



Dominion[®]

What Is and What Isn't Ready for Primetime

FLC Energy Workshop, Williamsburg, VA

Mary C. Doswell

Senior Vice President – Alternative Energy Solutions

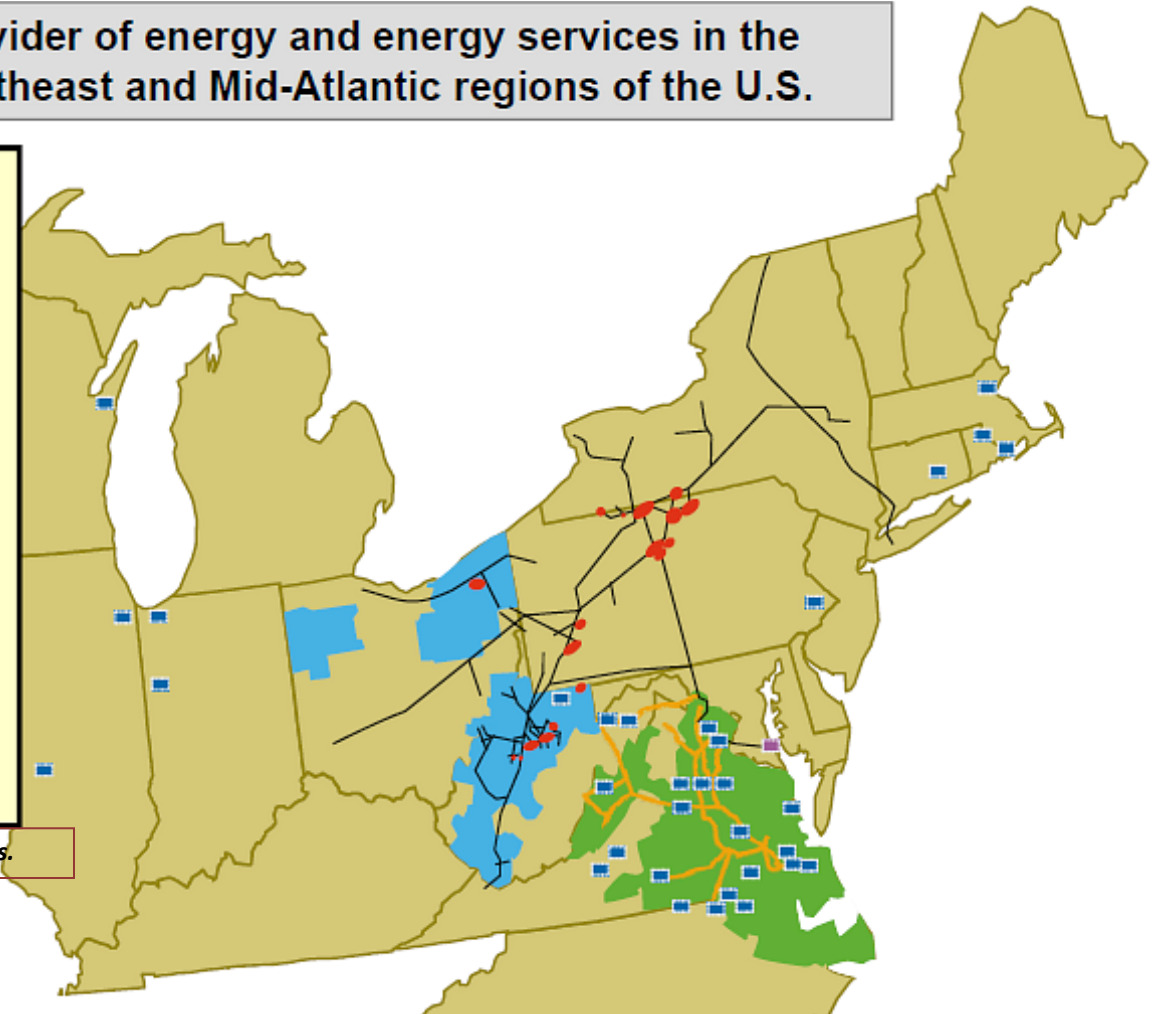
Dominion

Leading Energy Provider in Northeast U.S.

Leading provider of energy and energy services in the Midwest, Northeast and Mid-Atlantic regions of the U.S.

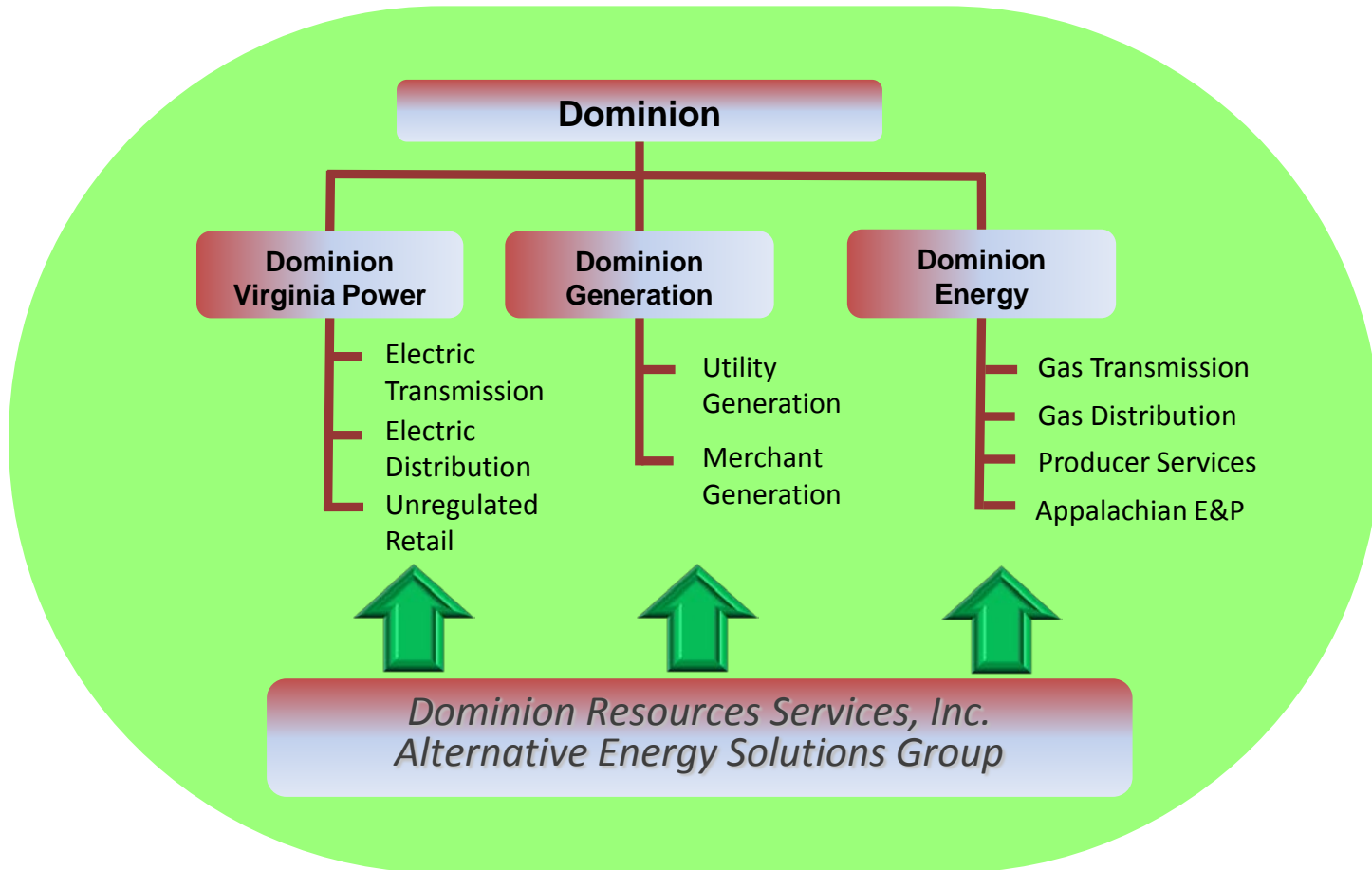
- ~27,600 MW of electric generation
- 6,000 miles of electric transmission
- 12,000 miles of natural gas transmission, gathering and storage pipeline
- 942 billion cubic feet of natural gas storage operated
- Cove Point LNG Facility
- 2.4 million electric customers in VA and NC
- 1.3 million natural gas customers in OH & WV
- 2.1 million non-regulated retail customers in 13 states

Map excludes Cirro Energy operations in Texas.



Dominion Today

Organizational Structure



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Role within Dominion

- Conduct technology research in renewables and conservation and load management to support business units
- Foster the evaluation of new and emerging technologies from a Dominion-wide perspective
- Participate in shaping the nation's energy policy
- Identify business opportunities
- Provide an information and idea-sharing forum for the Company

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graph TD; A[Alternative Energy Solutions] --- B[Research and Program Development]; A --- C[Policy and Business Evaluation]; A --- D[Financial Analysis]
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Research and
Program Development

- Clearinghouse for new and emerging alternative energy technologies
 - Research
 - Analyze
 - Prioritize

Policy and Business
Evaluation

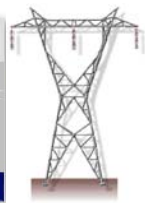
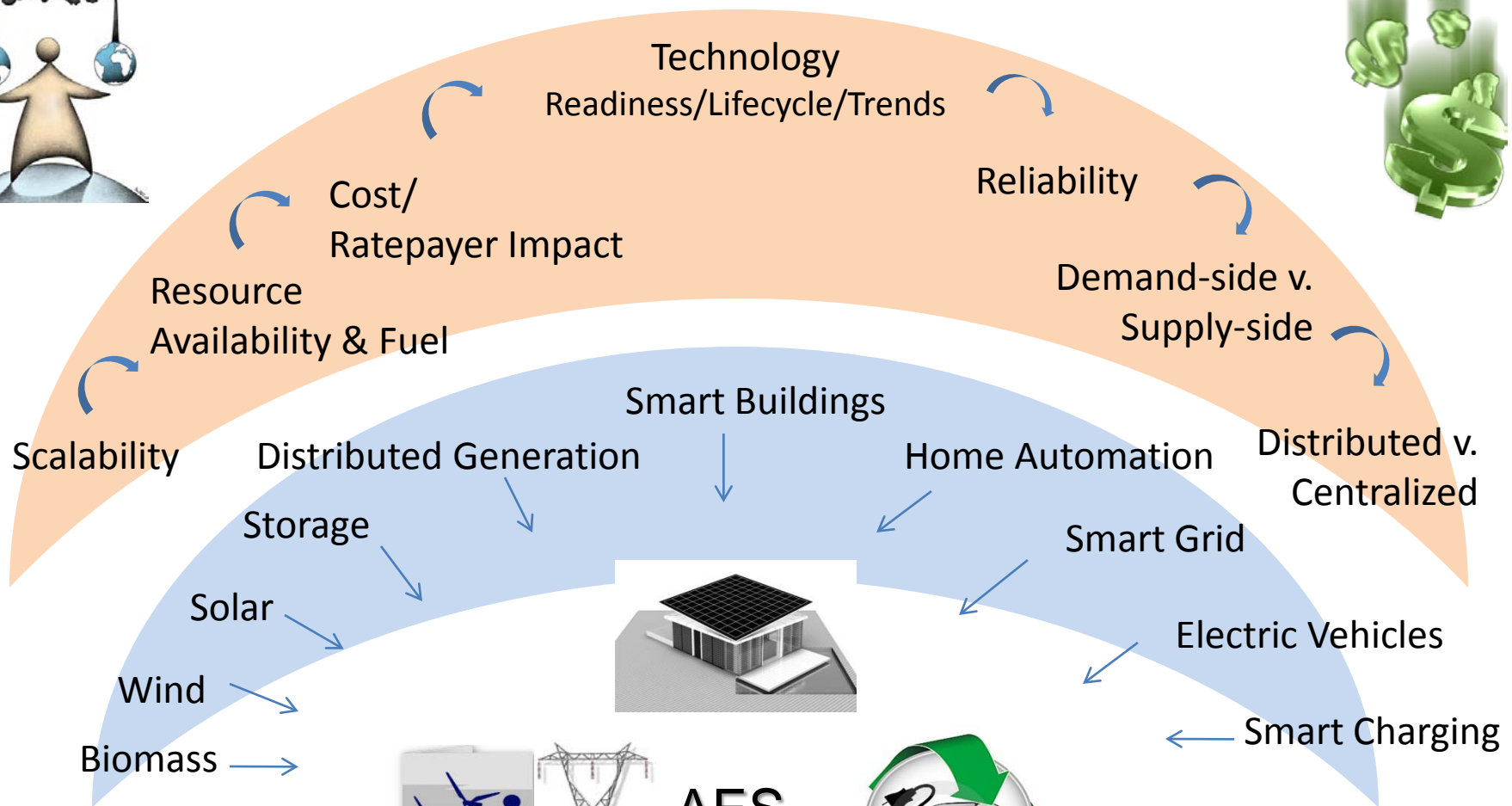
- Analysis of Federal and State Policy
- Evaluation of Market Policies and Rates
- Assessment of potential business opportunities

Financial Analysis

- Evaluate business model Options
- Determine market potential

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Evaluation Criteria & Technologies



AES



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View of the Market

- ❑ Significant technology advancements
- ❑ Costs coming down
- ❑ Further enhanced by tax incentives
- ❑ Venture capital availability reduced
- ❑ Industry stakeholders more engaged



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Technology Watch List

Transmission & Distribution/Customer Technologies

Smart Microgrid

- Utility Side
- Customer Side

Electric Vehicles

Distributed Generation

- Solar

- Wind

Geothermal



Generation Technologies

Solar

Onshore Wind

Offshore Wind

Biomass

Fuel Cells

Compressed Air Energy Storage

Batteries/Flywheels

Coal Gasification

Hydrokinetic

Algae

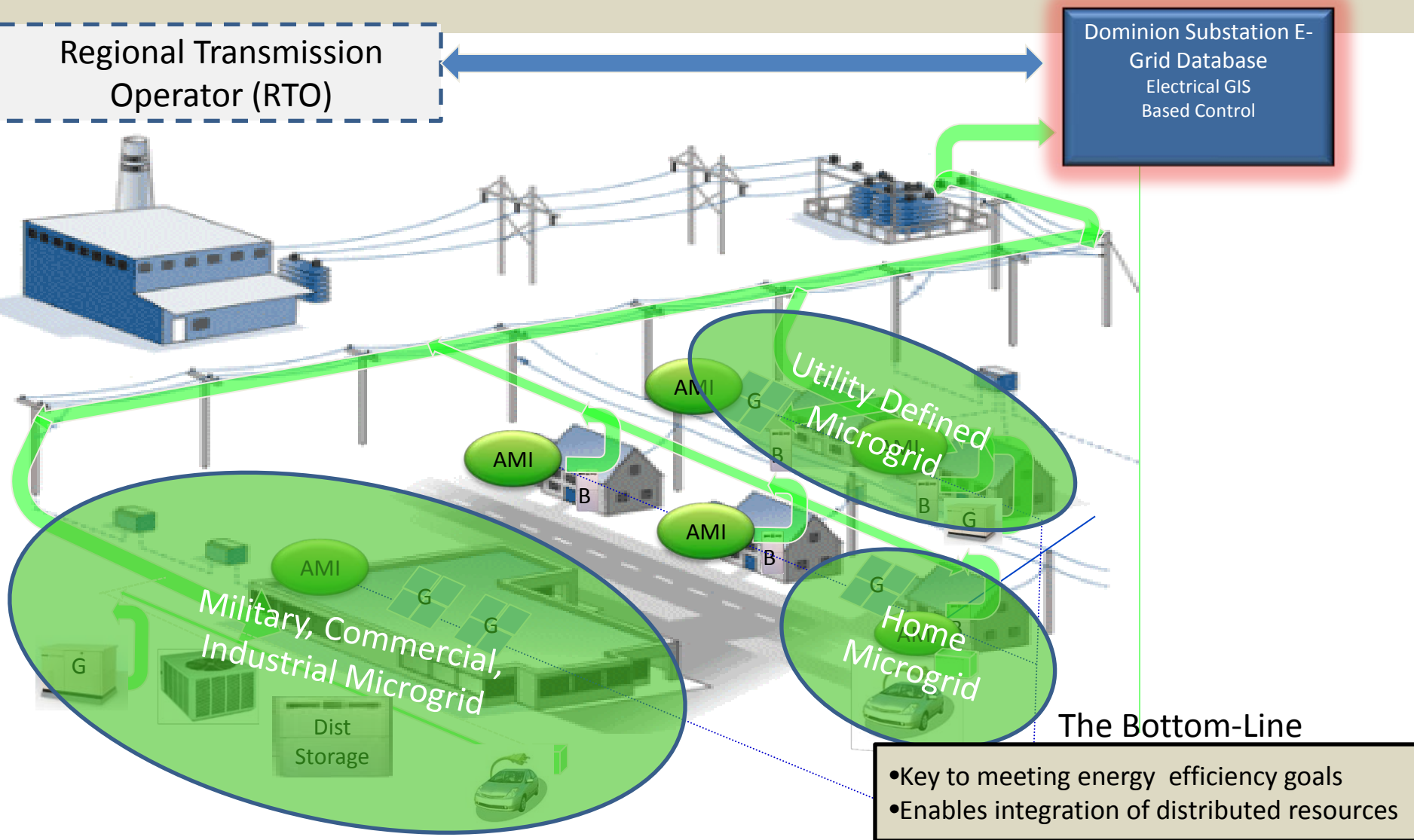


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What's Ready for Prime Time

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Smart MicroGrid



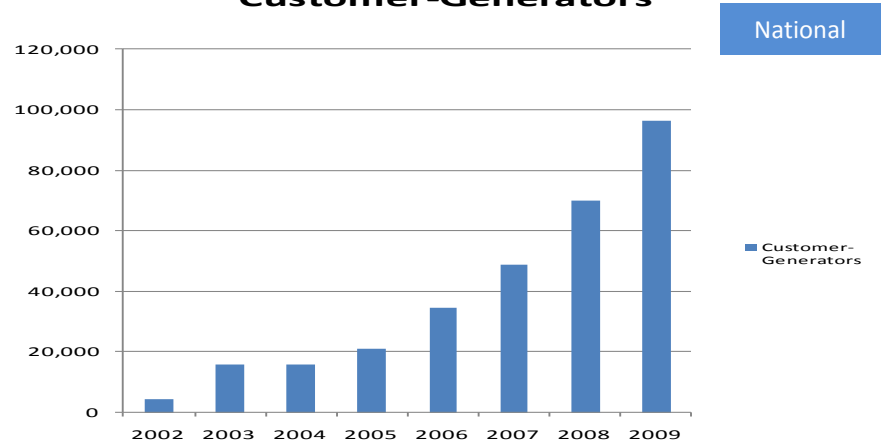
A microgrid is defined as an aggregation of electrical loads and generation. The generators in the microgrid may be fuel cells, reciprocating engines, solar power, wind or any of a number of alternate power sources. A microgrid may take the form of shopping center, industrial park or college campus. To the utility, a microgrid is an electrical load that can be controlled in magnitude.

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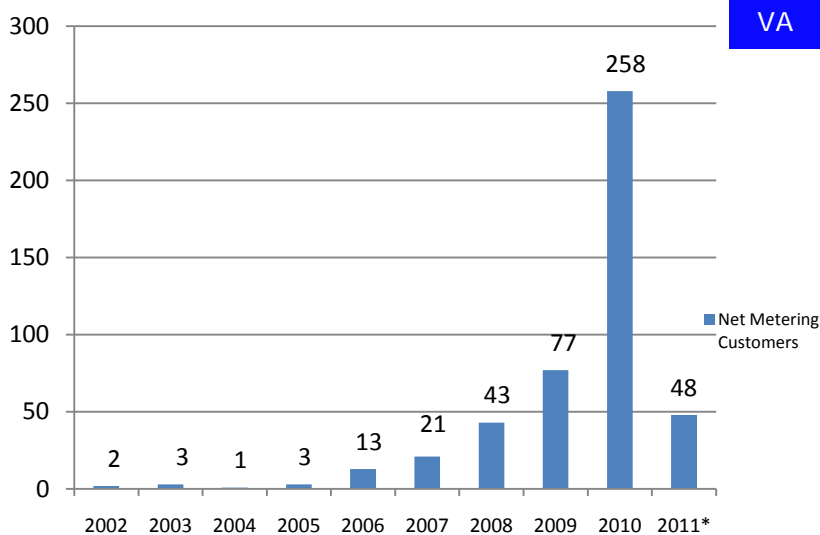
Proliferation of Distributed Generation

- ❑ National cumulative growth trend in net-metered DG systems (through 2009) indicates stronger market interest in this sector
 - Tax credits available through 2016 for solar and small wind <100 kw

Cumulative Number of Net Metering Customer-Generators



Annual DVP Net-Metering Customers



*Note: Includes all applications through March 11, 2011

❑ DVP Net-Metered Systems Growth in 2010

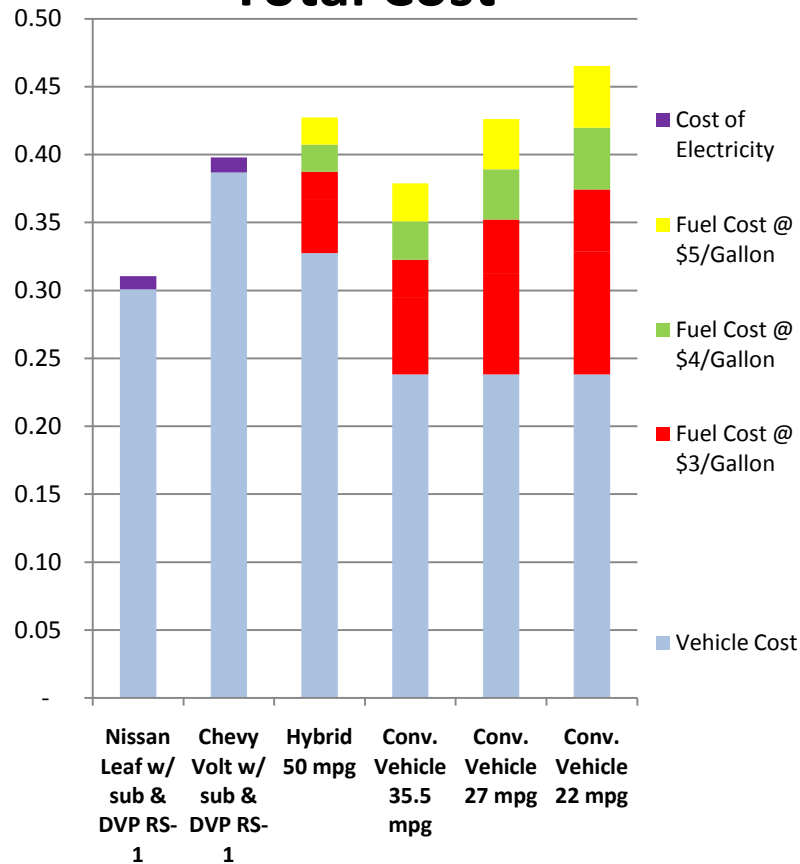
- Number of net-metering systems grew significantly as a result of VA DMME Renewables Rebate Program
- 469 Net-Metered Systems in Virginia (457 Solar, 12 Wind)
- Total installed capacity is greater than 2 MW
- 155% increase in total net-metered systems in 2010 over 2009
- 330% annual increase from 2009 to 2010

The Bottom-Line

- Solar DG costs continue to drop
- Integration into utility planning is key

Electric Vehicles Consumer Financial Drivers

Total Cost

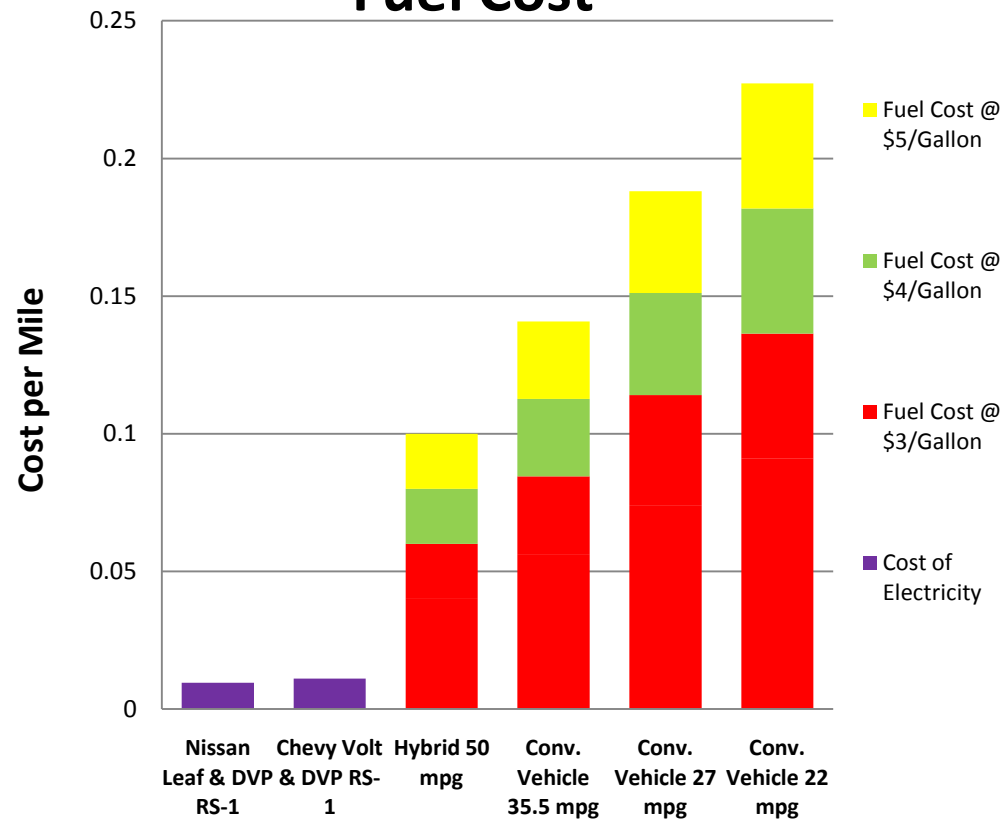


PHEVs/EVs with existing tax subsidy are price competitive.

*Note: 1) 7 year life, no maintenance cost, and 12K Miles/year 2) Nissan Leaf: \$25,280 (\$32,780 - \$7,500 tax credit), Chevy Volt: \$32.5k (\$40k - \$7.5k tax credit), Hybrid (Prius): \$27.5k, Conventional (Corolla): \$20k.

Electric Rate: Proposed DVP off-peak rate of 4.421 cents per kWh

Fuel Cost



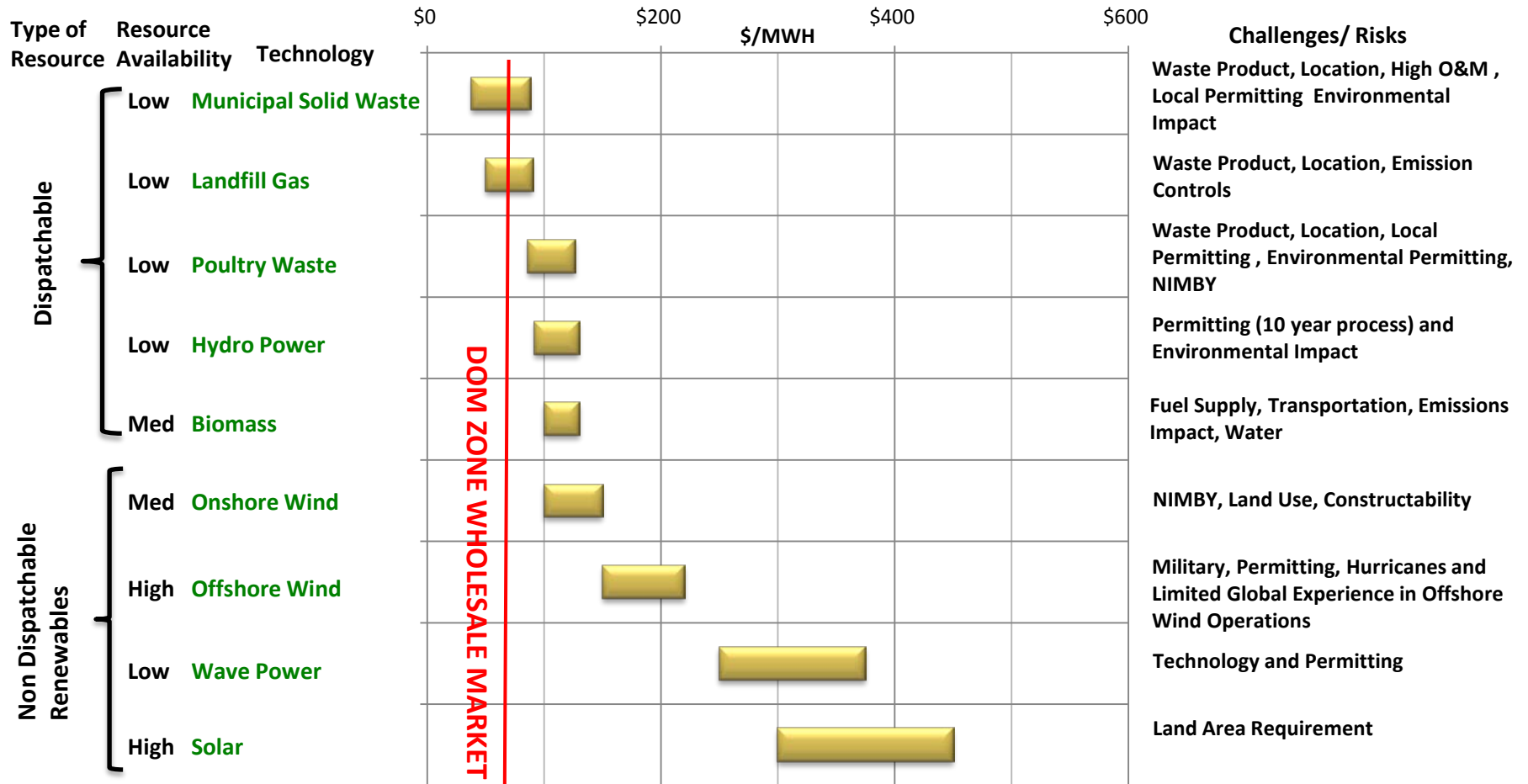
*Note: Proposed DVP off-peak rate of 4.421 cents per kWh.

The Bottom-Line

- EVs are now cost competitive
- Manufacturers have committed
- Charging infrastructure is key

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Renewable Energy Resource Cost Comparison



Low: 0-100 MW
Med: 100-500 MW

* \$/MWH Levelized *cost* of a resource does not differentiate the value of when generation occurs. Wind powers highest generation is at night, while Biomass operates during *peak* daytime hours. Estimates based on publicly available data.

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Generation-Level Solar

- ❑ Proposed 4 MW ground-mounted solar photovoltaic project in Southside Virginia (Halifax County)
- ❑ Includes integration of battery storage technology to test long- and short-term storage
- ❑ Proposed battery manufacturing facility in Halifax (potential for 150 related jobs)
- ❑ Received approval from Tobacco Commission on October 27, 2010 for \$5M to help fund the project
- ❑ Anticipate filing for SCC approval in Q1 2012



The Bottom-Line

- Costs continue to drop, but still not at grid parity
- Significant land required
- Intermittency an issue

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Dominion's Onshore Wind Resources

830 MW



- ❑ In Operation
 - Ned Power (132 MW) – West Virginia
 - Fowler Ridge (150 MW) – Indiana

- ❑ Under Development
 - Prairie Fork (300 MW) – Illinois
 - Virginia Wind (248 MW) - Tazewell County and other undisclosed locations

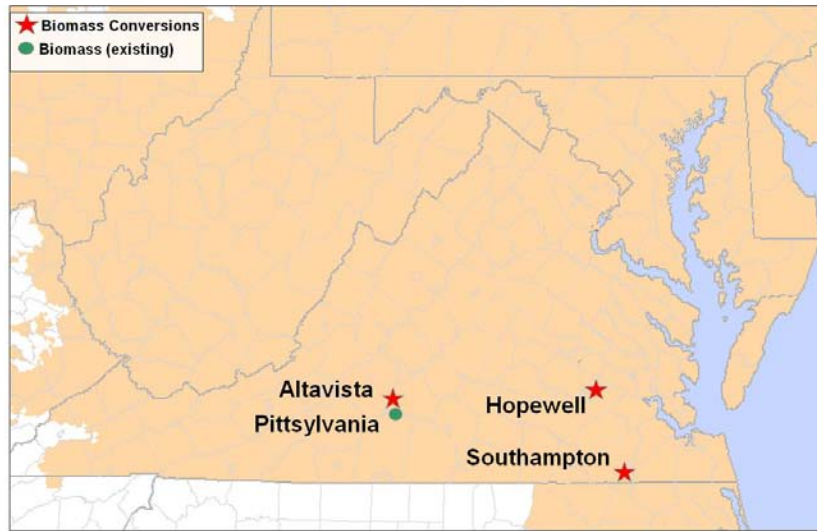
The Bottom-Line

- Constructed when costs competitive
- Cost challenges today
- Operational challenges

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Dominion's Biomass Resources

456 MW



In Operation

- Pittsylvania Power Station (83 MW)
- Altavista Power Station (6 MW)


Under Development

- VCHEC (117 MW)
- Altavista, Hopewell, Southampton Conversions (150 MW)
- Undisclosed (100 MW)



The Bottom-Line

- Cost competitive
- Fuel resource availability an issue
- Renewable status (EPA) uncertain



Alternative Energy Solutions Not Quite Ready for Prime Time

Technology	Key Factors
<u>T&D</u>	
Microwind	Technology Development/Local Opposition
Geothermal	Cost
<u>Generation</u>	
Offshore Wind	Technology/Cost
Compressed Air Energy Storage	Location/Market Structure
Batteries/Flywheels	Scalability/Market Structure
Fuel Cells	Technology/Cost

Alternative Energy Solutions Summary

- Considerable Technology advancements
- No “Silver Bullet”
- Evolution, not revolution
- Costs must come down
- Scalability is critical