

# ENVIRONMENTAL STEWARDSHIP AGENDA

Wake County, North Carolina

*Developed by the*  
Wake County Sustainability Task Force  
August 2011





# Table of Contents

<b>Introduction</b>	<b>1</b>
<b>Understanding Sustainability in Wake County</b>	<b>3</b>
The Rise of Corporate Sustainability	3
The Rise of the “Creative Class”	4
Planning for a Successful Future	5
Environmental Stewardship Agenda	5
Sustainability Task Force	6
Definition of Sustainability	6
Current Community Profile	7
Summary	8
<b>Energy</b>	<b>9</b>
Task Force Recommendations	9
Background Information	12
Regulatory Environment	16
Transition from Fossil Fuels to Renewable Energy	18
Energy Efficiency	19
References	20
<b>Water</b>	<b>21</b>
Task Force Recommendations	21
Background Information	24
Current Water Resource Paradigm	25
Water Quality Considerations	25
Water Supply Considerations	27
Regional Cooperation	30
Infrastructure Rehabilitation and Replacement	31
Water Resource Management Costs and Pricing	31
References	32
<b>Waste</b>	<b>33</b>
Task Force Recommendations	33
Background Information	41
Waste Material Generation	41
Waste Material Recycling	42
Waste Material Disposal	43
Financial Considerations for Solid Waste Management	44
<b>Task Force Summary Process</b>	<b>47</b>
<b>Appendices</b>	
Glossary	
Comments from Task Force Members	
Task Force Vision Statements	
Wake County Annual Report 2010	
Alternative Opinions	

# Acknowledgements

*The Sustainability Task Force benefited from the expertise and insight of a wide variety of community members. Some were appointed by the Board of Commissioners at the beginning of the process, some participated regularly in a less formal role, some were technical experts or speakers, and others were merely in the audience to observe. All those participants are listed below in appreciation of the contributions they made to the process.*

## Members

---

Christie Adams	David Diaz	Sherry Johnson	James Roberson
Ken Atkins	Tracy Dixon	Vivian Jones	Sara Roberston
Don Belk	Jerry Eatman	Mac Kendall	Michael Sanera
Alissa Bierma	Eric Ellis	Tara Lightner	Nellie Shipley
Rex Bost	Sean Flaherty	Ken Marshburn	Chris Sinclair
Kevin Brice	Audrey Galloway	Marilynn Marsh-Robinson	Horace Smith
Douglas Brinkley	Wallace Green	Mike McBrierty	Glenn Thomas
Joe Bryan	Billy Ray Hall	Don McCorquodale	Mary Tiger
Norman Camp	Robin Hammond	Drew Moretz	Priscilla Tyree
Tavey Capps	Suzanne Harris	Jim Mobley	Billy Warden
Thomas Cavender	Bryan Hicks	Margaret Newbold	Walter Wells
Michael Cole	Clyde Holt	Mack Paul	John Whitson
Steve Cole	Bianca Howard	Julian Prosser	Julie Wilkins
Wynne Coleman	Sig Hutchinson	Chad Ray	Lee Willmon
Gina Danison	Lana Hygh	Karen Rindge	Thomas Worth
Joe Desormeaux	Harold James	Larry Robbins	

## Interested Parties

---

Thomas Balkus	Scott Collens	Steven Holden	Brian Skiscim
Rachel Baker	David Cooke	Cindy Holmes	Eric Staehle
Daren Bakst	Roy Cordato	Steve Kalland	Richard Stroup
Susan Banks	Earl Crawford	Heather Keefer	Alex Taylor
Emily Barrett	Julie Cubeta	Brent Kirchoff	Laura Taylor
Cyndie Beaird	Kealy Devoy	Chrissie Koroivui	Ray Taylor
John Boyer	Mike Driskill	Kirsten Lechner	Ralph Thompson
Christine Boyle	Joe Durham	Thomas Lloyd	Dale Threatt-Taylor
Kelli Braunbach	Edward Finley	Don Mial	Zack Tinkler
Mike Brinchek	Kevin Fisher	Hallie Mittleman	AJ Vrieze
Lindy Brown	Denise Foreman	Joe Nazario	Amanda Vuke
Sharon Brown	Mark Forestieri	Stan Norwalk	Kenny Waldroup
Brennan Buckley	Doug Frain	Judy Pearse	Stan Williams
Melinda Clark	Leila Goodwin	Mike Ping	Sarah Williamson-Baker
Kevin Cochran	Tony Gurley	Jessica Robinson	Helen Yamamoto
Bill Coleman	Christie Herman	Lowell Shaw	Liani Yirka

# Introduction

In April 2009, the Wake County Board of Commissioners (BOC) identified three major goals for the year. One of the goals was to update and enhance the County's Environmental Stewardship Agenda to incorporate strategies for sustainability and "green" initiatives. Board requested staff to establish a Citizens' Task Force to evaluate current strategies and recommend changes and new strategies. The Board appointed a Sustainability Task Force in December 2009 to help define environmental priorities for the coming years. The Commission requested that the Task Force focus on three environmental topics:

## **Solid Waste Reduction and Management**

## **Water Resources Conservation and Management**

## **Energy Conservation and Management**

The Task Force met monthly from January 2010 to June 2011. The chairperson designated by the County Commissioners for the Task Force was Wake County Commissioner Joe Bryan. The full Task Force met on 16 occasions, while a waste management workgroup and an energy workgroup each met twice, and a water workgroup met four times. The Task Force was comprised of representatives from a broad range of public, private, and not-for-profit organizations. The Wake County Board of Commissioners officially appointed 61 members. The average attendance at Task Force meetings was 26 Task Force members, not including staff, facilitators, technical experts and guests.

The Task Force process was managed by staff from Wake County Government and facilitated by staff from the NC State University Cooperative Extension program Watershed Education for Communities and Officials (WECO). WECO staff asked Task Force members to make decisions using a consensus-seeking process, rather than strict voting process. Using this approach, participants were encouraged to share their interests (why they want something) behind their positions (what they want), to seek common interests, and to craft recommendations that incorporated as many interests as possible. After attempts to include the interests of all participants into recommendations were made, participants were encouraged to express any remaining alternative views for inclusion in the final report, which have been included here as an appendix.

The decision-making process was not expected to achieve unanimous support for recommendations; rather it was intended to afford all participants the opportunity to express their concerns and ideas for consideration, and to promote creative approaches to incorporate multiple interests in the recommendations. Accordingly, rather than voting yes or no for a recommendation, participants were polled to assess how strongly each supported or dissented for a given recommendation.

Given the varied and diverse nature of the perspectives represented by the Task Force

membership, it was difficult to develop recommendations that were unanimously supported. As such, many amendments were made to the recommendations during the process in an effort to address the wide range of interests and perspectives representative by the Task Force membership. Supporting staff did notice unanimous consensus among the Task Force on one important point- all felt that Wake County's natural resources are not priced adequately to reflect the true costs of developing and delivering related services to citizens, and that citizens are generally unaware of this reality.

## How to read this report

The results of these deliberations are captured within this report. The final recommendations of the Task Force for Energy, Water, and Waste are included in those three chapters, and are titled, Task Force Recommendations.

The remainder of the Energy, Water, and Waste chapters include introductory and background information compiled by Wake County and WECO staff to assist readers in understanding the issues. Wake County staff also developed performance measures to evaluate progress in these areas. In each of the 3 chapters, these are titled, Recommended Performance Measures.



# Understanding Sustainability in Wake County

Since the early 1990's Wake County has continuously been recognized nationally and internationally as one of America's best places to live, work, learn, and play. This recognition has fueled population growth in the County at a rate of approximately 85 persons per day for the past 10 years – one of the fastest growth rates for large urban counties in the nation. While we acknowledge the need to continue attracting creative people and innovative companies to Wake County, we also understand that our economic prosperity and natural resources are inextricably linked, and that to sustain our best place status we cannot pursue one at the expense of the other.

## The Rise of Corporate Sustainability

In recent years organizations such as Dow Jones and Goldman Sachs have started to publish investment focus lists that rank companies based on environment, social, economic, and governance factors based on the premise that corporate sustainability performance is an investable concept. The Dow Jones list is titled the Dow Jones Sustainability Index and the Goldman Sachs list is titled GS SUSTAIN. The emergence of these lists reflect investor sentiment that companies committed to corporate sustainability may be good investment opportunities because of the enlightened and disciplined management required to manage and assess opportunities and risks by considering environment, social, and economic factors simultaneously.

<b>Table 1-1 Dow Jones Sustainability United States Index (1) (Dow Jones Indexes, December 2010)</b>			
Rank	Company Name	Sector	Adjusted Weight Score (%)
1	Microsoft	Technology	4.75%
2	General Electric	Industrials	4.37%
3	Chevron	Oil & Gas	4.09%
4	IBM	Technology	4.08%
5	Procter & Gamble	Consumer Goods	4.03%
6	AT&T	Telecommunications	3.90%
7	Johnson & Johnson	Health Care	3.83%
8	Coca-Cola	Consumer Goods	3.13%
9	Citigroup	Financials	3.07%
10	Intel	Technology	2.62%

Notes:

1. The Dow Jones Sustainability United States Index is composed of U.S. sustainability leaders as identified through a corporate sustainability assessment.
2. The research methodology evaluates corporations based on climate change strategies, energy consumption, human resource development, knowledge management, stakeholder relations, and corporate governance.



In response, many companies have taken to calculating and reporting their carbon footprints and green house gas emissions and implementing green programs and sustainability initiatives. Consequently, monitoring and reporting factors such as air emissions, water use, waste disposal, energy consumption, and other environmental indicators has become the norm for an increasing number of companies. Table 1-1 presents the top 10 of the Dow Jones Sustainability United State Index as published in December 2010.

As rankings such as those presented in Table 1-1 continue to emerge and evolve, market forces and competition will make it increasingly necessary for companies to be viewed (scored, ranked, etc.) as a leader in corporate sustainability. As the competition for sustainability rankings increases, it is expected that companies focused on corporate sustainability will be attracted to those locations that have community leaders, programs, policies, and infrastructure systems in place that are consistent with and support a corporate sustainability culture. For sustainable companies, the quality of the local environment will be important and such companies will take notice of the health and condition of the local waterways, the landscapes, and the air.

## The Rise of the “Creative Class”

In his best-selling 2002 publication, *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life*, Richard Florida predicts that creative individuals will be the primary fuel source for economic growth and development in the 21st century. In his vision of the future, a creative class will emerge and it will not be motivated by the conventional need to climb the corporate ladder, but rather by the need to create new ideas and new technologies that have global applications to solve complex problems in complex societies. As shown in Table 1-2, the Research Triangle Park (RTP) Region was ranked No. 5 in the nation using Florida's Creativity Index factors.

Table 1-2 National Creativity Index Rankings (Richard Florida, 2003)				
Creativity Index Rank	Region	Technology Rank	Talent Rank	Tolerance Rank
1	Austin, TX	1	3	7
2	San Francisco, CA	3	5	6
3	Seattle, WA	6	6	1
4	Boston, MA	12	4	3
<b>5</b>	<b>Raleigh-Durham (RTP)</b>	<b>2</b>	<b>2</b>	<b>20</b>
6	Portland, OR	4	19	2
7	Minneapolis, MN	16	9	4
8	Washington-Baltimore	15	1	16
9	Sacramento, CA	5	11	17
10	Denver, CO	22	8	8



Florida's research suggests several important factors for community leaders in Wake County to consider in planning for the future:

1. Successful communities of the future will be defined by their ability to attract and retain creative talent;
2. The creative class will be attracted to those communities that provide a quality of life that cultivates creativity, investigation, discovery, and invention;
3. The creative class will place a high value on outdoor recreation and activities such as bicycling, jogging, kayaking, and trail running.

For the creative class, the quality of the local environment will be important and they will take notice of the health and condition of the local waterways, the landscapes, and the air.

## Planning for a Successful Future

In the future, as in the past, companies will relocate to places where talent is located. If the author of the Creative Class is correct and the Dow Jones and Goldman Sachs publications accurately reflect coming changes in corporate culture, then it is vital that Wake County sustain its standing as a creative and innovative community – one that is attractive to the innovative companies that will be committed to corporate sustainability and one that is attractive to the creative class that will drive economic development.

Fortunately, the community leadership and vision required to establish and sustain Wake County as a relocation destination of choice for creative people and innovative companies has a strong tradition in Wake County. Many of the policies, programs, and facilities that have allowed Wake County to sustain a best place status for an extended period of time – while welcoming 85 new residents per day for the past 10 years – started as community-based initiatives that were commissioned by locally-elected leaders many years ago. Such programs include, but are not limited to, open space and greenway development, water conservation, water reclamation and reuse, improved stormwater management, and waste reduction and recycling. Moving forward, a continued proactive approach to environmental stewardship and sustainability will be vital to ensuring Wake County's standing as a best place place for creative people and innovative companies.

## Environmental Stewardship Agenda

On April 1, 2002, the Wake County Board of Commissioners adopted Wake County's first Environmental Stewardship Agenda (ESA). The purpose of the ESA was to identify environmental stewardship initiatives, programs and policies that can contribute to sustaining Wake County's reputation as a desirable place to live, work, learn, and play. As the social, economic, and environmental conditions have changed in the County, the ESA has been updated to remain responsive to the needs of the community. Since April 2002, the ESA has been updated by Wake County staff and adopted by the Board of Commissioners on two occasions: September 15, 2003, and February 21, 2005.



## Sustainability Task Force

In April 2009, the Wake County Board of Commissioners identified three major goals for the year. One of the goals was to update and enhance the County's ESA to incorporate strategies for sustainability and green initiatives. To update the ESA, the Board of Commissioners established a citizen task force (Sustainability Task Force) with representatives of diverse interests and perspectives to evaluate current environmental stewardship strategies and to recommend changes and new strategies. The Board of Commissioners directed the Sustainability Task Force to focus on three critical areas:

1. Water Resources Conservation and Management
2. Solid Waste Reduction and Management
3. Energy Conservation and Management

The membership for the Sustainability Task Force was established in December 2009, and the Sustainability Task Force convened for its first meeting in January 2010. The objectives of the Sustainability Task Force were to (a) develop recommendations that are environmentally and financially sustainable for each of the three focus areas, and (b) develop performance measures by which the County, and the community as a whole, can measure progress toward the achievement of sustainability targets in the areas of water, waste, and energy.

## Definition of Sustainability

There are a number of different definitions for sustainability offered by private, public, and not-for-profit entities, and the definition changes depending on the subject and the audience. Following are typical dictionary definitions for sustainability and its root words:

**Sustain** – to hold up, to keep up, to prolong, to maintain, to keep in existence, to provide the conditions in which something can happen or exist.

**Sustainable** – A process, state, or condition that can endure or is able to be maintained for long periods of time.

**Sustainability** – the capacity to maintain a certain process, state or condition indefinitely.

For the purposes of the Sustainability Task Force, sustainability has been defined as utilizing practices that protect the economic, environmental, and social qualities of life for current and future generations.

The overall goal of the Sustainability Task Force has been to develop recommendations that balance the community's need for continued economic prosperity with the need to preserve and protect our natural resources as the County marches toward the next population milestone of 1.5 million residents.



## Current Community Profile

Wake County is one of the top 10 fastest growing counties in the country, and growth projections forecast this trend to continue. Located in the heart of North Carolina's Piedmont region, Wake County is home to the State Capital of North Carolina and it consists of a total surface area of approximately 860 square miles across two river basins: the Neuse and the Cape Fear. The County has approximately 900,000 residents, and there are 13 independent units of local government (12 municipalities and the County). These attributes, and those listed below, make Wake County the largest and most diverse county in the State of North Carolina.

**Population** – Wake County's population grew from about 300,000 in 1980 to over 900,000 currently, and is projected to reach 1.5 million in 2035.

Wake County Population Estimates	
1980	301,429
2010	900,000
2035	1,544,631

**Migration** – About 30% of the growth is naturally occurring (due to live births), and 70% is due to people moving to the County. The top sources for migration:

- Within North Carolina, most residents come from Durham County, followed by Johnston and Mecklenburg counties;
- From other states, most come from New York, followed by California and Virginia; and
- From outside the United States, most come from Mexico, followed by India and China.

**Age** – Wake County residents are younger than the average State resident and U.S. citizen, with a median age of 34.6, compared with 37 in N.C. and 36.9 in the U.S.

**Labor Force** – The number of jobs has increased by 170% from 1980 – 2008, from about 172,000 to 464,000. About 418,400 Wake County residents were employed in April 2010 – 92% of the County's labor force.

**Education** – On the whole, Wake County's populace is highly educated; 47.8% of the population over 25-years of age is college graduates, significantly higher than the nation and the State.

College Graduates, 1980 – 2008 Percentage of Population 25 years or Older			
Year	U.S.	State	Wake
1980	16.2	13.2	26.6
2008	27.7	26.1	47.8

**Housing** - The number of housing units has increased by 211% from 1980 – 2008, from about 113,440 to 353,235. The County's median housing value is \$238,119 compared to about \$150,829 (in 2008 dollars) in 1980. The County's average household size decreased slightly – from 2.66 persons/per household (pph) in 1980 to 2.62 pph in 2008.



**Income** – Per capita income has jumped 59% since 1980, to \$33,820, and median household income has increased 18% in that time, to \$65,180.

Per Capita Income, 1980 – 2008			
Year	U.S.	State	Wake
1980	\$20,160	\$16,887	\$21,293
2008	\$27,589	\$25,215	\$33,820
Change	37%	49%	59%
Note: Amounts are in 2008 dollars			

**Vehicles** – The number of registered vehicles in Wake County has leaped 227% since 1980, from about 226,000 to the current level of nearly 740,000.

**Students** – The number of students in Wake County Public School System has grown 157%, from about 54,400 in 1980 to over 140,000 now.

## Summary

The accolades that Wake County has earned since the early 1990's did not occur by chance, but have resulted from the unique partnerships forged among the community's diverse leaders in the areas of business, natural resource protection, education, infrastructure systems, and local government. Without question, one of the reasons Wake County has been able to sustain its status as one of America's best places is because the community's leaders recognize the importance of working together – allowing all interests and perspectives to participate in the discussion – to develop and implement important initiatives that balance economic prosperity, quality of life, and natural resource protection.

*“The ability for places to attract talent will be one of the single most important factors in determining the locations that ‘win’ and those that ‘lose’ in the new, extremely competitive global economy.”*

Wake County Economic Development  
A program of the Greater Raleigh  
Chamber of Commerce

Recognizing that the condition of our natural resources and the strength of our economy are linked, the Sustainability Task Force has developed recommendations for water, energy, and waste that are environmentally and financially sustainable. In addition – and equally important – the Sustainability Task Force has developed performance measures by which the community can measure progress toward the achievement of the sustainability targets established for each selected area.

The recommendations presented in this document, and the associated performance metrics, will be submitted to the Wake County Board of Commissioners as the 2011 Wake County Environmental Stewardship Agenda. As in the past, as the social, economic, and environmental conditions change in the County, the Environmental Stewardship Agenda will be updated to remain responsive to the changing needs of the community and to retain Wake County's standing as a best place for creative people and innovative companies.



# Energy

## Task Force Recommendations

As required by the Board of Commissioners, the Sustainability Task Force has developed recommendations for energy that are environmentally and financially sustainable. This section presents the recommendations of the Sustainability Task Force, broken down into broader Goals and more specific Strategies.

### Recommended Energy Goals

Citizens, businesses and governments of Wake County:

- A. Achieve and maintain EPA's national ambient air quality standards by reducing ozone and particulate matter.
- B. Minimize the adverse impacts to water, land, and air caused by the production and consumption of fuel and energy.
- C. Create a thriving clean technology industry cluster as part of its economic development strategy.
- D. Reduce dependence on foreign fuel sources.
- E. Reduce energy costs from Wake County government buildings and vehicles.

	Goals				
Strategies	A	B	C	D	E
1		X			X
2	X	X	X	X	X
3	X	X	X	X	X
4					X
5		X			
6		X		X	
7		X			
8		X		X	
9	X	X		X	
10	X	X	X		X
11		X		X	X
12	X	X	X	X	X
13		X	X		X



## Recommended Energy Strategies

The Task Force's recommended Strategies are as follows:

1. Evaluate existing building codes, policies and regulations to identify limitations to, and opportunities for, the energy efficient design of buildings and outdoor lighting.
2. Educate the residential, commercial, and industrial sectors about energy conservation and energy efficiency using science-based information.
3. Collaborate with others to implement energy demonstration and research projects.
4. Audit existing Wake County facilities, including schools, to find ways to conserve energy. Based on benefit cost analysis and return on investment, evaluate:
  - a) group relamping
  - b) motor management policy
  - c) energy efficient retrofits
  - d) retro commissioning
  - e) energy performance contracting for the purpose of installing energy conservation measures in areas such as HVAC, lighting, and day lighting design
5. Ensure that buildings owned or funded by Wake County perform at a high level by:
  - a) Requiring enhanced commissioning for new construction.
  - b) Requiring building owners to develop and consistently adhere to maintenance plans.
6. Support and encourage energy efficiency in all buildings not owned or funded by Wake County through the use of audits, retrofits, performance contracting, and retro-commissioning.
7. Evaluate potential incentives to promote:
  - a) the use of energy efficient appliances when replacements are needed
  - b) the construction of energy efficient buildings
  - c) the operation of energy efficient buildings
  - d) the retrofit of buildings to increase energy efficiency
8. Encourage and implement where feasible, mass transit, multimodal transportation planning and land use planning that helps achieve and maintain EPA's national ambient air quality standards requirements.
9. Support Waste Management Recommendation Goal 3, Maximize the Financial and Environmental Benefits of Other Landfill Resources Strategy 11, 12, 13.



10. Support development of Smart Grid infrastructure with appropriate information security standards.
11. Develop charging stations for electric cars with the consumer paying for the electricity.
12. Support development and use of current and future sustainable energies (e.g. solar, wind, geothermal, methane) where feasible.
13. Support economic development strategies to attract energy-related technology companies to Wake County.

## Recommended Energy Performance Measures

A second requirement placed upon the Sustainability Task Force by the Board of Commissioners was to identify performance measures that can be used to monitor and report progress toward the achievement of sustainability targets for energy. As mentioned in the Energy Providers section, most data on energy generation and consumption is collected and reported at the state and national levels. That makes developing Wake County-specific benchmarks and performance measures more challenging. However, there is sufficient data available to track and report on the following measures.

### Energy Usage in County and WCPSS Buildings

Utility bill data is available for buildings occupied by Wake County government and the public school system (WCPSS). That data can be converted into a standard unit of measurement, such as BTUs, and measured over time. Tracking the data in ratios, such as BTUs per square foot per year or BTUs per occupant per year, would allow for better comparability across different types and sizes of buildings. A decrease in these energy usage ratios over time would indicate progress toward Task Force recommendations.

### Participation in Load Management or Conservation Programs

Most utility companies currently offer optional programs to help customers conserve energy and better manage energy demand. One way to measure the community's interest in energy efficiency is to track participation rates in these optional programs. An increasing percentage of customers that participate would indicate progress toward Task Force recommendations.

### Participation in NC GreenPower

NC GreenPower is an independent, nonprofit organization established to improve North Carolina's environment through voluntary contributions toward renewable energy and the mitigation of greenhouse gases. As with load management and conservation programs offered by utility companies, tracking participation in this voluntary program is a gauge of the community's level of interest in renewable energy. An increasing number of customers that participate would indicate progress toward Task Force recommendations.



## Amount of Renewable Energy Installed in Wake County

Progress Energy tracks the installation of renewable energy generation facilities as part of its effort to meet REPS requirements. Seeing an increase in number of megawatts of renewable energy generated in Wake County could indicate progress toward Task Force recommendations.

## Magnitude of Clean Energy Industry Cluster

Wake County Economic Development tracks data on the presence and investment levels of businesses in their target industry clusters (currently electric vehicles, smart grid, and photonics). An increase in the number of companies, number of employees, or taxable investment in these industry clusters would represent progress toward Task Force recommendations.

## Background Information

It is very difficult for energy consumers in Wake County to know much about the source of the energy they are using. For example, when a homeowner turns on a light, the electricity that powers the lamp could have been generated by burning coal or natural gas, a nuclear reaction, or water powering a turbine. Even if it was possible to determine that those electrons came from a coal-fired power plant, it would still be impossible to know which one. That is because electricity travels on a grid of interconnected transmissions lines and utility companies such as Progress Energy have the ability to purchase energy that other utilities generated. As a result, the link between a community's consumption and generation is much less direct than it is with waste and water.

## Energy Generation and Consumption in North Carolina

- **Electricity** – North Carolina is a significant producer of electricity. According to the US Energy Information Administration (EIA), the state ranks #10 in net generation (megawatt hours) of electricity. Approximately 60 percent of the electricity generated in North Carolina comes from coal-fired power plants and another 33 percent is attributable to nuclear power. The remainder is generated primarily from hydroelectric and natural gas-fired power plants. The coal that supplies most of North Carolina's coal-fired power plants is transported by rail from West Virginia and Kentucky.
- **Natural Gas** – North Carolina does not produce a significant amount of natural gas within its borders. Most of the natural gas used in the state is supplied by the Transcontinental Gas Pipeline. This pipeline originates in the Gulf Coast area and

**Wake County Economic Development Target Industries**

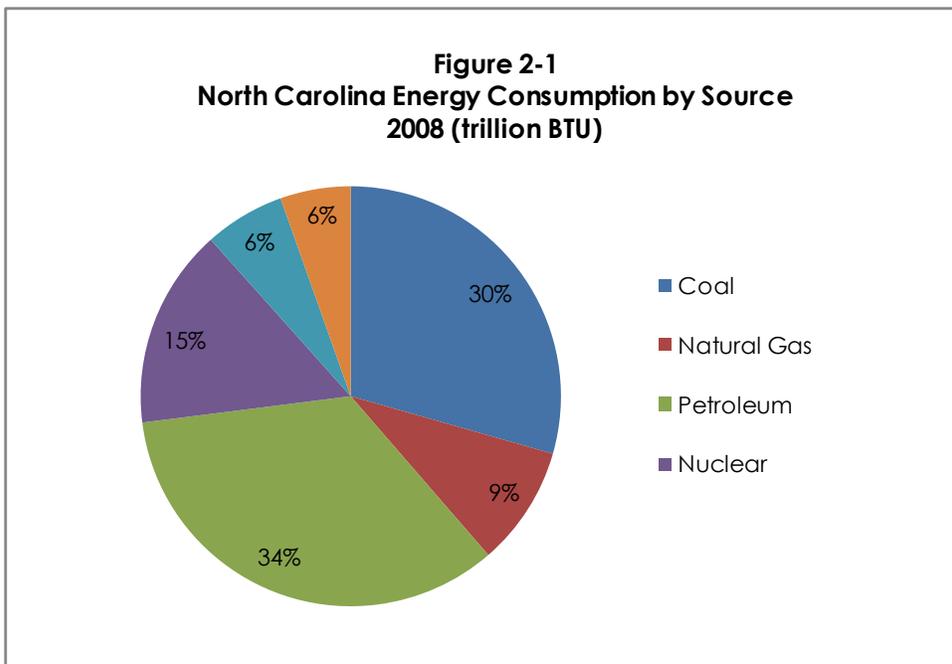
= Energy Related Industries

- Advanced Medical Technologies
- Life Sciences & Biotechnology
- Interactive Software / Games
- Defense Technologies
- Nonwoven Textiles
- Electric Vehicles
- Smart Grid
- Software/IT
- Photonics



travels through North Carolina and on to major population centers in the Northeast.

- **Petroleum** – None of the petroleum products used in North Carolina are produced within the state. As with natural gas, there are several pipelines (Colonial and Plantation being the most prominent) that originate in the Gulf Coast and supply petroleum to North Carolina and other states. In addition there is the Dixie Pipeline, which is a major supplier of propane to the Southeast. The Dixie pipeline terminates in Apex. Wilmington and Morehead City also play a vital role by providing ports for tankers from other states and countries delivering petroleum to North Carolina.
- **Renewables** – The primary renewable energy resource being used in North Carolina is hydroelectric. The state has seven hydroelectric power plants that have over 1,300 megawatts of capacity. In addition, EIA notes that North Carolina is home to about five percent of the country's net summer capacity for wood energy production and ranks among the top ten states in net summer capacity for wind power.

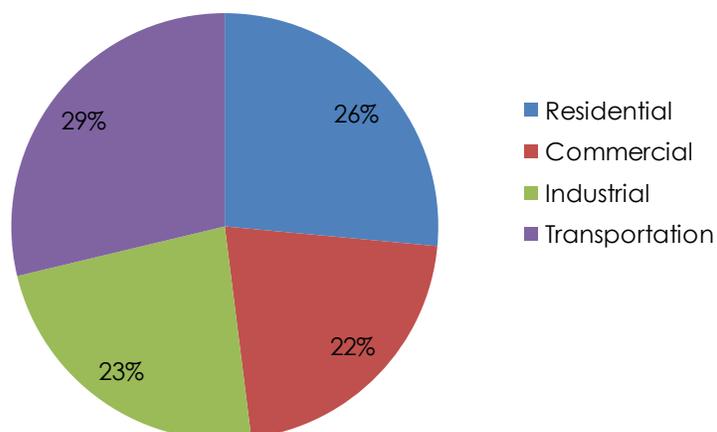


Data Source: US Energy Information Administration

As the graph in Figure 2-1 indicates, petroleum represents one-third of all energy consumption in North Carolina. Further analysis of petroleum consumption by the EIA indicates that approximately 80 percent of the petroleum usage is attributable to transportation, with another 12 percent attributable to the industrial sector. Coal is the second largest source of energy consumed in North Carolina, followed by nuclear and then natural gas.



**Figure 2-2**  
**North Carolina Energy Consumption by End-Use Sector**  
**2008 (trillion BTU)**



Data Source: US Energy Information Administration

Figure 2-2 illustrates who is using the energy shown in Figure 2-1. Transportation is the largest category of energy user, but only by a slim margin. Residential, commercial, and industrial energy users each make up about one quarter of North Carolina's energy consumption. The next section provides additional detail on how the residential and commercial sectors use energy.

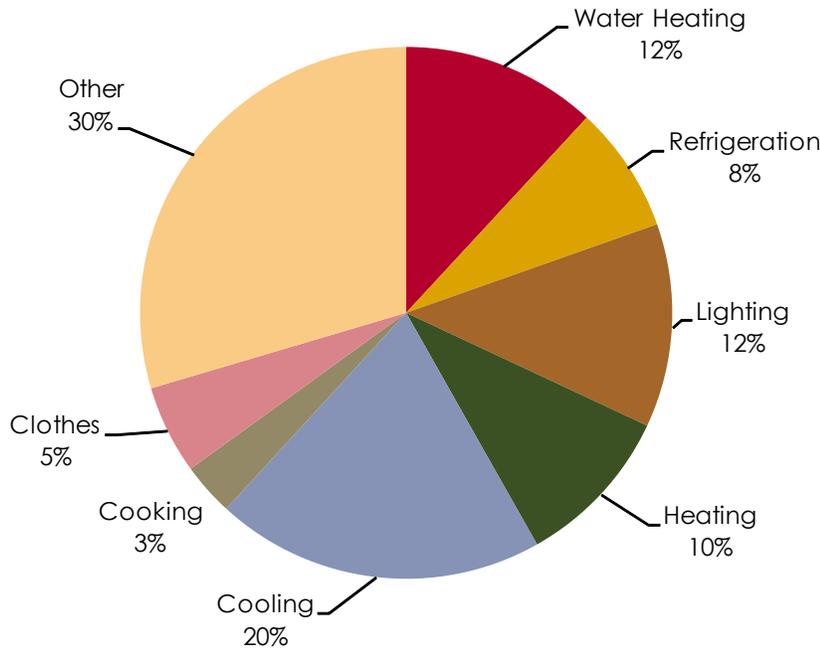
### Energy Providers in Wake County

In North Carolina energy companies are regulated monopolies that have assigned services areas. Therefore, there are only a few energy companies that serve customers in Wake County. Progress Energy is by far the dominant electricity provider, although some Wake County residents get electricity from Wake Electric Cooperative or from two town governments that provide electric service – Apex and Wake Forest. The three smaller service providers combined have fewer than 100,000 customers, which means that Progress Energy serves more than 800,000 Wake County citizens. Public Service Company of North Carolina (PSNC) is the only natural gas provider for Wake County residents.

Most data on energy generation and consumption is reported at the state or national level. Because utility companies are traditionally granted large service areas to offset their large infrastructure costs, major utility companies almost never serve just one county. Their reporting requirements are usually by service area and that means very little Wake County-specific consumption data is available. Progress Energy did provide some consumption details for their southeastern service area.



**Figure 2-3: Residential Energy Use – Progress Energy Customers**



Interestingly, Figure 2-3 shows that the largest component of electricity consumption in residential settings falls into the “Other” category, which includes televisions, computers, and other electronics. The next largest electricity-consuming uses are cooling, water heating, and lighting, followed closely by heating. If consumers are interested in reducing their electricity consumption, those uses are the logical place to start since those five categories make up almost 85 percent of electricity usage in residential settings.

**Figure 2-4: Commercial Energy Use – Progress Energy Customers**

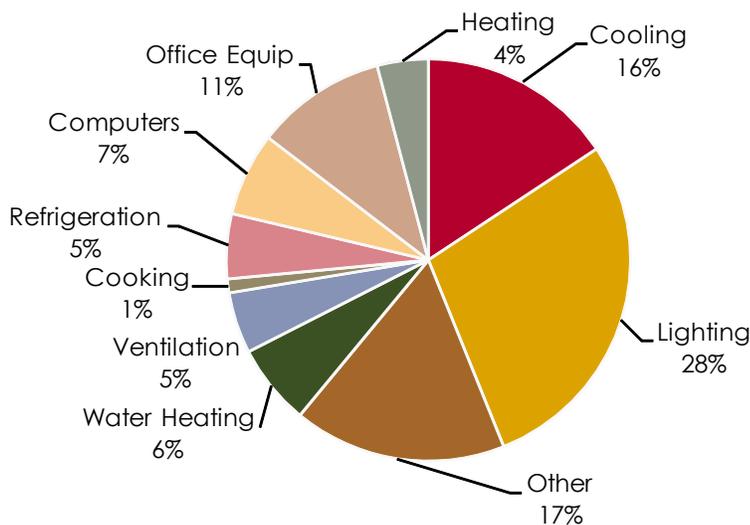


Figure 2-4 shows that the largest component of commercial electricity usage is lighting,



which explains why re-lamping is one of the most frequently cited energy retrofit projects for commercial buildings. The next largest categories are Other, Cooling, and Office Equipment. Those four categories make up approximately 72 percent of electricity usage in commercial settings.

## Regulatory Environment

### Electric Utilities

The rates and services of all public utilities in this state are regulated by the North Carolina Utilities Commission (NCUC). The General Assembly originally created the NCUC in 1891 as the Railroad Commission and gave it authority to regulate railroad, steam boat, and telegraph companies. In modern times the NCUC regulates electric, telephone, natural gas, water, wastewater, and several other industries. The NCUC does not regulate utility services provided municipalities (i.e. Town of Apex), electric membership corporations (i.e. Wake EMC), telephone membership corporations, cable TV, satellite, commercial mobile radio service, cellular, pagers, or data and Internet service providers.

In general terms, the NCUC requires companies like Progress Energy to apply the following principles in running their business:

- Serve an assigned territory with an obligation to serve every customer in that territory.
- Provide energy to customers in a way that minimizes cost and maximizes reliability.
- Base customer rates on the average cost to provide energy.
- Earn an agreed upon return on invested capital.

### Renewable Energy and Energy Efficiency Portfolio Standard

On August 20, 2007, the State of North Carolina signed Session Law 2007-397, commonly known as Senate Bill 3 or the Renewable Energy and Energy Efficiency Portfolio Standard (REPS). REPS requires all investor-owned utilities to meet 12.5 percent of their energy needs through renewable energy resources or energy efficiency measures by the year 2021. The target for rural electric cooperatives and municipal electric suppliers is slightly lower – 10 percent. The law also requires utilities to establish demand side management and energy efficiency programs.

Utilities can take a variety of approaches to meet the REPS requirements, including the use of renewable fuels in existing electric generating facilities, the generation of power at new renewable energy facilities, the purchase of power from renewable energy facilities, the purchase of renewable energy certificates, or the implementation of energy efficiency measures. There are three specific set-asides in the REPS requirements: utilities must use solar, swine waste, and poultry waste to meet a small portion of the 12.5 percent target.



REPS also specifies a cost recovery mechanism that allows the utilities to charge all customers a fee to make up for the lost revenue associated with energy conservation and/or the higher costs associated with renewable energy sources. The annual cost to customers is capped based on customer class - \$10 for residential, \$50 for commercial, and \$500 for industrial through 2011. In future years the allowable annual caps increase to \$34, \$150, and \$1,000 respectively.

The NCUC is responsible for administering REPS and has established a set of rules that provide additional guidance for utilities.

## Air Quality

The Clean Air Act, passed in 1970, is the law that defines the US Environmental Protection Agency's (EPA) responsibilities for protecting and improving the nation's air quality and the stratospheric ozone layer. The Clean Air Act allows the EPA to set limits on certain air pollutants to help ensure basic health and environmental protection from air pollution for all Americans. The Clean Air Act also gives EPA the authority to limit emissions of air pollutants coming from sources like chemical plants, utilities, and steel mills. Individual states or tribes may have stronger air pollution laws, but they may not have weaker pollution limits than those set by EPA.

EPA must approve state, tribal, and local agency plans for reducing air pollution. If a plan does not meet the necessary requirements, EPA can issue sanctions against the state and, if necessary, take over enforcing the Clean Air Act in that area. States have to develop State Implementation Plans (SIPs) that outline how each state will control air pollution under the Clean Air Act. A SIP is a collection of the regulations, programs and policies that a state will use to clean up polluted areas.

Six common air pollutants (also known as "criteria pollutants") are found all over the United States. They are particle pollution (often referred to as particulate matter), ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. Of these, ground-level ozone is of particular concern to the Triangle region. Ground-level ozone is a primary component of smog. Repeated exposure to ozone can make people more susceptible to respiratory infections and lung inflammation. It also can aggravate pre-existing respiratory diseases, such as asthma. Children are at risk from ozone pollution because they are outside, playing and exercising, during the summer days when ozone levels are at their highest. They also can be more susceptible because their lungs are still developing. People with asthma and even active healthy adults, such as construction workers, can experience a reduction in lung function and an increase in respiratory symptoms (chest pain and coughing) when exposed to low levels of ozone during periods of moderate exertion.

The two types of chemicals that are the main ingredients in forming ground-level ozone are volatile organic compounds (VOCs) and nitrogen oxides (NOx). VOCs are released by cars burning gasoline, petroleum refineries, chemical manufacturing plants, and other industrial facilities. The solvents used in paints and other consumer and business products also contain VOCs. The 1990 Clean Air Act has resulted in changes in product formulas to reduce the VOC content of those products. Nitrogen oxides are produced



when cars and other sources like power plants and industrial boilers burn fuels such as gasoline, coal, or oil. The reddish-brown color that people associate with smog comes from nitrogen oxides.

In 2009, the State of North Carolina recommended to the EPA that Wake County be included as a non-attainment area for the EPA's National Air Quality Ambient Standard for 8-hour ozone (the 2008 standard is 0.075 parts per million (ppm) measured over an 8-hour period). However, the EPA has since determined that the 2008 standard was not sufficiently protective of public health and revised the standard. The final rule was proposed for a level between 0.060-0.070 ppm and sent to the US Office of Management and Budget for review and approval on July 11, 2011. If approved, there is a high probability that Wake County will be designated within a non-attainment area in 2012. Even if Wake County's air quality monitors register below the standard, the County can still be pulled into non-attainment status if neighboring air quality monitors are above the standard, due to the commuting patterns of vehicles in the Triangle.

## Transition from Fossil Fuels to Renewable Energy

In 1800, wood and animal feed provided over 95 percent of the United States' energy needs. Since that time the country has gone through at least two major energy transitions: 1) from wood to coal and 2) from coal to oil and gas. We are now in the early stages of what may develop into a third transition – from fossil fuels to renewable energy sources.

The two previous transitions involved moving from an “inferior” fuel source to a “superior” one. For example, oil is superior to wood and coal in three key areas: energy density, ease of transportation and storage, and ability to release energy efficiently. But even with these obvious benefits, shifting to the new, improved fuel sources took about 50-70 years in both of the previous transitions.

As this country moves toward a third energy transition, there are two key factors that suggest the shift to renewables will be a lengthy process. The first is that the technical characteristics of renewables are currently less attractive than those of the fossil fuels they are replacing. For example, renewables contain less energy per unit of weight or volume than fossil fuels, which means it takes more fuel to provide the same amount of energy. Renewables like solar and biomass also require a larger amount of land area than fossil fuels to generate the same amount of energy. Another critical factor is that energy from renewables is often intermittent – the sun does not shine all the time and the wind does not blow 24 hours a day. Since there is not currently an adequate energy storage device for these fuel sources, it would be difficult to rely on them exclusively without technological advances.

The second factor that suggests a lengthy transition period is that fossil fuel supplies have not yet dwindled enough to drive prices up significantly. Energy analysts suggest that coal and oil production will continue to increase until approximately 2030, and that natural gas production will not decline until 2050. With relatively low prices and adequate supplies in the near term, consumer preferences and behaviors are unlikely



to cause a rapid shift to renewables in the next decade.

Despite the hurdles discussed above, a transition to renewable energy still has traction because, eventually, the world's supply of fossil fuels will run out unless there are dramatic reductions in energy consumption or increases in energy efficiency. The endless supply of renewables is a major benefit if the economic and technical issues can be resolved. Another advantage of renewables is that they are dramatically cleaner than fossil fuels. For those concerned about air pollution and/or greenhouse gases this is a major advantage for renewables.

Using the historical perspective of previous energy transitions as a guide, it will likely be many years before the United States is ready to rely on renewable energy as its primary energy source. Even when the country was transitioning to fossil fuels it took many years to develop the technology and infrastructure to efficiently use the new energy source. It also takes time for inventors to design products that use a new energy source and for consumers to start using those new products. During the transition period some experts recommend reducing consumption and increasing efficiency as ways to buy time to allow the shift to occur.

### Regional Accolades

- No. 2 Biggest Brain Magnet in U.S. Forbes.com, February 2011
- No. 1 Most Sustainable Mid-Size Community U.S. Chamber of Commerce, April 2011
- No. 10 State for Solar Energy Generation Business Facilities, August 2011
- No. 2 Fastest Growing Region for Green Jobs Brookings Institution, July 2011

The fact that energy is in a state of transition caused the task force to grapple with a number of difficult questions: Which renewable energy source(s) will emerge as viable alternatives to traditional energy sources? What is the most effective way to bridge the gap until renewables are a viable alternative? What is the preferred mix of regulatory mechanisms versus market mechanisms to guide us through the transition? How can Wake County maintain environmental quality while allowing businesses to thrive?

## Energy Efficiency

Energy efficiency involves the use of technology to produce the same end product while using less energy. For example, an energy efficient air conditioner produces the same level of cooling capability while using less energy than the average air conditioner on the market. Many experts, including members of the Sustainability Task Force's energy panel and the American Council for Energy Efficiency Economy (ACEEE), believe that energy efficiency is the "low hanging fruit" for energy sustainability. The ACEEE states that energy efficiency and demand response programs a) provide relief from short-term market impacts, b) represent the least cost resources available, and c) are the quickest to deploy. In addition, a report produced by Georgia Tech and Duke University uses modeling and cost benefit analysis to analyze policies that have the potential to improve energy efficiency. The report concludes that:



*If the South could achieve the substantial energy-efficiency improvements that have already been shown effective in other regions and nations, carbon emissions across the South would decline, air quality would improve, and plans for building new power plants could be downsized or postponed, all while saving ratepayers money.*

## Energy References

Booth, Laura. 2011. Personal Communication. Division Of Air Quality, NC Department Of Environment And Natural Resources.

Brown, Marilyn A; Gumerman, Etan; Sun, Xiaojing; Baek, Youngsun; Wang, Joy; Cortes, Rodrigo; Soumonni, Diran. Energy Efficiency In The South. 2010. Southeast Energy Efficiency Alliance. Atlanta.

Clean Air Act. US EPA. July 2011 [http:// www.EPA.Gov/Air/Caa/](http://www.EPA.Gov/Air/Caa/)

Eldridge, Maggie; Elliott, R. Neal; Vaidyanathan, Shruti. North Carolina's Energy Future: Electricity, Water, And Transportation Efficiency. 2010. Report. American Council For An Energy-Efficient Economy. Washington Dc

James, Harold. Electronic presentation to the STF. October 2010

Kerr, Richard. Do We Have The Energy For The Next Transition? Science. August 13, 2010. pp 780-781.

NC Green Power. [http:// www.ncgreenpower.Org/About/Index.html](http://www.ncgreenpower.Org/About/Index.html)

NC Utilities Commission Renewable Energy And Energy Efficiency Portfolio Standard. NC Utilities Commission. Accessed June 2011. [http:// www.NCuc.Net/Reps/Reps.htm](http://www.NCuc.Net/Reps/Reps.htm)

NC Utilities Commission. [http:// www.NCuc.Net/](http://www.NCuc.Net/) Accessed June 2011.

Perdue, Governor Beverly. 2009. State Of North Carolina's Recommendation On Boundaries Of 8-Hour Ozone Nonattainment Areas.

US Energy Information Administration. Consumption, Price, And Expenditure Estimates. 2008. Accessed May 31 2011. [http:// www.Eia.Gov/Emeu/States/Hf.Jsp?Infile=Sep\\_Sum/Plain\\_html/Sum\\_Btu\\_1.html](http://www.Eia.Gov/Emeu/States/Hf.Jsp?Infile=Sep_Sum/Plain_html/Sum_Btu_1.html)

US Energy Information Administration. State Energy Profile - NC. [http:// www.eia.Gov/State/State-Energy-Profiles-Analysis.Cfm?Sid=NC](http://www.eia.Gov/State/State-Energy-Profiles-Analysis.Cfm?Sid=NC). Oct 2009. Accessed May 31, 2011.

US Environmental Protection Agency. The Plain English Guide To The Clean Air Act. [http:// www.EPA.Gov/Air/Peg/Cleanup.html](http://www.EPA.Gov/Air/Peg/Cleanup.html)

US Office Of Electricity Delivery And Energy Reliability. US Department Of Energy. [http:// www.Oe.Energy.Gov/Demand.htm](http://www.Oe.Energy.Gov/Demand.htm)

Wake County Economic Development. Target Industries. [http:// www.Raleigh-Wake.Org/Page/Target-Industries](http://www.Raleigh-Wake.Org/Page/Target-Industries)



# Water

## Task Force Recommendations

As required by the Board of Commissioners, the Sustainability Task Force has developed recommendations for water that are environmentally and financially sustainable. This section presents the recommendations of the Sustainability Task Force for Goals and Strategies.

### Recommended Water Goals

The Task Force's recommended Goals are as follows:

- A. Clean water resources are available for current and future generations at reasonable and predictable costs.
- B. Impact and concern for drought events is reduced.
- C. The use of drinking water for non-potable applications is reduced.
- D. Regional planning, coordination, and collaboration for water resource management are improved.
- E. Clean water resources support quality economic development, a healthy population, participation in outdoor recreation, productive wildlife habitats, and agricultural production.
- F. The quality and quantity of groundwater resources are protected.
- G. Citizens have the information and tools to understand the need to protect and promote healthy water resources.

Strategies	Goals						
	A	B	C	D	E	F	G
1	X	X	X		X	X	X
2	X	X	X		X		
3					X	X	
4	X	X		X	X		
5		X		X	X	X	X
6				X	X		X
7	X			X	X	X	
8				X	X	X	
9	X	X	X	X	X	X	X



## Recommended Water Strategies

The Task Force's recommended Strategies are as follows:

1. Conduct a full benefit-cost analysis of water resource facilities and programs (water, wastewater, and stormwater), including the protection and restoration of the designated uses of water resources in the County. Analyses and products should include, but not be limited to, the following:
  - a) Life-cycle cost analysis of the capital, operations, maintenance, rehabilitation, and replacement required for wastewater facilities.
  - b) Life-cycle cost analysis of the capital, operations, maintenance, rehabilitation, and replacement required for potable water facilities, including the development of future water supply sources.
  - c) Life-cycle cost analysis of the capital, operations, maintenance, rehabilitation, and replacement required for stormwater facilities, including the acquisition of land through voluntary sale and donation to restore and protect the designated uses of water resources.
  - d) Develop and implement dynamic water resource pricing policies that recover all costs, promote efficient use of water resources, and equitably allocate costs to individuals based upon the benefits received from, and the impacts placed on, water resource facilities and programs.
2. Evaluate existing policies and regulations (building codes, development ordinances, public health laws, etc.) to identify limitations to, and opportunities for, increasing voluntary implementation of water efficiency, water conservation, and water reclamation/reuse (including stormwater, rainwater, wastewater, and grey water).
  - a) Work with the state Department of Insurance to develop recommendations and promote changes during the building code adoption process.
  - b) Work with the appropriate health agencies to identify limitations in public health laws.
  - c) Identify local and state government case studies and best practices to aid Wake County and North Carolina to amend local and state codes, ordinances and other policies
3. Evaluate existing policies and regulations (development ordinances, etc.) to identify limitations to, and opportunities for, increasing the voluntary implementation of conservation development design and low-impact development design to protect water resources and groundwater recharge areas.
4. Expand regional water supply partnerships in the Cape Fear River Basin and the Neuse River Basin to conduct collaborative assessments of water supply availability in the region. Encourage local governments in the region to work cooperatively to protect the quality of current water resources, maximize the efficient use of current



water resources, and identify opportunities to expand existing, or develop new, water supply sources.

5. Implement surface water and ground water monitoring and reporting programs to continuously assess and report the quality and quantity of water resources in Wake County. The focus will be to:
  - a) Provide easily understood information for both the technical reader and the non-technical reader regarding water resource conditions in Wake County.
  - b) Provide a framework for coordinating future data collection and reporting efforts with other government agencies regarding water resource conditions in Wake County.
  - c) Identify water quality issues of concern that should be targeted for additional investigation and corrective action.
  - d) Monitor the effectiveness of water quality improvement policies and projects implemented in Wake County to mitigate water resource degradation (impairment).
6. Implement a collaborative process involving local government interests, economic development interests, environmental protection interests, and other interested and impacted parties to review water resource data; establish goals; and identify, prioritize and implement water quality improvement policies and projects to restore and protect the designated uses of water resources in Wake County.
7. Reduce the volume and velocity of stormwater runoff generated by new and existing development, where needed, to:
  - a) Restore and maintain the designated uses of water resources in Wake County
  - b) Protect public health and safety from flood hazards
  - c) Protect downstream property owners from property damage resulting from flooding
  - d) Comply with the requirements of the Falls Lake Rules and the Jordan Lake Rules
8. Identify, prioritize, and conserve land that serves as headwaters, groundwater recharge areas, and stream buffers through voluntary actions and incentives.
9. Support and implement a collaborative water resources education, marketing and promotions campaign that emphasizes the necessity, value, and benefit of water as a basic requirement of life. The campaign will be science-based and include information about the hydrologic cycle, land use impacts on water resources, water efficiency, water conservation, and the costs associated with providing water resource facilities and programs.



## Recommended Water Performance Measures

A second requirement placed upon the Sustainability Task Force by the Board of Commissioners was to identify performance measures that can be used to monitor and report progress toward the achievement of sustainability targets for water. There are a number of different performance measures that the community can use to gauge the success of the recommended strategies. A description of the recommended performance measures follows.

**Impaired Streams.** Based on most recent reports published by NCDENR, there are currently (2010) 297 miles of streams in Wake County that have been identified as “impaired”. This metric can be monitored to assess increases or decreases in impaired stream miles with the County. Increases in the miles of impaired streams will suggest degrading water quality conditions in the County, and decreases in the miles of impaired streams will suggest improving water quality conditions in the County.

**Total system per capita water use.** This metric will be calculated by dividing the total system water use for a municipality for an entire year (all water use, all classes of customers) by the total population of the municipality. This metric will be reported as gallons per capita per day (gpcd). Increases in this metric will suggest reduced water use efficiency in the County, and decreases in this metric will suggest increased water efficiency in the County.

**Residential per capita water use.** This metric will be calculated by dividing the total water use by the residential customer class only for a municipality for an entire year, by the total population of the municipality. This metric will be reported as gallons per capita per day (gpcd). Increases in this metric will suggest reduced water use efficiency in the County, and decreases in this metric will suggest increased water efficiency in the County.

**Peak Day Ratio.** This metric will be calculated by dividing the annual peak day water use for a system (single highest day of water use for a year) by the annual average day water use for a system (total system water use for a year divided by 365 days). Increases in this metric will suggest increased use of drinking water for outdoor uses during the summer, and decreases in this metric will suggest decreased use of drinking water for outdoor uses during the summer.

## Background Information

Water – it constitutes approximately 60 percent of the weight of an adult human body, and is essential to human life. Without it, we can survive only a few days. In addition to requiring water to sustain our body, we rely on water for cooking, cleaning, washing, and bathing. Water is a basic element of public health and safety for sanitation and fire protection. We use water in a variety of manners to support important business and commerce activities, and we have come to enjoy water through recreational activities such as boating, fishing, swimming, and hiking along trails adjacent to local streams. Finally, water is a powerful natural force as demonstrated by the Colorado River carving the Grand Canyon, periodic flooding along the Mississippi River, and streambed



scouring and bank erosion in local streams.

During the Task Force process, the term “water resource” was used generically to describe the creeks, streams, wetlands, groundwater supplies, and surface water reservoirs that exist in the County. In addition, the term “watershed” was used to define the land area that drains to a specific water resource.

## Current Water Resource Paradigm

Under the prevailing water resource management paradigm, water supply management, wastewater management, and stormwater management are generally viewed as linear processes and separate systems where:

Water is withdrawn from a supply source (i.e. a body of water), treated to protect public health, delivered to numerous customers through a complex pipe network, used once, and then discarded as wastewater.

Wastewater is collected from numerous customers through a complex pipe network, conveyed to a central facility that is located remotely from the customers, treated to protect public health and the environment, and then discharged to a receiving body of water.

Stormwater is directed away from roadways and structures to protect the public and property from flooding, collected in a complex network of curbs, pipes, and ditches, and then discharged to the closest receiving body of water.

The deficiency of the current water resource management paradigm is that it is typically focused on addressing acute water resource issues specific to the individual systems such as water shortages during droughts, fish kills in surface waters, and flooding from severe storm events. A more effective water resource paradigm – a sustainable water resource paradigm – requires a holistic approach to system planning, service delivery, financial accounting, and performance monitoring that recognizes that all of these systems (water, wastewater, and stormwater) are interconnected, and that the long-term quality and health of each system is directly related to the long-term quality and health of the other systems.

## Water Quality Considerations

Regulatory agencies routinely collect and review information and data to assess and report the quality and health of water resources. The quality and health of a water resource is defined by regulatory agencies using three categories of information:

**Chemical Data:** What constituents are present in the water, and at what concentrations? Do any of the constituents present a public health and safety risk, or an environmental risk?

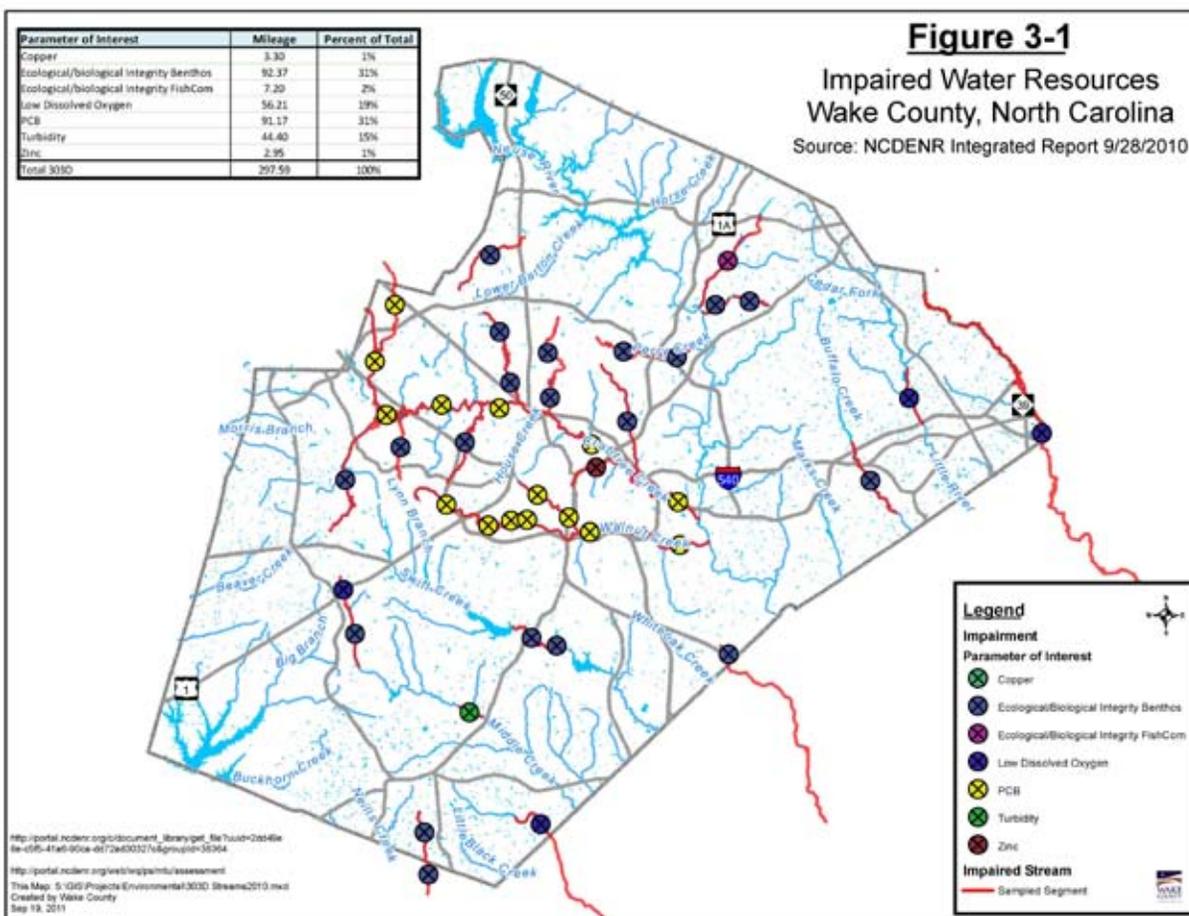
**Biological Data:** What aquatic species are found to be living in the water, and how pervasive is the species? Do the population counts appear to be stable, increasing, or decreasing?



**Physical Condition (geomorphology) Data:** What is the physical condition of the stream bank, the stream bed, and the riparian buffer?

When regulatory agencies complete their review of these data sources, the agencies then report whether or not the water resource is meeting its intended purpose or designated use. In North Carolina, the designated use of a water resource is established by the North Carolina Department of Environment and Natural Resources (NCDENR) and includes water supply, aquatic habitat, and recreation. If it is determined that a water body is not supporting a designated use, NCDENR characterizes the water body as “impaired” and establishes a process to implement a water resource improvement plan to restore the designated use of the water resource. In a report issued by NCDENR in September 2010, 297 miles of streams were identified as “impaired” in Wake County (see Figure 3-1).

Recent, local examples of this environmental assessment and regulatory process are the Falls Lake Rules and the Jordan Lake Rules – both of which are water resource improvement plans intended to restore the designated uses of local water resources. In both of these instances, the objective is to reduce the occurrence of nuisance algae blooms (which can create fish kills – habitat impairment) by reducing nitrogen and phosphorus loadings to the water bodies. The State of North Carolina estimates that the cost of compliance for the Falls Lake Rules, for private, local, state, and federal entities, is approximately \$1.5 billion (NCDENR, Fiscal Analysis, June 2010).





## Water Supply Considerations

Future water demands will be a function of growth and development patterns, and the volume of water used by different classes of customers. During the Task Force process, members received information about water supply issues from representatives of the Town of Cary and the City of Raleigh. The Town of Cary manages water supply and treatment systems and wastewater treatment systems that serve Apex, Cary, Morrisville, RDU airport, and the Wake County portion of Research Triangle Park. The City of Raleigh manages water supply and treatment systems and wastewater treatment systems that serve Garner, Knightdale, Raleigh, Rolesville, Wake Forest, Wendell, and Zebulon.

### Water Consumption Rates

On an annual average basis, 70% of the total water use in Cary and Raleigh is by residential and irrigation accounts, with the balance of water used by non-residential accounts (commercial, industrial, public institutions, etc.). During the summer months, approximately 23% of the total water use in Cary is through irrigation accounts, and irrigation accounts represent 11% of the total number of accounts in the system. In Raleigh, irrigation accounts represent 4% of the total accounts in the system and during the summer months irrigation accounts represent 9.9% of the total system water demand.

The staff from Raleigh and Cary indicated that they both measure water use consumption using three performance metrics:

**Total system per capita water use.** Total system per capita water use is calculated by dividing the total system water use for an entire year (all water use, all classes of customers) by the total population of the municipality. This metric is reported as gallons per capita per day (gpcd).

**Residential per capita water use.** Residential per capita water use is calculated by dividing the total water use by the residential customer class only for an entire year, by the total population of the municipality. This value represents indoor and outdoor water use for residential customers, excluding water used through separate irrigation meters. Cary and Raleigh use this metric to assess general water use patterns in the community, as both of their systems are approximately 60% residential by total water use. This metric is also reported as gallons per capita per day (gpcd).

**Peak Day Ratio.** The peak-day ratio is calculated by dividing the annual peak day water use for a system (single highest day of water use for a year) by the annual average day water use for a system (total system water use for a year divided by 365 days). The peak day ratio is highly dependent on weather, and a high peak-day ratio generally suggests heavier water use during the summer for outdoor uses.

A summary of the water use metrics monitored by the City of Raleigh and Town of Cary for 2010 are presented in Table 3-1.



**Table 3-1  
Water Use Metrics  
City of Raleigh and Town of Cary**

<b>Municipality</b>	<b>Total System GPCD</b>	<b>Residential GPCD</b>	<b>Peak-Day Ratio</b>
City of Raleigh	107	72	1.37
Town of Cary	97	68	1.67

In 2010, the Town of Cary reported to the State of North Carolina (2010 Water Supply Plan) that the Town had a total water supply capacity of 30.5 million gallons per day (mgd), a 2010 total system demand of 17.3 mgd, and a forecasted 2050 water demand of 30.6 mgd. Accordingly, Cary staff reported to the Task Force that if used sustainably, the existing water supply storage allocation from Jordan Lake Reservoir could provide adequate water supply for Apex, Cary, Morrisville, and RTP South to the year 2050.

In 2010, the City of Raleigh reported to the State of North Carolina (2010 Water Supply Plan) that the City had a total water supply capacity of 78.2 (mgd), a 2010 total system demand of 51 mgd, and a forecasted 2050 water demand of 122.3 mgd. Accordingly, the City of Raleigh reported to the Task Force that the City currently does not have sufficient capacity to meet the City’s forecasted 2050 water demand with current water supply resources (i.e. Falls Lake and Lake Benson). Raleigh has been evaluating a proposal to develop a new reservoir (Little River Reservoir) in the Neuse Basin, as well as other alternatives.

### Existing Water Supply Sources

Overall, Wake County residents, industries, businesses, and public institutions currently receive water from six primary sources. These are:

**Jordan Lake Reservoir.** The US Army Corps of Engineers manages the Jordan Lake Reservoir. The water supply storage for Jordan Lake is owned by the State of North Carolina and managed by the North Carolina Division of Water Resources in NCDENR. It is managed to provide water supply, recreation, flood control, fish and wildlife habitat, and downstream flow augmentation, with storage volumes reserved for each of these uses. The estimated safe-yield of Jordan Lake is 100 mgd. At this time, 63% of Jordan Lake’s water supply allocation is committed. Apex, Cary, Holly Springs, Morrisville, and Wake County have water supply allocations from Jordan Lake totaling approximately 41 mgd. Water from Jordan Lake is treated at the Apex-Cary Water Treatment Facility.

**Falls Lake Reservoir.** The US Army Corps of Engineers manages the Falls Lake Reservoir. The water supply storage for Falls Lake is owned by the US Army Corps of Engineers, and the City of Raleigh has contracted for exclusive use of the entire water supply storage allocation in the reservoir. The estimated 50-year safe-yield of the Falls Lake Reservoir is 67.0 mgd. Water is treated at the EM Johnson Water Treatment Plant and provided by City of Raleigh to customers in Garner, Knightdale, Raleigh, Rolesville, Wake Forest, Wendell, and Zebulon.

**Lake Benson.** The last safe yield study performed for Lake Benson estimates the 50-year safe yield of the lake as 11.2 mgd. Water is treated at the DE Benton Water Treatment



Plant and provided to customers in Garner, Knightdale, Raleigh, Rolesville, Wake Forest, Wendell, and Zebulon.

**Cape Fear River.** Water is treated at the Harnett County Regional Water Treatment Plant and provided to customers in Fuquay-Varina and Holly Springs. The Town of Holly Springs and the Town of Fuquay-Varina have each purchased 2.0 mgd of capacity from Harnett County, with the option to purchase additional capacity in the future. The raw water intake for the Harnett County Regional Water Treatment Plant is in Lillington, NC. Harnett County reports an available water withdrawal capacity from the Cape Fear River of 68.4 mgd.

**Neuse River.** Water is treated at the Johnston County Regional Water Treatment Plant and provided to customers in southeastern, unincorporated Wake County, as well as Fuquay-Varina. The Town of Fuquay-Varina has purchased 1.5 mgd of capacity from Johnston County. Johnston County reports an available water withdrawal capacity from the Neuse River of 12.0 mgd.

**Groundwater.** Groundwater is provided to customers through either private wells or community well water systems. Approximately 150,000 persons use groundwater in Wake County. There is currently no standard or method for estimating the safe yield of the entire groundwater resources supply in Wake County (a fractured-rock type of aquifer). However, in response to citizen requests to investigate excessive groundwater drawdown conditions in portions of the Falls Lake water supply watershed, Wake County – in cooperation with the United States Geologic Survey (USGS) – has installed a series of real-time groundwater monitoring stations in the County. Wake County's investigations suggest that the competition for limited groundwater resources could be creating dry well conditions in a portion of the Falls Lake water supply watershed. The groundwater monitoring stations illustrate seasonal groundwater fluctuations, with the most severe drawdown occurring during the summer months.

## Alternative Water Supply Options

The currently available water supply capacity that has been constructed, or has been purchased, for residents, businesses, industries, and public institutions in Wake County is estimated at approximately 124 million gallons per day. Assuming a total system water use rate of 100 gpcd, this available capacity is insufficient to meet the water supply demands for the next population milestone targeted by the County – 1.5 million residents. To address this issue, the Sustainability Task Force discussed a number of possible strategies to reduce water use by changing behaviors, increasing water use efficiency, and developing alternative sources of water to meet varying types of water demands required by the community. Brief descriptions of the strategies discussed by the Task Force are presented below.

**Water Conservation.** Water conservation can be implemented as either voluntary or involuntary programs. The objective is to reduce water use through changes in behavior. Water conservation programs can be targeted toward indoor and outdoor water uses. Indoor water use targets typically include using washing machines and dishwashers only when fully loaded, reducing the run time for faucets when brushing



teeth or washing, and reducing shower times. Outdoor water use targets typically include installing drought-tolerant landscaping, and reducing water use for irrigation, car-washing, and rinsing of driveways and sidewalks (area washdown). The Town of Cary and the City of Raleigh reviewed their current water conservation programs with the Task Force, with emphasis on changes in water pricing (tiered rate structures) and restrictions on outdoor water use.

**Water Efficiency.** Water efficiency can be implemented as either voluntary or involuntary programs. The objective is to reduce water use by installing fixtures and appliances that are designed to use less water. Typically, water efficiency programs are targeted toward indoor water uses such as toilets, showers, faucets, dishwashers, and washing machines. The Town of Cary and the City of Raleigh reviewed their current water efficiency programs with the Task Force, with emphasis on programs that offer rebates to citizens that purchase and install high-efficiency fixtures.

**Wastewater Reuse.** Wastewater reuse is the practice of using treated wastewater from municipal treatment plants after it has received additional treatment to ensure that the public health and environment are protected. Wastewater reuse is typically used in applications where it is not necessary to have a water supply source that has been treated to drinking water standards. Some examples of suitable wastewater reuse applications include landscape irrigation, cooling tower make-up water, boiler make-up water, ornamental fountains, toilet and urinal flushing, and area washdown. The Town of Cary and the City of Raleigh reviewed their current wastewater reuse programs with the Task Force.

**Greywater Reuse.** Greywater reuse is the use of all non-toilet household wastewater (i.e., from showers, baths, spas, hand basins, and washing machines) for onsite landscaping in a manner that protects public health and the environment. Water from dishwashing machines and kitchen sinks can be used, but care should be taken to eliminate the potential for the greywater to contain food particles, fats, oils, and greases. The Task Force did not receive any information about active greywater reuse programs in Wake County. It appears that there are limited applications for greywater reuse at this time based on current public health and building code regulations.

**Stormwater Reuse.** Stormwater reuse is more commonly referred to as rainwater harvesting. Rainwater harvesting is the process of collecting rainwater from impervious surfaces (roofs, walkways, decks, etc.) on a property and using the water for non-potable demands. The water collected through the rainwater harvesting system can be used for landscape irrigation, vehicle washing, and area washdown. The City of Raleigh currently offers a cost-share program to aid qualified residences, businesses, industries, and public institutions with the installation of rainwater harvesting devices.

## Regional Cooperation

As the region continues to grow, local governments involved in the delivery of water resource services are being pressured to increase the level and quality of services; while at the same time being pressured to reduce the cost of services. As a result, local



governments have started to expand discussions related to regional cooperation for water resource services as a means of reducing service costs and improving the quality, delivery, and overall reliability of services. Within Wake County, two more prominent regional cooperation efforts include the Upper Neuse River Basin Association and the Jordan Lake Partnership. The Town of Cary and the City of Raleigh reported to the Task Force that both are participating in the Jordan Lake Partnership. The Jordan Lake Partnership was formed in 2009 for regional water supply planning with the goal of collaboratively defining Jordan Lake's role in a long term sustainable and secure regional water supply for the Research Triangle Region. As members of the Jordan Lake Partnership, the municipalities of Cary, Raleigh, Apex, and Durham adopted regionally-consistent, year-round water conservation measures (including tiered rates), and regionally-consistent water shortage response framework. The general consensus of the Task Force is that long-term, sustainable water resources must include some form of regional cooperation.

## **Infrastructure Rehabilitation and Replacement**

The Task Force received information from the City of Raleigh and the Town of Cary that the community's water, wastewater, and stormwater infrastructure is aging and deteriorating. The two municipalities reported that despite the best intentions and execution of owners, engineers and contractors, water resource facilities are vulnerable to some form of chemical or physical deterioration, and the facilities associated with each system will eventually require some form of rehabilitation or degree of replacement. The City of Raleigh reported that the value of the buried water and sewer pipelines in the City's service area is in excess of \$3 billion.

The challenge for water resource managers (both public and private) is to be able to forecast rehabilitation needs and costs with adequate accuracy to minimize the frequency and number of emergency repairs and unscheduled maintenance activities. Frequent and regularly scheduled inspection and maintenance activities are necessary practices to ensure the long life and service of these large investments. The general consensus of the Task Force is that long-term, sustainable water resources facilities and systems require programs for continuous inspection, maintenance, rehabilitation and replacement.

## **Water Resource Management Costs and Pricing**

On average, Wake County residents pay approximately 1 penny per gallon for water service. For that one penny, the water is stored until we are ready to use it, it is treated to protect us from illness, and it is delivered to our homes, businesses and public institutions, and made available for use 24-hours per day, 7- days per week at a relatively constant pressure. This is a relatively low cost (relative to cell phone bills, cable service, etc.) for a service that is an essential element of everything we do as we live, work, learn, and play in Wake County. This cost model (i.e., penny per gallon) is similar for wastewater management and stormwater management.

In Wake County, water resource management services are generally provided through



public enterprise systems through either a Department of Public Works or a Department of Public Utilities. Pursuant to § 160A-312 of the North Carolina General Statutes, local governments have the legal authority to operate public enterprises such as water, wastewater, and stormwater utility systems. As public enterprises, utility systems in Wake County adhere to the principle of full cost recovery, which allows each user of the system to contribute revenues proportional to the level of service received. As such, each local government annually adopts a balanced budget for the utility enterprise system which demonstrates that forecasted operating revenues are equal to, or exceed, forecasted operating costs. This approach ensures that revenues are sufficient to maintain a self-supporting financial status for the utility enterprise system.

Unfortunately, the current cost allocation and pricing methodologies do not generally represent all of the costs required to manage and deliver water resource services. The costs that are not typically fully accounted for include long-term maintenance and replacement of infrastructure, restoration of degraded streams, restoration and replacement of damaged and lost property, and construction and operation of future water resource facilities. These costs are not typically accounted for because the historic objective for water resource utilities has been to provide water resource services at the lowest possible cost by addressing short-term acute water resource issues and not long-term sustainability issues. However, as the Task Force members heard from Dr. Laura Taylor, (Professor of Economics, North Carolina State University) during the Task Force process, when a commodity or service is priced low, the market correspondingly assigns a low value to the commodity or service, and the resource is consumed or used to the point of exhaustion, resulting in a market failure of sorts (i.e. water shortages during a drought, fish kill, impaired stream, etc.). The Task Force consensus is that water resources are very valuable to the community, and the pricing of the services should reflect that high value and should include the full costs of providing the service for the long-term on a sustainable basis.

## References

D'Amato, Vic; Clements, Trevor; Taylor, Tina. Integrating Water Infrastructure in a New Paradigm for Sustainable, Resilient Communities. Manuscript by the Electric Power Research Institute and Tetra Tech, Inc. 2010.

DiNapoli, Thomas P. Economic Benefits of Open Space Preservation. Office of the State Comptroller, New York. March 2010.

Goodwin, Leila. Presentation to Wake County STF. June 2010.

Jordan Lake Partnership website. [www.jordanlakepartnership.org/](http://www.jordanlakepartnership.org/)

NC Division of Water Resources, Department of Environment and Natural Resources. Neuse River Basin Water Resources Plan. July 2010.

Perrin, Christy et al. Low Impact Development: A Guidebook for North Carolina. June 2009. North Carolina Cooperative Extension AG716.

Wake County Environmental Services. Wake County Water Quality Report: Report card on the health of surface water in Wake County. December 2010.

Waldrup, Kenny. Presentation to Wake County STF. June 2010.



# Waste

## Task Force Recommendations

As required by the Board of Commissioners, the Sustainability Task Force has developed recommendations for solid waste that are environmentally and financially sustainable. This section presents the recommendations of the Sustainability Task Force for Goals and Strategies.

### Cost-Effective Strategies

For the purposes of solid waste, the term “cost-effective strategy” will be defined as a strategy that can be implemented for less than the prevailing tipping fee at the South Wake Landfill, which is currently \$30 per ton and which will change in the future. Using this definition, if a waste diversion strategy for a specific material can be implemented for less than the prevailing tipping fee, then that strategy should be given consideration because it is less expensive to divert the material than to dispose of the material. If, however, a waste diversion strategy for a given material cannot be implemented for less than the prevailing tipping fee, then consideration should be given to continue disposing of the material at the South Wake Landfill until the economics of diverting the specific material can be improved through technological advances, market conditions demand for the material), operational changes, or changes in law.

The consensus of the Task Force was that the application of this definition should be used to make “screening assessments” and not “pass/fail judgments” for waste diversion strategies, as it may be valuable or necessary to implement a waste diversion strategy prior to the economics becoming favorable. Accordingly, the general consensus of the Task Force is to preserve the option to pursue early implementation of waste diversion strategies if appropriate.

### Recommended Solid Waste Goals

The Task Force's recommended Goals are as follows:

- A. Financial and Environmental Benefits of the South Wake Landfill will be extended.
- B. Waste Reduction, Reuse, and Recycling for Construction and Demolition Debris will be increased.
- C. Financial and Environmental Benefits of Other Landfill Resources will be maximized.
- D. Investigations for Next Generation Waste Management System will be initiated.



	Goals			
Strategies	A	B	C	D
1	X			
2	X			
3	X			
4	X			
5	X			
6	X			
7		X		
8			X	
9			X	
10			X	
11			X	
12				X

### Recommended Solid Waste Strategies

1. Adjust Tipping Fees. Continue to adjust the tipping fee at the South Wake Landfill and East Wake Transfer Station to accurately reflect the full cost of service for disposal, including all necessary reserve funds and future costs to develop the next generation waste management system.
2. Divert High Volume Waste Materials from Landfill Disposal. Identify and implement cost effective programs to divert high volume waste materials from the South Wake Landfill.
  - a) Conduct a waste characterization study for all waste received at the South Wake Landfill. Collect waste characterization data for residential, commercial, and public institution sectors. Design the study to identify high volume materials received at the South Wake Landfill.
  - b) Evaluate the feasibility of implementing waste diversion programs for high volume materials identified in the waste characterization study. Work with private sector recycling processors to identify cost effective options for waste diversion.
  - c) Identify the collection and processing infrastructure, education, and institutional changes needed to implement the selected waste diversion programs.
  - d) Implement the cost effective waste diversion programs for the targeted high volume materials.
3. Divert Food Waste from Landfill Disposal. The 1999 Waste Characterization Study conducted by Wake County identified 12.1 percent of the waste received as food waste. If a portion of food waste can be cost effectively diverted from the landfill, it will help to extend the life of the South Wake Landfill beyond the currently planned 25 year life.



- a) Review the findings of the waste characterization study to identify the quantity of food waste disposed of at the South Wake Landfill.
  - b) Launch a voluntary residential composting program. The program will include:
    - i. Education for citizens on the methods of compost production and alternative end uses for food waste compost.
    - ii. Subsidies to assist citizens with the purchase of compost production equipment, materials, and supplies such as bins, tumblers, etc.
  - c) Conduct a pilot scale food waste diversion composting program for large food related facilities such as grocery stores, food processors, and cafeterias. The objective of the pilot study will be to accurately define the full cost of service to implement a food waste diversion composting program for large food related facilities.
    - i. Evaluate the feasibility of implementing a food waste diversion composting program for large food related facilities. Work with private sector waste haulers and industrial composting companies.
    - ii. Identify the collection and processing infrastructure, education, and institutional changes needed to implement a food waste diversion composting program for large food related facilities.
    - iii. Implement the cost effective food waste diversion composting program for targeted facilities.
4. Evaluate Pay-As-You-Throw (PAYT) Pricing for Residential Customers. With PAYT pricing, waste disposal costs are based on the type of waste, the size of the disposal container, and the frequency of waste collection. The PAYT program offers a financial incentive to voluntarily reduce, reuse, and recycle wastes. Currently, businesses, industries, and public institutions in Wake County are subject to PAYT pricing. Under this recommended strategy, residential customers will have the opportunity to reduce their disposal costs by reducing their waste.
- a) Evaluate the technical, financial, and institutional feasibility of implementing a PAYT pricing program for single-family residential customers.
  - b) Develop an implementation plan, based on the findings of the feasibility study, for a PAYT pricing program for single-family residential customers.
5. Offer Developers Incentives to Provide Recycling Facilities:
- a) Evaluate options to offer incentives (parking counts, housing density credits, etc.) to developers to provide recycling facilities in new or existing (retrofits) commercial, multi-family residential, and mixed-use projects. This recommendation is intended to increase recycling by increasing the convenience to recycle in commercial, multifamily residential, and mixed-use developments.



- b) Develop design information to guide developers on best practices for including recycling facilities in new and existing projects.
6. Evaluate Converting Waste Cooking Oils and Greases to Biofuels:
- a) Conduct a pilot-scale program to produce biofuels using restaurant grease trap wastes and residential used cooking oils and greases. Work with local governments, private sector waste haulers, and biofuel producers.
  - b) Identify the collection and processing infrastructure, education, and institutional changes needed to implement a biofuel production program using restaurant grease trap wastes and residential used cooking oils and greases.
  - c) Implement the cost-effective biofuel production program using restaurant grease trap wastes and residential used cooking oils and greases.
7. Establish a Construction and Demolition (C&D) Debris workgroup. This workgroup will serve as a forum for Wake County staff and industry leaders to identify impediments to C&D material reuse and recycling, and identify opportunities to increase C&D material reuse and recycling in Wake County. The workgroup will be comprised of representatives from the commercial building industry, residential building industry, not-for-profit organizations (Habitat for Humanity, Builders of Hope, etc.), building material manufacturers, and building material disposal and recycling companies.
- a) Identify Potential Pilot Tests. The C&D Work Group will work with County staff to identify pilot tests that can be used to define current impediments to C&D reuse and recycling.
  - b) Conduct Pilot Tests for C&D Reuse and Recycling. The C&D Work Group will oversee the conduct of pilot tests selected for implementation. The data from pilot tests will be used to evaluate the cost-effectiveness of full-scale implementation of C&D material reuse and recycling.
  - c) Develop Education Materials. The C&D Work Group will work with County staff to create fact sheets and other educational materials to inform developers and builders of the benefits, opportunities and resources availability for C&D material reuse and recycling.





d) Develop an Outreach Plan. The C&D Work Group will work with County staff to develop an outreach plan to distribute education materials related to C&D material reuse and recycling. The outreach plan will include recommendations for printed materials, workshops, webbased tools, and social media tools.

8. Generate Power from Methane Gas Production. A by-product of waste decomposition at a landfill is methane gas. It is possible to collect the methane gas at a landfill and use the gas to generate electricity through combustion in an engine-generator. The North Wake Landfill and the South Wake Landfill currently produce sufficient volumes of methane gas to produce electricity which can be sold to electric utilities as renewable energy. In addition, environmental attributes associated with renewable energy generation and greenhouse gas destruction may also be marketed and sold under certain circumstances. Wake County staff will work with private sector companies to develop methane gas resources for maximum financial and environmental benefit.

In June 2011, the County completed negotiations for a landfill gas-to-energy project for the South Wake Landfill. The project will result in net revenues to the County in excess of \$10 million over the next 15 years.

9. Evaluate Other Renewable Energy Options. The South Wake Landfill and the North Wake Landfill have sufficient land resources available to investigate the feasibility of renewable energy using solar and wind resources. Wake County staff will work with private sector companies and university resources to evaluate the technical, financial, and regulatory feasibility of developing solar power and wind power resources at the County's landfill properties.

10. Evaluate Opportunities to Attract Private Businesses and Industries to the South Wake Landfill. Incentives could include rezoning adjacent properties from residential use to commercial or industrial use. Companies can benefit from the proximity to the landfill's energy resources and material recovery resources. Wake County staff will work with private sector companies and economic development professionals to identify the features and benefits of the County's landfill resources that can be promoted and marketed to attract private sector investment to locate on, or in close proximity to, the South Wake Landfill.

11. Evaluate Opportunities to Develop Park and Recreation Facilities on Landfill Properties. The County's landfill properties provide unique opportunities to preserve open space and develop active recreation facilities. Building on the success of the North Wake Landfill District Park, Wake County staff will work with community groups (public, private, and not-for-profit) to identify opportunities to integrate park and recreation facilities into the County's landfill properties.

12. Initiate immediate investigations to develop the next generation waste management system due to the long lead time required to develop the system.

a) The County partner with research universities, private industry, and regional local



governments to conduct the necessary investigations.

- b) Consistent with the selection process for the South Wake Landfill, the investigation of next generation waste management systems should consider landfill disposal versus emerging technologies; and in-county versus out-of-county options.
- c) The evaluation criteria should include environmental compliance requirements, quality of service factors (reliability, redundancy, etc.), level of service factors (i.e., accommodate long-term population growth projections), cost-of-service factors (i.e., retain relatively low unit cost of service), and social factors (i.e., environmental justice).
- d) The evaluation should include an assessment of mitigation measures that can be offered to address potential adverse impacts to property owners. The mitigation measures will be used to address the potential concerns of property owners that are located adjacent to, or in close proximity to, the next generation waste management system.
- e) The evaluation should also include an assessment of technology advances that provide for energy production from waste materials generated in Wake County. Such technologies include, but are not limited to, the following:
  - i. Advanced landfill design
  - ii. Waste-to-Energy (produce electricity from combustion of waste)
  - iii. Gasification (produces combustible gas, hydrogen, synthetic fuels)
  - iv. Thermal depolymerization (produces synthetic crude oil)
  - v. Pyrolysis (produces combustible tar/bio-oil and chars)
  - vi. Plasma arc gasification (produces hydrogen and CO usable for fuel cells or generating electricity)
  - vii. Anaerobic digestion (Biogas rich in methane) for organic waste components such as
  - viii. food waste, and wastewater treatment facility sludge.
  - ix. Fermentation production (ethanol, lactic acid, hydrogen)
- f) An implementation schedule should be developed to identify the various steps necessary to bring the next generation waste management system in service.

## Performance Measures for Waste Management

A second requirement placed upon the Sustainability Task Force by the Board of Commissioners was to identify performance measures that can be used to monitor and report progress toward the achievement of sustainability targets for waste management. There are a number of different performance measures that



the community can use to gauge the success of the recommended strategies. Descriptions of recommended performance measures are presented below, and sample calculations are provided in Table 4-3 for metrics No. 1 through 4.

1. Annual per capita tons of municipal solid waste disposed. This metric is calculated using the total tons of municipal solid waste disposed from all sources at all locations divided by the total county population. This metric can be modified using single-family residential units or total residential units to calculate a unit index based on tons of municipal solid waste generated per household per year.
2. Annual per capita tons of total waste disposed. This metric is calculated using the total tons of municipal solid waste disposed and total tons of C&D waste disposed from all sources at all locations divided by the total county population. This metric can be modified using single-family residential units or total residential units to calculate a unit index based on total tons of municipal solid waste and C&D waste generated per household per year.
3. Annual per capita tons of recycled materials collected. This metric is calculated using the total tons of recycled material collected from residential housing units (most readily available data) divided by the total county population. This metric can be modified if recyclable material from businesses, industries, and public institutions can be collected and reported. In addition, this metric can be modified using single-family residential units or total residential units to calculate a unit index based on tons of recycled material generated per household per year.
4. Annual waste diversion rate. This metric is calculated using the total tons of recycled material collected from residential housing units (most readily available data), divided by the sum of the total tons of municipal solid waste and the total tons of recycled material collected. This metric can be modified if recyclable material from businesses, industries, and public institutions can be collected and reported.



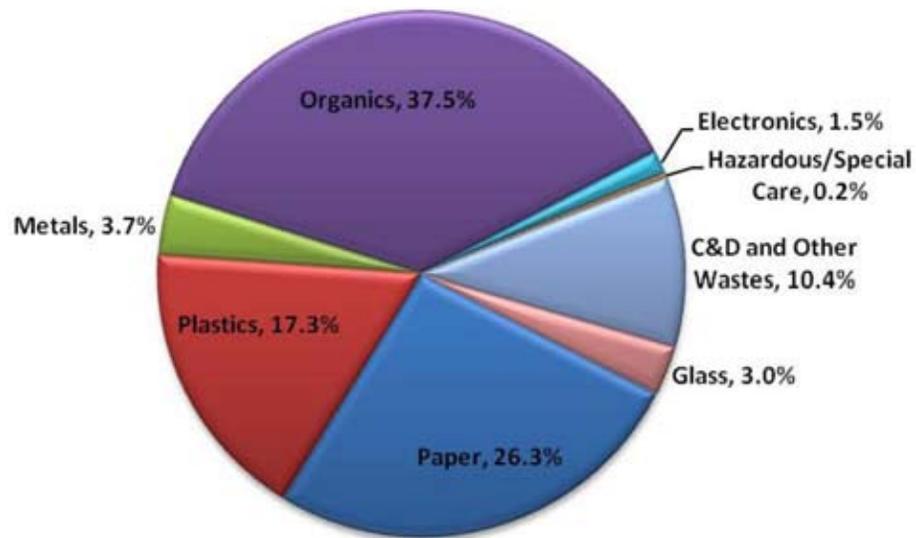


<b>TABLE 4-3 Solid Waste Performance Metrics Wake County 2005 to 2010</b>						
<b>Performance Metrics</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Total Municipal Solid Waste (MSW), tons/year	609,100	633,003	648,170	636,250	634,116	596,565
County Population	757,346	793,401	831,537	866,438	892,409	919,938
<b>Per Capita MSW Generation Rate, tons/person/year</b>	<b>0.80</b>	<b>0.80</b>	<b>0.78</b>	<b>0.73</b>	<b>0.71</b>	<b>0.65</b>
Total Municipal Solid Waste (MSW), tons/yr	609,100	633,003	648,170	636,250	634,116	596,565
Construction and Demolition Debris	426,859	462,405	491,563	502,624	332,586	265,625
County Population	757,346	793,401	831,537	866,438	892,409	919,938
<b>Per Capita MSW/C&amp;D Generation Rate, tons/person/year</b>	<b>1.37</b>	<b>1.38</b>	<b>1.37</b>	<b>1.31</b>	<b>1.08</b>	<b>0.94</b>
Total Residential Recycled Materials, tons/yr	38,043	40,092	44,414	47,596	49,367	53,681
County Population	757,346	793,401	831,537	866,438	892,409	919,938
<b>Per Capita Recycling Rate, pounds/person/year</b>	<b>100.5</b>	<b>101.1</b>	<b>106.8</b>	<b>109.9</b>	<b>110.6</b>	<b>116.7</b>
Total Municipal Solid Waste (MSW), tons/year	609,100	633,003	648,170	636,250	634,116	596,565
Residential Recycled Materials, tons/year	38,043	40,092	44,414	47,596	49,367	53,681
<b>Waste Diversion Rate, %/year</b>	<b>5.88%</b>	<b>5.96%</b>	<b>6.41%</b>	<b>6.96%</b>	<b>7.22%</b>	<b>8.26%</b>

- Waste characterization data. As the name suggests, a waste characterization study is conducted to define the characteristics of waste disposed of at a landfill. The most recent waste characterization study for Wake County was conducted in May 2011, and the results are presented in Figure 4-2. The objective is to define the quantity of recyclable and reusable materials disposed by residents, businesses, industries and public institutions in Wake County, with the goal being to have a final waste product from the community that contains predominantly non-reusable, non-recyclable materials.



**Figure 4-2**  
**Overall Waste Stream Composition**  
**Wake County Waste Characterization Study, 2011**



6. Annual or bi-annual recycling participation rate survey. The County will conduct an annual or bi-annual survey to determine the residential and business participation in recycling programs. The survey can be used to determine the effectiveness of education and outreach efforts.
7. Special events recyclable material collection. For special events such as the North Carolina State Fair, NC State football games, Carolina Hurricane games, Susan G. Komen Race for the Cure, etc., the County will measure the tons of recycled material collected at these events and report the findings through various media sources. The results can be used to determine the effectiveness of education and outreach efforts.
8. Estimated life of landfill. The South Wake Landfill opened in February 2008, with an estimated useful life 25 years. If the community can successfully implement the recommended strategies, then the useful life of the South Wake Landfill can be extended beyond the currently planned 25 years. On an annual basis, the County can report the estimated closure date for the South Wake Landfill.

## Background Information

The U.S. Environmental Protection Agency (USEPA) has been collecting and reporting data on waste generation for over 30 years. During calendar year 2009, the USEPA reported that residents, businesses, industries, and public institutions in the U.S. generated approximately 243 million tons of municipal solid waste (MSW), which equates to 4.34 pounds per person per day. For the purposes of the USEPA report, MSW includes such items as packaging, food scraps, yard waste, furniture, electronics (i.e., televisions, computers, cell phones), tires, and white goods (i.e., appliances), but



does not include hazardous, industrial, or construction and demolition debris.

The USEPA reports that as of 2009, there were 1,900 MSW landfills and 87 waste-to-energy facilities permitted to operate in the U.S. Of the 243 million tons of MSW generated during calendar year 2009, 29 million tons (~12 percent) of MSW were combusted to generate energy (waste-to-energy), 82 million tons (~34 percent) were recycled or composted (waste diversion), and the balance of 132 million tons (~54 percent) were disposed of in landfills.

Based on best available information from the State of North Carolina, Wake County's waste generation rate for 2010 was estimated to be approximately 4.42 pounds per person per day.

## Waste Material Generation

The primary waste materials generated in Wake County are municipal solid waste, yard waste, construction and demolition debris, white goods (appliances), scrap tires, electronics, and household hazardous waste. The State of North Carolina requires that these materials be disposed of at permitted facilities. Each facility is required to report to the State annually on the quantity and source of waste materials received. The reported quantities of waste materials generated in Wake County for fiscal year 2005 to fiscal year 2010 are presented in Table 4-1.

<b>Waste Material Type</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Municipal Solid Waste	609,100	633,003	648,170	636,250	634,116	596,565
Construction & Demolition Debris	426,859	462,405	491,563	502,624	332,586	265,625
Yard Waste	60,063	63,328	65,739	61,054	73,760	76,805
Household Hazardous Waste	475	407	422	472	585	639
White Goods (Appliances)	1,748	1,459	1,421	1,068	1,005	847
Electronics	473	475	744	603	906	986
Scrap Tires	9,825	11,177	13,117	13,180	11,781	12,046
<b>Total</b>	<b>1,110,548</b>	<b>1,174,260</b>	<b>1,223,183</b>	<b>1,217,259</b>	<b>1,056,748</b>	<b>955,523</b>

Data Source: Solid Waste Management Annual Reports, Household Hazardous Waste Facility Annual Report, Scrap Tire Management Annual Report, County Waste Disposal Reports.

## Waste Material Recycling

Material recycling is provided in Wake County for both traditional and non-traditional materials. Traditional recyclable materials in the community consists primarily of mixed paper, corrugated cardboard, plastic food/beverage containers, glass food/beverage containers, and metallic food/beverage containers. Non-traditional materials include such items as yard waste, electronics, scrap tires, and white goods.



## Traditional Material Recycling

The majority of traditional recyclable materials are processed at two private-sector facilities in Wake County: Recycle America and Sonoco Recycling. Each of Wake County's 12 municipalities collects recyclable materials from residents through curbside collection programs and county-run convenience centers. Unlike waste material disposal, the State of North Carolina does not have strict requirements for recyclable material processors to report the quantity and source of recycled materials received. However, the County and municipalities maintain records of these materials before delivering them to local recyclable material processors. Table 4-2 presents the quantity of recycled materials collected annually by local governments in Wake County.

<b>Local Government Agency</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Apex	2,230	2,395	2,656	2,093	2,650	2,926
Cary	7,603	7,488	8,586	8,969	9,322	11,136
Fuquay-Varina	600	600	727	852	801	897
Garner	838	745	880	908	822	1,445
Holly Springs	1,050	868	1,243	1,115	1,978	1,706
Knightdale	364	329	380	434	487	506
Morrisville	310	564	612	695	778	720
Raleigh	16,185	17,598	19,243	20,915	21,634	22,630
Rolesville	0	97	149	173	151	267
Wake Forest	1,418	1,823	1,993	2,767	2,635	2,689
Wendell	130	144	129	262	236	278
Zebulon	125	130	140	153	259	192
Wake County (convenience centers)	7,190	7,311	7,676	8,262	7,615	8,290
Wake County (government buildings)	295	342	356	396	298	259
Wake County Public Schools (mixed paper)	1,932	884	724	807	780	653
<b>Total</b>	<b>40,269</b>	<b>41,318</b>	<b>45,494</b>	<b>48,799</b>	<b>50,446</b>	<b>54,592</b>

Data Source: Solid Waste Management Annual Reports.

## Non-Traditional Material Recycling (Landfill Disposal Bans)

In an effort to increase the quantity of materials diverted from municipal solid waste landfills, the North Carolina General Assembly has enacted legislation over the years that bans certain materials from being disposed in a landfill.

Before October 2009: materials such as yard waste; whole scrap tires; aluminum cans; white goods (appliances); and lead-acid batteries (car batteries) were banned from landfills.

Since October 1, 2009: the following additional materials have been banned from landfills: rigid-plastic containers; used motor vehicle oil filters; oyster shells, and wooden pallets.

Since July 1, 2011: discarded computer equipment and televisions have been banned from landfills.



The historic trend has been that as materials have become banned from landfill disposal, recycling markets have emerged to accommodate the diversion of materials. In some instances, the legislative bans include surcharges at the point of sale of the item (tires and appliances). The revenue from the surcharges are then used to subsidize recycling program costs around the State.

## Waste Material Disposal

It is understood that some quantity of materials cannot be recycled or reused and cannot be designed out of the system. Once waste reduction, reuse and recycling have been achieved to the greatest extent practicable given prevailing market conditions, a waste material will remain that requires disposal. Consistent with national trends, landfill disposal is currently the primary waste disposal method for local governments in North Carolina because it serves as a low-cost, efficient, and environmentally responsible method for waste disposal.

There is currently one MSW landfill in Wake County and four construction and demolition debris landfills in Wake County.

## Regulatory Requirements for Landfill Disposal

In 1989, the North Carolina General Assembly passed the Solid Waste Management Act, which required all 100 counties to (a) provide for the safe disposal of solid wastes produced in each county and (b) implement programs to reduce the amount of waste disposed of in landfills. The result of this legislation was that counties were mandated to begin managing and planning for solid waste collection and disposal. The General Statutes were also amended to require that each county implement a recycling program for solid waste materials that can be economically recycled.

Current-day municipal solid waste landfills are planned, permitted, designed, constructed, operated, and monitored to ensure compliance with environmental protection requirements for air resources, land resources, surface water resources, and groundwater resources. During the planning and permitting phases of landfill development, regulatory agencies require landfill owners to conduct environmental studies to ensure that landfills are located in a manner that avoids or minimizes impacts to streams, wetlands, groundwater, and other environmental resources. Prior to issuance of final permits for construction and operation, regulatory agencies solicit public input on proposed landfill projects through public hearing sessions and public comment periods.

The time required to develop the South Wake Landfill was approximately 20 years, at a cost of approximately \$5 million. Current regulatory requirements for landfill development have become more stringent, and so it should be expected that developing a new landfill in Wake County will require at least the same time duration and financial cost as the South Wake Landfill.



## Landfill Disposal of MSW

During 2010, 99-percent of the municipal solid waste generated in Wake County that required disposal was disposed of in three landfills:

1. South Wake Landfill owned by Wake County Government (74 percent);
2. Sampson County Landfill owned by Waste Industries (20 percent); and
3. Upper Piedmont Landfill owned by Republic Services (5 percent).

Other landfills that received municipal solid waste generated in Wake County included the Lee County Landfill in Bishopville, SC, and the Charlotte Motor Speedway Landfill (Cabarrus County, NC) owned by Republic Services.

No waste from Wake County was combusted in a waste-to-energy facility in 2010. Over the past decade, only 228 tons of (0.004 percent) of municipal solid waste generated in Wake County has been combusted in a waste-to-energy facility.

## Financial Considerations for Solid Waste Management

Local governments in Wake County have been involved in solid waste management services since the 1970's. Solid waste management in Wake County, just as in most other regions of the nation, consists of a system of public and private programs and facilities that provide for waste collection, transportation, and disposal, as well as recyclable material collection, transportation, and processing.

### Cost of Service

In general, the cost-of-service for solid waste management is based on the service requirements of the community served. The key service requirements in a community for solid waste management are as follows:

1. The type of material to be handled (waste material or recyclable material);
2. The size and type of disposal container and collection vehicle (manual roll-cart, automated roll-cart; front-load dumpster, compactor, open-top, etc.);
3. The frequency of waste collection (daily, weekly, bi-weekly, other);
4. The type of disposal and recycling facility;
5. The proximity of the final destination for the material (waste or recyclable) relative to the source of the material.

Service requirements such as the type of material, the size and type of disposal container and the frequency of waste collection are defined by the residences, businesses, industries, and public institutions in the community. Accordingly, once a residence, business, industry or public institution defines its service requirements, it can then solicit bids from any number of private waste management companies to provide the service. Because there are a number of viable private-sector waste management companies in the community, the market competition aids in controlling costs.



Service requirements, such as the type and location of the disposal facility are generally selected by the private-sector waste management companies, which typically select the options that allow them to offer the most competitive pricing to the residences, businesses, industries, and public institutions in the community.

Nationally and locally, landfill disposal remains the low-cost waste disposal method, as waste-to-energy facilities continue to remain more expensive than landfills due to the higher capital and operating cost requirements. Therefore, in Wake County both public-sector and private-sector waste management entities rely on landfill disposal for their customers.

With regards to the location of disposal facility, there are a number of landfill location options available for use by public-sector and private-sector waste management entities, and therefore location has the greatest cost variability in the community. The primary cost factor related to facility location is the cost of transportation, which is a direct function of labor costs, diesel fuel costs, and equipment operations and maintenance costs – a shorter hauling distance has reduced costs for these items than a longer hauling distance. A benefit of the South Wake Landfill to the residences, businesses, industries, and public institutions is that it is located closer to the waste sources than any other landfill. This proximity advantage offers the potential for a lower cost of service to the community because of reduced transportation costs.

### **Public/Private Partnerships for Solid Waste Management**

Since the 1970's, Wake County has been developing solid waste disposal facilities in the county using a public-private partnership model. Under this model, Wake County assumes responsibility for land acquisition and environmental permitting, and then solicits proposals from the private sector to design, build, and operate the landfill facilities in accordance with the environmental permits. Wake County pays the private-sector partner using revenue generated from the tipping fees charged for waste disposal.

In 2004, prior to developing the South Wake Landfill, Wake County conducted two request-for-proposal (RFP) processes in order to identify the least-cost waste disposal system for residents, businesses, industries, and public institutions. The objective of the first RFP process was to solicit bids for alternative solid waste disposal and conversion technologies. The first RFP process identified landfill disposal as the least-cost disposal method. The objective of the second RFP process was to determine the least-cost location for landfill disposal by soliciting bids for in-county disposal using the South Wake Landfill and out-of-county disposal using private landfills located in other counties. The second RFP process identified the South Wake Landfill as the least-cost location for landfill disposal.

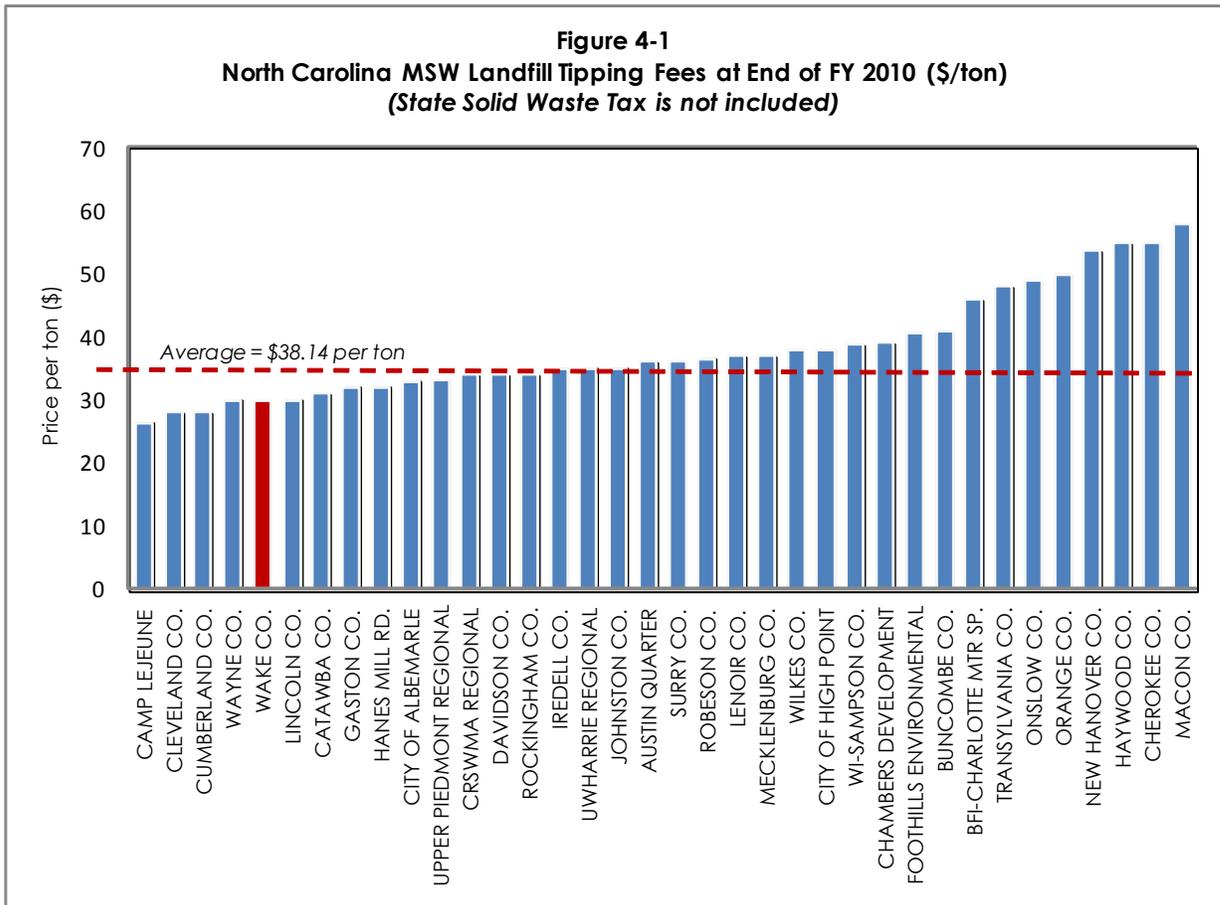
The South Wake Landfill is located between the Towns of Apex and Holly Springs on NC Highway 55. The landfill is being developed in phases and, upon completion, it is anticipated to have a total footprint of 189 acres and a design capacity of approximately 30 million cubic yards (air space) of municipal solid waste. The operating permit from the State of North Carolina allows the South Wake Landfill to accept



municipal solid waste from residents, businesses, industries, and public institutions located within Wake County only. The landfill opened in February 2008, with a tipping fee of \$30 per ton. It is estimated that the South Wake Landfill has a life expectancy of 25 years beginning February 2008.

### Current Waste Disposal Costs

As shown in Figure 4-1, the public-private partnership approach allows residents, businesses, industries, and public institutions in Wake County to have one of the lowest waste disposal rates in North Carolina at \$30 per ton for the South Wake Landfill (\$36 per ton for the East Wake Transfer Station). The disposal rate is set to recover all costs for personnel, equipment, materials, supplies, and capital, as well as reserves for soil purchases, landfill closure, and future post-closure care and maintenance. The current disposal rate does not include any allowance or reserves for developing the next generation waste management system to replace South Wake Landfill when it is no longer available for service.





## References

R.W. Beck, 1999. Wake County Waste Characterization Study. Wake County Solid Waste Management Division.

PAY AS YOU THROW (PAYT) IN THE US: 2006 UPDATE AND ANALYSES FINAL REPORT. Co-Sponsored by: EPA Office of Solid Waste, Jan Canterbury, Washington DC Skumatz Economic Research Associates, Inc., Superior, CO. Prepared by: Skumatz Economic Research Associates, Inc. (SERA) 762 Eldorado Drive, Superior, CO 80027. December 30, 2006.

United States Environmental Protection Agency. EPA530-R-98-018. December 1998. 1EPA Solid Waste and Emergency Response (5306W) Full Cost Accounting in Action: Case Studies of Six Solid Waste Management Agencies.

United States Environmental Protection Agency. Office of Solid Waste (5306P). Municipal Solid Waste in the U.S. 2007 Facts and Figures. EPA530-R-08-010.

Lifecycle Construction Resource Guide. Pollution Prevention Program Office, Office of Policy and Management. EPA Region 4. EPA-904-C-08-001. [www.epa.gov/region4/p2](http://www.epa.gov/region4/p2)

Landfill methane utilization. (Section 7.4 in Clean Energy Strategies for Local Governments). United States Environmental Protection Agency. <http://www.epa.gov/statelocalclimate/resources/strategy-guides.html>

Don't Throw Away That Food: Strategies for Record-Setting Waste Reduction. US EPA. EPA-530-F-98-023. September 1998 [www.epa.gov/osw](http://www.epa.gov/osw)



# Task Force Process Summary

This section of the report summarizes the meeting activities and the decision-making process for the Wake County Sustainability Task Force (Task Force). During the course of the Task Force process, a summary of the meeting discussions were prepared in the form of monthly newsletters, which were distributed to the Task Force members via an email link each month. The monthly newsletters and the other information, documents, and data sources used during the 18-month process are posted on the project website at [www.ncsu.edu/WECO/wake](http://www.ncsu.edu/WECO/wake).

## Process Overview

The Task Force was established by the Board of Commissioners in December 2009, and met on the 3rd Thursday of each month from January 2010 to June 2011. The chairperson designated by the County Commissioners for the Task Force was Wake County Commissioner Joe Bryan. The full Task Force met on 16 occasions, while a waste management workgroup and an energy workgroup each met twice, and a water workgroup met four times. The Task Force was comprised of representatives from a broad range of public, private, and not-for-profit organizations. The Wake County Board of Commissioners officially appointed 61 members. Task Force members were asked to be present at meetings, read the homework, respond to questions electronically, represent their organization and self and participate in implementing the resulting action plan. The average attendance at Task Force meetings was 26 Task Force members, not including staff, facilitators, technical experts and guests.

Task Force members were provided with operating principles to help them work together. These included:

1. Diverse perspectives are required for sustainable solutions;
2. Suspend premature judgment;
3. Assume the best in each other;
4. Listen to understand;
5. One person speaks at a time.

## Task Force Facilitation Team

The Task Force process was managed by staff from Wake County Government and facilitated by staff from NC State University Cooperative Extension Program Watershed Education for Communities and Officials (WECO). Wake County staff gathered and provided information on sustainability topics, scheduled guest speakers, arranged meetings and reviewed agendas and reports. WECO staff guided discussions and helped keep the Task Force focused and productive. WECO staff also created and

maintained a website, blog, and listserve, reported meeting results and updates in monthly newsletters, drafted agendas for review, organized information and worked with Wake County staff and Task Force members to craft the recommended goals and strategies for water, energy, and waste.

## Consensus-Based Process

WECO staff asked Task Force members to make decisions using a consensus-seeking process, rather than strict voting process. Using this approach, participants were encouraged to share their interests (why they want something) behind their positions (what they want), to seek common interests, and to craft recommendations that incorporated as many interests as possible. After attempts to include the interests of all participants into recommendations were made, participants were encouraged to express any remaining alternative views for inclusion in the final report.

The decision-making process was not expected to achieve unanimous support for recommendations; rather it was intended to afford all participants the opportunity to express their concerns and ideas for consideration, and to promote creative approaches to incorporate multiple interests in the recommendations. Accordingly, rather than voting yes or no for a recommendation, participants were polled to assess how strongly each supported or dissented for a given recommendation. The tool used to assess individual Task Force member sentiment was the 5-finger scale.

One Finger: Endorsement – I like it

Two Fingers: Endorsement with minor point of contention—basically, I like it.

Three Fingers: Agreement with minor reservations—I can live with it.

Four Fingers: Stand aside with major reservations—Formal disagreement, but will not block it

Five Fingers: Block – Member will not support proposed plan and will try to stop implementation

In this process, a recommendation was determined to have achieved “consensus” when all participants voted with four fingers or higher. When an individual expressed a five-finger vote, the individual was asked if any element for feature of the recommendation could be revised to meet their interest while still meeting the interests of the majority. If it was not possible to accommodate the interest of the individual without losing the support of the majority, then the individual was encouraged to express position as an alternative view. Recommendations that had more than two five-finger votes were removed or amended until only two or no five-finger votes remained. Given the varied and diverse nature of the perspectives represented by the Task Force membership, it was difficult to develop recommendations that were unanimously supported. As such, many amendments were made to the recommendations during the process in an effort to address the wide range of interests and perspectives representative by the Task Force membership.

## Key Observation of Task Force Process – true cost of resources

Of all the concepts, ideas, and principles reviewed and discussed by the Task Force during the 18-month process, Wake County staff and WECO staff observed generally unanimous agreement with one concept – though the agreement was not expressed using common language or based on similar reasoning. The concept that appeared to garner unanimous support was related to the cost allocation and pricing methodologies currently used for water, energy and waste services. Specifically, concern was expressed that the current cost allocation and pricing methodologies do not appear to accurately reflect the full and complete costs of the natural resource impacts associated with developing and delivering these important services to a community. In presentations to the Task Force by economists Dr. Laura Taylor and Dr. Richard Stroup, both from North Carolina State University, it was suggested that the pricing models could be adjusted to more fully and accurately account for the “externalities” associated with developing and delivering water, energy, and waste services to a community. It was reasoned that if a more complete and accurate pricing structure was adopted – one that placed an appropriate value on natural resource impacts – then a more efficient and effective form of the “reduce-reuse-recycle” culture could be adopted by the community based on pricing.

## Summary of Meetings

### January 2010 Task Force

At the first Wake Task Force meeting, WECO staff led participants through a visioning process. Participants were asked to spend 5 minutes writing their answers to a visioning question on notecards. The three visioning questions to which people responded were:

- What will be different about our energy sources and consumption in a sustainable Wake County?
- How will we benefit from sustainable water resources?
- What does sustainable waste management mean to you?

People were then asked to find someone they did not know, introduce themselves, and share their ideas with each other. After a few minutes, they found somebody else new to meet and talk with. The Task Force then regrouped to share over-riding themes that emerged from the discussions. Several members then answered the question, “of what you heard, what inspires you the most”, before the meeting adjourned. A summary of the visioning statements collected from the Task Force at the Kickoff Meeting for water, energy, and waste is presented in Appendix A.

(57 members participated, plus 24 others including staff, facilitators, technical experts and guests)

## **February 18th, 2010 Task Force**

Task Force members discussed the vision statements / summary statements put together by the facilitation team. Staff and facilitators compiled more than 600 responses from the visioning questions asked in January, categorized them into similar groupings, and wrote statements describing the categories. These were posted on the project website and announced via email to participants the week before the February meeting.

The Task Force was randomly split into 3 groups, and each was assigned a topic: water, waste or energy. Originally the groups were slated to rotate through all 3 topics, but the facilitators decided to extend the discussion and keep everyone in the same group throughout the meeting. As a result, participants discussed one topic and heard summaries of the other topic discussions. Numerous people mentioned their need or desire to weigh in on the different topics and the facilitators agreed with them. Several people suggested that they needed more information about the topics before the discussions could progress.

(36 members participated, plus 18 others including staff, facilitators, technical experts and guests)

## **March 18th, 2010 Task Force**

The purpose of this meeting was to learn about state and local trends in waste generation and management, and to learn about current and new practices to meet waste management challenges. Three speakers presented on the topic:

1. Paul Crissman, Division of Waste Management, Solid Waste Section Chief
2. Tommy Esqueda, Wake County Environmental Services Director
3. Chrissie Koroivui, Wake County Environmental Services Program Coordinator

After the presentations, members were asked to discuss the following two questions in small groups at their tables.

Q1) What are the implications of what you have just heard on your decision-making, etc.?

Q2) What are the next steps for discussing waste management in Wake County?

(35 members participated, plus 15 others including staff, facilitators, technical experts and guests)

## **April 15th, 2010 Task Force**

The discussion of waste management continued. The purpose of the meeting was to organize all the waste ideas into a usable logic model and to learn about current and new practices to meet waste management challenges. In response to requests during the March meeting, Tommy Esqueda, Wake County Environmental Services Director, presented some waste management strategies from other programs against which Wake County could be measured.

WECO staff began by acquainting Task Force members with a draft Waste Management Logic Model that captured ideas generated during the January, February and March meetings, connecting tools and strategies to outcomes. A logic model is a visual representation of a program or idea that charts the flow from inputs to outputs. It was used to help the Task Force to view all the data and ideas about waste in a systems view and to determine recommendations for activities and investments that lead to desired goals.

Task Force members provided feedback on the readability and content of the model. The Task Force then worked together in small groups to add more strategy details to the model. Categories were added to the logic model by Task Force members. Some logic models items were set aside and labeled as caveats or assumptions. The remaining items in the logic model were ranked for importance. The Task Force then broke into small groups to discuss the issues that were ranked highly: Incentives, Strategic plan for new disposal system, less non-renewable energy needed, composting , Construction and demolition diversion, sources of waste.

(23 members participated, plus 14 others including staff, facilitators, technical experts and guests)

### **May 20th, 2010 Task Force**

In May meeting the Task Force heard about water resources in general and new ideas and concepts in water management. Presentations were made by Mitch Woodward of Wake County Cooperative Extension and Victor D'Amato and Kimberly Brewer of Tetra Tech. A question and answers session followed the presentation.

Wake County and WECO staff used the Task Force input on waste management to write DRAFT goals which the Task Force reviewed. Participants were asked to comment about the May meeting on the Task Force blogsite.

(24 members participated, plus 9 others including staff, facilitators, technical experts and guests)

### **June 17th, 2010 Task Force**

At the June meeting the Task Force learned about water resource management efforts by Raleigh, Cary, and Wake County. Representatives of corresponding water management departments presented information about water supply sources, demand, conservation, and critical water resource issues. After presentations, the Task Force members were asked to identify issues that had not yet been discussed in the realm of water resources. Presentations were made by:

1. Leila Goodwin, Water Resources Manager for the Town of Cary
2. Kenny Waldroup, Assistant Director, Raleigh Public Utilities Department
3. Melinda Clark, Wake Country Watershed Manager.

The Task Force was asked to answer the following question at their tables:

What is missing from these conversations on water?

Members wrote their answers on flip charts and presented them to the group.

(28 members participated, plus 16 others including staff, facilitators, technical experts and guests)

### **July 15th, 2010 Task Force**

At the July meeting the Task Force talked about environmental economics and discussed a draft Water logic model. Dr. Laura Taylor, Center for Environmental and Resource Economic Policy (CEnREP), NCSU, presented. Dr. Taylor's presentation was followed by group questions, comments and discussion.

A draft logic model was developed from the participant comments and speaker presentations about water that had been collected since January 2010. The goal of the model was to help visualize all that had been discussed and consolidate it into a diagram. This first draft was sent to the Task Force the week before this meeting. It was handed out at that meeting and participants were asked to review the model, and determine how well their ideas were represented. In addition, they were asked to identify three strategies they think would provide the most benefits for the investment and write those on index cards. If strategies were missing, they could add new ones. Each table was asked to write the highlights of their discussion. The results of these exercises and additional comments aided staff in amending the logic model and developing strategies for the Water Work Group to discuss.

(26 members participated, plus 10 others including staff, facilitators, technical experts and guests)

### **Waste Work Group July 20, 2010**

The Waste Work Group met for the first time to discuss the draft waste strategies. The Work Group received a 1st draft of strategies by email before the meeting.

Task Force attendees: Michael Cole, Bill Coleman, Bianca Howard, Sig Hutchinson, Michael Sanera

Guests: Mandy Bowden (Waste Management), Mike Brinchek (CDM), Jim Foster (Sonoco Recycling), Bob Holden (Town of Cary), Tim Hunter (Waste Management), Brent Kirchoff (Waste Industries), Linda Leighton (City of Raleigh), Neal Westphalen (SAS)

Staff: Patrick Beggs (WECO), Tommy Esqueda (Wake County), Chrissie Koroivui (Wake County), Christy Perrin (WECO), Matt Roylance (Wake County), Lowell Shaw (Wake County)

The Work Group discussed the logic model and goals, and the first 4 of the 6 strategies. Notes were taken on a flip chart by WECO staff. WECO staff used these notes as well as handwritten notes to amend the 1st draft recommendations document.

There was no Task Force meeting in August.

## **Waste Work Group August 24, 2010**

The Waste Work Group met for the second time discuss the remaining draft waste strategies.

Task Force attendees:  
Michael Cole, Bianca Howard, Chad Ray, Michael Sanera

Guests: Mike Brinchek (CDM), Kevin Fisher (Sonoco Recycling), Bob Holden (Town of Cary), Tim Hunter (Waste Management), Kirsten Lechner (Wake County contractor), Linda Leighton (City of Raleigh)

Staff: Tommy Esqueda (Wake County), Christy Perrin (WECO), Matt Roylance (Wake County), Kat Williams (WECO)



The Work Group discussed the last 3 of the 6 strategies. Notes were taken on a flip chart by WECO staff. These notes, as well as handwritten notes, were used to amend the 1st draft recommendations document.

## **Sept 16th, 2010 Task Force**

At the September meeting draft waste management recommendations were presented for review and comment. The waste management recommendations were a result of the strategies drafted by staff using what was heard from the Task Force members and presenters, then amended based on discussions at the Waste Work Group meetings. The Work Group received assistance and advice from local, private-sector and public-sector, waste management professionals.

The facilitators introduced some basics of consensus decision making to guide the Task Force discussions, including a hand-out on consensus from the Natural Resources Leadership Institute, and a description of the five-finger scale.

Bianca Howard, Task Force member and Waste Work Group member, helped Patrick Beggs present the recommendations to the entire room. The recommendations had been sent to Task Force members ahead of time and were printed in large format posters around the room. Draft goals for waste management were also posted for comments. Task Force members were split into groups by table and asked to work their way around the room, adding their comments and concerns about the recommendations to each poster.

The resulting comments were incorporated into the Draft Waste Recommendations.

(26 members participated, plus 9 others including staff, facilitators, technical experts and guests)

### **October 18, 2010 Water Work Group**

Task Force members were asked to volunteer for the Water Work Group. This was the first meeting of the Water Work Group.

Task Force attendees: Kevin Cochran, Wynne Coleman, Robin Hammond, Sig Hutchinson, Sherry Johnson, Karen Ringe, Sara Robertson, Michael Sanera

Guests: Mary Brice (Dewberry), Leila Goodwin (Town of Cary), Kenny Waldroup (City of Raleigh)

Staff: Patrick Beggs (WECO), Christy Perrin (WECO), Greg Bright (Wake County), Melinda Clark (Wake County), Tommy Esqueda (Wake County), Matt Roylance (Wake County), Britt Stoddard (Wake County)

Wake County and WECO staff used input about water from the Task Force and presenters from all relevant meetings to write a set of draft strategies and goals. These were sent to the Work Group by email before the meeting.

Participants were asked to use the 5 finger scale and identify only the 1's (green dots) and 5's (red dots) in an effort to determine which strategies to begin discussing.

### **Oct 21, 2010 Task Force**

At this meeting Harold James, Director-Term Wholesale and Alternative Energy at Progress Energy, gave a basic primer on Energy in Wake County.

The second half of the meeting was spent brainstorming a definition for sustainability. Since January 2010 the facilitators collected definitions of sustainability from the Task Force. WECO used these to compile 9 different definitions, and presented them to the Task Force. Small groups were asked to circle the important words in the 9 definitions, and use those words to come up with a new definition which their table could support. We tested consensus using the 5 finger scale and then wrapped up the meeting. The four definitions included:

1. The ability to be continued over time for improved quality of life and environment.
2. Utilizing practices that ensure environmental and social well-being on an economically viable basis
3. Meeting the needs of the present and the future generations through good stewardship of resources to create a healthy quality of life without sacrificing the right to individual independence.
4. To restore and maintain natural systems in order to meet current needs equitably without compromising the resources required by future generations.

Task Force members responded to a 5-finger poll about the 4 definitions (results in the Nov. Newsletter).

(28 members participated, plus 11 others including staff, facilitators, technical experts and guests)

### **November 10, 2010 Water Work Group**

The Water Work Group met for the second time on Nov 10, 2010.

Task Force attendees: Kevin Cochran, Wynne Coleman, Robin Hammond, Sherry Johnson, Sara Robertson, Michael Sanera, Suzanne Harris

Guests: Mary Brice (Dewberry), Leila Goodwin (Town of Cary)

Staff: Patrick Beggs (WECO), Christy Perrin (WECO), Matt Roylance (Wake County), Britt Stoddard (Wake County), and Dale Threatt-Taylor (Wake County)

The meeting objective was to provide feedback on each of the draft strategies to guide revisions that will go to full Task Force. The Work Group continued discussing the strategies listed in the document dated Oct 7, 2010. The group began with strategy G, and then continued with B, C, etc. in alphabetical order. They were asked to consider the following question:

“How can the strategy better meet your interest while meeting others’ interests, too?”

### **Nov 18th, 2010 Task Force**

At the beginning of the meeting, the group continued work on a definition for sustainability. There were asked to consider the following questions:

What are elements of definition 4 that are similar to other definitions?

What desirable aspects of definitions 1-3 does #4 NOT have?

What is missing from definition #2?

If you can't live with #4, Why?

Staff used the feedback to re-write definition #4 to better meet the interests expressed.

Then they heard from a panel on renewable and clean energy, who answered questions provided to them ahead of time, and from the Task Force.

Renewable/Clean Energy Panelists:

Daren Bakst, John Locke Foundation

Ed Finley, NC Utilities Commission

Steve Kalland, NC Solar Center

(18 members participated, plus 10 others including staff, facilitators, technical experts and guests)

**The December meeting was cancelled due to weather.**

### **January 6th, 2011 Water Work Group**

The Water Work Group met a third time on Jan 6, 2011.

Task Force attendees: Kevin Cochran, Wynne Coleman, Robin Hammond, Sherry Johnson, Karen Ringe, Sara Robertson, Michael Sanera, Suzanne Harris

Guests: Mary Brice (Dewberry), Ed Buchan (City of Raleigh)

Staff: Patrick Beggs (WECO), Christy Perrin (WECO), Bryan Coates, Tommy Esqueda(Wake County), and Britt Stoddard (Wake County)

The meeting objective was to provide feedback on each of the draft strategies to guide revisions that would go to the full Task Force.

### **January 25th, 2011 Water Work Group**

The Water Work Group met a fourth time on Jan 25, 2011.

Task Force attendees: Wynne Coleman, Sherry Johnson, Karen Ringe, Sara Robertson, Amanda Vuke (for M. Sanera), Suzanne Harris

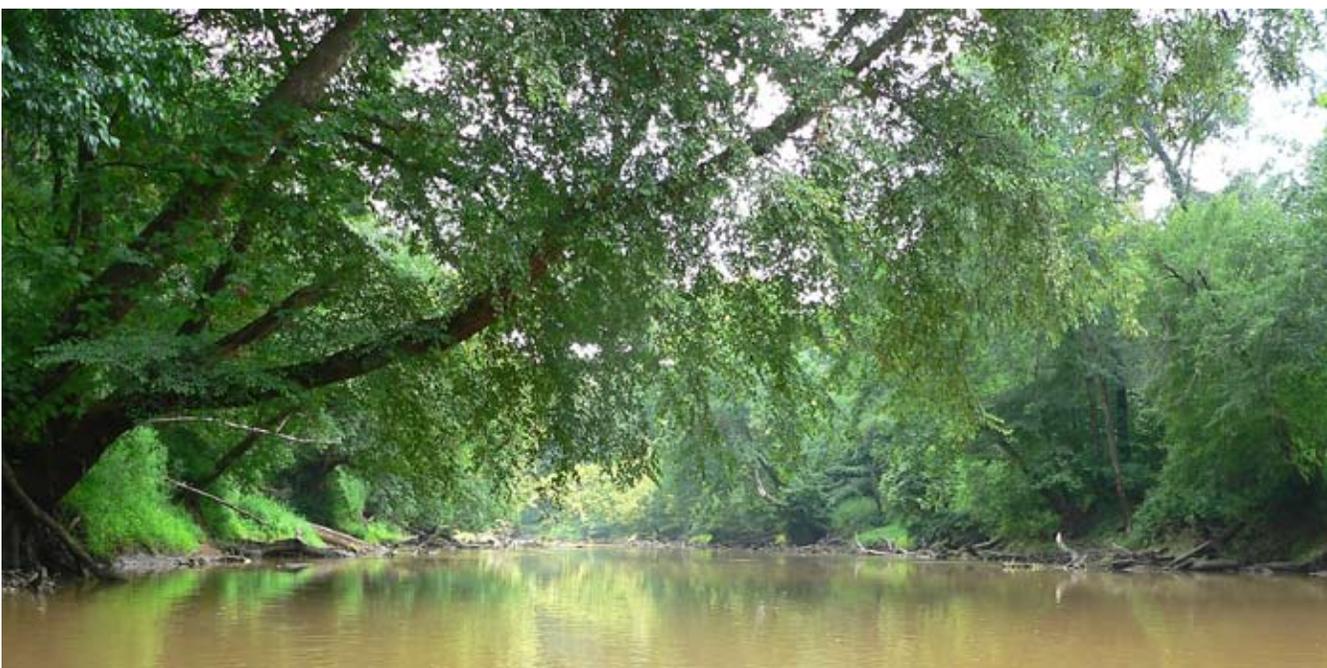
Guests: Mary Brice (Dewberry)

Staff: Patrick Beggs (WECO), Kat Williams (WECO), Tommy Esqueda (Wake County)

The Water Work Group finished discussing the draft strategies to guide revisions that would go to full Task Force.

### **Jan 20th, 2011 Task Force**

The Task Force continued the discussion on the definition of sustainability and also



discussed the Jan 20 Draft Energy logic model. A revised definition of sustainability was presented and the Task Force was polled. 21 members supported it at a “3” or higher, 2 members objected to it with a “5”. The group decided to move forward with the following definition:

Sustainability: Utilizing practices that protect the economic, environmental, and social qualities of life for current and future generations.

Members were asked to set aside ideas about strategies and objectives and just consider Goals in the Energy logic model. Task force members split into 3 tables and discussed the goals in reference to the following questions:

What do you like about the goals?

What don't you like?

What goals are missing?

The three tables reported out to the room.

Wake staff handed out a draft of the Introduction Section for the Wake County Environmental Stewardship Agenda. This report will be written by staff using the recommendations put forward over the next several months by the Task Force.

(24 members participated, plus 8 others including staff, facilitators, technical experts and guests)

### **Feb 17th, 2011 Task Force**

Participants provided feedback on the draft water recommendations that were developed by staff with input from the water subcommittee. They also heard a presentation on economics from Dr. Richard Stroup, Department of Economics, NC State University.

The nine water recommendations were posted on large paper around the room. Participants were asked to put their comments about the recommendations on the posters. All of the comments were recorded and posted on the project website. Comments were reviewed by staff and used to guide revisions to the recommendations.

Dr. Richard Stroup, NCSU Department of Economics, was invited to provide a “part two” to the discussion about environmental economics. A handout with his talking points was distributed and posted on the web site.

At the end of the meeting Tommy Esqueda, Wake County Environmental Services Director, handed out copies of a draft Solid Waste Section for the final report, which includes background about waste management, the Task Force recommended strategies, and suggested performance measures for tracking implementation progress. The document was posted on the project website and was emailed to the list serve following the February meeting.

(20 members participated, plus 11 others including staff, facilitators, technical experts and guests)

### **February 21st, 2011 Energy Work Group**

Task Force members were asked to volunteer for the Energy Work Group.

Task Force attendees: Emily Barrett, Kevin Cochran, Steve Cole, Wynne Coleman, Sig Hutchinson, Glenn Thomas, Michael Sanera

Staff: Patrick Beggs (WECO), Christy Perrin (WECO), Matt Roylance (Wake County)

The meeting objective was to provide feedback on the Energy logic model draft strategies. This feedback will be used to develop a further draft that will go to full Task Force. A participant asked to note in the minutes that silence does not mean assent.

### **March 17th, 2011 SFT**

This meeting focused on the final Waste Recommendations. Final recommendations were presented to the Task Force with the option for participants to provide alternative opinions.

Facilitators asked the Task Force to seek consensus, rather than voting. This meant asking participants to share their interests (why they want something) behind their positions (what they want), to seek common interests, and to craft recommendations that incorporate as many interests as possible. After attempts to meet the interests of all participants were made, participants were encouraged to express any remaining dissenting views for inclusion in the final report. The dissenting views were written on index cards and reported out with the final recommendations.

Tommy Esqueda reviewed the proposed process of presenting the final recommendations to the County Commissioners.

(17 members participated, plus 16 others including staff, facilitators, technical experts and guests)

### **April 14, 2011 Energy Work Group**

The Energy Work Group met a second time.

Task Force members: Emily Barrett, Steve Cole, Wynne Coleman, Sig Hutchinson, Michael Sanera

Guests: Ralph Thompson, Ewan Pritchard

Staff: Patrick Beggs (WECO), Christy Perrin (WECO), Matt Roylance (Wake County)

The Work Group discussed and provided feedback on the draft energy strategies. The feedback was used to revise the draft strategies for presentation to the full Task Force. After the meeting they participated in a guided tour of the FREEDM center at NCSU Centennial Campus.

## April 21st, 2011 Task Force

The Task Force was asked for comments and alternative opinions about the waste management recommendations and the accompanying explanatory chapter, which were sent out ahead of time by email.

Participants with alternative opinions were asked to include their name with the comment, to be included in the final write up, after the alternative opinion write up has been reviewed by the individual. Participants were asked to discuss the recommendations at their tables and report out afterward.

The Water recommendations (without the accompanying explanation chapter, since it was not yet done) were sent to the Task Force ahead of the meeting. At the meeting, participants were asked to consider each recommendation using the 5 finger scale. Participants that ranked anything a "5" were asked to write an alternative opinion. After participants were offered the opportunity to write their alternative opinions, discussion about the water recommendations was opened to the group.

Michael Sanera supplied a video of Dr. Richard Mueller, of Berkley University, explaining about falsified data used to teach about climate change. The facilitator asked for comments after the 4 minute video.

A discussion was begun about how to market the final recommendations. Comments were collected from participants. Commissioner Bryan challenged everyone to be creative. Participants helped define the format of the Final Report.



(14 members participated, plus 5 others including staff, facilitators, technical experts and guests)

### **May 15, 2011 Task Force**

The Task Force reviewed the draft Energy recommendations that came from the discussions of the Energy Work Group. The recommendations were printed on posters and the Task Force was asked to write comments on them. They were also asked to go back and read the comments of others after everyone was finished. These comments, along with WECO responses, were posted on the project website. Meeting participants were then asked to share their thoughts and questions. These were captured on flipcharts and recorded in the newsletter. The Task Force also continued their discussion about what to do with the entire set of recommendations and final report.

(13 members participated, plus 4 others including staff, facilitators, technical experts and guests)

### **June 16, 2011 Task Force**

The Task Force met for the final time. They reviewed and discussed the revised Energy recommendations, and were asked to consider the 5 finger scale to determine their level of support for each recommendation. Those who gave a recommendation a 5 were asked to indicate an alternative opinion. As a wrap-up question, the Task Force was asked to write on index cards responses to the question:

“What one thing would you want to tell Wake County citizens about the Wake Task Force recommendations?”

The answers were collected and recorded in the final newsletter and are presented in Section 5.6 of this report. Staff informed Task Force members that the supporting background chapters for the waste, water, and energy recommendations would be completed and posted online for their review.

(21 members participated, plus 10 others including staff, facilitators, technical experts and guests)

## Wake County Sustainability Task Force Report

# Appendices

<b>Glossary</b>	<b>2</b>
<b>Comments from Task Force Members</b>	<b>9</b>
<b>Task Force Vision Statements</b>	<b>11</b>
<b>Wake County Annual Report 2010</b>	<b>31</b>
<b>Alternative Opinions:</b>	
<b>The Wake County Environmental Sustainability Task Force Report: Clarification and Critique By Task Force Member Dr. Michael Sanera September 27, 2011</b>	<b>37</b>
<b>Alternative Position Statement in Response to the Wake County Sustainability Task Force Report By Wynne Coleman on behalf of Wake County Taxpayers Association October 20, 2011</b>	<b>48</b>
<b>Comments on the Environmental Stewardship Agenda by the HBA of Raleigh-Wake County, Suzanne Harris, VP of Governmental Affairs October 19, 2011</b>	<b>71</b>

# Glossary

## A

**Algae** – Members of a large group of primarily aquatic organisms that contain chlorophyll and other pigments and can carry out photosynthesis, but lack true roots, stems, or leaves and range from single cells to large multicellular structures. Examples of algae include seaweed, kelp, dinoflagellates, and diatoms.

**Algal Bloom** – The rapid growth of algae in a system due to excessive amounts of nutrients and the appropriate physical and chemical conditions.

**Aquifer** – A stratum of rock or soil that contains groundwater.

**Attainment** refers to the National Ambient Air Quality Standards (NAAQS) are standards established by the United States Environmental Protection Agency under authority of the Clean Air Act that apply for outdoor air throughout the country. Primary standards are designed to protect human health, with an adequate margin of safety, including sensitive populations such as children, the elderly, and individuals suffering from respiratory diseases. Secondary standards are designed to protect public welfare from any known or anticipated adverse effects of a pollutant. A district meeting a given standard is known as an “attainment area” for that standard, and otherwise a “non-attainment area”

**Audit** (Energy) is the process of determining energy consumption, by various techniques, of a building or facility.

## B

**Baseflow** – The amount of stream flow contributed by groundwater sources.

**Benthic Macroinvertebrates** – animals without backbones or internal skeletons that live on or near the bottom of a water body.

**Best Management Practices (BMPs)** – Methods, measures, or practices to prevent and/or reduce water pollution. Examples include treatment requirements, operating procedures, erosion control practices, fertilizer and animal waste management, runoff control in urban systems, etc.

**Biochemical Oxygen Demand (BOD)** – The potential amount of oxygen consumed in the degradation of organic material by bacteria.

**Bioindicators** – Organisms used to determine changes in water quality and/or pollutant levels within a system.

**Biological Assessment** – Evaluations of the condition of water bodies using surveys and other direct measurements of species diversity and species abundance (of macroinvertebrates, fish, and plants) to determine whether water bodies support survival and reproduction of desirable fish, shellfish, and other aquatic species and how aquatic life reacts to water quality.

**Biological Diversity (Biodiversity)** - The number and variety of living organisms on earth in all forms and at all levels, including ecosystem diversity, species diversity, and genetic diversity.

**Biological Integrity** – Supporting and maintaining the biological components of an aquatic ecosystem to a level comparable to that of natural habitats of the surrounding region.

**Biota** – All of the organisms, including bacteria, plants, and animals, that live in a particular location or area.

**Buffer** – A vegetated area, forested or otherwise vegetated, located between water bodies such as

stream, wetlands, and lakes, that provides a permanent barrier against runoff from development, agriculture, construction, and other land uses. Buffers are designed to filter pollutants in runoff before the pollutants reach surface waters.

## C

**Clean Technology** has no one definition, but can be described as “a diverse range of products, services, and processes that harness renewable materials and energy sources, dramatically reduce the use of natural resources, and cut or eliminate emissions and wastes.”

**Commissioning or building commission** is a systematic and documented process of ensuring that a building owner's operational needs are met, building systems perform efficiently, and building operators are properly trained. It is a method of risk reduction for new construction and major capital improvements or upgrades. Enhanced commissioning involves additional requirements. Retro-commissioning is performed on existing buildings and involves the identification of less-than-optimal performance of equipment and systems and making necessary repairs or enhancements to save energy and cost.

**Connectivity** – A measurement of the continuity of a corridor (riparian corridor, etc.). Connectivity promotes valuable natural functions, such as movement of animals through their habitat, transport of materials and energy, which help maintain the integrity of natural communities.

**Critical Habitat** – Areas that are essential for the conservation of federally endangered or threatened species. Such areas may require protection or certain management practices.

## D

**Designated Uses** – Uses for water resources identified by state water quality standards that must be upheld or achieved as required by the Clean Water Act (CWA). Examples of designated uses include aquatic habitat, fisheries, and public water supply.

**Detention** – The slowing, collecting, or detaining of stormwater runoff prior to release into receiving waters.

**Discharge** – The release or placement of wastewater, dredged or fill materials, or other substances directly into surface waters.

**Dissolved Oxygen** – The amount of oxygen present in the water column. Dissolved oxygen is important for aerobic organisms and proper biological functioning. Less than 5 parts per million of oxygen in water can cause stress to aquatic organisms. The lower the oxygen concentrations, the greater the stress.

## E

**Ecological Integrity** – Supporting and maintaining all components, biological, physical, and chemical components, of an ecosystem to a level comparable to that of natural habitats of the surrounding region.

**Ecosystem** – The network of a biological community and its surrounding interconnected physical and chemical environment.

**Effluent** – Treated or untreated wastewater that is discharged into the environment from a treatment plant, sewer, or industrial facility.

**Energy Conservation** involves cutting waste of energy. For example, an energy efficient air conditioner is still wasteful if it is running all day when no one is home.

**Energy Efficiency** involves technology that produces the same end product while using less energy. For example, an energy efficient air conditioner produces the same level of cooling capability while using

less energy than the average air conditioner on the market.

**Energy Performance Contracting** (also called Energy Saving Performance Contracting) - A turnkey service sometimes compared to design/build construction contracting which provides customers with a comprehensive set of energy efficiency, renewable energy and distributed generation measures and often is accompanied with guarantees that the savings produced by a project will be sufficient to finance the full cost of the project.

**Enhanced Commissioning** is a set of best practices that go beyond fundamental commissioning to ensure that building systems perform as intended by the owner. These practices include designating a commissioning authority prior to the construction documents phase, conducting commissioning design reviews, reviewing contractor submittals, developing a systems manual, verifying operator training, and performing a post-occupancy operations review. (US Dept. of Defense requires this in all new buildings)

**Erosion** – The wearing away of rock and soil due to wind, weathering, water, ice, or other physical, chemical, or biological forces. The rate of erosion may be increased by land-use activities.

**Eutrophication** – Process by which a water body undergoes an increase in dissolved nutrients, often leading to algal blooms, low dissolved oxygen, and changes in community structure. This process occurs naturally over time, but can be accelerated by human activities that increase nutrient inputs into aquatic ecosystems.

**Exotic species** – A recently introduced species, or a species that is living in a location that is outside of its normal or historical range.

**Extinct species**- A species no longer in existence

**Extirpated species** – A species no longer surviving in regions that were once part of their range.

## F

**Fecal Coliform** – Bacteria found in the fecal matter of warm-blooded animals. Fecal coliform is harmless to human health, but is used as an indicator of other harmful pathogens.

**First Flush** - Stormwater that initially runs off an area that is more polluted than the stormwater that runs off later.

**Flood**- An overflow of water onto lands that are used or usable by man and not normally covered by water.

**Floodplain** – Area of land on each side of a stream channel that is inundated periodically by flood waters.

**Fragmentation** – The process whereby a large patch of habitat is broken down into many smaller patches of habitat, resulting in a loss in the amount and quality of habitat.

## G

**Gaging station**- A particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

**Geodatabase**- A GIS-based computer program where both mapping information and other data such as water quality can be combined, mapped, and tracked.

**GIS (Geographical Information Systems)** – Computer program for storing, mapping, analyzing, and displaying geographically-referenced data, that is, data identified according to location.

**Greenway** - A linear open space established along a natural corridor, such as a river, stream, ridgeline, rail-trail, canal, or other route for conservation, recreation, or alternative transportation purposes.

Greenways can connect parks, nature preserves, cultural facilities, and historic sites with business and residential areas.

**Greywater** - wastewater from clothes washing machines, showers, bathtubs, hand washing, lavatories and sinks.

**Groundwater** – Water occurring beneath the earth's surface, typically in aquifers, that supplies wells and springs, and is a key source of drinking water.

**Group Relamping** is a process to save money when fluorescent, high-pressure sodium or metal halide lighting is used. All lamps in a group are replaced at the same time rather than one at a time upon failure, because the average lifespan of the lamps is a known factor.

## **H**

**Habitat** – An area with specific physical and environmental conditions in which a particular plant or animal lives.

**Habitat Integrity** – Supporting and maintaining the physical and environmental conditions of an aquatic ecosystem to a level comparable to that of natural habitats of the surrounding region.

**Headwater(s)** - (1) the source and upper reaches of a stream; also the upper reaches of a reservoir. (2) the water upstream from a structure or point on a stream. (3) the small streams that come together to form a river.

**Hydrologic cycle** - the cyclic transfer of water vapor from the Earth's surface via evapotranspiration into the atmosphere, from the atmosphere via precipitation back to earth, and through runoff into streams, rivers, and lakes, and ultimately into the oceans.

**Hydrologic Unit Cataloging (HUC)** – Cataloging of watersheds of various geographical scales, using numerical codes, developed by the USGS.

**Hydrology** – Movement and distribution of groundwater and surface water in a system.

## **I**

**Impaired Water** – Any waterbody of the United States that does not attain water quality standards (as defined in 40 CFR part 131) due to an individual pollutant, multiple pollutants, pollution, or an unknown cause of impairment.

**Impervious Surface** – A surface that does not allow water to penetrate. Examples of impervious surfaces include asphalt, rooftops, and concrete.

**Infiltration** – The process by which a liquid draining or seeping into the earth, stormwater pipes, etc.

**Intermittent Stream** – A stream that flows only at certain times of the year, or does not flow continuously.

## **J - K - L**

**Land Use** – The way land is used or developed. For instance, the types of buildings/structures permitted on the land and the types of activities permitted on the land. Particular land uses are often associated with different types of pollution, such as erosion and sedimentation from construction activities.

**Land Use Planning** – Planning and creating policies to guide the way in which land and resources will be used.

**Loading** – Entry of pollutants into a body of water.

## M

**Mitigation** – Actions taken to avoid, reduce, or compensate for the effects of human-induced environmental damage. It can include projects such as restoration and enhancement of negatively impacted ecosystems, or creation of an ecosystem.

**Monitoring** - Repeated observation, measurement, or sampling at a site, on a scheduled or event basis, for a particular purpose.

**Motor System Management** is a set of ongoing policies and practices that help facilities effectively manage their motor populations based on life-cycle costing and proactive planning. Sound motor management helps reduce downtime, decrease energy costs and improve productivity.

**Municipal water system** - a water system that has at least five service connections or which regularly serves 25 individuals for 60 days; also called a public water system.

## N

**Natural Disturbances** – Natural events that disturb the structure and function of an ecosystem such as floods, drought, earthquakes, fire, lightning, etc.

**Non-Point Source (NPS) Pollution** – Pollution that enters water bodies from a variety of sources. NPS pollution is caused by runoff from rainfall or snowmelt that moves over and through the ground, washing natural and human-made pollutants into surface waters and underground sources of drinking water.

**Nutrient Management** – A best management practice (BMP) developed to minimize the amount of nutrients entering surface and ground waters by limiting the amount of nutrients applied to the land to only as much as the crop is estimated to use.

**Nutrients** – Substances, such as nitrogen and phosphorous, required by plants and animals for growth. In some circumstances, excessive nutrient additions to surface waters may result in excessive algal/plant growth and, subsequently, the accumulation and decay of increased organic matter.

## O - P

**Oxygen Demanding Materials** – Materials such as organic wastes, food wastes, etc. that use up dissolved oxygen in the water column as they decompose.

**Pathogen** – A disease-causing organism (viruses, bacteria, or fungi can be pathogenic organisms).

**Perennial Stream** – A stream that flows continuously throughout the year.

**Point Source Pollution** - Pollution that can be traced to a single point, or output, such as a pipe.

**Potable water** - water of a quality suitable for drinking.

## Q - R

**Receiving Waters** – Surface waters, whether natural or man-made, into which materials are discharged.

**Reclaimed wastewater** - treated wastewater that can be used for beneficial purposes, such as irrigating certain plants.

**Restoration** - The management of physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to sites that formerly supported wetlands.

**Riparian** – Of, relating to, living on, or located on the banks of a watercourse such as a river, stream, lake, etc.

**River Basin** – Area encompassing all the land drained by streams and creeks flowing downhill into a major river. All water that falls within the basin flows into these streams and rivers.

**Runoff** – Water flowing across the land that does not infiltrate the soil, but drains into surface or ground waters, or when rainfall exceeds the infiltration capacity of the land.

## **S**

**Sedimentation** – The deposition of particles of soil, sand, silt, clay, or organic matter onto the bottom of any surface water or left behind as water leaves.

**Smart Grid** is a term that describes modernizing the electric transmission and distribution system using digital technology. This would provide two-way communication that would improve the efficiency and reliability of the system, allowing utilities to identify and isolate problems quickly and make better use of the energy supply. Customers would get real-time information about their usage. U.S. Dept. of Energy lists the following characteristics of a smart grid: Enables informed participation by the customer, Accommodates all generation and storage options, Enables new products, services, and markets, Provides power quality for the digital economy, Optimizes assets and operates efficiently, Anticipates and responds to system disturbances, Operates resiliently against attack and natural disaster.

**Source Water** - Water in its natural state, prior to any treatment for drinking.

**Stormwater Runoff** – Runoff that picks up contaminants deposited on impervious surfaces during its flow to surface or ground waters.

**Stream Corridor** – Spatial scale defining the ecosystem surrounding a stream, linear in shape, that includes the stream channel, riparian vegetation, floodplains, streambanks, tributary streams, and trails, roads, and other development.

**Stream Restoration** – The management of morphological, ecological, and hydrological characteristics of a stream with the goal of returning natural/historic functions to the stream system.

**Streambank Stabilization** – Prevention of stream bank erosion and deterioration through vegetation or other stabilizing structures.

**Surface Water** - The water that systems pump and treat from sources open to the atmosphere, such as rivers, lakes, and reservoirs.

**Suspended Solids** – Organic and inorganic particles suspended in the water column and carried by the water. The presence of suspended solids in water may reduce the amount of light reaching the water column, clog the gills of fish and other animals, and are often associated with toxic contaminants that bind to particles.

## **I**

**TMDL** (total maximum daily load) - Calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards and allocation of that amount to the pollutant's sources.

**Total Suspended Solids (TSS)** – The weight of all suspended solids in water.

**Tributary** – A stream or river that feeds into a larger stream, lake, or river.

**Turbidity** – A measurement that indicates the amount of suspended solids in the water column.

## **U - V - W - X - Y - Z**

**Vegetative Clearing** – The removal of riparian and upland vegetation for land-use purposes.

**Water Quality Standards** – Laws and regulations that maintain limits, or criteria, for certain chemical, biological, and physical parameters in order to protect designated uses.

**Water Table** – The depth at which the ground is saturated with water.

**Watershed** - Ecosystem consisting of three major components, stream channel, floodplain, and upland areas, that function together and drain to water bodies, including lakes, rivers, estuaries, wetlands, streams, and the surrounding landscape (groundwater recharge areas are also considered).

**Watershed Advisory Group** – Assembly of a group of key participants, such as local citizens, public officials, landowners, local business owners, and public interest groups, who represent a variety of community interests, are affected by watershed initiatives, and will play an active role in the watershed planning process.

**Watershed Stakeholder** - Anyone who has influence upon the quality of waters in a watershed (such as industry, municipalities, boaters, agriculture, forestry), and anyone who is impacted by the quality of waters in a watershed (such as fisherman, swimmers, waterfront homeowners), and thus has a “stake” in any potential water quality management measures.

**Wetlands** – Areas that are frequently inundated or saturated with water for periods of time long enough to support vegetation suited for survival in saturated soils. Wetlands may include bogs, swamps, marshes, etc (40 CFR 232.2(r)).

---

# Comments from Task Force Members

At the June 2011 meeting of the Task force (last meeting of the process), Task Force members were asked to respond to the following question:

**What one thing would you want to tell Wake County citizens about the final Sustainability Task Force recommendations?**

Appendix B is a summary of the responses prepared by the Task Force members that elected to respond. Task Force members were not required to provide their name in submitting these responses, and the responses are presented in this appendix for review and consideration by the reader.

## Task Force Closing Comments

1. The STF developed recommendations that are relevant to the current global conditions and concerns import to future quality of life.
2. The report is important from an environmental, integrity, economic development, and social justice perspective which collectively speak to the future viability of us as a county.
3. These issues are not of a nature that they can be considered once, their solutions implemented all at once, and then the issues can be thereafter ignored. Mistakes will happen, unintended consequences will occur, and circumstances will change. But I think these topics will deserve attention, consideration, and re-consideration in the years ahead. As with all collaborative efforts, these recommendations are the result of considerable discussion, debate, and some disagreement. On the whole, these recommendations are a serious attempt to provide input and advice to our policy-makers that will guide decisions for a sustainable future.
4. The recommendations were made with future generations in mind. Hours of discussion, blood, sweat, and tears went into them with the hopes that their implementation will enhance Wake County citizen lives at home, at work and at play. We hope you take them as seriously as we do.
5. Our intentions were good. It may seem as though we didn't go far enough, but we were a cautious group.
6. The majority of the Task Force members do not understand the origin of sustainability, or the intention to promote it and the sustainable development movement. This Task Force chose to adopt a definition of sustainability that is virtually identical with a philosophy that I oppose because it comes from the original United Nations philosophy of sustainable development that will centralize government and micromanage every

---

facet of life through environmental, economy and social equity. They should reject this definition in favor of supporting the environment through local county values and experience, not through international policy insinuation.

7. When implemented, these recommendations are meant to enhance the environmental stewardship, quality of life and economic viability of our community for us and for our children.
8. The vision of the STF is to ensure a high quality of life for all of us for decades to come. These recommendations are the steps we need to take as a community to get us there.
9. The STF did not use academically sound resource economics to develop the recommendations. Most of the recommendations are based on special interest fads.
10. By complying with the recommendations, you may not live to see the results, but your children and future generations will.
11. The benefits of compliance are directly proportional to the efforts put forth by individuals.
12. Overall the sustainability Task Force recommendations earn a "1" from me on the 5 finger scale [meaning I endorse it and I really like it]
13. They are not a balanced view and were created in a very backwards/inefficient process. It all started as a positioning/ political agenda and snowballed into nothingness. Sorry - being honest. I believe intentions were good though.
14. You would be totally surprised at the diverse opinions that were involved in the resulting recommendations.

# Task Force Vision Statements

The Kickoff Meeting for the Sustainability Task Force was convened on January 19, 2010. At the Kickoff meeting, the Task Force members were asked to respond to the following three “visioning” questions:

**What will be different about our energy sources and consumption in a sustainable Wake County**

**How will we benefit from sustainable water resources?**

**What does sustainable waste management mean to you?**

A summary of the responses provided by the Task Force members are presented in this Appendix. The responses to these questions served to guide the 18-month process, including the selection of guest speakers, the preparation and presentation of relevant information and data, and the group meeting exercises to promote discussion and encourage engagement among the Task Force members.

## Energy Vision Statements

**Wake County Sustainability Task Force participants provided the following answers to the question: What will be different about our energy sources and consumption in a sustainable Wake Co?**

Editor's comments: Numbers in parentheses indicate the number of duplicate or extremely similar comments made. The headings are editor's best attempt to draft vision statements reflecting the participants' ideas (and assume participants WANT Wake County to be sustainable in energy).

**Multiple sources of energy will be available, giving the consumer choices**

**A Higher Percentage of Energy will come from renewable energy sources**

**Diversity of choices / options (22)**

- Multiple sources to sustain a rapidly growing population
- Better, expanded, varied and diverse options available, including small, clean, and natural choices, as well as traditional choices such as gas and oil
- Equal access to sustainable energy sources and the ability to choose that which meets the need, available to all
- Choices for everyone
- Energy sources will be many rather than few
- Will see solar and other alternate energy solutions
- Energy choices will be economically feasible

- Distributed small energy sources make up most of the base load generation
- Solar and wind energy available to the general public
- Clean, renewable diversified energy options
- Use multiple energy sources –wind, solar, bio, etc.
- Gas stations will be more open to have ethanol fuel
- We will incorporate diverse energy alternatives: solar, wind, geothermal, hydro

### **Conventional/Traditional energy sources**

- We will use less fossil fuel
- Conventional sources are used to supplement peak load needs, not provide base load
- Reduced use of coal
- Coal will still be king
- We will make better use of our own natural gas as opposed to foreign oil
- Will be less dependent on fossil fuel
- There will be reduced coal/gas resources

### **Renewable and General Source ideas**

- A higher % of energy will come from renewable sources
- Energy sources will be renewable

### **Wake County Sustainability Task Force participants provided the following answers to the question: What will be different about our energy sources and consumption in a sustainable Wake Co?**

- Energy source: brought in outside of county
- Domestic, renewable, low-toxicity, efficient
- Renewable energy sources
- We will strive to use more renewable energy resources
- Energy sources will need to be more efficient (less waste)
- More “green” powered buildings ie., biomass, wind turbines, solar panels, geothermal (2)
- Biofuels will be easily accessible
- Use more renewable sources: wind, solar, etc
- Increased production of non-carbon

- Increased reliance upon solar, wind and nuclear sources of energy for producing electricity
- New energy sources will be present: solar, hydro, geothermal
- Hydrogen fuel cells for all electricity
- Shift from oil and gas to biofuels

### **Cleaner**

- Traditional energy sources (natural gas, oil, electricity, coal) will become cleaner and more efficient
- Energy sources will be the most efficient and healthy available
- Focus on clean energy sources
- Cleaner for environment

### **Waste to Energy (8)**

- More useable energy derived from waste products
  - Methane generation from agriculture and waste
  - Landfill gases converted to usable energy
  - Industry by-products used as fuel sources
  - Food scraps and waste vegetable oil used to create energy
  - More use of by products for fuel sources (biofuels, black liquor)

### **Distribution**

- Sustainable energy utility
- District based energy
- New and improved local power distribution infrastructure
- Locally distributed energy generation
- Plug-in stations for electric cars are solar powered
- More local production and local use of energy
- More power produced at end user site (co-generation)

### **Nuclear (4)**

**Wake County Sustainability Task Force participants provided the following answers to the question:**

**What will be different about our energy sources and consumption in a sustainable Wake Co?**

- Nuclear energy companies will find even safer ways to deal with waste, it will become more widely accepted and wake county will have expanded and/or additional nuclear power plants

### **Wind (5)**

- More use of wind power where feasible, including multiple types of turbines.
- Public sites, such as schools will be leaders in wind energy
- Wind energy will be pursued in the Research Triangle
- Wind turbine energy

### **Solar (14)**

- Solar power will be more viable and available. It's use will increase on all rooftops, will becoming the no. 1 source of electricity, common, more dependent upon
- Solar energy will be a major source of energy to public or private buildings, homes and retail/shopping center, etc., every building will use, panels on every roof.
- Solar Energy- Photovoltaics (combine w/ LED's)

### **Water (3)**

- Hydro generation
- Enhanced hydro power base on tidal (2)

Transportation will consume less energy

### **Mass transit and planning**

- More mass transit will be available(4)
- More people will use mass transit (4)
- Mass transit will use alternative energy sources
  - local energy sources
  - fewer fossil fuels
- Alternative forms of transit will be available
  - Electric powered mass transit will be much more in use
- Planning will change to accommodate mass transit
  - More walkable/liveable development patterns that reduce dependence on autos
  - Smart growth closet to cities and employment

### **How to achieve sustainable mass transit goals**

- Bus tickets will serve as lottery tickets
- Mass transit will be more convenient
- Rail system (2)
- Rapid transit

**Wake County Sustainability Task Force participants provided the following answers to the question: What will be different about our energy sources and consumption in a sustainable Wake Co?**

- Regional transit (2)
- Bike lanes or large shoulders on roads (2)
- Telecommuting opportunities will increase to become the new normal

### **Autos**

- More opportunities to utilize alternative fuels in cars
  - Hydrogen generators for fuel cells in autos
  - Driving efficient vehicles- electric and hydrogen (2)
  - Alternative fuel vehicles: electric, biofuels (2)
  - We will have more electric cars (2)
  - Private electric vehicles will predominate
  - No more fossil fuel required for vehicles
  - Fully electric county vehicles (2)
  - Convert county fleet to electric plug in vehicles in cooperation with NCSU
- Higher fuel efficiencies for autos (2)
- We will have fewer cars fueled on gasoline that comes from the Middle East

**The community will have a greater understanding of energy consumption and options.**

- More people will know where their energy comes from and will understand their energy consumption and the County's consumption better than now
- Awareness of energy efficiency will be on par with awareness of renewable energy
- Citizens and businesses will have a profound understanding and appreciation for energy intensity (feedback loop)
- Citizens will become conscious consumers of energy
- Education about alternative energy

- Better understanding and accountability for our personal energy use – in our homes, work, cars, etc.
- Environmentally aware consumption

#### **How to achieve energy education:**

- Energy sustainability will be taught in schools
- Schools will be encouraged to teach about energy efficiency and measuring energy use (part of high school science)
- Awareness programs for people to learn about energy conservation
- School programs expanded so that elementary kids learn what to do and how

#### **Wake County Sustainability Task Force participants provided the following answers to the question: What will be different about our energy sources and consumption in a sustainable Wake Co?**

##### **Pricing, Markets, and Policy will increase energy sustainability**

- Sustainable sources of energy will equal long term, cost effective solutions
- Innovation will be viewed as a valuable commodity
- Cost will not be the excuse for not implementing new technologies
- Energy ideas will be significantly cheaper to implement than they are today
- Cost efficiency (what will be least burden to taxpayer but most efficient for producer?)
- Our cities and county will be achieving CO2 reductions beyond Kyoto goals
- Energy cost will be higher (4) [including 3x present cost]
- Long term cost effective solutions = \$\$
- Cost reduction, energy sources, and consumption: what will be different?

##### **How to achieve energy sustainability:**

- need feedback mechanisms about impacts of using renewable resources
- Incentives for alternative energy
- Incentives for energy conservation (4)
  - Tax breaks to drive demand
  - Lower, tiered cost based on usage (2)
  - Better, more, expanded incentives for companies to go above and beyond energy reduction/green energy use/installation
  - Demand management that provides incentives for conservation – residential and

commercial

- Buy back from electric company
- Energy consumption: homeowner's will be credited for conserving energy
- Provide opportunities for businessmen to pursue "green buildings"
- We will mandate controls for limiting use of energy and other resources (water)
  - Penalties for over consumption
  - Electricity will be taxed to reduce consumption

### **Energy conservation, including efficiency, will lower per capita consumption**

- A much higher value will be put on conservation, expanding our current resources
- The utility usage will be 30-50% less in government facilities
- Small amounts of energy will have a BIG IMPACT – efficiency
- Consumption will decrease because citizens are using energy more efficiently
- Citizens, businesses and governments will be conserving energy and using energy efficiency technology to reduce total electricity and fossil fuel use by half

### **Wake County Sustainability Task Force participants provided the following answers to the question: What will be different about our energy sources and consumption in a sustainable Wake Co?**

- Focus will be in conservation of resources/reducing consumption rather than on increasing resources
- Commercial customer-20% reduction in energy use by 2015
- Energy consumption per person will be down because the norm will be "using less." The prices of energy will be much higher; making this practice something everyone wants to do. Our homes, cars, buildings will all use less
- Energy consumption will be 50% of today = Europe
- Less waste
- Consumption per person of fossil fuels will go down substantially
- Per capita consumption will be lower (2)
- We will find ways to not only use less energy to do the same things we do today but will consume more cleanly
- In a sustainable Wake County, energy consumption will be decreased and energy efficient measures implemented throughout county
- We will develop and find smarter ways to consume energy

- Energy consumption for county facilities will be lessened dramatically due to commuting

#### **How to achieve conservation:**

- Use less (don't waste energy)
- Upgrade to energy grid
- We will all consume less
- New construction
  - Change building codes to require more highly-efficient home construction (6" studs, 3 pane glass, etc.)
  - All new construction will be LEED or comparable energy standards (2)
  - Energy efficient retrofits for homes and buildings
  - Houses will be built more energy-efficiently
  - There will be more "green" homes and businesses built
  - All buildings (including those belonging to low income communities) are weatherized to reduce e- needs of climate control
  - Homes will be smaller and better insulated, which will tend to reduce consumption of energy
  - New homes built to heat and cool themselves
  - Smaller homes
- Ensure all schools are equipped with solar panels for power
- Convert as much lighting in county buildings to LED
- Address the issue of fuel consumption by finding other means, such as electric cars, carbon fuel
- Smart electricity grids
- Consumption: in 10 years every building will have programmable controllers for managing building energy use
- We will reduce own wasted energy thru energy audits

#### **Wake County Sustainability Task Force participants provided the following answers to the question: What will be different about our energy sources and consumption in a sustainable Wake Co?**

- Smart appliances
- Smart meters

- Less cost for home owner
- LED lighting for ball fields parking lots streets
- Much lower consumption because of using energy efficient public transport

#### **Alternate views:**

- Consumption: Demand will go up dramatically. Efficiency must increase
- Increased consumption due to growth and technology

Society will change its thinking concerning energy

- Energy will be considered as an initial filter when decisions are made about how the county grows and operates
- People will take personal responsibility for conserving energy (sustainability)
- Need to collaborate with other counties to make difference
- More productive communities
- Community & individual engagement
- When people think about energy they will think also about how it connects to other resources
- All our food is locally grown-so we reduce the number of miles it travels
- Drying cloths outside will be new status symbol
- Move towards paying for services instead of things
- Less emission of pollution
- Chemicals reduced in water

## **Water Vision Statements**

**Wake County Sustainability Task Force participants provided the following answers to the question: How will we benefit from sustainable water resources?**

Editor's comments: Numbers in parentheses indicate the number of duplicate or extremely similar comments made. The headings are editor's best attempt to draft vision statements reflecting the participants' ideas of benefits (and assume participants WANT these benefits from sustainability).

Clean water is ensured for future generations.

- Negative benefits: momentous to conserve more sustainability is in place
- Not overusing available water resources protects future supplies
- Ensure water for future generations (5)

- Decrease in water quality issues from runoff
- Clean, healthy, drinking water for all citizens (6)
- Improved water quality and natural resources for better health and for quality of life for all humans

**Ideas for “HOW” to ensure clean water include (some “how” comments were duplicated by editor & placed in multiple categories since they were not indicated for a particular benefit)**

- Continue methods to reduce consumption for commercial use
- Innovation for better appliances and fixtures: washing machines, faucets, shower heads, toilets
- We should consume less water do to more efficient water using products
- Water consumed will be charged using an aggressive water pricing structure
- Efficient use by commercial manufacture sector
- Focus more on efforts on monitoring and enforcement
- Improving drinking water and increasing the capacity at falls lake
- More environmentally friendly growth

**Costs of drinking water treatment, purchasing water for use, and developing new sources are predictable and affordable for all.**

- Predictable cost
- Continued growth down infrastructure cost
- Down fewer new supplies needed
- Cost efficient for citizens
- Reduced costs for essential resources
- Save cost if have sustainable H2O resources
- Decrease the amount of energy used to pump water if we were more sustainable
- Be able to spend resources on other things that we don't have to spend on purchasing water

**Wake County Sustainability Task Force participants provided the following answers to the question: How will we benefit from sustainable water resources?**

- Maintain affordable water rates for businesses and citizens (2)
- Clean water at a reasonable cost (2)
- Water utility bills will cost less per gallon

- 
- Reducing pollution of water reduces cost of water treatment (2)
  - Save money taxpayer local government infrastructure cost
  - Will protect quality of life for diverse economic groups by maintaining affordability of water
  - Lowers cost for energy/pumping
  - Reduced cost of wastewater treatment
  - Reduced drinking water cost
  - Spend less money developing new water sources
  - Less money will be spent to remove junk from our waste water
  - Less costly water
  - Save money on treatment facilities
  - Lower cost of drinking water because treatment plants won't need to be expanded as much
  - Less demand for new water treatment plants
  - Save money more for other things
  - We will have enough water at an affordable cost with limited rationing To promote growth and support future generations
  - Efficient use of water is also energy efficient

**Clean, abundant water attracts businesses and supports economic growth.**

- allows continued economic growth (16 similar comments, including terms like growing vibrant economy, and thriving economic development)
- increased ability to attract businesses and tourism to county (8)
- food sources produced in the water will thrive
- lower water cost to attract economic development
- Can continue economic growth during times of severe drought. Also existing businesses will be less impacted such as car washes and landscaping
- more money
- Local agriculture will be in more competitive position

**People understand ecological connections and value water resources**

- Listen to water resources testing info and implement needed changes
- No more scary droughts because people will value water

- Wake, Durham, Chatham, orange, will know how much water we each value

**Wake County Sustainability Task Force participants provided the following answers to the question: How will we benefit from sustainable water resources?**

- Know the quality of water
- People value water like air
- People know what they use and the impact
- Better connection and understanding of our environment

**Local governments and other organizations successfully work together on sustaining water resources**

- Wake, Durham, Chatham, orange, will know how much water we each value
- Examine ways to better utilize Soil and Water Conservation Districts and their programs
- Less regional tension over scarce resources
- Better intergovernmental relationships
- Sustains coastal communities

**Demand for potable water is reduced**

- Reclaimed Wake usage cuts cost and demands
- Water re use will reduce demand for potable water and reduced demand will save money or production capacity

**Ideas for “How” to reduce demand for potable water included:**

- Use more grey water on irrigation, toilets, car washes
- Better use of recyclable water
- Could reduce storm water runoff through use and reuse of water
- Reuse water for business operations, cooling systems, etc.
- Finding ways to use grey water: irrigation, flushing, toilets, etc.
- Focus more on efforts on monitoring and enforcement
- More environmentally friendly growth

**Sources of groundwater for rural citizens are clean and plentiful.**

- Groundwater will be clean and plentiful for rural non water and sewer areas
- Groundwater resources are no depleted
- Protect quality of groundwater’s

---

**Ideas for “HOW” to provide clean and plentiful sources of groundwater**

- Identify deltas protect groundwater's recharge areas

**Wake County Sustainability Task Force participants provided the following answers to the question: How will we benefit from sustainable water resources?****Citizens' health is supported by clean water.**

- Health of the population is directly related to good water source
- Healthy ability to provide clean water to residents
- Healthier citizens and lower health costs (3)
- Healthier citizens (11)
- Sustain our lives
- Healthier air and population
- Healthier human condition

**Safe, clean and beautiful water resources support recreation and tourism**

- More recreational opportunities (4)
- Our kids can safely play in the shores
- Be healthier through water recreation
- We will enjoy our natural resources and parks
- Sustains local fishing
- A place to cool off
- The county will have more beautiful scenery
- Active, productive, recreational benefits for all
- Safe clean places to swim and play (2)
- Quality of life and tourism will flourish due to the better fishing
- water based recreation to promote tourism and growth and improved quality of life
- Maintain quality of our rivers, lakes, oceans, for personal enjoyment in the natural world
- More water in stream for recreation, ecosystems, and aesthetics
- There will still be places for me to go kayaking and other water sports
- Maintain healthy surface water systems
- Kids will get to experience playing in healthy streams

- Cleaner, safer
- There will be pretty blue lakes and ponds everywhere
- Great places to fish, see wild life, healthy animals

**Ideas for “HOW” to protect/provide water resources for recreation**

- Would help to reduce streams contamination from run off
- Focus more on efforts on monitoring and enforcement
- More environmentally friendly growth

**Wake County Sustainability Task Force participants provided the following answers to the question: How will we benefit from sustainable water resources?****Water supply is secure from extreme weather conditions & supports drinking, farming, business uses.**

- Less drought and more water for consumption (3)
- Mitigation of extreme weather events and other circumstances
- Less concern about drought
- Decreased droughts and affects on agriculture and business population
- We won't have crises during droughts
- Drought proof
- We won't have to fight so much over water
- There will be no need for drought stages for water use
- Security from extreme weather conditions (2)
- Less water issues
- Better management across the board for all communities so downstream issues
- Families will have enough water to use
- Secure supply (2)
- Ensures adequate supplies
- Water used for a number of different things
- Long term use and address the growing population in wake county
- Active water as available for storage
- Water equals farming efficient

- More water!
- Irrigation of food crops
- Meet daily needs
- Increased available capacity
- Adequate drinking water to support our community
- Reduce the number of times that water alerts are issued and don't water lawns, cars, take long showers
- Less portable water use for not potable purposes
- a greater supply of clean water
- we won't run out of drinking water
- perhaps less fluctuations in reservoirs which might be beneficial to aquatic life
- there will not be a need for drought stages for water use
- Less conservation required in homes
- More water that can be allocated to other demands (commercial)

**Ideas for HOW to provide water supply**

- commercial customers 20 percent reduction in water use in 2015
- Irrigation is limited or restricted

**Wake County Sustainability Task Force participants provided the following answers to the question: How will we benefit from sustainable water resources?**

- Use less through construction methods
- Use more drought tolerant plants that don't put a demand on potable water lines
- better accounting of use
- Focus more on efforts on monitoring and enforcement

**Water resources support balanced ecosystems and wildlife habitats.**

- Balanced ecosystem (2)
- Wildlife habitats are healthy and productive (5)
- Increased focus on endangered habitats of species
- We will restore biodiversity for our rivers, lakes and streams
- Wildlife in abundance

- We will see rare salamanders in our neighborhood creek
- Our existing water sources will stay healthier and support more wildlife
- Protection of natural environments and less run off
- Ponds, lakes, and creeks will be clear and blue
- Clean water through our the county for fish and other creatures
- Preserve wildlife, forest and fish
- Safe and affordable water will sustain all our living creatures
- Preserve the beauty of our natural surroundings and support wild life and fishing
- Improved natural environment equals less negative impact
- Habitat will be preserved and created
- Nature at its best

#### **Ideas for HOW to protect/provide water resources for wildlife habitat**

- Would help to reduce streams contamination fro run off
- Focus more on efforts on monitoring and enforcement

#### **Property values and personal choices are improved**

- Individuals will be free to select where and how they want to live
- Value of our houses
- Property values maintained- increased
- No where flooding anywhere in wake county

#### **MISCELLANEOUS comments:**

- Better quality of life

#### **Wake County Sustainability Task Force participants provided the following answers to the question: How will we benefit from sustainable water resources?**

- Use of systems locally that prevent movement of water through transportation
- Facilitates generation of electricity
- Cost down, supply up, quality up, business opportunities up, health risk down, recreation options up, economic growth up

## **Waste Vision Statements**

#### **Wake County Sustainability Task Force participants provided the following answers to the**

**question: What does sustainable waste management mean to you?**

Editor's comments: Numbers in parentheses indicate the number of duplicate or extremely similar comments made. The headings are editor's best attempt to draft vision statements reflecting the participants' ideas (and assume participants WANT sustainable waste management).

**Better landfill design management and remediation creates valuable community assets**

- Better landfill design and management (2)
- Landfills, once closed, can become valuable community assets instead of wastelands (7)

**Ideas for "HOW" to ensure better landfill design and management include:**

- Minimal landfill costs and land usage for landfills
- Have plans to address future waste disposal needs
- Reduced dependency on landfills
- More (smaller, disbursed?) landfills
- New and innovative uses for methane gas generated in landfills (2)
- Equity and justice in disposal (2)
- No expansion of landfill sites in Wake County (9)
- We'll handle all Wake County's trash in Wake County (3)

**Fuel and energy sources are produced and available locally.**

- No bad environmental effects
- Better security

**Ideas for "HOW" to localize fuel and energy production include:**

- Create new and innovative ways to convert waste to energy, fertilizer and mulch products (17)
- Thermal reuse
- Landfills for alternate sources for fuel (methane)

**Enhance the product lifecycle through Cradle-to-Grave product manufacturing.**

- Waste product of one process equals food/input for another process
- Waste from one person or company is the raw material for another
- Cradle to grave accountability of waste stream

**Wake County Sustainability Task Force participants provided the following answers to the**

**question: What does sustainable waste management mean to you?**

- Cradle to grave managements
- Full life cycle of products

**Ideas for “HOW” to enhance the product lifecycle include:**

- Development of materials which can be reused again and again in a different form
- Looking at the entire supply chain of a product
- Facilitating R&D such that products are produced in a manner yielding 0 waste
- Closed loop systems

**Enhance accessible and ubiquitous recycling and re-use programs.**

- More recycled products to conserve natural resources and reduce pollution (11)
- Sustainable economic growth
- New business opportunities / profitable recycling program (3)
- Garbage in = product out

**Ideas for “HOW” to enhance recycle and re-use programs include:**

- Simple mechanisms for mixed (including hazardous) recyclable collection (10)
- (Emulate?) Seattle's recycling program
- All products contain 50% more of recycled material
- No more plastic or paper bags given out at grocery stores (2)
- Recycled 90% more of all material
- Innovative ways to re-use waste materials with fewer disposable, 1-use items (12)
- Governments, institutions and businesses will be purchasing recycled products whenever possible – FIRST
- Higher percent of recycle going into landfills (4)
- Environmentally friendly product packaging
- Recycling the majority of our waste at all levels- commercial and residential (5)
- Recyclable containers in all businesses and public places (3)
- Consolidation and clean rules for recycling and waste disposal (2)
- New ways to recycle and reuse products, Turning waste into product (8)
- No trash collection, 100 percent reuse, recycle and compost

- Increase use, requirements, availability of compostable and biodegradable products (14)
- Provide emergency programs
- Economically-efficient recycling (6)
- Financial incentives (Pay as You Throw) for smarter ways to dispose of waste (7)

**Educational initiatives will increase waste management awareness.**

**Wake County Sustainability Task Force participants provided the following answers to the question: What does sustainable waste management mean to you?**

- Public education on waste reduction
- Encouraging re-use
- Teaching it's easy and convenient to do the right thing
- Provide education about ways to reduce waste
- Increased focus on recycling and reducing waste
- Awareness for recycling of waste amount and materials that don't get common collection platforms
- Recycling bins located everywhere (2)
- Improved recycling participation
- It will be unthinkable to throw away an aluminum can
- Increased infrastructure efforts to reduce waste
- Education in schools
- More education/awareness to reduce waste stream

**Reduce demand for potable water by increasing our use of grey water.**

- Gray water recapture for landscape
- Assures a source of clean water in sufficient quantity for homes and industries
- Be able to convert living waste into potable water
- Better ways to manage car washes

**Reduce the need for landfills by producing less waste.**

**Ideas for "HOW" to produce less waste include:**

- Creative packaging changes could reduce product costs as well as waste (7)
- Minimize consumption

- 
- More recycling (2)
  - Reduce need for landfills by reducing solid waste to throw away at home (5)
  - Produce Bio-friendly products (3)
  - No more water bottles – use tap
  - Buying local
  - We will produce less waste and use landfill space less quickly
  - Less trash bags
  - Reduced waste to dispose or treat
  - Make better choices when purchasing anything
  - Prevent waste from occurring
  - No Litter (3)
  - Any waste we discard is biodegradable (5)

**Wake County Sustainability Task Force participants provided the following answers to the question: What does sustainable waste management mean to you?**

- Better use of our waste and recycle

**Working smarter in the disposal of waste can create a cleaner, healthier environment through technological innovation.**

**Ideas for “HOW” to ensure a cleaner, healthier environment include:**

- Increase crops that take up excess soil nutrients
- Use of technology innovation in the disposal of waste
- Cleaner/healthier environment and water – less visual clutter and healthier animals and birds (3)
- Job- and smarts-intensive, not energy intensive (work smart not hard)

# Wake County Sustainability Annual Report 2010

Wake County Government has established the Wake Sustainability Committee (WSC) of interested and informed County employees to serve as a guiding force behind opportunities for sustainability to be initiated within the County organization. The WSC is designed as a permanent entity, structured in such a way as to ensure Wake County's ongoing commitment to sustainability. The WSC not only continues the work of the Environmental Stewardship Committee but works toward updating and enhancing this agenda to incorporate strategies for sustainable initiatives, with a particular focus on energy, solid waste and water. Areas of study emphasis are reviewed each year by the WSC to ensure that they respond to the goals established by the Board of Commissioners for the coming year.

The items below represent highlights from the group's 2010 annual report:

## **GOAL: ASSIST IN DEFINING WAKE COUNTY'S GUIDING PRINCIPLES ON SUSTAINABILITY AS IT RELATES TO WATER, WASTE AND ENERGY**

### **Work Completed**

- Coordinated efforts and supported the Sustainability Task Force in providing requested information.
- Researched many municipal sustainability plans and supplemented a summary spreadsheet of goals collected from the plans. Reviewed the list and incorporated some goals specifically for the WSC. Other goals were considered items for possible inclusion in Wake County's overall guiding principles on sustainability.

### **Future Work**

- Continue to coordinate with the Sustainability Task Force and provide support for establishing the County's sustainability goals for Energy, Water and Waste.
- Continue to research sustainability efforts of municipalities similar in size or structure to Wake County to assess their appropriateness for inclusion in the list of WSC goals and County goals.

## **GOAL: COMPILE A COMPREHENSIVE SET OF RESOURCES AND INFORMATION ON EXISTING SUSTAINABILITY PROGRAMS AND PRACTICES WITHIN WAKE COUNTY**

### **Work Completed**

- WSC members conducted an informal survey of sustainable practices within their

departments.

- Invited representatives from various County departments to present information on County-wide sustainability initiatives.
- Provided/shared success stories from individual departments for reducing costs, saving energy and reducing waste.
- Compiled a list of existing Wake County sustainability practices.

#### **Future Work**

- Continue to solicit employee input on existing and new sustainable practices within the departments. Improve the mechanism to share this information in various formats so County departments may learn from each other's efforts.
- Continue to invite County staff and external experts to provide information to the WSC on sustainability issues and to answer questions.
- Continue to develop and publicize individual and department success stories for energy, water and waste reduction.
- Continue to coordinate and develop a collection of information on County sustainability practices.

## **GOAL: DEVELOP MODEL PROJECTS TO TEST SPECIFIC GOALS AND MEASUREMENTS**

#### **Work Completed**

Five buildings have been identified as potential model projects to test goals established to reduce energy, waste and water. These include:

- Community Services Center
- Eva Perry Library
- Homeless Shelter
- Sunnybrook Human Services Building
- Northern Regional Center

#### **Future Work**

Based on the results and understanding of the assessment process, additional County buildings will be selected for assessment through discussions with WSC, General Services Administration (GSA) and Waste Reduction Partners (WRP), and new projects will be established.

## **GOAL: CONDUCT ASSESSMENTS AND ESTABLISH BASELINES FOR GOALS TOWARD REDUCTION OF WATER, WASTE AND ENERGY FOR THE MODEL PROJECTS**

### Work Completed

- Based on the five buildings established as model projects, WSC, the County team and WRP have completed the on-site detailed assessment for the Community Services Center and provided a final recommendation report. The energy and water assessment reports with specific recommendations are provided in the Community Services Center Assessment Report.
- The WSC, in conjunction with GSA and WRP, has established a building assessment process for gathering critical building data, and is organizing a team to conduct future building assessments that specifically focus on energy, waste and water use.

### Future Work

- WSC, GSA and WRP will complete the assessments on the remaining four facilities and provide recommendations for cost-saving measures by summer 2011. This will establish the baselines and goals for these additional facilities. WCS, in conjunction with GSA will develop a plan of action to follow up with the recommendations and implementation schedule for each building.
- A County assessment team consisting of WSC members, GSA staff and facility managers will continue to assess County facilities over time and will make recommendations for energy and water conservation and waste reduction. WRP will train the County team in their analysis techniques to allow the County to interpret the data collected during ongoing building assessments.

## GOAL: DEVELOP A SCORECARD FORMAT/MEASUREMENT TOOL FOR TRACKING AND MONITORING PROGRESS TOWARD ESTABLISHED GOALS

### Work Completed

- For Model Projects: The first level of this goal was establishing the baseline information necessary for each of the model projects. This baseline data was completed for the Community Services Center. This establishes a reference point from which to measure all future improvements and accounts for the recommendations provided in the assessment report, including energy, waste and water consumption reductions, as well as realized cost savings.
- For Wake Sustainability Committee: The second level of this goal was establishing the ability to track progress of the Committee toward goals established in the approved charter, and this report provides the format for communicating this.

### Future Work

- The WSC will further refine the baseline data for measuring building improvements and will also continue to assess additional buildings in the future.
- Establishing goals and annual reporting of progress will be the standard for the WSC.

## GOAL: DEVELOP A COMMUNICATION PLAN FOR EMPLOYEES AND WAKE

## COUNTY CITIZENS

### Work Completed

- Designed and maintained an employee sustainability website at <http://we.wakegov.com/topics/green> to educate and inform Wake County employees about ways to recycle, save energy and reduce water use at work and at home.
- Established a section on Wake County's public website at <http://www.wakegov.com/green> to educate the public on what Wake County is doing related to sustainability efforts.
- Sent informational quarterly newsletters to employees educating them on sustainability committee initiatives.
- Set up an "idea share" online service where employees could submit and review ideas on ways to limit waste, save energy and reduce water.
- Designed branding for the Wake County Sustainability Committee that was incorporated into printed and presentation materials.

### Future Work

The WSC communication subcommittee is planning events such as an employee environmental challenge and an educational opportunity about reducing waste and local sustainability initiatives related to buying local foods. In partnership with the Downtown Farmers' Market, the WSC will sponsor a day for employees to learn more about environmental topics and local sustainability efforts.

## GOAL: DEVELOP EDUCATIONAL OUTREACH OPPORTUNITIES

### Work Completed

- The Committee held an event on Earth Day, April 22, 2010, at the Swinburne Human Services Building and conducted a brief survey regarding suggestions for future programs and opportunities.
- As indicated in the communication plan, the WSC provided a series of Insights articles and County-wide emails to employees throughout the year.
- The Committee created a Wake Sustainability website, allowing all employees to access accumulated information regarding reduction of energy, water and waste, among other topics. In addition, the WSC created a sustainable ideas comment page on the website to allow any employee to share ideas and to make suggestions on improving operations or processes to reduce energy, water and waste.

### Future Work

- The WSC will continue to use emails, Insights articles, and the website and Sustainable Ideas submissions for providing information as well as receiving suggestions.
- The Committee will also coordinate department informational sessions for sharing what

the committee does, where to find educational information and for soliciting feedback.

## **GOAL: DEVELOP COUNTY-WIDE/DEPARTMENTAL SUSTAINABILITY INITIATIVES**

### **Work Completed**

- Completed a web-based recycling survey within the County to gain feedback on the county recycling program.
- Encouraged County-wide participation in the Power-IT Down program.
- Initiated the development of green purchasing guidelines.

### **Future Work**

- Coordinate recycling activities with GSA based on input received from the recycling survey and the continuous input of the Sustainable Ideas website.
- Provide support to GSA for additional opportunities to communicate and educate about the benefits of recycling.
- Expand the Power-IT Down concept from a once-a-year activity to a regular, ongoing activity, so energy savings benefits can be increased.
- Develop a measurement/estimate tool to provide information on the specific energy and cost savings that can be realized when turning off computers and printers.
- Coordinate these efforts with IS and new programs being investigated for monitoring and controlling computer power usage.
- Further develop the process of creating purchasing guidelines so opportunities for green purchasing that make economic sense can be available for all departments.

## **GOAL: RESEARCH OPPORTUNITIES FOR GRANTS THAT PERTAIN TO SUSTAINABILITY GOALS AND PROGRAMS. APPLY FOR GRANTS AS APPROPRIATE.**

### **Work Completed**

- Periodically reviewed grant postings of government and private organizations for those applicable to the Committee's goals.
- Compiled a list of grant opportunities for future consideration.
- Compiled pertinent information for grant-writing purposes.

### **Future Work**

The WSC will continue to monitor grant opportunities and coordinate efforts to apply for grants that will fit into the goals established by Wake County and the Wake Sustainability Committee.

## **GOAL: DEVELOP A PROCESS/PROGRAM FOR CONTINUOUS REVIEW OF**

---

## COUNTY ACTIVITIES AND PROGRAMS TO ENSURE THAT THE COUNTY IS ACHIEVING THE BEST ENVIRONMENTAL PRACTICES IN GOVERNMENT OPERATIONS

### Work Completed

- The WSC provides an annual report summary to sponsors and senior management; the first annual report was submitted in the spring of 2011.
- Created a framework for reviewing and re-establishing goals on an annual basis to coordinate with the Board of County Commissioners (BOCC) goals and the Sustainability Task Force goals.

### Future Work

- Continue to provide an annual summary report on the work of the WSC.
- Further develop more detailed measuring and reporting of improvements and cost savings.
- Continue to coordinate BOCC and County goals with the WSC charter goals.
- Develop and train internal assessment teams for future assessments of County facilities.

---

## **The Wake County Environmental Sustainability Task Force Report: Clarification and Critique By Task Force Member Dr. Michael Sanera September 27, 2011**

### **Background**

In late 2009, the Wake County Commissioners appointed a 55-member citizens' task force to revise the county's Environmental Stewardship Agenda by incorporating "strategies for sustainability and 'green' initiatives."

The Wake County Environmental Sustainability Task Force met monthly for 18 months from January 2010 to June 2011. The task force focused on three areas: water resources conservation and management, solid waste reduction and management, and energy conservation and management.<sup>1</sup>

The county hired facilitators from the NC State University's Watershed Education for Communities and Officials program to oversee the process and help task force members work toward consensus decisions.<sup>2</sup>

This critique is limited to a discussion of the final task force recommendations. They were the only part of the report that was discussed fully and voted on by task force members.

Other than some of the data presented in the background sections of the task force report (September 23, 2011), task force members neither discussed nor approved the introductory section nor the background sections for water, energy, and solid waste. What is worse, the "performance measures" that follow each list of recommendations were also not presented to nor discussed by task force members.

It is therefore dishonest to state on the cover of this report that it was "Prepared by Wake County Sustainability Task Force." *All of the sections not considered by nor voted on by the task force members at their regularly scheduled meetings must be removed from the report or attached as an appendix and clearly marked as input from the staff.* To do otherwise is to perpetrate a dishonest representation of the 18 months' of task force work, mislead the Wake County commissioners, and mislead the public as well.

---

<sup>1</sup> Wake County Environmental Sustainability Task Force (WCESTF), "Scope and Process," [http://www.ces.ncsu.edu/depts/agecon/WECO/wake/documents/taskforce\\_scope-process.pdf](http://www.ces.ncsu.edu/depts/agecon/WECO/wake/documents/taskforce_scope-process.pdf).

<sup>2</sup> WCESTF, "Staff Team," [http://www.ces.ncsu.edu/depts/agecon/WECO/wake/documents/staff\\_team.pdf](http://www.ces.ncsu.edu/depts/agecon/WECO/wake/documents/staff_team.pdf).

## I. The Task Force Process: Flawed from the Start

Task force members received a “Scope and Process” document that outlined the objectives, timeline, and meeting process. The process was a “consensus-based decision making process rather than majority voting process.” In other words, facilitators assisted members in reaching consensus, and when that could not be accomplished, disagreements were to be noted in the task force reports and the facilitators did a commendable job within the constraints of this flawed process.

While this consensus process is quite common at all levels of government, it is not without problems. Typically, proponents of a recommendation are not asked to provide supporting scientific or economic data to support the viability of their recommendation. The recommendation is assumed to be the consensus of the task force unless a member objects. The member who objects is then asked to explain the reasons for his objection. This process is effective at reaching consensus, but it is not an effective way to evaluate effectiveness or efficiency of recommendations. It often leads to the well-documented phenomenon of “groupthink.”<sup>3</sup> The process used by the facilitators inevitably produces groupthink because, in one description:

“It is the mode of thinking that happens when the desire for harmony in a decision-making group overrides a realistic appraisal of alternatives. Group members try to minimize conflict and reach a consensus decision without critical evaluation of alternative ideas or viewpoints.”<sup>4</sup>

### Task force membership

Task force members were not selected on the basis of scientific or economic expertise. On the contrary, the members were selected because they represented special-interest groups or governmental interests that might be affected by the recommendations. In fact, no resource economists were on the task force nor were any resource economists at hand to act as support staff. Additionally, the task force process did not include a procedure to evaluate recommendations for their scientific or economic validity or effectiveness.<sup>5</sup>

Those seem to be fundamental flaws in the process since the task force was charged with making recommendations on three issues concerning natural resources: water and energy resources and solid waste disposal. Thus task force members were without a mechanism

<sup>3</sup> Irving Janis, *Victims of Groupthink*, Boston: Houghton Mifflin, 1972.

<sup>4</sup> Here is Janis’ definition of groupthink from his 1971 *Psychology Today* article, “Groupthink”: “The more amiability and esprit de corps there is among the members of a policy-making in-group, the greater the danger that independent critical thinking will be replaced by groupthink, which is likely to result in irrational and dehumanizing actions against out-groups.” Janis analyzed President John F. Kennedy’s decision to invade Cuba at the Bay of Pigs to develop his theory. See <http://en.wikipedia.org/wiki/Groupthink>.

<sup>5</sup> WCESTF, “Task Force Membership,” <http://www.ces.ncsu.edu/depts/agecon/WECO/wake/documents/roster.pdf>.

to check their recommendations for economic or scientific validity, unintended consequences, or costs and benefits of various options.<sup>6</sup>

### **Most speakers represented special-interest groups or governmental interests**

The task force did hear from a series of speakers.<sup>7</sup> Unfortunately, nearly all of these speakers represented either private special interests or governmental interests. For example, the solid waste and recycling information presented on March 18, 2010, did not include any total cost data so that members could determine the landfill vs. recycling costs.<sup>8</sup>

It was only after the urging of several members of the task force that an energy panel discussion with divergent views was presented at the November 2010 meeting, nearly a year into the process. An alternative economic point of view delivered by a qualified resource economist<sup>9</sup> was not presented to the members until more than a year into the process.

### **Definitions matter**

As a further illustration of the lack of concern for economic or scientific rigor, the task force members did not have a common definition of sustainability. In other words, each member was free to apply his or her own sustainability definition to the issues being discussed. This lack of a common definition led to many unproductive discussions. It was rectified late in the process when the task force members were asked to arrive at a consensus on a definition of sustainability. After much discussion, the task force adopted this definition:

“Sustainability is utilizing practices that protect the economic, environmental, and social qualities of life for current and future generations.”

This definition relies on the most common definition used in the field, first put forth in 1987 in the UN report *Our Common Future*:

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”<sup>10</sup>

<sup>6</sup> The task force did hear from economists late in the process, but those presentations provided only general principles, not evaluations of specific recommendations or alternatives.

<sup>7</sup> The list of presentations are given on the bottom right-hand side of the task force web site,

<http://www.ces.ncsu.edu/depts/agecon/WECO/wake>.

<sup>8</sup> The members did receive landfill tipping fee data and the amounts that contract providers charge various Wake County cities to pick up residential solid waste.

<sup>9</sup> Dr. Richard Stroup, North Carolina State University adjunct professor and former professor of economics and department chair at Montana State University.

<sup>10</sup> United Nations World Commission on Environment and Development, *Our Common Future* (1987), Oxford: Oxford University Press, 1987.

Unfortunately, neither of those definitions conforms to the basic principles of resource economics. Both imply using governmental power to force people to save resources now because some “experts” think they might be useful for future generations. Such a proposition is economic nonsense and violates the basic principles of a free society and a free economy.

Even the most knowledgeable scientific experts in the 1930s could not have comprehended then that, in a few decades, copper telephone wires would have become less necessary because fiber optics (using ordinary sand) and satellites would carry much of our telecommunications. So had there been a government-enforced sustainability policy in the 1930s that required people to save copper for future generations, it would have wasted important resources and stifled technological innovation. In the same way, it is an absurdity to base sustainability policy on a definition that does not understand fundamental facts of resource economics. As economist Dr. Roy Cordato concludes:

*“The reality is that there is **no empirical or historical evidence** that any generation has been less prosperous than previous generations as a result of overuse of resources by previous generations. In fact, the evidence is exactly the opposite. It is the resource usage of previous generations, and the capital formation that it generated, that gives generations to follow opportunities for prosperity that they would not have otherwise had.”<sup>11</sup> (Emphasis added.)*

### **Why was this biased process used?**

If the process was not geared toward developing economically or scientifically tested and sound policy recommendations, why was the consensus process used, and what was it designed to produce?

The reason this process was used, and why it is popular at all levels of government, is that it normally creates a politically acceptable outcome. This process did not rely on environmental science, natural resource economics, or scientific or economic data related to the issues of water, energy, or solid waste. With a few rare exceptions explained in detail below, little or no attempt was made by facilitators to bring in independent sources of scientific or economic information. No scientists or economists with expertise in the areas were selected to be task force members.

The first indication of the political goal of the task force process was the selection of the task force members.<sup>12</sup> A wide variety of political interest groups were represented. Cities, environmental groups, agencies, etc. all represent political interests in Wake County. These are often referred to as “stakeholders.” As this commentary argues, it is impossible

<sup>11</sup> Dr. Roy Cordato, *Sustainable Growth: Principles and Policies*, Nathaniel Macon Research Series No. 3, John Locke Foundation, May 2008, p. 23-24,

<http://www.johnlocke.org/research/show/policy%20reports/170>.

<sup>12</sup> WCESTF, “Task Force Membership,”

<http://www.ces.ncsu.edu/depts/agecon/WECO/wake/documents/roster.pdf>.

to get all of the people or groups represented, so the policy recommendations produced by the typical “stakeholder” process often pass costs on to unrepresented individuals and groups who have no say in the process.<sup>13</sup> For example, recommendations' changes in the building code and the land use “incentives” offered to home builders would likely drive up the cost of housing for future Wake County residents who cannot be represented directly because no one knows who they are.

## II. Principles of Resource Economics

The issues addressed by the task force—water, energy and solid waste—are fundamentally related to resource economics. This section of the report shows that by relying on interest-group representatives instead of qualified resource economists, the task force produced a *hodgepodge of conflicting, confusing, and counterproductive recommendations*.

The following discussion only hints at the potential economic problems contained in the recommendations developed by the task force. It is by no means a complete list of problems. County commissioners' decisions to implement any of the task force's recommendations must be based on evaluations by qualified economists.

Economics is about scarcity, and economists evaluate various institutional arrangements to determine which arrangements use resources most efficiently. Resources include not only natural resources such as the ones reviewed by the task force—water, energy and landfill space—but labor that goes into any production process and capital that is necessary for buildings and equipment. (I will summarize these three resources by using the terms land, labor, and capital.) Simply put, institutionalized market economies use these three resources more efficiently than government ownership of production. The Soviet Union’s economic system failed because the communist government owned and allocated resources based on what the Communist Party leadership wanted, not what consumers wanted. This system of government ownership produced not only a declining standard of living, but also an actual decline in the life expectancy of its citizens.

**Principle #1: Efficiency.** To the non-economist, efficiency is usually defined as the most output for the least input—“more bang for the buck.” But economists use a broader definition: “The measure of how well an allocation system satisfies people’s wants and needs.”<sup>14</sup> In other words, competitive free markets are considered the most efficient allocation system because they not only produce more goods at lower costs, but the goods produced are what people want. The Soviet Union produced lots of tanks, guns, and missiles because that is what the Communist Party leaders wanted. Even though the people wanted toasters, cars, and televisions, few were produced because political

<sup>13</sup> Michael Sanera, “The Most Important Stakeholders Often Have No Say” *Carolina Journal Online*, January 7, 2011, [http://www.carolinajournal.com/articles/display\\_story.html?id=7240](http://www.carolinajournal.com/articles/display_story.html?id=7240).

<sup>14</sup> William Boyes and Michael Melvin, *Fundamentals of Economics*, Second Edition, New York: Houghton Mifflin, 2003, p. 354.

decision makers, not consumers, controlled the country's resources—land, labor, and capital.

Therefore, inherent in some of the task force's recommendations are two fundamental economic mistakes. First, many of the recommendations claim to focus on efficiency, but that focus is only on one resource; e.g., increasing energy efficiency. These recommendations ignore what could be wasteful expenditures of other resources—such as labor and capital—in order to achieve increased energy efficiency. When that happens, the overall result is actually inefficient.

The second mistake is that many of the recommendations are based on decisions by political and bureaucratic elites, not consumers. Providing a taxpayer subsidy for consumers to buy an energy-efficient refrigerator is a clear sign that the consumer, left to his own decision, might opt for another item. The elite decide they must prevent the consumer from making this purchasing “mistake” by offering him a taxpayer subsidy.

The task force report defines “energy efficiency” as: “Energy efficiency involves technology that produces the same end product while using less energy.” The definition takes only one of the major resources into account. It ignores labor and capital. The definition also provides this example: an air conditioner that produces the same amount of cool air while using less energy.<sup>15</sup> But it is foolish to consider only the energy side of the equation. Consider: would any rational person buy a 9,000-BTU window air conditioner costing \$30,000 even if it used less energy? The high price—which is a measure of the value of *all the resources* that go into producing an item—indicates that lots of other valuable resources were used to make this “energy efficient” air conditioner.

To make matters worse, government subsidies sometimes encourage people to buy “energy efficient” items that waste not only productive resources, but taxes, which are taken out of the private sector where they would have been used in more productive ways (see section on government subsidies below).

The task force's Energy Strategies #1 and #6 recommend building buildings based on energy-efficient designs. Building or retrofitting buildings to save energy is a laudable goal, but if the new design requires higher cost materials and more construction labor, the new building may be energy efficient, but the total use of resources may make it inefficient and wasteful of resources. Thus it would not be sustainable.

Similar problems exist in the solid waste recommendations. Throughout the entire discussion of solid waste, the economic literature on landfill vs. recycling was ignored. Instead, the task force established Waste Strategy #1, which is intended to extend the life of the South Wake Landfill; i.e., find other ways to dispose of trash so that the landfill would fill up later rather than sooner. This goal assumes, without any economic evidence, that alternative waste disposal costs—for example, recycling—are less than continuing to

---

<sup>15</sup> WCESTF, “Environmental Stewardship Agenda,” September 23, 2011, p. 15, [http://www.ces.ncsu.edu/depts/agecon/WECO/wake/documents/STF\\_Report\\_Draft\\_09.23.2011.pdf](http://www.ces.ncsu.edu/depts/agecon/WECO/wake/documents/STF_Report_Draft_09.23.2011.pdf).

use the landfill. Thus without any economic data, the recommendations call for diversion of high volume materials, diverting food waste, converting waste cooking oil to biofuel, and establish construction and demolition waste. Actually, the task force was presented with economic evidence that some types of recycling are not sustainable because they waste resources.<sup>16</sup> Of course, this evidence was ignored in favor of the ruling recycling dogma.

While the task force recommendations call for waste characterizations studies, pilot studies, etc., they do not require true economic analysis of the costs of those programs compared with the costs of using the landfill to dispose of solid wastes.

In fact, extending the life of the landfill has nothing to do with the sustainable use of resources. Extending the life of the landfill is a political goal created by a mix of environmental special-interest groups and Not-In-My-Back-Yard (NIMBY) political pressure on elected officials.

The NIMBY problem stems from the fact that landfills impose uncompensated costs (noise, increased road traffic, smells, lower land values, etc.) on nearby landowners. If those costs were compensated by lower property taxes, for example, much of the NIMBY factor would dissipate.

To have truly sustainable solid waste disposal, commissioners should focus on using environmentally safe methods at the lowest possible cost.

**Principle #2: The Price Mechanism.** Generally speaking, in market economies, scarce resources—land, labor, and capital—are efficiently allocated using the price mechanism. Economists define the price mechanism as the system used by buyers and sellers to voluntarily determine a mutually agreeable price where both buyer and seller expect to gain from the voluntary exchange.

Simply put, if the supply of a resource becomes scarcer, the corresponding price increase signals entrepreneurs to produce more supply and consumers to conserve or look for substitutes.

The sustainability task force was charged with developing recommendations for two resources, energy and water.

Concerning water, government water pricing systems are set by a political dynamic, not the price mechanism. Historically, elected officials who wanted to please voters have set

---

<sup>16</sup> Michael Munger, “Think Globally, Act Irrationally: Recycling,” Library of Economics and Liberty, July 2, 2007, <http://www.econlib.org/library/Columns/y2007/Mungerrecycling.html>; Daniel K. Benjamin, “Eight Great Myths of Recycling” Property and Environment Research Center, PERC Policy Series: PS-28, September 2003, <http://www.perc.org/articles/article179.php>; Daniel K. Benjamin, “Recycling Myths Revisited,” Property and Environment Research Center, PERC Policy Series: PS-47, July 2010, <http://www.perc.org/articles/article1282.php>.

water prices lower than would be expected if a market price mechanism were operating. On the other hand, current pressures from environmental interest groups have caused elected officials to price water too high. Fixed-tiered-rate systems indiscriminately punish consumers for using water. Cary's top rate is \$8.10 and Greensboro's is \$6.80 for about 750 gallons of water.<sup>17</sup> Barring a wholesale transference of a government water system to the private sector, it is impossible for a government water system to use a market-driven price mechanism.

The task force's water recommendations try to solve the dilemma presented by government bodies that determined water prices without a market price mechanism. Water Strategy #1 calls for a study of the "full benefit-cost analysis of water resource facilities and programs" leading to the development of a "dynamic water resource pricing policies." This recommendation is a step in the right direction, assuming (1) that qualified economists conduct the study, not ideological consultants or special-interest research organizations, and (2) that "dynamic pricing" means *price will change based on changes in water supply and demand*.

Unfortunately, Water Strategy #1 undermines the core principle of a dynamic pricing system based on changes in water supply and demand by specifying counterproductive goals. It states: "pricing policies that ... promote efficient use of water resource, and equitably allocate costs to individuals based upon the benefits received from, and the impacts placed on, water resource facilities and programs."

Instead of allowing consumers to use water as they choose within a price based on supply and demand, that section invites special-interest pressure on elected officials to dictate how consumers use their water. For example, it encourages such policies as tiered water pricing, outdoor water restrictions, mandatory low-flow toilets and showerheads, etc.

A dynamic water pricing system should only be concerned with adjusting the price based on the supply of and demand for water. For example, once the relative costs of the system are determined, a base price could be set. Then the price should change based on changes in supply and demand, not the political preferences of the policymakers. If total demand increases due to population growth, or if a drought condition decreases supply, then the price should increase. On the other hand, if supply increases due several years of wet weather, price should decrease. The fact that Wake County's population will increase must motivate system administrators to find more supply, not engage in mandating conservation measures often called demand-side management.<sup>18</sup>

Demand-side management policies such as mandatory conservation with fines for enforcement are the kind of "nanny state" policies that are unproductive, discriminatory, and inconsistent with the values of a free society. During the 2007 drought, Raleigh and

<sup>17</sup> Joseph Coletti, "Drought-Resistant Water: Variable prices can work better than mandatory restrictions," John Locke Foundation *Spotlight* No. 338, December 3, 2007, <http://www.johnlocke.org/research/show/spotlights/188>.

<sup>18</sup> Dr. Roy Cordato, "Demand Management: Social engineering by any other name ...", John Locke Foundation *Spotlight* No. 402, October 28, 2010, <http://www.johnlocke.org/research/show/spotlights/253>.

other Wake County cities passed restrictions on personal lawn watering and car washing and on commercial ventures such as car washes and pressure-washing businesses. These regulations and the fines to enforce them drove some places out of business and punished someone who wanted a green lawn, but at the same time it did nothing to people whose water use was less visible; e.g., people who like long showers, who water numerous houseplants or who wash their car in the back yard.

While a government pricing system based on supply and demand would be less efficient than a true free-market pricing system, it would still cause people to conserve voluntarily in ways that suit them best. It would still be better than managing consumption through arbitrary, capricious, one-size-fits-all nanny-state regulations (see more in the Regulations section below).

**Principle #3: Regulations.** Governments use regulations to influence individual behavior when actions by one party harm others. Historically, these have generally concerned specific and limited health and safety regulations. For example, speed limits, traffic lights, and so forth regulate driving behavior, making our highways safer for everyone. More recently, special-interest groups have lobbied to regulate areas unrelated to specific health or safety issues, giving rise to the nanny state. New York City’s banning trans-fat from restaurants and San Francisco’s banning of fast-food happy meals for kids are just two examples of special interests’ lobbying interests succeeding in forcing conformity to their ideologically preferred behaviors.

The task force’s water and energy recommendations call for the review of building codes. Energy Strategy #1 states that the county should “evaluate existing building codes, policies and regulations to identify limitations to, and opportunities for, the energy efficient design of building and outdoor lighting.” Water Strategy #2 contains similar language. While it is important to examine building codes in order to eliminate unnecessary or ineffective restrictions on individual actions, it appears that some task force members want to add regulations that would force people to conform to “environmentally correct” ideology. For example, Energy Strategy #1 calls for changing building codes to encourage “energy efficient design of buildings.” Given the discussion of the term “energy efficient” above, this recommendation could cause the county to pay double or triple the cost of constructing buildings in order to save a small amount on energy. Economists would call that a highly inefficient—or in task force parlance, an *unsustainable*—use of total resources to save on just one resource: energy.

The water recommendations contain similar language. Examining building codes to find opportunities for water efficiency and water conservation could lead to requiring low-flow showerheads (which were famously ridiculed in the “Seinfeld” TV episode in which Kramer and Newman sought high-flow showerheads from a black market dealer in a back alley). The county should not respond to pressure from special-interest groups to change building codes based on the latest “environmentally correct” dogma. Instead, county officials should work to use a pricing structure that allows individuals and families to determine how they will use water.

**Principle #4: Incentives.** Economists use the term “market incentives” to describe the response of individuals and firms to changes in the price mechanism or, more generally, changes in costs and benefits. For example, when a freeze hits Florida and the price of orange juice increases, apple juice firms have a market incentive to produce more apple juice and consumers have a market incentive to find a lower price substitute for higher priced orange juice. All of this activity takes place in the context of private property rights and voluntary exchanges. Market incentives promote efficient use of scarce resources and thereby lead to the sustainable use of resources.

Conversely, many government officials are largely unaware of the role market incentives play in the promoting the efficient use of scarce resources. Instead, they use government subsidies to manipulate individual choices in predetermined ways. For example, Energy Strategy #7 states, “evaluate potential incentives to promote” energy-efficient appliances and the construction, operation, and retrofit of energy-efficient buildings. In this case, using a taxpayer subsidy to get individuals to do what government officials think is “best” creates an incentive. *While a market incentive encourages efficient use of resources, a government-subsidized political incentive does the opposite.*

Taxpayer subsidies transfer money from the private sector to the public sector. When public-sector decision makers use that money for incentives to appease special-interest groups—in this case, a program that subsidizes “energy efficient” appliances—it results in inefficient use of all of the resources used in production.

For example, the high price of an energy-efficient appliance such as a washing machine or refrigerator indicates that more resources—land, labor and capital—are required in the production process. The government subsidy lowers the price to the consumer, but it does not change the fact that more resources were used in its production. Those resources could have been used in the production of other products desired by consumers. Thus the overall impact of the subsidy is to misdirect resources in wasteful, inefficient ways. That means it is an unsustainable use of resources.

A second distortion of the term “incentives” in the task force report involves recommended changes in land use regulations. Solid Waste Strategy #1 states that developers should be offered “incentives to provide recycling facilities,” which include “parking counts, housing density credits, etc.” Offering quid pro quo deals to homebuilders and other developers is an increasingly popular way for special-interest groups to get homebuilders and, by extension, home buyers to pay for their pet projects without a direct cost to taxpayers.

Here is the way the “incentive” bargaining system works: Planners with support from special-interest groups want developers to provide certain public amenities, in this case recycling facilities, at no direct cost to the taxpayers. They write planning regulations with land use standards that are unreasonably low. In this case, they set parking counts (number of minimum parking spaces for a development) and housing density (number of houses per acre) artificially low. Planners know that in order for the development to be an economic success, developers must increase those standards. Planners are more than

willing to increase those standards if the developer provides the “free” recycling facility. The fact that, for the most part, the additional cost for the “free” amenity is passed on to the buyers is no concern for the planners nor the special-interest group pressuring for the amenity. This incentive system, which resembles an extortion scheme, is specifically explained and recommended in a consultant report produced for the City of Raleigh.<sup>19</sup>

### III. The One and Only Recommendation

It is no accident that the task force did not calculate the costs of its recommendations or compare them to other, perhaps less costly, alternatives. The majority of the task force members were not concerned with costs, especially when other people would be made to pay them.

This brief analysis only hints at the systemic problems in the task force’s final report. To discuss all of its problems in detail would require a much heftier document. As the commissioners consider the Sustainability Task Force recommendations, it is imperative that they commission qualified resource economists, not sustainability consultants nor sustainability university faculty, to conduct economic analyses of the recommendations *before any of them are implemented*. It is only then that they will have the information they need to decide if a recommendation would produce economic and environmental benefits for the citizens of Wake County.

---

<sup>19</sup> Dr. Michael Sanera, “A Planners’ Glossary: Understanding Raleigh’s New Development Code, The Diagnostics & Approach Report,” John Locke Foundation *Regional Brief* No. 75, March 2010, p. 5, <http://www.johnlocke.org/research/show/policy%20reports/208>.

---

**Alternative Position Statement**  
**in Response to the Wake County Sustainability Task Force Report**  
**By Wynne Coleman**  
**on behalf of**  
**Wake County Taxpayers Association**  
**October 20, 2011**

I am a member of the Wake County Taxpayers Association. The Wake County Taxpayers Association (WCTA) is a non-partisan, non-profit, all-volunteer organization whose purpose is to monitor the use of taxes, initiate action to reduce excessive taxation, eliminate wasteful government spending, and encourage the wise and common sense use of taxes at all levels of government. <http://www.wcta.org/>

WCTA fully supports the principles of the United States Constitution and the North Carolina State Constitution. WCTA strives to preserve and defend the constitutional integrity of the local jurisdictions in Wake County.

Because I have studied the origins and development of the sustainability movement for many years, the Executive Board of the WCTA invited me to represent the Association on the Wake County Sustainability Task Force.

I was grateful for the opportunity to serve on the Task Force because, by participating, I could verify how the facilitated consensus process works to achieve sustainability goals for cities and counties. As a result, I attended all 15 Task Force meetings. I also volunteered to participate in the Water Work Group and the Energy Work Group, which met outside the regular Task Force meetings in order to refine the Task Force's recommendations. I attended all of the meetings for those two Work Groups.

As much as I valued the opportunity to serve on the Task Force, I was unable to support the views of the majority. Page 47 of the Task Force report states that the Wake County Board of Commissioners officially appointed 61 members from a broad range of public, private, and not-for-profit organizations. I noticed that, after the first few meetings, the attendance dropped off. Participants seemed to drift in and out of meetings when they could fit it into their schedules. There was a core group that attended regularly. The report states there was an average of 27 members in attendance. I found that very few of the members questioned the necessity, or the validity, of incorporating sustainability strategies into the Wake County Environmental Stewardship Agenda (ESA). Most members came to the meetings predisposed to promote the ideals of sustainability. That is why I appreciate the opportunity to state my concerns about sustainability to the Wake County Commissioners.

Before I do so, I would like to state that I have read Dr. Michael Sanera's report to the Commissioners on behalf of The John Locke Foundation. I agree

completely with his assessment of the Wake County Sustainability Task Force meetings and Task Force report. I concur with his observation that material was inserted into the report by Wake County Staff that was not discussed in the Task Force meetings; that “the Task Force process is flawed”; that “by relying on interest-group representatives instead of qualified resource economists, the task force produced a hodgepodge of conflicting, confusing, and counterproductive recommendations”; that “most speakers represented special-interest groups or governmental interests; and “the County commissioners' decisions to implement any of the task force's recommendations must be based on evaluations by qualified economists.” (1)

Dr. Sanera’s report saves me from having to cover the same ground and frees me to focus on my specialized concerns regarding theories of sustainability as they relate to the Wake County Sustainable Development Task Force Report. American citizens across the nation have begun to see the negative effects of sustainability policies in their local communities and are very concerned about it. They are beginning to ask their elected officials about international documents, such as Agenda 21, and sustainability’s effect on their local property rights and individual freedom. Non-governmental organizations that promote Agenda 21 ideals are being removed in counties across the USA. Counties are investigating to oversee legislation so that it does not violate property rights and to train county staff to understand property rights and assure they are protected in all county business. (See Page 14 for details.)

My primary concern is that:

**The philosophy and definition of sustainability, or sustainable development, is incompatible with and destructive to the principles and nature of our Constitutional Republic.**

### The Definition of Sustainability

One of the major goals of the Task Force was “to update and enhance the County’s ESA **to incorporate strategies for sustainability** and green initiatives. (emphasis mine)” The dilemma was that the Wake County Commissioners did not provide the Task Force with a working definition of “sustainability” to carry out this goal. Consequently, valuable meeting time was given over to discussions regarding whether or not the Task Force members needed a definition of sustainability. Some members did not think that having a definition was necessary. After much discussion, it was finally determined that the Task Force should provide a definition as a basis for their recommendations.

Over the ensuing months, the quest to agree on a definition resulted in a number of discussions, which sometimes took up half a meeting. Small group exercises were designed by the facilitators to assist the Task Force members in arriving at

a definition. Some of these exercises limited members' ability to come up with new ideas. They merged divergent ideas into a compromise definition, essentially weakening the original intent of the previously proposed ideas. It wasn't until January 20, 2011, a year into the meetings, that the Task Force members adopted a definition.

### **Derivation of the Task Force Definition**

On page 4, Wake County Sustainability Task Force Report states:

"There are a number of different definitions for sustainability offered by private, public, and not-for-profit entities, and the definition changes depending on the subject and the audience."

One must accept this statement at face value since the report does not give examples of different definitions offered by private, public, and not-for-profit entities. Similar comments that there are many definitions were made by participants at Task Force meetings. This prompted me to do my own search for different definitions of sustainability. My findings led me to the conclusion that the most common definition of sustainable development is a statement found in the Brundtland Report, *Our Common Future*, released during the 1987 United Nations World Commission on Environment and Development (UNCED) (2):

**"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."**

I argue that this is the seminal definition of "sustainability," or "sustainable development," from which other definitions are derived. (The difference between the two terms is that "sustainability" is the goal. "Sustainable development" is the means of achieving it.) Every definition I found during my research was either a paraphrase, mildly re-worded, or a pared down version of the original definition in the Brundtland report.

Here is the Wake County Sustainability Task Force's definition of sustainability:

**"utilizing practices that protect the economic, environmental, and social qualities of life for current and future generations."**

This definition is very similar to the one stated in the Brundtland Report.

### **The Precautionary Principle - Americans should proceed with caution!**

The objective of "meeting the needs of future generations," expressed in the UN definition and in the Task Force definition, is supported by an application known

as “The Precautionary Principle,” or “Precautionary Approach.” (*Business Dictionary* adds that the Precautionary Principle is called “preventative principle.”) (3)

The Precautionary Principle was set forth in Principle 15 of the 1992 United Nations Rio Declaration on Environment and Development, which states: “In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, **lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.**” (emphasis mine) (4)

The website for the Scientific and Environmental Health Network (<http://www.sehn.org>) tells us that eight years later, “On January 26, 1998, at an historic gathering in Racine, Wisconsin, at Wingspread, headquarters of the Johnson Foundation, scientists, philosophers, lawyers and environmental activists, reached agreement on the necessity of the Precautionary Principle in public health and environmental decision-making. **The key element of the principle is that it incites us to take anticipatory action in the absence of scientific certainty.**” (emphasis mine) (5)

The lack of scientific certainty could pose challenges to the individual rights of citizens as the list of earthly fears grows longer. Michael Shaw, President of *Freedom Advocates*, an organization that opposes sustainable development, explains the Precautionary Principle in plainer language: “A person may not take action **if** that action **may** cause harm. (emphasis mine)” Shaw gives a local example: “In Santa Cruz, California, the federal Department of Interior working with local officials and business interests attempted to effect rules that would prohibit many landowners in the county from waking on their property during the winter in order to avoid the possibility of stepping on a long toed salamander, an endangered species, during its mating season!” (6) In a news article, he gives the same account adding his admonition that: “Such precautionary” practices are designed to shift legal presumptions in civil and criminal law.”(7) For additional comments, see Appendix 1.

Of course, man-made global warming is the issue that immediately comes to mind when one thinks of the precautionary principle. The United Nations and others, who are concerned about earth’s future, have called for countless restrictive energy and conservation measures to prevent man-made global warming. However, man-made global warming and some related climate change theories are unproven. The controversy rages on between believers and skeptics, and the ongoing debate raises the question of how many personal freedoms citizens must sacrifice in light of scientific uncertainty. (20)

**Fear for Future Generations:**  
**What can the residents of Wake County do about it?**

In the Brundtland Commission definition and in our Task Force definition, the fear that the earth's resources will be depleted by the current generation to deprive future generations, drives many the documents of the United Nations and also influences the thinking of the members of the Wake County Sustainability Task Force.

In Appendix A of the Task Force report is a collection of "Vision Statements." The report states (on p. 61), "The Kickoff Meeting for the Sustainability Task Force was convened on January 19, 2010. At the Kickoff meeting, the Task Force members were asked to respond to the following three 'visioning' questions:

**What will be different about our energy sources and consumption in a sustainable Wake County?**

**How will we benefit from sustainable water resources?**

**What does sustainable waste management mean to you?"**

If one reads the members' responses, one will see how often the responses express concern for scarcity of resources, over- consumption, and preventing the waste of resources through methods such as reuse or recycling.

As a result, the Task Force recommendations reflect this concern in recommendations to the Commissioners. For example:

In the Task Force Energy Recommendations for water (p. 16), a goal is to – "Minimize the adverse impacts to water, land, and air caused by the production and consumption of fuel and energy."

In the Water recommendations (p.27), a goal is that "Clean water resources are available for current and future generations at reasonable and predictable costs."

In the Solid Waste Management Recommendations (p. 38), a goal is to "Increase Waste Reduction, Reuse, and Recycling for Construction and Demolition Debris."

During the early months of the Task Force meetings and again in May 20, 2010, Dr. Michael Sanera of the John Locke Foundation, a member of the Task Force, distributed to each member of the Task Force (who was present) a booklet entitled, *Sustainable Growth: Principles and Policies* written by Dr. Roy Cordato, Vice President for Research and resident scholar at the John Locke Foundation. A link to the booklet was also posted on the Wake County Sustainability Task Force blog at <http://wecowake.wordpress.com/?s=Sanera+memo>. On pages 23-26, the booklet addresses the fear permeating the definition of sustainability, that the earth's resources will be depleted and unavailable to future generations. Dr. Cordato writes:

“The reality is that there is no empirical or historical evidence that any generation has been less prosperous than previous generations as a result of overuse of resources by previous generations. In fact, the evidence is exactly the opposite. It is the resource usage of previous generations, and the capital formation that it generates, that gives generations to follow opportunities for prosperity that they would not have otherwise had.” For additional comments, see Appendix 2.

### **Two competing philosophies – Can they blend?**

**Question:** What is wrong with a Wake County definition of sustainability that is derived from a United Nations definition of Sustainable Development?

**Answer:** The philosophy of the United Nations is fundamentally incompatible with the founding principles of our Constitutional Republic.

The United States Declaration of Independence states: “That all Men are created equal, that they are endowed by their Creator with certain unalienable rights...” “Unalienable rights” are defined as rights that are not to be separated, given away, or taken away. The most important purpose of government in the United States is to protect the individual’s unalienable rights. The product of an individual’s labor belongs to the individual.

By contrast, the United Nations Declaration of Human Rights states: “Rights and freedoms may in no case be exercised contrary to the purposes and principles of the United Nations.” In other words, what the United Nations grants, the United Nations can take away. The individual’s rights are always subservient to the greater good of the global community. You and the product of your labor belong to the global community.

Some people equate United Nations sustainable development ideology with communism. They may have some reason to believe this, for it is noteworthy that the 1977 Soviet Constitution has wording that bears striking resemblance to the Brundtland Report’s definition of sustainability, put forth only a decade later. For that matter, the Soviet wording bears quite a resemblance to the Wake County Sustainability Task Force Definition. The 1977 Soviet Constitution states:

*“Chapter 2, Article 18. In the interests of the present and future generations, the necessary steps are taken in the USSR to protect and make scientific, rational use of the land and its mineral and water resources, and the plant and animal kingdoms, to preserve the purity of air and water, ensure reproduction of natural wealth, and improve the human environment.”*

Others believe that the UN ideology of Sustainable Development is a form of Communitarianism; a synthesis, or blending of communism and capitalism. This philosophy is often referred to as “The Third Way.” In communitarianism, the

individuals rights are subservient to the global community. A characteristic of communitarianism is that members of society are encouraged to organize into coordinated groups to express their opinions and particular interests, **much as we have done in the Wake County Sustainability Task Force.** (8)

There are critics who claim that the sustainable practices advocated by the United Nations encourage a form of economic fascism, as was practiced in Mussolini's Italy. Economic fascism creates control over society through the partnering of government with business. (For additional information, see Appendix 3.) The Summary of the Introduction to the Wake County Sustainability Task Force (page 6) is a reflection of the gradual acceptance and approval in the United States for public-private partnerships in government affairs. (9)

Regardless of which philosophy is actually the philosophy of United Nations Sustainable Development goals, all of them have fundamental elements that are alien to that of the guiding principles envisioned and put forth in our nation's founding documents for limited government and a free society. Sustainable development is government approved development.

### **International documents influencing local jurisdictions**

Although, the 1987 Brundtland Report's definition is the basis for the goal of "Sustainable Development," the term itself did not appear until 1992 during the United Nations Conference on Environment and Development (UNCED), commonly known as the Rio Earth Summit.

Five main documents came out of the UNCED process:

- The Rio Declaration on Environment and Development
- The Statement of Forest Principles
- The United Nations Framework Convention on Climate Change
- The United Nations Convention on Biological Diversity
- Agenda 21

More than 178 nations adopted Agenda 21, and pledged to evaluate progress made in implementing the plan every five years thereafter. President George H. W. Bush was the signatory for the United States. Congress never authorized the implementation of Agenda 21 as a treaty. In the United States, Agenda 21 remains soft law policy recommendation. (10)

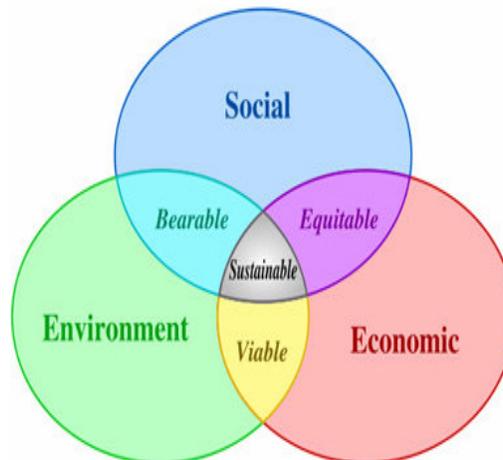
Agenda 21, in particular, is known for its support for Sustainable Development.

From the start, some Americans saw that Agenda 21 was antithetical to our U.S. founding documents, but the subject was so complex, the UN documents so long, the language so impenetrable and fuzzy that their warnings went unheeded by the average American. Few had the patience or fortitude to wade through countless repetitive sentences to find the key life-altering initiatives buried in these documents. In the last few years, American citizens have begun to see the effects of these policies in their local communities and are very concerned about it. They have begun to learn about Agenda 21 and are asking their elected officials about Agenda 21's effect on their property rights and individual freedoms (See page 14).

### The 3 Es of Sustainable Development

Most people interpret sustainability or Sustainable Development to mean protecting the environment and saving the earth for future generations.

The reality is that Sustainable Development encompasses much more than protecting the environment. The environment is only one third of the total package known as “**the 3 Es**” or “**three pillars**,” which is usually symbolized by three interlocking circles. (For other symbols, see (11).)



The 3 Es are **Environment, Economy and Equity (or Social Equity)**. The 3 Es are found in the Wake County Sustainability Task Force's definition of "sustainability" and implied in some task force statements and recommendations.

**Environment** places nature above man. In the sustainable development philosophy, man is generally a threat to nature. Therefore, man's rights extend only as far as government allows for the common good.

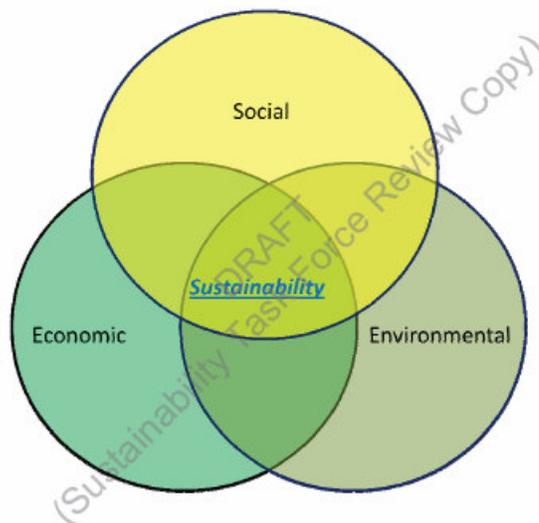
**Economy** is the redistribution of wealth internationally and the creation of public/private partnerships. Redistribution of wealth is the unjust or forced redistribution of wealth, taking from the wealthy to give to the poor, effectively lowering the standard of living in America to that of the rest of the world.

**Equity** (or **social equity**) is the law to restructure human nature. In the 3 E system, equity is often associated with the term, “social,” as in “social equity.” In the United States, equity means equality of opportunity. In sustainable development, equity means equality of materialism or equality of results. Equity requires a redistribution of wealth, but focuses on class distinctions. Another expression for “social equity” is “social justice.” “Social justice” subordinates the American concept of “equal justice” for the individual to the concept of collectivism. Social justice collectivizes individual rights into equal rights for groups, such as women, youth, the poor, and the unemployed.

The following sentence, published in a preparatory committee report for the upcoming UN Rio+20 Conference in 2012, couldn’t provide a better example of the above explanations. It emphasizes “equity,” but manages to capture the essence of all three values of the **3 Es**:

*“A key implication of prudence, responsibility, and equity is that the claims of the rich must be subordinated to those of the poor and to the well-being of the Earth’s life support systems.”* (emphasis mine) (12)

### The Task Force Report and the 3 Es



In the first draft of the Introduction to the Task Force report, the Wake County Staff had a picture of the 3 Es to be on the same page as the Task Force's definition. Several times during the meetings, I questioned the proposals to include social issues in our considerations. I mentioned the 3 Es, but no one seemed very interested. When I saw, in the first draft of the Introduction to the Wake County Sustainability Task Force Report, that the Wake County Staff had a picture of the 3 Es to illustrate the Task Force's consensus definition of "sustainability," I pointed out to the Task Force members that this was the 3 Es system I had been trying to bring to their attention. This symbol of the 3 Es had been inserted into the draft of our Task Force report by Wake County Staff, even though the Task Force members were unaware of or disinterested in discussing the 3 Es in the meeting. This was an example to me, of what I had heard or read many times from citizens across the nation who had participated in similar "visioning" and task force meetings to consider initiatives such as "sustainability." These meetings are not based on spontaneous local inspiration, values and experiences. Many of the outcomes are pre-planned. Citizen input is just for show.

After the series of Task Force meetings officially ended, I was told by Tommy Esqueda, Wake County Environmental Services Director, that the symbol was removed from the Introduction because the Commissioners had originally asked that the objectives be limited to environmental and financial considerations. Still, the concept of the 3Es is in the Task Force definition, "utilizing practices that protect the **economic, environmental,** and **social** qualities of life for current and future generations."

### Rio+20

Some people may say that it is absurd to link the local Wake County Task Force Report to the international standards and ideals of United Nations 1990s documents, such as Agenda 21. It is not absurd; the facts are incontrovertible; the evidence is clear!

The United Nations Conference on Sustainable Development (UNCSD), also known as Rio+20, is being organized to take place in Brazil on 4-6 June 2012 to mark the 20th anniversary of the 1992 United Nations Conference on Environment and Development (UNCED), in Rio de Janeiro.

Heads of State and Government or other representatives will attend. The objective of the Conference is to produce a new focused document that will secure renewed political commitment for sustainable development, assess its progress, fill in the remaining gaps in the implementation, and address new and emerging challenges. (13) See Appendix 4 for the definition of a "focused document."

A March 7-8, 2011 report to the Secretary General of the United Nations regarding Rio+20 outlines the objectives for the Conference. The implementation of the three pillars (the 3 Es) of sustainable development is prominent in objectives 93 and 123 of the report. See below:

(All bolding and underlining is mine for emphasis.)

“Objective 93. Overall, there is a widely recognized need to strengthen the institutional framework for sustainable development at all levels. In particular, the aim is integration in policymaking and implementation of **the three pillars of sustainable development.**”

“Objective 123. ... **insufficient progress has been made in integrating sustainable development into policymaking and implementation at all levels.** Member States should have an active role in providing political guidance to the United Nations system **for overcoming the institutional fragmentation and lack of integration of the three pillars of sustainable development.**”

Objective 123 above and 101 as follows shows that the United Nations has ambitions to implement sustainable development at all levels - meaning the national and local levels of the United States, including Wake County:

Objective 101 clarifies even further: “Ultimately the success or failure of sustainable development rests on implementation at **the national and local levels.**”

How does the UN intend to accomplish this? Statement 101 continues:

“Such implementation could benefit from ... **establishment and enforcement of regulatory and incentive frameworks to shift towards sustainable consumption and production patterns.**”

The United Nations would like to increase their authority by establishing a new umbrella organization for sustainable development, such a “**world environment organization**, based on the model of the World Health Organization.

Page 26 of the report lists intentions of:

“Establishing a new umbrella organization for sustainable development. It would enhance integration of sustainable development in the work of institutions covering **economic, social and environmental pillars.**”

And:

“Establishing a specialized agency such as a world environment organization. Specialized agency based on the model of United Nations agencies such as the World Health Organization (WHO) and FAO, which are hybrid normative and operational entities. **It would be the global authority on the environment**, providing policy guidance to other

United Nations entities working on the environment and multilateral environmental agreements.” (14)

As the ultimate statement to impose global enforcement standards on local government, the Rio+20 preparatory meeting held on May 10 concluded that, “**A global organization may be needed with powers to enforce new international law** created to maintain, and where necessary, restore the planet’s ecological health.” (15)

### **My recommendations to the Wake County Commissioners**

We are entering a critical period in which more and more sustainable development policies are being implemented in local communities. It may seem that we now can strike a happy balance between government-approved sustainable development policies and the comfortable independent lifestyle that Wake County citizens enjoy. But, this freedom will be short-lived if sustainable development takes over our county.

It is necessary for the Wake County Commissioners to decide which system of government they wish to have - either constitutional government or a global-controlled system of sustainable development. You cannot have both.

In a World Net Daily article (7/09/11) entitled “What Could Be Bad About ‘Sustainability?’”, the author, Henry Lamb, states: “To be sustainable, according to the U.N. definition, development must have no negative environmental impact. This requirement demands a monitor of development activity and a judgment made to determine whether the activity results in a negative environmental impact. This monitor and judge is necessarily some entity empowered by government. Development that fails to meet these requirements is, by definition, not sustainable. Development that meets these requirements is declared by government to be sustainable. Therefore, sustainable development is government-approved development.” (emphasis mine) (16)

Maurice Strong, former Assistant Secretary of the United Nations and Chair of the 1992 Earth Summit II in Rio, stated in the opening session of the Rio Conference that industrialized countries have:

“Developed and benefited from the unsustainable patterns of production and consumption which have produced our present dilemma. It is clear that current lifestyles and consumption patterns of the affluent middle class—involving high meat intake, consumption of large amounts of frozen and convenience foods, use of fossil fuels, appliances, home and work-place air-conditioning, and suburban housing—are not sustainable. A shift is necessary toward lifestyles less geared to environmentally damaging consumption patterns.”

---

If the Wake County Commissioners do not want Wake County to undergo this lifestyle “shift,” I recommend the following course of action to stop sustainable development:

1. Resist the trend toward regional governance, which is the erosion of representative government through the blurring of jurisdictions and constitutional boundaries. (17)
2. Local planning is the responsibility of local elected officials and must not place a greater degree of responsibility into the hands of non-elected boards and agency officials. Appointed commissions and boards should not speak for the citizen. The only person who speaks for the citizen is the duly elected official who speaks for the citizen through the U.S. Constitution.
3. Refuse local government receipt of federal or state money for any new sustainable development projects.
4. Avoid partnerships with the federal government, with non-governmental organizations (NGOs) such as **ICLEI**, the **International Council for Local Environmental Initiatives**, which now calls itself **ICLEI - Local Governments for Sustainability** (18), foundations, and corporations that advance sustainable development. Once you make partners with these organizations, it is difficult to extricate yourself.
5. Maintain the proper relationship between (local) government and business. For more information, see Appendix 3.
6. Do not accept intrusive technologies, such as Smart Grid, Smart Meters. (19)
7. Preserve private property rights.
8. Do not mandate laws and policies based on the blanket assumption of scientific theories that have not been proven, such as global warming. (20) For more information, see Appendix 4.
9. Cease imposing the manipulative consensus process on citizens in meetings. (21)
10. Save money by eliminating task forces made up of special interest groups and individuals. It was stated to me by Tommy Esqueda, Wake County Environmental Services Director, in a Water Work Group meeting that the Wake County Sustainability Task Force cost approximately \$70,000.

The battle is always local. Globalism is only attained through local infiltration. Tom DeWeese, President of the American Policy Center, reports that, "In the last year, some counties in the United States have taken a stand against international intervention in their local jurisdictions. Five Counties: Carroll County, MD; Montgomery County, PA; Amador County, CA and recently, James City County, VA have voted not to renew their ICLEI contracts. Of great significance, in Bonner County, Idaho, County Commissioner Cornel Rasor is working to establish a "Property Rights Council" as an official arm of the county government. The council will oversee legislation to assure it does not violate property rights. In addition, it will train county staff to understand property rights and assure they are protected in all county business. DeWeese comments: "This is a revolutionary proposal that must be implemented across the nation." (22)

Commissioner Richard Rothchild of Carroll County, Maryland, the first County in the United States to terminate its contract with ICLEI said: "I am resolved to retain County decisions at the County level. I love my country and our Constitution and I believe the price of liberty is eternal vigilance. So, I say: Good-bye ICLEI. Let's put together our own program to encourage environmental stewardship based on our local County values and experiences." (23)

I congratulate the Wake County Commissioners for not being a member of ICLEI. I know that the Wake County Commissioners respect the U.S. Constitution and took an oath to protect and defend it. When one hears or sees the same sustainability phrases and slogans often enough, it is easy to forget where these ideas originate. As stated at the beginning of this report, my primary concern regarding the recommendations of the Wake County Sustainability Task Report is that the philosophy and definition of sustainability, or sustainable development, is incompatible with and destructive to the principles and nature of our Constitutional Republic. Therefore, I ask the Wake County Commissioners to reconsider inserting sustainability strategies and initiatives into any Wake County departments or Wake County agendas.

## Footnotes:

(1) *The Wake County Environmental Sustainability Task Force Report: Clarification and Critique* by Task Force Member Dr. Michael Sanera, John Locke Foundation, September 27, 2011

(2) The Brundtland Report was chaired by Gro Harlem Brundlandt, the former Director-General of the World Health Organizations and the first female Vice President of the World Socialist Party. See:  
[http://www.encyclopedia.com/topic/Gro\\_Harlem\\_Brundtland.aspx](http://www.encyclopedia.com/topic/Gro_Harlem_Brundtland.aspx).

XX Congress of the Socialist International, New York, "The World Economy: A Common Responsibility", 09/11/1996  
<http://www.socialistinternational.org/viewArticle.cfm?ArticleID=126&Search=Gro%20Harlem%20Brundtland>

(3) Business Dictionary,  
<http://www.businessdictionary.com/definition/precautionary-principle.html>

(4) Principle 15, Text of Declaration on Environment and Development  
<http://habitat.igc.org/agenda21/rio-dec.html>

(5) **"Wingspread Conference on the Precautionary Principle** January 26, 1998." <http://www.sehn.org/wing.html> . "The Scientific and Environmental Health Network (SEHN) was founded in 1994 by a consortium of North American environmental organizations (including the [Environmental Defense Fund](#), [The Environmental Research Foundation](#), and [OMB Watch](#)) concerned about the misuse of science in ways that failed to protect the environment and human health. Granted 501(c)(3) status in 1999, SEHN operates as a virtual organization, currently with six staff and seven board members working from locations across the U.S."

(6) Sustainable Development: Global to Local Action Plans, (booklet) pp.44-45, published by Freedom Advocates, P.O. Box 330 Freedom, California 95019,  
<http://www.FreedomAdvocates.org>

(7) "Liberty or Sustainable Development: Part 5" by Michael Shaw, August 10, 2008, <http://www.newswithviews.com/Shaw/michael17.htm>

(8) Article from Encyclopedia Britannica (eb.com), primary contributor, Amitai Etzioni, founder of Communitarian Network,  
<http://www.britannica.com/EBchecked/topic/1366457/communitarianism>

An analysis by Berit Kjos,  
[http://www.crossroad.to/Quotes/communitarian/third\\_way.htm](http://www.crossroad.to/Quotes/communitarian/third_way.htm)

(9) Summary of the Introduction of the Wake County Sustainability Task Force Report, p. 6: “The accolades that Wake County has earned since the early 1990’s did not occur by chance, but have resulted from the unique partnerships forged among the community’s diverse leaders in the areas of business, natural resource protection, education, infrastructure systems, and local government. Without question, one of the reasons Wake County has been able to sustain its status as one of America’s best places is because the community’s leaders recognize the importance of working together – allowing all interests and perspectives to participate in the discussion – to develop and implement important initiatives that balance economic prosperity, quality of life, and natural resource protection.”

(10) Agenda 21 document: <http://www.un.org/esa/dsd/agenda21/>

(11) Three Visual Representations of Sustainable Development: Pillars, Circles, Interlocking Circles; *The Future of Sustainability: Re-thinking Environment and Development in the Twenty-first Century*, published by the World Conservation Union (IUCN), p.4

[http://cmsdata.iucn.org/downloads/iucn\\_future\\_of\\_sustainability.pdf](http://cmsdata.iucn.org/downloads/iucn_future_of_sustainability.pdf)

(12) First Preparatory Meeting, May 10, 2010:

<http://www.uncsd2012.org/rio20/index.php?page=view&type=13&nr=134&menu=24>

Meeting report, p. 3:

PREMISES FOR A NEW ECONOMY: AN AGENDA FOR RIO + 20, May 10, 2010, New York

[http://www.un.org/esa/dsd/dsd\\_aofw\\_sdkp/sdkp\\_pdf/sdkp\\_workshop\\_0510/joint\\_statement.pdf](http://www.un.org/esa/dsd/dsd_aofw_sdkp/sdkp_pdf/sdkp_workshop_0510/joint_statement.pdf)

(13) FN: United Nations Rio+20 website:

<http://www.uncsd2012.org/rio20/>

Rio+20: Objectives and Themes,

<http://www.uncsd2012.org/rio20/index.php?menu=61>

(14) Secretary-General's Report on Objectives and Themes of the United Nations Conference, *UNDESA by: United Nations Department of Economic and Social Affairs (UNDESA)*

<http://www.uncsd2012.org/rio20/index.php?page=view&type=400&nr=10&menu=45>

(15) (12) First Preparatory Meeting, May 10, 2010:

<http://www.uncsd2012.org/rio20/index.php?page=view&type=13&nr=134&menu=24>

Meeting report, p. 4:

PREMISES FOR A NEW ECONOMY: AN AGENDA FOR RIO + 20, May 10, 2010, New York

[http://www.un.org/esa/dsd/dsd\\_aofw\\_sdkp/sdkp\\_pdf/sdkp\\_workshop\\_0510/joint\\_statement.pdf](http://www.un.org/esa/dsd/dsd_aofw_sdkp/sdkp_pdf/sdkp_workshop_0510/joint_statement.pdf)

(16) “What Could Be Bad About Sustainability, by Henry Lamb, World Net Daily, 7/09/11,

<http://www.wnd.com/index.php?fa=PAGE.printable&pagelid=320125>

For more about Henry Lamb, see Appendix 4.

(17) For example: The County might take an area and design its rules around a watershed with no electoral boundaries and then put a watershed in the hands of a Council of Government (COG). A COG is an organization that creates a fourth system of government in the United States – just like an MPO, a metropolitan planning organization.

Triangle J Council of Governments is a COG. The Triangle J Council of Governments is a voluntary organization of municipal and county governments in North Carolina's Region J (Chatham, Durham, Johnston, Lee, Moore, Orange and Wake counties). It is one of 17 regional councils established in 1972 by the General Assembly to aid, assist, and improve the capabilities of local governments in administration, planning, fiscal management, and development.

<http://www.tjcoq.dst.nc.us/>

(18) ICLEI stands for *The International Council for Local Environmental Initiatives*. It recently changed its name to *ICLEI-Local Governments for Sustainability*. ICLEI is an international council that has its headquarters Bonn, Germany. It is an accredited non-governmental organization of the United Nations that recommends policy, to American towns, cities and counties, which is derived from an international United Nations plan known as **Agenda 21**. When applied to local jurisdictions, the plan is known as **Local Agenda 21**. ICLEI founders helped UN planners draft the language for Local Agenda 21. One of the programs ICLEI promotes in U.S local governments is the urban Smart Growth program. ICLEI is successful through offering special technology and grant money - usually in the name of climate change - to local governments. 600+ American cities are dues-paying members. In Wake County, Raleigh and Cary are members. <http://iclei.org/>

(19) See links to articles regarding Smart Grid's privacy issues that I submitted to the facilitators for posting on the Wake County Sustainability Task Force blog:

<http://wecowake.wordpress.com/2011/02/28/smart-grid-privacy-issues/>

Also: Below are comments I wrote about smart grid (for the facilitators to collect) at the May 19, 2011 Wake County Sustainability Task Force Meeting (The comments are not found in “Comments on the Draft Energy Recommendations” published in the June 2011 Wake County Sustainability Task Force newsletter. However, they can be found on page 7 in the following notes taken by the facilitators at the meeting and sent to me by Wake County Sustainability Task Force facilitator and Weco Project Manager, Patrick Beggs.):

<http://www.ces.ncsu.edu/depts/agecon/WECO/wake/documents/EnergyStrategiesDraft3withSTFcommentsandWECOresponses.pdf>

I wrote: “After all the smart grid discussion, I still can’t support it because of privacy concerns, cybersecurity vulnerability, it does not reduce energy consumption just shifts it to different hours, rate payers are forced to pay for the promotion (ads), forces people to buy expensive gadgetry, administrative costs for more regulators and construction, advocates, forces a product on consumers that don’t need it, utility companies have too much control”

(20) Climate Change Reconsidered: 2011 Interim Report, S. Fred Singer, Craig Idso, Robert M. Carter, August 29, 2011, <http://heartland.org/policy-documents/climate-change-reconsidered-2011-interim-report>

“NASA Satellite Data Show Climate Models Are Wrong – Again,” Jonathan DuHamel, Tucson Citizen, 7/27/11, <http://tucsoncitizen.com/wryheat/2011/07/27/nasa-satellite-data-shows-climate-models-are-wrong-again/>

“Breaking News: Greenhouse Gas Theory Trashed in Groundbreaking Lab Experiment,” Jon O’Sullivan, Updated by Nasif S. Nahle, Climate Realists,” 7/18/11, <http://climateréalists.com/index.php?id=8073>

“The Global Warming Challenge: Uncertainty, the Precautionary Principle, and Climate Change,” <http://www.theclimatebet.com/?p=102>

“Are 32,000 Scientists Enough to Question Global Warming ‘Consensus?’”, Mark Sheppard, *American Thinker*, May 19, 2008, [http://www.americanthinker.com/blog/2008/05/are\\_32000\\_scientists\\_enough\\_to.html](http://www.americanthinker.com/blog/2008/05/are_32000_scientists_enough_to.html)

(21) “‘Visioning’ – Knowing What You Are Getting Into” by Center for Intelligent Growth, 9/11/07, [http://www.freedomadvocates.org/articles/planning\\_-\\_smart\\_growth/%22visioning%22\\_-\\_know\\_what\\_you\\_are\\_getting\\_into\\_20070911258/](http://www.freedomadvocates.org/articles/planning_-_smart_growth/%22visioning%22_-_know_what_you_are_getting_into_20070911258/)

(22) American Policy Center, “Report from the Front Lines,” 10/11/11

(23) From radio broadcast, “County in Maryland Terminates ICLEI, Commissioner Richard Rothchild, Carroll County, Maryland, 2/04/11” (<http://www.freedomadvocates.org>)

## Appendices:

**Appendix 1.** If Michael Shaw is correct in his assessment that precautionary practices shift legal presumptions in civil and criminal law, then, ultimately, law enforcement will step in. Santa Cruz County was, arguably, the first county in the United States, where international initiatives for Sustainable Development were tested through a planning guide entitled Local Agenda 21. (1) So, it is not surprising that a *New York Times* article, entitled, "Sending the Police Before There's a Crime," reported that two arrests made in Santa Cruz, California this summer were the result of "an unusual experiment by the Santa Cruz Police Department in predictive policing — deploying officers in places where crimes are likely to occur in the future." Using computer data, the method is "based on models for predicting aftershocks from earthquakes, it generates projections about which areas and windows of time are at highest risk for future crimes by analyzing and detecting patterns in years of past crime data" The article states that "the accuracy of the program is yet to be demonstrated" and "the success will be evaluated after six months." But, if, according to the precautionary principle, the key element to prevention is to "take anticipatory action in the absence of scientific certainty," why should accuracy, or scientific certainty, necessarily be demonstrated in the actions of law enforcement? If the definition of crime continues to expand into the territories of environment and social ills- and that is where it seems to be heading - will this predictive analysis, used by law enforcement, be applied to what used to be normal everyday activities of human life? (2)

**Appendix 2.** Dr. Cordato goes on to say that the standard sustainability model is based on the premise that...in the extreme, people, if left unchecked by government-imposed constraints, will mindlessly deplete resources to extinction or at least to levels of extreme scarcity. He comments: "Of course, if this view of the world were accurate there would indeed be a tradeoff between the prosperity of current and future generations. But in a world where resources are privatized and allocated according to the principles of the price system, and entrepreneurs are allowed to engage their ingenuity in order to take advantage of profit opportunities, things do not work this way.

He gives examples of crude oil, which was considered messy, flammable, dangerous and valueless, and sand, which seemed to have no value or practical purpose, until the ingenuity of the human mind transformed both into useful resources. He comments that this kind of story can be told about everything in nature that we currently consider a resource. He concludes, "The human mind, therefore, is the ultimate resource."

Dr. Cordato's solution for future generations: "So long as there is a free market system, where prices are allowed to fluctuate and entrepreneurs are free to

pursue profits through creativity and innovation, sustainable development is assured. Indeed what is most likely to retard this process are government programs meant to manage and direct the timing and kinds of technological change that should be pursued. In light of all that we have learned about government planning of the economy in the 20th century, does anyone really think that massive government programs to ensure sustainable energy in 1845 would have led to anything like the growth-sustaining result that actually occurred?" (pp.23-26)

**Appendix 3.** The Public-Private Partnership system (PPP), known as "corporate fascism," was practiced by totalitarian regimes in pre-World War II Germany and Italy. PPPs caused private business to lose independence in post-Cold War Russia. American intellectuals and policy makers embraced it in the 1930s. It is promoted to this day. It is especially promoted in the sustainable development philosophy and the United Nations Agenda 21 Document.

Here is an example of language typically found in Agenda 21:

**"30.7. Governments, business and industry, including transnational corporations, should strengthen partnerships to implement the principles and criteria for sustainable development.** 30.8. Governments should identify and implement **an appropriate mix of economic instruments and normative measures such as laws, legislations and standards, in consultation with business and industry, including transnational corporations,** that will promote the use of cleaner production, with special consideration for small and medium-sized enterprises. Voluntary private initiatives should also be encouraged... (emphasis mine"

For in-depth information about Public-Private Partnerships and Economic Fascism, read:

"Economic Fascism" by Thomas DiLorenzo, published by in The Freeman, the flagship publication of the Foundation for Economic Education, June 1994 • Volume: 44 • Issue: 6, <http://www.thefreemanonline.org/columns/economic-fascism/>

"Sustainable Development: Public-Private Partnerships, the undermining of free enterprise, and the emergence of soft facism" by Dr.Steven Yates, [http://www.libertygarden.com/gateway/html/modules.php?op=modload&name=PagEd&file=index&topic\\_id=&page\\_id=35](http://www.libertygarden.com/gateway/html/modules.php?op=modload&name=PagEd&file=index&topic_id=&page_id=35)

**Appendix 4.** Regarding the meaning of the term, "focused document," author Henry Lamb writes in his World Net Daily article, "New U.N. Treaty in the

making?” (3/5/11): “For the past few years, this Commission has been conducting regional meetings every few months in preparation for the 2012 blowout in Rio. This 20-year anniversary party is expected to produce an even larger crowd than the 1992 event, and many U.N. Watchers believe that it will produce a new treaty.”

“This is not idle speculation. Folks who dare read the U.N. mumbo-jumbo illustrated by A/RES/64/236 from March 31, 2010, will quickly recognize the meaning of Article 20(b), which says: ‘*The Conference will result in a focused political document.*’”

“What is a ‘focused’ political document? To advocates of global governance this means a legally binding U.N. treaty. This effort has been under way since at least 1998 when a draft ‘Covenant on Environment and Development’ was circulated by the United Nations Environment Program. Just in case the advocates cannot generate sufficient support to get a treaty or a covenant adopted at the 2012 shindig, they will be able to call the ‘focused political document’ a plan of action, until they can build more support, and thus avoid the appearance of failure.” To read the rest of the article, see <http://www.wnd.com/?pageId=270953>.

“Henry Lamb is the founding Chairman of Sovereignty International (1996), and the founding CEO of the Environmental Conservation Organization (1988). He is publisher of eco-logic Powerhouse, a widely read on-line, and print magazine, and he writes a weekly column for World Net Daily, and other publications. He has attended United Nations meetings around the world, is a frequent speaker at conferences and workshops across the country, and is a regular guest on dozens of talk radio programs. He has provided testimony for the U.S. Congress, as well as State Legislatures, and is a consultant on U.N. affairs to FOX News.

For eight years, he was CEO of a national trade association for contractors, headquartered in Chicago, coming to that position from CEO of a private construction company specializing in erosion control and water management structures. His background includes teaching at the secondary school level, and serving four years as a legislative analyst for a county government in Florida.

Henry attended Manatee Junior College in Bradenton, Florida; Stetson University in DeLand, Florida; and did his graduate work at the University of North Carolina.” (<http://www.financialsense.com/contributors/henry-lamb> )

**Appendices Footnotes:**

(1) "Local Agenda 21 Santa Cruz - Key points from twelve Focus Groups," Berit Kjos, <http://www.crossroad.to/text/articles/la21sc298.html>

(2) "Sending the Police Before There's a Crime," by Erica Goode, August 15, 2011, *The New York Times*, [http://www.nytimes.com/2011/08/16/us/16police.html?\\_r=2](http://www.nytimes.com/2011/08/16/us/16police.html?_r=2)

---

## Comments on the Environmental Stewardship Agenda *by* the HBA of Raleigh-Wake County

*Suzanne Harris, VP of Governmental Affairs*

October 19, 2011

- ❖ We question the original intent of the creation of the task force. The report suggests that the Board directed a focus on three critical areas, yet those critical areas were not even mentioned in the April 13<sup>th</sup> Commissioner work session minutes. Instead the minutes reflect the following:
  - Update/Enhance the County's Environmental Stewardship Agenda to incorporate strategies for sustainability and "green initiatives" including:
    - Expanding the use of alternative fuel vehicles;
    - Pursuing LEED certification for large capital projects;
    - Continuing to make energy efficient improvements and upgrades in buildings.
    - Expanding partnerships in reuse and recycling.
    - Establish a Citizens' Task Force to evaluate current strategies and recommend changes and new strategies.
- ❖ We agree with the critique made by Dr. Michael Sanera that the only part of the report that was discussed fully and voted on by task force members was the final task force recommendations and consequently will be the only part on which we comment.
- ❖ This process was also flawed from the beginning because we never agreed on a definition of sustainability. It was only after we were deep in the process (probably about 1 year in) that the discussion was finally had. And in large part, that was too late.
- ❖ We disagree with the statement in the Introduction Summary that states, "...the Sustainability Task Force has developed recommendations for water, energy, and waste that are environmentally and financially sustainable."
- ❖ It is stated in the report that one of the objectives of the STF was to develop recommendations that are environmentally and financially sustainable for each of the three focus areas. We contend that this objective was not met. There was plenty of discussion on the "environmental" part of being sustainable. That is not to say that the proposed recommendations are actually environmentally sustainable. It is

---

just being assumed because it “sounds right” that they are. We did not have adequate discussion or supporting information to have an educated debate about the balance of environmental sustainability and financial sustainability. The financial component was essentially entirely ignored.

- ❖ It is not even worth taking the time to knit pick line by line the goals, recommendations and strategies. What’s important to note is that NONE of these recommendations have been proven to be environmentally and financially sustainable. They are simply “thought to be” or “hoped to be” by those supporting this report. Also, it should be noted that the performance measures, to my knowledge, were not presented nor discussed by the task force.
- ❖ Recognizing that this is harsh, this document, at best, could be used as an example of what comes from a flawed process. Our true charge from the Board work session was to evaluate current strategies and recommend changes and new strategies. We perhaps glanced at the old ESA, but certainly did not take any time to evaluate the current strategies to see how they were or were not working. Additionally, the assumption of a charge to “recommend changes [to existing strategies] and new strategies” suggests that there are already goals set for the ESA. Instead the task force created new goals – 16 in all. Then countless verbose strategies/objectives were created through the flawed process and somehow performance measures appeared too.
- ❖ We are not in support of this document as a whole, because the process through which it was created was highly flawed and in our opinion should not be the document that guides the County’s “sustainability” efforts into the future.

