

Arlington's Community Energy Project

Ensuring a Competitive and Sustainable Community



April 2011

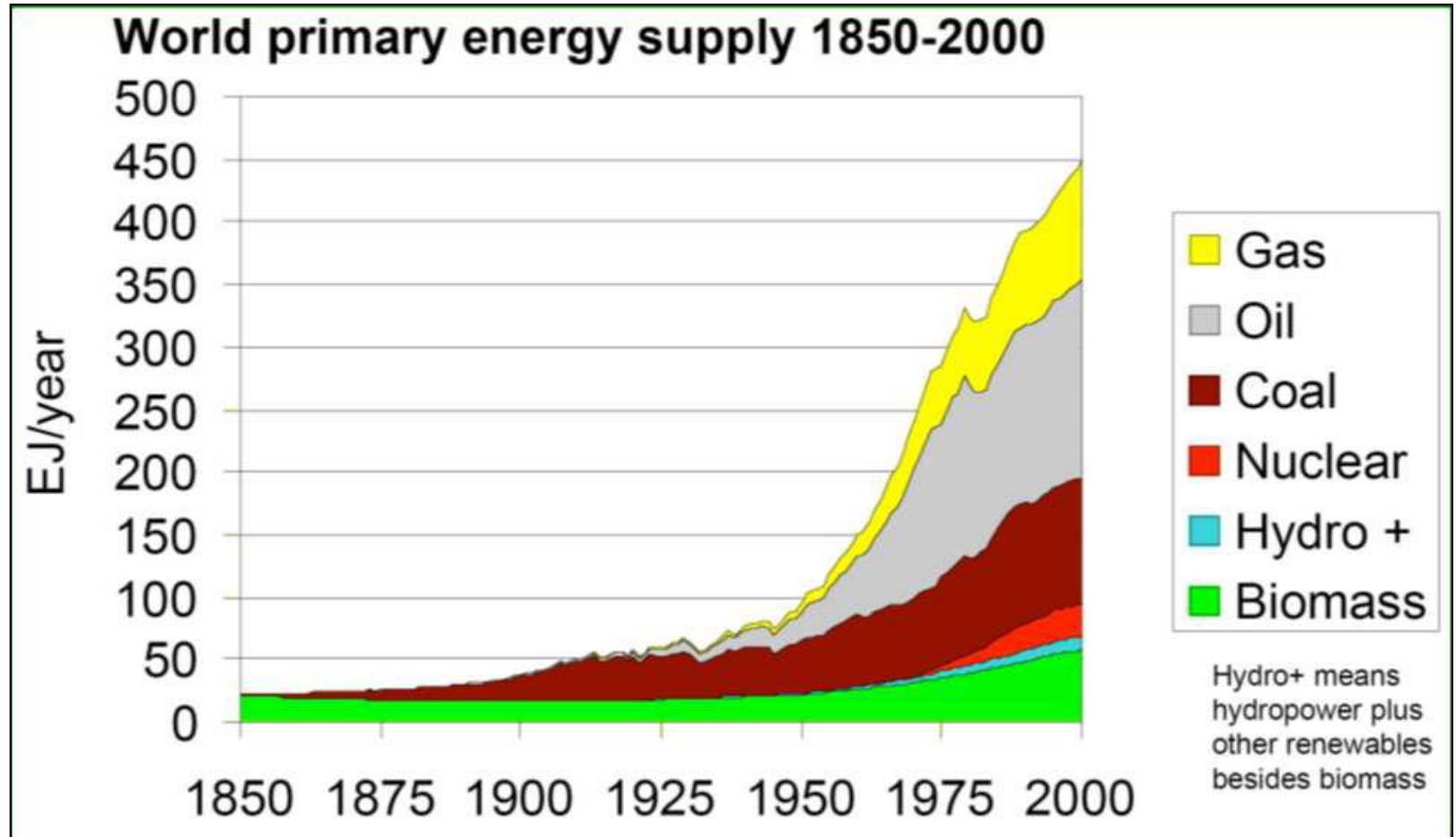
Arlington's History of Planning

- *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

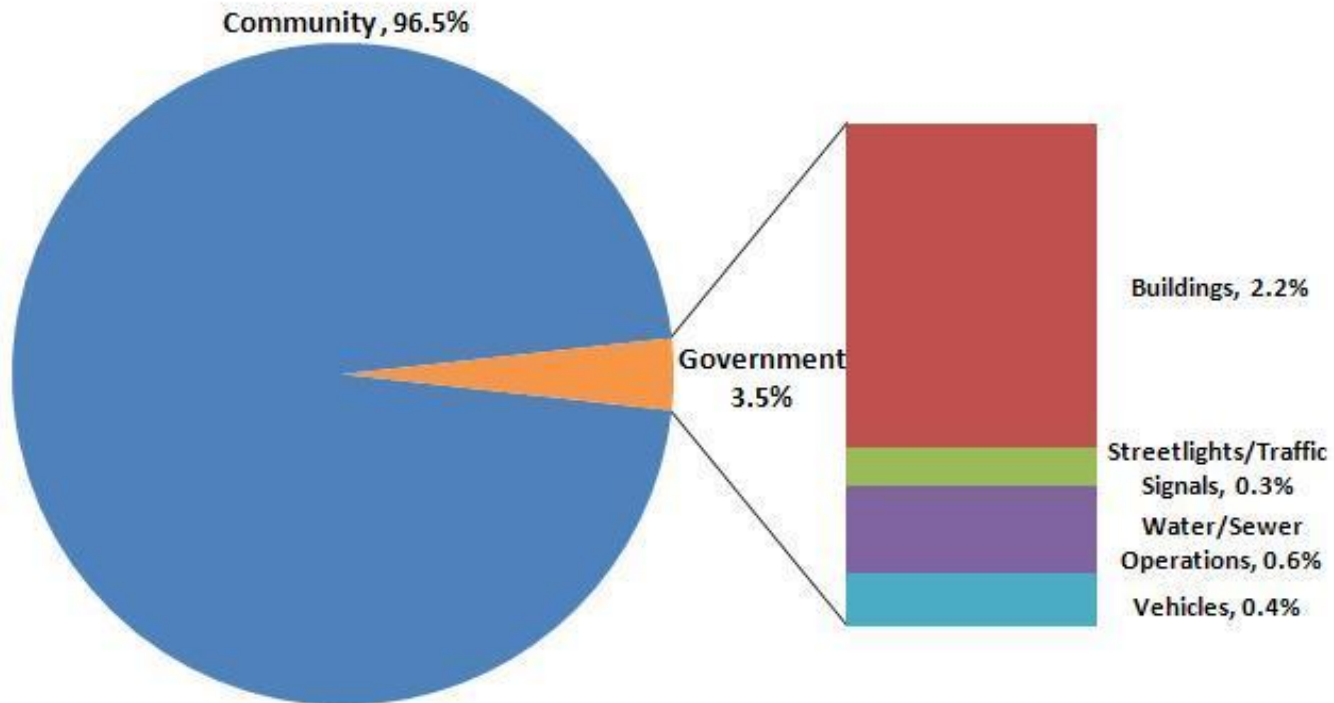
Energy use – fossil fuels – is the predominant source of greenhouse gas emissions, especially in urban areas.

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.

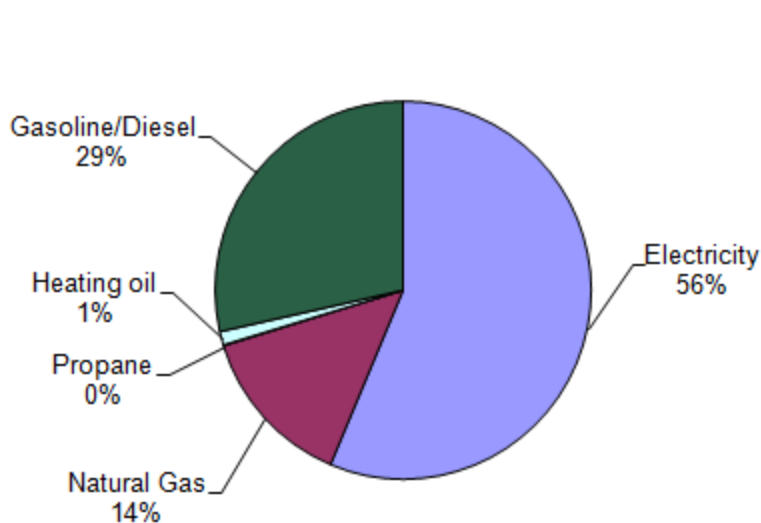
Arlington County Government's Greenhouse Gas Emissions

Total Arlington County Greenhouse Gas Emissions by Sector, 2007

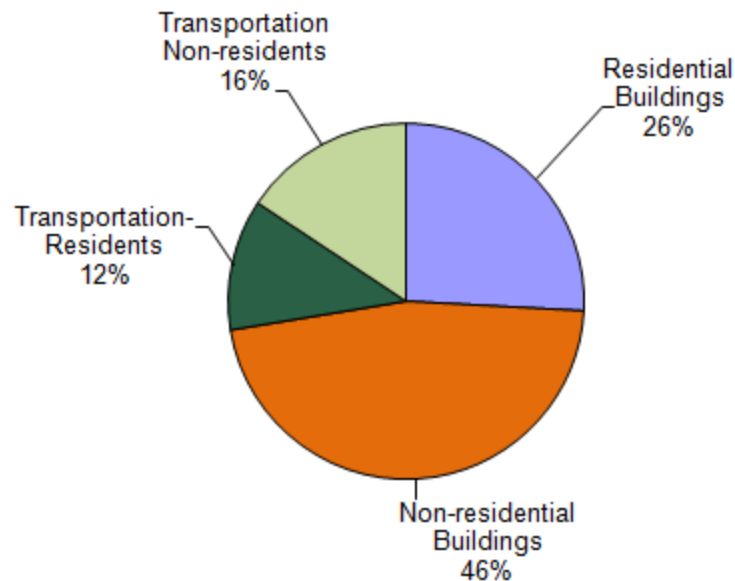


Arlington County - Carbon Footprint

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

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

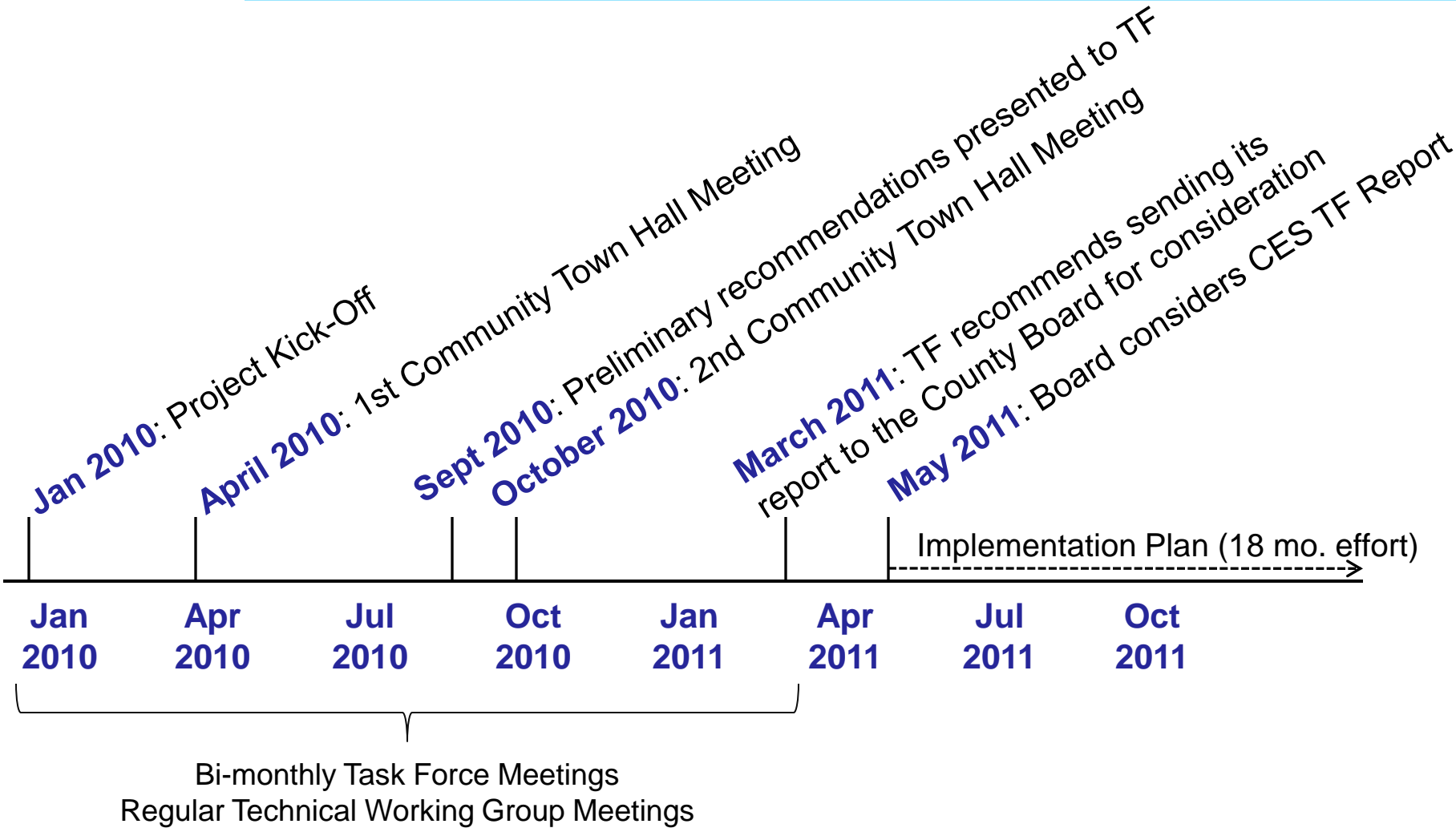
Environment

- Greenhouse Gas Reduction

Three Groups of Benefits



Timeline



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

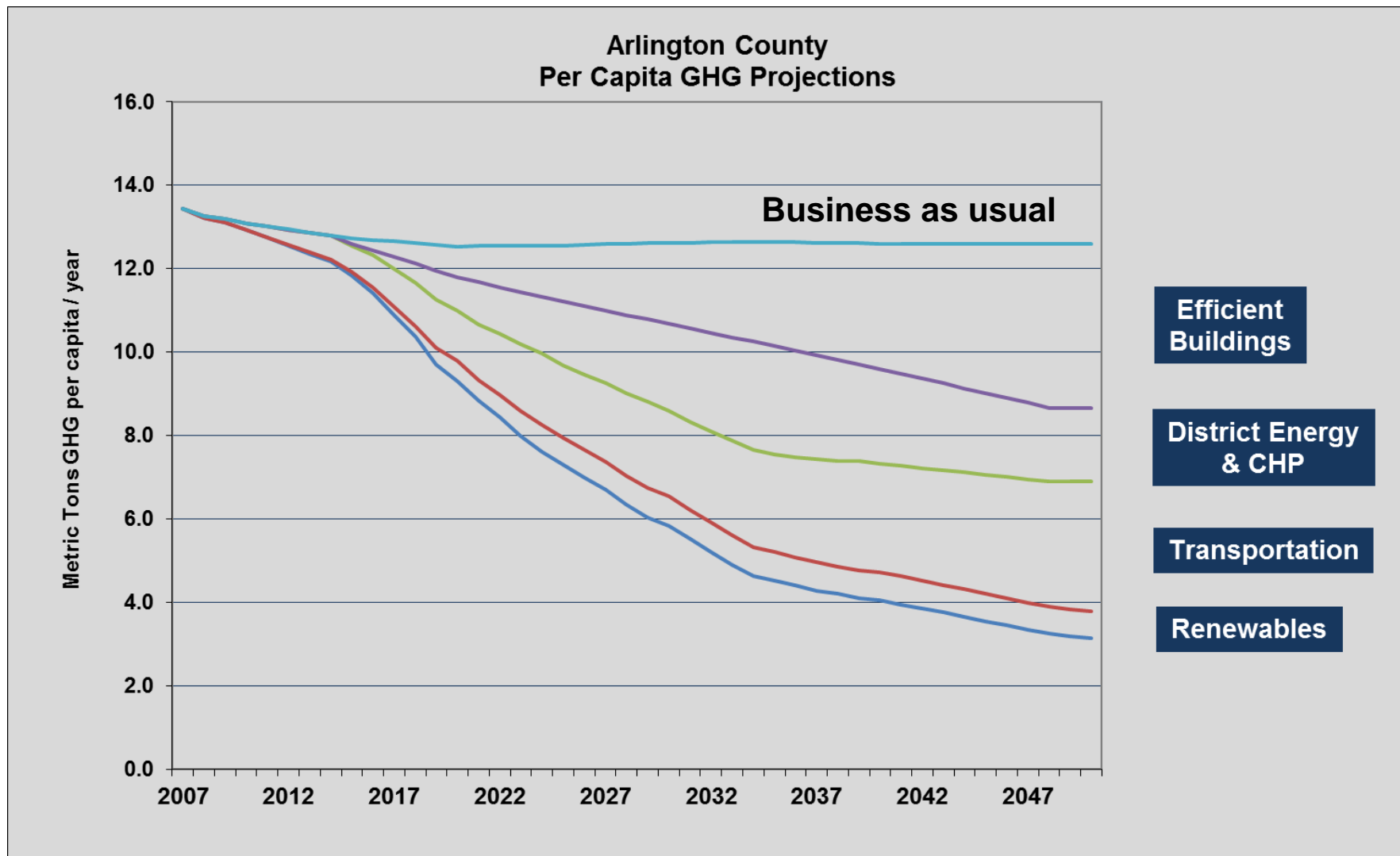
2050 goal for Arlington?

Headline Target: 2050 Greenhouse Gas Emissions

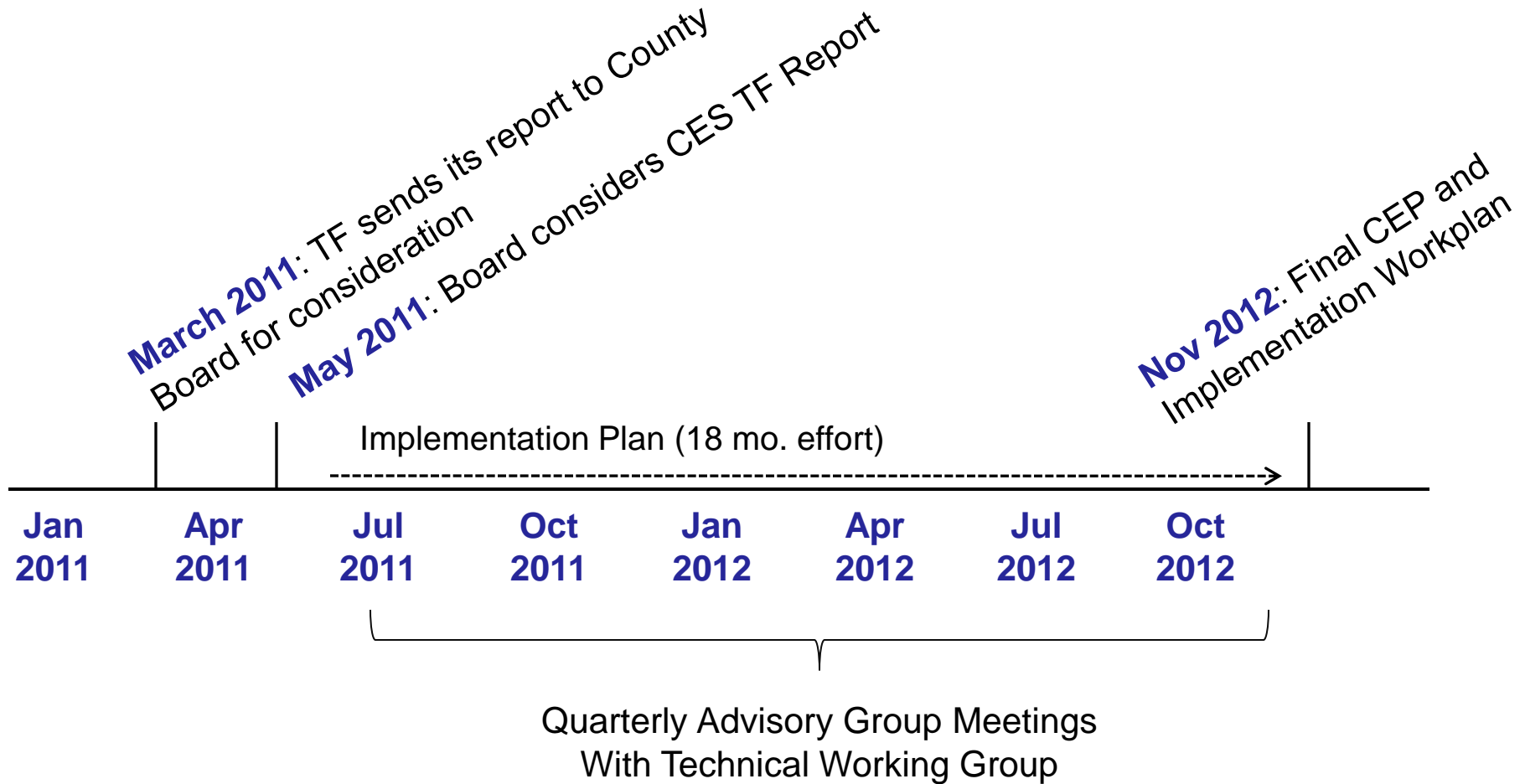
- **Task Force recommends a GHG emissions target of 3 metric tons CO₂e /capita per year by 2050.**
- In 2007, Arlington produced 13.4 metric tons CO₂e per resident
- Task Force also recommended Arlington's target for 2050 be 2.2 metric tons CO₂e /capita if regional energy plan established.

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*

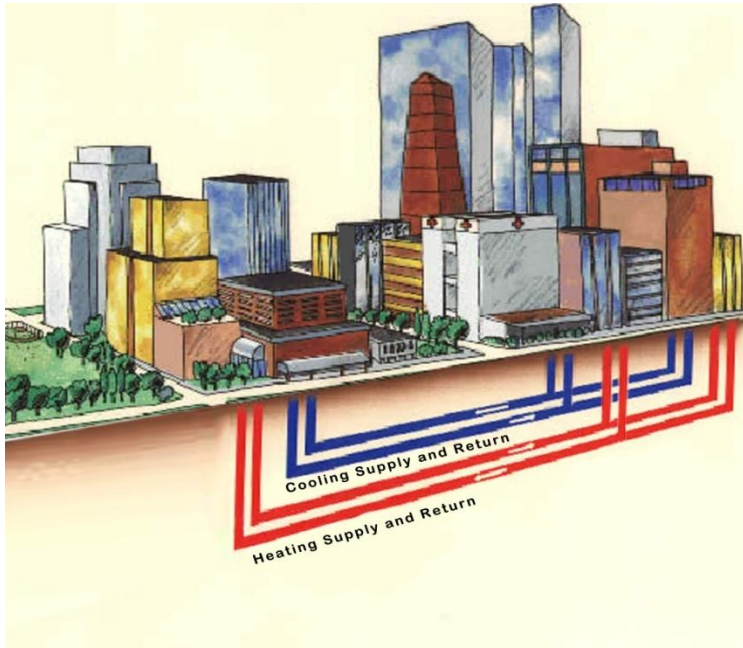
Integrated Solution – Tailored for County!

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



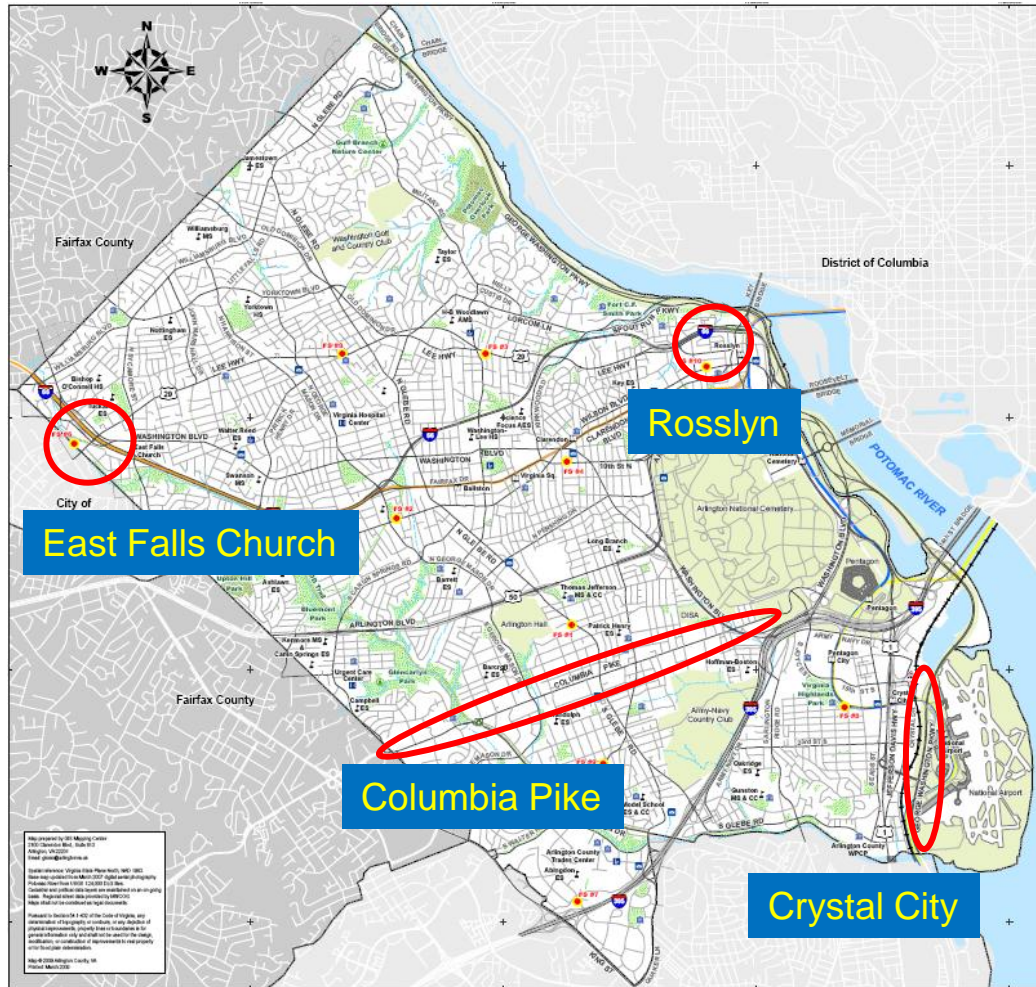
Centralized supply and delivery

- 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

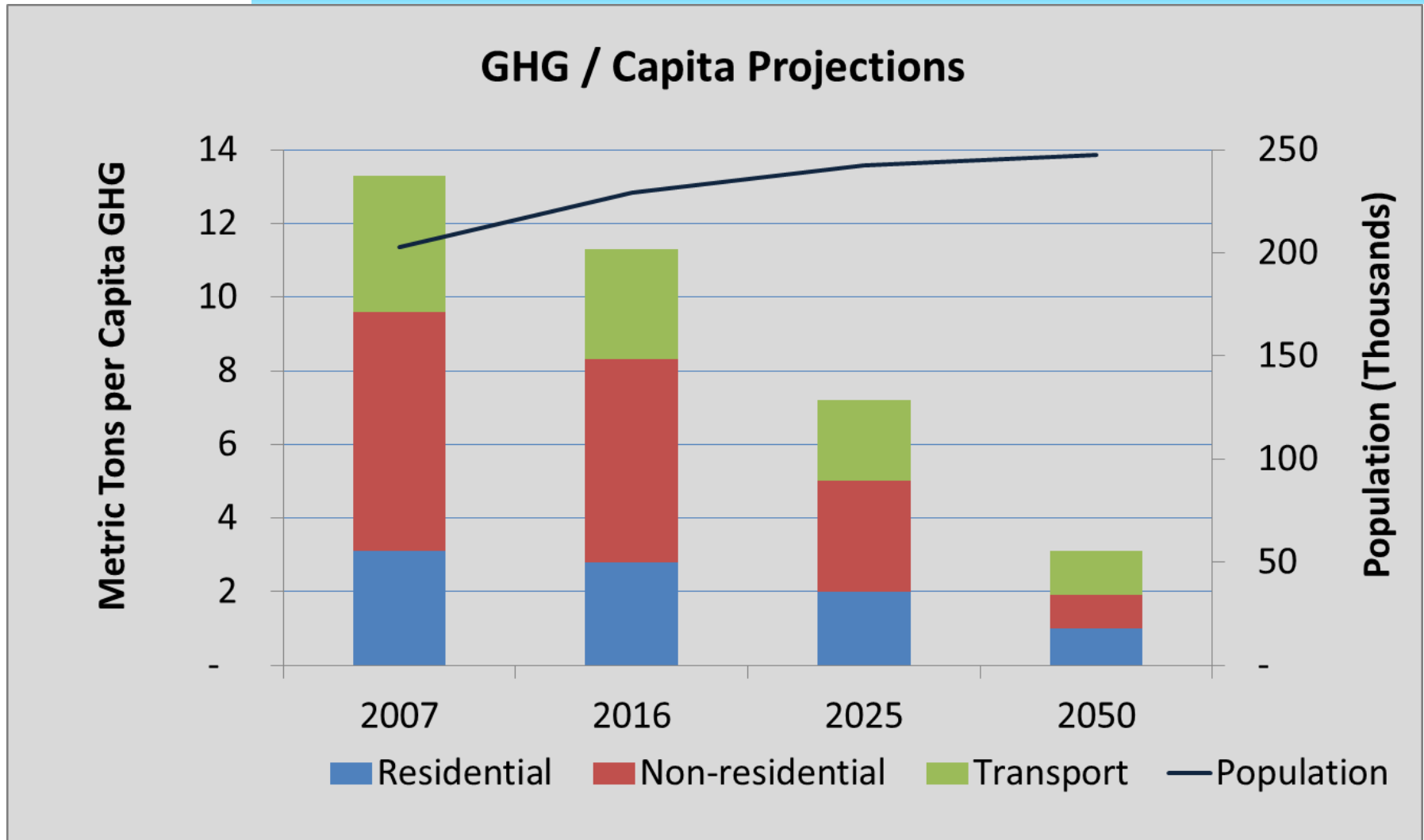


Recommendation: Enabling Strategies

- 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



Benefits of Success!



Resident

- *Less utility costs*
- *Resale value*
- *Employment*
- *Quality of life*

- *Environmental impact*
- *Competitive energy services*
- *New business investment*

Commercial

- *Reduced costs*
- *Rental values*
- *Low vacancy*
- *Productivity*

Academic

- *Sustainable curricula*
- *Lower costs*
- *Student magnet*
- *Global network*

Developers

- *Premium prices*
- *Low carrying time*
- *Reduced investment*

Utilities

- *Higher returns*
- *Emissions credits*
- *Customer intimacy*
- *Diversification*

Banks

- *Collateral Value*
- *Credit worthiness*

New Relationships – New Rules

For more information:



www.arlingtonva.us/energyplan