

Arlington's Community Energy Project

*Ensuring a Competitive and
Sustainable Community*



May 2011

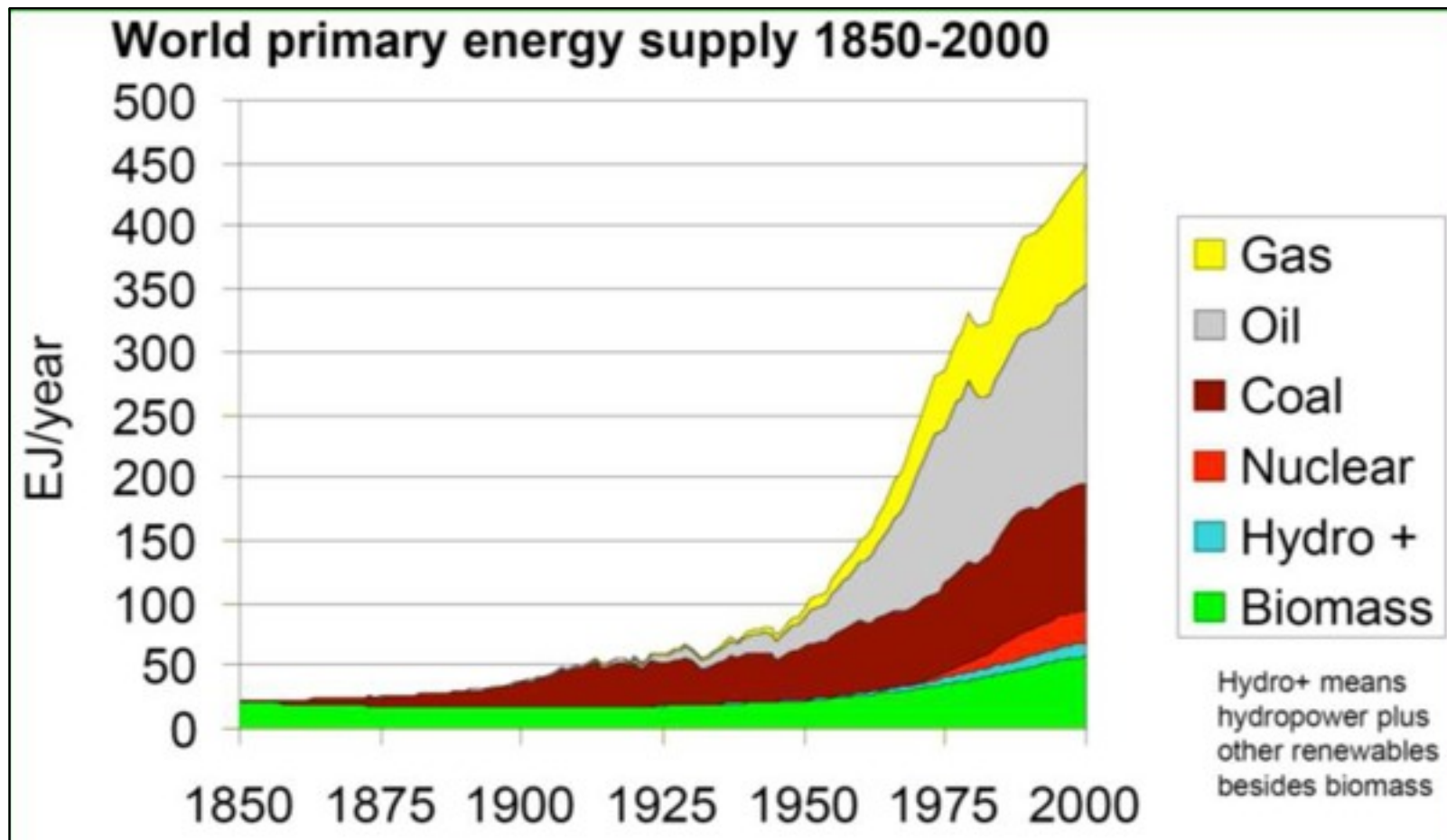
Arlington's History of Planning

- *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?????

Insatiable Appetite for Energy

About 70% of it in Cities



Forecast to double by 2030

Greenhouse Gases are Proxy for Energy Performance

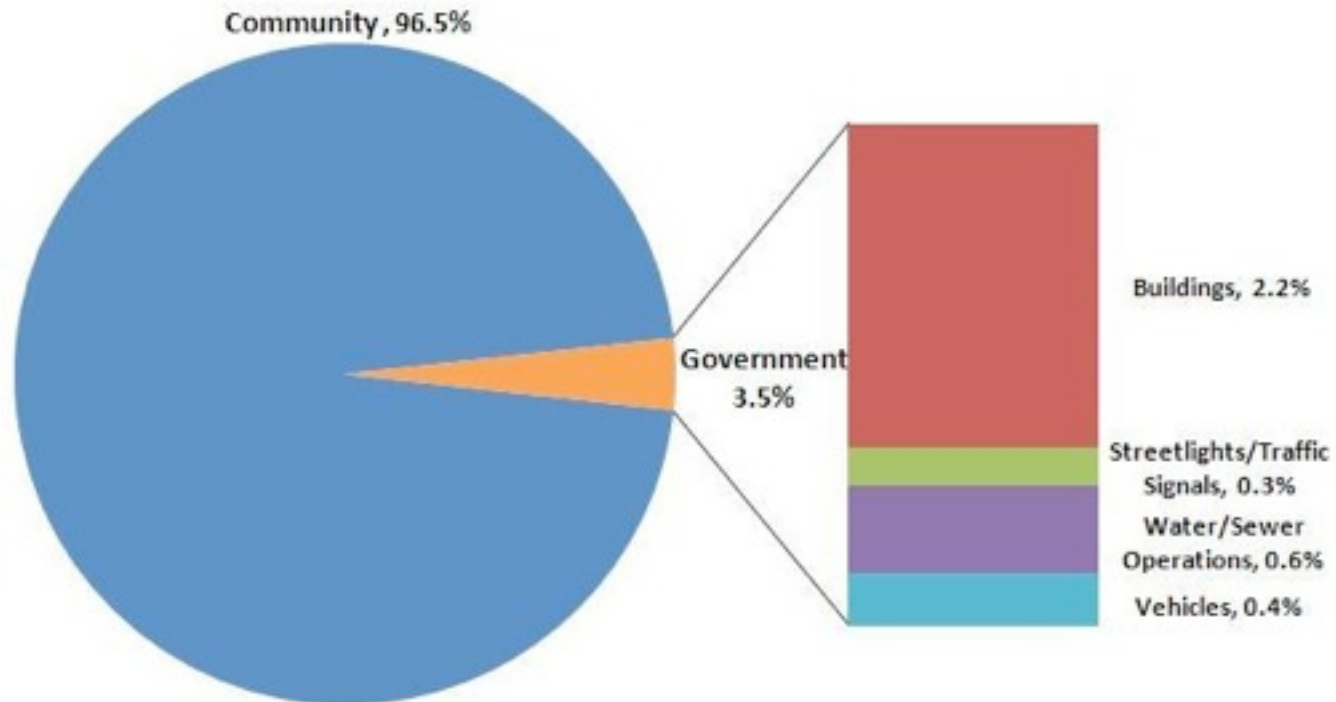
Energy use – fossil fuels – is the predominant source of greenhouse gas emissions, especially in urban areas.

Greenhouse gas emissions are a widely-used metric for overall energy productivity, as GHG reflect both energy efficiency and carbon content of fuels.

Carbon dioxide-equivalent (CO_2e) is the measure, and CO_2e per capita allows benchmark comparisons.

Arlington County Government's Greenhouse Gas Emissions

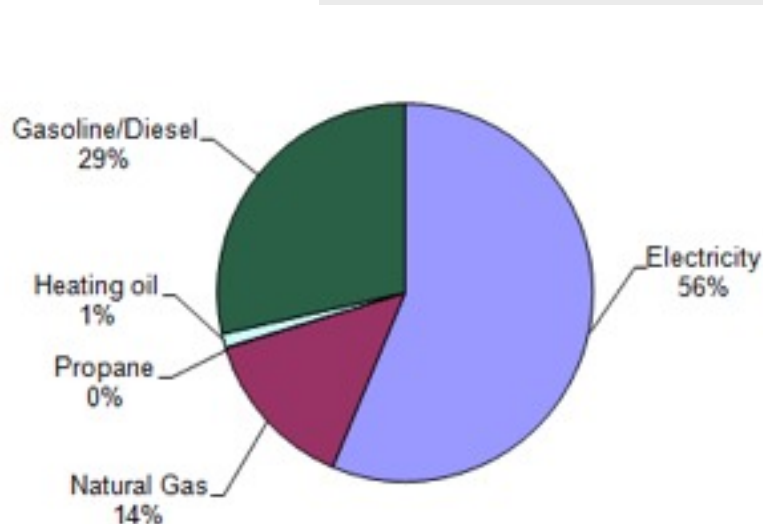
Total Arlington County Greenhouse Gas Emissions by Sector, 2007



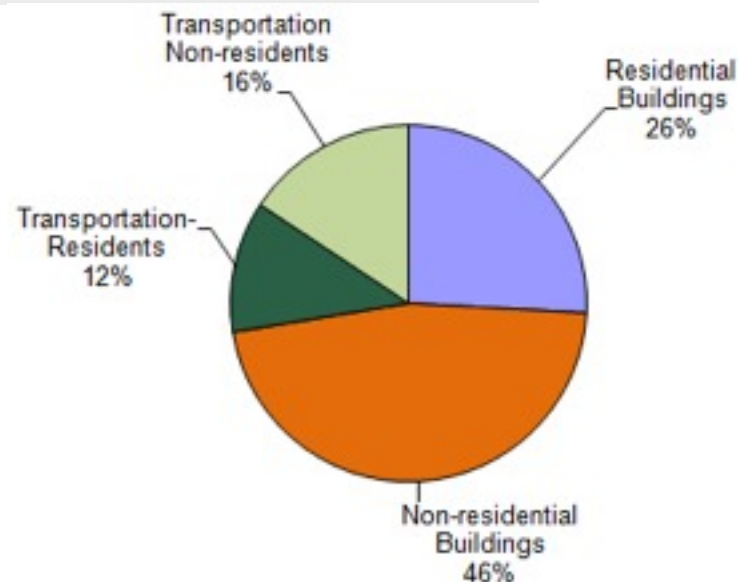
Arlington County - Carbon Footprint

2007 Greenhouse Gas Emissions

2,730,000 metric tons / 6,020,000,000 lbs CO_{2e}



by type



by sector

13.4 metric tons for each Resident

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*

Community Energy Project: Background

Competitiveness

- Energy cost
- Employment
- Investment

Security

- Supply security
- Supply quality
- Flexibility

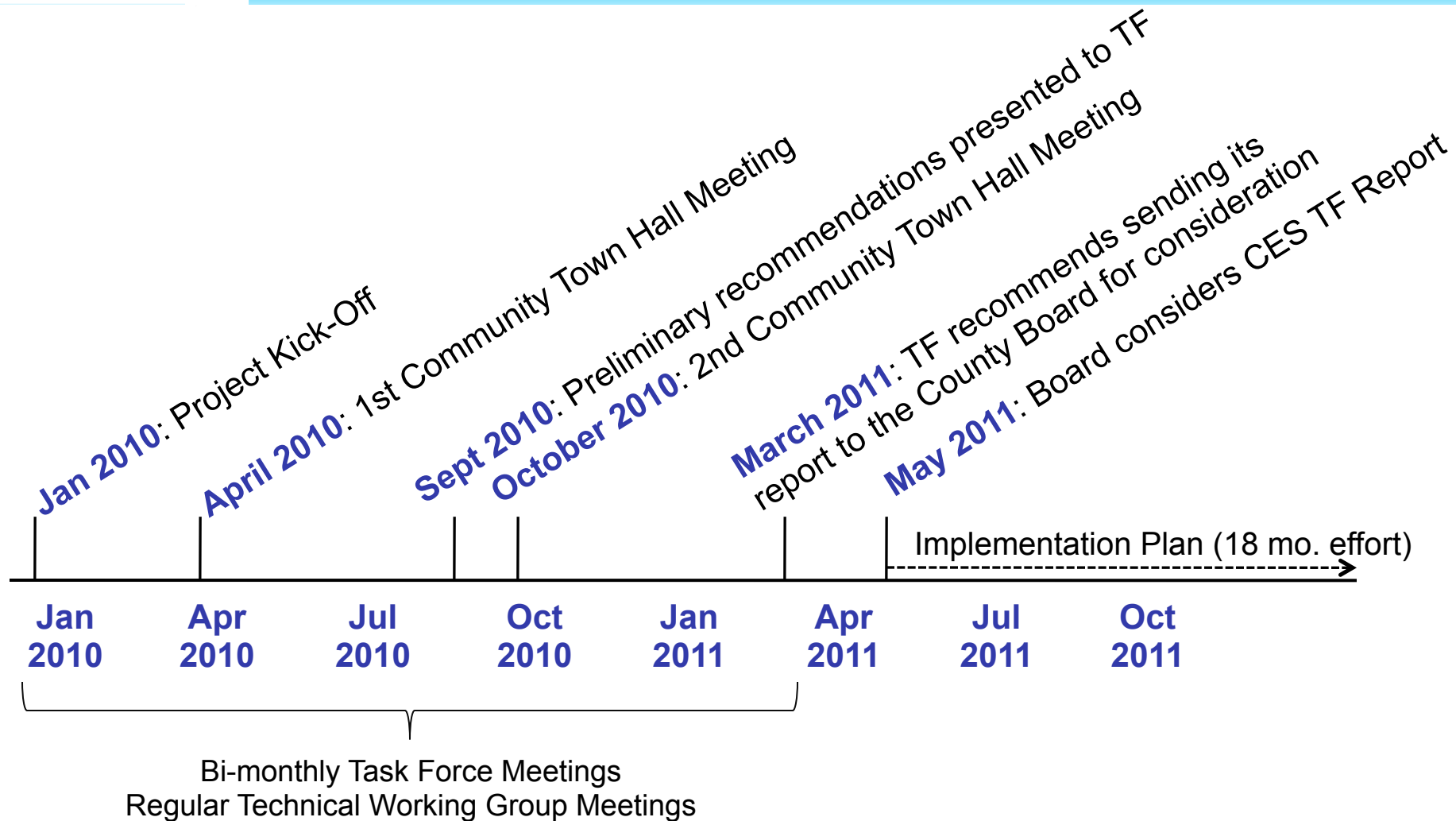


Environment

- Greenhouse Gas Reduction

Three Groups of Benefits

Timeline



- From Jan 2010 to Now:
 - (2) *Community Energy Town Hall meetings*
 - (8) *CES Task Force meetings*
 - (2) *Sector meetings*
 - (1) *County Board Work Session*
 - (10) *Commission meetings*
 - (4) *Community group meetings*
 - (25) *Other*
- From now to Summer:
 - (2) *County Board meeting and Work Session*
 - (4) *Commission meetings*
 - (15) *Community group meetings*
- Articles for the Citizen, Civic Associations
- Reporter interviews
- Continuously updated project website

Greenhouse Gas Indicators

- National Greenhouse Gas per capita per year (metric tons CO₂)
 - *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
 - *Loudoun County* 14.2 with 6.0 goal
 - **Arlington County** **13.4**
 - *Canada – Guelph* 12.2 with 5.0 goal
 - *Mannheim* 6.0
 - *Denmark - Copenhagen* 3.0

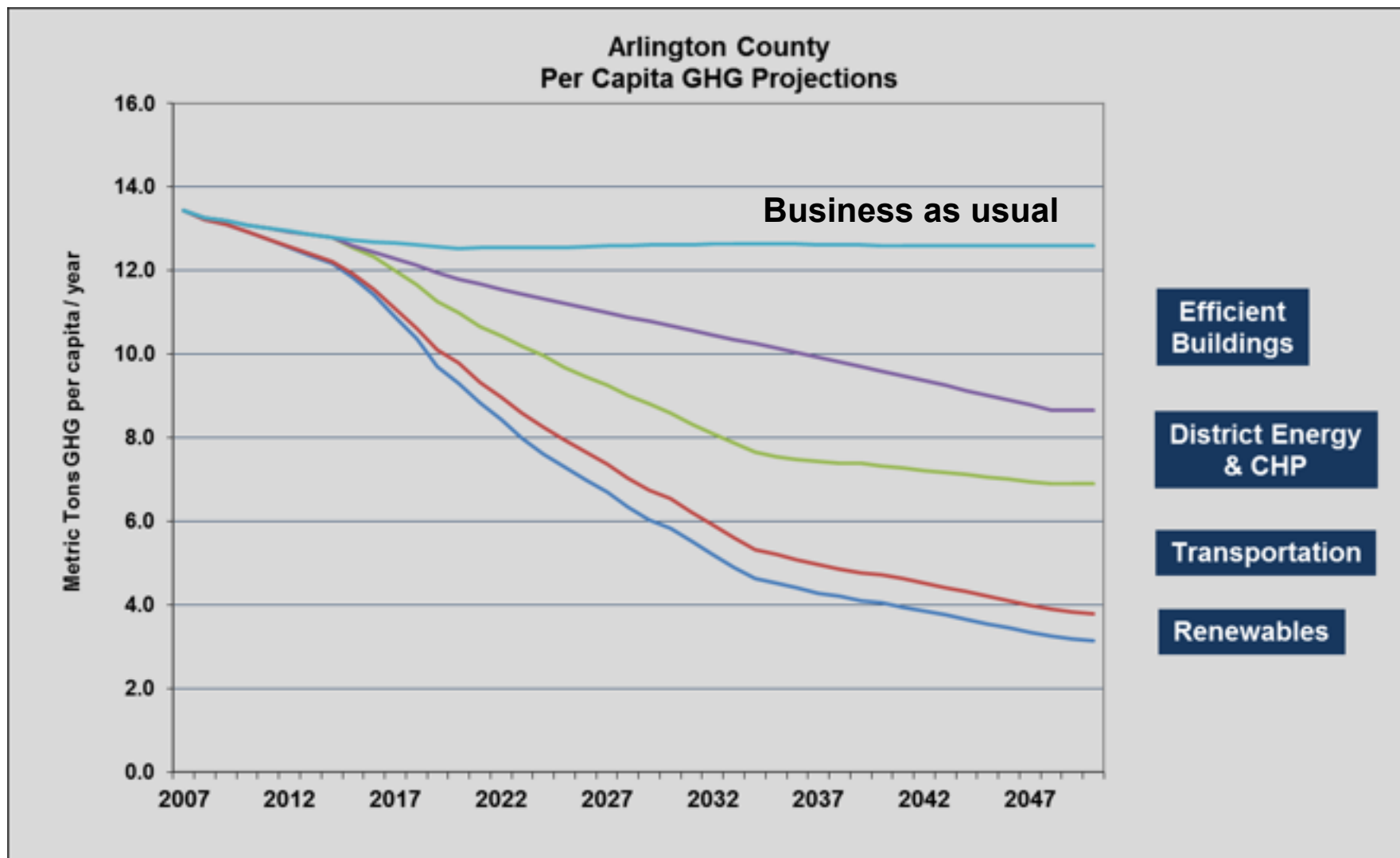
2050 goal for Arlington?

Headline Target: 2050 Greenhouse Gas Emissions

- **Task Force recommends a GHG emissions target of 3 metric tons CO₂e /capita per year by 2050.**
- In 2007, Arlington produced 13.4 metric tons CO₂e per resident
- Task Force also recommended Arlington's target for 2050 be 2.2 metric tons CO₂e /capita if regional energy plan established.

Per Capita GHG Emissions

Impacts of Key Energy Policy Recommendations



Timeline (*continued*)



Arlington Community Energy Framework

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

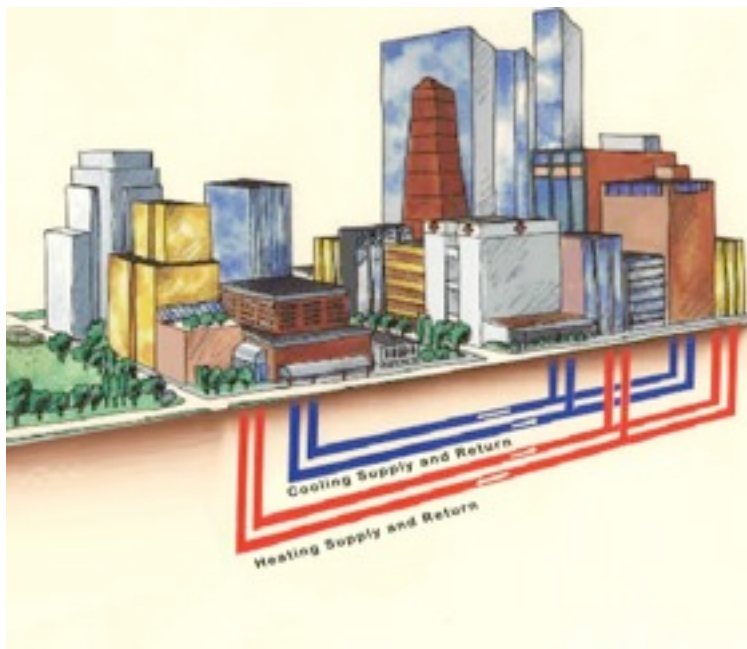
Integrated Solution – Tailored for County!

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



Recommendation: District Energy Systems



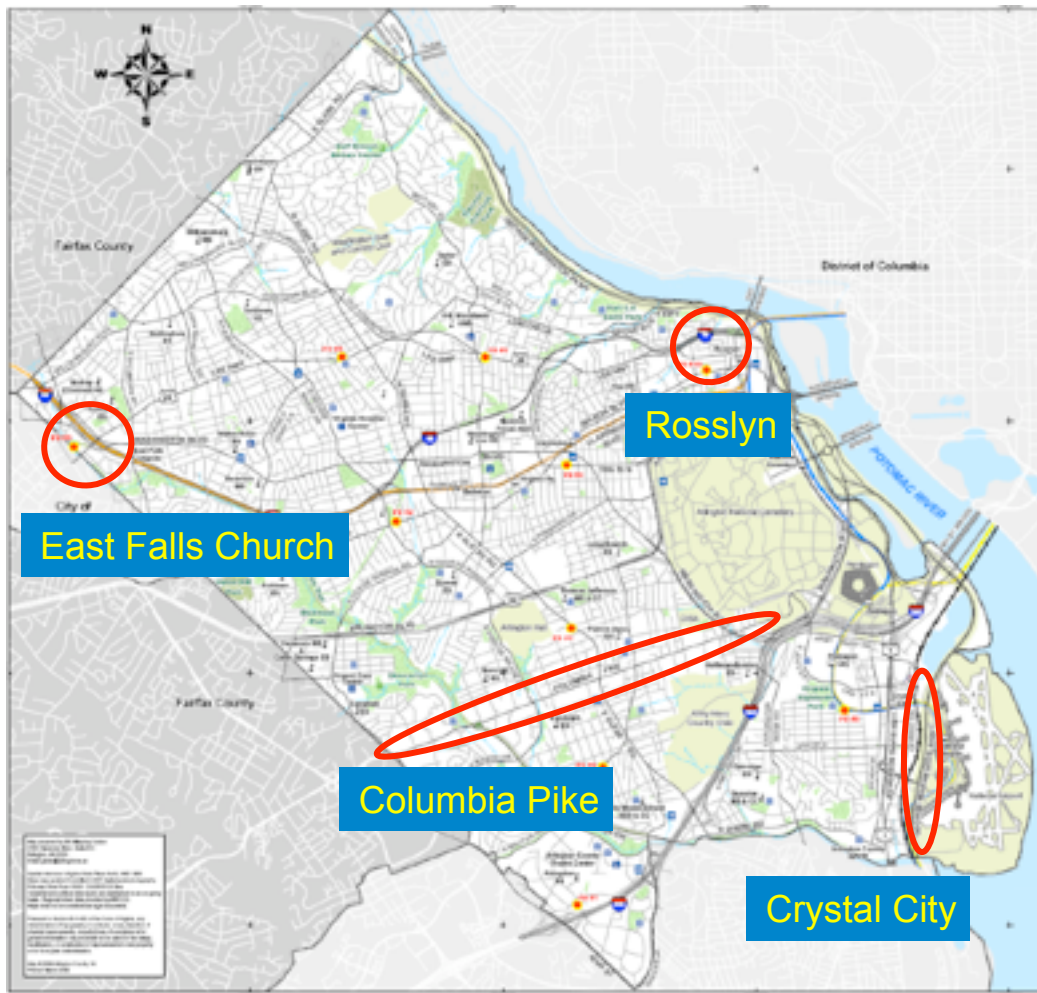
Centralized supply and delivery

- *Heating*
- *Cooling*
- *Domestic hot water*

- Distribution to many homes and buildings
- Closed network of highly insulated pipes
- Optimized energy supply from multiple 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

Task Force Recommendations *High Priority Candidates*



Potential Scale Project Areas

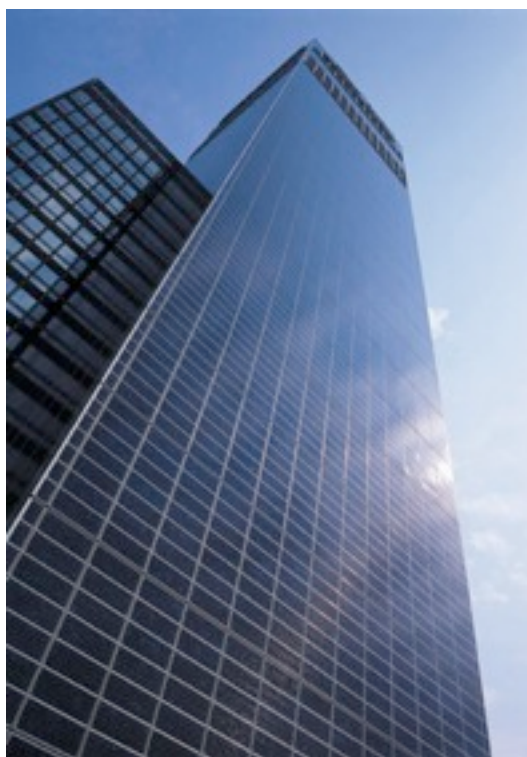
Recommendation: Energy Efficient Transportation

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



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



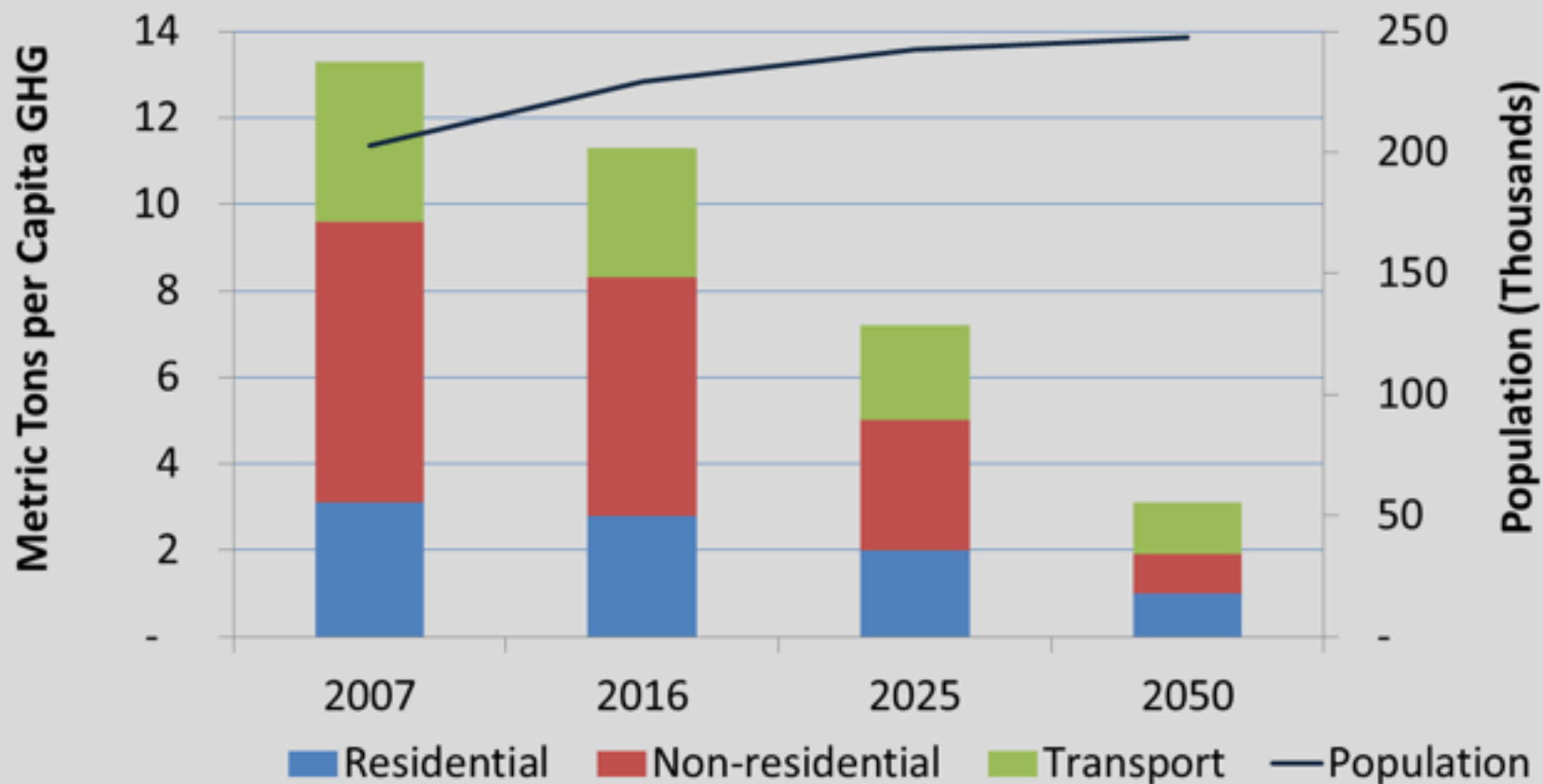
Recommendation: Enabling Strategies

- Energy planning and processes
- Energy performance labeling
- Community input / energy literacy
- Education and training
- Financing and incentives
- Greenhouse gas emissions data
- Regional energy plan

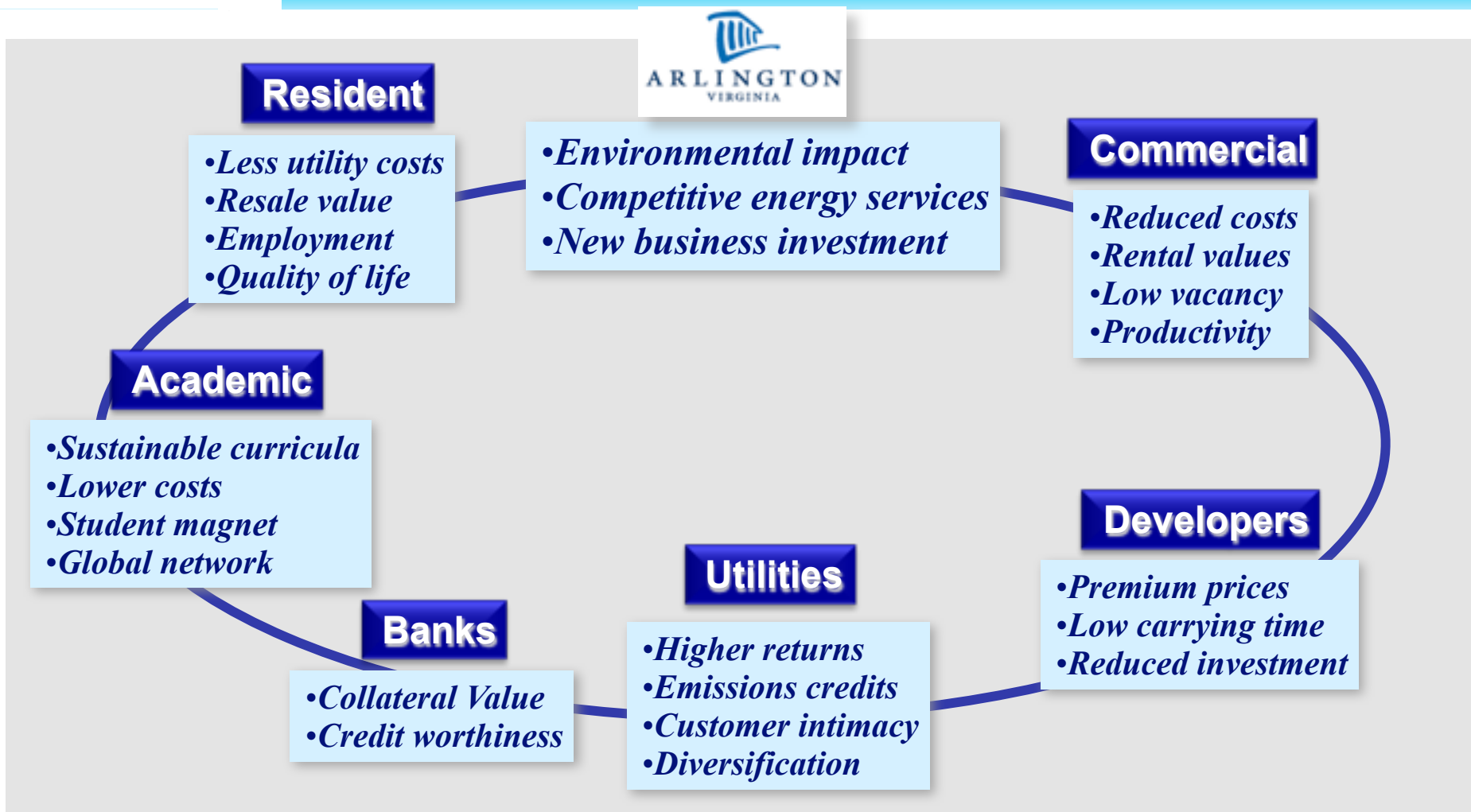


Energy Modeling Results

GHG / Capita Projections



Benefits of Success!



New Relationships – New Rules

For more information:



www.arlingtonva.us/energyplan