



## Arlington's Community Energy Project

### *Ensuring a Competitive and Sustainable Community*



March 2011



## Arlington's History of Planning

- *Affordable Housing*
- *Chesapeake Bay Preservation*
- *Historic Preservation*
- *Homelessness*
- *Information Technology*
- *Land Use*
- *Natural Resources Mgmt*
- *Neighborhood Conservation*
- *Open Space/Public Spaces*
- *Public Art*
- *Recycling*
- *Sanitary Sewer*
- *Stormwater Management*
- *Transportation*  
*Streets, Transit, Biking,  
Parking, Pedestrians*
- *Urban Forestry*
- *Water Distribution System*
- *Green Buildings*
- *AIRE*

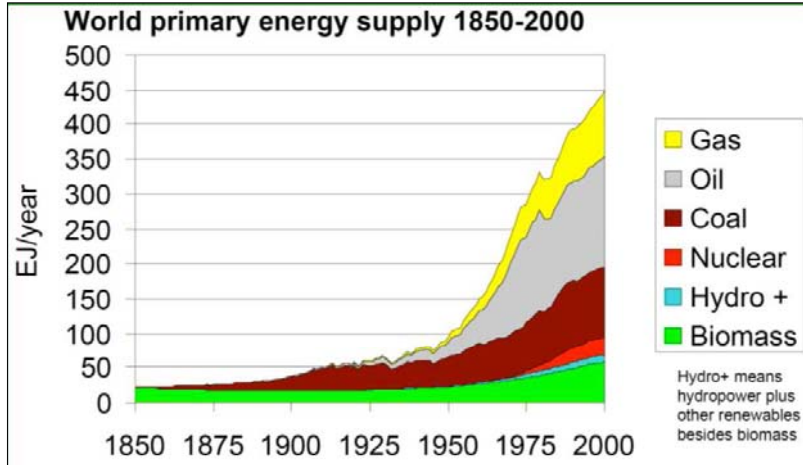
Energy?????

*Community Energy Project*



# Insatiable Appetite for Energy

About 70% of it in Cities



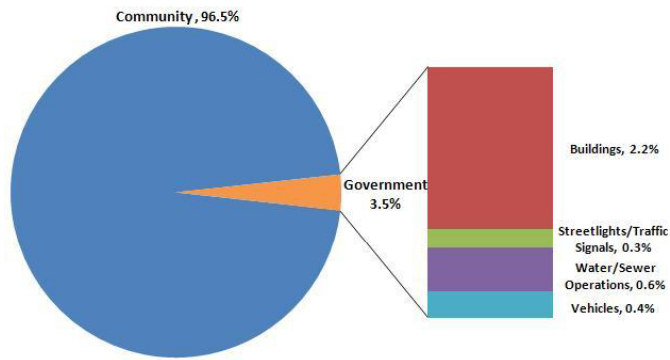
**Forecast to double by 2030**

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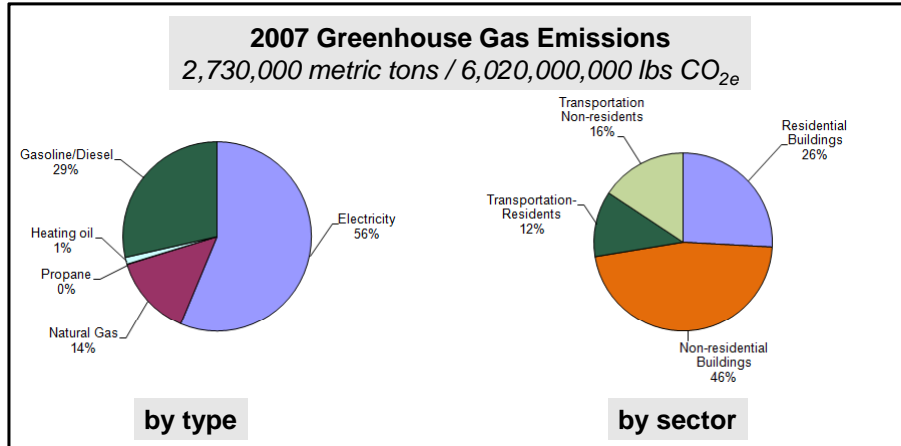
# Arlington County Government's Greenhouse Gas Emissions

Total Arlington County Greenhouse Gas Emissions by Sector, 2007





# Arlington County - Carbon Footprint



**13.4 metric tons for each Resident**

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# Greenhouse Gas Indicators

■ National Greenhouse Gas per capita per year (metric tons CO<sub>2</sub>)

■ Canada	22.6
■ USA	21.7
■ Denmark	14.1
■ Germany	11.7
■ European Union	10.5

■ Municipal Greenhouse Gas per capita per year

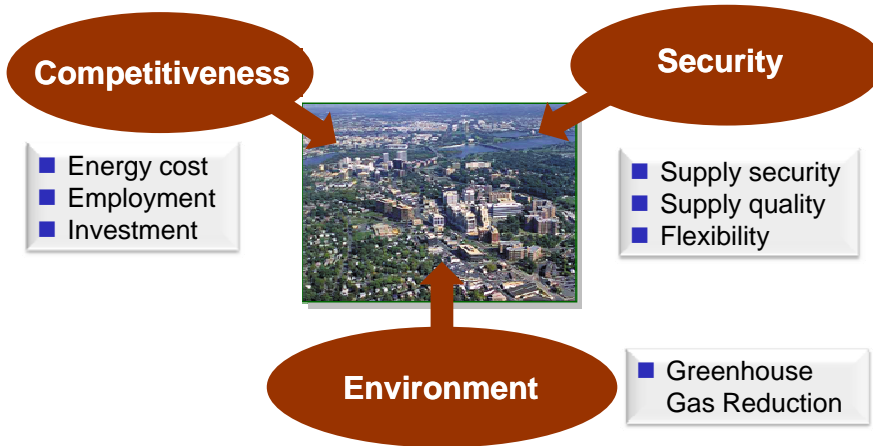
■ Washington DC	19.7
■ <b>Arlington County</b>	<b>13.4</b>
■ Loudoun County	14.2 with 6.0 goal
■ Canada – Guelph	12.2 with 5.0 goal
■ Mannheim	6.0
■ Denmark - Copenhagen	3.0

**2050 goal for Arlington?**

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\*Rough indicators - multiple sources

## Community Energy Project: Background



- Competitiveness**
- Energy cost
  - Employment
  - Investment

- Security**
- Supply security
  - Supply quality
  - Flexibility

- Environment**
- Greenhouse Gas Reduction

### Three Groups of Benefits

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## Community Energy and Sustainability (CES) Task Force

### Purpose

- *Recommend countywide goals for long-term, mid-term and short-term reduction of greenhouse gas (GHG) emissions as well as key strategies and actions to be taken by government, the private sector, the non-profit sector and individuals to meet those goals. Energy use is the predominant cause of GHG emissions and is therefore the primary focus of this effort.*
- *Produce a Community Energy Plan (CEP) that will be the foundation for an Energy Master Plan, which could ultimately become an element of Arlington County's Comprehensive Plan.*

*Adopted by Arlington County Board, January 1, 2010*



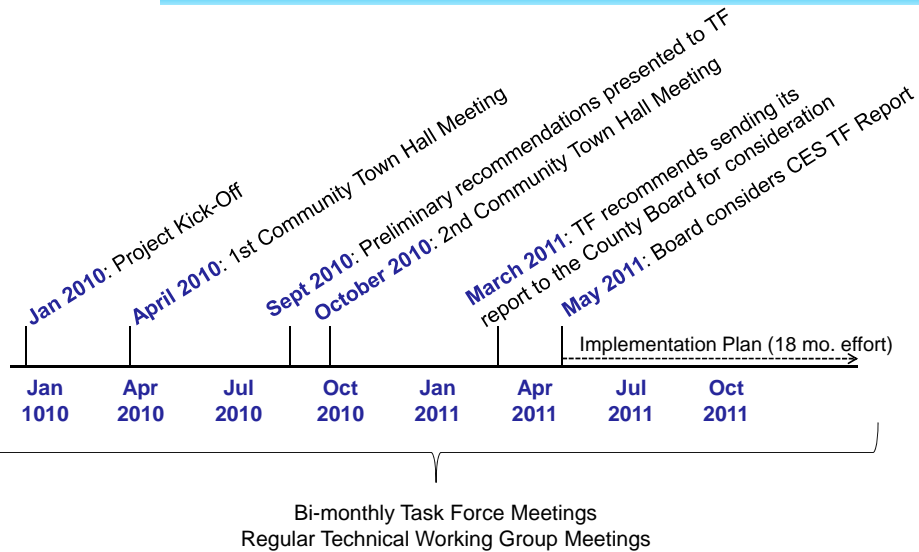
## CES Task Force (29 members)

- **Businesses (8)**
  - JBG
  - Little Diversified Architectural Consulting
  - Lockheed Martin
  - Marriott International
  - SRA International
  - Turner Construction
  - VA Hospital Center
  - Vornado
- **Citizens (4)**
  - Arlington Civic Federation
  - Commissions
- **Educational Institutions (2)**
  - Arlington Public Schools
  - Virginia Tech
- **Energy & Energy Tech Industry (3)**
  - Dominion Virginia Power
  - United Solar Ovonic (Uni-Solar)
  - Washington Gas
- **Local, State and Federal Gov'ts (5)**
  - The Pentagon
  - US EPA
  - Commonwealth of Virginia Senate
- **Nonprofits/Associations (5)**
  - Apartment and Office Building Association
  - Arlington Chamber of Commerce
  - Arlington Partnership for Affordable Housing
  - Arlingtonians for a Clean Environment
  - Pew Center on Global Climate
- **Regional Transportation Authorities (2)**
  - Metro Washington Airports Authority
  - Metro Washington Area Transit Authority

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## Timeline



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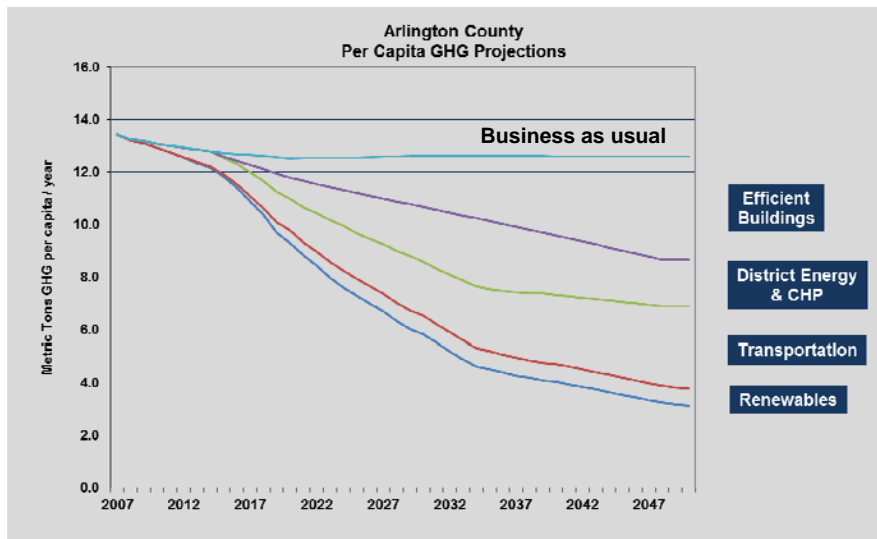
## Headline Target: 2050 Greenhouse Gas Emissions

- Task Force recommends a GHG emissions target of 3 metric tons CO<sub>2</sub>e /capita per year by 2050.
- In 2007, Arlington produced 13.4 metric tons CO<sub>2</sub>e per resident
- Task Force also recommended Arlington's target for 2050 be 2.2 metric tons CO<sub>2</sub>e /capita if regional energy plan established.

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## Per Capita GHG Emissions Impacts of Key Energy Policy Recommendations



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## Arlington Community Energy Framework

- Energy efficiency – *If you don't need it - don't use it*
- Heat Recovery – *It it's already there – use it*
- Renewable energy – *If it makes sense, go carbon free*
- Energy distribution – *Invest where it makes sense*

**Integrated Solution – Tailored for County!**

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## Recommendation: Energy Efficient Buildings

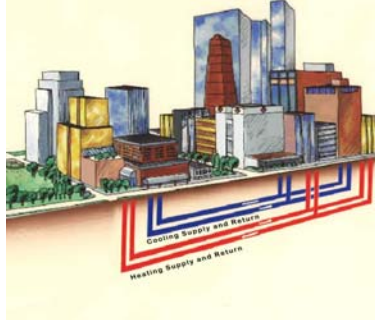
- Increase energy efficiency in new and renovated homes and buildings, on the order of 30% to 50%
  - *Efficient construction and equipment*
  - *Operations and maintenance*
- Create a mixed-use, net-zero energy scale project



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## Recommendation: District Energy Systems



Centralized supply and delivery

- Heating
- Cooling
- Domestic hot water

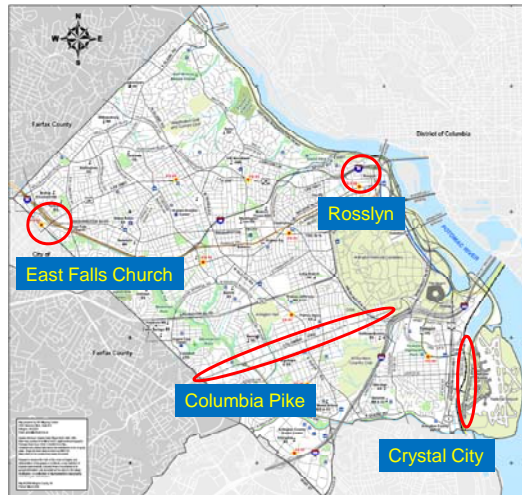
- Distribution to many homes and buildings
- Closed network of highly insulated pipes
- Optimized energy supply from multiples sources
  - Combined Heat & Power
  - Boilers/Furnaces
  - Absorption Chillers
  - Electric Chillers
  - Solar and Biomass
  - Waste heat recovery
- Typically operated by dedicated DE-Utility

**Widely deployed proven technology**

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## Task Force Recommendations High Priority Candidates



**Potential Scale Project Areas**

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## Recommendation: Energy Efficient Transportation

- Reduce vehicle miles traveled
- Support federal efforts to increase vehicle fuel efficiency
- Support the reduction of carbon content in fuels



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## Recommendation: Renewable Energy

- Increase use of solar photovoltaic systems countywide
  - *Target: 160 Megawatts of capacity by 2025*
- Increase use of clean and renewable energy sources for domestic hot water and space heating needs



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## Recommendation: Enabling Strategies

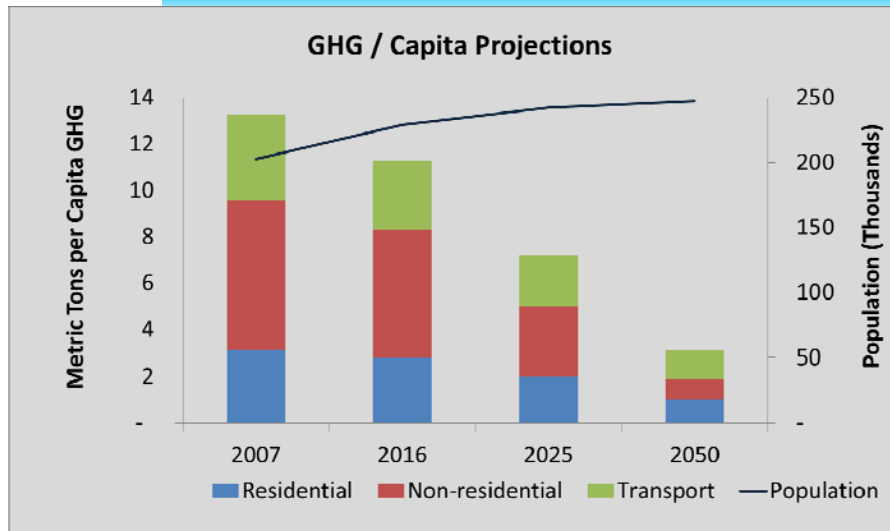
- Institutionalize energy planning
- Energy performance labeling
- Education and training
- Financing and incentives
- Ongoing County and regional programs



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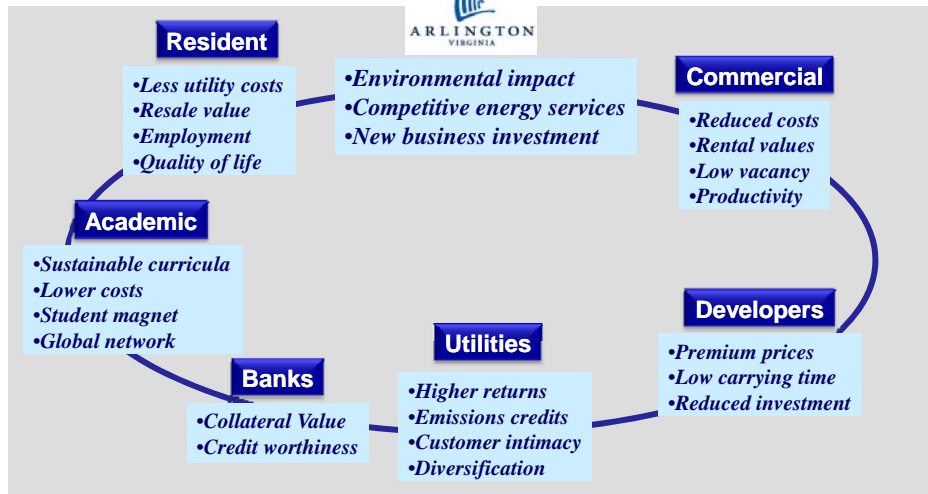
## Energy Modeling Results



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# Benefits of Success!



## New Relationships – New Rules

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# For more information:



[www.arlingtonva.us/energyplan](http://www.arlingtonva.us/energyplan)

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