

Energy Infrastructure



*COG Board of Directors
May 14, 2014*

DANGER
METROPOLITAN WASHINGTON
Council of Governments

**HIGH VOLTAGE
WITHIN
KEEP OUT**



Types of Energy Infrastructure

Electric

- Generating Plants & Wires

Natural gas

- Wells, Pipelines & Storage

Petroleum Products

- Wells, Refineries, Pipelines & Storage

Rail & Water

- Coal, Ethanol & Propane (LPG)



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Energy Expenditures

Energy Expenditures As a % of GDP (2011)

State	Rank	% GDP
DC	1	2.2%
Maryland	13	7.7%
Virginia	14	7.9%
US Ave		9.3%

Annual Energy Cost Per Capita (2011)

State	Rank	\$/person
DC	11	\$ 3,871
Maryland	13	\$ 3,974
Virginia	18	\$ 4,185
US Ave		\$ 4,474



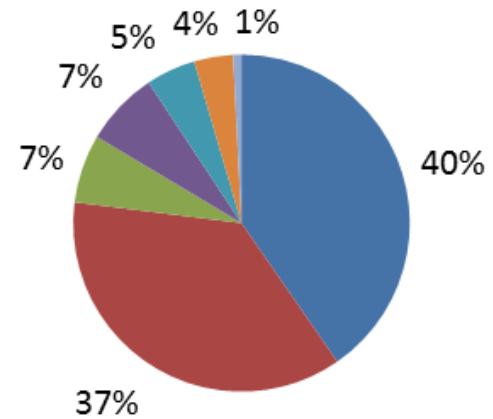
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Electricity

**Electric Utility
Customer Share in MWCOG Region**



- Pepeco
- Potomac Edison
- BGE
- Manassas Electric
- Dominion
- NOVEC
- SMECO



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Electricity

2/3 Imported via Transmission Lines

Regional Generating Plants – 8500 MW

- 3 Coal; 3 Natural Gas; 4 Distillate Oil; 3 WTE; 6 Landfill Gas; 27 MW solar
- 3 Natural Gas Plants in Development

\$10.2 billion Distribution System Asset Value

- 470 Substations; 260,000 Transformers
- 75,000 miles of Distribution Lines
- + 2 million Meters



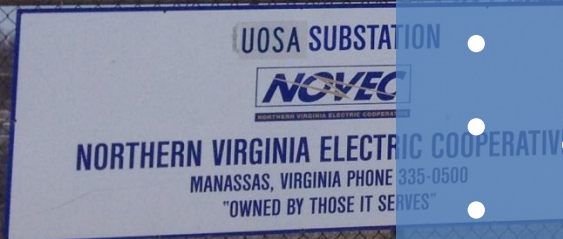
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Planned Investments in Infrastructure Upgrades – COG Region 2014-2018

- Pepco - \$3 billion
- Dominion Virginia Power- \$1.4 billion
- NOVEC - \$150 million
- SMECO - \$85 million
- Potomac Edison - \$4.4 million
- Manassas - \$4.4 million



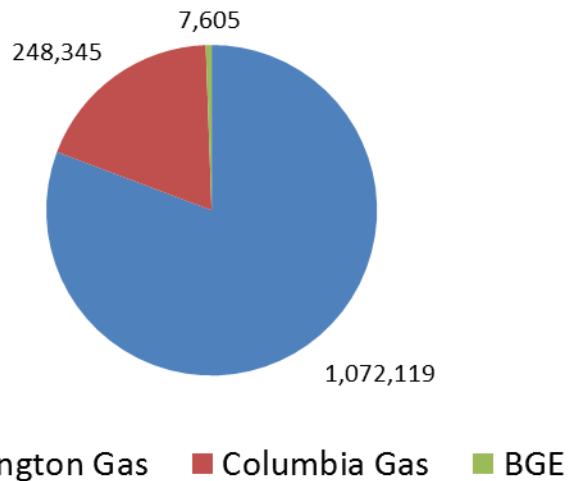
Natural Gas

100% Imported via Interstate Transmission Pipelines

Infrastructure

- \$4.5 billion Asset Value
- 15,000 miles of Distribution Pipelines
- 1.1 million Meters
- Washington Gas - Proposed \$650 million System Upgrades Over the Next 5 Years

Natural Gas Utility Customer Share in MWCOG Region



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Petroleum Products

Products – 100 % imported

- Gasoline & Diesel
- Fuel Oil
- Ethanol
- Aviation Fuel
- Propane

Delivery System

- Colonial & Plantation Interstate Pipelines
- Rail/Barge/Truck
- 8 Primary Distribution Terminals
- Multiple Jobbers
- Retail Gas Stations & Delivery



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Issues and Innovations

Resiliency and Reliability

- Interdependencies
- Aging Infrastructure
- Cost of Upgrades
- Shortages/Curtailment
- Reliance on Imports
- Workforce
- Changing Regulations
- Changing Business Paradigms



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Issues and Innovations



Innovations

- Smart Grid
- Microgrids/Distributed Generation
- Integration of Renewables
- Energy Storage
- Electric & Alt Fuel Vehicles



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