

STRATEGIC ENERGY ACTION PLAN

TOWN OF CARY, JUNE 2012

EXECUTIVE SUMMARY

PURPOSE

In a concerted effort, the Town of Cary is establishing an energy reduction goal with associated strategies to actively improve energy practices in order to lower costs and reduce emissions that contribute to environmental pollution. The plan will serve as a guide to sound energy decision-making, improving the efficient use of energy while maintaining high levels of service in all areas.

ESTABLISHING A GOAL

Since the Town's energy use is driven by the services it provides, and since the Town continues to grow, there is a certain fixed level of energy use that Town operations will use. Future energy use (and associated costs and emissions) was estimated to the year 2020, using current town operational energy use and growth and cost increase factors. This estimate includes all existing buildings and buildings and operations planned on the Capital Improvement Plan.

Staff examined the major categories of energy use and determined reduction percentages that are achievable and realistic using technology and operational change to yield the following overall goal. The term "business as usual" means that this is the level of energy use that we can anticipate if the Town did not drive energy reduction further.

Overall Goal:

**13% reduction in energy use from the projected
"Business as Usual" energy use estimate by 2020**

Anticipated Savings and Emissions from Achieving this Goal:

**\$1,500,000 savings/yearly
and yearly reduction of 7,000 metric tonnes of carbon dioxide**

Subgoals that will help us achieve this overall goal:

- Fleet—Increase average miles per gallon (MPG) for town fleet by 20%; Reduce miles driven by 5%

- Buildings—30% reduction in energy use
- Water & Wastewater—3% reduction in energy use across these two categories

KEY ELEMENTS OF THE PLAN

4 Strategic Focus Areas for Energy Management for the Town of Cary:

- A. Energy Data Management
- B. Energy Supply Management
- C. Energy Demand Management
 1. Energy Use in Buildings and Streetlights
 2. Energy Use in Water and Wastewater Treatment and Transport
 3. Energy Use from Vehicles and Motorized Equipment
- D. Organizational Integration and Education

Key performance indicators for the Town:

- Total energy use (MMBTU, million British thermal units), total cost (\$), total emissions (MTCDE, metric tonnes carbon dioxide equivalent); and each of these for fleet, buildings, water and wastewater
- Energy use per citizen (MMBTU/citizen), Energy cost per citizen (\$/citizen), Emissions per citizen (MTCDE/citizen)
- For buildings, energy use per gross square foot (btu/gsf)
- For water and wastewater, energy use per volume treated (btu/MG) and energy use per citizen (btu/citizen)
- Average miles per gallon (MPG) per vehicle class and yearly number of miles traveled

PLAN OF ACTION

- **Existing Conditions (2010)** - we own and operate 92 buildings, varying in age and totaling approximately 500,000 square feet and we own and maintain 681 vehicles and large equipment pieces.
- **Baseline Energy Consumption (2010)** – we utilize 67,759,011 kWh of electricity at a cost of \$ 6.5 million, 543,667 therms of natural gas at a cost of \$ 433,000, 23,506 gallons of propane at a cost of \$ 72,500 and 693,421 gallons of fleet fuel at a cost of \$1.2 million. This is a total energy cost of \$8.2 million.

- **Implementation** - we will seek to institutionalize energy efficiency as a worthwhile value by:
 - Making all Town departments responsible for meeting the goals and requirements of this Plan. The sustainability manager will coordinate and work with Town departments to regularly report to management on the effectiveness of the Plan, including energy and cost saving impacts of the Plan.
 - Ensuring that personnel who work with energy equipment or are involved in energy-related decisions receive training for implementing this Plan.
 - Providing training and technical resources to assist the Facilities staff in evaluating various energy-saving technologies.
 - Serving as a positive example to the community by demonstrating the benefits of energy efficiency and, where possible, renewable energy resources.

- **Reporting and Plan Review** - we expect to update Council on the key performance indicators yearly and to review the plan extensively every third year. Staff will aim to have the update and/or review done by the end of August so the results may be used for the following year's budget development.

Focus A: Energy Data Management

Strategy 1. Collect, update, and quality control utility data to support management of energy as an important cost center

Activities	Last Milestone	Frequency	Due On	Estimate of Avoided Cost (Savings)	Cost	Accountability
Geo-locate all electric meters and cross check with utility's description of location	2011	Every 5 to 7 years	2016 to 2018	--	\$2,000	PWUT
Create web-based system viewable by staff with 7-years of electricity data for every meter, building, and department.	System ready for use, March 2012.	One Time	NA	TBD	\$7,500/year recurring; \$4,000 one-time set up	Sustainability and Finance
Update Web-based system for electricity accounts monthly.	Training will occur spring of 2012	Monthly	Monthly	Should save at least 2-4 staff hours/month.	Staff time	Finance
Update Web-based system with natural gas and water accounts.	Planned implementation by FY14	Monthly	Monthly	TBD	TBD	TBD
Submeter Fire Station #8	Construction began spring 2012	One Time	spring 2013 construction completion	TBD	Part of the high performance specifications for construction approved by Council on May 13, 2010	Engineering, PWUT, Sustainability
Submeter Town Hall and Install an Energy Management Software with a dashboard that can accommodate future buildings	RFP being drafted spring/summer 2012	One Time	fall 2012	TBD	TBD after RFP process—already budgeted for in FY11, rolled to FY12	Sustainability, PWUT, TS, Engineering

Focus B: Supply Side Management (Utility Side)

Strategy 1.	Actively manage the cost of utilities and fleet fuel					
Strategy 2.	Utilize incentive programs					
Activities	Last Milestone	Frequency	Due On	Estimate of Avoided Cost (Savings)	Cost	Accountability
Ongoing familiarity with Progress Energy Rates so any available rate increase opt-outs are captured	8 largest meters, rate opt out on November 2010	As needed—rates could change 1X/year	As needed—triggered by revised rates at the NC Utilities Commission	\$1,650,000.00/10 years	Staff time	PWUT & Sustainability
Train staff on energy management principles	June 2011—4 staff trained, 2 have obtained Professional Energy Manager Certifications	As needed	As needed	TBD	The June 2011 training was a free program offered by the NC Department of Commerce; Ongoing training must be budgeted	Sustainability
Progress Energy Rate Review	Review conducted March 2012	Every other year for all accounts. For new large accounts, after 6 months.	March 2014	\$14,148.59/year (this represents the March 2012 identified savings)	4 hours staff time	PWUT & Sustainability
Daily gasoline fleet fuel costs obtained	Daily	Daily	Daily	2% savings over the state contract (FY 2011)	Staff time	Finance
Daily B20 fleet fuel costs obtained	Daily	Daily	Daily	4.5% savings over the state contract (FY 2011)	Staff time	Finance
Negotiation of propane costs	FY 2011 Vendor Change to Assure Operational Consistency	As needed when state contract changes	As needed	Current vendor marginally more than state contract, however vendor selected by Town provides essential reliability	Staff time	Finance
Apply for Progress Energy Incentives	Ongoing	As needed	As needed	Incentives applied for thus far total	Staff time	PW&UT and Sustainability

				over \$75,000—and these funds will be used for more energy retrofit projects, per the grant terms		
Review of past utility billing to assure that there were no errors in past billing	Planned for FY2013	Every four years	FY2017	TBD	Typically these projects can be bid for no cost—in return for a % of the rebates provided	Sustainability
Utilize peak shaving at the Western Wake Water Reclamation Facility	Planned for 2014	Ongoing	Ongoing	TBD	Staff time, Engineering Services	PWUT
Timing operations during off peak hours at utility plants when possible	Ongoing	Ongoing	Ongoing	TBD	Staff time	PWUT

Focus C: Energy Demand Management (Town Side)

1. Energy Use in Buildings and Streetlights

Strategy 1.	Conduct energy audits to identify opportunities for conservation
Strategy 2.	Identify and implement no-cost energy efficiency projects
Strategy 3.	Identify and implement energy efficiency projects with paybacks of 5 years or fewer
Strategy 4.	Include energy efficiency projects in regular budget development process and continue to pursue grant funds to offset costs

Activities	Last Milestone	Frequency	Due On	Estimate of Avoided Cost (Savings)	Cost	Accountability
HVAC and/or lighting retrofits done at James Jackson Operations Center, Bond Park Community Center, Bond	All will be completed by September 2012	One Time	One Time	TBD	100% grant funded, \$277,000	PWUT

Park Senior Center, Herb Young Community Center, Parking Deck, and Town Hall						
Audits and retrofits of six existing fire stations	Ongoing	One Time	Audits completed April 2012 and retrofits completed FY 2013	TBD	100% grant funded, \$145,000	Fire Department
Retrocommissioning of Town Hall to determine energy saving opportunities in the buildings with the highest KBtu/sqft	Final report delivered April 2012	One Time	One Time	TBD	100% grant funded, \$195,000	PWUT
LED streetlight pilot	Installation completed Dec 2010	Ongoing	Ongoing	\$5,256/year	100% grant funded, \$35,215	Engineering
LED streetlight project to replace fixtures and do a lighting analysis, and where needed a lighting upgrade, on all Town roads and one pilot neighborhood	Included in budget process for FY2013—in CIP for FY2014	One Time project with ability to expand to DOT streets in the future	NA	\$170,000/year in reduced electricity charges	Up front capital cost of \$995,000.	Sustainability, Engineering, Finance
Develop a new building SOP or policy to assure energy and water efficiency in new construction	Planned for FY 2013	One Time	FY 2013 with review every 3 years (review due FY 2016)	TBD	Staff time	Sustainability, Engineering, PWUT
Develop a building operational SOP or policy for existing buildings (to include temperature set points, appliance efficiency guidelines, etc.)	Planned for FY 2013/ FY2014	One Time	FY 2013 with review every 2 years (review due FY 2015)	TBD	Staff time	All departments
Develop an Asset Management Plan	Underway, planned completion is FY2014	On-going	On-going	TBD	Staff time with assistance from Energy Management Consultant	PWUT

Focus C: Energy Demand Management (Town Side)

2. Energy Use in Water and Wastewater Treatment and Transport

Strategy 1.	Conduct third party evaluation of water and wastewater operations for energy efficiency opportunities
Strategy 2.	Use life cycle cost analysis to evaluate energy efficient equipment when new equipment is needed
Strategy 3.	Analyze processes for opportunities to meet operational needs and save energy

Activities	Last Milestone	Frequency	Due On	Estimate of Avoided Cost (Savings)	Cost	Accountability
Third party evaluation of water and wastewater plants for energy efficiency opportunities	Planned	Every third year	FY 2014	TBD	TBD	PWUT
Minimize onsite aerated sludge holding	Ongoing	Ongoing	Ongoing	TBD	Staff time	PWUT
Variable frequency drives on pumping systems	In place; As needed upon replacement or original purchase	Ongoing	Ongoing	TBD	Staff time, pump cost differential	PWUT
Energy efficient finished water pump motors	In place	Ongoing	Ongoing	TBD	Motor cost	PWUT
Energy efficient aeration systems at Western Wake Water Reclamation Facility	Planned	Ongoing	Ongoing	TBD	System cost	PWUT
Replacing aging aeration systems	As needed	Ongoing	Ongoing	TBD	Replacement cost if system not broken	PWUT

Focus C: Energy Demand Management (Town Side)

3. Energy Used in Vehicles and Motorized Equipment

Strategy 1.	Diversify fuel types to buffet the Town against price fluctuations
Strategy 2.	Pilot new fleet technologies to increase fuel efficiency and determine if operationally appropriate and cost effective

Strategy 3.	Seek to reduce the number of miles traveled in a way that meets operational need and reduces cost
Strategy 4.	Vehicle Right-Sizing—we will seek to purchase vehicles that are the right size for the job and no larger
Strategy 5.	Fleet Utilization—we will seek to fully utilize all vehicle assets and we will sell or shift under-utilized assets when practical

Activities	Last Milestone	Frequency	Due On	Estimate of Avoided Cost (Savings)	Cost	Accountability
Pilot alternatively fueled vehicles including hybrid and all-electric options	All-electric Nissan Leaf received May 2012	As practical and possible with Town and grant funds	As needed	~\$19,311 per year	Staff time; 100% grant funded through 3 grants—\$208,746	PWUT
Pilot anti-idling technologies (3 police vehicles and 2 utility vehicles)	Installed FY 2012	Ongoing	Ongoing	TBD	Staff time; grant funded-\$12,000; budgeted \$15,975	PWUT
Robust biodiesel (B20) program	Ongoing	Ongoing	Ongoing	TBD	TBD	PWUT
Monthly Sustainable Fleet Team meetings to review alternative fuels and technologies	Ongoing	Ongoing	Ongoing	NA	Staff time	PWUT, Sustainability
Yearly Fleet Utilization Review	Summer 2011 the NC Solar Center Did a Free Analysis	Yearly	Summer 2012 staff will conduct analysis	TBD	Staff time	PWUT
Teleconferencing for Fire Department	Planned	One Time	FY 2013	TBD	Staff time; TBD based on RFP	FD
Aquastar will removing 10 of the highest mileage cars from the road	Aquastar fully installed in FY12	Ongoing	Ongoing	\$2,000 per year	Co-benefit, so no cost associated for this plan	Finance
No Idling SOP for Fire Department	Under Development	One Time	FY 2013	TBD	Staff time	FD
During each year's budget preparation staff will critically consider selecting replacement vehicles that are	Ongoing	Ongoing	Ongoing	TBD	Staff time	All Departments

appropriate for the operational need, with an eye toward opportunities to down-size						
Develop a Sustainable Vehicle Procurement Policy to formalize above	Planned FY2013	Planned	Ongoing	TBD	Staff time	

Focus D: Organizational Integration and Education and External Communication

Strategy 1.	Educate and inform staff on the Strategic Energy Action Plan and how they can work to assist the Town in surpassing these goals
Strategy 2.	Formally recognize staffers who recommend or innovate regarding energy and sustainability.
Strategy 4.	Friendly competitions to drive down waste of energy
Strategy 5.	Include this plan on the external website

Activities	Last Milestone	Frequency	Due On	Estimate of Avoided Cost (Savings)	Cost	Accountability
Sustainability manager speaks briefly to all New Employee Training Classes about the Town's approach to energy conservation	Ongoing	Ongoing	Ongoing	TBD	Staff time	Sustainability
Formal recognition of staffers who recommend energy and sustainability initiatives	Planned	Planned	In development for FY 13/ FY14	TBD	Staff time	Sustainability, HR
Intranet site to educate and inform staff on what the Town is doing on energy	Planned	Planned	In development for FY 13/ FY14	TBD	Staff Time	Sustainability
Fire Department energy competition between fire houses	Planned	Planned	In development for FY 13/ FY14	TBD	Staff time supported by EPA grant	Sustainability, FD

