail. **Transportation Choice**: For maximum resource efficiency, allow & encourage a variety of transportation choices, particularly alternatives to the single-occupant vehicle. **Encourage** the following transportation choices, including (ranked order): 1. Neighborhood walkability 2. School walkability 3. Bicycle lanes and bicycle safety 4. Enhanced bus service and shelters 5. Dedicated bicycle and pedestrian paths 6. Bus rapid transit 7. Multi-modal connectivity 8. Light rail and transit-oriented development 9. Grid street system 10. Traffic calming 11. Traffic engineering and transportation demand management **Discourage** the following transportation components: 1. Large scale surface parking lots 2. Gated/unconnected communities 3. Large-scale single-use areas 4. Commuter/bedroom communities without amenities and transportation choices to employment.

(adopted 11.03.2008), Chart NOT ranked

Timeline	Comments & Collaboration Opportunities
	Brownfield= Property that has already been used and that might have some problems such as debris or pollution that would need to be corrected before building new projects on that land. Developing on these lands can relieve the pressure to build on unspoiled land. Remediated brownfield= A brownfield site that has had pollution problems reduced to acceptable levels based on the proposed types of use, for the community to use for redevelopment. Greyfield= A developed site that may have obsolete or declining use of commercial, or residential uses and is typical in inner-suburban and urban neighborhoods. Greenfield= A greenfield is a site, usually suburban or rural, that has never been used for residential industrial or commercial purposes. Density with amenities= Urban design that results in development patterns with a mixed use of residential, commerical and sometimes industrial applications all interconnected by multimodal transportation; parks, greenspace, and public areas; & attention to design detail. It is defined chiefly by its walkability.

Land Use and Transportation

Title	Recommendation
Amend Transportation Element: Increase Multimodal Flexibility	(a) Increase multimodal transportation opportunities by requiring movement for all modes of transportation, including transit, bicycles & walking. (b) Merge the Mass Transit Element & the Traffic Circulation Element into a single objective of the Transportation-Mobility Element; & address the transportation needs of all users, including bicyclists, pedestrians, and other active transportation modes. (c) Incorporate expenditure plans for all modes of transportation in the Capital Improvement Element (CIP).
Develop Transit Action Plan	Develop a coordinated short, medium, & long term transit action plan with incremental benchmarks that: a. Collaborates with local, state, & Federal agencies, Santa Fe College & the University of Florida; b. Builds upon the strengths of the Regional Transit System (RTS), & converts existing bus lines to Bus Rapid Transit (BRT) - give priority to east-west routes & north-south along 13 St.; c. Develops service for the unincorporated urban areas in Alachua County; d. Incorporates expertise to plan routes for BRT that could transition to light rail in the future; e. Acquires right-of-way & infrastructure for BRT and future light rail; f. Increases the allowable density in the higher-density land use categories along BRT line; g. Plans for dense, transit-oriented development within the urban context proximate to rapid transit stations (nodes of mixed use activity); & h. Requires BRT access in all new development in unincorporated Alachua County.
Require Bus Rapid Transit (BRT)	Amend Alachua County Comprehensive Plan to require BRT for all future development in unincorporated Alachua County.
Bus Rapid Transit & Land Use: Increase allowable densities	In order to support Bus Rapid Transit, amend the Comprehensive Plan to increase the allowable density along established BRT lines.
Bus Rapid Transit & Transfer of Development Rights (TDR)	Designate areas served by BRT as receiving areas for a transfer of development rights (TDR) program.

(adopted 11.03.2008), Chart NOT ranked

Timeline	Comments & Collaboration Opportunities
	Adopt for Alachua County transportation timeframes consistent with Metropolitan Transportation Planning Organization (MTPO): Medium= 5 years Long-term= 20-30 years

Land Use and Transportation

Title	Recommendation
Free Bus-Pass Program: Power by Alternative Fuels	(a) Develop a free bus-pass program & opportunities for employers to participate in it. (b)To promote energy technology businesses, use the favorable publicity that would accrue from operating free service with buses fueled by (for example) methane produced from sewage sludge.
New Transit Markets: Identify	Identify & implement services for additional markets for transit, including: a. New transit markets for park & ride, & downtown shuttles from outlying communities; b. Additional locations for park & ride lots on major arterials (39th Ave., Newberry Road, Archer Road, 441/13th Street); c. Transit services similar to those offered during special community events (e.g., for major shopping periods, community festivals, UF football games & farmers markets) d. Carpools & vanpools instead of transit to areas with low transit ridership populations.
Tourism & Transportation	As bus & BRT routes are considered, insure that routes are added along transportation corridors that also serve visitors.

(adopted 11.03.2008), Chart NOT ranked

Timeline	Comments & Collaboration Opportunities
	Implementation of this plan might include a free-ride zone in high-traffic areas (working in partnership with retail & tourism industries); a "ride-the bus" program, in conjunction with a commute-trip reduction program that encourages employers to target car commuters (who would be given a free bus pass for a month); & partner with businesses which make a commitment to increase bus ridership among employees. Alachua County & City of Gainesville governments offer a free bus-pass program for their government employees. Encourage other local governments & employers to offer the same. Business development: In Chattanooga's case, Advanced Vehicle Systems located a facility there for building electric buses that are sold worldwide.
	To provide more efficient & wider-ranging service, license one or several private carriers that have small buses, nominally 10 to 30 passengers; put them on a more frequent schedule over a far broader area; & feed into main trunk lines, where a few of the large buses would provide service & connect again to smaller carriers along the route. Economic development opportunity for private transportation providers. Inspiration: To help reduce the carbon footprint of its 3-day event, the 2008 Coachella Music Festival created its own train & train station, which went from downtown Los Angeles to Indio, CA. http://www.coachella.com/visitors/amtrak
	Public transit makes a community more attractive to visitors.

Land Use and Transportation

Title	Recommendation
EVs, NEVs, MSEVs & Golf Carts: Pathways & Charging Infrastructure	(a) Apply for a US DOE grant to install parking meters that also recharge electric cars, neighborhood electric vehicles (NEVs), medium-Speed electric vehicles (MSEVs) & golf carts; & establish specific roadways on which EVs, NEVs, MSEVs & golf carts can be driven. To begin, add just a few routes from housing to work & shopping areas. (b) Set a date by which the County Commission shall adopt a pathway map which includes all roadways & streets on which electric vehicles, NEVs, MSEVs & golf carts can be driven. Adopt policies that allow these vehicles to be driven on appropriate public streets & roads. (c) Insure that there are not isolated "pockets" of areas without pathway access. Engage all local governments & FDOT in conversation about how to reduce speed limits on roads & streets to link pathways.
Safe bicycle routes: follow the yellow-brick road	Mark bicycle routes in a different color on the street so that riders will be able to easily follow safe routes & bicycle "boulevards".
Increase access: Cul de sac opportunities	Identify methods for Alachua County to promote bicycle & pedestrian access through cul de sacs to adjacent neighborhoods or retail areas, or in other such (currently) restricted areas. Conservation easements or other incentives could be provided to property owners who allow such access.

(adopted 11.03.2008), Chart NOT ranked

Timeline	Comments & Collaboration Opportunities
	EVs= Electric Vehicle: A vehicle powered by electricity, usually provided by batteries but may also be provided by photovoltaic (solar) cells or a fuel cell. www.neo.ne.gov/statshtml/glossarye.htm EVs are currently divided into two classes; one highway capable and the other designated as LSEV or NEV. NEVs= Neighborhood Electric Vehicle: A Neighborhood Electric Vehicle (NEV) is a term for a speed limited battery electric vehicle.http://en.wikipedia.org/wiki/Neighborhood_electric_vehicle By Federal NHTSA standards this vehicle class may go no faster than 25 mph. LSEVs= Low-Speed Electric Vehicle is another term for NEVs MSEVs= Medium-Speed Electric Vehicle is an evolving class of vehicles with rollbar, roll cage, & crush proof frame that can typically travel at speeds up to 35 mph. Currently, NEVs can be driven on public roads posted for 35MPH or less. See Peachtree City, GA for example of path system for golf carts: http://www.peachtree-city.org/index.asp?NID=216 Alachua County's Green Map is located at: http://maps.alachuacounty.us/geogreen
	Many neighborhoods border retail areas, but pedestrians & bicyclists cannot get to them without driving a car. Children cannot walk or bike to play with friends in an adjacent neighborhood. Bicycle & pedestrian access would offer a choice to reduce energy consumption & costs.

Land Use and Transportation

Title	Recommendation
Minimize energy use: Better coordinate transportation & school locations	(a) Minimize the fuel use & costs of busing schoolchildren by ensuring that new residential neighborhoods are carefully coordinated with new school locations. (b) Ensure that the transportation system is developed in a manner so that children do not face hazardous walking conditions in locations near schools; & that a complete sidewalk system around schools is a priority.
County buildings & public services: location policy	Adopt a policy re: location of Alachua County government buildings to ensure that: (a), they are conveniently located to those residents who are to receive those services; & (b), insure that decisions about Alachua County buildings afford multiple transportation choices for people who need the services.
Rural land use: Energy-efficient design & "Farm to table" agricultural communities	Review the models of Serenbe, Georgia; and Greensburg, Kansas; and adopt their best practices for Alachua County.

(adopted 11.03.2008), Chart NOT ranked

Timeline	Comments & Collaboration Opportunities
	Note: At a minimum, buildings need to be located along transit & BRT corridors. Encourage co-location of public services. Avoid the example of the State of Florida, which moved the Job Corps Center outside of downtown, requiring everyone to drive or take a long bus trip to get there.
	Consider as a model for new energy-efficient development in agricultural areas the development called "Serenbe", a farm-to-table community southeast of Atlanta, GA that contains a working farm within its open space. http://serenbe.com/ The town of Greensburg, Kansas - destroyed last year by a tornado - has adopted an energy-efficiency & sustainable development plan, & is being rebuilt to use renewable energy sources.http://www.greensburgks.org/

Residential Buildings (adopted 11.03.2008), Chart IS ranked

Rank	Title	Recommendation
1	Education/Conservation	Develop (in coordination with local media, utilities, local governments, School Board, business community & others) a coordinated energy conservation education program.
2	Existing Housing: Low-Cost Improvements - Low Income	Support local nonprofit organizations that help disadvantaged populations by providing energy-efficiency education and home improvements.
3	Existing Housing: Low-Cost Improvements	Create a Residential Energy Efficiency Ordinance (REEO) that includes Low-Cost Energy Efficiency Improvements, to ensure that existing homes are brought to a baseline energy efficiency standard. Initiate a study of the RECOs (Residential Energy Conservation Ordinances) in other college communities to identify best practices for these ordinances. Set effective date of January 1, 2010, so as to allow participation of general public & other stakeholders in development of the REEO. Monitor the work of the Florida Building Commission, which is to convene a work group to develop a model residential energy efficiency ordinance (REEO): http://chambersouth.com/index.phpsrc=news&refno=118&category=Press%20Releases&PHPSESSID=28ad14a7793ecd47a15e5874059aa7fc

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	Behavior change associated with this education program can potentially save 10-15% or more of the energy consumed by a residential household. Santa Fe College and UF may be able to coordinate with the County on this program.
Immediate Term (within 1 year)	e.g., the Community Weatherization Coalition, Rebuilding Together, Neighborhood Housing and Development Corporation, Central Florida Community Action Agency, Action Network
Short Term (1-3 years)	Instead of using "Residential Energy Conservation Ordinance" (RECO) it is recommended that "Residential Energy Efficiency Ordinance" or (REEO) be used to avoid confusion with the anti-racketeering acronym "RICO" (Racketeer Influenced and Corrupt Organizations Act). Implementation (coupled with the Low-Cost Energy Improvements) can save 20-25% or more of the energy consumed by a residential household. College towns across the country have adopted Residential Energy Conservation Ordinances (RECOs). Below is a list of some college towns that have RECOs, & a list of links for more information: Burlington,Vermont Minimum Energy Efficiency Standard (University of Vermont, Champlain College, Burlington College) http://www.burlingtonelectric.com/EnergyEfficiency/tos2.htm http://www.burlingtonelectric.com/EnergyEfficiency/tos3.htm http://www.burlingtonelectric.com/EnergyEfficiency/tos1.htm Wisconsin Minimum Energy Efficiency Standard - Time of Sale (1985) (Marquette University, University of Wisconsin, Lawrence University) http://commerce.wi.gov/SBdocs/SBRentalWeatherizationBrochure7366.pdf Berkeley, CA Residential Energy Conservation Ordinance (UC Berkeley) http://www.ci.berkeley.ca.us/sustainable/residents/ResSidebar/RECO.html Boulder, Colorado Residential Energy Conservation Ordinance (University of Boulder) http://www.bouldercolorado.gov/files/Environmental%20Affairs/CAPAG/reco_report_boulder.pdf San Francisco, California Residential Energy Conservation Ordinance (City College of San Francisco, San Francisco State University, UC Irvine, University of San Francisco) http://www.sfbaywindow.com/articles/1/4/146.html Davis, California (UC Davis)

Residential Buildings (adopted 11.03.2008), Chart IS ranked

Rank	Title	Recommendation
4	Financing: Low-Cost Improvements - Low Income	(a) Approve a recommended financing mechanism(s) to fund low cost weatherization improvements and high performance retrofits for local low-income & substandard housing supply. (b) Ask the State Housing Initiatives Partnership (SHIP) to request approval from the Florida Housing Finance Corporation (FHFC) to expand their efforts (to non-first time homebuyers) & fund energy efficiency improvements to new & existing homes & workforce housing population at less than or equal to 140% median income.
5	Existing Housing: Major Energy Efficiency Upgrades	Maximize energy savings in the existing housing stock: Establish an incentive-based program to promote Major Energy Efficiency Upgrades in the existing housing stock. To qualify for these incentives, property owner must first make low-cost improvements (or meet the same energy-efficiency standard.)
6	Disclosure of Building Performance	Require full disclosure of the 'relative energy intensity' of all structures using a County Commission-approved energy rating system. Require that the disclosure be provided in all real estate transactions, including rentals. Set effective date of January 1, 2010 to allow participation of general public and other stakeholders in disclosure's development.
7	Financing - Sustainablility Investment Fund	Create a Sustainable Investment Fund. This fund would be a vehicle by which local residents and business owners could invest, at a reasonable rate of return, in a fund to help their fellow community members finance energy efficiency improvements or the purchase of renewable energy systems. Investors would receive interest on their investments and the borrowers would pay interest on their loans. The fund could be administered by a local credit union or bank or another entity that is legally capable of managing this type of fund. Alachua County government could promote the fund and support it by either subsidizing the interest rate on loans, or by providing some form of guarantee on all or part of the loan to reduce the risk and lower the interest rates.

Timing	Comments & Collaboration Opportunities
Short Term (1-3 years)	A list of example funding mechanisms could include: Project Share, a Berkeley-type program; the Sustainability Investment Fund; Alachua County CAPP grants; or the SHIP request listed above.
Short Term (1-3 years)	Incentives are designed to help homeowners & landlords increase efficiency versus the 'standard level'. Incentives can include rebates, low-cost loans, tax credits, bulk-buying programs, etc.
Short Term (1-3 years)	If the Alachua County Commission does not have the authority to enact, lobby the State &/or Federal government to obtain authority to accomplish this task.
Mid Term (4-10 years)	

Residential Buildings (adopted 11.03.2008), Chart IS ranked

Rank	Title	Recommendation
8	Adopt the Model Green Building Ordinance	Recognize and integrate various local, state, and national sustainability building programs.
9	Adopt Comprehensive Residential Standards	Use the Florida Green Building Coalition (FGBC) Interactive Application Tool spreadsheets for Building & Development to outline a comprehensive program for the residential sector that: (a) increases energy- efficiency & reduces greenhouse gas emissions, & (b) saves natural resources. Include standards, goals, methods of measurement, & systems for tracking comprehensive efforts toward sustainability. Integrate the program with existing building codes so that the standards are clear and concise.
10	High Efficiency HVAC Systems	In new construction that has central heating or cooling, require (if cost-effective): 1) that HVAC systems be at least 75% as efficient as the best available systems at time of installation; 2) programmable thermostats; 3) at least two duct zones in dwelling units with either two or more floors, or 4 or more rooms; 4) compressors & air handlers that are multi- or variable-speed; 5) an efficiently-engineered duct layout with R-8 or greater insulation if ducts are in un-conditioned space; & 6) that, before approval of installation, ducts shall be tested to assure that they meet State duct performance standards .

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	Adopted by the Florida League of Cities. The Florida-recognized sustainability rating systems include the FGBC ratings: Green Government, Green Commercial, Green Development, and Green Homes Standard; FDEP's Green Lodging; Green Communities; U.S. Green Building Council's LEED™ ratings: New Construction, Commercial Interiors, Core and Shell, Existing Buildings, Homes and Neighborhood Development; Green Globes, Green Building Initiative®, and NAHB National Green Building Program. The Florida Building Commission developed the recently-released Model Green Building Ordinance (see Appendix A), which was developed by its Florida Green Building Workgroup comprised of local and state governments, building officials, industry representatives and conservation advocates. The City of Gainesville was first (2001) in Florida to adopt a Green Building Ordinance and served as a model for the Model Green Building Resolution (http://consensus.fsu.edu/FBC/GBW/Green_Building_Model_Ord_12-31-07.pdf).
	This program includes detailed energy-efficiency guidelines, credits for use of sustainable materials, and health standards for buildings.
	If Alachua County does not have the authority to enact this requirement, it should seek to change the appropriate legislation or building codes to do so. Equipment will be considered cost-effective if the added monthly cost on a 30-year mortgage is not more than the calculated savings in a monthly utility bill.

Residential Buildings (adopted 11.03.2008), Chart IS ranked

Rank	Title	Recommendation
11	Cool Roofs	Adopt ordinance to require installation of cool roofs including radiant barrier decking with low-emissivity underside on all new residential construction.
12	Multi-Family: Alternative Energy - Landlords	Encourage landlords within the GRU service territory to install renewable energy systems with separate meters, and sell power back to GRU. Encourage other utilities within Alachua County to allow landlords to install separate meters for renewable energy systems.
13	Affordable Housing & Utilities	Use the newly-defined Shimberg Institute Affordable Housing Index (that includes utilities) to redefine housing affordability in Alachua County's population.
14	Amend Comprehensive Plan	Amend the Alachua County Comprehensive Plan to include in the appropriate location the goals, objectives and policies that are included within this recommendation chart.

Timing	Comments & Collaboration Opportunities
	Builders have known for decades that white roofs reflect the sun's rays & lower the cost of air conditioning. Study now shows cool roofs also reduce global warming. In 2009, new & retrofitted residential & commercial buildings in California (with both flat & sloped roofs) will have to install heat-reflecting roofing as part of an energy-efficient building code. http://www.latimes.com/news/local/la-me-roofs10-2008sep10,0,2976609.story Study is from the Lawrence Berkeley National Laboratory at: http://www.climatechange.ca.gov/events/2008_conference/presentations/2008-09-09/Hashem_Akbari.pdf Low-slope/flat commercial roofs - DOE at Oak Ridge National Laboratory http://www.ornl.gov/sci/roofs+walls/facts/CoolCalcEnergy.htm Residential roofs - DOE at Oak Ridge National Laboratory http://www.ornl.gov/sci/roofs+walls/SteepSlopeCalc/index.htm Cool roofs in Florida - Florida Solar Energy Center http://www.fsec.ucf.edu/en/publications/html/fsec-cr-1220-00/
Short Term (1-3 years)	If a landlord purchases a renewable energy system, the landlord (property owner) should obtain the benefit of the rebates & tax breaks--the tenant should not be able to take this benefit from the landlord's investment. Common practice is that the landlord owns the property & commons area, & the utility account is in the renter's name. Utility credits or savings from renewable power generation on site typically accrues to the name on the utility account.
	When the Alachua County 2003 Affordable Housing Study is updated, insure that the new Shimberg Institute Affordable Housing Index (that includes utilities) is used to determine housing affordability.
	Insure that future County Commissions and the County Manager will continue to develop and review this data; consider these issues; and take appropriate action.

Innovative Energy Systems and Renewable Energy

Rank	Title	Recommendation
1	Support Energy Efficiency Upgrades	Reduce the overall consumption of primary energy by funding energy conservation projects according to the ECSC Guiding Principles: a) reduce energy consumption, b) maximize energy efficiency, and c) increase the use of alternative & renewable energy. Develop a financing mechanism similar in concept to the Berkeley FIRST model so that property owners can immediately implement efficiencies that require capital.
2	Support a Feed-in-Tariff	Encourage the City of Gainesville and its utility, GRU; & Clay Electric Cooperative, & its supplier, Seminole Electric Cooperative, to implement a Feed-in Tariff similar to the one in Germany & other countries in the European Union. Request a presentation from Ed Regan (GRU) on Germany's use of a feed-in-tariff. [See his July 29 presentation to ECSC on his trip to Germany & solar installations.]

(adopted 11.03.2008), Chart IS ranked

Timing	Comments & Collaboration Opportunities
	Allows property owners (residential, commercial) opportunity to obtain the capital to make immediate energy-efficiency upgrades, reduce electric consumption, and develop economic & energy security. Funds would be prioritized in their expenditure such that energy efficiency is maximized to the extent practical. Alternative energy additions would require an energy audit, with any indicated improvements being performed before implementing alternative energy additions. The Berkeley FIRST plan provides low-cost financing for solar panels that are installed on qualifying properties. Payments are made through the property-owner's property taxes and are transferable to the next property-owner. The financing mechanism could be similar to a road “special assessment”, in which the majority of property owners located on a dirt road formally request that Alachua County pave the road. The cost for the paving is then collected from each property owner over a period of time. It is estimated that $1 million be allocated for the program as an appropriate beginning. Special consideration of a mechanism to encourage non-profits and governmental entities would need further consideration. Alachua County government, Gainesville City Commission, electric utilities, private financial institutions
Immediate Term (within 1 year)	For example, every rate payer would be charged a renewable energy fee of 1-2 percent per month. The money generated from that fee would be used to pay a feed-in-tariff per kWh that is above the retail rate of the respective rate category. Feed-In Tariffs may be more effective incentives than utility rebates for alternative energy installations. A feed-in tariff pays a premium above the full retail rate for energy delivered from renewable resources. This rate is guaranteed for an appropriate length of time to adequately finance the transformation of energy production to renewable sources. Ed Regan's July 2008 presentation gave a description of Germany's success implementing feed-in tariffs. https://govconnect.alachuacounty.us/committees/ECSC/Strategies/ECSC%2007-29-08/default.aspx?InstanceID=1 This is an example of "pay for production" of energy, instead of "pay for installation" of a system. Support the production of renewable energy through a feed-in tariff over rebates for installation.

Innovative Energy Systems and Renewable Energy

Rank	Title	Recommendation
3	Support Guiding Principles: Reduce Use of Conventional Energy in Buildings	Amend the Comprehensive Plan, land development regulations (LDRs), and Building Code to include the following ranked hierarchy of importance: (i) practice conservation (reduce consumption); (ii) Make efficiencies in building envelopes, mechanical equipment, and appliances; and (iii), invest in renewable energy generation.
4	Support a Renewable Portfolio Standard (RPS)	Support adoption of an RPS for Florida. (a) Appoint a task force to review HB7135, the State of Florida's recently adopted RPS legislation for investor-owned utilities, signed by Governor Crist on June 24, 2008. This legislation requires the Public Service Commission to develop an RPS ruling by February 1, 2009. (b) Support legislative proposals to enact or establish Renewable Portfolio Standards with targets of 10% (or greater) of total energy supplied by 2015, & 20% by 2020. Nuclear power should not be considered as a renewable resource under an RPS. (c) Direct County staff & the task force to provide to the County Commission a report on RPS & Public Service Commission actions prior to the spring 2009 legislative session (see also Legislative recommendations) so as to add to the legislative agenda support or opposition regarding RPS actions. (d) Work with the City of Gainesville & its utility, GRU; & Clay Electric Cooperative, & its supplier, Seminole Electric Cooperative, to develop an RPS with targets of 10% or greater of total energy supplied by these non investor-owned utilities in 2015, & 20% or greater by 2020. Nuclear power should not be considered as a renewable resource under this RPS.

(adopted 11.03.2008), Chart IS ranked

Timing	Comments & Collaboration Opportunities
	Where the County Commission supports these policies but may not have jurisdiction to make changes (i.e., State Building Code), focus efforts on State and Federal legislative change.
	For reference to HB 7135 see http://www.pewclimate.org/node/6022 Clay Electric is only a distributor of electricity. They have no generation capacity of their own. Seminole Electric Cooperative is the utility generating power for all Cooperatives. The RPS would have to be implemented by Seminole Electric. Of the 27 states that have adopted RPSs, none define nuclear energy as "renewable". http://www.uscusa.org/cleanenergy Uranium is a limited resource. There are also public concerns about fuel supply (uranium processing), safety, & storage of nuclear waste. This process is very energy consumptive. Renewable Energy as defined by the European Union may include: Renewables <u>Production</u> i. RES-E - (GWh) – All known RES electricity generation. Summary of all GWh figures, except “Small HPP” and “Biogas" here are used all known data related to renewables for 2004 year. This figure sometimes differs from the figure “12b Power Generation - for RES”. (See 12b). 1. Hydro - (GWh) – electricity generated by hydro power plant includes small hydro. Tide, Wave, Ocean power plants are included as well, because Eurostat is using it in this way. a. Tide, Wave, Ocean – (MW) - summary of electricity generated by power plants using Tide, Wave and Ocean energy 2. Wind – (GWh) - electricity generated by onshore and offshore wind power plants. Figures are set for the end of 2004, while there was a significant increase of new installed Wind Power Plants in 2005. 3. Biomass el - (GWh) - electricity generated by all types of biomass plants includes biogas. 4. Solar PV – (GWh) – electricity generated by photovoltaic 5. Geothermal el - (GWh) –electricity generated by geothermal power plants ii. RES Heat - (TJ) - All known RES heat production. Summary of all TJ figures, except “Biogas” 1. Biomass th - (TJ) - heat produced by all types of biomass plants includes biogas. 2. Solar Heating – (TJ) - heat produced by all types of solar thermal devices 3. Geothermal th – (TJ) - heat produced by all types of geothermal heating devices, exclude heat pumps 4. Heat Pumps – (TJ) - heat produced by Heat Pumps Source: http://ec.europa.eu/energy/green-paper-energy/doc/2006_03_08_gp_factsheet_en.pdf

Innovative Energy Systems and Renewable Energy

Rank	Title	Recommendation
5	Adopt Internal Alachua County Renewable Portfolio Standard	Adopt, as an internal County goal, the State RPS standard or higher for generation of County renewable energy. Achieve at least 10% of total County government (cumulative) consumption by 2015, & 20% by 2020, through combination of conservation & renewables. Encourage School Board to accomplish same.
6	Locate Solar Power Sites	a) Instruct the County Manager to ascertain where, within Alachua County, there are potential solar power generation (either photovoltaic or solar thermal) sites with adequate space to accommodate the RPS level the County Commission establishes as being in the County's interest. This space requirement should include allowance for use of rooftops of all buildings within the County, as well as large land areas, & be based on the best presently available technologies in the solar thermal and photovoltaic fields at the time of the assessment. b) Amend the Comprehensive Plan to allow use of solar power installations on agricultural lands. c) Support the location of solar power installations on closed landfills. d) Place solar panels in "alternative" locations, i.e. streetscapes, bus shelters, surface parking lots, wet or dry retention areas and other bodies of water, etc. e) Issue a Request for Proposals (RFP) for a solar utility to develop a partnership with Alachua County. f) Assess the feasibility of Building Integrated PV (BIPV) for existing & future County-owned buildings.
7	Rebates for "Energy Star" Water Heaters	Request that the Gainesville City Commission & other utility providers in Alachua County offer a water heater rebate that reflects at least the US DOE "Energy Star" water heater ratings that will take effect January 1, 2009. Other alternatives include waste heat recovery and gas tankless water heating.

(adopted 11.03.2008), Chart IS ranked

Timing	Comments & Collaboration Opportunities
	This would be a voluntary goal to be achieved; Alachua County will not be required to meet the State RPS.
	For inspiration, see " Install solar systems with no up-front costs: San Jose, CA Mayor Chuck Reed issues challenge to solar industry"; & "Nine solar companies respond to the mayor's challenge." San Jose, California website. http://www.sanjoseca.gov/mayor/goals/environment/Solar/solaroptions.asp Explore ground and pole PV installations within dry and wet water retention areas.
	Today, no water heaters carry the “Energy Star” rating. Currently, GRU offers a rebate for only natural gas water heaters (note: natural gas is a more expensive fuel.) “Energy Star” rated heat-pump water heaters could serve the dual function of more efficient water heating & removal of heat from the building. Heat pump water heaters have an "Energy Star" rating of 2.0 as compared to a rating of 0.62 for natural gas storage water heaters. DOE's expected annual savings are estimated to be $277/year for the heat pump water heater versus the natural gas storage water heater.

Innovative Energy Systems and Renewable Energy

Rank	Title	Recommendation
8	Anaerobic Digestor(s) for Organic Solid Waste	(a) Develop an anaerobic digestion facility that would be capable of processing wet-stream (organic fraction) municipal solid waste, such as grass clippings, & other appropriate materials, with the resulting methane gas to be used as a natural gas substitute. b) Issue an RFP to construct an anaerobic digester for production of methane gas & soil amendment from the organic fraction of Municipal Solid Waste (MSW) & sewage sludge.
9	Alternative Supplies: Solid/Liquid Fuels & Gas	a) Require that all land-clearing debris be used as an energy source in co-generation, composting, or other reuse applications. b) Issue &/or support an RFP for biodiesel fuel production facilities, for local fuel use, to be located within Alachua County. c) Support sustainably-grown nonfood crops for biomass production for local fuel use.
10	Support Load Balancing	Encourage implementation of technologies which cost-effectively shift peak loads if they can be proven to reduce energy consumption and greenhouse gas emissions. (for example, thermal energy storage; industrial waste heat recovery; & co-generation.) Recommend a greater rate differential incentivizing lower peak use and request more variable time of use rate structures or blocks. Set a date for implementation. Prominently publish usage hours & costs.
11	Transportation Services: Alternative and Renewable Energy	Encourage alternative fuel sources (methane gas, CNG, biofuel, solar, etc.) for use in transportation services such as school & public buses, & taxi services. Encourage the Alachua County School Board & Library District to investigate & use alternative fuel sources (including biofuel, methane, &/or solar) for all school & library-supported vehicles.
12	School Transportation Initiative	Encourage Alachua County School System to investigate the use of alternative fuel sources including biofuel, methane, and or solar for all school supported vehicles.

(adopted 11.03.2008), Chart IS ranked

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	Waste Management coordination issue. The project would an opportunity for Alachua County & City of Gainesville to partner in its development. The partners should seek grant funding. Use of this fuel for public transit could decrease transit system costs & increase use of public transit routes. Can result in increased transit ridership, removing cars from roads & reducing greenhouse gas emissions. Importantly, this could also help reduce residents' out-of-pocket expenses for skyrocketing fuel bills.
	These supplies of methane can be used for energy production, & would displace some current fossil fuel consumption. See the Waste & Energy Implications report for more information.
	Gives consumers choice, & ability to control their personal electric consumption & costs. Provides customers incentives to shift their consumption paterns, so that utilities will not have to install additional generating capacity. The Gainesville City Commission could, for example, direct GRU to establish non-peak hour electric rates (for pool pumps, dishwashers, clothes washers, dryers, water heaters, etc.) during low peak hours, because there is a lower rate for those KWh. Unintended consequences (greenhouse gas emissions) of load balancing must be avoided such that load balancing occurs in the most environmentally sensitive & energy efficient manner.
	Use of alternative fuels in school & library vehicles could reduce the cost of conventional fuel expenses; reduce greenhouse gas emissions; support local biofuels production; create more sustainable operations; & provide a standard for other Florida counties to consider.

Innovative Energy Systems and Renewable Energy

Rank	Title	Recommendation
13	"Alternative" Vehicles: Develop Service Infrastructure	Direct the County Manager to investigate infrastructure requirements for service & charging/fueling of alternative- energy vehicles (hybrid, electric, fuel cell). Require that electric & other vehicle service infrastructure (for example, dedicated parking, charging/fueling stations & directional signage) be developed in premium locations, such as at public buildings & in employment centers.
14	Commercial, Governmental and Industrial Buildings	**Commercial, Government & Industrial Buildings** a) Encourage & provide incentives so that building owners may lease their rooftops for the installation of solar arrays. b) Require that all new non-residential building construction install a radiant barrier (heat shield or reflective material) & mechanical distribution systems within the building envelope's conditioned space. (c) Require that all new rental residence properties & all new commercial properties provide HVAC systems with efficiencies of at least 75% of "best available technology". **County Government Buildings:** d) Conduct an energy audit of all County-owned and County-operated facilities. Implement weatherization & efficiency upgrades. e) Based on the energy audit of County facilities, require that all Alachua County-owned buildings meet or exceed the County-Commission approved energy-reduction standards (County Energy Reduction Policy, 2001), with the target of at least a 20% reduction by 2012. f) Identify the buildings (exclude jail) that are suitable for solar energy systems, & install these systems (or partner with a third party to install the system), such that the collective Alachua County government system provides at least 250 kilowatts by 2012, with goals for higher energy production in future years. (g) The jail could support solar energy systems in addition to the 250 kilowatt standard mentioned in (f). Develop partnerships with private businesses to install solar systems on the jail & other County buildings. Set priority to develop an energy & water-independent jail. h) To promote locally-installed renewable, distributed energy systems, install a solar parking lot system in a high-profile parking lot that is owned by the County.

(adopted 11.03.2008), Chart IS ranked

Timing	Comments & Collaboration Opportunities
	Require that all new garages be wired to charge plug-in vehicles. Consider pay-as-you-go solar carports. For more information, see the article about the commercial test (Duke Energy & GridPoint) of utility-controlled "smart charging" for plug-in hybrid electric vehicles (PHEVs):http://www.gridpoint.com/news/press/20080327a.aspx
	a)The owner of the roof-top buys power from the solar financier at a rate lower than what could be purchased from the local utility. An estimate from an ECSC member in the industry is that installed costs for these systems iare appx. $5.50/ Watt and are typically over 1 MW in size. These major solar installers are not so much interested in the relatively small state incentives. Power purchase agreements involve the leasing of large commercial roof-tops for the installation of solar systems over an extended finance period. b) If the County Commission does not have jurisdiction to accomplish this, lobby to have the commercial building code modified. c) If the County Commission does not have jurisdiction to accomplish this, lobby to have the commercial building code modified to require this. Power purchase agreements involve the leasing of large commercial roof-tops for the installation of solar systems over an extended finance period.

Innovative Energy Systems and Renewable Energy

Rank	Title	Recommendation
15	County Fuel Efficiency Standard	Adopt an internal Alachua County fuel efficiency standard. The County's mileage goal for each class of vehicle should be at least 20% above the federal standards, with higher standards set for the future. Maintain & make publicly accessible via the Internet sufficient data to monitor accurate measurement of performance, so that others can follow the County's example.
16	Solar Installations: Provide Incentives	Reduce permitting fees & expedite the process for obtaining permits for residential & commercial solar installations.
17	Biodiesel: Waste Vegetable Oil (WVO) Collection	Encourage all restaurants in Alachua County to make their WVO (waste vegetable oil) available for local biodiesel production.
18	Research home-scale biodiesel	Research use of biodiesel & glycerin on a household scale.
19	Energy Efficient Homes: Provide Incentives	Adopt a regulation that provides a 50% reduction in permitting & inspection fees for energy efficient homes based on an approved energy rating system; & ensure the incentive is spread throughout the community rather than used by one builder, developer, or project.
20	Ground Source Heat Pumps	Promote, possibly through reduced permit fees, the use of high-efficiency ground source heat pumps (that do not extract water for heat exchange) in new commercial, governmental and residential construction.
21	Amend Comprehensive Plan: Include Alternative & Renewable Energy Goals	Amend the Alachua County Comprehensive Plan to include, in the appropriate location, the goals, objectives and policies included within this recommendation chart.

(adopted 11.03.2008), Chart IS ranked

Timing	Comments & Collaboration Opportunities
	Promote higher-than-federal MPG standards for other governmental & commercial fleets in Alachua County.
Short Term (1-3 years)	Delays in permitting may penalize the owner of a solar system. Applications for state & federal rebate may be ineligible or payment may be delayed due to late submissions.
	See St. Johns County biodiesel operation. As current restaurant contracts expire or are terminated, owners can provide WVO to biodiesel operations, thereby avoiding the cost of having it removed.
	Ideas include utilizing bioidiesel in place of natural gas; in generators or propane tanks; & for use in grills, lawn equipment, & RVs. Glycerin research could aid in soap use, pesticides or donated to other groups for their use.
	Insure that future County Commissions and the County Manager will continue to develop and review this data; consider these issues; and take appropriate action.

Legislative Items (adopted 11.03.2008), Chart NOT ranked

Title	Recommendation
Legislative Agenda on Energy	Support the following Federal and State legislative agenda, and creation of new and recurring Federal and State funding sources to assist local governments in development and implementation of these initiatives: **Enact an economic recovery policy that creates American jobs and businesses:** --Provide funds for Energy Efficiency and Conservation Block Grants for local governments; --Provide funds for local transit infrastructure projects; --Create a "Climate Prosperity" demonstration grant program that directs US Economic Development Administration, HUD, Small Business Administration, and USDA Rural Development funding to support local economic development strategies that produce 'green' businesses and 'green' jobs; --Fully fund the Green Jobs Act of 2007 ($125 million annually) to support worker training in emerging manufacturing and hi-tech sectors; and --Create an "Energy Conservation Corps" service program to empower young Americans to be part of new, clean energy solutions. **Support a national climate policy that:** --Sets mandatory limits on greenhouse gas emissions with market-based trading; --Invests proceeds from carbon trading in local government actions that reduce GHG emissions through: highly resource and energy-efficient buildings; transit and other VMT reduction strategies; a transition to alternative local fleets and fuels; renewable energy; 'green' infrastructure; and 'green' jobs and businesses; and --Allows regulated emitters to invest through carbon offsets in local 'green' infrastructure that reduces greenhouse gases, including community forestry, 'green' roofs, and open space and farmland preservation. **Implement clean energy policies that:** --Reduce building energy use by at least 30% by 2025; --Establish national building efficiency targets, and provide annual funding to help local governments meet or exceed the national targets; and --Produce at least 25% of the nation's power from renewable energy by 2025 through renewable portfolio standards and measures to overcome interconnection and rate barriers to community-scale renewables. **Invest in local climate capacity through annual federal appropriations:** --Fully fund the Energy Efficiency and Conservation Block Grants; --Provide annual funds for the EPA Local Climate Demonstration Grants; --Provide annual funds for the DOE Clean Cities program to support low-emission vehicles and cleaner fuels, including alternative fuels infrastructure and plug-in hybrid vehicles; and --Provide annual funds for the Forest Service Urban and Community Forestry program.

Legislative Agenda on Energy continued on next page

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	

Legislative Items (adopted 11.03.2008), Chart NOT ranked

Title	Recommendation
Legislative Agenda on Energy	Continued from previous page **Transform the nation's transportation strategy:** --Substantially increase federal resources for public transit; --Support local initiatives to reduce vehicle-dependence and use, including funds for transit-oriented development, VMT reduction planning and implementation, walkability programs, bikeways and greenways, infill and brownfield revitalization, and reuse of historic and existing buildings; and --Fund low-emission buses, transition to clean local fleets, and local alternative fuels infrastructure. **Build resilience in communities to prepare for climate impacts:** --Create a federal interagency task force to produce a federal action plan that includes: (a) national research and development; (b) local technical assistance; and (c) new protocols for intergovernmental collaboration at local, state, regional and federal levels; --Expand the FEMA Pre-Disaster Mitigation program to support local government initiatives to address climate impacts; --Expand NOAA's Coastal Zone Management Act and climate programs to directly support local climate adaptation planning and implementation; and --Fund local efforts to support families and populations most vulnerable to climate impacts.
Energy Legislation: Track and Monitor	With the assistance of Alachua County's Federal and State legislative lobbyist, track and monitor all proposed legislative bills on energy-related matters. Provide input to delegations on these bills. Request input of ECSC or other advisory committee on legislative proposals on energy-related matters.
Eliminate Sales Tax on Energy Star Appliances	Request that tax on Energy Star appliances (i.e., front load washers, seer 16 and up AC, etc.) be eliminated.
Ban Incandescent Bulbs	Request ban on incandescent bulbs; and creation of annual funding source for recycling of CFLs.

Timing	Comments & Collaboration Opportunities
Immediate Term (within 1 year)	
Immediate Term (within 1 year)	
Short Term (1-3 years)	Adds another incentive to upgrade the efficiency of appliances and equipment.
Short Term (1-3 years)	

Legislative Items (adopted 11.03.2008), Chart NOT ranked

Title	Recommendation
Bottle Bill & Disposable Bags & Packaging	Seek change in State law to allow local governments to regulate packaging and used bottles. (1), Provide to the Florida Department of Environmental Protection input from local officials and interested citizens on potential new regulations for disposable bags and packaging. Promote the ability of local governments to enact more stringent regulations if they choose to do so. (2), Promote & support passage of a Florida legislative bill for $0.10 deposit on beverage containers, with a return of containers to retailers for refund of the deposit.
Motion Controls for Lighting	Lobby the State to alter building codes (or amend codes in Alachua County & its cities) to modify parts of their building codes in appropriate sections to require motion sensors to control lighting. Using Section 13-415.1 of the New Construction guide as an example, require existing buildings to use energy-saving mechanisms to control lighting in commercial buildings (i.e., timers or sensors).
Ban Burning of MSW	Promote & support passage of a State law that bans "open" burning of household MSW.
Increase gas tax allocation for mass transit	The County, City of Gainesville and MTPO should allocate an additional ½ cent gas tax to improve mass transit from whatever sources are available.
Appliances: Allow consumers to disable stand-by power	Lobby at the State and Federal level to require on/off switches on appliances to disable standby power (except for emergency equipment.)
Consumer Information: Stand-by Power Consumption	Request that vendors & suppliers in Alachua County provide & post the standby power consumption of equip-ment they sell. Lobby the State & Federal government to require this labeling.
Public Transit: Additional Investment	Lobby the State of Florida to make implementation of public transit a priority, & to invest additional funds, specifically for development & implementation of public transit, in each FDOT district.
Support Feed-in Tariff Legislation	Instruct the County's lobbyists to support legislation to enact or enable the implementation of a Feed-in Tariff similar to the one in Germany and other countries in the European Union.

Timing	Comments & Collaboration Opportunities
Short Term (1-3 years)	Florida Statute 403.7033 (See WEIS report) The amount of petroleum used to manufacture 14 plastic bags is equivalent to the petroleum needed to move an automobile one mile. The average person uses 500 bags a year (35 miles!). It costs 17 cents to recycle each plastic bag.
Short Term (1-3 years)	If the County does not have the authority to enact, it should lobby at the Federal or State level of government to do so.
Immediate Term (within 1 year)	GRU's renewable energy payment (also called a feed-in-tariff) is the first of its kind in the US, but it is voluntary legislation.

Legislative Items (adopted 11.03.2008), Chart NOT ranked

Title	Recommendation
Support RPS Standards	Instruct the County's Federal and State lobbyists to support legislative proposals to enact or establish Renewable Portfolio Standards (RPS) with targets of 10% or greater of total energy supplied by utilities to be attained by 2015, and 20% by by 2020. Nuclear power should not be considered as a renewable resource under an RPS. a) Review Florida House Bill 7135, signed by Governor Crist on June 25, 2008, requiring the Public Service Commission to develop an RPS by February 1, 2009. b) Instruct the County's lobbyists to support legislative proposals to enact or establish RPSs with the above targets.
State Standards for Alternative Fuel Vehicle Infrastructure	Support State legislation to adopt regulations and standards for electric vehicle charging stations, & service infrastructure for other alternative "fuel distribution systems."
Hydrogen Fueling Service Infrastructure: Support Development	Adopt a resolution that requests Congress & the President to make development of hydrogen fueling infrastructure a priority.

Timing	Comments & Collaboration Opportunities

Legislative Items (adopted 11.03.2008), Chart NOT ranked

Title	Recommendation
Legislative Agenda on Energy: Part II	Take a leadership position in talks, negotiations, and, especially, actions on climate issues. Enact a resolution for President-elect Obama, US House and Senate leadership, and Florida legislators to adopt and implement the following recommendations, and ask the City of Gainesville Commission to do the same: --Develop a program equivalent to putting a man on the moon to achieve energy independence based on conservation and use of alternative energy; redirect much of the efforts of NASA to improving terrestrial transportation rather than more interplanetary exploration. --Increase the efficiency requirements for Energy Star designation on all appliances and equipment, e.g. SEER of 20 for HVAC, energy factor of 4 for water heaters. --Expand, increase, and extend tax credits for energy efficiency improvements to homes and businesses. --Increase efficiency requirements for all homes and commercial buildings; e.g. require HERS of <30 for Energy Star. --Increase mileage standards for automobiles and trucks by 10% per year until they reach the level of Europe, Japan, China, etc. Limit tax credits for hybrid, electric, and alternative fuel vehicles to those that achieve 40 mpg or better. --Lower Federal highway speed limits to 65 or less and require that states receiving highway funds have effective programs to enforce speed limits. --Increase proportion of transportation funds for mass transit to equal that spent for new highway construction. --Eliminate any Federal subsidies for shipping by truck; promote increased use of rail for transportation of commodities. --Require that at least 1/3 of subsidies, loans or other 'bail-out' mechanisms for the auto and other industries be devoted to reducing energy consumption in the manufacturing process and in the products produced. --Require that states and local governments receiving Federal funds for mass transit have strict land use controls in place to prevent sprawl. --Redirect all funding subsidies for fossil fuel exploration, extraction, or processing to development of renewable energy. --Require that energy used to produce energy, or fuels from biomass, be from renewable sources rather than fossil fuels. --Eliminate subsidies for farming by corporate farmers; adopt policies that encourage small farms and local foods. --Install solar PV, solar water heaters, and ground source heat pumps in Federal buildings throughout the country where feasible, or when upgrading existing HVAC systems. --Require all states to set goals of reducing per capita energy consumption to at least as low as that of California by 2020 and to develop plans to achieve this goal.

Timing	Comments & Collaboration Opportunities

Legislative Items (adopted 11.03.2008), Chart NOT ranked

Title	Recommendation
State of Florida: Support & Expand the Solar Rebate Program	Support State legislation to reinstate and expand funding for the Florida Solar Rebate program. Support a slight reduction in the rebate amount per system in order to increase the total number of systems that can receive a rebate.
Residential Energy-Efficiency Data for Alachua County	Support State legislative proposals to develop residential energy-efficiency data for financing mechanisms and funding partners: data could include utility information for all residential structures in Alachua County; creation of a website and geographic model; identification of structures for energy-efficiency upgrades; marketing strategy and obstacles; use of structures (owner-occupied or rental); size (sq. feet); age of structure; capacity of Alachua County contractors to accomplish energy-efficiency upgrades; training and certification needed; projected increase in employment and number of new jobs created; and payback time for money borrowed.
Reclaimed water: use for toilets	Require new construction adjacent to reclaimed water infrastructure to be plumbed so that it uses reclaimed water for wastewater (toilets).
County Commission: adopt energy standards for building operations	Adopt a memorandum of understanding (or similar document) to require **all** those who use Alachua County government space or buildings to follow County Commission-adopted energy standards.

Timing	Comments & Collaboration Opportunities

Executive Summaries

Buildings: Residential

Buildings: Non-Residential

Waste & Energy Implications

Land Use & Transportation

Alternative Energy

Subcommittee Reports

Rising utility bills, increased concerns about climate change and greenhouse gas pollution, continued use of fossil fuels, and projected escalation of costs to extract and process remaining world oil reserves are inter-connected threats that, over the near to mid-future, will generate dramatic implications for the way our Alachua County community sustains itself.

Gasoline prices of $5 - $10/gallon will alter the way our communities function, and significantly affect all of us, most especially seniors and less-advantaged populations, food security, economic vitality, and transportation and tourism.

The Energy Conservation Strategies Commission subcommittee reports represent an extensive literature review and comprehensive background for a 100-year planning horizon in Alachua County; discuss potential issues; and develop recommendations (policies, programs, best practices, etc.) for Alachua County government and the public to implement in order to create a more energy efficient and resource resilient community.

The proceeding pages represent a brief summary of the five subcommittee's work and areas for further exploration.

Top Ten Residential Building Recommendations:

1. **Education/Conservation**: Develop (in coordination with local media, utilities, local governments, School Board, business community & others) a coordinated energy conservation education program.
2. **Existing Housing: Low-Cost Improvements - Low Income**: Support local nonprofit organizations that help disadvantaged populations by providing energy-efficiency education and home improvements.
3. **Existing Housing: Low-Cost Improvements:** Create a Residential Energy Efficiency Ordinance (REEO). Set effective date of January 1, 2010, so as to allow participation of general public & other stakeholders in development of the REEO.
4. **Financing: Low-Cost Improvements - Low Income:** Approve a financing mechanism to fund low cost weatherization improvements and high performance retrofits for local low-income & substandard housing supply.
5. **Existing Housing: Major Energy Efficiency Upgrades:** Maximize energy savings in the existing housing stock: Establish an incentive-based program to promote Major Energy Efficiency Upgrades in the existing housing stock.
6. **Disclosure of Building Performance**: Require full disclosure of the 'relative energy intensity' of all structures using a County Commission-approved energy rating system.
7. **Financing - Sustainability Investment Fund:** This fund would be a vehicle by which local residents and business owners could invest, at a reasonable rate of return, in a fund to help their fellow community members finance energy efficiency improvements or the purchase of renewable energy systems.
8. **Adopt the Model Green Building Ordinance**: Recognize and integrate various local, state, and national sustainability building programs.
9. **Adopt Comprehensive Residential Standards**: Use the Florida Green Building Coalition (FGBC) Interactive Application Tool spreadsheets for Building & Development to outline a comprehensive program for the residential sector
10. **High Efficiency HVAC Systems**

Summary: Residential Buildings Subcommittee

Challenge: Those with low or fixed incomes are disproportionately impacted by rising energy costs, and typically live in older housing stock, which is significantly less energy-efficient than recently-built homes. Higher utility bills=less disposable income for other needs.

Frequently, these same owners or renters do not have access to the capital needed to upgrade the operational efficiency of their place of residence; landlords do not always have a vested interest in improving their property's energy efficiency, as they do not pay the utility bills. Energy is wasted by inefficiencies.

Goal: To provide relief and opportunity to our community by recommending means and methods to reduce high utility bills and consumption of energy wasted by inefficiencies. Consider policies, develop programs and provide options that are quantifiable, based on current building science knowledge, and implementable. Work with community partners to leverage existing capital and volunteer expertise.

Summary: Non-Residential Buildings

Challenge: Energy is wasted when building efficiencies are not maximized.

Goal: Recommend ideas, policies and programs that reduce energy consumption and maximize efficiencies in existing government and commercial/industrial/institutional buildings. Develop 'best practices' for new buildings and leased Alachua County facilities. Focus on the jail, which is 50% of Alachua County's total energy consumption.

Top Ten Waste and Energy Recommendations:

1. **Waste Management Policy; Life-cycle GHG Analysis**: Life cycle analysis of GHG emissions should form the basis of all waste management policy.
2. **Increase Diversion Rate to 75%**: Establish a goal for Alachua County (including municipalities) to attain a diversion rate from disposal of 65% by 2013, increasing to 75% by 2020,
3. **MSW: Anaerobic Digestion & Composting** : Develop a facility to manage the biodegradable portion of MSW through either anaerobic digestion (to produce methane) or composting. MSW: Organic Component: Submit a Request for Qualifications (RFQ) to obtain technical advice on details of anaerobic and aerobic composting of organic components of MSW and sewage sludge
4. **MSW: Organic Component**: Submit a Request for Qualifications (RFQ) to obtain technical advice on details of anaerobic and aerobic composting of organic components of MSW and sewage sludge; & proceed to implement one or both of these technologies
5. **Wastewater Treatment: Anaerobic digestion is preferred method**: Anaerobic digestion should be the preferred method of wastewater treatment. Existing facilities for aerobic digestion should be phased out as anaerobic digestion is phased in.
6. **Sewage sludge: Use Methane Gas as Energy Source**: Encourage the Gainesville City Commission to adopt a goal of using methane gas from sewage as an energy source first (for WWTP power generation, or as a fuel for buses), and secondarily, as a fertilizer or product to be sold or spread on agricultural lands. Encourage the Gainesville City Commission to set a date certain for GRU to develop this alternative.
7. MSW: Separate & Develop Three Streams
8. **Prohibit Disposable Containers for Yard Waste**
9. **Environmental Park; Expand Materials Recovery Facility**: Expand the materials recovery facility (MRF) at Alachua County's Leveda Brown Environmental Park (or other suitable location) as needed to process recovered recyclable materials.
10. **Commercial Recycling; Strengthen**: Alachua County and the City of Gainesville should strengthen commercial recycling ordinances, and vigorously enforce them.

Summary: Waste and Energy Implications

Challenge: Both energy and money are expended in the collection and ultimate disposal of discards, and the reuse of recyclables. Each component of the waste stream possesses a different energy potential and environmental hazards associated with power production.

Goal: Obtain data and decision-support tools; and using life-cycle analysis, develop recommendations for (1) use of waste materials for creation of locally-needed products; and/or (2) power production. Consider examples of other communities (i.e., the City of Bern, Switzerland uses methane extracted from municipal sewage sludge to power city buses.)

Sources and Uses of Energy in Florida (2005)

(data in BTUs)

Source	Commercial	Industrial	Residential	Transportation	Total
Coal	7.30	27,581.50	0.72	0.00	27,589.52
Natural Gas	63,208.30	70,566.43	17,666.23	10,495.00	161,935.95
Petroleum	27,770.74	155,077.82	16,016.55	1,584,513.06	1,783,378.17
Atl Energy	999.10	0.00	30,725.74	0.00	31,724.84
Biomass	1,366.38	98,265.35	5,342.69	0.00	104,974.41
Electric†	305,067.88	67,135.69	395,080.46	337.54	767,621.56
Wasted Electric	670,066.34	147,460.18	867,774.47	741.38	1,686,042.38
Total	1,068,486.03	566,086.97	1,332,606.85	1,596,086.97	4,563,266.83

Chart Notes: Data compiled from Energy Information Administration of the Department of Energy. Retrieved from EIA

Electricity generated by utilities also receives input from sources like coal and nuclear.

Carbon Sequestration and Cap and Trade

carbon sequestration: The capture of carbon dioxide so that it is no longer in gaseous form. The carbon dioxide gas can be dissolved in a liquid or combined with other chemicals so that it is in liquid or solid state. The use of carbon dioxide by plants is a form of carbon sequestration because the carbon is converted into plant material. Similar types of sequestration can be conducted for other greenhouse gases.

Overview: Development of Landscape Carbon Stocks for Participation in Carbon Markets

Managing the emissions and sequestration of carbon on the County's lands can be accomplished through the development of mitigation projects, and the resultant carbon credits can be traded on the carbon market. As evidenced by the European markets, the monetary potential of carbon markets and carbon trading is significant, and the US carbon market could become an important income stream for the County.

While lands supporting forestry and agriculture are most appropriate for use in mitigation projects, management of natural and semi-natural lands should also be considered in the County's overall carbon budget and greenhouse gas inventory. Although GHG sources and sinks in the forestry and agriculture sectors are minor portions of the total emissions profile of any region, depending on the productivity of the landscape, they can represent an important means of offsetting the projected increases in fossil emissions over future decades.

Development of mitigation projects is a complex matter involving sophisticated estimates of all significant sources and

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Summary: Land Use and Transportation

Challenge: Natural resource preservation, food security, efficient multimodal transportation, and excellent urban design are mutually critical to sustaining a community, especially when gasoline prices increase.

Goal: To plan for, and adapt to, these community threats and opportunities, recommend policies and strategies designed to create integrated, sustainable 'best practices'.

Background: The supply of land for a variety of economic activities is one of our greatest economic assets, but the supply of this land is limited. How effectively we use that land will determine our long-term economic vitality. Currently 75% of the land in Alachua County is used for agriculture, silvaculture and 5 acre lots.

Once land is developed , it is extremely difficult and costly to restore that land to agriculture. Alachua County is at a critical decision-making point with respect to its pattern of land development. Decisions on land use regulation need to be made in context of higher energy prices and global competition for limited resources including land. Land that is currently used for crops and pasture could be used supplement local versus foreign food supplies thereby reducing the amount of energy needed to ship and store food products. Florida's agricultural lands also have great potential for carbon sequestration and the farming of high-value biofuels.[1]

The transportation sector is also bearing the impact of higher prices for fuel. Florida's transportation sector is dependent upon liquid fossil fuels for 97% of the energy consumed (see the table to the left). This creates both challenges and opportunities for landowners in Alachua County.

Residents who currently live far from the employment centers will face ever higher transportation costs. Inevitably, many residents will choose to change their lifestyles and move closer to their place of employment. Others will purchase more energy efficient vehicles and continue to commute long distances. This will change the market dynamics for housing. Residents with higher incomes will have some flexibility to decide whether to pay more for energy or to live in a more
advantageous residential location. Lower income residents will face a significant challenge as (a) the cost of fuel takes a greater proportion of their income and (b) the housing market for convenient locations becomes more competitive.[2]

1. S. Mulkey. Climate change and land use in Florida: Interdependencies and opportunities. 2008. Retrieved July 30, 2008 from https://www.communicationsmgr.com/projects/1349/docs/Climatechange.pdf
2. Center for Housing Policy. A heavy load: The combined housing and transportation burdens of working families. October 2006. Retrieved August 11, 2008 from http://www.nhc.org/pdf/pub_heavy_load_10_06.pdf

(Continued from page 172)

sinks of GHGs associated with a piece of real estate over a period of at least several decades, and preferably a century. While the economics clearly favor the development of mitigation projects, it is paramount that all such projects result in effective reduction of atmospheric GHGs relative to that which would have occurred in their absence.

Methods for measurement and management of carbon stocks

It is apparent that the atmosphere is the ultimate commons, and it must be managed in a globally comprehensive manner. Thus, it is critical to the effective management of local carbon stocks that they be evaluated in the context of broadly regional GHG emissions. Additions to carbon stocks through the development of landscape-based mitigation projects results in estimates of carbon offsets, typically measured in CO2 equivalents (see references for definition), which can then be marketed.

Project managers must first define the land management practices that they will use to create the offsets, and then establish spatial and temporal boundaries for the project. Factors to consider include: (1) the potential for reversal (loss of stored carbon stocks) and (2) the degree of leakage (GHG emissions resulting from or associated with the creation of the project). For an offset to be tradable on the carbon market, it must clearly be additional in that it must represent avoided emissions or carbon sequestered that would not have otherwise occurred. The determination of valid additionality requires measurement and independent verification over an appropriate time frame.

Small parcels of land used in mitigation projects can be consolidated for market trading through aggregation by an organization such as the Florida Forestry Association, or possibly even Alachua County government. Detailed methodology and theory can be found in Wiley and Chameides, 2007, and Mulkey et al. 2008.

Types of carbon stocks

Alachua County exercises authority over a significant acreage of forest and agricultural lands. While these lands can be managed for carbon offsets, it is important to assess the importance of these offsets in the context of the County's greenhouse gas inventory. The burning of fossil fuels constitutes the largest source of GHG emissions, but sources and sinks associated with natural and semi-natural lands should also be assessed. For example, Paine's Prairie is clearly a source of methane emissions, and so long as this area is managed as a wetland, these emissions are appropriate and unavoidable. However, a management plan for the Prairie should attempt to minimize unnecessary GHG emissions.

Because the seasonality of inundation (hydroperiod) is cur-

rently not managed, it is likely that ecosystem respiration and wildfires on poorly managed marshlands result in higher CO2 emissions than necessary. Presently, no carbon market is considering the trading of credits associated with managed natural and semi-natural lands, but international agreements are in being developed to give credit for avoided deforestation, especially rainforest. This is similar in principle to the proper management of lands such as Paine's Prairie.

The built environment, including its green space, represents an opportunity for enhancing mitigation. Explicit management of the County's urban forests could result in a limited number of marketable offsets (e.g. parts of the Hog Town Creek watershed). As considered elsewhere in this report, buildings represent the largest single source of GHGs, if one includes the embodied emissions associated with materials and construction in addition to ongoing fossil energy use during the lifespan of the building. In addition to tax credits or other economic advantages for energy efficient construction, the County could also encourage the development of urban forests wherever possible. Landscaping of subdivisions to include the retention of pocket parks and afforestation of boundary lands could add to the offset potential of the built environment in Alachua County.

Unresolved issues related to carbon offsets

Recently there has been controversy about which carbon offsets represent valid GHG reductions (i.e., are additional). For example, afforestation at higher latitudes may actually increase the radiant heating of the atmosphere relative to non-forested land because of the altered albedo (reflectivity) during the winter when the land is covered by snow. This concern does not apply to Florida, and should not be a reason for dismissing the use of forest as an offset.

In addition, one form of leakage may be associated with market adjustments when a forest is set aside as an offset. When a parcel of forest is designated for mitigation, this may result in harvesting of a parcel elsewhere, depending on the supply and demand of wood. The County should evaluate the elasticity of the forest products market when considering its forests as offsets. This aspect becomes especially complex in light of the impending enhanced use of woody biomass as fuel for production of electricity.

Perhaps the most important offset issue concerns the value that existing forestland should have on the carbon market. Most experts regard existing standing crop as not meeting the criteria for additionality unless the forest is actively managed for enhanced sequestration or avoided emissions. Current practice by the CCX is thus suspect, and the County should not expect income from its standing forest until this issue is resolved.

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The use of conservation tillage (low till or no till) as a means of enhancing carbon sequestration has also been challenged. A limited number of studies show little carbon sequestration advantage of conservation tillage over regular tillage, although one should note the reduced GHG emissions associated with reduced use of farm implements.

These studies were done of soils that are quite unlike those formed from Florida's sand or limestone substrates. One might predict that allowing humus to accumulate, rather than be tilled into the soil, would enhance the leaching of carbon to lower layers, especially under conditions of warm temperatures and high rainfall. Ultimately the role of conservation tillage for creation of offsets requires additional quantitative study of the process, and likely will vary from location to location. While there are other valid reasons for using conservation tillage, the County may wish to see what the science has to say about the particular soils in North Central Florida before attempting to market these offsets.

Regulatory Unknowns

The County should position itself to take maximum advantage of the opportunities in the carbon market as it develops. The most important limitation of the use of forest and agricultural lands for mitigation projects is the lack of authoritative rules governing which offsets can be marketed. The United Nations Framework Convention on Climate Change (UNFCCC) is engaged in an ongoing process to develop guidelines, and it is reasonable to expect rules for market trading to be forthcoming within the next few years. Similarly, regional agreements such as the Regional Greenhouse Gas Initiative (REGGI) involving several northeastern states are moving forward to develop rules for tradable credits. Federal legislation under consideration limits the market participation of forestry and agriculture to 15 percent of the emissions credits nationwide, but the final form of these regulations will not be apparent until sometime in 2009. Meanwhile, the County should exercise caution with respect to investing in creation of mitigation projects on its forest and agricultural lands. Nevertheless, there is much that could be done that is already subsumed in operational expenses to manage the GHG sources and sinks on County lands.

Given the consequences of climate change for future generations, it is reasonable to argue that government has an ethical duty to manage carbon stocks, regardless of the putative value of the carbon offsets.

Key Concept: Sustainability: Environment, Economy and Social Equity

Alachua County has over a decade of initiatives and programs dedicated to creating a more sustainable community stretching from the 1999 Alachua County Sustainability Projects Ad Hoc Committee, to the most recent, Energy Conservation Strategies Commission in 2008.

In each endeavor the County, representatives of the business community, local institutions and private citizens have met to meet the needs of the present without compromising the ability of our great grandchildren to have the same quality of life

The term "**sustainability**" is used in Alachua County to describe activities that include, but not limited the following goals:

Tend to improve social conditions for all kinds of people

Increase economic opportunities

Improve environmental protection or restoration efforts

Will continue to have these effects for the foreseeable future

Key Concept: Local Food and Energy Security

Food production and distribution are very energy- and water-intensive processes, and they also generate significant amounts of GHG emissions.

One of the factors of the energy intensity of food is that it takes many calories of energy to produce one calorie of energy in the form of meat. For example it takes approximately 57 calories of energy to produce 1 calorie of lamb compared to 1 calorie of inputs to create 4 calories out corn.[1]

Food prices had been dropping over the past 80 years or so, but prices of some foods recently began to skyrocket.[2, 3] During the Great Depression, food spending represented 25% of a family's disposable income. In 2007, that amount had dropped to 10%.[4]

Rising fuel, fertilizer, water, production, storage and transportation costs in the food sector will put upward financial pressure on the American family's food budget.

Energy is required to produce, transport, store, and process food. For some food, the farm to table trip is very energy efficient, but for other foods this process is extremely energy and water intensive.

1. D. Pimentel and M. Pimentel. Sustainability of meat-based and plant-based diets and the environment. American Journal of Clinical Nutrition, 78 (suppl):660S–663S. 2003.

2. J. Turner. Food prices skyrocket. 2008. Retrieved July 21, 2008 from http://www.celsias.com/article/food-prices-skyrocket/

3. U.S. Department of Agriculture. Food CPI, prices, and expenditures: CPI for food forecasts. 2008. Retrieved July 22, 2008 from http://www.ers.usda.gov/briefing/cpifoodandexpenditures/Data/cpiforecasts.htm

Food prices are rising, in part, because of the competition between food and fuel now taking place across America. High demand for biofuel feedstock has driven up the prices of the many grains and legumes typically consumed by humans.[5]

Water, used to irrigate crops and perform a variety of operations in food production, contains a large amount of embodied energy. Energy is required to pump, transport, and purify water. Agriculture is a major user of ground and surface water in the United States, accounting for 80 percent of the Nation's consumptive water use and over 90 percent in many Western States.[6]

Food Transportation

The average American meal travels over 1,500 miles from the farm to our tables in trucks, trains, and airplanes—some of this food comes from California, some comes from Mexico, some comes from Chile, and other food comes from other locations around the country and around the world. All of this transportation of food depends on oil.

The doubling of oil prices from $70/barrel in early July of 2007 to $145/barrel in early July of 2008 has driven up transportation costs for all industries.[7]

More locally produced food will reduce our food costs, reduce the amount of fuel we consume in the food production process and reduce GHG emissions. A large percentage of the food purchased in Alachua County comes from outside the County.

Alachua County's agriculture production, in terms of dollars, represents about 13% of the amount spent on food in the County. In other words, even if we assume that every morsel of food that is grown in Alachua County is consumed here, 88% of the food expenditures in Alachua County would be spent on products grown outside the County.

This is an estimate based on information from the Unites States Department of Agriculture and the Florida Department of Agriculture.

4. U.S. Department of Agriculture. Food CPI, prices and expenditures: Food expenditures by families and individuals as a share of disposable personal income. 2008. Retrieved July 21, 2008 from http://www.ers.usda.gov/briefing/CPIFoodAndExpenditures/Data/table7.htm

5. C. Zimmerman. Good news for ethanol in OECD report. July 18, 2008. Retrieved July 21, 2008 from http://domesticfuel.com/category/food-prices/

6. U.S. Department of Agriculture. Irrigation and water use. 2004. Retrieved July 21, 2008 from http://www.ers.usda.gov/Briefing/WaterUse/

7. WTRG Economics. Crude oil futures prices—NYMEX. July 18, 2008. Retrieved July 21, 2008 from http://www.wtrg.com/daily/crudeoilprice.html

Top Ten Alternative Energy Recommendations:

1. **Support Energy Efficiency Upgrades**: Reduce the overall consumption of primary energy by funding energy conservation projects according to the ECSC Guiding Principles: a) reduce energy consumption, b) maximize energy efficiency, and c) increase the use of alternative & renewable energy. Develop a financing mechanism similar in concept to the Berkeley FIRST model so that property owners can immediately implement efficiencies that require capital.
2. **Support a Feed-in-Tariff**: Encourage the City of Gainesville and its utility, GRU; & Clay Electric Cooperative, & its supplier, Seminole Electric Cooperative, to implement a Feed-in Tariff similar to the one in Germany & other countries in the European Union.
3. Support Guiding Principles: Reduce Use of Conventional Energy in Buildings
4. **Support a Renewable Portfolio Standard (RPS)**
5. **Adopt Internal Alachua County Renewable Portfolio Standard**: Adopt, as an internal County goal, the State RPS standard or higher for generation of renewable energy. Achieve at least 10% of total County government (cumulative) consumption by 2015, & 20% by 2020, through combination of conservation & renewables. Encourage School Board to accomplish same.
6. **Locate Solar Power Sites**: Instruct the County Manager to ascertain where, within Alachua County, there are potential solar power generation (either photovoltaic or solar thermal) sites with adequate space to accommodate the RPS level the County Commission establishes as being in the County's interest.
7. **Rebates for "Energy Star" Water Heaters**
8. **Anaerobic Digestor(s) for Organic Solid Waste**
9. **Alternative Supplies: Solid/Liquid Fuels & Gas use**
10. **Support Load Balancing**: Encourage implementation of technologies which cost-effectively shift peak loads if they can be proven to reduce energy consumption and greenhouse gas emissions.

Summary: Alternative Energy

Challenge: Reduce local dependence on fossil fuels.

Goal: Foster ideas and policies that will increase the use of locally-applicable renewable energy sources in Alachua County. Provide recommendations that will move Alachua County government and the public to renewable energy sources.

Key Concept: Feed-in Tariff for Renewable Energy

A typical commercial solar roof installation in Germany. Photo by: Ed Regan

A feed-in tariff (FIT) as practiced in Germany is a long term contract between a utility provider and a customer (for example a homeowner or business) to buy power from the customer's solar array at the market cost per kw-hour plus a premium. FITs are used to incentivize the production of power from, rather than the simple installation of, renewable energy systems.

In Germany, it has resulted in the economic growth of the renewable energy design and manufacture sectors. In large part because of the FIT, by 2007, Germany had installed 1,100 MW of photovoltaic capacity, compared to only 205 MW in the United States. It was also able to take a 46% share of global solar and wind markets. and leads the world in exporting this technology.

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Innovative use of a German landfill creating an "energy farm" of solar and wind energy. Photo by: Ed Regan

Results of Germany's FIT Program

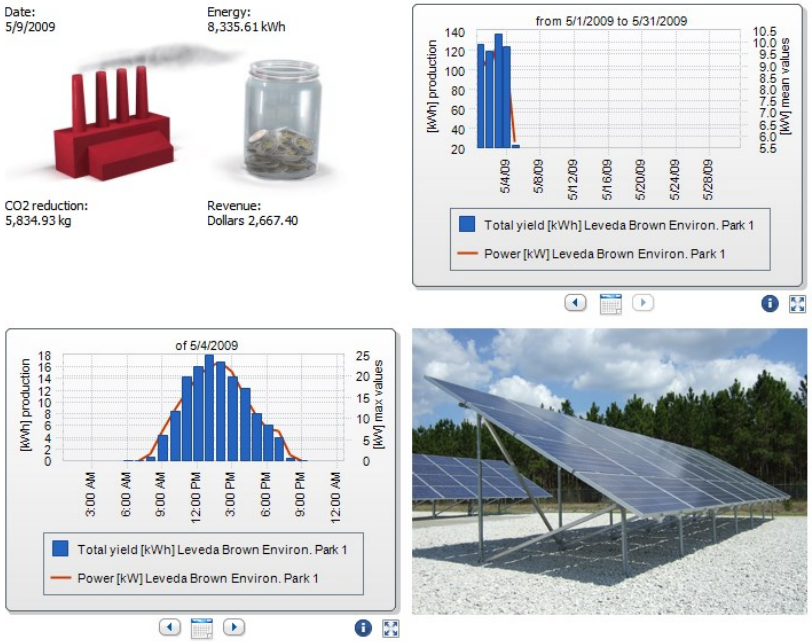
- 230,000 Employed in Renewable Energy Industry
- $23 Billion Euros/Year Industry
- Major Global Market Share – Technology Leaders
  Wind Turbines, Solar Panels, Electric Inverters
- National Benefit To Cost = 2.8:1
- Reduced Carbon Emissions
- Improved the Economy
- Improved Energy Security
- Enhanced Long-term Affordability of Renewable Energy [1]

Rough Calculations: If the owner of large rooftop area were to install solar photovoltaic panels on 250,000 square feet of roof top space it could roughly produce 744 kW-hours per year.

For that power GRU would pay $193,500 per year if the FIT is set at 26 cents/kW-hour.

1. Ed Regan, Assistant General Manager for Strategic Planning for Gainesville Regional Utilities, July 29, 2008 Presentation to the ECSC.

Alachua County's Participation with the Feed-in Tariff at the Leveda Brown Environmental Park



Pictured above: Alachua County's real-time energy production from the Feed-in Tariff may be tracked by the public at this website: http://www.sunnyportal.com/Templates/PublicPageOverview.aspx?plant=dacf7f8d-2c1d-439a-8301-9e3ad4e5e91d&splang=en-US

Results of the 25kW Solar System May 2009:

- Total Energy Produced: 8,335 kWh
- CO2 Reduction: 5,834 kg
- Revenue Generated: $2,667

Beyond the Feed-in Tariff

From a vocational perspective, per megawatt, solar panels have the potential to generate more jobs (15.2 in the manufacturing sector and 7.1 construction) than wind, geothermal or biofuels energy. Photovoltaic panels installation concurrently stimulate related trades and has the potential to act as vocational training to higher skilled trades.

Glossary

agronomic uptake: The amount of nutrients that a plants can absorb from a given area of land. Plants use the nutrients to grow, but if more fertilizer is applied to the land than can be absorbed, the excess could pollute surface water or well water.

Biogenic: A substance that is produced by living organisms. Biogenic carbon is carbon that has recently been taken (mostly) from the atmosphere by plants or other organisms. This type of carbon is sustainable because carbon levels in the atmosphere can be returned to normal when the plants regrow.

BTU: British thermal units. The amount of energy required to heat 1 pound of water from 64°F to 65°F. It is equal to approximately 0.29 watt-hours.

carbon equivalent: The amount of carbon that would have the same global warming potential as another gas. This can be calculated by finding the global warming potential of the gas and multiplying by 12/44 to convert carbon dioxide equivalents to carbon equivalents. For example, the global warming potential (over 100 years) of 1 pound of methane is approximately 25, meaning that it would produce a warming of the atmosphere as much as about 25 pounds of carbon dioxide. The carbon equivalent would be 25 × 12/44 = 6.818.

carbon sequestration: The capture of carbon dioxide so that it is no longer in gaseous form. The carbon dioxide gas can be dissolved in a liquid or combined with other chemicals so that it is in liquid or solid state. The use of carbon dioxide by plants is a form of carbon sequestration because the carbon is converted into plant material. Similar types of sequestration can be conducted for other greenhouse gases.

Diversion: Diversion of materials from disposal so that they can be recycled, reused, or composted.

dry-stream: The component of the solid waste stream that contains dry recyclables such as paper, cardboard, glass, cans, and plastics, but does not contain food waste, yard waste, animal manures, or other substances that contain water.

EPA: The U.S. Environmental Protection Agency.

GHG:Greenhouse gas. These are gases that contribute to the warming of the atmosphere. The primary anthropogenic GHGs are carbon dioxide, methane, ozone, and nitrous oxide.

GRU: Gainesville Regional Utilities.

ILSR: Institute for Local Self-Reliance. An institute dedicated to environmentally sound community development. According to Dr. Neil Seldman, their president, their motto is “We solve environmental problems by starting businesses.” Dr. Neil Seldman made a presentation to the ECSC in February, 2008. Their home page is http://www.ilsr.org/.

LBEP: Leveda Brown Environmental Park (LBEP). A center near

Waldo Road not far from Gainesville that serves as a transfer station and includes facilities for recycling and household hazardous waste.

Megawatt: 1 million watts. The amount of electricity needed to power 10,000 light bulbs that are 100 watts each or enough to power 700 homes. For comparison, the total capacity of GRU generation facilities was reported as 611 megawatts in the GRU 2005-2006 Annual Statement.

metric ton: A metric unit of mass equaling 1,000 kilograms, also called a long ton. Similar to but not exactly the same as a short ton, which is 2,000 pounds.

MSW: Municipal Solid Waste. The stream of discarded materials from residential and commercial (but not industrial) sources. MSW is often placed in landfills and is sometimes incinerated.

pay-as-you-throw: A municipal waste program by which residents pay based on the amount of refuse that they discard. By paying for disposal of refuse, residents are encouraged to recycle, which is free.

polychlorinated biphenyls (PCBs): A class of organic compounds that include one or more chlorine atoms and are considered very toxic. They were used to make coatings for wires and were used as additives in pesticides, adhesives and other compounds.

RFP: Request for Proposal. A request that can be issued by governments or private businesses that asks other companies to provide plans for fulfilling the requirements described in the document.

RFPs: can be issued to collect proposals for the construction of buildings, construction of equipment, installation of software systems, management of service operations, or other such things.

RFQ: Request for Qualifications. A request that can be issued by governments or private businesses that asks other companies to provide a description of their expertise that could be used to perform a complex task, build something, or otherwise fulfill the requirements of an RFP.

RMDZ: Recycling Market Development Zone. An expanded recycling center built around a recycling transfer station and where private businesses who use those materials are also located. The businesses might make products from recycled plastic, glass, metal or other such materials. There might also be an area where these products are sold. The Development Zones would attract businesses because the zones would offer some type of tax discount or other such offering. Another possibility would be that the site would house a renewable energy generating station (such as solar) that would allow RMDZ businesses to market their products as being made from recycled materials and 100% renewable energy.

SCF: Standard Cubic Feet. A measure of volume equal to the space occupied by a cube that has edges of 1 foot each.

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Glossary

SFC: Santa Fe College (formerly Santa Fe Community College). A college in north-west Gainesville that serves Alachua County and the surrounding area.

short ton: A mass of 2,000 pounds, also called a simply a ton. Similar to but not exactly the same as a metric tonne, which is 1,000 kilograms or 2,200 pounds. This document will use the phrase short ton to mean 2,000 pounds to avoid confusion with a metric ton.
UF University of Florida.

volatile solids: Solid components of sewage sludge that would be lost on ignition of the dry material at 550°C. Volatile solids would include lipids (fats), proteins, carbohydrates, and some household cleaners and chemicals. Volatile solids are also a rough indicator of the amount of methane that can be produced during anaerobic digestion.

wet-stream: The organic components of the municipal solid waste stream that include food waste, yard waste, animal manures, and other substances that contain water.

Whistling Pines Ranch: A farm near Archer where GRU spreads Class B biosolids (processed sewage sludge). The biosolids serve as a fertilizer for the farm, which grows food for animals.

WTE: Waste To Energy. The conversion of waste materials to energy. These operations can be conducted at waste-to-energy facility that convert either biomass or garbage into energy. There is risk that these facilities will burn items that cause air pollution.

zero waste: “Zero Waste is a goal that is both pragmatic and visionary, to guide people to emulate sustainable natural cycles, where all discarded materials are resources for others to use. Zero Waste means designing and managing products and processes to reduce the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water or air that may be a threat to planetary, human, animal or plant health” (definition from http://www.zwia.org/standards.html).

Last Thoughts:

Reduce Consumption

Enhance Energy Efficiency

Use Renewable Resources in a Sustainable Manner