

***Town of Davie, Florida  
Sustainability Action Plan  
(2011-2016)***



***Robbins Park – Davie, Florida***

## **ACKNOWLEDGMENTS**

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# REVISION SCHEDULE



The first Version of the 2011 – 2016 Town of Davie Sustainability Action Plan was originally adopted by Town Council on June 1, 2011. The schedule below outlines plan amendment dates to take place on an annual basis as well as the dates in which specific action items were approved by Town Council.

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Annual SAP Revision Dates

Action Plan Approval Dates

# MISSION, VISION, CORE VALUES



## MISSION STATEMENT

This Sustainability Action Plan (SAP) outlines the way the Town of Davie plans to achieve future growth that is Sustainable while carefully maintaining the rural atmosphere that makes Davie unique. This will be done by building capacity within the Town, by conserving energy and natural resources within municipal operations, and by providing Sustainability related education outreach and support to the community.

## VISION STATEMENT

Five years from now the Town of Davie will be recognized in South Florida as a leader in Sustainability that has improved operational efficiency and realized cost savings in municipal operations, increased urban tree canopy within the Town, and incentivized the community to integrate principles of Sustainability into their daily lives and business practices through education, outreach, and policy development.

## CORE VALUES

As the Town works to fulfill its mission and vision the following core values will guide the Mayor, Town Council and Staff:

### Adhere to the Triple Bottom Line

Decisions will be made to lessen social, economic, and environmental impact

### Learn by Doing

Sustainability is best achieved using a learn by doing approach

### Adaptive Management

Activities will be monitored to allow for continued adaptation of Town policies and procedures

### Transparency

Sustainability results will be communicated to ensure transparency

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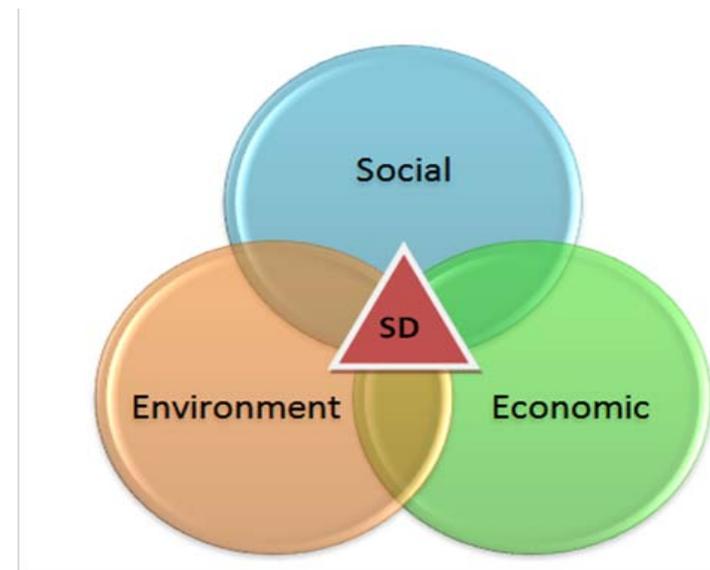


## THE TOWN OF DAVIE, FLORIDA

The Town of Davie, Florida (the Town) encompasses 35 square miles located within central Broward County in South Florida and is home to over 90,000 residents. The Town is within a short commute to the Ft. Lauderdale metropolitan area, two international airports, Port Everglades, and major thoroughfares such as I-595, and I-75. The Town is distinguished from other municipalities because there are few places in South Florida where residents can enjoy easy access to nearby metropolitan amenities while living in a community that maintains a rural atmosphere and western theme district. The Town also has access to over 165 miles of trails and numerous parks giving residents the opportunity to live an equestrian lifestyle.

As the Town’s population continues to grow and South Florida becomes increasingly urbanized, Town leaders find themselves at the forefront of the Sustainable Development movement. Like many local governments throughout the U.S. the Town must find the most effective way to encourage growth, stimulate business, and provide quality services to residents, while at the same time, conserving energy, reducing greenhouse gas emissions, and preserving the natural heritage that give the Town its unique character. The concept of Sustainable Development became prominent in 1987 after the

World Commission on Environment and Development published “Our Common Future.” The report addressed problems caused by development and resource depletion in industrialized countries. Sustainable Development is generally defined as a model for development that strives to “meet the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987)”<sup>1</sup>. Central to the Sustainable Development model is the concept of the “Triple Bottom Line.” The Triple Bottom Line is



a framework for Sustainable Development that requires consideration of economic values along with social and environmental values. In this context, Sustainable

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Development can be achieved when economic factors maximize long term profits, social factors ensure long term social development, and environmental factors support long term capacity of the natural system.

## **MAYOR AND TOWN COUNCIL LEADERSHIP**

The Town's commitment to Sustainable Development begins with the experience, leadership and direction given by the Mayor and Town Council. The Mayor and members of Town Council have been involved in a variety of initiatives at the federal, state, and county levels that demonstrate their expertise working on Sustainability related issues. Some of these initiatives include the Broward County Climate Change and Water Resources Task Force, the Florida League of Cities, and the Federal Appropriations committee for Environmental Issues, funding relating to the Comprehensive Everglades Restoration Plan (CERP). The Mayor and Town Council adopted Resolution 2007-182 which formalized a clear commitment to Sustainability and began the process to define what Sustainability means to the Town of Davie. Please refer to the Davie Green website for a copy of this resolution.<sup>2</sup> The resolution also authorized the Town Administrator to direct Staff to develop polices, guidelines and strategic actions that address energy efficiency, extending building life cycles, community programs, and other important components of

Sustainability. As a result of this resolution, and the overall leadership from the Mayor and Town Council, Davie has implemented a number of successful initiatives. Some of these initiatives include the formation of the Green Energy and Environmental Committee (GEEC), pursuit of the Florida Green Building Coalition (FGBC)<sup>3</sup> Green Government Certification, and participation in organizations such as the U.S. Green Building Council (USGBC)<sup>4</sup>, the Florida and Broward League of Cities, and the International Council for Local Environmental Initiatives (ICLEI) Local Governments for Sustainability<sup>5</sup>.

### ***THE GREEN ENERGY AND ENVIRONMENTAL COMMITTEE (GEEC)***

In 2009, Town Council instituted the Green Energy and Environmental Committee (GEEC). The GEEC is composed of a dynamic group of individuals that have demonstrated both personal and professional proficiency in a variety of disciplines germane to Sustainability ranging from green building, natural resource conservation, land preservation, wetland restoration science, land use planning and zoning, architecture, and hydrogen fuel cell technology. These individuals give the committee local representation as a result of their involvement in local businesses, other nearby governments such as Broward County and the City of North Miami, and local educational institutions. The purpose of the GEEC is to advise the Town Council about environmental protection,

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resource conservation, and energy efficiency matters, as well as to promote environmental programs and facilitate community education. Since its inception, the GEEC has accomplished a great deal. The GEEC has passed resolutions that have helped clarify the Town's position on important issues affecting our nation and state. Resolution 2010-048 opposes the development of nuclear power plants in the U.S. and expansion of oil and gas drilling. Resolution 2010-070 opposes offshore oil and natural gas drilling in Florida waters. Other resolutions passed have helped to conserve energy and reduce greenhouse gas emissions in municipal operations. For example, Resolution 2010-067, directed the Town to join over 4,000 other cities in observance of "Earth Hour" a movement designed to turn-off all non-essential lighting. Resolution 2011-037 outlined a commitment to develop idle reduction policies to conserve fuel and reduce greenhouse gas emissions that is used in this plan. The GEEC also provided leadership and direction in Resolution 2011-083 which assigned work to Town Staff to create an Urban Farming Initiative Program. The GEEC is also working to evaluate pilot projects that feature hydrogen, solar and bio-gas technologies. Please refer to the Davie Green website for copies of these resolutions.<sup>6</sup> The GEEC is also in the process of developing a "Green Building Checklist" for new construction and major renovation projects that draws upon a diverse background of standards and rating system such as the U.S. Green Building Council's LEED rating

system, the Florida Green Building Coalition, and others. The checklist has been introduced at federal, state, and county levels to obtain feedback on ways it can be used as a basis to incentivize the construction community to build greener. Finally, the GEEC has also been instrumental in the development of this plan as it worked closely with the Steering Committee and consultants during the strategic planning process to provide critical feedback and help refine SAP objectives.

## ***FLORIDA GREEN BUILDING COALITION***

The Town has been a member of the Florida Green Building Coalition (FGBC) since 2007. As part of its involvement with the FGBC, the Mayor and Town Council directed staff to initiate the Town's current campaign to secure Silver level certification from the FGBC under the Green Local Government Standard. The standard was developed in collaboration with the Florida Energy Office, the South East Regional Office of the Department of Energy (DOE), and the Florida Solar Energy Center. It is intended to help cities and counties achieve outstanding environmental stewardship. The Town has made considerable progress towards achieving this certification and has completed more than 55% of its required actions.

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## ***U.S. GREEN BUILDING COUNCIL, ICLEI LOCAL GOVERNMENTS FOR SUSTAINABILITY, AND THE FLORIDA LEAGUE OF CITIES***

The Town of Davie has been a member of the U.S. Green Building Council since 2007 and a member of the International Council for Local Environmental Initiatives (ICLEI) Local Governments for Sustainability since 2010. The Town has also been a member of the Florida League of Cities for more than fifteen years. The Town’s involvement in these organizations is important to advancing sustainability because each organization provides access to important information that will help the Town stay current on future grant opportunities and develop the framework for future sustainability programs.

### ***ENERGY EFFICIENCY RETROFITS***

The Town received a grant in the amount of \$841,200 from the DOE as part of the Energy Efficiency and Conservation Block Grant Program (EECBG). Portions of the grant will be used for energy efficiency retrofits such as lighting and fixtures at Shenandoah and Pine Island parks. These retrofits will play a critical role in improving energy efficiency in Town operations which will result in greenhouse gas emissions reductions and yield cost savings to tax payers.

### ***FORESTRY***

The Town has also been involved in forestry initiatives for some time. In 2009, the Town was awarded the “Outstanding

Forestry Program in Florida,” from the Florida Urban Forestry Council. The Town is also a member of the Arbor Day Foundation Tree City USA program which provides direction, technical assistance, and recognition for urban and community forestry programs. The Town maintains the Tree Legacy Program and Town Council has also set an ambitious goal to increase forest canopy within the community 30% by 2030. Finally, the Town has also participated in a tree study with the University of Florida designed to quantify the environmental benefits of the Town’s urban forest such as carbon sequestration and improved water quality.

### ***EARLY COMMITMENTS AND ACTIONS***

In addition to some of the higher profile initiatives mentioned above, Town staff has also been conducting other initiatives for some time. For example, the Town has provided recycling opportunities for residents and businesses in public parks where they are able to recycle larger items that curbside receptacles cannot handle.

The Town Fleet Department has also been recognized as being among the “100 Best Fleets in North America” on various occasions. Town staff is in the process of implementing Automatic Meter Reading (AMR) technology to more effectively read water meters resulting in fewer vehicle miles traveled, less gasoline consumed, and reduced carbon

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emissions. The Town has also been actively involved in promoting a community garden program at Battens Farm. This program will help residents establish community gardens. Finally, the Town has developed the “Davie Green” section of its website. Please refer to this site for a complete description of the initiatives that the Town has completed over the years. These initiatives are just a few that have resulted in energy savings, creation of local jobs, GHG reductions, and environmental preservation.

***Chapter 1 - Introduction***

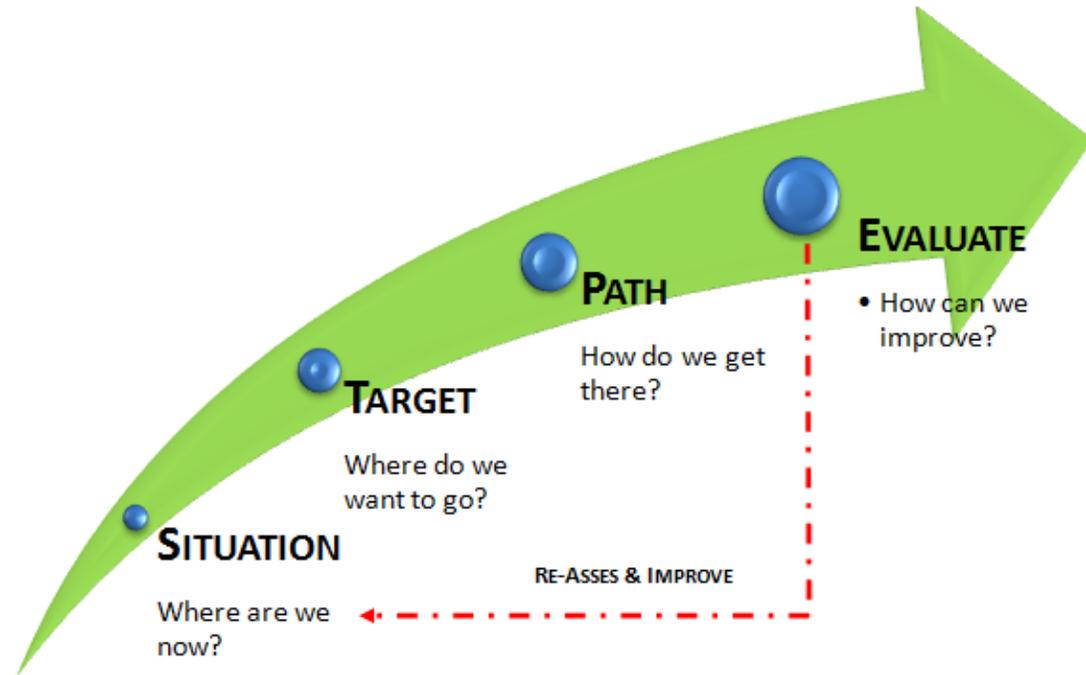




## THE SUSTAINABILITY ACTION PLANNING PROCESS

This 2011 – 2016 Sustainability Action Plan (SAP) represents the Town’s first effort to consolidate existing and future Sustainability initiatives into one unified framework that draws upon the principles of the Triple Bottom Line as a guiding theme. To create the SAP, the Steering Committee comprised of Town staff and consultants embarked on a strategic planning process spanning a four month period. During this time, the SAP Steering Committee carried out baseline analyses, conducted strategic planning workshops, and attended a peer exchange symposium hosted by MiaGreen to learn from other local governments developing their respective energy and sustainability

plans. The Steering Committee also received valuable guidance from the GEEC. The process was designed to uncover answers to three fundamental questions as they related to Sustainable Development: 1) Where are we now? 2) Where do we want to go? 3) How do we get there? and 4) How can we improve?



# CHAPTER 1 INTRODUCTION



## WHERE ARE WE NOW?

The Steering Committee conducted surveys of existing sustainability related initiatives implemented prior to the strategic planning process, conducted a greenhouse gas emissions inventory, and distributed an employee commuter survey. This information helped the Town define where it currently stands in terms of sustainability and to establish a baseline for future comparison.

### *GREENHOUSE GAS EMISSIONS INVENTORY*

A greenhouse gas emissions inventory (GHGI) is the total sum of all greenhouse gas emissions from an organization, company or facility. The unit of measurement for a GHGI is metric tons carbon dioxide equivalent (MTCO<sub>2e</sub>), which is the universal unit to represent greenhouse gas emissions. It includes all six greenhouse gases defined by the Kyoto Protocol normalized to carbon dioxide which is the most abundant greenhouse gas. The Kyoto Protocol was the first international agreement introduced in 1997 by the United Nations and it predominantly aims to lessen the effect of climate change by reducing GHG emissions. Greenhouse gas emissions inventories (GHGI) were conducted for municipal operations and the surrounding community in accordance with the Local Government Operations Protocol Version 3. The process entailed collection of utility data and other

important information to highlight energy and greenhouse gas emissions across municipal departments and different sectors in the community. Results of the inventory are briefly summarized on the following page. Please refer to **Appendix A** for the detailed report.

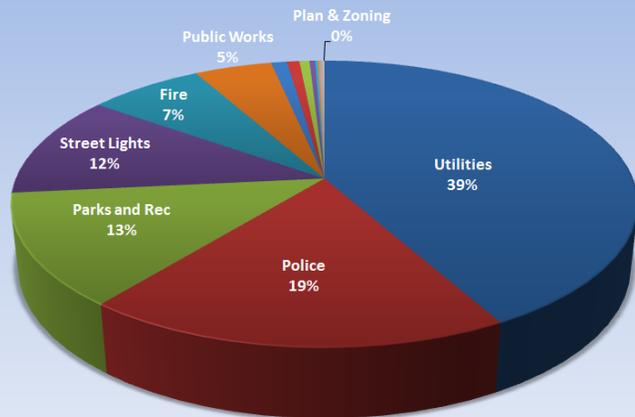
### *Municipal GHGI Results*

The Town established calendar year 2009 as its baseline year for energy use and greenhouse gas emissions from municipal operations. This date was selected because utility and emissions data were most readily available. In 2009, greenhouse gas (GHG) emissions from Town operations were 16,707 MTCO<sub>2e</sub>. The figure illustrates how GHG emissions are distributed amongst Town Departments. The largest emitter was the Utilities Department at 39% of total emissions followed by Police (19%), Parks and Recreation (13%), Street Lights (12%), and the Fire Department (7%).

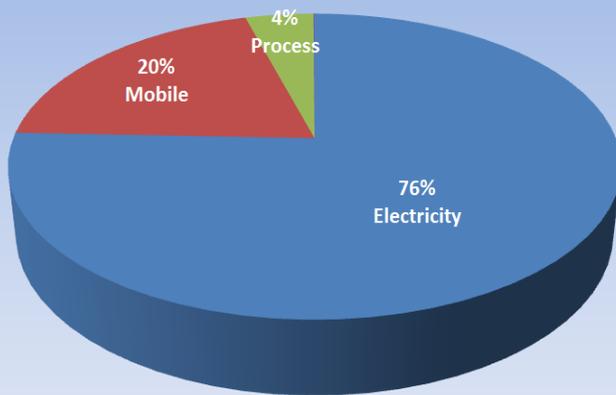
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**TOWN OF DAVIE - 2009 GHG EMISSIONS BY DEPARTMENT**  
(16,707 MT CO<sub>2</sub>e)



**TOWN OF DAVIE - 2009 GHG EMISSIONS BY SCOPE**  
(16,707 MT CO<sub>2</sub>e)



The largest GHG scope source of emissions within Town operations was electricity (76%), followed by fuel or mobile combustion (20%), and process emissions from wastewater treatment (4%). Total electricity use within municipal operations amounted to 20,282,425 kilowatt hours (kWh) and total fuel consumption amounted to 371,873 gallons of unleaded and diesel. Of this total, the Town’s largest users of electricity and fuel are summarized below. Please refer to page 11 for an executive level energy and emissions dashboard created for the Town that details energy use and emissions across all departments.

### High Use Electricity Departments

Department	Kilowatt Hours (kWh)
Utilities	9,830,264
Parks and Recreation	3,230,571
Street Lighting	3,230,571
Police	1,730,520
Fire	970,702

### High Use Electricity Departments

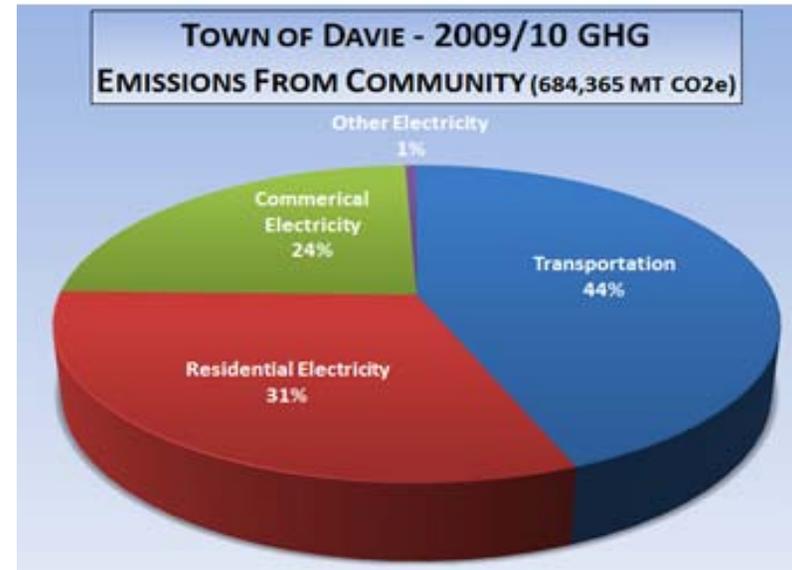
Department	Gallons Unleaded	Gallons Diesel
Police	233,425	254
Public Works	28,967	7,609
Fire	16,912	40,354

# CHAPTER 1 INTRODUCTION



## Community GHGI Results

The Town also established calendar year 2009 as its baseline year for energy use and greenhouse gas emissions from the Community. This date was also selected because utility and emissions data were most readily available. Community-wide GHG emissions were estimated at approximately 1.2 million MTCO<sub>2</sub>e in 2009. The emissions largely resulted from emissions from electricity demand (56%) and the transportation sector (44%). Electricity use in the community amounted to approximately 1 billion kWh. The pie chart breaks down emissions as a percentage of the whole.



Community 2009 GHG Emissions

Account Type	kWh	MT CO <sub>2</sub> e
<b>Residential - Total</b>	<b>615,754,301</b>	<b>383,405</b>
1 - Residential Sales	615,701,779	383,373
A - Residential Sales - Public Authority	52,522	33
<b>Commercial - Total</b>	<b>471,398,595</b>	<b>293,521</b>
2 - Commercial Sales	398,553,555	248,163
B - Commercial Sales - Public Authority	72,845,040	45,358
<b>Industrial - Total</b>	<b>8,241,578</b>	<b>5,132</b>
3 - Industrial Sales	656,381	409
C - Industrial Sales - Public Authority	7,585,197	4,723
<b>4 - Public Street &amp; Highway Lighting</b>	<b>3,524,779</b>	<b>2,195</b>
<b>5 - Other Sales to Public Authority</b>	<b>179,303</b>	<b>112</b>
<b>Total Community</b>	<b>1,099,098,556</b>	<b>684,365</b>

## 2009 Energy Use Dashboard

An energy dashboard was created during the strategic planning process for Town of Davie operations only for baseline year 2009. The dashboard (located on the following page) provides a very detailed executive level summary of exactly where energy is being used by various departments. All units used to measure energy are provided in the dashboard. The dashboard also normalizes all energy measurement units into one standardized unit called British Thermal Units (BTUs).

# CHAPTER 1 INTRODUCTION



## 2009 Town of Davie Energy Use Dashboard

Town of Davie, Florida - 2009 Energy Dashboard																				
Dept	Scope 2 Emissions (Electricity)					Scope 1 Emissions (Propane)				Scope 1 Emissions (Fuel)								Totals		
	Accts.	Cost	kWh	MMBTUs	MT CO2e	Cost	Gallons Propane	MMBTUs	MT CO2e	Unleaded Cost	Gallons Unlead	MMBTUs	MT CO2e	Diesel Cost	Gallons Diesel	MMBTUs	MT CO2e	Cost	MMBTUs	MT CO2e
Utilities	49	\$923,406	9,830,264	33,541	6,121	\$0	0	0	0	\$18,007	11,285	1,402	99	\$16,794	7,609	1,055	78	\$958,206	35,998	6,298
Police	1	\$164,171	1,730,520	5,905	1,078	\$0	0	0	0	\$374,893	233,425	29,006	2,051	\$560	254	35	3	\$539,625	34,945	3,131
Parks and Rec	49	\$476,518	3,230,571	11,023	2,012	\$0	0	0	0	\$19,071	11,829	1,470	104	\$0	0	0	0	\$495,589	12,493	2,115
Street Lights	2	\$605,965	3,099,147	10,574	1,930	\$0	0	0	0	\$0	0	0	0	\$0	0	0	0	\$605,965	10,574	1,930
Fire	5	\$91,845	970,702	3,312	604	\$3,784	2,042	186	12	\$27,294	16,912	2,101	149	\$89,010	40,354	5,597	412	\$211,934	11,196	1,177
Public Works	45	\$87,883	762,088	2,600	475	\$0	0	0	0	\$45,806	28,967	3,600	255	\$13,817	6,247	866	64	\$147,506	7,066	793
Garage	2	\$26,740	249,358	851	155	\$0	0	0	0	\$1,079	627	78	6	\$202	91	13	1	\$28,020	941	162
CRA	8	\$31,107	198,742	678	124	\$0	0	0	0	\$636	375	47	3	\$0	0	0	0	\$31,742	725	127
Rodeo	1	\$23,098	165,508	565	103	\$0	0	0	0	\$0	0	0	0	\$0	0	0	0	\$23,098	565	103
Building Div.		\$0	0	0	0	\$0	0	0	0	\$10,521	6,640	825	58	\$0	0	0	0	\$10,521	825	58
Housing	5	\$5,722	45,525	155	28	\$0	0	0	0	\$318	187	23	2	\$0	0	0	0	\$6,039	179	30
Unidentified		\$0	0	0	0	\$0	0	0	0	\$832	2,247	279	20	\$206	93	13	1	\$1,038	292	21
Engineering		\$0	0	0	0	\$0	0	0	0	\$3,557	2,233	278	20	\$0	0	0	0	\$3,557	278	20
Special Projects		\$0	0	0	0	\$0	0	0	0	\$1,407	871	108	8	\$483	221	31	2	\$1,890	139	10
Town Clerk		\$0	0	0	0	\$0	0	0	0	\$1,658	1,044	130	9	\$0	0	0	0	\$1,658	130	9
Plan & Zoning		\$0	0	0	0	\$0	0	0	0	\$844	548	68	5	\$0	0	0	0	\$844	68	5
<b>Totals</b>	<b>167</b>	<b>\$1,830,490</b>	<b>20,282,425</b>	<b>69,203</b>	<b>12,629</b>	<b>\$3,784</b>	<b>2,042</b>	<b>186</b>	<b>12</b>	<b>\$505,606</b>	<b>317,004</b>	<b>39,391</b>	<b>2,786</b>	<b>\$121,072</b>	<b>54,869</b>	<b>7,610</b>	<b>560</b>	<b>\$3,067,234</b>	<b>116,414</b>	<b>15,989</b>

Figure 1: Energy Dashboard

# CHAPTER 1 INTRODUCTION



## **COMMUTER SURVEY**

A commuter survey was conducted to learn about the commuting habits of Town employees. The survey was modeled after a similar survey done by the City of Portland, Oregon. Surveys were distributed via email and hard copy. Approximately 131 responses were received. Based on the survey, the total “round trip” commuting distance of respondents was 2,122 miles per week. The typical method of transportation to work was driving alone (91%) followed by Town vehicle use (8%). The remaining 1% of employees used car pooling, the bus, or walked to get to work. When polled as to why employees chose to drive alone, the most popular responses indicated that employees need to run personal errands before and after work and that they work late or irregular hours. When polled on the types of incentives that would encourage employees to use alternative methods of transportation, some of the most popular responses included:

- the option to telecommute or work from home;
- ability to set aside pre-tax dollars for commute costs; and
- access to onsite childcare and other services.

Please refer to **Appendix B** for a copy of the survey. Also refer to Objective 6.4, “Increase the Number of Employees Who Utilize Alternative Transportation,” for additional information regarding the survey.



## WHERE DO WE WANT TO GO?

Using strategic planning workshops and work completed under the FGBC Green Local Government Program, the Town set out to define where it wants to go in terms of sustainability. This was done by using baseline findings to identify three areas where the Town wishes to focus its sustainability efforts. These areas include: 1) Institutional Capacity, 2) Municipal Operations, and 3) Community Planning and Development as illustrated in the diagram.



After defining these focus areas the Steering Committee developed a series of targets that define where the Town plans to go to become more Sustainable. Institutional Capacity was targeted as a focus area because the Sustainably Action Plan (SAP) will bring with it additional workload for Town staff. Therefore developing institutional capacity will help the Town build leadership around the plan, identify working groups to implement action items, help finance strategic actions, and form important partnerships within the community. Municipal Operations was the next target. This is because it is an area where the Town can make important progress in becoming more sustainable. Some objectives in this area were identified by completing “large user analyses” for electricity. These analyses helped the Steering Committee focus on developing strategic actions in aspects of Town operations that would have the most significant impact. Finally, Community Planning and Development was selected as the final focus area for the SAP. Sustainable Development must extend beyond the Town and impact the lives of residents and businesses in the community. The Planning and Community Development component of the SAP will focus on integrating Sustainable Development into existing planning documents, education and outreach, and the creation of a larger community program that will incentivize sustainability within the business and residential communities.

# CHAPTER 1 INTRODUCTION



## HOW DO WE GET THERE?

During this step in the strategic planning process, series of action items were developed that define the way objectives in each target area will be implemented. In total, the SAP consists of 31 specific actions across 12 target areas. All actions were characterized as having short (1-2 Years), mid (2-3 Years), or long (3-5 Years) implementation horizons. Using implementation horizons, the Town developed a comprehensive matrix that prioritizes all 31 actions. The matrix provides an estimated range for how much each action will cost and indicates if the action is likely to be eligible for future grants. The table below represents an excerpt from the matrix.

Priority	Target	Action Item Summary		Planning Horizon	Benefit	Low End Cost	High End Cost	Funding Source	
								Town	Grant
1	Leadership	1.1.1	Formalize mission and vision statement for the SAP	Short	Indirect	Staff Time	Staff Time	x	
2	Funding	2.1.1	Develop and execute grant action plan	Short	Direct	\$2,500	\$6,000	x	
3	Funding	2.1.2	Dedicate Town budget line item for sustainability	Short	Direct	Staff Time	Staff Time	x	
4	Partnerships	3.2.1	Secure FGBC certification by 2011	Short	Direct	Staff Time	Staff Time	x	
5	Leadership	1.1.2	Implement sustainability management system	Short	Indirect	\$5,000	\$1,000	x	
6	Existing Buildings & Infrastructure	6.1.3	Conduct energy audits of high energy use buildings	Short	Indirect	\$25,000	\$35,000	x	
7	Data Management	5.1.1	Sustainability data tracking program	Short	Indirect	\$3,000	\$9,000	x	
8	Existing Buildings & Infrastructure	6.1.1	Energy star portfolio manager program	Short	Indirect	\$2,000	\$5,000	x	
9	Education & Outreach	11.1.1	Update Davie Green website	Short	Direct	\$800	\$2,500		x
10	Existing Buildings & Infrastructure	6.1.5	Building performance energy efficiency challenge	Short	Direct	\$800	\$1,000	x	
11	Vegetative Cover & Open Space	12.1.2	Expand tree planing programs	Short	Direct	\$65,000	\$75,000		x
12	Education & Outreach	11.1.2	Engage in community planning process	Short	Indirect	\$8,000	\$10,000		x
13	Vegetative Cover & Open Space	12.1.1	Expand I-Tree study	Short	Indirect	\$15,000	\$20,000		x
<b>Total Rough Estimate Cost to Implement Short Term Actions</b>							<b>\$164,500</b>		
<b>Total Rough Estimate Cost to Implement Short Term Actions (Potential Town Contribution)</b>								<b>\$57,000</b>	
<b>Total Rough Estimate Cost to Implement Short Term Actions ( Potential Grant Contribution)</b>									<b>\$107,500</b>

It outlines the actions the Town plans to implement over the short term. Actions classified as having indirect benefits include conducting studies such as energy audits to identify

future capital projects. Conducting a study does not directly result in energy savings; however it is a critical first step to determine how the Town can most effectively allocate future

# CHAPTER 1 INTRODUCTION



resources. Actions classified as having direct benefits include projects that when implemented will directly save energy or help to secure funding. See **Appendix C** for a copy of the completed matrix that also highlights mid and long term actions. Following the matrix, there is a list of actions that were discussed during the strategic planning process that were not formally included in this plan. The Town will take another look at these actions during the re-evaluation phase of the project to determine if they should be incorporated in the future.

In summary, this represents the Town's first iteration of a Sustainability Action Plan (SAP). The first two years of the plan will focus on building important programs and administrative infrastructure so that the Town can implement capital projects that have direct impacts during years 3-5 of the plan. Based on rough conservative cost estimates conducted by the Steering Committee, this plan will likely require approximately an initial "start-up" investment \$164,500. This investment would kick-start the Town's Sustainability program by putting planning into action. It is difficult to forecast where funding will come from; grants, Town funds, or other sources. However, based on these preliminary rough estimates, five short term actions costing roughly \$107,500 could potentially be paid for using grant funding. If the Town is successful in securing this minimum

amount of grant funding, the remaining difference (\$57,000) could potentially come from Town funds or other sources. Investment into this SAP will bring the Town a variety of benefits. Some of these benefits will be easily quantifiable while others won't. The following lists some of the benefits short term action items will bring during the first two years of the plan.

- Leadership and formalized commitments
- Recognition
- Capacity for measuring performance
- Energy audits outlining energy conservation projects
- A Sustainability web portal
- Energy savings, GHG emission reductions, cost savings
- A community Sustainability plan
- Opportunities to increase tree canopy cover
- A competitive edge for future Sustainability related grants
- Momentum and forward motion

## HOW DO WE IMPROVE?

Finally, the last step in the strategic planning process will be to evaluate the overall progress of the plan. This will be done by convening annual meetings with the Town Steering Committee, the GEEC, and other stakeholders responsible for implementing this plan. Prior to annual meetings, the Energy

# CHAPTER 1 INTRODUCTION



Use and Greenhouse Gas Emission Inventory and other databases that track performance metrics will be recalculated. Using this information, stakeholders will evaluate the Town's performance in completing action items and determine how effective they were at meeting objectives stated in the plan. This process will enable managers to understand what worked and what needs to be improved. At the conclusion of this process, the SAP will be revised and amended as needed to ensure that adaptive management is taking place and that the Town continues to learn by doing.

## **TOWN OF DAVIE SUSTAINABILITY ACTION PLAN (SAP) VERSION 1 (2011 – 2016)**

The SAP builds upon past work completed by the Town. Town Resolution 2007 – 182 forms the foundation of the SAP by outlining the general framework for Sustainability. Additional structure is provided as a result of the Town's current pursuit of Silver Certification under the FGBC Green Local Government Program. Strategic planning workshops and baseline analysis helped to precisely define the direction for the Town's Sustainability efforts. Finally, all SAP actions are based upon widely accepted standards and resources from well known organizations such as the U.S. Green Building Council (USGBC), the United States Environmental Protection Agency (EPA), and the FGBC.



The SAP is more than just a document. It outlines the foundation for a system that draws from baseline data, contains policies and procedures, and features innovative programs that will help the Town become more sustainable over time. The following discusses some key features of the SAP.

### ***GREEN CAPITAL PROJECTS MATRIX***

The Steering Committee expressed that it would like to have the ability to maintain a database of capital projects that could be implemented if funding was identified. The Steering Committee further expressed that the database should be electronic and function in similar fashion to the Town's Local Road's Master Plan (LRMP). Using the LRMP as a model, the Steering Committee will develop a Green Capital Projects

# CHAPTER 1 INTRODUCTION



Matrix. The Green Capital Projects Matrix will be a compilation of capital projects the Town plans to implement to become more energy and water efficient. When grant opportunities become available, the Town staff will have a quick method of matching grant criteria with applicable projects that have already been planned. The Green Capital Improvements Matrix will help the Town avoid the need to develop last minute projects to suit funding opportunities. Instead, the Town will be ready with a list of projects that tie into a larger plan increasing grant application efficiency and competitive edge, as many stimulus grants are looking for “shovel ready” projects. Please refer to Action 6.1.4 and 6.2.4 for a more complete description of this future action and its benefits.

## ***POLICIES FOR ANNUAL GHGI AND SAP MAINTENANCE AND UPDATING***

The SAP has many objectives and actions that focus on reducing energy consumption and greenhouse gas emissions. As actions such as fleet improvements are implemented it is important that the Town can measure the success of a given project or program at reducing energy consumption and emissions for a variety of reasons. The SAP contains procedures that outline the way the existing database for the GHGI and the SAP should be maintained and updated to incorporate new information and to document the work completed as part of the program. Maintaining and updating

the GHGI and the SAP will help the Town understand the success of strategic actions and provide information needed to communicate positive results to the Town Council and the surrounding community. It will also ensure that the SAP is a living document that can adapt as technologies change and knowledge improves.

## ***GREEN STAMP ACTION PLANS***

Each of the actions in this plan represent recommendations put forward by the Town Steering Committee detailing the best way to achieve the objectives stated in the 2011-2016 SAP. Due to the large number of actions, not all could be developed in great detail. Some contain enough detail to allow Town Council to understand the costs and benefits associated with their implementation while others do not. To address this issue, all actions in this plan will be considered recommendations yet to be adopted by Town Council. If an action is to be implemented, it must first be presented as a proposal to Council for approval.

# CHAPTER 1 INTRODUCTION



Upon approval, the action will receive implementation status and be added to **Appendix D**. As time progresses, this Appendix will grow and provide a historical archive of the actions that have been approved and completed under this plan. Actions that have been approved for implementation or completed will be indicated with the Davie Green Logo in this and future plan iterations.



## ***CERTIFICATION SYSTEMS AND TECHNICAL RESOURCES FOR GUIDANCE***

During the strategic planning process, the Steering Committee made a deliberate effort to develop a plan that takes advantage of the wealth of information available for sustainability in order not to duplicate work and develop an efficient plan. The U.S. Green Building Council (USGBC) and the Florida Green Building Coalition (FGBC) have developed a rating systems and certification standards to encourage green building and green local governments. Additionally, the Environmental Protection Agency (EPA) has a variety of tools and programs that are designed to help the public become more sustainable. These rating systems, tools, and resources represent the concerted effort by a diverse set of professionals and industry leaders spanning over many years. These targets, objectives, and actions contained in this plan tie in to the wealth of information and refer to standards, tools,

and other previously developed resources to the fullest extent possible.

## ***FGBC Green Local Government Standard***

The Florida Green Building Coalition (FGBC) provides the framework for local governments to become certified as “Green”. The standard outlines a series of requirements that a local government can earn. The Town is committed to receiving a Silver Certification under the program. Therefore, the actions and the objectives in this plan were carefully cross referenced with the requirements of the program for consistency to ensure that efforts are not duplicated.

## ***USGBC LEED Rating Systems***

The U.S. Green Building Council (USGBC)<sup>7</sup> is a non-profit organization based in Washington D.C. The USGBC developed a green building certification system called Leadership in Energy and Environmental Design (LEED). The LEED certification system provides building owners and operators with a “framework for identifying and implementing practical and measurable green building design, construction, operations, and maintenance solutions.”<sup>8</sup> Building owners and operators can achieve different levels of certification by achieving credits outlined in a series of rating systems for projects that deal with new construction, operation and maintenance of existing buildings, design of commercial

# CHAPTER 1 INTRODUCTION



interiors, building core and shell construction, and neighborhood development to name a few. Securing project certification requires careful planning and can result in additional costs. However, there can be many benefits to certification such as increased recognition, cost savings, energy and greenhouse gas emission reductions, and improved building occupant comfort just to name a few.

The Town has not yet committed to securing LEED certification for any of its buildings yet. However, the Town recognizes the wealth of information contained in each rating system and plans to use them as a resource when implementing action items outlined in this plan. There are two LEED rating systems that will be cited in subsequent chapters. The first is the 2009 LEED edition for New Construction and Major Renovations (LEED NC Rating System)<sup>9</sup>. This rating system will be used as a resource when implementing SAP actions that address new construction projects and developing green building policies and programs. The second is the 2009 LEED edition for Existing Buildings Operations and Maintenance (LEED EB Rating System)<sup>10</sup>. This rating system will be used as a resource when implementing SAP actions that address existing buildings in the areas of energy auditing and retrofit projects. For example, under SAP action 6.1.3 the Town will “Conduct Energy Audits of High Energy Use Buildings.” There are different types of energy

audits that can be conducted to varying level of detail. Also, audits should be conducted by professionals with specific credentials. The LEED EB Rating System contains a credit (2.1 Existing Building Commissioning – Investigation & Analysis) that outlines the process for energy auditing and references a standard for energy audits developed by the American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE). The information contained in this credit will provide valuable resources that will help the Town conduct building energy audits.

### ***U.S. Environmental Protection Agency (EPA Programs)***

The EPA contains a wealth of information, free tools, and programs designed to help the public use resources more efficiently. This plan recommends that the Town enroll in the EPA Portfolio Manager Program and the Waste Wise Program. The Portfolio Manager Program is tailored to buildings and provides free tools to benchmark energy performance of existing buildings, guidance, and recognition programs. The Waste Wise Program is a similar program tailored to improving solid waste management.

### **USING THE SUSTAINABILITY ACTION PLAN (SAP)**

As stated previously, the SAP is more than just a document it is intended to function as the framework for a system that will help the Town implement and manage Sustainability over

# CHAPTER 1 INTRODUCTION



time. The system consists of strategies, action plans, studies, policies, and procedures.

## ***CHAPTERS 1-3: STRATEGY DOCUMENTS***

The subsequent chapters contain strategy documents. These documents represent the overall strategy the Town will implement in the areas of Institutional Capacity, Municipal Operations, and Community Planning and Development. These chapters are intended to be succinct so that readers can grasp the overarching direction of the plan. They are supplemented with the following information should readers wish to delve into topics in greater detail.

## ***References to USGBC, FGBC, and the EPA***

Some actions in this plan have synergies with the USGBC 2009 LEED editions for New Construction and Major Renovations (LEED NC Rating System) and Existing Buildings: Operations and Maintenance (LEED EB Rating System). When synergies occur with these rating systems, references to specific credits are provided. These references are provided so that readers can uncover additional detail that may be helpful to implementing actions. Other actions in this plan have synergies with the FGBC Green Government Standard. When synergies with the FGBC occur, a reference is provided to specific credits that will earn the Town points towards certification to become a Green Local Government.

## ***Endnotes***

This plan cites a wealth of information regarding Sustainability that will be drawn upon frequently. Endnotes have been provided throughout this plan complete with citations for books, printed media, and websites.



## ***Chapter 2 – Institutional Capacity***



# CHAPTER 2- INSTITUTIONAL CAPACITY



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## STRATEGY INTENT

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**Institutional Capacity** refers to the ability of an organization to produce results required to meet targets and objectives. The Town of Davie identified seven areas where it wishes to improve institutional capacity. These areas include: strengthening existing leadership, financing, strategic partnerships, training, data management, recognition, and communication. Improvement in these areas will help the Town manage the additional workload the SAP will generate and ensure that the plan does more than just “sit on the shelf.”

### **TARGET 1: LEADERSHIP**

- Objective 1.1: Formalize commitment and develop implementation system
- Action 1.1.1: Formalize mission and vision statement for the SAP
- Action 1.1.2: Implement a sustainability management system

### **TARGET 2: FUNDING**

- Objective 2.1: Secure at least \$500,000 in financing to implement SAP actions
- Action 2.1.1: Execute grant action plan
- Action 2.1.2: Dedicate Town budget line item for sustainability

### **TARGET 3: STRATEGIC PARTNERSHIPS & INVOLVEMENT**

- Objective 3.1: Identify and engage strategic partners that advance the SAP
- Action 3.1.1: Implement strategic partnership and engagement plan
  
- Objective 3.2: Continue involvement in Sustainability related initiatives
- Action 3.2.1: Secure FGBC certification by 2011
- Action 3.2.2: Secure additional certifications and recognition

### **TARGET 4: TRAINING**

- Objective 4.1: Increase staff technical competency in sustainability
- Action 4.1.1: Develop a sustainability education and training program

### **TARGET 5: DATA MANAGEMENT & TRACKING**

- Objective 5.1: Improve the Town’s ability to manage data and track performance
- Action 5.1.1: Maintain Sustainability Data Tracking Program



## TARGET 1: LEADERSHIP

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### ***OBJECTIVE 1.1: FORMALIZE COMMITMENT, IDENTIFY MANAGERS, AND DEVELOP IMPLEMENTATION SYSTEM***

Prior to the development of the Sustainability Action Plan (SAP), Davie had been implementing sustainability related initiatives across various departments for some time as outlined in Chapter 1 and detailed in **Appendix A**. During the initial stages of the strategic planning process, the Steering Committee recognized that all sustainability initiatives should ideally fall under one unified framework. The purpose of this objective is to provide support for the SAP by formalizing a commitment via Town Council resolution, identifying key Town staff to help manage and implement SAP actions, and to create a system that can be used as a tool to implement SAP actions. Accomplishing this objective will create buy in for the plan across the Town, help build capacity to carry out and monitor action items, and facilitate the flow of information and assignments across the departments using one consistent platform.

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# CHAPTER 2- INSTITUTIONAL CAPACITY



## *(Short Term)*

### ***Action 1.1.1: Formalize Mission and Vision Statement for SAP***

The Town will hold a planning workshop with key staff to develop a mission and vision statement for the SAP. The Town's vision statement will be a statement about the future that defines the SAP's role in it. It will also outline how the SAP will meet any anticipated challenges. The Town's mission statement should be a practical statement that defines why the SAP and its management structure exist and what the SAP and its management structure does. Once both statements are finalized they will be adopted by Town Council resolution and included in the Town's Comprehensive Plan. (See FGBC; Credit A-1, Action A-B, 5 Points Max).

## *(Short Term)*

### ***Action 1.1.2: Implement a Sustainability Management System***

An Environmental Management System (EMS) is "a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency." Most EMSs consist of a basic framework commonly referred to as Plan, Do, Check, Act (PDCA) that facilitates a cycle of planning, implementation, and review to meet targets and objectives. The Town will implement EMS

for Sustainability that uses the PDCA process.<sup>11</sup> The EMS will have one person designated to oversee the system. The Town may choose to develop and certify the EMS in accordance with International Standards Organization (ISO) 14001 family of standards for Environmental Management Systems.<sup>12</sup> However, doing so will incur additional expenses associated with third party verification. (See FGBC; Credit A-5, Actions A-B, 8 Points Max)



## TARGET 2: FUNDING

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### ***OBJECTIVE 2.1: SECURE AT LEAST \$500,000 IN FINANCING TO IMPLEMENT SAP ACTIONS***

The Town of Davie received a non-competitive grant from the Department of Energy under the Energy Efficiency and Conservation Block Grant (EECBG) program in the amount of \$841,200. These funds have been expended to finance the development of this plan and to fund building energy efficiency retrofits for the Police Department and to install energy efficient lights and fixtures at Shenandoah and Pine Island Parks. This objective is one of the single most important objectives outlined in this plan. Without securing additional financing most of the strategic action items outlined in the SAP cannot be implemented. Accomplishing this goal will help catalyze the SAP by allowing staff to implement key projects and programs. It will also help the Town leverage additional funds to build the program into the future.

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# CHAPTER 2- INSTITUTIONAL CAPACITY



*(Short Term)*

## **Action 2.1.1: Execute Grant Action Plan**

Federal and state governments have made it a priority to provide funding opportunities to local governments and entities that are engaged in aspects of Sustainable Development such as energy efficiency, greenhouse gas reductions, water conservation, recycling, and habitat conservation. As evidence of the Town's recent EECBG award there are a variety of organizations that have a track record of funding municipal governments to develop sustainability and energy management plans. Some of these organizations include the Department of Housing and Urban Development (HUD), the Environmental Protection Agency (EPA), the National Renewable Energy Laboratory (NREL), and the South Florida Solar Energy Center.<sup>13</sup> The Town developed a grant action plan during the strategic planning process. The plan identifies target granting entities to track, contains procedures for competition screening, and sources staff to write grant applications. The plan also ties into the strategic partnership efforts of the Town as outlined in Action 3.1.1 and outlines other sources of innovative financing such as Energy Service Companies (ESCOs), Property Assessed Clean Energy Financing (PACE), and tax incentives. Please refer to **Appendix D** for the Town's Grant Action Plan.



*(Short Term)*

## **Action 2.1.2: Dedicate Town Budget Line Item for Sustainability**

The Town will create a budget to initiate the SAP implementation process. The budget will be approved by Town Council. If the Town wishes to receive one point from the FGBC for this action, a portion of the budget must be dedicated to include publicity and education related activities designed to communicate the SAP to the community as outlined in Chapter 3. (See FGBC; Credit A-7, Action A, 1 Point Max)



## TARGET 3: STRATEGIC PARTNERSHIPS

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### ***OBJECTIVE 3.1: IDENTIFY AND ENGAGE STRATEGIC PARTNERS THAT ADVANCE THE SAP***

Sustainability is multidisciplinary and it impacts almost every aspect of municipal operations and the community. Implementing actions to obtain sustainability results can be technically complex and expensive. Developing strategic partnerships with neighboring jurisdictions, educational institutions, and the business sector is an effective way to overcome technical barriers through information exchange and to become more competitive to secure grants and other mechanisms by pooling resources and political clout. During the strategic planning process, the Town identified a list of potential strategic partners to advance the intentions of the SAP.

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# CHAPTER 2- INSTITUTIONAL CAPACITY



## *(Mid Term)*

### **Action 3.1.1: Develop Strategic Partnership Plan**

The Town will develop a strategic partnership plan. The purpose of the plan will be to facilitate the process of engaging important partners that can advance the SAP. Engaging strategic partners and building models for collaboration will help the Town pool resources, share information and learn of best practices, build coalitions that will increase grant competitiveness, and find ways to leverage existing Sustainability funds. During the strategic planning process the Town began to identify and communicate with future strategic partners that include the City of Ft. Lauderdale, Florida; Florida Atlantic University (FAU), and Broward County. During this process, the Town should continue to be engaged in sustainability related working groups and initiatives that are currently taking place throughout Broward County. One way this can be done is to continue collaborating with Broward County to refine the “Green Building Checklist” developed by the GEEC to find ways it can be integrated into community construction guidelines and standards (See Green Energy and Environmental Committee discussion in the preface for additional detail regarding the Green Building Checklist). Another way the Town can continue working with Broward County is through involvement in the County’s Municipal

Green Initiatives Clearing House. The clearing house will focus on outreach for local governments within Broward County involved in the EECBG program. The Clearing House will provide assistance in the areas of 1) energy efficiency and rebate programs, 2) transit outreach, and 3) green construction practices and inspection. Other strategic partners that the Town plans to reach out to include Nova Southeastern University, the South Florida Regional Education Center, and the South Florida Regional Planning Council. The nature of each strategic partnership developed by the Town will be different. However, the following steps can be taken to undertake the development of the plan. First, the Town should identify additional strategic partners that it wishes to engage. Next, the Town should categorize all potential partners based on the nature of a potential future partnership such as: 1) public-private, 2) cross jurisdictional, 3) non-profit, and 4) institutional. Finally, the Town should formulate conceptual models that outline the benefits both parties will achieve as a result of the partnership. Once this is done, the Town can begin to reach out to partners and begin to formalize future relationships, programs, and projects.



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***OBJECTIVE 3.2: CONTINUE TOWN INVOLVEMENT IN SUSTAINABILITY RELATED INITIATIVES AND ACHIEVE  
RECOGNITION FOR SAP ACTIONS***

The Town is currently a member of the Florida Green Building Coalition (FGBC) and is working to secure Silver Certification to become a Green Local Government. Involvement in this program is important because it provides structure to the SAP. Once certification is achieved, it will help the Town receive recognition for all of its hard work. The purpose of this objective is to help the Town continue to be involved in similar Sustainability related initiatives that provide recognition.

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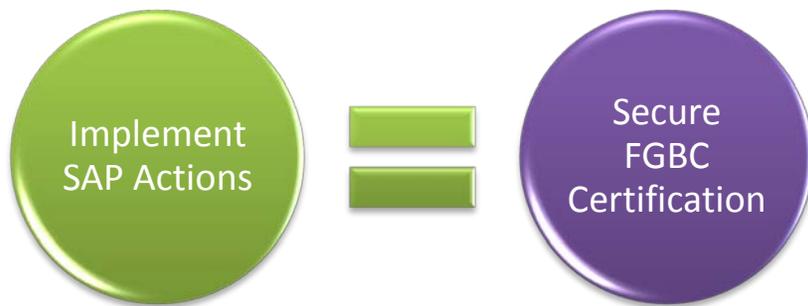
# CHAPTER 2- INSTITUTIONAL CAPACITY



## *(Short Term)*

### ***Action 3.2.1: Secure FGBC Certification by 2011***

Davie has made considerable progress towards achieving Certification to become a Local Green Government. Nearly 56% of the required actions have been complete and the Town plans to complete all actions no later than June of 2011. To secure points towards the FGBC certification process, the Town used the ICLEI framework to develop this SAP which is consistent with a local government emissions reduction program. The framework incorporates a five milestone structure to guide local governments that entails: 1) establishing a baseline, 2) setting targets, 3) developing a local action plan, 4) implementing the local action plan, and 5) measuring results. The SAP has been designed to achieve this goal.



## *(Long Term)*

### ***Action 3.2.2: Secure Additional Certifications & Recognition***

The Town will continue to be involved in Sustainability programs and initiatives and seek out recognition. For example, Action 6.1.1 outlines the Town's plan to use the EPA Energy Star Portfolio Manager program to benchmark existing buildings. The program lays out a series of steps the Town can take to secure building certifications that recognize energy efficiency improvements. The Town will explore the feasibility of securing Energy Star Labels for existing and/or future buildings that can demonstrate significant energy improvements. A single building can be recognized as Energy Star Certified if it can score a 75 on the Energy Star performance scale. Action 6.3.1 also outlines the Town's plan to become involved in the EPA's WasteWise Program. Like the Portfolio Manger program, WasteWiste outlines a series of steps that, if met, can result in awards. Potential awards would give the Town exposure and help to build recognition. The Energy Star WasteWise programs are just a few examples of how involvement in Sustainability programs provides the Town with a guiding framework to become more Sustainable while at the same time securing recognition for successful projects.<sup>14</sup>



## TARGET 4 TRAINING

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***OBJECTIVE 4.1: INCREASE STAFF TECHNICAL COMPETENCY IN SUSTAINABILITY IN ACCORDANCE WITH TOWN  
RESOLUTION R-27-182, SECTION 2***

This SAP will generate additional work for staff as action items are implemented. Some strategic actions can be implemented by staff. However, other actions may require more technical knowledge than staff currently possess. In these cases, the Town will likely procure specialized services to complete sustainability related initiatives. For example, this plan calls for energy audits in Chapter 3. Existing staff does not currently have the technical expertise to carry out energy audits. Therefore, professional auditors must be hired by the Town. It may not be feasible for the Town to train existing staff to conduct energy audits themselves. However, staff can be trained about the process and the best way to help write future requests for proposals and scopes of work. Doing so will help the Town better define its needs when procuring professional services, products, and equipment. Increasing staff knowledge can result in higher quality bids, more accurate pricing, and overall cost savings. Implementing the actions designed to meet this objective will help the Town fulfill credits for the FGBC Silver Certification and help the Town realize intent of Town Resolution R-27-182, Section 2.

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# CHAPTER 2- INSTITUTIONAL CAPACITY



## *(Long Term)*

### ***Action 4.1.1: Develop a Sustainability Education and Training***

The Town will develop an employee education training program that contains components for existing and new employees. Both programs will be designed so that employees will obtain knowledge and skills that will be directly applicable to actions outlined in the SAP. The following outlines focus areas for the training program and links to resources to find additional information. All focus areas below are consistent with FGBC actions. (See FGBC; Credits A,C,F,H,I,K,L, 12 Points Max)

- ***SAP Orientation (FGBC H-3, Actions A-B)*** – SAP orientation training will be geared towards new and existing employees that will be involved in implementing the SAP or have an expressed interest in Sustainability. Its purpose will be to orient employees to the SAP and its commitment.
- ***Green Building (FGBC L-4, Action A)*** – Green building training will be geared towards existing employees involved in Objectives 6 & 8 described in Chapter 3. Its purpose will be to help staff understand the green building process, the types of green building rating systems such as

the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) for New Construction and Major Renovations, and specific building technologies and controls that can be used to reduce energy consumption in municipal buildings.

- ***Energy & Water Use Auditing (FGBC F-5, Action B)*** – Energy audit training will be geared towards existing employees within departments involved in Objectives 6 & 8 of this plan. Training should begin by helping staff understand the energy auditing process and learning most effective way to procure energy audit related services. More advance levels of training will include training staff to conduct energy audits and helping them achieve certified energy manager (CEM) certification provided by the America Association of Engineers.<sup>15</sup>
- ***EMS Workshops (FGBC K-2, Action A)*** – EMS Work Group Seminars will be geared for staff who have been assigned tasks as part of the SAP. The purpose of workshops will be to hold periodic meetings to keep updated on task assignments, progress, and obstacles.



## TARGET 5: DATA MANAGEMENT & TRACKING

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### ***OBJECTIVE 5.1: IMPROVE THE TOWN'S ABILITY TO MANAGE DATA AND TRACK KEY SUSTAINABILITY PERFORMANCE***

#### ***INDICATORS***

An energy use database was developed during the strategic planning process. The database contains electricity, fuel, natural gas, and other important energy related metrics that were used to develop the greenhouse gas inventory for the SAP. The database forms the scientific underpinning for the SAP and its continued maintenance is critical for a variety of reasons. First, the database was used to develop to target areas of inefficiency and develop objectives and actions outlined in Chapter 3 of the SAP. As the database is updated in the future, it will help the Town measure the success of programs and projects allowing staff to adapt its management practices. Finally, the database will also provide data that can be communicated to promote SAP and to Town Council so that they can be informed on the status of important initiatives. The purpose of this objective is to ensure that the Town has appropriate procedures in place to ensure that the database is maintained and used to support the SAP into the future.

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# CHAPTER 2- INSTITUTIONAL CAPACITY



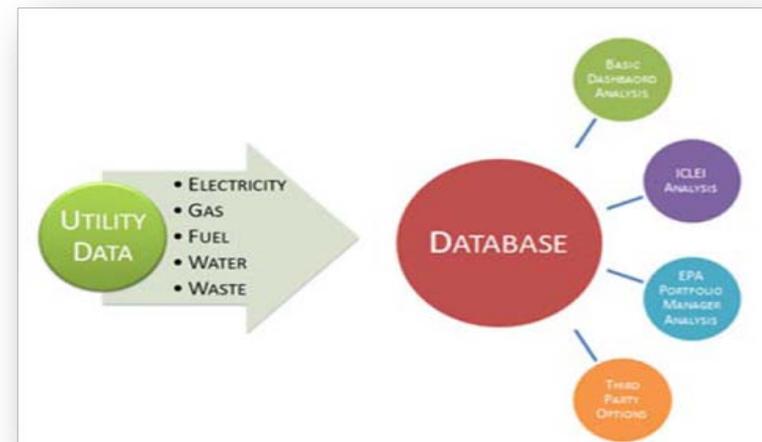
## *(Short Term)*

### **Action 5.1.1: Maintain Sustainability Data Tracking Program**

The current database developed for the SAP contains raw data sets for electricity, fuel, and propane that have been subsequently sorted by Town department using basic algorithm commands for Microsoft Excel. As the SAP develops, the database should also house information for water, waste, and other key datasets. The Town developed a data tracking program during the strategic planning process. The program adheres to the following general process for each dataset that will be tracked as part of the SAP. Note: This action has synergy with Action 6.1 “EPA Portfolio Energy Star Manager Program” located in Chapter 3.

- The Town will use standardized data requests for each utility provider or data source specifying the format in which data is expected, the timeline in which data is required, and other pertinent information. The Town will submit data requests to the utility or data source.
- Upon receipt raw data will be entered into the database and subsequently sorted using existing algorithms built into the database.

- Sorted data will be forwarded in its digital form to staff responsible for implementing a given project and staff will load data into existing tools used for tracking projects such as EPA Portfolio Manager software and perform necessary analysis;
- Staff will compare results against the Town’s baseline for a given project and results will be communicated to SAP staff, Town Council, and the community as dictated.
- The Town will also include in this database electronic listing of green energy ratings available for buildings. This will help achieve certification form the FGBC (See FGBC; Credit C1b f).



# ***Chapter 3 – Municipal Operations***



# CHAPTER 3- MUNICIPAL OPERATIONS



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## Strategy Intent

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**Municipal Operations** refers to all of the operations that are controlled directly by the Town. A baseline energy use and greenhouse gas emissions inventory was conducted to assess how much energy is used across various departments. Based on this information, the Town identified areas where it plans to make meaningful reductions to operational costs and environmental impacts. These areas will target Existing Buildings and Infrastructure, New Construction, and Fleet.

### TARGET 6: EXISTING BUILDINGS AND INFRASTRUCTURE

Objective 6.1: Reduce electricity in utilities (5%) and other categories (10%) by 2016

Action 6.1.1: Implement Energy Star Portfolio Manager Program

Action 6.1.2: Develop & Implement the “Green Capital Projects Matrix”

Action 6.1.3: Conduct energy audits of high energy use buildings

Action 6.1.4: Carry out building performance energy efficiency challenge

Objective 6.2: Reduce potable water use in municipal operations 15% by 2015

Action 6.2.1: Conduct baseline water use analysis

Action 6.2.2: Conduct plumbing fixture equipment audit

Action 6.2.3: Conduct irrigation and landscape review

Action 6.2.4: Add water conservation projects to “Green Capital Projects Matrix”

Objective 6.3: Improve Waste Recovery and support of state recycling goal

Action 6.3.1: Implement Waste Wise Program

Action 6.3.2: Conduct waste stream audit

Action 6.3.3: Expand municipal waste and recycling program

Objective 6.4: Increase the number of employees who utilize alternative transportation

Action 6.4.1: Develop alternative transportation incentive program

**Continued on Next Page**

# CHAPTER 3- MUNICIPAL OPERATIONS



**TARGET 7: NEW CONSTRUCTION**

Objective 7.1: Implement Green Design and Building Policies

Action 7.1.1: Define municipal green building standards that exceed Florida building code

**TARGET 8: FLEET**

Objective 8.1: Update fleet best management practices and fleet track record

Action 8.1.1: Improve green fleet program

Action 8.1.2: Implement hybrid fund the difference program

**TARGET 9: RENEWABLE ENERGY**

Objective 9.1: Explore renewable energy opportunities

Action 9.1.1: Develop renewable energy pilot program



## TARGET 6: EXISTING BUILDINGS AND INFRASTRUCTURE

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### ***OBJECTIVE 6.1: REDUCE ELECTRICITY USE IN UTILITY OPERATIONS BY 5% AND ELECTRICITY USE IN BUILDINGS & OTHER INFRASTRUCTURE BY 10% BY 2016***

During baseline year 2009, the Town consumed a total of 20,282,425 kilowatt hours of electricity resulting in \$1,836,219 in electricity expenditures across 167 electricity accounts maintained by Florida Power and Light (FPL). The energy use and greenhouse gas emissions database was used to produce a large user analysis to narrow down the largest electricity accounts throughout the Town. This analysis can be found in the Energy Use and Greenhouse Gas Emission Inventory (**Appendix A**) as well as on the following pages. Based on this analysis, the Town identified 23 electricity accounts representing the Town's largest users. These users consumed 18,822,266 kWh of electricity resulting in \$1,622,593.00 in electricity expenditures in 2009. As the table and subsequent graphic on the following pages illustrate, it is clear that Utility Operations consumes the most electricity in the Town. Although buildings and infrastructure such as the Police station at Nobb Hill Road, Town Hall, ball field lighting, and pools consume electricity, the amount is significantly less than that of utilities. It is more difficult to reduce electricity use in utility operations than in buildings and infrastructure. As a result, the Town developed this objective in two parts, making it easier for building managers to achieve electricity reduction goals. This is because they are not tied to large electricity use from Utility Operations. Development of this goal required careful consideration by consultants, the Town Steering Committee, and the GEEC. The purpose of this objective is to develop an energy reduction program that focuses on the Town's largest users. Doing so will help the Town filter out insignificant electrical accounts and focus on accounts that significantly impact the Town's energy consumption. If achieved, a 5% reduction in electricity consumed by the Town's largest users would conserve approximately 1 million kWh and save \$80,000 annually.

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# CHAPTER 3- MUNICIPAL OPERATIONS



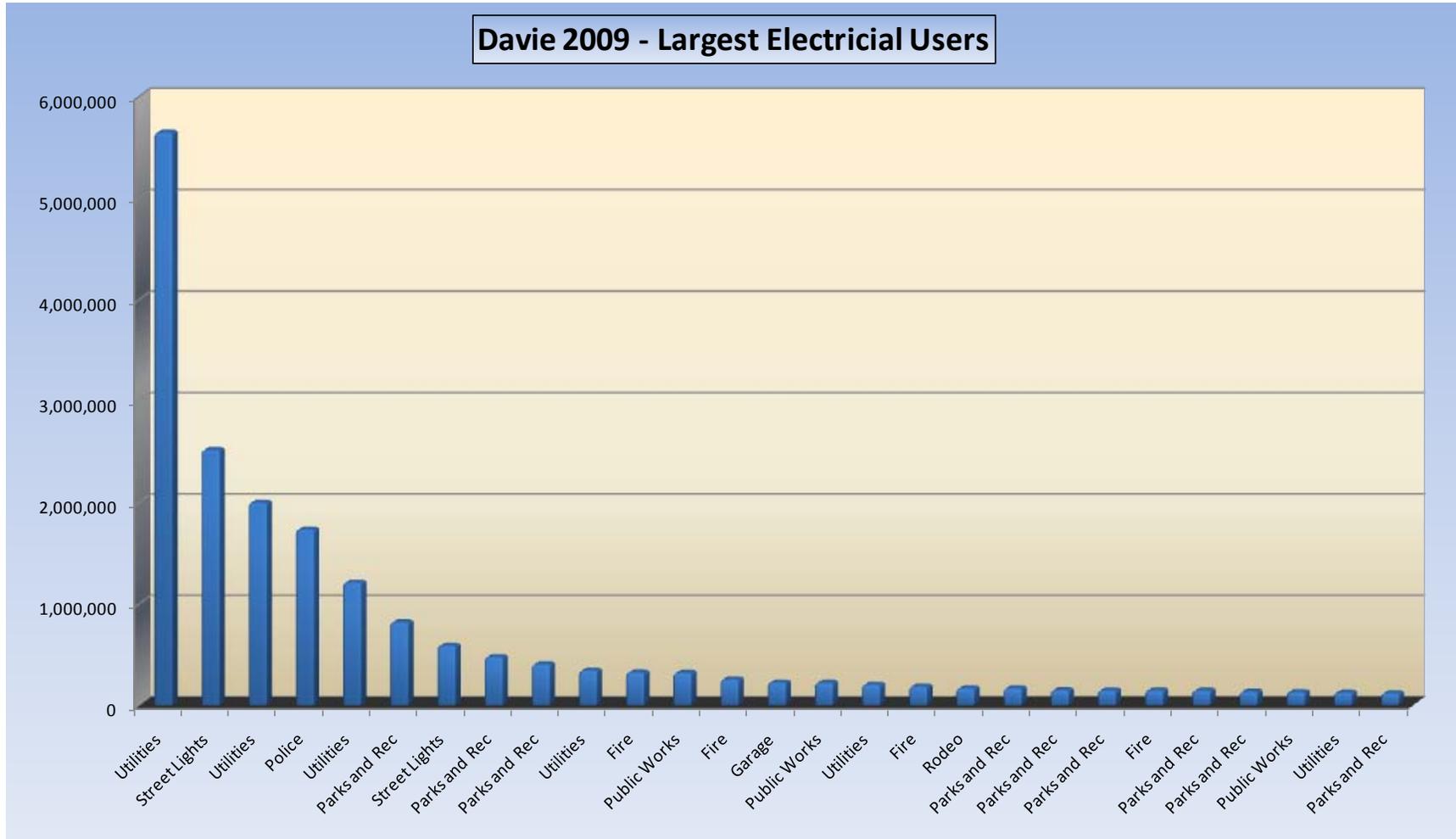
Large User Analysis Table

Acct #	kWh	Bill	Department	Address	Total kWh	20,282,425.0
2853951578	5,646,000	\$488,401	Utilities	3500 NW 76TH AVE # WTP-3	These Accounts all use more than 1 Million kWh per year	kWh Used 13,095,168.0
229767785	2,515,488	\$438,084	Street Lights	-		% of Total 65%
2859954527	1,996,080	\$194,460	Utilities	7501 NW 38TH ST # WWTP2		
1455275469	1,730,520	\$164,171	Police	1230 S NOB HILL RD # POLICE		
9303765813	1,207,080	\$125,007	Utilities	3790 SW 64TH AVE # WTP # 1		
1829569787	816,360	\$84,604	Parks and Rec	3800 SW 92 AVE (PIP Pool)	These Accounts all use more than 250,000 kWh per year	kWh Used 3,504,308.0
2678654886	583,659	\$167,881	Street Lights	-		% of Total 17%
8025967343	473,280	\$49,532	Parks and Rec	4300 SW 57TH TERR # COMM (Potter MPC)		This Category Plus Above 82%
662982404	402,360	\$42,105	Parks and Rec	3801 S PINE ISLAND RD # MULTIPU		
1307652840	339,628	\$36,625	Utilities	6898 STIRLING RD # LS-8		
3943529473	320,160	\$32,174	Fire	6901 ORANGE DR #FIRE ADMIN (Fire 50%, PW 50%)		
1915963738	316,430	\$32,903	Public Works	6591 SW 45TH ST #CITY HALL3		
1131703306	252,431	\$25,541	Fire	4491 OAKES RD # FIRE STATION 104		
2968795456	220,980	\$23,253	Garage	6915 ORANGE DR	These Accounts all use more than 100,000 kWh per year	kWh Used 2,222,790.0
1921968796	218,580	\$22,903	Public Works	6591 SW 45TH ST #CITY HALL		% of Total 11%
1460665829	200,594	\$21,924	Utilities	3335 COLLEGE AVE # LS-19		This Category Plus Above 93%
5903960796	182,124	\$18,030	Fire	6901 SW 45TH ST #FIRE STATION 38		
1908962754	165,508	\$23,098	Rodeo	6525 SW 45TH ST		
1825560780	164,400	\$42,554	Parks and Rec	3800 SW 92 AVE # BALLPARK (PIP)		
9687164310	145,200	\$44,439	Parks and Rec	3800 SW 92ND AVE # CS4 (PIP Baseball/Softball)		
2981233543	143,945	\$37,339	Parks and Rec	3800 SW 92ND AVE # CS3 (PIP Baseball/Softball)		
3289858585	142,707	\$14,950	Fire	6101 SW 148TH AVE # FIRE STATION 91 (35%PR & 65% FIRE)		
6706469753	142,680	\$23,430	Parks and Rec	14459 SHENANDOAH PKWY (Shenandoah)		
9505364092	131,733	\$14,702	Parks and Rec	4200 SW 61ST AVE # POOL (BBR)		
1909960781	127,440	\$14,515	Public Works	6591 SW 45TH ST #CITY HALL2		
472668870	121,087	\$13,011	Utilities	3201 COLLEGE AVE # LS-20		
6337127515	115,812	\$32,919	Parks and Rec	3800 SW 92ND AVE # CS2 (PIP Football/Soccer)		

# CHAPTER 3- MUNICIPAL OPERATIONS



Large User Analysis Bar Graph



# CHAPTER 3- MUNICIPAL OPERATIONS



## *(Short Term)*

### ***Action 6.1.1: Implement Energy Star Portfolio Manager Program***

Improved data management and tracking can result in direct energy efficiency reductions and cost savings because it empowers building managers to make informed decisions regarding the way they operate their building portfolio. Case studies from the U.S. Environmental Protection Agency demonstrate that sound data management and tracking programs have help entities reduce energy consumption anywhere from 5% - 25% (EPA, 2008).<sup>16</sup> The Town will work to reduce energy use in its building portfolio by utilizing the EPA's free Portfolio Manager<sup>17</sup> benchmarking tool to track energy use throughout various Town buildings and facilities. The Town will do this by incorporating building data from the energy inventory database into the Portfolio Manager software. The analysis from this activity will benchmark Town buildings against similar buildings across the nation using a building energy use index. This activity will also enable the Town to monitor and track energy performance and each building and track the success of future energy retrofits as they are implemented. As the Town progresses in this action, it will evaluate the pros and cons associated with enrolling in the Energy Star Challenge and becoming an EPA Energy Star Partner. See LEED 2009 Existing Buildings: Operations &

Maintenance Rating System, Energy and Atmosphere Credit 1, "Optimize Energy Performance," for additional guidance regarding the EPA Energy Star Portfolio Manager Program.

## *(Mid Term)*

### ***Action 6.1.2: Develop & Implement the Green Capital Projects Matrix***

During the strategic planning process, Town staff expressed a desire to create a "punch list" of energy efficiency projects that are implementation ready such as HVAC replacements and lighting retrofits. This desire came in response to difficulties staff experienced identifying specific energy efficiency projects to include in grant applications that had very short turnaround times. In order to more efficiently identify energy efficiency retrofit projects in the future, the Town will develop the "Green Capital Projects Matrix." The matrix will be different than capital improvement project lists the Town currently maintains. This is because these lists typically outline large capital projects that may have a variety of energy efficiency related components to them. Instead, the Green Capital Projects Matrix will be designed to identify smaller energy efficiency projects that can be included in upcoming grant applications that are energy efficiency related. The following steps outline the general process the Town will take to develop the Green Capital Projects Matrix:

# CHAPTER 3- MUNICIPAL OPERATIONS



- **Identify existing capital projects** - The first step will be to identify existing projects that will generate electricity savings. Projects will include those planned in the Town’s capital improvement plan as well as projects identified during the strategic planning process.
- **Conduct end of life cycle assessment** - The Town will also engage key staff, primarily from the Public Works and Utilities department to complete an end of life cycle assessment for infrastructure and equipment. Examples of end of life cycle assessment items include pump motors, lift stations, ball field lights, and outdoor lighting. The assessment should identify all aging infrastructure and equipment and provide a general schedule for its replacement.
- **Incorporate results of energy audits (Action 6.1.3)** – The Town will combine existing information from existing capital projects and end of life cycle assessments with the energy conservation measures outlined in the energy audit discussed in Action 6.1.3. At the conclusion of this process, the Town will possess a list of detailed energy efficiency projects that can be implemented as soon as funding becomes available. The list will also be prioritized to highlight the expected payback period of projects to the fullest extent possible so that staff can implement projects that offer the best return on investment possible.
- **Implement action items** - After the Green Capital Projects Matrix has been completed, the Town should match projects to available sources of funding. Implementation should be prioritized first by availability of funding. If funding is not available, implementation should then be prioritized by first implementing energy conservation measures based on their overall payback periods. Projects with quick paybacks also known as “low cost – no cost” should be given priority over projects with long paybacks. Also as projects are implemented, the Town should incorporate important standards during procurement. For example, for all lighting retrofits, the Town should make it clear that retrofits using CFLs should be avoided. Finally all projects that are implemented should be tracked using EPA Energy Star Portfolio Manager. See LEED 2009 Existing Buildings: Operations & Maintenance Rating System, Energy and Atmosphere Credit 2.2, “Existing Building Commissioning Implementation,” for additional guidance if a building is not eligible for EPA Energy Star Portfolio Manager.

# CHAPTER 3- MUNICIPAL OPERATIONS



## *(Short Term)*

### ***Action 6.1.3: Conduct Energy Audits of High Energy Use Buildings***

Using the information from the EPA Energy Star Portfolio analysis, existing projects, and planned end of life cycle projects, the Town will develop a Request for Proposal (RFP) to conduct detailed energy audits of select buildings that score poorly on the EPA Energy Star Portfolio analysis. Making all of this information available to bidders will help the Town define a clear scope for energy audits that can be conducted on buildings as well as infrastructure. The audit RFP should at a minimum consist of an American Society of Heating Refrigerating, Air-Conditioning Engineers (ASHRAE) level II audit. The Town should also require bidders to complete the following tasks: 1) develop energy conservation measures for each audit; 2) calculate the estimated payback period for energy conservation measures for each audit; 3) calculate the estimated payback for existing projects and end of life cycle projects identified by the Town; and 4) incorporate and prioritize all projects into the green building retrofit capital project matrix. See LEED 2009 Existing Buildings: Operations & Maintenance Rating System, Energy and Atmosphere Credit 2.1, “Existing Building Commissioning - Investigation and Analysis,” for additional guidance regarding requirements for ASHRAE energy audits.

## *(Long Term)*

### ***Action 6.1.4: Carry Out Building Energy Efficiency Challenge***

Actions 6.1.1 – 6.1.4 outline programs designed to implement physical changes to building system to conserve energy. The purpose of this action is to realize savings by encouraging building occupants to engage in low to no cost behaviors that conserve energy. Behavior based energy efficiency strategies represent an “untapped” resource to energy conservation managers (McMakin et al, 2000).<sup>18</sup> Many cities and universities throughout the U.S. have successfully implemented building behavior challenges that created direct energy savings. However, perhaps the most important result of challenge programs, if designed effectively, is that they often educate building occupants to engage in habits that create long term energy savings beyond the challenge period. For example, the University of Indiana developed an Energy Efficiency Challenge for students and faculty across a variety of buildings (University of Indiana, 2009)<sup>19</sup>. The Energy Challenge has been implemented four times since 2008 and has conserved 2,753,850 kWh of electricity resulting in cost savings of \$199,469 and a reduction of 4,392,252 pounds of CO<sub>2</sub>e emissions.

## CHAPTER 3- MUNICIPAL OPERATIONS



There are a variety of models that can be used to develop a building energy conservation challenge. The following outline a series of basic steps and program components the Town plans to incorporate into the challenge.

- Identify & Categorize Target Buildings
- Define Challenge Period
- Calculate Baseline
- Develop Rules & Incentive (Prize)
- Market, Monitor, and Calculate Results

This action is generally consistent with the Florida Green Building Coalition (See FGBC) Green Local Government Standard, “Credit A-1 Actions A-B and C-6 Action C.”

## CHAPTER 3- MUNICIPAL OPERATIONS



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### ***OBJECTIVE 6.2: REDUCE POTABLE WATER CONSUMPTION IN MUNICIPAL OPERATIONS 15% BY 2015***

Water conservation has a myriad of benefits that have social, environmental, and economic dimensions. Water conservation helps to prevent saltwater intrusion and preserves public drinking water supplies. It also helps maintain natural systems, reduces cost, and reduces energy use associated with pumping and movement of water. During the strategic planning process, the Steering Committee recognized the critical role of water conservation to Sustainability and decided to include it as an important objective.

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# CHAPTER 3- MUNICIPAL OPERATIONS



*(Mid Term)*

***Action 6.2.1: Conduct Baseline Water Use Analysis***

During the strategic planning process, the Town indicated that it has not yet completed a baseline water use analysis. The Town will conduct a baseline water use analysis to begin the process of meeting its water conservation objective. The baseline analysis will attempt to distinguish between potable and reclaimed water. If the audit uncovers water use anomalies, the Town may consider installing sub-meters to identify problems. See LEED 2009 for Existing Buildings: Operations & Maintenance, Water Efficiency Credit 1.1, “Water Performance Measurement” for resources and calculations that may be helpful in conducting a baseline water use analysis.

*(Mid Term)*

***Action 6.2.2: Conduct Plumbing Fixture Equipment Audit***

The Town will use trained staff to conduct a plumbing fixture audit. Staff will survey existing plumbing fixtures including, but not limited to toilets, faucets, and shower heads to identify areas where water conservation measures can be implemented. Staff will also survey opportunities where HVAC water and condensate capture may be applicable. Examples of simple water conservation measures include automatic controls and low flow fixtures. Staff will also review

HVAC cooling tower operations to ensure that they are optimized for water conservation. See LEED 2009 for Existing Buildings: Operations & Maintenance, Water Efficiency Credit 2.1 and 4 “Plumbing Fixture and Fitting Efficiency and Cooling Tower Water Management” for additional resources when developing this program.

*(Mid Term)*

***Action 6.2.3: Conduct Irrigation Landscape Review***

The Town will also use trained staff to conduct an assessment of landscape irrigation systems and landscape planting and design. Landscape irrigation system audits will be designed to detect leaks or breaks in irrigation lines as well as to identify opportunities where irrigation systems can be updated with automated controls. High priority should be given to ball-field and park irrigation systems. Landscape audits will be designed to determine if irrigated landscapes are using gray or potable water sources and to ensure that drought tolerant native species are being utilized to the fullest extent possible. Audits will also identify areas where turf grass can be replaced with drought tolerant native plant species to reduce irrigation demand and they will identify areas where rain barrels and other types of catchment projects can be implemented. See LEED 2009 for Existing Buildings: Operations & Maintenance, Water Efficiency Credit 3 “Water Efficient Landscaping,” for useful information on how to conduct a plumbing fixture

# CHAPTER 3- MUNICIPAL OPERATIONS



audit. Also a part of this action, the Town will work to revise a portion of its land development code that address landscaping and irrigation. Town ordinance 2010-020 adopts “Florida Friendly” landscaping practices and irrigation systems which promote water conservation and water quality improvements. The Florida Friendly landscaping principles, among other things, provide incentives for developers who utilize 100% native and drought tolerant plants. It also provides guidance on optimal irrigation methods that are appropriate for site conditions. However, upon review of the Town’s Land Development Code (Chapter 12, Section 12-102) there is a provision that requires “Buffer Yards” to be irrigated. The Town will revisit this provision and ensure that steps are being taken within the code that strives to minimize the need for irrigation to the fullest extent possible.

## *(Long Term)*

### ***Action 6.2.4: Add Water Conservation Projects to the “Green Capital Projects Matrix”***

The results of previous actions 6.2.2 (Plumbing Fixture Equipment Audit) and 6.2.3 (Irrigation Landscape Review) will be added to the “Green Capital Projects Matrix” outlined in Action 6.1.2. As a result, the matrix will contain two types of projects that address energy efficiency and water conservation. As stated previously, this matrix will provide a

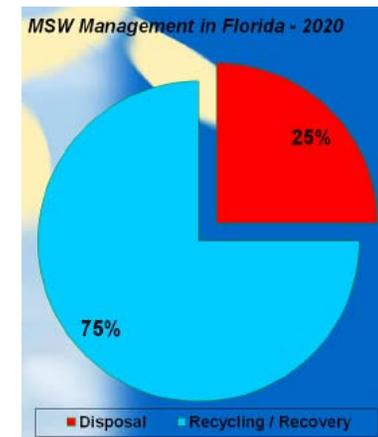
comprehensive list of capital projects, that when implemented, will help the Town achieve electricity and water reduction objectives. Both programs will provide the Town with a long term comprehensive prioritized “punch list” for projects allowing the Town to quickly identify projects that conform to future grant opportunities. The matrix will also help the Town secure other forms of funding, and lay out a clear path for energy efficiency and water conservation into the future.

# CHAPTER 3- MUNICIPAL OPERATIONS



## **OBJECTIVE 6.3: IMPROVE WASTE RECOVERY/RECYCLING AND REDUCE LANDFILL WASTE IN SUPPORT OF STATE RECYCLING GOAL**

The Town utilizes Broward County’s Waste and Recycling Services (WRS). WRS utilizes a combination of landfills, recycling, and combustion/waste to energy solutions to its customers. In 2006, Municipal Solid Waste (MSW) trends reported by Broward County indicated that approximately 46% of MSW was placed into landfills while 34% was combusted using waste to energy technology, and 20% was recycled. Section 403.7032 of the Florida Statutes proposes a 75% recycling goal by the year 2020. As part of this statute, the Florida Department of Environmental Protection (FDEP) is required to develop a comprehensive program to achieve this goal.<sup>20</sup> If the state is to meet this goal, Florida must “triple its current recycling rate within 10 years” (Broward County, 2008)<sup>21</sup> (FDEP Report to Legislature 2010)<sup>22</sup>. Reducing waste is a measure that can result in cost savings through avoided tipping fees and create a variety of environmental benefits even if waste is being sent to waste to energy facilities as is the case with most of the MSW generated by the Town. For example, the waste to energy process emits pollutants into the atmosphere such as carbon and other substances such as mercury when batteries are incinerated. The waste to energy process also can create toxic ash that must be disposed of properly. The intent of this objective is to support the State of Florida and Broward County in achieving the 75% reduction goal and to bring additional social, environmental, and economic benefits to the Town. The objective sets out to double the quantity of MSW used for waste recover in the WTE facility while reducing waste that is sent to the landfill.



# CHAPTER 3- MUNICIPAL OPERATIONS



*(Mid Term)*

## ***Action 6.3.1: Implement EPA Waste Wise Program***

Like the EPA Energy Star Portfolio Manager Program described in Action 6.1.1, the WasteWise program is also free. It is designed to help entities reduce MSW and industrial waste. As part of the development of this plan, Town of Davie has become an endorser in the program. As a result, the Town is committed to taking the steps required to reduce internal waste and help members of the community reduce waste as well. Now that the Town has become an endorser, it has access to free technical assistance and the WasteWise Re-Track program, a free online tool used to track waste related data. The Town is also eligible to participate in the various WasteWise challenge programs. Achieving recognition through these programs will help the Town secure recognition in fulfillment of Objective 3.2.

*(Mid Term)*

## ***Action 6.3.2: Conduct a Waste Stream Audit***

A waste stream audit represents the first important step for any recycling and waste reduction program. The Town has yet to conduct a waste stream audit to determine a baseline scenario for its MSW contribution. Therefore the objective outlined above was purposely left vague so that additional

data can be gathered to develop a more specific target. The Town will conduct a waste stream audit by following the subsequent general steps. According to the US EPA there are a variety of methods that can be used to conduct a waste stream audit that include<sup>23</sup>:

- Define composition of the waste stream
- Determine waste volume
- Determine waste sources
- Outline waste disposal process used
- Determine waste disposal costs

*(Mid Term)*

## ***Action 6.3.3: Expand Existing Municipal Waste & Recycling Program***

Drawing from the WasteWise program and the results of the waste stream audit, the Town will expand its existing recycling and waste reduction programs. Currently the Town offers all-in-one single stream bins in offices. The Town also holds public auctions to promote re-use of items such as office furniture, electronics, and other goods. One way the Town plans to expand waste reduction efforts is by developing procurement guidelines. For example, these guidelines may include provisions for sourcing goods that are: 1) made from recycled content, 2) biodegradable, and 3) non-toxic. These

## CHAPTER 3- MUNICIPAL OPERATIONS



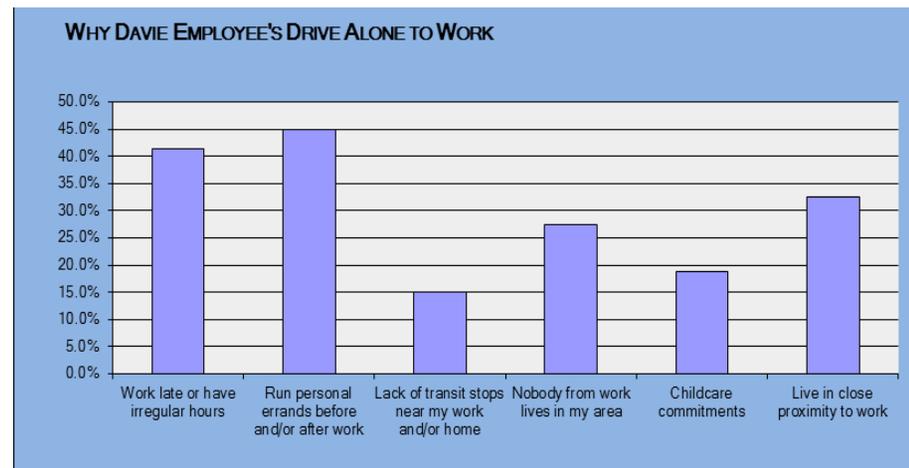
guidelines may also define purchasing objectives to source goods such as appliances that have energy star ratings. The LEED 2009 for Existing Buildings: Operations & Maintenance, Materials and Resources Credits 1-2, “Sustainable Purchasing,” outlines calculations that will help the Town determine baseline waste levels. These calculations can be used along with the WasteWise Re-Track program to benchmark the Town’s waste production and track the future performance of expanded recycling and waste reduction initiatives. Broward County’s Comprehensive Plan (Waste Element) is an excellent resource the Town can reference when working to expand these programs (Broward County Comprehensive Plan, Waste Element Volume 4).<sup>24</sup>

# CHAPTER 3- MUNICIPAL OPERATIONS



## **OBJECTIVE 6.4: INCREASE THE NUMBER OF EMPLOYEES WHO UTILIZE ALTERNATIVE TRANSPORTATION**

A commuter survey was conducted to learn about the commuting habits of Town employees. The survey drew information from, notable sources, including a survey done by the City of Portland, Oregon. Surveys were distributed via email and hard copy. Approximately 131 responses were received. Based on the survey, the total “round trip” commuting distance of respondents was 2,122 miles per week. The typical method of transportation to work was driving alone (91%) followed by Town vehicle use (8%). The remaining 1% of employees use car pools, the bus, or walk to get to work. When polled as to why employees chose to drive alone the most popular responses indicated that employees need to run personal errands before and after work and that they work late or irregular hours. Other responses included lack of transit opportunities near work and childcare commitments as shown in the bar graph. The purpose of this objective is to increase the number of employees who utilize alternative methods of transportation to commute to work. Achieving this objective will help reduce greenhouse gas emissions; vehicle miles traveled, and conserve unleaded gasoline. Please refer to **Appendix B** for a copy of the survey and a description of survey results.



# CHAPTER 3- MUNICIPAL OPERATIONS



*(Mid Term)*

**Action 6.4.1: Develop an Alternative Transportation Incentive Program**

As part of the survey, Town employees were also polled to learn more about the type of incentives that would encourage the use of alternative methods of transportation. According to the survey the most popular incentive was the opportunity to telecommute or work from home followed by the option to set aside pre-tax dollars to cover commuting costs associated with alternative transportation. Other incentives indicated were having employers provide onsite childcare, dry cleaning, and fitness centers, and locker rooms. Please refer to **Appendix B** for a copy of the survey. The Town will investigate developing an alternative transportation program that is beneficial to both the Town and employees.

There are a variety of models that other local governments have implemented to encourage alternative methods of transportation. Some of these models entail:

- Make arrangement for vehicles to accommodate bicycles
- Carpool/vanpool assistance, or park and ride express bus
- Carpool or express bus lanes or express bus to suburbs
- Alternative commuting incentives for employees

The Town will evaluate other programs in the Country and conduct a strength and weakness assessment of programs and ideas as they apply to the specific transportation context of the Town of Davie.

Incentives to encourage the use of alternative methods of transportation	Response Percent
Opportunity to telecommute or work from home	79.4%
Option to set aside pre-tax dollars for commuting costs	31.7%
On-site childcare, dry cleaning, fitness center, services	30.2%
Free ride home in the event of an emergency or overtime	22.2%
Match list of potential ride share partners	17.5%
Locker rooms with showers	15.9%
Recognition program for alternative transportation	11.1%
Bicycle parking	6.3%
Preferred parking spaces for car pools	1.6%
<i>*Note: Respondents were allowed to provide multiple responses</i>	



## TARGET 7: NEW CONSTRUCTION

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### ***OBJECTIVE 7.1: IMPLEMENT GREEN DESIGN AND BUILDING POLICIES***

According to the US Green Building Council (USGBC), LEED 2009 Rating System for New Construction, buildings consume 25-50% of the total energy and 70% of the total electricity used in the United States annually. The Town's portfolio of buildings is comprised of a mix of older and newer buildings. Many buildings still have a long life ahead of them and can become more energy efficiency through retrofitting. However, there will come a time when new construction projects will take place. In preparation for new construction projects, the Town will work to define minimum green building standards for new municipal construction projects. However it will do this in a way that recognizes the energy efficiency standards already stated in the Florida Green Building code. The Town will also do this in a way that allows for flexibility that weighs costs with social and environmental benefits for future standards and requirements.

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# CHAPTER 3- MUNICIPAL OPERATIONS



## *(Long Term)*

### **Action 7.1.1: Define Municipal Green Building Standards**

Town Resolution R-27-182 was signed in 2007. It states “the Town shall be guided by established energy efficiency standards providing for an integrated whole building design approach to ensure the best processes are implemented through every phase of design, construction, and renovation so that buildings realize substantial economic and environmental benefits through their entire life cycle”. The resolution provides the general intent and leadership commitment from Town leaders. The next step the Town will take to further demonstrate its leadership will be to more precisely define a municipal green building standard that, at a minimum, exceeds Florida building code standards. Town will do this by completing the following steps. Completion of this action will help the Town achieve points from the FGBC for certification. (See FGBC; Credits C3d for further detail.

- **Define Framework** – Building codes are designed to set minimum standards for design and construction. The Town will work to define green building standards for new municipal construction projects that, at a minimum, exceed the latest version of the Florida Building Code. This will ensure that the Town is always building to higher standards than “business as usual.” Town will evaluate the

many green building rating systems and standards that are available. Given that green building is multidisciplinary, certification systems and standards such as the U.S. Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED) certification system, the Florida Green Building Coalition (FGBC) green local government, and the Green Globe Standards have been developed to guide building owners through the construction process. The Town will evaluate the cost and benefits associated with adherence to one or multiple certification system/standards. If the Town does not wish to adhere to a particular standard, it may consider making specific actions on the Green Building Checklist developed by the Green Energy and Environmental Committee (GEEC) as required components of the new standard. There are many models the Town can consult to develop the standards. For example, some local jurisdictions choose to apply standards to all new construction projects ranging in sizes from 5,000 to 10,000 square feet. Some apply building standards only to buildings that have high occupancy levels. Others choose to mirror standards to the best of their ability but opt out of actually pursuing certification to avoid additional costs such as program registration, additional studies, commissioning, and other activities.<sup>25</sup>

## CHAPTER 3- MUNICIPAL OPERATIONS



- ***Create New Resolution & Integrate into Future RFPs -***  
Once the Town has defined a specific approach to apply municipal green building standards, the final standard should be approved as a new resolution by Town Council and integrated into all new Requests for Proposal (RFP) documents when procuring architectural, engineering, and construction services for new construction projects. Doing this will ensure that the professionals involved in the building design and construction phases will be informed to the Town's project expectations.



## TARGET 8: FLEET

### ***OBJECTIVE 8.1: UPDATE FLEET BEST MANAGEMENT PRACTICES AND FLEET TRACK RECORD***

In the 2009 baseline energy use and greenhouse gas inventory it was found that over 317,000 gallons of gasoline and 54,000 gallons of diesel were consumed, for a total cost of \$626,677 to the Town. The police department used the largest amount of fuel, with the fire department being the largest consumer of diesel, and second overall consumer of fuel in the Town. In order to accomplish this objective the Town will need to study aspects of market such as new vehicular technologies, alternative fuels, fuel costs, asset maintenance and depreciation, and optimal vehicle usage. These issues are not trivial

and require a fully developed and thought out plan to achieve. Additionally, as most of the fleet fuel usage is associated with emergency services special consideration will have to be taken into account so that the fleet can remain financially competitive, bearing in mind upward trends in gasoline prices, without sacrificing any of the capabilities of the current fleet. The following program will guide the Town in the years to come to meet this objective in an environmentally conscious and competitive way.

Department Name	Gallons of Gasoline	Gallons of Diesel	Total		
			Cost	MMBTUs	MT CO2e
Police Department	233,424.90	253.60	\$375,453.66	29,040.78	2,053.94
Fire Department	16,911.90	40,354.10	\$116,304.89	7,698.24	560.64
Public Works	28,967.30	6,247.00	\$59,622.44	4,465.91	318.35
Utilities	11,285.40	7,608.60	\$34,800.93	2,457.58	176.86
Parks and Recreation	11,828.60	-	\$19,070.60	1,469.83	103.95
Building Division	6,640.30	-	\$10,521.43	825.13	58.36
Unidentified	2,246.80	93.30	\$1,038.18	292.13	20.70
Engineering	2,233.40	-	\$3,556.66	277.52	19.63
Special Projects	870.90	221.00	\$1,889.76	138.87	9.91
Town Clerk	1,044.10	-	\$1,658.49	129.74	9.18
Garage	627.20	91.20	\$1,280.36	90.59	6.44
Planning and Zoning	548.20	-	\$844.39	68.12	4.82
Admin / Housing and CD	374.80	-	\$635.89	46.57	3.29
<b>Totals</b>	<b>317,003.8</b>	<b>54,868.8</b>	<b>\$626,677.68</b>	<b>47,001.0</b>	<b>3,346.1</b>

# CHAPTER 3- MUNICIPAL OPERATIONS



*(Mid Term)*

## ***Action 8.1.1: Improve Green Fleet Program***

There are many ways optimizing the Town fleet will result in benefits. However, it can be difficult to begin the process of fleet optimization to become more fuel efficient using “green” technologies and practices. This is because there are a variety of technologies and fuel types available. This action outlines a series of steps the Town will take to continue its excellent fleet track record by integrating green fleet technologies into the Town planning, procurement, and maintenance processes.

- **Join the U.S. DOE Clean Cities Coalition** – The U.S. Department of Energy maintains the Clean Cities Program designed to help reduced petroleum consumption. A major component of the program deals with fleet. The fleet component of the Clean Cities program works with municipalities helping them become involved in coalitions composed of local fleet leaders that share a common goal to reduce fuel consumption and make existing fleets more fuel efficient. The Clean Cities Coalition will provide the Town with resource and technical guidance needed to navigate the sometimes overwhelming green vehicle technology space.

- **Annual Vehicle Technology Review** – Vehicle technology is in a constant state of evolution and this rapid development is currently accelerating. Over the last few years there has been an explosion of alternative options to the gasoline internal combustion engine such as hybrid, plug in electric hybrid, electric, hydrogen fuel cell, and compressed natural gas. In order for the Town to stay abreast of these rapid changes, time should be set aside every year for continuing education in the available vehicle technologies. This can be done by researching online for new advances, looking at cooperative purchasing agreements (something the Town is currently involved in) for new vehicle opportunities, and attending educational events such as classes and seminars. This evaluation should culminate in a short summary document highlighting any new technologies or advances that may need to be addressed for the year’s vehicle purchase order, and also mention any technologies that should be monitored specifically for future. The review should evaluate the following at a minimum.

Hybrid Vehicles - Hybrid vehicles use a combination of electric motors and internal combustion. The best selling hybrid electric vehicle is the Toyota Prius. Its price starts at approximately \$24,000 and its average fuel economy is

# CHAPTER 3- MUNICIPAL OPERATIONS



about 50 miles per gallon. Many municipalities have purchased hybrid vehicles.<sup>26</sup>

**Plug In Hybrid Electric** – A plug in hybrid electric vehicle utilizes electricity supplied from an outlet and it can run using fuel. An example of a Plug-In Hybrid Electric Car is the Chevy Volt. The Volt's price starts at approximately \$32,000 after tax credits. It has a range of approximately 25 – 50 miles when using its battery. To overcome the short range, the vehicle can run off of gasoline. Potential barriers include price, potential maintenance and battery warranties.<sup>27</sup>

**Electric Vehicles** – An electric vehicle does not have an internal combustion engine and only operates using electricity from an outlet. An example of an electric vehicle is the Nissan Leaf. The Leaf costs approximately \$25,000 after tax credits. The Leaf has a range of approximately 100 miles from one charge and is termed a zero tailpipe emission vehicle. However, emissions are still generated from the vehicle from the use of electricity generated at a power plant. Potential barriers include potential battery warranties and range, and the need for charging stations.<sup>28</sup>

Hydrogen fuel cell technology is still emerging and remains costly. The only emission from a vehicle using hydrogen fuel cell technology is water. The only commercially available vehicle that utilizes this technology is the Honda Clarity. Only 200 vehicles will be available for lease in Southern California. The clarity can drive approximately 240 miles before needed to be refueled. This vehicle and technology have various barriers such as cost, technology, and lack of infrastructure for re-fueling stations. However, its low environmental impact makes it a very promising alternative for the future and it should always be an important part of an annual vehicle technology review.<sup>29</sup>

- **Implement Anti-Idling Program** – In January of 2011, the Green Energy and Environmental Committee (GEEC) proposed an Idle Reduction Policy mandatory for all non-exempt employees, which was adopted by the Town Council in February of 2011. Adoption of this policy allows the Town to formally curb excessive idling of fleet vehicles to reduce fuel consumption and pollution as well as reduce unnecessary wear and tear on vehicles. A small scale educational campaign that would provide details of the policy would increase acceptance and create a feeling of ownership and responsibility for the vehicle operators. Additionally a challenge program may be a good way to increase participation. With proper monitoring, intra-

# CHAPTER 3- MUNICIPAL OPERATIONS



departmental competitions could be held. These types of challenge programs will help to strengthen teams and in this case would ultimately achieve the desired results, less idling in the Town and lower fuel consumption. The GEEC is currently working to develop a policy to place windshield stickers to remind vehicle operators of anti-idling rules.

- **Utilize Alternative Fuels for Fleet** – Alternative fuels are becoming more commonplace in the market today such as “flex fuels” like E-85 that blends ethanol with gasoline. Biodiesel is also becoming more common place which blends concentrations of animal fats or vegetable oils with different concentrations of diesel fuels. There are a variety of blends ranging from B100 to B10 depending on the concentration of biodiesel to conventional diesel. Today blends such as B10, which is 90% conventional diesel and 10% biodiesel can often be used in conventional vehicles without any vehicle modifications. There are not many new diesel vehicles being manufactured today that offer comprehensive warranty coverage for biodiesel blends above 10% which may cause problems. However, there are a variety of vehicle conversion kits that can be purchased for old diesel power vehicles. These vehicles may be ideal for developing pilot programs. It should be noted, that when evaluating potential biofuels in the

context of sustainability attention must be paid to the type of feedstock being used. For example some biofuels created from palm oils can adversely impact Sustainability objectives. This is because there are known instances where palm plantations used to produce bio-fuels replace native tropical forests in developing countries. This process exacerbates global climate change and habitat loss which is counterproductive to Sustainability goals.

- **Monitor Hybrid and Alternative Emergency Vehicle Development** – One of the biggest challenges that many municipal fleets face is how to upgrade their emergency vehicles to more efficient types without sacrificing performance or capability. There has been a long standing debate on whether hybrid technologies could be utilized, especially in the Police Department. At this time there are numerous police departments using hybrid technologies for vehicles that are not on patrol. These can be detective vehicles, or some of the larger trucks and SUVs used for pulling trailers. Often the same vehicles used as patrol cars are used in situations where they may not be needed. In this case some police departments are opting for smaller, hybrid vehicles and finding that they are saving a significant amount of fuel. There are also at least two municipalities in the U.S. that are implementing hybrid

# CHAPTER 3- MUNICIPAL OPERATIONS



vehicles as patrol cars.<sup>30</sup> There are some considerations though as these vehicles may not be as powerful and fast as the typical patrol car, and the regenerative braking may not be ideal in pursuit situations. However, there have been some positive results from the municipalities using these vehicles on patrol. As vehicle technology is constantly evolving, the Town needs to stay current not only on what vehicles are available, but how these vehicles are being utilized in other municipal governments. This program will be linked directly with the *Annual Vehicle Technology Review* but special consideration needs to be taken into account when dealing with emergency vehicles. Creating a partnership between the Town fleet manager and members from both the Police and Fire departments will allow the emergency personnel to voice their concerns about what they need in their respective vehicle fleets. One of the first steps to getting this program off the ground would be to contact the municipalities who have already implemented this technology and see if they have any advice for the Town.

**(Long Term)**

## ***Action 8.1.2: Implement Hybrid Fund the Difference Program***

New vehicle technologies are developed all of the time, but despite their higher fuel efficiency these vehicles often are more expensive than their conventional counterparts. Although the upfront costs of the vehicles can make them seemingly cost prohibitive, depending on usage the higher fuel efficiency can sometimes create paybacks that make the vehicle worthwhile. Other times the payback based on fuel savings alone is not sufficient to justify the additional capital expenditure and the more efficient vehicles are not purchased. This “Fund the Difference” program is designed to use grant funding to pay for the additional expenditure from upgrading a conventional vehicle to a more fuel efficient or advanced vehicle. Grant funding would be used to supplement the existing vehicle replacement budget. In the current market this could be used to upgrade a conventional vehicle to a hybrid model, however as new technologies become more commonplace similar purchases could also be made. This program will hinge significantly on the results from the *Annual Vehicle Technology Review* and should be coordinated with that review.



## TARGET 9: RENEWABLE ENERGY

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### ***OBJECTIVE 9.1: EXPLORE RENEWABLE ENERGY OPPORTUNITIES***

Like vehicle technology, renewable energy technology is also in a constant state of evolution and development. Renewable energy technologies such as solar and wind are becoming increasingly scalable and cost effective each day. The Town has already begun to explore possibilities of using solar technology for street lighting applications in Town parks. For example, the Town has worked with vendors to learn more about solar outdoor lighting which can provide attractive return on investments when factoring in the absence of electricity costs and expensive electrical wiring costs. The Town plans to continue to research and evaluate renewable energy technologies and find cost effective ways it can be integrated into municipal operations.

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# CHAPTER 3- MUNICIPAL OPERATIONS



## *(Long Term)*

### ***Action 9.1.1: Develop Renewable Energy Pilot Program***

The Town will work to identify renewable energy pilot programs. It will do this by conducting an assessment of areas where renewable energy technologies may be used to reduce electricity consumption. Using this assessment the Town will work with vendors and conduct research to learn more about the pros and cons of each technology to determine the overall return on investment of potential technology solutions. Potential projects will be added to the “Green Capital Projects Matrix” when they are ready for implementation. To facilitate this process, the Town will actively seek out renewable energy technology grants that will help to catalyze future pilot programs.

Finally, as the Town begins to implement renewable energy technology, the Town will also set up monitoring programs to track system performance over time. Some examples of potential renewable energy technologies to be considered include, but are not limited to, small scale wind turbines, solar hot water heaters and rooftop installations, hydrogen fuel cells, and bio-digesters.

***Chapter 4 – Community Planning & Development***



# CHAPTER 4- COMMUNITY-PLANNING & DEVELOPMENT



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## STRATEGY INTENT

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The intent of this strategy is to build upon existing work completed to incentivize and facilitate sustainability in the residential and business communities. This will be done by focusing on planning and policy and by developing an education and outreach program that will be complete by 2016.

### **TARGET 10: PLANNING & POLICY**

Objective 10.1: Encourage the development community to build green

Action 10.1.1: Revisit the RAC green building incentive program

### **TARGET 11: EDUCATION & OUTREACH**

Objective 11.1: Develop a community sustainability program by 2013

Action 11.1.1: Update Davie Green Website

Action 11.1.2: Engage in Community Planning Process

### **TARGET 12: VEGETATIVE COVER AND URBAN FORESTRY**

Objective 12.1: Increase urban tree canopy cover 30% by 2030

Action 12.1.1: Expand the i-Tree Study

Action 12.1.2: Expand tree planting programs



## TARGET 10: PLANNING AND POLICY

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### ***OBJECTIVE 10.1: ENCOURAGE THE DEVELOPMENT COMMUNITY TO BUILD GREEN***

During the strategic planning process, the Steering Committee expressed a desire to create an environment within the Town that encourages developers to build greener buildings. The GEEC has been working to develop a “green building checklist” for new construction projects that come to the Town for plan review. This green building checklist is comprehensive because it draws upon green building requirements outlined in the all LEED rating systems, the Florida Green Building Coalition (FGBC), and other standards. It was also developed in consultation with a multidisciplinary team of experts that includes university professors and green building professionals. The checklist is in draft form and many questions remain to be answered regarding how it will eventually be implemented. The Town has also attempted to make code modifications for private construction projects pursuing LEED Silver or Gold Certification that are located in the Town’s Regional Activity Center (RAC). The code essentially would provide a Town park and recreation impact fee waiver and a 25% height increase for LEED Silver projects. LEED Gold projects would receive a similar waiver of 35% height increase and a 10% increase in impervious area. However, no incentives have been granted since its adoption. Both projects are examples of ways the Town would like to begin to encourage greener developments. However, there are many barriers that must be thoroughly considered before developing a comprehensive program. Does the Town want to develop regulatory programs or pursue incentive programs instead? What are some of the legal ramifications of mandatory and regulatory programs? The actions as part of this objective outline the steps the Town will build upon existing initiatives that have already taken place to encourage green development in a manner that is clear, reasonable, and shields the Town from unnecessary risk.

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# CHAPTER 4- COMMUNITY-PLANNING & DEVELOPMENT



*(Mid Term)*

***Action 10.1.1: Revisit the RAC Green Building Incentive Program***

As stated above, the Town has already developed an incentive program for development projects that will be located in the Town's Regional Activity Center (RAC). This was done through code modifications that provided developers with impact fee waivers, building height increases, and increases in impervious areas in return for constructing buildings that earn LEED Silver Certification. To date, a LEED Silver building has yet to be constructed. This may most likely be due to the recent economic downturn. However, some concerns have been raised regarding this program. One important concern raised by the Town is that the incentive program has the potential to open the Town to liability. For example, the Town will grant waivers to developers that receive plan approval for LEED certified buildings. However, if the developer cannot achieve all of the planned points from the USGBC after the project is complete, it is possible that the project will not receive certification. In this scenario, the Town runs the risk of providing incentives that cannot be retracted such as height increases since the building would have already been developed. In a situation such as this, competing developers may be put at a disadvantage creating unneeded liability for the Town.

The incentive program is an excellent first step to incentive green building amongst developers. However, the Town plans to work with the GEEC, developers, and other stakeholders to determine ways to strengthen the code by providing risk mitigation measures for the Town and additional benefits to developers.



## TARGET 11: EDUCATION AND OUTREACH

### **OBJECTIVE 11.1: DEVELOP A COMMUNITY SUSTAINABILITY PROGRAM FOR BY 2013**

Developing community outreach and education is a critical component of any sustainability plan. During the strategic planning process, the Town also expressed a desire to develop a community education and outreach program that specifically addressed residents and businesses. As a first step in the process, the Town conducted a community energy use and greenhouse gas emissions inventory of energy use by the community within the Town of Davie geographical boundary. In 2009, the Town as a whole used approximately 1,099,098,556 kWh of electricity across five sectors including: 1) Residential; 2) Commercial; 3) Industrial; 4) Public Streets & Highway Lighting; and 5) Other Sales to Public Authority.

Community 2009 GHG Emissions		
Account Type	kWh	MT CO <sub>2</sub> e
<b>Residential - Total</b>	<b>615,754,301</b>	<b>383,405</b>
1 - Residential Sales	615,701,779	383,373
A - Residential Sales - Public Authority	52,522	33
<b>Commercial - Total</b>	<b>471,398,595</b>	<b>293,521</b>
2 - Commercial Sales	398,553,555	248,163
B - Commercial Sales - Public Authority	72,845,040	45,358
<b>Industrial - Total</b>	<b>8,241,578</b>	<b>5,132</b>
3 - Industrial Sales	656,381	409
C - Industrial Sales - Public Authority	7,585,197	4,723
4 - Public Street & Highway Lighting	3,524,779	2,195
5 - Other Sales to Public Authority	179,303	112
<b>Total Community</b>	<b>1,099,098,556</b>	<b>684,365</b>

The table outlines how electricity was consumed across each sector. The pie chart outlines the percentage breakdown across departments. The residential sector consumed approximately 56% of electricity throughout the Town while commercial, public highway and lighting, and industrial consumed 43%, 4%, and 1% respectively. Other sales to public authority consumed less than 1% of electricity consumed. Using this inventory as an indicator for how energy and other resources such as water are consumed helped the Town develop two focus areas for its community programs. The first area will focus on the residential community. The second area will focus on the commercial and business community.

# CHAPTER 4- COMMUNITY-PLANNING & DEVELOPMENT



## *(Short Term)*

### ***Action 11.1.1: Update Davie Green Website***

The Town has developed the Davie Green website.<sup>31</sup> The first step the Town will take to implement its sustainability program will be to develop a web portal. The web portal will begin with a modest web presence and develop over time as the SAP matures. The web portal will, at a minimum, provide a narrative of the Town's Sustainability Action Plan (SAP). It will also provide an environmental report card where metrics can be reported on a regular basis. Finally, the website will contain a news and information section that provides educational links that benefit both residences and businesses in the community. As the website becomes increasingly popular, the Town may want to consider upgrading its capability to include social networking via twitter and facebook to reach out to the community and provide a blog forum so that the community can share knowledge, experiences, and provide feedback to the Town. The Town may also want to consider using the website as a platform to develop informative billing programs. This can be done combining GIS capabilities with some of the smart metering initiatives being carried out by FPL. The City of Charlotte in North Carolina developed an excellent website that can serve as a future model for the web portal called power2charlotte.<sup>32</sup> The website functions as a portal that provides the community

with narrative descriptions of the City's plan and ways in which residents can interact. As the web portal is being developed, the Town will also work to determine ways in which it can help the community become more familiar with new smart meters through the use of mobile applications and other innovative approaches.

## *(Short Term)*

### ***Action 11.1.2: Engage Community Planning Process***

The Town identified the need to provide community programs to residential and commercial entities. Therefore, the Town will embark on a strategic planning process to help provide more specifics for community programs. Initial workshops will be dedicated to outlining focus areas where the Town wishes to develop programs. Based on initial feedback during the strategic planning process along with guidance from the FGBC, the Town has identified five areas to target: 1) leadership; 2) energy efficiency; 3) water conservation; waste and recycling; and agriculture and forest cover. The Town will conduct strategic planning workshops designed to build out programs in each focal area.

# CHAPTER 4- COMMUNITY-PLANNING & DEVELOPMENT



To do this the Town will focus at a minimum target the following components for each focal area:

- Education and outreach
- Incentives
- Access to information and tools
- Funding
- Program monitoring and performance tracking

The Town will identify programs to develop the area of community waste management and recycling.

- ***Waste Management and Recycling (Public Events, Multi-Family Residences, Other Innovative Programs)*** - First, the Town has recognized that many non Town sponsored public events do not recycle basic products such as water bottles. The Town plans to develop a program that either incentivizes recycling at non Town sponsored public events or makes doing so mandatory if a special event permit is necessary. An additional topic the Town plans to focus on is obtaining additional funding to provide additional recycling receptacles at Pine Island Park where household items such as paint, solvents, cleaners, batteries, electronic equipment, computer and monitors, and CFL bulbs can be appropriately disposed of. The Town secured

a grant to purchase 22 gallon recycling receptacles to be placed around Town. However additional receptacles that have greater capacity for additional recycling volumes are needed. Based on feedback from residents, the Town has identified a need to facilitate recycling at multi-family residences such as apartment buildings. Finally, the Town is currently in the middle of its waste hauling contract which is set to expire in 2013. The Town will begin to evaluate opportunities for innovative recycling programs that can potentially be incorporated into the community at the conclusion of the contract. The Broward County Comprehensive Plan Waste Elements (Broward County, 2006)<sup>33</sup> outlines two innovative programs for community recycling called Recycle Bank and Pay as You Throw. According to the County's Waste Element, Recycle Bank works with cities and waste haulers to incentivize community recycling by providing points that can be used by residents to obtain discounts at over 1,500 local and national businesses. This is done using a system that weighs curbside recyclables upon pick-up. Based on weekly weights residents receive applicable points. The cities of Hollywood and North Miami in Florida have implemented this program. The Town will continue to collaborate with these cities to learn more about the program and its suitability for the Town.

# CHAPTER 4- COMMUNITY-PLANNING & DEVELOPMENT



- **Waste Management and Recycling (Construction Debris Waste Management)** – As this plan was being reviewed internally, Town Council expressed a desire to include programs that will encourage the construction community to improve its waste management practices during the demolition process. There are a variety of ways that this can be done. The LEED 2009 New Construction and Major Renovations Rating System provides an excellent overview of strategies that can be employed to improve construction debris waste management under Materials and Resources Credits 1-3. Each of these credits outlines different approaches. These credits deal with building re-use by encouraging contractors to maintain features of existing buildings such as existing floor, roofing, and decking. They also focus on construction waste management by encouraging contractors to recycle materials that are removed or demolished during the project. For example this credit requires contractors to develop a construction waste management plan that identified materials that will be recycled. Finally, these credits also outline ways to utilize and source materials found either onsite or offsite to reduce the demand for “virgin materials.”
- **Integration of Green Building Checklist** - The GEEC has developed a Green Development Checklist for new construction and substantial renovation of commercial, residential, and industrial buildings. This checklist has been mentioned various times throughout this plan. It draws upon all LEED rating systems, the Florida Green Building Coalition and other standards. The checklist has been introduced at federal, state, and county levels for feedback to promote the utilization of environmentally friendly and energy efficient principles and methods in the following general areas listed below.
  - Community/Neighborhood – use of compact building design; energy efficient street lighting; energy efficient automobiles/transit
  - Lot Choice – priority uses of small properties in urban areas; use of “brownfield” lands that can be cleaned; use of lands close to sewer and power lines, mass transit or green space
  - Site Choice – re-create or preserve wildlife habitat or shelter, replant or donate vegetation, use cleared materials for mulch or landscaping or stabilizing soil, or save or reuse topsoil.

# CHAPTER 4- COMMUNITY-PLANNING & DEVELOPMENT



Water Efficiency/Conservation – use of very efficient clothes washers low-flow toilets or waterless urinals; use of reclaimed water; innovative irrigation or drought tolerant plants; use of rain gardens, bioswales and cisterns.

Energy Efficiency/Conservation – use of light colored exterior walls; buildings shaded on the east and west by trees; property sized air-conditioners; use of ceiling fans; energy efficient appliances and indoor lighting; efficient well-pumping; use of alternate electrical grids, and/or use of wind/solar/natural gas energy.

Materials – use of building materials with recycled content; eco-friendly insulation; lumber from sustainable sources; or locally produced materials.

Health – use of detached garage; carbon monoxide alarm; central dehumidification systems; energy efficient bathroom exhaust fans with timer; humidistat; whole house filtration.

Highlighting as many of these principles as possible when completing the Town of Davie Green Development Checklist will ensure that a project will provide for energy efficiency, water conservation, and long-term sustainability. This

strategic planning process will help to define exactly what the Town plans to use the Green Building Checklist and how it will be integrated into the Town’s existing building, planning, and zoning review process.

# CHAPTER 4- COMMUNITY PLANNING AND DEVELOPMENT

## TARGET 12: VEGETATIVE COVER AND URBAN FORESTRY

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### ***OBJECTIVE 12.1: INCREASE URBAN TREE CANOPY 30% BY 2030***

The Town has also been involved in forestry initiatives for some time. In 2009, the Town was awarded the “Outstanding Forestry Program in Florida,” from the Florida Urban Forestry Council.<sup>34</sup> The Town is also a member of the Arbor Day Foundation Tree City USA<sup>35</sup> program which provides direction, technical assistance, and recognition for urban and community forestry programs. Town Council has also set an ambitious goal to increase tree canopy within the community 30% by 2030. Finally, the Town has also participated in a tree study with the University of Florida designed to quantify the environmental benefits of the Town’s urban forest such as carbon sequestration and improved water quality. This objective will focus on ways to incentive the community to become involved in meeting this objective through education and outreach. One way the Town will work to incentive the community is by planning programs that communicate the ways tree planting can offset personal carbon emissions associated with daily activities.

---

# CLOSING REMARKS

## *(Short Term)*

### ***Action 12.1.1: Expand the i-Tree Study***

The i-Tree study currently being conducted by the Town is designed to help quantify the environmental benefits associated with trees and canopy cover. For example, trees provide shade to buildings which can help reduce electricity demand needed for cooling. Trees also provide water filtration and prevent storm-water erosion. Trees also are extremely effective at sequestering and storing carbon from the atmosphere. The Town will work to secure additional funding to expand the i-Tree study to more accurately quantify the carbon sequestration and storage benefits associated with tree planting and tree conservation programs. This information will be used to develop Acton 12.1.2, which will be designed to help the Town and the community offset carbon emissions through tree planting.

## *(Short Term)*

### ***Action 12.1.2: Expand Tree Planting Programs***

Using the data from the i-Tree study, the Town will develop a municipal and community tree planting program that builds upon the existing Tree Legacy program. The Town of Davie currently maintains the Tree Legacy program which allows residents to purchase trees to be planted in Town Parks.

Trees purchased are accompanied by a Certificate of Acknowledgement that can be personalized with a message. The Town plans to expand this program by providing customers more information that highlights the many benefits that a tree planting investment would bring to the community such as; <sup>36</sup>

- carbon sequestration and storage,
- improve storm-water run-off,
- energy efficiency,
- aesthetics,
- and improved well-being

Communicating these benefits will help to incentivize tree planting because program participants will better understand how trees can mitigate personal environmental impacts and improve environmental quality for the entire community. The Town will explore innovative approaches to expanding its tree planting program. It will investigate other tree planting programs in the U.S. to determine models that help residents better understand the environmental impacts associated with daily life and relate to ways tree planting can help mitigate things such as carbon emissions from personal energy use and travel.

# CLOSING REMARKS

## CLOSING REMARKS

This Sustainability Action Plan (SAP) covers a five year planning horizon (2011-2016). It represents the culmination of a strategic planning process undertaken by the Town's Sustainability Steering Committee composed of key staff and consultants. The Steering Committee and its consultants worked in close collaboration with the Green Energy and Environmental Committee (GEEC) that provided critical guidance throughout the process. During this process, the Town:

- developed a Sustainability mission and vision;
- established core Sustainability values;
- completed 5 in depth planning workshops;
- conducted an energy use and greenhouse gas inventory;
- performed assessments of existing initiatives;
- developed Sustainability targets, objectives, and actions; and
- prioritized actions based on planning horizons

As a result of the work completed during this process, the Town defined three major areas where it plans to focus its Sustainability efforts: 1) Building Institutional Capacity, 2) Optimizing Municipal Operations, and 3) Planning for Community Development, Outreach, and Education.

In closing, this plan is more than just a planning document. It represents the framework for a much broader system the Town will use to continue to plan for and implement projects and programs that advance Sustainability. Through monitoring, this system was designed to receive continual feedback as projects and programs are implemented over time. This feedback will facilitate a learn by doing culture that will help Sustainability managers with the Town adapt to changing technologies and grow in step with the emerging field of Sustainable Development.

# RESOURCES

## END NOTE RESOURCES

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- <sup>1</sup> Brundtland, G., (1987), “Our Common Future: The World Commission on Environment and Development.” Oxford, Oxford University Press
- <sup>2</sup> Davie Green Website  
[http://www.davie-fl.gov/Pages/DavieFL\\_Green/index](http://www.davie-fl.gov/Pages/DavieFL_Green/index)
- <sup>3</sup> Florida Green Building Coalition Website  
<http://floridagreenbuilding.org/>
- <sup>4</sup> United States Green Building Council (USGBC) website  
<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=124>
- <sup>5</sup> International Council for Local Environmental Initiatives (ICLEI) Local Governments for Sustainability Website  
<http://www.iclei.org/>
- <sup>6</sup> Davie Green Website  
[http://www.davie-fl.gov/Pages/DavieFL\\_Green/index](http://www.davie-fl.gov/Pages/DavieFL_Green/index)
- <sup>8</sup> United States Green Building Council, (2009), “Leadership in Energy and Environmental Design (LEED) for Existing Buildings: Operations and Maintenance.” Washington, D.C.
- <sup>9</sup> Leadership in Energy and Environmental Design, (2009), “ New Construction and Major Renovations Rating System.” United States Green Building Council (USGBC), Member Approved November 2008 (Updated May 2011). Version for Public Use and Display.
- <sup>10</sup> Leadership in Energy and Environmental Design, (2009), “Existing Buildings: Operations & Maintenance Rating System.” United States Green Building Council (USGBC), Member Approved November 2008 (Updated May 2011). Version for Public Use and Display
- <sup>11</sup> Stapleton, P., Glover, A., and Davis, S., (2000), “Environmental Protection Agency, National Science Foundation ( NSF), Environmental Management Systems: An Implementation Guide for Small and Medium Sized Organizations.” NSF Press, Washington , D.C.  
<http://www.epa.gov/owm/iso14001/wm046200.htm>

# RESOURCES

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- <sup>12</sup> International Standards Organization (ISO), Family of Standards for Environmental Management (14001).  
[http://www.iso.org/iso/iso\\_catalogue/management\\_and\\_leadership\\_standards/environmental\\_management.htm](http://www.iso.org/iso/iso_catalogue/management_and_leadership_standards/environmental_management.htm)
- <sup>13</sup> Grant Agency Websites  
Department of Energy (DOE)  
<http://www.energy.gov/>  
Department of Housing and Urban Development (HUD)  
<http://portal.hud.gov/portal/page/portal/HUD>  
Environmental Protection Agency EPA  
<http://www.epa.gov/>  
National Renewable Energy Laboratory (NREL)  
<http://www.nrel.gov/>
- <sup>14</sup> Weblinks to EPA Energy Star and WasteWise Programs  
[http://www.energystar.gov/index.cfm?c=evaluate\\_performance.bus\\_portfoliomanager](http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager)  
<http://www.epa.gov/epawaste/partnerships/wastewise/index.htm>
- <sup>15</sup> American Association of Energy Engineers  
<https://www.aeecenter.org/i4a/pages/index.cfm?pageID=3330>
- <sup>16</sup> Environmental Protection Agency, (2008), “EPA Energy Star Building Manual.” Washington, D.C.  
[http://www.energystar.gov/index.cfm?c=business.bus\\_upgrade\\_manual](http://www.energystar.gov/index.cfm?c=business.bus_upgrade_manual)
- <sup>17</sup> Environmental Protection Agency (EPA) Energy Star Portfolio Manager Website  
[http://www.energystar.gov/index.cfm?c=evaluate\\_performance.bus\\_portfoliomanager](http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager)
- <sup>18</sup> Mckakin, R., Lundgren, E., and Malone, E, (2000), “Promoting Behavior-Based Energy Efficiency in Military Housing.” U.S. Department of Energy Efficiency and Renewable Energy Federal Management Program, Pacific Northwest Laboratory

# RESOURCES

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- <sup>19</sup> Indiana University Bloomington Energy Efficiency Behavior Challenge  
<http://energychallenge.indiana.edu/>
- <sup>20</sup> Florida Department of Environmental Protection Web Link to 75% Reduction Goal  
<http://www.dep.state.fl.us/waste/recyclinggoal75/default.htm>
- <sup>21</sup> See Citation (Broward County Comprehensive Plan, Waste Element Volume 4).
- <sup>22</sup> Florida Department of Environmental Protection (2010), “75% Recycling Goal Report to the Legislature.” January 4, 2010.
- <sup>23</sup> Environmental Protection Agency (EPA) Waste Assessment Approaches Web Link  
<http://www.epa.gov/osw/partnerships/wastewise/approach.htm>
- <sup>24</sup> Broward County Comprehensive Plan, Waste Element Volume 4. Last Amended in 2006.  
<http://www.broward.org/PLANNINGANDREDEVELOPMENT/COMPREHENSIVEPLANNING/Pages/ComprehensivePlan.aspx>
- <sup>25</sup> Example of Ways Other Jurisdictions Have Implemented Green Building Policies  
City of Portland, Oregon  
<http://www.portlandonline.com/bps/index.cfm?c=50449&a=304948>  
City of Long Beach, California  
<http://www.lbds.info/civica/filebank/blobdload.asp?BlobID=2533>  
City of Hollywood, Florida  
<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1852>
- <sup>26</sup> Toyota Prius Hybrid Website  
<http://www.toyota.com/prius-hybrid/>
- <sup>27</sup> Chevy Volt Website and UN News Ranking  
<http://www.chevrolet.com/volt/>  
[http://usnews.rankingsandreviews.com/cars-trucks/Chevrolet\\_Volt/](http://usnews.rankingsandreviews.com/cars-trucks/Chevrolet_Volt/)

# RESOURCES

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<sup>28</sup> Nissan Leaf Website and Edmunds Review

<http://www.nissanusa.com/leaf-electric-car/index#/leaf-electric-car/index>  
<http://www.edmunds.com/nissan/leaf/2011/#fullreview>

<sup>29</sup> Honda Clarity Website

<http://automobiles.honda.com/fcx-clarity/>

<sup>30</sup> Examples of Cities that Have Used Hybrids in Emergency Vehicle Fleet

Westwood Police Department in New Jersey

[http://www.njslom.org/magart\\_0208\\_pg70.html](http://www.njslom.org/magart_0208_pg70.html)

<http://webapps.icma.org/pm/9006/public/feature1.cfm?author=robert%20s.%20hoffmann&title=hybrid%20police%20patrol%20vehicle%20praised>

<sup>31</sup> Davie Green Website

[http://www.davie-fl.gov/Pages/DavieFL\\_Green/index](http://www.davie-fl.gov/Pages/DavieFL_Green/index)

<sup>32</sup> Power to Charlotte, North Carolina Website

<http://www.power2charlotte.com/>

<sup>33</sup> See Citation (Broward County Comprehensive Plan, Waste Element Volume 4).

<sup>34</sup> Weblink for the Florida Urban Forestry Council

<http://www.fufc.org/>

<sup>35</sup> Weblink for the Arbor Day USA Tree City Program

<http://www.arborday.org/programs/treeCityUSA/index.cfm>

<sup>36</sup> Peper, Paula J.; McPherson, E. Gregory; Simpson, James R.; Albers, Shannon N.; Xiao, Qingfu 2010. Central Florida community tree guide: benefits, costs, and strategic planting. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station.

**APPENDIX A:**  
**GREENHOUSE GAS EMISSIONS INVENTORY**



***2009 Town of Davie, Florida  
Energy Use and Greenhouse Gas Emissions Inventory***



# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY



Prepared by:

Authors:

Matt Zirkelbach

Jonathan Brewer

Dr. Heike Naigur

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

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# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## INTRODUCTION

This document presents the results of an Energy Use and Greenhouse Gas Emission Inventory conducted for the Town of Davie for the calendar year of 2009. This section introduces the basic concepts behind both Energy Use and Greenhouse Gas Emissions Inventories. This section also outlines the data limitations this study and how it should be used as a tool to support the 2011-2016 Sustainability Action Plan (SAP).

## ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

Conducting an *Energy Use and Greenhouse Gas Emissions Inventory (EU&GHGI)* is a systematic process designed to quantify an entity's energy use from operations or facilities and the associated greenhouse gas emissions from the consumption of that energy. The *EU&GHGI* will allow the Town to benchmark itself to determine what areas to target for energy savings and emissions reduction projects and programs. The common practice is to quantify energy in terms of the billable quantity, but also using British Thermal Units (BTUs) in order for an even comparison. The standard for quantifying greenhouse gases is in the units of metric tonnes of carbon dioxide equivalent (MT CO<sub>2</sub>e). Equivalent means that any non-CO<sub>2</sub> gases included in the total are weighted by their Global Warming Potential (GWP). Making such a comparison of differing energy sources allows for measurement efficiency in the overall usage of the energy.

Energy Units			
Type	Billed	Symbol	BTU Equivalent
<i>Electricity</i>	<i>Kilowatt Hours</i>	<i>kWh</i>	3,412
<i>Diesel</i>	<i>Gallons</i>	<i>gal</i>	138,691
<i>Gasoline</i>	<i>Gallons</i>	<i>gal</i>	124,000
<i>Propane</i>	<i>Gallons</i>	<i>gal</i>	91,047

Global Warming Potentials	
Greenhouse Gas	GWP
<i>Carbon Dioxide (CO<sub>2</sub>)</i>	1
<i>Methane (CH<sub>4</sub>)</i>	21
<i>Nitrous Oxide (N<sub>2</sub>O)</i>	310

Figure 1: Energy Units and GWPs

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

Greenhouse gas emissions can be classified into three scopes, Scope 1, 2, and 3. Scope 1 emissions are “direct” emissions that occur as a result of direct user or operator controlled emissions of greenhouse gases to the atmosphere. In this inventory Scope 1 emissions stem from the combustion of fossil fuels in Town controlled operations. Scope 2 emissions are considered “indirect” and come from the consumption of purchased or acquired electricity, steam, heating or cooling; for Davie the only Scope 2 emissions come from purchased electricity. Scope 3 emissions are considered “indirect” and can result from supply chain activities, consumer and post-consumer activities, waste, business travel, and employee commuting. Scope 3 emissions are considered optional in the reporting of a GHG inventory as they are often quite difficult to quantify and control, therefore they have been left out of this study.

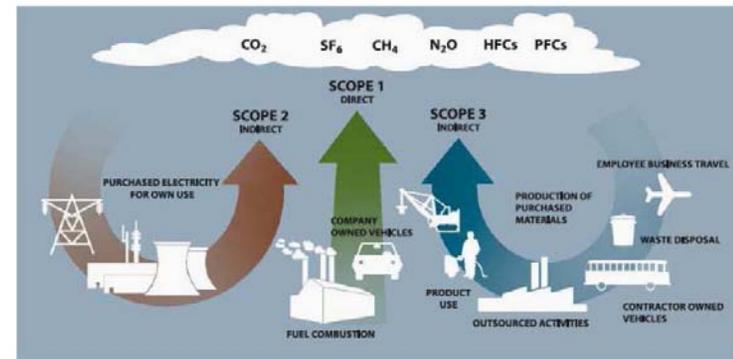


Figure 2: Emission scopes as defined by international protocols such as the World Resources Institute's Global Reporting Protocol which is also reflected in the The Climate Registry's Local Government Protocol.

Figure 2: GHG Scopes

## USE OF THIS INVENTORY

The purpose of the Inventory is to create a baseline for future trend analyses for Davie's energy use and greenhouse gas emissions. By establishing a baseline now, the Town will be able to make informed policy decisions governing future development. This is not a tool adequate for developing regulation, and care should be exercised in comparing the results of this inventory to those done by other communities as these inventories are often created uniquely for each community. The Inventory is limited and should be used by the Town for internal planning purposes only. First, it does not include energy use or GHG emissions for the community. Second, the Inventory only represents one year of historical data, making it difficult to predict energy use trends with a high degree of confidence. Third, as the GHG Inventory is derived from the Energy Use Inventory, is based on, but does not necessarily conform to, all accepted protocols or guidelines.

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## **METHODOLOGY**

This section outlines the methodology used to collect, organize, and analyze natural gas and electricity and fuel data for this inventory.

### **PROTOCOL (LGOP VERSION 1.1 MAY 2010)**

The Town used the LGOP Version 1.1 (LGOP V1.1) published in May 2010. LGOP V1.1 was developed in partnership with the California Air Resources Board, the California Climate Action Registry, the Climate Registry and ICLEI Local Governments for Sustainability. The decision to use LGOP was made primarily because the protocol is one of the most commonly used in the U.S. and within the South Florida area. The LGOP was also used because the Town is currently seeking certification as a “Green Local Government” under the Florida Green Building Coalition (FGBC). As part of the FGBC process, it is recommended that participants use the ICLEI framework to reduce GHG emissions. The LGOP V 1.1 serves as the translation of ICLEI’s International Local Government Greenhouse Gas Protocol for use in developing local government operations emissions inventories in the U.S.

## **PROJECT SCOPING**

The first step to an *EU&GHGI* is the creation of organizational and operational boundaries (scoping). Organizational boundaries are drawn to limit what operations and facilities an inventory will include, Davie chose to limit the scope of the Inventory to include only municipal controlled operations and exclude for the present time an inventory of community energy use and greenhouse gas emissions. It was also determined that the Town’s prime intention for the Inventory was to first quantify energy use across various departments and second to quantify associated greenhouse gas emissions. Based on this directive, it was also determined that the Inventory would not include quantification of Scope 3 greenhouse gas emissions.

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## MUNICIPAL OPERATIONS



The following sections will discuss in detail the analysis and results of the municipal energy use and greenhouse gas inventory.

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## DATA COLLECTION

The largest hurdle in the data collection process was that there was no clear central repository for utility and energy information. Until this inventory was created the Town had no means of tracking energy or its associated emissions, but only the costs associated with the purchase of the energy.

### *Electricity*

As the Town did not maintain any records outside of billing for electricity the data was collected from Florida Power and Light (FPL), the electricity provider to the municipality. The data was delivered in monthly format in a 24 month block. This is the standard method for delivery of electrical data from FPL. The block's data range is defined by the previous 24 complete months from the date of the data request. Data contained information from October 2008 – September 2010, giving only a complete calendar year of 2009. The FPL data is delivered with account numbers and addresses but there is no correlation to Town departments. This information had to be cross referenced with a database created maintained by the Town in order to determine which addresses belong to which departments within the Town. The 12 months of data billed in 2009 were summed to calculate total usage during that year. There were 167 accounts at the time of the inventory associated with 9 departments.

### *Propane*

Propane gas was handled similarly to electricity however data was not consistently monthly. As the propane is only used in the fire stations it is only delivered when it is needed. We utilized hard copy invoices to calculate the propane usage during the 2009 year. Any invoice which was dated in 2009 was considered to be part of the year usage, while any invoices dated outside of 2009 were considered to be part of other years.

✓ Electricity:  
Ray Rynning  
Governmental Account Manager  
(Florida Power and Light)  
7201 Cypress Road  
Plantation, Florida 33317  
Office: 954-321-2259  
Email: [ray.rynning@fpl.com](mailto:ray.rynning@fpl.com)

✓ Propane (Scope 1)  
Amerigas District 5551  
2220 SW 70<sup>th</sup> Avenue  
Davie, FL 33712

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## Fuel

The Town manages a complex and comprehensive fuel usage database for its entire fleet. This database is able to produce summary reports by department and fuel type (gasoline or diesel) on yearly basis. In 2009 there were 13 identified departments and 7 miscellaneous accounts utilizing fuel in the Town.

## ESTABLISHING A BASELINE YEAR

The calendar year of 2009 was chosen to be the baseline year for the *EU&GHGI* due to data availability. Throughout the year adequate data was available for electricity, propane gas, and gasoline and diesel usage for all of the Town operations. This baseline approach represents general conformity with other accepted guidelines such as Cities for Climate Protection Program that suggest to establish base years as far back as reliable data can be obtained.

## DATA ANALYSIS

With all of the data collected and aggregated by department and source, the next steps were to determine energy consumption and greenhouse gas emissions. To each unit of energy a conversion factor was applied to determine BTUs and greenhouse gas emissions on the same department and source sorting. The BTU energy quantities could then be aggregated regardless of fuel type to determine total energy usage by department and for the entire Town. The same holds true also for aggregating of greenhouse gas emissions.

✓ Fuel:  
 Roger Bohannon  
 General Manager  
 (First Vehicle Services Town of Davie)  
 6915 SW 45<sup>th</sup> Street  
 Davie, FL 33314  
 Office: 954-797-1249

TOWN OF DAVIE, FLORIDA - 2009 Total Energy and Emissions			
Dept	Totals		
	Cost	MMBTUs	MT CO <sub>2</sub> e
Utilities	\$958,206	35,998	7,016
Police	\$539,625	34,945	3,131
Parks and Rec	\$495,589	12,493	2,115
Street Lights	\$605,965	10,574	1,930
Fire	\$211,934	11,196	1,177
Public Works	\$147,506	7,066	793
Garage	\$28,020	941	162
CRA	\$31,742	725	127
Rodeo	\$23,098	565	103
Building Div.	\$10,521	825	58
Housing	\$6,039	179	30
Unidentified	\$1,038	292	21
Engineering	\$3,557	278	20
Special Projects	\$1,890	139	10
Town Clerk	\$1,658	130	9
Plan & Zoning	\$844	68	5
<b>Totals</b>	<b>\$3,067,234</b>	<b>116,414</b>	<b>16,707</b>

Figure 3: 2009 Total Energy use and Emissions

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## GOVERNMENTAL OPERATIONS

The first perspective presented on the Davie governmental operations is an aggregate total of energy in terms of cost, energy and greenhouse gas emissions broken down by department. This is very useful as a first glance for the Town to determine what to target first. From this initial view it can be seen that the Utilities department is producing the most emissions, highest cost, and highest energy usage. It is typical to see the Utilities department in the top three departments, if not the top, when a municipality provides potable water or wastewater treatment as a service to the residents. The Police department's energy cost and greenhouse gas emissions are considerably lower than the Utilities department, but the overall energy consumption is close. This has to do with the different types of energy used by the departments. Parks and Recreation is also often found in the top three departments because of the combination of electricity used for outdoor lighting, and fuel used to maintain the parks. This type of analysis is useful to get a high level perspective to determine what departments should be targeted and which ones might be overlooked in the near future for reduction plans. The next sections will drill into more detail on why each department is ranked as it is. The appendix also has a complete view of the energy dashboard and some of the *Large Users* for additional reference.

## BUILDINGS AND FACILITIES

The next part of the analysis focuses on only the built environment in the Town governmental operations. For this inventory, that means examining the electricity and propane gas usage. Electricity was analyzed first, as it contributes most significantly to all categories investigated, including energy, emissions and cost.

The Utilities department is the highest consumer of electricity in the Town, and this was expected as they are also the highest total user when looking at all energy types. Additionally, as the Utilities are responsible for the treatment and movement of water in the Town, a high electrical demand is expected. The Parks and Recreation and Street Lighting departments round out the

Town of Davie, Florida - 2009 Electricity Usage					
Dept	Scope 2 Emissions (Electricity)				
	Accts.	Cost	kWh	MMBTUs	MT CO2e
Utilities	49	\$923,406	9,830,264	33,541	6,121
Parks and Rec	49	\$476,518	3,230,571	11,023	2,012
Street Lights	2	\$605,965	3,099,147	10,574	1,930
Police	1	\$164,171	1,730,520	5,905	1,078
Fire	5	\$91,845	970,702	3,312	604
Public Works	45	\$87,883	762,088	2,600	475
Garage	2	\$26,740	249,358	851	155
CRA	8	\$31,107	198,742	678	124
Rodeo	1	\$23,098	165,508	565	103
Housing	5	\$5,722	45,525	155	28
Building Div.		\$0	0	0	0
Unidentified		\$0	0	0	0
Engineering		\$0	0	0	0
Special Projects		\$0	0	0	0
Town Clerk		\$0	0	0	0
Plan & Zoning		\$0	0	0	0
<b>Totals</b>	<b>167</b>	<b>\$2,436,454</b>	<b>20,282,425</b>	<b>69,203</b>	<b>12,629</b>

Figure 4: 2009 Electricity Usage

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

top three in terms of electrical usage. This examination allows Davie to see what departments are using the most electricity, and what departments are using the least. This is useful, however, in terms of an energy reduction plan; a further level of analysis needs to occur to determine exactly what accounts are driving this energy usage. A *Large User* analysis was done on a per department basis, and also aggregated for the entire Town. This information can be found in Appendix A of the inventory.

Only the Fire department uses propane gas in the Town. It is used for cooking in fire station kitchens. The propane is purchased in gallon quantities based on demand when the stations need it. The emissions associated with propane use in the Town are minimal but were included for completeness.

Town of Davie, 2009 Propane Gas Usage						
ID	Accounts	Cost	Gallons Propane	MMBTUs	MT CO2e	%
Fire Station 68	1	\$1,157	785	71	4.5	38%
Fire Station 104	1	\$1,506	527	48	3.0	26%
Fire Admin 38	1	\$722	450	41	2.6	22%
Fire Station 91	1	\$399	281	26	1.6	14%
<b>Total</b>	<b>4</b>	<b>\$3,783.87</b>	<b>2,042</b>	<b>186</b>	<b>12</b>	<b>100%</b>

Figure 5: 2009 Propane Gas Usage

## VEHICLE FLEET

The vehicle fleet was examined similarly to both propane and electricity and broken down by department, cost, energy consumption, and greenhouse gas emissions. Because there were two fuel types, diesel and gasoline, the individual quantities were first converted into energy units and then they were aggregated to see what departments consumed the most energy in fuel. The Police department consumed the most total fuel in terms of cost, energy and emissions, and also the highest quantity of gasoline. The Fire department consumed the highest amount of diesel fuel, and ranked second in overall totals. The Public Works, Utilities and Parks and Recreation rounded out the top five departments and the remaining department's totals are small in comparison. The Police and Fire departments are typically ranked in the top users of fuel in a municipal government, and it is simply due to the nature and requirements of emergency service. Figure 6 below details fuel usage by Department for the Town of Davie during baseline year 2009

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

Davie 2009 Fuel Usage by Department										
Department Name	Unleaded Cost	Gallons of Unlead	MMBTUs	MT CO2e	Diesel Cost	Gallons of Diesel	MMBTUs	MT CO2e	Total	
									MMBTUs	MT CO2e
Police Department	\$374,893	233,425	29,006	2,051	\$560	254	35	3	29,040.78	2,053.94
Fire Department	\$27,294	16,912	2,101	149	\$89,010	40,354	5,597	412	7,698.24	560.64
Public Works	\$45,806	28,967	3,600	255	\$13,817	6,247	866	64	4,465.91	318.35
Utilities	\$18,007	11,285	1,402	99	\$16,794	7,609	1,055	78	2,457.58	176.86
Parks and Recreation	\$19,071	11,829	1,470	104	-	-	-	-	1,469.83	103.95
Building Division	\$10,521	6,640	825	58	-	-	-	-	825.13	58.36
Unidentified	\$832	2,247	279	20	\$206	93	13	1	292.13	20.70
Engineering	\$3,557	2,233	278	20	-	-	-	-	277.52	19.63
Special Projects	\$1,407	871	108	8	\$483	221	31	2	138.87	9.91
Town Clerk	\$1,658	1,044	130	9	-	-	-	-	129.74	9.18
Garage	\$1,079	627	78	6	\$202	91	13	1	90.59	6.44
Planning and Zoning	\$844	548	68	5	-	-	-	-	68.12	4.82
Administration / Housing and CD	\$636	375	47	3	-	-	-	-	46.57	3.29
<b>Totals</b>	<b>\$505,606</b>	<b>\$317,004</b>	<b>39,391</b>	<b>2,786</b>	<b>121,072</b>	<b>54,869</b>	<b>7,610</b>	<b>560</b>	<b>47,001.0</b>	<b>3,346.1</b>

Figure 6: 2009 Fuel Usage by Department

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## WASTEWATER TREATMENT EMISSIONS

The wastewater treatment operations in the Town account for a sizeable portion of energy use in terms of electricity, but the process itself also inherently generates greenhouse gas emissions. In order to calculate these emissions two equations were utilized from the LGOP to determine emissions from Nitrification/Denitrification and effluent discharge based on a population of 27,000 residents served.

Wastewater Treatment Emissions - 2009	
Population Served	27,000
Nitrification/Denitrification	73 MT CO <sub>2</sub> e
Effluent Discharge	645 MT CO <sub>2</sub> e
<b>Total Emissions</b>	<b>718 MT CO<sub>2</sub>e</b>

## EMISSIONS BY SOURCE AND SCOPE

The final analysis is done by looking at the Town as a whole in terms of greenhouse gas emissions. The graphs below show by department where the emission are coming from, and also by scope. We can see here very easily that electricity is the main source of greenhouse gas emissions in the Town, and that the Utilities department is the largest emitter.

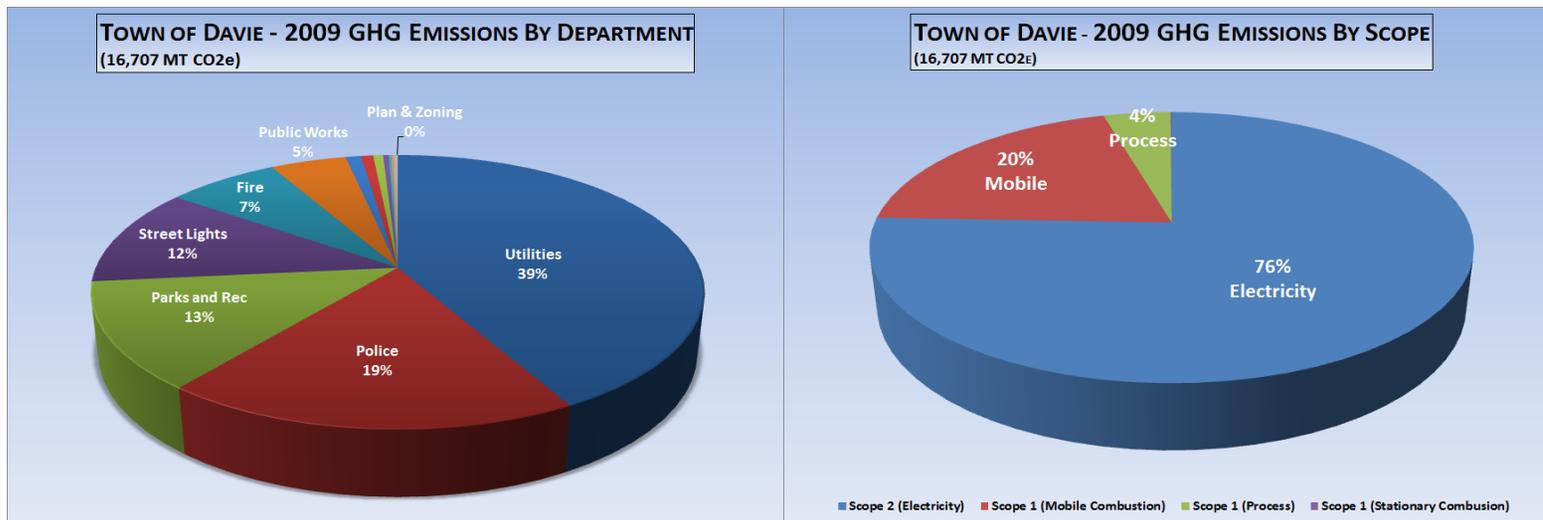
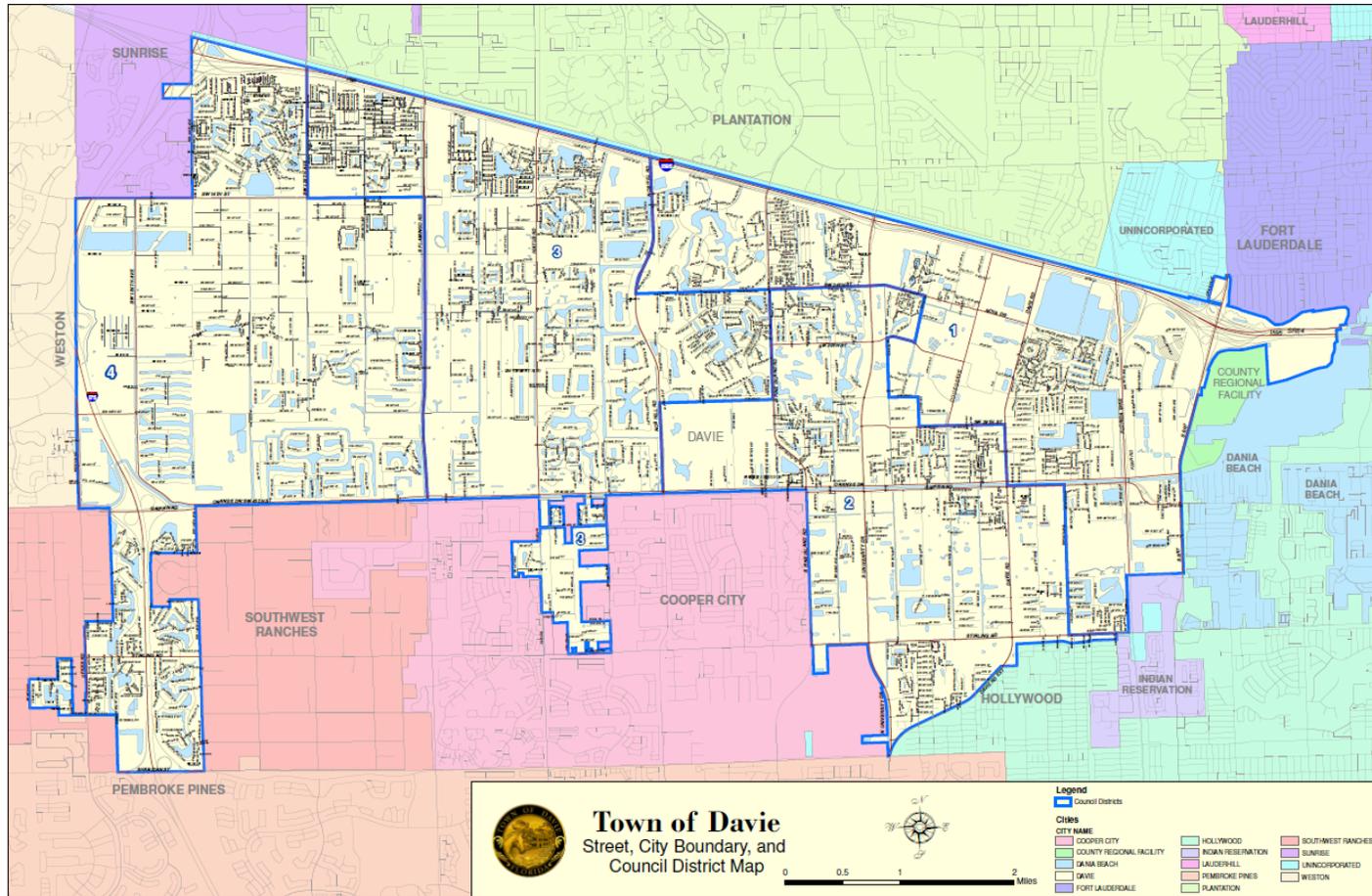


Figure 7: 2009 GHG Emissions by Source and Scope

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## COMMUNITY



The following section details a basic greenhouse gas inventory for the community in Davie. Only electricity and transportation were examined, and a basic analysis was produced.

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## COMMUNITY ELECTRICITY

Electricity information was sourced from the local power utility, FPL, for the community. This information was only available for the 2010 year, and was broken down into 5 sectors, some with additional sub sectors. As there is not a large fraction of industrial process occurring within the town, as expected the usage is mostly split between the residential and commercial basis. The total electrical consumption for the community in 2009 was almost 1.1 million kWh. The 4<sup>th</sup> sector displayed in the table, showing Public Street and Highway Lighting is partially included in the municipal operations. This sector here includes the governmentally controlled lighting as well as that controlled by Broward County and the State of Florida.

<b>Community 2010 GHG Emissions</b>		
<b>Account Type</b>	<b>kWh</b>	<b>MT CO<sub>2</sub>e</b>
<b>Residential - Total</b>	<b>615,754,301</b>	<b>383,405</b>
1 - Residential Sales	615,701,779	383,373
A - Residential Sales - Public Authority	52,522	33
<b>Commercial - Total</b>	<b>471,398,595</b>	<b>293,521</b>
2 - Commercial Sales	398,553,555	248,163
B - Commercial Sales - Public Authority	72,845,040	45,358
<b>Industrial - Total</b>	<b>8,241,578</b>	<b>5,132</b>
3 - Industrial Sales	656,381	409
C - Industrial Sales - Public Authority	7,585,197	4,723
<b>4 - Public Street &amp; Highway Lighting</b>	<b>3,524,779</b>	<b>2,195</b>
<b>5 - Other Sales to Public Authority</b>	<b>179,303</b>	<b>112</b>
<b>Total Community</b>	<b>1,099,098,556</b>	<b>684,365</b>

Figure 8: 2010 Community Electricity Usage

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

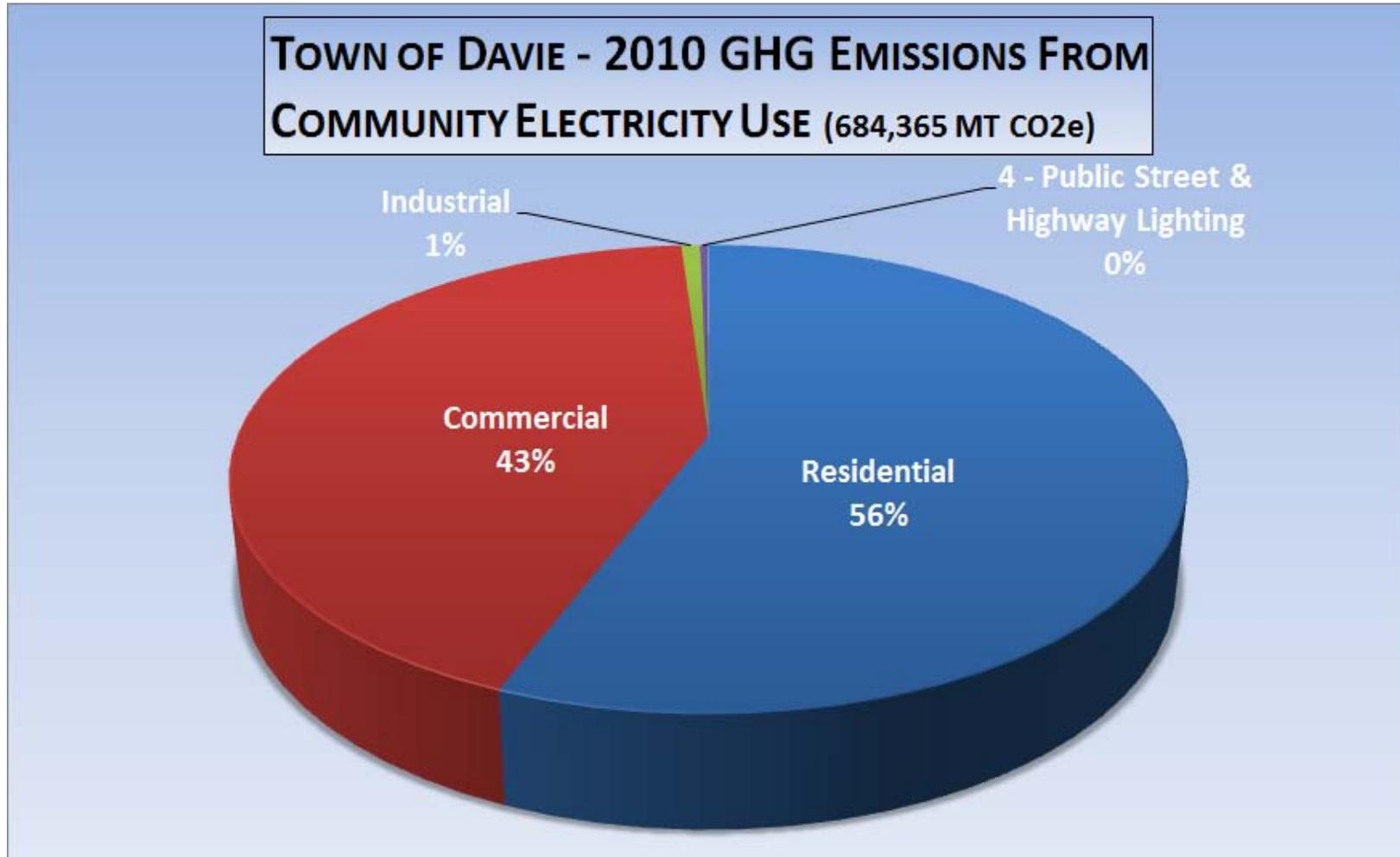


Figure 9: 2010 Community Electricity Usage - Graph

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## COMMUNITY TRANSPORTATION

A basic community transportation study was conducted to ascertain the greenhouse gas emissions generated by the transportation in the Town. As Broward County had already conducted a similar study in 2007, this data was used to find a per capita emission for the average citizen in Broward County. Using this and a projected population growth factor of 1.9% per year, a current population was calculated for the Town of Davie. By multiplying the per capita emissions factor by the projected population for 2009, a figure of 537,337 MT CO<sub>2</sub>e was calculated.

Davie Community Transportation Emissions 2009	
Broward County Population - 2007	1,765,707
Broward County Transportation Emissions Total - 2007	10,047,035 MT CO <sub>2</sub> e
Broward County Transportation Emissions Per Capita - 2007	5.69 MT CO <sub>2</sub> e
Town of Davie Population - 2007	90,945
Population Growth Factor	1.90%
Projected Davie Population - 2009	94,434
<b>Projected Transportation Emissions from Davie Community Population</b>	<b>537,337 MT CO<sub>2</sub>e</b>

Figure 10: Community Transportation Emissions 2009

## COMMUNITY TOTALS

The last phase of the community analysis is comparing the different community sectors to each other. While the electrical data is from 2010, a comparison to the transportation study can still be made without much concern, to at least get an order of magnitude calculation. Transportation is a major player in the community wide emissions generating over 44% of the emissions, with electricity generating about 56% with residential and commercial sectors contributing roughly equal amounts.

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

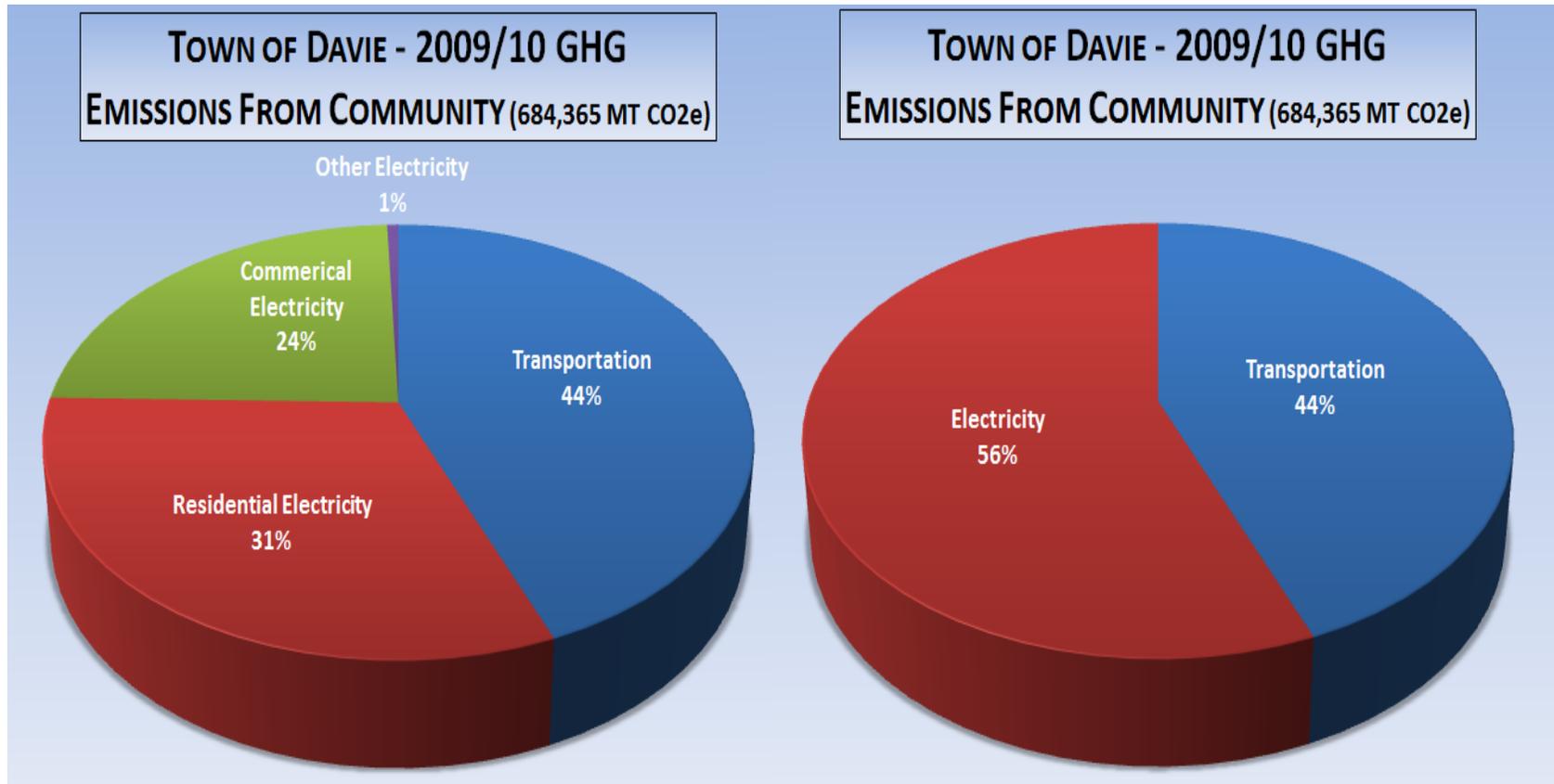


Figure 11: Community GHG Totals

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## APPENDIX A – ENERGY ANALYSIS:

### ENERGY DASHBOARD

One of the more functional tools for a municipal government is an energy dashboard. The following was prepared with energy consumption, in natural units and also in BTUs as well as the associated costs and greenhouse gas emissions from the usage of this energy. This dashboard gives an at-a-glance view of where exactly energy is being used by greenhouse gas emission scope, fuel type, and department.

Town of Davie, Florida - 2009 Energy Dashboard																				
Dept	Scope 2 Emissions (Electricity)					Scope 1 Emissions (Propane)				Scope 1 Emissions (Fuel)						Totals				
	Accts.	Cost	kWh	MMBTUs	MT CO2e	Cost	Gallons Propane	MMBTUs	MT CO2e	Unleaded Cost	Gallons Unleaded	MMBTUs	MT CO2e	Diesel Cost	Gallons Diesel	MMBTUs	MT CO2e	Cost	MMBTUs	MT CO2e
Utilities	49	\$923,406	9,830,264	33,541	6,121	\$0	0	0	0	\$18,007	11,285	1,402	99	\$16,794	7,609	1,055	78	\$958,206	35,998	6,298
Police	1	\$164,171	1,730,520	5,905	1,078	\$0	0	0	0	\$374,893	233,425	29,006	2,051	\$560	254	35	3	\$539,625	34,945	3,131
Parks and Rec	49	\$476,518	3,230,571	11,023	2,012	\$0	0	0	0	\$19,071	11,829	1,470	104	\$0	0	0	0	\$495,589	12,493	2,115
Street Lights	2	\$605,965	3,099,147	10,574	1,930	\$0	0	0	0	\$0	0	0	0	\$0	0	0	0	\$605,965	10,574	1,930
Fire	5	\$91,845	970,702	3,312	604	\$3,784	2,042	186	12	\$27,294	16,912	2,101	149	\$89,010	40,354	5,597	412	\$211,934	11,196	1,177
Public Works	45	\$87,883	762,088	2,600	475	\$0	0	0	0	\$45,806	28,967	3,600	255	\$13,817	6,247	866	64	\$147,506	7,066	793
Garage	2	\$26,740	249,358	851	155	\$0	0	0	0	\$1,079	627	78	6	\$202	91	13	1	\$28,020	941	162
CRA	8	\$31,107	198,742	678	124	\$0	0	0	0	\$636	375	47	3	\$0	0	0	0	\$31,742	725	127
Rodeo	1	\$23,098	165,508	565	103	\$0	0	0	0	\$0	0	0	0	\$0	0	0	0	\$23,098	565	103
Building Div.		\$0	0	0	0	\$0	0	0	0	\$10,521	6,640	825	58	\$0	0	0	0	\$10,521	825	58
Housing	5	\$5,722	45,525	155	28	\$0	0	0	0	\$318	187	23	2	\$0	0	0	0	\$6,039	179	30
Unidentified		\$0	0	0	0	\$0	0	0	0	\$832	2,247	279	20	\$206	93	13	1	\$1,038	292	21
Engineering		\$0	0	0	0	\$0	0	0	0	\$3,557	2,233	278	20	\$0	0	0	0	\$3,557	278	20
Special Projects		\$0	0	0	0	\$0	0	0	0	\$1,407	871	108	8	\$483	221	31	2	\$1,890	139	10
Town Clerk		\$0	0	0	0	\$0	0	0	0	\$1,658	1,044	130	9	\$0	0	0	0	\$1,658	130	9
Plan & Zoning		\$0	0	0	0	\$0	0	0	0	\$844	548	68	5	\$0	0	0	0	\$844	68	5
<b>Totals</b>	<b>167</b>	<b>\$1,830,490</b>	<b>20,282,425</b>	<b>69,203</b>	<b>12,629</b>	<b>\$3,784</b>	<b>2,042</b>	<b>186</b>	<b>12</b>	<b>\$505,606</b>	<b>317,004</b>	<b>39,391</b>	<b>2,786</b>	<b>\$121,072</b>	<b>54,869</b>	<b>7,610</b>	<b>560</b>	<b>\$3,067,234</b>	<b>116,414</b>	<b>15,989</b>

Figure 12: Energy Dashboard

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

## LARGE USER ANALYSIS

A Large User Analysis was conducted in order to examine the individual electricity accounts weighted by their usage. Figure 13 (below) illustrates that only 27 accounts of the Town's total accounts (165) account for over 93% of the total electricity usage. These accounts that have now been identified can be targeted for reduction plans to get the largest overall reductions in the Town.

Acct #	kWh	Bill	Department	Address	Total kWh	20,282,425.0
2853951578	5,646,000	\$488,401	Utilities	3500 NW 76TH AVE # WTP-3	These Accounts all use more than 1 Million kWh per year	kWh Used 13,095,168.0 % of Total 65%
229767785	2,515,488	\$438,084	Street Lights	-		
2859954527	1,996,080	\$194,460	Utilities	7501 NW 38TH ST # WWTP2		
1455275469	1,730,520	\$164,171	Police	1230 S NOB HILL RD # POLICE		
9303765813	1,207,080	\$125,007	Utilities	3790 SW 64TH AVE # WTP # 1		
1829569787	816,360	\$84,604	Parks and Rec	3800 SW 92 AVE (PIP Pool)	These Accounts all use more than 250,000 kWh per year	kWh Used 3,504,308.0 % of Total 17% This Category Plus Above 82%
2678654886	583,659	\$167,881	Street Lights	-		
8025967343	473,280	\$49,532	Parks and Rec	4300 SW 57TH TERR # COMM (Potter MPC)		
662982404	402,360	\$42,105	Parks and Rec	3801 S PINE ISLAND RD # MULTIPU		
1307652840	339,628	\$36,625	Utilities	6898 STIRLING RD # LS-8		
3943529473	320,160	\$32,174	Fire	6901 ORANGE DR #FIRE ADMIN (Fire 50%, PW 50%)		
1915963738	316,430	\$32,903	Public Works	6591 SW 45TH ST #CITY HALL3		
1131703306	252,431	\$25,541	Fire	4491 OAKES RD # FIRE STATION 104		
2968795456	220,980	\$23,253	Garage	6915 ORANGE DR		
1921968796	218,580	\$22,903	Public Works	6591 SW 45TH ST #CITY HALL		
1460665829	200,594	\$21,924	Utilities	3335 COLLEGE AVE # LS-19	These Accounts all use more than 100,000 kWh per year	kWh Used 2,222,790.0 % of Total 11% This Category Plus Above 93%
5903960796	182,124	\$18,030	Fire	6901 SW 45TH ST #FIRE STATION 38		
1908962754	165,508	\$23,098	Rodeo	6525 SW 45TH ST		
1825560780	164,400	\$42,554	Parks and Rec	3800 SW 92 AVE # BALLPARK (PIP)		
9687164310	145,200	\$44,439	Parks and Rec	3800 SW 92ND AVE # CS4 (PIP Baseball/Softball)		
2981233543	143,945	\$37,339	Parks and Rec	3800 SW 92ND AVE # CS3 (PIP Baseball/Softball)		
3289858585	142,707	\$14,950	Fire	6101 SW 148TH AVE # FIRE STATION 91 (35%PR & 65% FIRE)		
6706469753	142,680	\$23,430	Parks and Rec	14459 SHENANDOAH PKWY (Shenandoah)		
9505364092	131,733	\$14,702	Parks and Rec	4200 SW 61ST AVE # POOL (BBR)		
1909960781	127,440	\$14,515	Public Works	6591 SW 45TH ST #CITY HALL2		
472668870	121,087	\$13,011	Utilities	3201 COLLEGE AVE # LS-20		
6337127515	115,812	\$32,919	Parks and Rec	3800 SW 92ND AVE # CS2 (PIP Football/Soccer)		

Figure 13: Large User Analysis - Table

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

Figure 14 shows graphically the top 26 accounts in the Town. The Utilities WTP-3 at 3500 NW 76<sup>th</sup> Avenue is clearly the largest user in the Town.

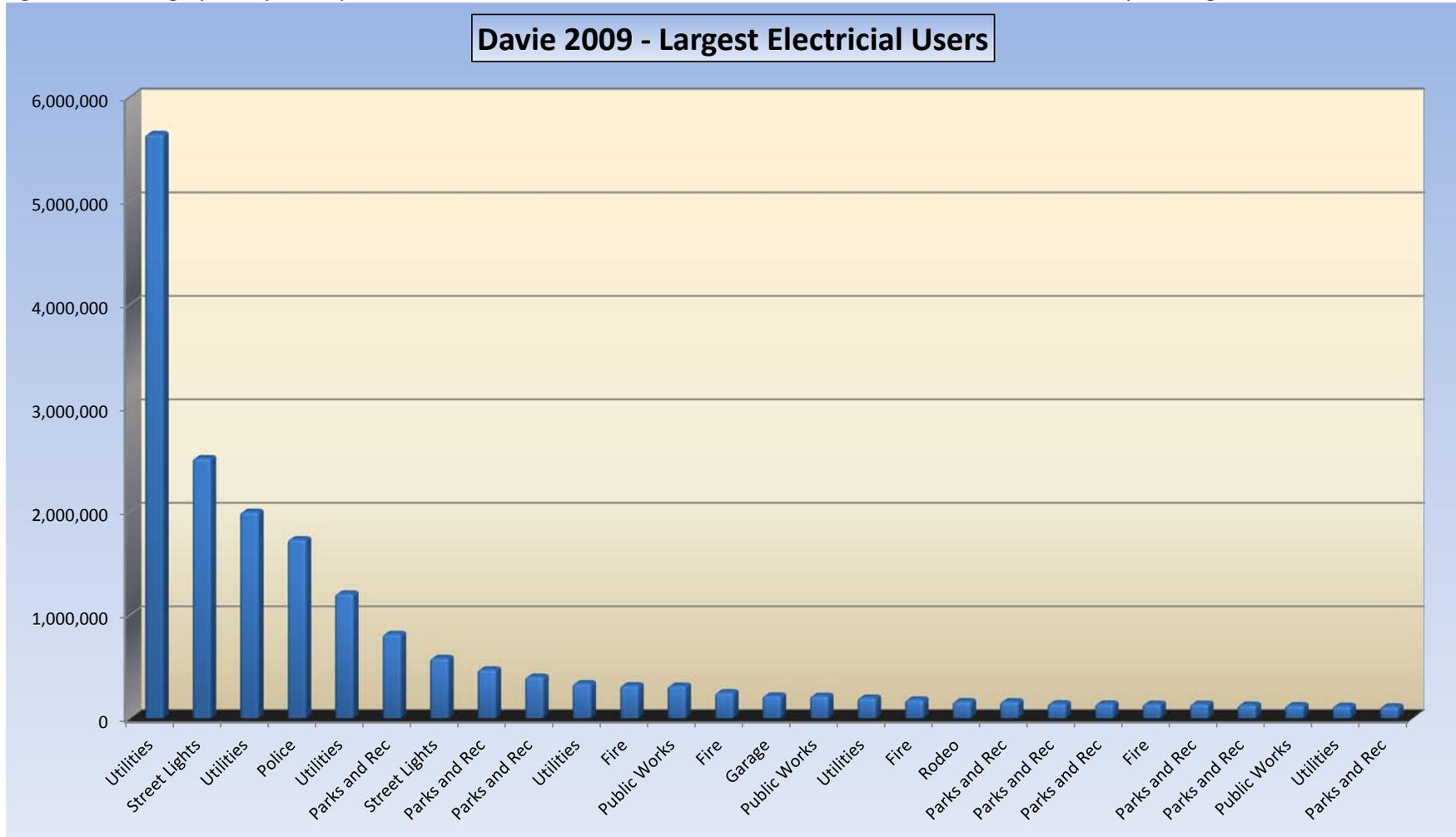


Figure 14: Large User Analysis - Bar Graph

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

Figure 15 shows the top 5 accounts in the Town all of which draw more than 1million kWh per year.

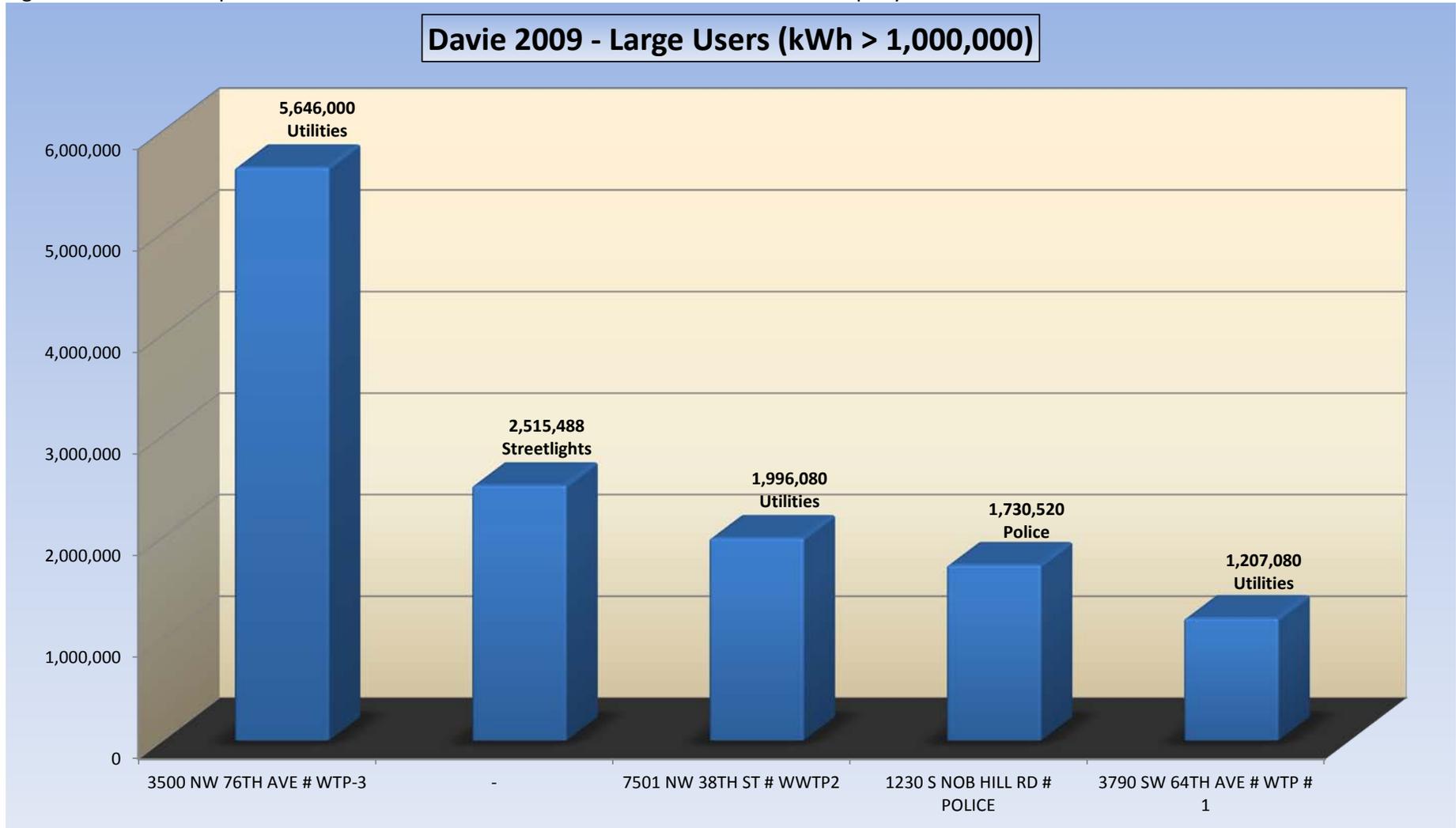


Figure 15: Large User Analysis - Bar Graph 2

# 2009 ENERGY USE AND GREENHOUSE GAS EMISSIONS INVENTORY

Figure 16 shows the top 8 accounts that draw over a quarter of a million kWh per year (with the over 1million kWh users removed).

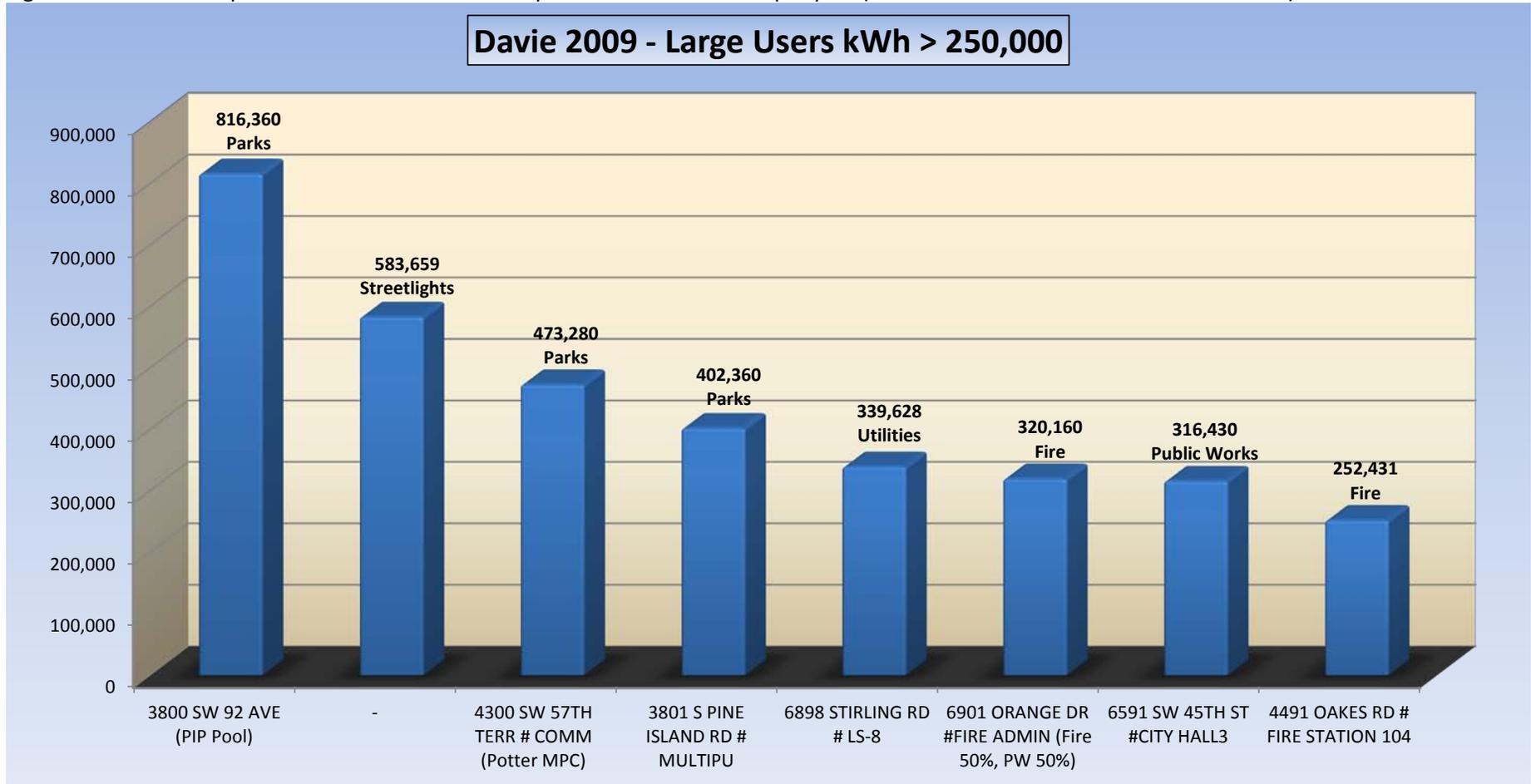


Figure 16: Large User Analysis Bar Graph 3

**APPENDIX B:**  
**COMMUTER SURVEY**



February 8, 2011

Town Employees  
6591 Orange Drive  
Davie, FL 33314-3339

Re: Commuter Survey for  
Greenhouse Gas Emissions Inventory and Sustainability Plan (B 10-109)

Dear Employees,

The Town of Davie (the Town) is currently conducting a Greenhouse Gas Emissions (GHGI). The GHGI measures energy use (fuel, electricity, and propane) across Town departments. We will use the GHGI to develop a Sustainability Action Plan (SAP) that will help our Town become more energy efficient over time. This project is being funded as part of our Energy Efficiency and Conservation Block Grant (EECBG) and we plan to have the GHGI and SAP completed over the next few months.

As part of this process, the Town requests a few minutes of your time to answer the enclosed "Employee Commuter Survey." The survey is intended to understand typical commuting patterns by our employees and to identify areas where programs can be developed to encourage alternative methods of transportation such as biking, car pooling, transit ridership, and others.

Enclosed you will find a short survey consisting of nine (9) basic commute related questions. The survey should take no more than 5-10 minutes to complete. Please return your responses to the questions in the enclosed survey no later than March 1, 2011 by 5:00 p.m. Responses and questions should be directed to:

Lise Bazinet (Planner II)  
Planning and Zoning Department  
6591 Orange Drive  
Davie, FL 33314  
(954) 797- 1180

Thank you in advance for your time.

---

Town of Davie, FL - Employee Commuter Survey [Exit this survey](#)

1.

**1. Please provide general information**

Town Department

Home Zip Code

**2. What is the distance of your commute?**

Enter the distance of your commute in miles. The distance entered should represent ONLY 1 way distance from home to work.

**3. How do you typically commute to and from work?**

Indicate the method in which you commute to and from work and the number of days you use each method during a typical five (5) day work week (choices should sum to 5 days).

Drive Alone	<input type="text"/>
Carpool/Dropped Off	<input type="text"/>
Rail	<input type="text"/>
Bus	<input type="text"/>
Walk	<input type="text"/>
Bicycle	<input type="text"/>
Town Vehicle	<input type="text"/>
Other	<input type="text"/>

**4. If you selected "Car Pool / Dropped Off" in Question 3, please provide the following information.**

Vehicle Make (i.e. Ford)

Vehicle Model (i.e. Escape)

Vehicle Year (i.e. 2009)

Number of Persons Over Age 16 or older accompanying you

**5. If you selected "Alone" or "Town Vehicle" in Question 3 please provide the following information.**

Vehicle Make (i.e. Ford)

Vehicle Model (i.e. Escape)

Vehicle Year (i.e. 2009)

**6. If you selected "Drive Alone" or "Town Vehicle" in Question 3, indicate your reasons for doing so.**

Work late or have irregular hours

Run personal errands before and/or after work

Lack of transit stops near my work and/or home

Nobody from work lives in my area

Childcare commitments

Live in close proximity to work

Other

7. If you selected "Other" in Question 3, please briefly describe the method of transportation used. Please include the number of days you used the "Other" method of transportation.

8. Which of the following incentives might encourage you to try or continue to use an alternative mode to get to work? Please only select your top 4 choices.

- Preferred parking spaces for car pools
- Free ride home in the event of an emergency or overtime
- Option to set aside pre-tax dollars to cover commuting costs
- Match list of potential ride share partners
- Employee recognition program for alternative transportation
- Bicycle parking
- Locker rooms with showers
- On-site childcare, dry cleaning, fitness center, banking or other services
- Opportunity to telecommute or work from home

Other (please specify)

9. How likely would you be to try the following ways of getting to work

	Not Likely	Likely	Not Likely	Not an Option
Car Pool or Van Pool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Train	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bicycle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Telework	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Compressed Work Week	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Done

Powered by **SurveyMonkey**  
Create your own free online survey now!



**APPENDIX C:**  
**SAP ACTION ITEM PRIORITIZATION MATRIX**



# SAP ACTION ITEM PRIORITIZATION MATRIX



## 2011-2016 SAP ACTION ITEM PRIORITIZATION MATRIX

During this step in the strategic planning process, series of action items were developed that define the way objectives in each target area will be implemented. In total, the SAP consists of 31 specific actions across 12 target areas. All actions were characterized as having short (1-2 Years), mid (2-3 Years), or long (3-5 Years) implementation horizons. Using implementation horizons, the Town developed a comprehensive matrix that prioritizes all 31 actions. The matrix provides an estimated range for how much each action will cost and indicates if the action is likely to be eligible for future grants. The table below represents an excerpt from the matrix. It outlines the actions the Town plans to implement over the short term. Actions classified as having indirect benefits include conducting studies such as energy audits to identify future capital projects. Conducting a study does not directly result in energy savings; however it is a critical first step to determine how the Town can most effectively allocate future resources. Actions classified as having direct benefits include projects that when implemented will directly save energy or help to secure funding.

Following the matrix, there is a list of actions that were discussed during the strategic planning process that were not formally included in this plan. The Town will take another look at these actions during the re-evaluation phase of the project to determine if they should be incorporated in the future.

# SAP ACTION ITEM PRIORITIZATION MATRIX



Priority	Target		Action Item Summary	Planning Horizon	Benefit	Low End Cost	High End Cost	Funding Source	
								Town	Grant
1	Leadership	1.1.1	Formalize mission and vision statement for the SAP	Short	Indirect	Staff Time	Staff Time	x	
2	Funding	2.1.1	Develop and execute grant action plan	Short	Direct	\$2,500	\$6,000	x	
3	Funding	2.1.2	Dedicate Town budget line item for sustainability	Short	Direct	Staff Time	Staff Time	x	
4	Partnerships	3.2.1	Secure FGBC certification by 2011	Short	Direct	Staff Time	Staff Time	x	
5	Leadership	1.1.2	Implement sustainability management system	Short	Indirect	\$5,000	\$1,000	x	
6	Existing Buildings & Infrastructure	6.1.3	Conduct energy audits of high energy use buildings	Short	Indirect	\$25,000	\$35,000	x	
7	Data Management	5.1.1	Sustainability data tracking program	Short	Indirect	\$3,000	\$9,000	x	
8	Existing Buildings & Infrastructure	6.1.1	Energy star portfolio manager program	Short	Indirect	\$2,000	\$5,000	x	
9	Education & Outreach	11.1.1	Update Davie Green website	Short	Direct	\$800	\$2,500		x
10	Existing Buildings & Infrastructure	6.1.5	Building performance energy efficiency challenge	Short	Direct	\$800	\$1,000	x	
11	Vegetative Cover & Open Space	12.1.2	Expand tree planing programs	Short	Direct	\$65,000	\$75,000		x
12	Education & Outreach	11.1.2	Engage in community planning process	Short	Indirect	\$8,000	\$10,000		x
13	Vegetative Cover & Open Space	12.1.1	Expand I-Tree study	Short	Indirect	\$15,000	\$20,000		x
14	Existing Buildings & Infrastructure	6.1.2	Develop and implement green capital projects matrix	Mid	Indirect	Staff Time	Staff Time	x	
15	Partnerships	3.1.1	Implement strategic partnership & engagement plan	Mid	Indirect	\$1,200	\$2,000	x	
16	Fleet	8.1.1	Green fleet program	Mid	Indirect	\$8,000	\$10,000	x	x
17	Existing Buildings & Infrastructure	6.2.1	Baseline water use analysis	Mid	Indirect	\$15,000	\$20,000	x	x
18	Existing Buildings & Infrastructure	6.2.2	Plumbing fixture equipment audit	Mid	Indirect	Staff Time	Staff Time	x	
19	Existing Buildings & Infrastructure	6.2.3	Irrigation and landscape review	Mid	Indirect	Staff Time	Staff Time	x	
20	Existing Buildings & Infrastructure	6.3.1	Implement EPA waterwise program	Mid	Indirect	Staff Time	Staff Time	x	
21	Existing Buildings & Infrastructure	6.3.2	Conduct waste stream audit	Mid	Indirect	\$15,000	\$20,000	x	
22	Existing Buildings & Infrastructure	6.3.3	Expand municipal waste and recycling program	Mid	Direct	Staff Time	Staff Time	x	
23	Existing Buildings & Infrastructure	6.4.1	Alternative transportation incentive program	Mid	Direct	\$25,000	\$3,500	x	x
24	Planning & Policy	10.1.1	Revisit RAC green building incentive program	Mid	Direct	Staff Time	Staff Time	x	
25	Existing Buildings & Infrastructure	6.1.4	Carry out building energy efficiency challenge	Mid	Direct	TBD	TBD	x	x
26	Partnerships	3.2.2	Secure additional certifications and recognition	Long	Indirect	TBD	TBD		
27	Training	4.1.1	Develop a sustainability education and training program	Long	Direct	\$8,000	\$12,000	x	x
28	Existing Buildings & Infrastructure	6.2.4	Add water efficiency projects to green capital projects matrix	Long	Direct	TBD	TBD	x	x
29	Fleet	8.1.2	Future hybrid fund the difference	Long	Direct	TBD	TBD		x
30	New Construction	7.1.1	Define minimum green building standards	Long	Indirect	TBD	TBD	x	
31	Renewable Energy	9.1.1	Renewable energy pilot project screening program	Long	Indirect	TBD	TBD		x

# SAP ACTION ITEM PRIORITIZATION MATRIX



The table below lists important notes that accompany the SAP Action Item Prioritization Matrix

<i>Notes</i>
<i>1. Costs represent rough estimations and are subject to change upon further analysis</i>
<i>2. ** Refer to capital improvements project matrix for a list of capital projects that will advance the SAP. Cost estimates are TBD. List remains to be completed</i>
<i>3. Staff time refers to programs that can be implemented by Town staff. These projects do not require additional capital to complete</i>
<i>4. Actions indicated with check marks indicate that points can be awarded from the Florida Green Building Coalition upon completion</i>



## **ACTIONS NOT INCLUDED IN THE 2011-2016 – SAP**

The 2011-2016, Town of Davie Sustainability Action Plan (SAP) references the action item implementation matrix. The matrix outlines all of the actions that the Town plans to implement as part of this plan. There were many additional actions proposed during the strategic planning process that did not officially make their way into the SAP. These actions remain important because they represent good ideas that should not be forgotten. The list below summarizes the action items not formally included in the plan. The Town will take another look at these actions during the re-evaluation phase of the project to determine if they should be incorporated in the future.

- Develop a zero plastic bag policy for over the counter sales in cooperation with local retailers
- Enhance household hazard waste collection programs
- Sustainable vendor procurement
- Equipment and lighting shut-off programs
- Establish composting sites at Town and County approved sites
- Promote zero waste events
- Continue to revisit and revise Town development policies to promote sustainable building design and architecture
- Improve pedestrian safety
- Trail system improvements that tie into alternative vehicles such as hydrogen or electric (golf carts)
- Add mulching machines and plan for mulch give-away programs
- Use rain water to backwash pool filters and keep chlorine levels to a minimum while still within health department standards
- Used cell phone recycling program

**APPENDIX D:**  
**SAP ACTION PLANS & PROPOSALS**



# ACTION 2.1.1 – EXECUTE GRANT ACTION PLAN



## GRANT ACTION PLAN INTENT

Target 2 (Funding), Objective 2.1 in the 2011-2016 Town of Davie Sustainability Action Plan (SAP) states that the Town will “Secure at Least \$500,000 in Funding to Implement SAP Actions.” Under this objective, Action 2.1.1 states that the Town will “Execute a Grant Action Plan” as a means to meet this objective. As a result of the creation and adoption of the SAP, the Town has placed itself in a much more competitive position to receive future funding because granting agencies favor applicants that have well conceptualized plans already in place over applicants that do not. The SAP demonstrates that the Town has developed clear goals, possesses the infrastructure needed to administer funds. Furthermore, the SAP ensures that federal dollars will tie into a much larger Sustainability effort planned by the Town. This action plan will leverage the strengths of the SAP and outlines the approach that staff will take to secure grant funding.

## BACKGROUND

There are 26 federal grant funding agencies in the U.S. As evidence of the Town’s recent EECBG award, more of these agencies have made it a goal to fund local governments and other entities engaged in aspects of Sustainable Development such as energy efficiency, greenhouse gas reduction, water

conservation, recycling, habitat conservation, and deployment of renewable energy, just to name a few. Despite the recent momentum in funding to come from the American Reinvestment and Recovery Act (ARRA), it is anticipated that the Town will face the following challenges when attempting to successfully procure a Sustainability grant.

1. Sustainability Grant Point Person
2. Grant Identification
3. Assessment of Competition and Likelihood of Success
4. Project Preparation

## PLAN APPROACH & PROTOCOLS

The approach outlined below describes how the Town will meet the four challenges outlined above

1. Sustainability Grant Point Person – The first and most important component of this grant action plan is to designate a point person that will implement the protocols. The point person should be both familiar with this SAP as well as grant writing, and Town grant application procedures.

## ACTION 2.1.1 – EXECUTE GRANT ACTION PLAN



2. Grant Identification – Federal budgets and political climates fluctuate. When the Town received funding under the Department of Energy (DOE) Energy Efficiency and Conservation Block Grant (EECBG) program, the U.S. was experience a governmental trend of spending as part of the American Reinvestment & Recovery Act (ARRA). Today Governmental spending is being curbed in both the house and senate. For example, a recent article from the Sustainable Cities Network, provided a review of a compromise federal spending package titled HR 1473 for the remaining 2011 fiscal year. The article noted that the package has both “good and bad” news for local governments seeking to improve energy efficiency, modernize fleet, reduce greenhouse gas emissions, and other sustainability initiatives. Positive news included that funding for these initiatives will still be available. However, many well known programs including the EECBG and EPA Climate Showcase Communities will be “zeroed out.” This will make competition for other sources of grant funding very competitive. The Town of Davie will respond to this and other future fluctuations and make itself more competitive for future grants by implementing grant identification protocols as they are outlined below:
  - a. Register to receive federal grant notifications using Grants.gov. The Sustainability Grant Point Person will register with the Grants.gov website and subscribe to both the RSS feed feature and register to receive email notices using the “Advanced Search Criteria.” When setting up the advanced search criteria the Grant Point Person will take care to select grant categories that correspond with the SAP, list the type of funding desired and select agencies of interest. Agencies of interest should at a minimum include: 1) the Department of Energy; 2) Department of Transportation; 3) Environmental Protection Agency; and 4) the National Science Foundation.
  - b. Develop a grant program tracking database. The Sustainability Grant Point Person will continue to populate and update the Sustainability grant tracking database. The database will contain the name, weblink, and other pertinent information for grant programs that are applicable to the SAP. It will be the Grant Point Person’s responsibility to maintain the database and provide updates to it over time. This document concludes with a preliminary list of grant programs that should be

# ACTION 2.1.1 – EXECUTE GRANT ACTION PLAN



tracked and further studied to determine if concrete opportunities can be identified.

3. Assessment of Competition and Likelihood of Success – As grant opportunities are identified it is important that the Town have the ability to screen opportunities to determine the likelihood of success given the amount of time required to prepare a grant application. The Sustainability Grant Point Person will complete the following protocols after identifying a grant that may be applicable to the SAP.

- a. Evaluate the quantity of funding available with the anticipated number of potential applicants and anticipated awards. This can be done by asking grant administrators directly how many applicants are expected. This can also be done by dividing the estimated grant award by the total number of likely applicants.
- b. Attend grant conference calls and pre-proposal meetings whenever possible. Provide a brief statement regarding the overall likelihood of receiving the proposed award.

4. Project Preparation - An important obstacle that the Town of Davie has expressed in the context of grants is being prepared when new opportunities arise. In many cases, grant solicitations have quick turnaround times requiring potential applicants to have projects that are shovel ready. The Town has already begun its preparation to arrive at a punch list of projects that are shovel ready as directed in Target 6 (Existing Buildings and Infrastructure), Objective 6.1.3 Implement Capital Improvements Matrix. The matrix is currently being developed to include an itemized list of capital projects planned by the Town that are applicable to Sustainability in that they reduce energy use, greenhouse gas emissions, conserve water, or provide other benefits. This matrix should be referred to frequently as grants become available that cover cost of capital improvements.

Many grants also require budget matching to remain competitive. This action plan recommends that portions of the Town’s budget for sustainability be available in the event that cost sharing and matching is required for a grant opportunity that demonstrates a high likelihood of success.

# ACTION 2.1.1 – EXECUTE GRANT ACTION PLAN



## SCHEDULE AND ESTIMATION OF RESOURCES REQUIRED

This section of the action plan will outline the overall schedule to carry out the tasks outlined above as well as a general estimation of resources likely to be required.

Task	Schedule
Sustainability Grant Point Person	2 Months for SAP Adoption
Grant Identification	Ongoing
Assessment of Competition	Ongoing
Project Preparation	Ongoing

Tasks 1-4 can all be completed using in house Town Staff. The Town may wish to consider utilizing outside resources to assist with technical components, metrics, and other aspects required to prepare and submit grant applications that have high likelihoods of success.

# ACTION 2.1.1 – EXECUTE GRANT ACTION PLAN



## NEXT STEPS

The table below contains the pre-cursor to a more comprehensive list of grant programs that the Sustainability Point Person will track to identify concrete grant programs that tie into the SAP.

Program	Agency	Intent
Energy Efficiency and Conservation Block Grant Program	DOE	Energy Efficiency
Sustainable Communities	DOE, EPA, HUD, DOT	Community Focus
TIGER	DOT	Transportation, livability, community infrastructure
EPA Brownfields & EDA Global Climate Change Mitigation Fund	EPA, EDA	Site Re-development
Clean Water State Revolving Fund Drinking Water State Revolving Fund	SWSRF, DWSRF	Wastewater treatment, watershed management,
State Recycling Grant	FDEP	Waste and Recycling

Additionally, the Town will evaluate the following short term grant opportunities in accordance with this plan located on the following pages.

# ACTION 2.1.1 – EXECUTE GRANT ACTION PLAN



## OPPORTUNITY 1

RFQ Type:	OTHER FED TYPES
FSG Code:	R
Notice Type:	GRANTS
Subject:	REAP - Energy Audit and Renewable Energy Development Assistance
Agency Name:	Grants.gov - Business and Cooperative Programs
Solicitation Number:	RDBCP-11-REAP- Energy AUDIT
URL:	<a href="http://www.grants.gov/search/search.do;jsessionid=1h7LNLrFHDzkJ0lxhwPh2pvRhhwLTpvnk2MjS1tV711TmrPmTxc!-1702297235?oppld=92633&amp;mode=VIEW">http://www.grants.gov/search/search.do;jsessionid=1h7LNLrFHDzkJ0lxhwPh2pvRhhwLTpvnk2MjS1tV711TmrPmTxc!-1702297235?oppld=92633&amp;mode=VIEW</a>
Response Date:	2011-05-09
Publish Date:	2011-05-09
Buyer Name:	Anthony Ashby
Buyer URL:	<a href="mailto:Anthony.Ashby@wdc.usda.gov">Anthony.Ashby@wdc.usda.gov</a>
Eligibility Entity:	Native American tribal governments (Federally recognized) Native American tribal organizations (other than Federally recognized tribal governments) Others (see text field entitled "Additional Information on Eligibility" for clarification) Additional Information on Eligibility: Eligible entities include a unit of State, tribal, or local government and their instrumentalities; institutions of higher education; rural electric cooperatives; or a public power entity. The program is design to assist farmers, ranchers, and rural small businesses.
Opportunity Category:	Mandatory
Description:	The REAP/EA/REDA Grant Program will provide grants for Energy audits and renewable Energy development assistance.
RFQ ID:	FD_GRANTS-2011-05-10-12

# ACTION 2.1.1 – EXECUTE GRANT ACTION PLAN



## OPPORTUNITY 2

RFQ Type:	OTHER FED TYPES
FSG Code:	B
Notice Type:	GRANTS
Subject:	REAP-Renewable Energy Systems and Energy Efficiency Improvements
Agency Name:	Grants.gov - Business and Cooperative Programs
Solicitation Number:	RDBCP-11-REAP-RES-EEI
URL:	<a href="http://www.grants.gov/search/search.do;jsessionid=1h7LNLrFHDzkJ0lxhwPh2pvRhhwLTpvnk2MjfS1tV711TmrPmTxc!-1702297235?oppld=92653&amp;mode=VIEW">http://www.grants.gov/search/search.do;jsessionid=1h7LNLrFHDzkJ0lxhwPh2pvRhhwLTpvnk2MjfS1tV711TmrPmTxc!-1702297235?oppld=92653&amp;mode=VIEW</a>
Response Date:	2011-05-09
Publish Date:	2011-05-09
Buyer Name:	Anthony Ashby
Buyer URL:	<a href="mailto:anthony.ashby@wdc.usda.gov">anthony.ashby@wdc.usda.gov</a>
Eligibility Entity:	Others (see text field entitled "Additional Information on Eligibility" for clarification) Additional Information on Eligibility: Eligible applicants are agricultural producers and rural small businesses. All agricultural producers, including farmers and ranchers, who gain 50% or more of their gross income from the agricultural operations are eligible. Small businesses that are located in a rural area can also apply. Rural electric cooperatives may also be eligible to apply. Additional Information on Eligibility: Citizenship - To be eligible, applicants must be individuals or entities at least 51 percent owned by persons who are either: 1) citizens of the United States (U.S.), the Republic of Palau, the Federated States of Micronesia, the Republic of the Marshall Islands, or American Samoa; or 2) legally admitted permanent residents residing in the U.S. Project - The project must be to conduct a feasibility study for a renewable Energy system. Eligible technologies include: projects that produce energy from wind, solar, biomass, geothermal, hydro power and hydrogen-based sources. All projects must be located in a rural area and must be owned by the applicant. Legal authority and responsibility - Each applicant must have, or obtain, the legal authority necessary to carry out the purpose of the grant.
Opportunity Category:	Mandatory
Description:	The Rural Energy for America Program will provide funds to agricultural producers and rural small businesses to install renewable energy systems and energy efficiency improvements. The Rural energy for America Program is designed to help agricultural producers and rural small businesses reduce energy costs and consumption and help meet the nations critical energy needs. The grants are awarded on a competitive basis.
RFQ ID:	FD_GRANTS-2011-05-10-14

# ACTION 2.1.1 – EXECUTE GRANT ACTION PLAN



## OPPORTUNITY 3

RFQ Type:	OTHER FED TYPES
FSG Code:	B
Notice Type:	GRANTS
Subject:	Rural Energy for America Program (REAP) - Feasibility
Agency Name:	Grants.gov - Business and Cooperative Programs
Solicitation Number:	RDBCP-11-REAP-FEASIBILITY
URL:	<a href="http://www.grants.gov/search/search.do;jsessionid=1h7LNLrFHDzkJ0lxhwPh2pvRhhwLTpvnk2MifS1tV711TmrPmTxc!-1702297235?oppld=92533&amp;mode=VIEW">http://www.grants.gov/search/search.do;jsessionid=1h7LNLrFHDzkJ0lxhwPh2pvRhhwLTpvnk2MifS1tV711TmrPmTxc!-1702297235?oppld=92533&amp;mode=VIEW</a>
Response Date:	2011-05-09
Publish Date:	2011-05-09
Buyer Name:	Anthony Ashby
Buyer URL:	<a href="mailto:anrhony.ashby@wdc.usda.gov">anrhony.ashby@wdc.usda.gov</a>
Eligibility Entity:	Individuals Small businesses Others (see text field entitled "Additional Information on Eligibility" for clarification) Additional Information on Eligibility: Eligible applicants are agricultural producers and rural small businesses. All agricultural producers, including farmers and ranchers, who gain 50% or more of their gross income from the agricultural operations are eligible. Small businesses that are located in a rural area can also apply. Rural electric cooperatives may also be eligible to apply. Additional Information on Eligibility: Citizenship - To be eligible, applicants must be individuals or entities at least 51 percent owned by persons who are either: 1) citizens of the United States (U.S.),the Republic of Palau, the Federated States of Micronesia, the Republic of the Marshall Islands, or American Samoa; or 2) legally admitted permanent residents residing in the U.S. Project - The project must be to conduct a feasibility study for a renewable energy system. Eligible technologies include: projects that produce energy from wind, solar, biomass, geothermal, hydro power and hydrogen-based sources. All projects must be located in a rural area and must be owned by the applicant. Legal authority and responsibility - Each applicant must have, or obtain, the legal authority necessary to carry out the purpose of the grant.
Opportunity Category:	Mandatory
Description:	The Rural Energy for America Program will provide funds to agricultural producers and rural small businesses to conduct feasibility studies for renewable energy systems. The Rural energy for America Program is designed to help agricultural producers and rural small businesses reduce energy costs and consumption and help meet the nation s critical energy needs. The grants are awarded on a competitive basis and can be up to 25% of total eligible project costs. Grants are limited to \$50,000 for renewable energy feasibility studies.
RFQ ID:	FD_GRANTS-2011-05-10-13