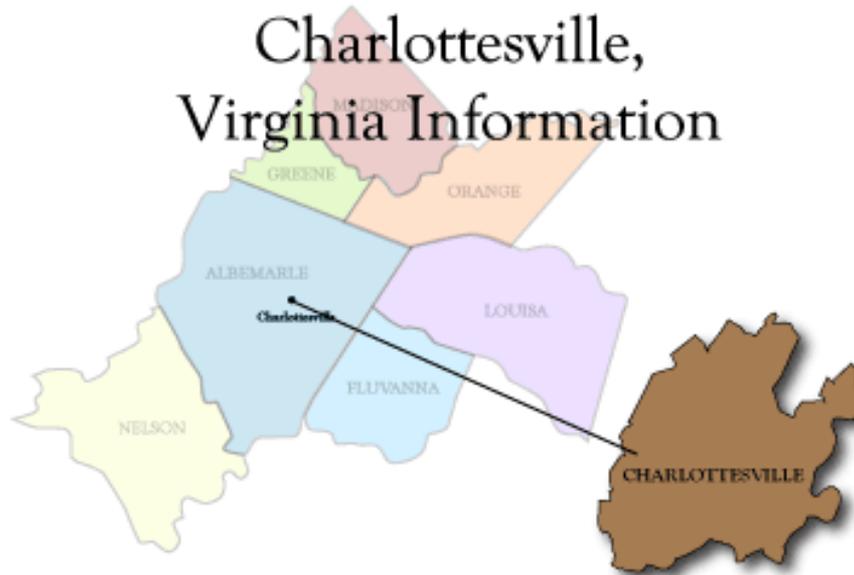




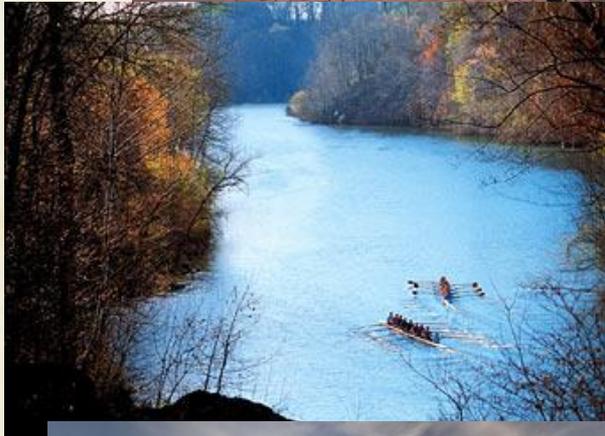
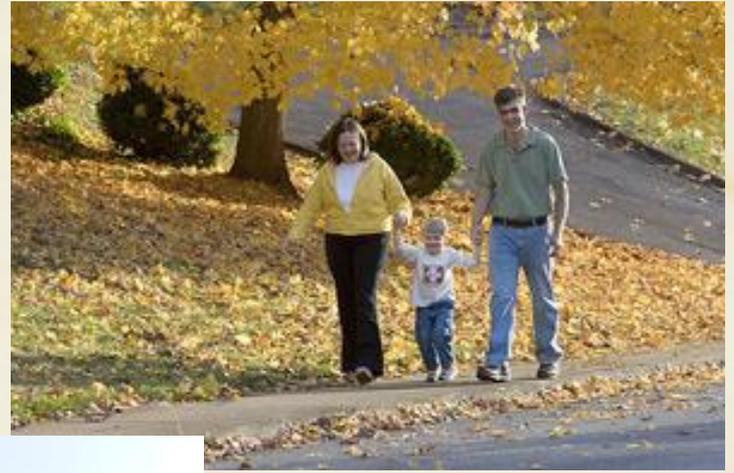
# Charlottesville: Environmental Sustainability Division Climate Protection Programs and Initiatives

Susan Elliott  
Climate Protection Program Coordinator  
*VA DEQ Environmental Excellence Conference – March 12, 2014*

# Charlottesville, Virginia Information



10.2 square miles!



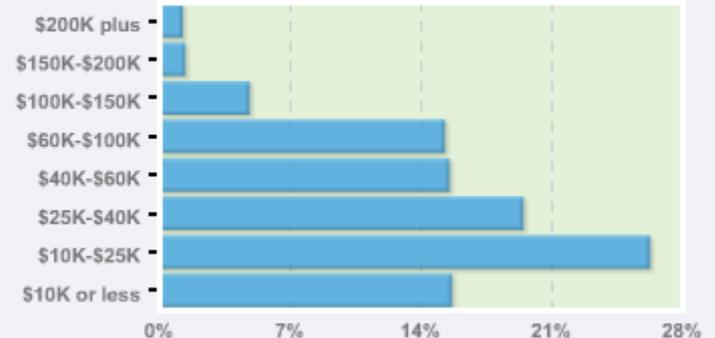


## Some Community Quick Facts

- 10.2 square miles
- ~44,000 residents
- ~17,000 households
  - ~58% Rentals
  - ~40% multi-unit housing structures
- ~\$44,500 median household income
- ~27% persons below the poverty level

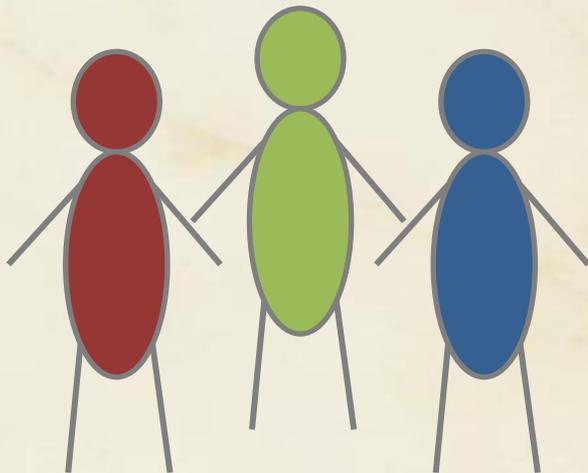


## Household income distribution



<http://www.areavibes.com/charlottesville-va/demographics/>

# Three “Themes” of Our Programs



# A Tradition of Environmental Commitments



1998 - Regional Sustainability Accords

2002 - City's Environmental Division established

2003 - Environmental Sustainability Policy issued & EMS initiated

2006 - Signatory to US Mayors Climate Protection Agreement

2007 - Charlottesville City Council Vision 2025 (Green City)

2007 - Comprehensive Plan (currently being updated for 2013)

2008 - Green Building Policy adopted

2009 - Local Energy Alliance Program (LEAP) established

2009 - Launched Local Climate Action Planning Process (LCAPP)

2011 - Published LCAPP Report

2013 - Stormwater Utility Adoption



# Commitments to Reducing GHG Emissions



2006 - Unanimously endorsed the US Mayors Climate Protection Agreement

2007 - Comprehensive Plan included, for the first time, goals and objectives related to Climate Protection

2008 - Community greenhouse gas emissions baseline report compiled

2009 - Resolution endorsing collaboration between the City, County of Albemarle and University of Virginia to address energy efficiency and climate change

2009 - A successful, joint grant application to help establish the Local Energy Alliance Program (LEAP) – foreseen to be a key player in helping the community to achieve energy use and emissions reductions

2009 - Local Climate Action Planning Process (LCAPP) launched

2011 - LCAPP report presented to City Council

2012 - Charlottesville Emissions Report Update compiled and presented to Council April 2013 with appropriate targets to assess against

2013 - Comprehensive Plan with Energy/Climate Goals



# City Council 2025 Vision Statement

## *“A Green City”*

Charlottesville citizens live in a community with a vibrant urban forest, tree-lined streets, and lush green neighborhoods.

We have an extensive natural trail system along with healthy rivers and streams.

We have clean air and water, we emphasize recycling and reuse, and we minimize stormwater runoff.

Our homes and buildings are sustainably designed and energy efficient.





# Green City Initiatives



## Initiatives

- Urban Forest Management
- Public Transit + Bike/Ped Improvements
- “Greening” the Fleet
- High Performance “Green” Buildings
- Stream/Watershed Protection
- Stream Restoration
- Stormwater Management
- Land Use/Zoning
- Waste Reduction and Recycling
- Energy Efficiency, Renewables, Resource Conservation
- Emissions Baseline and Emission Reduction Goals (aka Local-based Climate Protection efforts)

## Departments/Divisions

- Environmental Sustainability
- Neighborhood Development Services
- Parks and Recreation
- Public Works
- Community: Commercial; Non-Profit; Residents; Others



# 2013 Comprehensive Plan



## Environmental Chapter: Sustainable Development, Resource Efficiency, Waste Reduction, and Climate Protection

Goal 5 – Encourage high performance, green building standards and practices and the use of U.S. Green Building Council's (USGBC) LEED certification program, Earthcraft, Energy Star or other similar systems.

*(5.1) Policy and financial incentives*

Goal 6 – Promote effective and innovative energy and fuel management in both City and community buildings and operations.

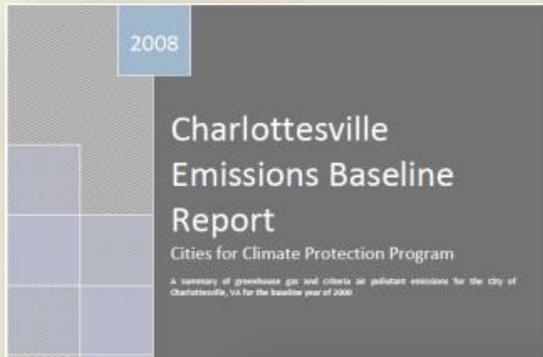
*(6.1, 6.2, 6.3, 6.4) Reduce energy demand and increase energy efficiency community-wide; cleaner sources of energy; Reduce vehicle-related emissions; Track and achieve emissions reductions*

Goal 8 – Promote and implement strategies to reduce waste generation ... to decrease environmental impacts, including greenhouse gas emissions.

**Key References:** Incorporated in the Comp Plan by reference

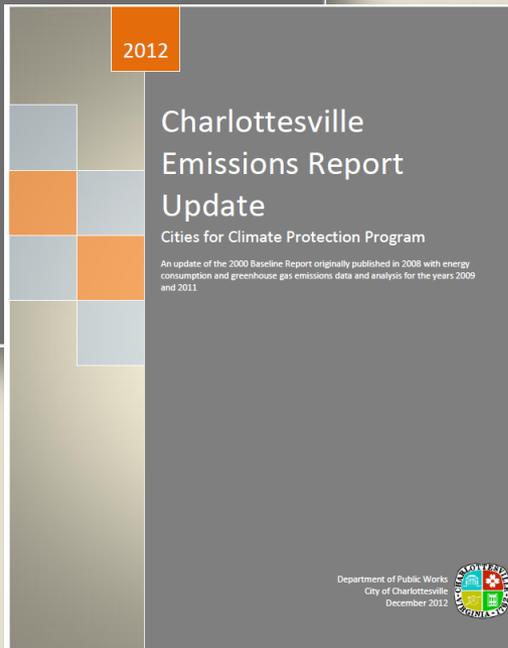


# Charlottesville Emissions Reports



- Emissions Baseline Report

- Resulted from the US Mayors Climate Protection Agreement
- Completed in 2008
- Inventory years 2000 & 2006



- Emissions Report Update

- Added inventories from 2009 and 2011
- 11 year perspective
- Completed the Five Milestones in ICLEI's Five Milestone performance framework
- Meets the LCAPP Recommendations to regularly provide public updates on progress towards reducing emissions internally as well as community-wide



# Charlottesville Emissions - Sectors

## Sectors

Institutional – 32%

University of Virginia

Commercial/Non-Residential – 26%

Residential – 18.78%

Community (10.2 sq mi)

Transportation – 16.7%

Municipal – 2.7%

City Operations

60% of Profile



UNIVERSITY OF VIRGINIA  
COMMUNITY  
CREDIT UNION



- EECBG Funds - 100% Community Accessible
- [www.charlottesville.org/greenincentives](http://www.charlottesville.org/greenincentives)





# Influences & Efforts

## Improvements in bicycle/pedestrian infrastructure

- Trails & On-road
- Multi-modal Plan; Bike/Ped Plan; Complete Streets Policy with Context Sensitive Solutions design; Code Audit

## Supporting a switch from driving to other modes of transportation & more efficient modes:

- Biking; Walking; Transit; Carpooling/Car Sharing; Combinations (all of the above)

**Free Pilot Classes**  
for  
**Safe Everyday Bicycling**  
[charlottesville.org/bikeclass](http://charlottesville.org/bikeclass)  
*Open to All Free for City Residents \$ 10 Non-Residents*

To help promote safe bicycling in Charlottesville, the City is offering public bicycle education classes, free for City of Charlottesville residents! **Sign up** to gain some skills for the road and provide feedback for future classes.

**Class Times (Spring 2014)**

**Confident Everyday Bicycling**  
*Ages 15+ and Adults*  
Sat. March 15, 1pm - 4pm Activity #230716-01  
Sat. March 22, 1pm - 4pm Activity #230716-02

**Skillz and Drillz \*Pre-Requisite Skill Levels\***  
*Ages 5-6*  
Sat. April 26, 2pm - 3pm Activity #230715-01

*Ages 7-8*  
Sat. April 26, 3:30 - 5pm Activity #230715-02

**Meet at Washington Park - Upper Parking Lot.**  
Classes focus on skill drills and on-bike practice in a traffic-free environment with information about how to ride safely with traffic. Call 434.970.3086 or see [charlottesville.org/bikeclass](http://charlottesville.org/bikeclass) for pre-req skill level info. Whether you're looking to improve or starting with the basics, there's a class for you!

**Sign Up** **City Residents: Free** **All Others: \$10**  
Register through the City's Parks and Recreation. Classes are listed under the "Outdoors" section.

**Online: Credit Card Required.**  
Go to: [www.charlottesville.org/parksandrec](http://www.charlottesville.org/parksandrec)

**Phone: Credit Card Required.** Activity # Requested.  
434.970.3260 Monday - Friday 8am - 5pm

**In-Person: Cash, Check, or Credit Card.**  
Parks & Recreation Administrative Office (City Hall Annex); or at Smith Aquatic & Fitness Center.

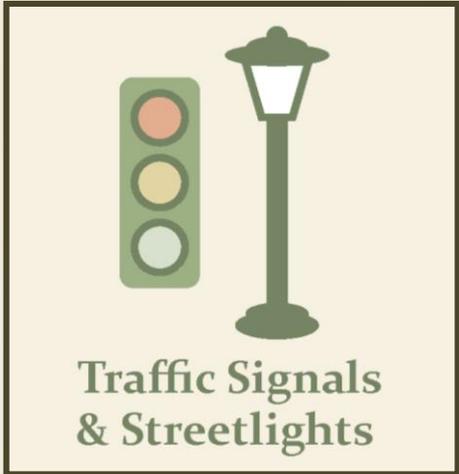
**Mail: Credit Card Required.** Mail a completed Parks and Recreation program registration form.

**BIKE SAFE CHARLOTTESVILLE**



### Greening of the Fleet

- Anti-Idling Policy
- Alternatively fueled and efficient vehicles (~42 hybrids, 2 compressed natural gas buses, 4 all-electric low-speed trucks)
- Hybrid-electric buses – 2 in service; plans to convert the fleet over next 10 years.
- Seasonal biodiesel used (transit buses, school buses and others)
- Participating in a R&D project related to electric vehicles and fast-charge technology



### Efficient Infrastructure

- Traffic Signal Conversion – Incandescent to LED**
- ~ 500 lights at 48 signalized intersections
  - ~ 80% energy demand reduction per intersection
  - Simple Payback: ~ 2 Years
- Ornamental Streetlights**
- As of 2011, 53% use LEDs
  - More LED lighting when upgrading or adding new
- Other Streetlights**
- Dominion-owned
  - Partnered to pilot LEDs in double-streetlamps

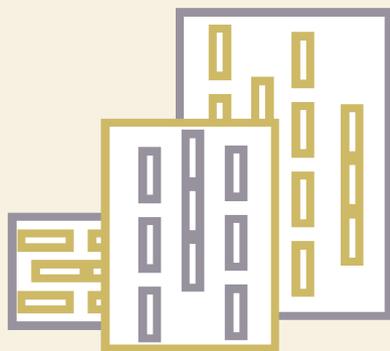


### Efficient Buildings

- Three Major Efforts**
- Improve efficiency of existing facilities
  - Pursue high performance green buildings for all new facilities
  - Implement operational adjustments
- Projects and Programs**
- \$1.8M Energy Performance Contract
  - Focused & consistent utility management (tracking, auditing, retrofits, and upgrades)
  - LEED Buildings
  - Integrating Renewable Energy Strategies – CIP Funding ([charlottesville.org/citysolar](http://charlottesville.org/citysolar))

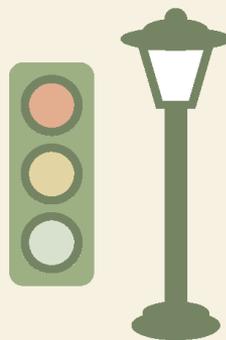
# Municipal Sector: 2011 Community Emissions Profile

2011 Community Profile: **2.7%**      2000-2011: **↓18%**



## Facilities

↓ 29.8% GHG Emissions  
↓ 29.5% Energy Use



## Traffic Signals & Streetlights

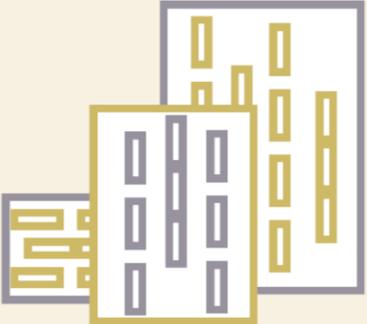
↓ 24% GHG Emissions  
↓ 20.8% Electricity (kWh)



## Fleet

GHG Emissions  
↓ 10.3% Gasoline  
↑ 48.4% Diesel

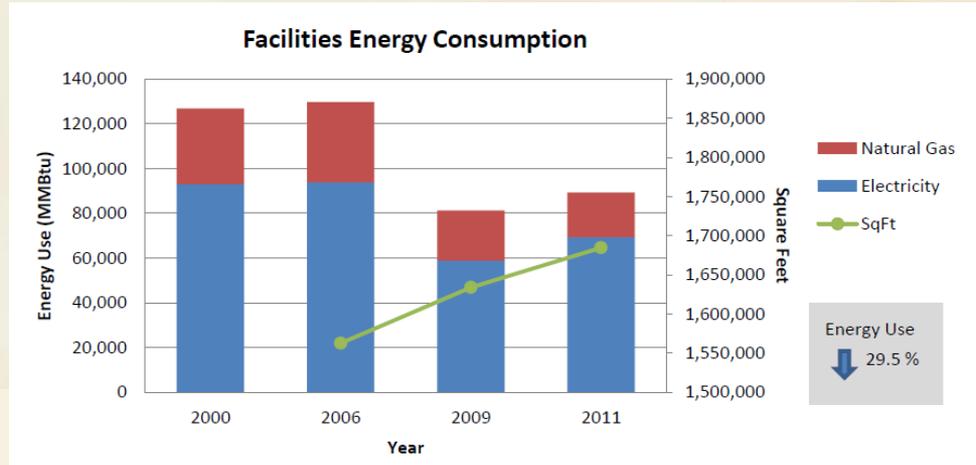
2000  
vs.  
2011 }



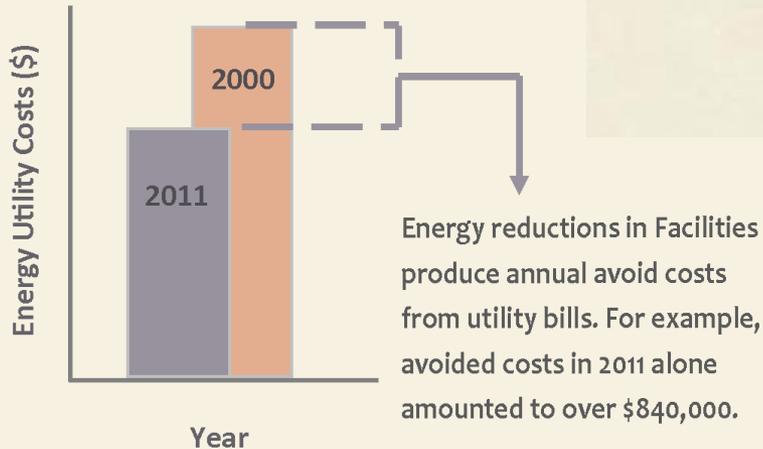
**Facilities**

↓ 29.8% GHG Emissions  
↓ 29.5% Energy Use

## Savings occurred with an increase in building portfolio



### Facilities' Annual Energy Use Costs (Calculated at 2011 Utility Rates)



Results in annual avoided costs and protection from rising utility rates

# 2012 City of Charlottesville Emissions Report Update

2000

vs.

2011

Community-wide Emissions: **↑ 7%**



↓ 1.2%  
per capita



673,050 vs 720,870  
MT CO<sub>2</sub>e

2011 Profile: Commercial & Institutional 58.38% Residential 18.78% Transportation 16.7% Waste 3.43% Municipal 2.7% Industrial 0.05%

Note: The University of Virginia is the only institutional entity within the City and was included in its entirety in the emissions profile.

## The Largest Community Sectors

**Institutional (UVa)**

2011 Profile: 32%

2000-2011  
↑ 28% GHG Emissions

**Commercial**

2011 Profile: 26%

2000-2011  
↑ 1% GHG Emissions

**Residential**

2011 Profile: 18.78%

2000-2011  
↑ 15% GHG Emissions  
↑ 13.5% Energy Use

**Transportation**

2011 Profile: 16.7%

2000-2011  
↓ 13.5% GHG Emissions  
(based on vehicle miles traveled)

# Informing the Climate Protection Program

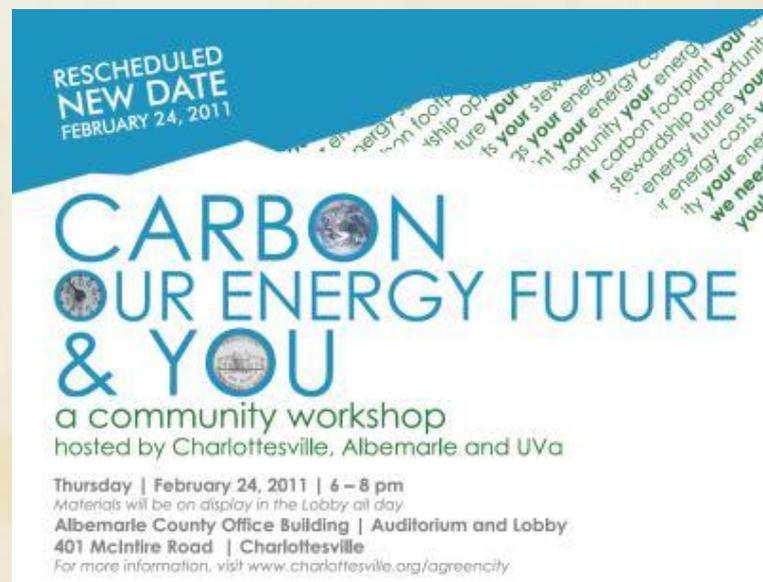


# Local Climate Action Planning Process (2009)



- Steering Committee of key community representatives (local government, local businesses, local NGOs, local institutions)
- Working Groups: network of ~50 subject experts, interested parties, and staff

- Community Workshop
- Recognition of Co-Benefits
- Outcomes included
  - 5-Part Framework with Action Strategies
  - Recommended Principles
  - Next Steps



# 5

## Five-Part Framework for Our Community Energy Profile

1

### Energy & the Built Environment

- Reduce Energy Demand in Existing Buildings
- Increase Energy Efficiency Performance of New Buildings
- Enable Building to Green Building Standards and Practices

2

### Energy & Mobility

- Focus Land Use and Transportation Planning on Density and Infill
- Improve Travel Efficiency
- Encourage Alternatives to Single Occupancy Vehicle Use

3

### Energy Sourcing

- Promote Adoption of Cleaner Sources of Electrical Energy
- Promote Adoption of Cleaner Sources of Energy for Heating and Cooling
- Promote Adoption of Hybrid, Electric and Biodiesel Vehicles and Fuels

4

### Energy & Materials

- Promote Zero Waste Principles of Waste Reduction and Minimization
- Consider Impacts of Purchasing Decisions; Prioritize Local Procurement
- Reuse and/or Repurpose Existing Buildings

5

### Energy & the Landscape

- Maintain Existing Tree Canopy and Forestland Base
- Expand Forest Cover
- Manage Existing Tree Canopy and Forests to Promote Health and Diversity



### Reduce Energy Use and Demand in Existing Buildings

- Increase awareness and adoption of low and no cost measures to reduce energy use in buildings (target both property owners and tenants)
- Encourage and assist property owners to benchmark their buildings' energy use and/or to get a building energy label/score
- Implement a City- and/or County-owned water and gas utility on-bill repayment option for financing

### The Delta Force Team at the University of Virginia

In 2008, the University of Virginia launched the Delta Force, a cross-functional team-based approach to retrocommissioning existing buildings with a focus on energy and water conservation. Each building's Delta Force Team includes UVA staff members and external support professionals with expertise in commissioning and HVAC system testing and balancing. The Delta Force Team has prioritized energy-intensive facilities, starting with older research labs and dining halls. Retrocommissioning each building takes approximately 12-15 million. Through May 2011, the Delta Force Team has realized cumulative energy cost savings of over \$2.3 million.



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an... unanimously approved the Green Building and

ess that will continue to evolve and will depend... encourages the City, County and UVA to take... ed Principles and Recommended Next Steps:

uctions at the local level... ty, University of Virginia and community partners... and planning... s about the impacts of carbon emissions and... the health, economic and environmental benefits

considerations in planning and operations of... form Comprehensive and other planning efforts... on for each entity to enhance planning for and... near-term reduction goals;... ssions and energy use in internal programs... community baseline emissions.

Action Planning Process to expand information

## Recommended Principles

- ➔ To continue to demonstrate leadership in energy and carbon reductions at the local level;
  - To build on existing synergies by continued collaboration of City, County, University of Virginia and community partners;
  - To integrate the role of energy and carbon emissions in projects and planning;
- ➔ To equip the community at all levels to make informed decisions about the impacts of carbon emissions and energy; and
- ➔ To identify and promote actions that enable the community to reap the health, economic and environmental benefits that accompany sound energy-based decisions.

## Recommended Next Steps

1. Act on existing commitments to further address carbon and energy considerations in planning and operations of the City, County and University of Virginia.
  - a. Use the *Five-Part Framework for Our Community Energy Profile* to inform Comprehensive and other planning efforts;
  - b. Utilize the *Framework Action Strategies* to develop an *Action Plan* for each entity to enhance planning for and knowledge about emissions reduction opportunities and identify near-term reduction goals;
- ➔ Provide regular public updates on progress toward reducing emissions and energy use in internal programs and operations as well as on the results of periodic tracking of community baseline emissions.
2. Build on stakeholder involvement developed through the *Local Climate Action Planning Process* to expand information exchange on carbon and energy-related issues.
  - ➔ Provide learning and engagement opportunities for the wider community including celebration of local successes in the private sector;

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The City and County have jointly pursued similar but Jessup Building and the Levy Building.

property taxes on agricultural, horticultural, forested and open space land uses. The has 4919 parcels registered with 252,000 acres. The current enrollment represents and \$2.3 billion in value deferred.

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### Energy & Materials



### Energy & the Landscape

exchange on carbon and energy-related issues.

- a. Provide learning and engagement opportunities for the wider community including celebration of local successes in the private sector;
- b. Adapt the *Framework Action Strategies* into a *Community Toolkit* containing local guidance and case studies aimed at community members wishing to save energy and reduce their individual emissions;
- c. Facilitate continual improvement of all participants by bringing senior management and project leaders together annually to share and learn from each other's projects and experiences in reducing carbon emissions and energy use in operations and facilities; increase related training and outreach targeting employees;
- d. Invite community members to become actively engaged in efforts to develop tailored *Action Plans* for the City and the County

**THANK YOU!**

**QUESTIONS?**

