VIRGINIA ENERGY PLAN – EXECUTIVE SUMMARY

The General Assembly established a state energy policy framework in Chapter 1 of Title 67 of the Code of Virginia and directed the Department of Mines, Minerals and Energy to draft the Virginia Energy Plan. The General Assembly further directed that the Plan be updated by July 1, 2010, and every four years thereafter.

The Code set energy policy and objectives for the Commonwealth. These broadly provide that Virginia should:

- Ensure availability of reliable energy supplies at reasonable costs;
- Establish sufficient infrastructure to support energy needs;
- Use resources efficiently and facilitate energy conservation;
- Facilitate development of Virginia's low cost resources, including clean coal and natural gas;
- Facilitate development of less polluting energy sources;
- Foster energy research and development; and
- Address environmental protection with energy facilities.

Virginia uses a diverse mix of energy resources.

- The transportation sector uses 31 percent of total energy use.
- The residential sector uses 24 percent.
- The commercial sector uses 23 percent.
- The industrial sector uses 22 percent.

Energy use by sector varies.

- Petroleum is the primary energy source for transportation, providing 97 percent of transportation energy.
- Residential energy is provided primarily by electricity (53 percent), natural gas (29 percent), and petroleum (14 percent).
- Commercial energy use comes primarily from electricity (65 percent) and natural gas (28 percent).
- Industrial energy comes from a diverse mix including petroleum (32 percent), coal (19 percent), natural gas (18 percent), biomass (16 percent), and electricity (15 percent).

This Plan assesses Virginia's energy situation through examining the state's primary energy resources: electricity, coal, nuclear, natural gas, renewables, and petroleum.

Electricity:

- Electricity is provided by three investor-owned utilities (84.2 percent of retail sales), 13 electric cooperatives (11.3 percent), and 16 municipal utilities (4.5 percent).
- Generation and transmission of electricity is managed through the PJM Interconnection, a regional transmission operator serving Virginia, Mid-Atlantic States through New Jersey, and portions of states to the West through Illinois.

- Rates and terms of service for investor-owned utilities and cooperatives are set through cases heard by the State Corporation Commission.
- 2008 electricity use was provided 66 percent from in-state generation and 34 percent from electricity imports. Coal (44 percent), nuclear (38 percent), and natural gas (13 percent) fueled the majority of in-state generation in 2008.
- Virginia's electric rates have risen over time, with a higher percentage jump in 2009. Rates vary among Virginia's electric utilities. Average prices for electricity in 2009 were 10.61 cents/kilowatt hour (kWh) for residential consumers; 8.1 cents/kWh for commercial consumers; 6.87 cents/kWh for industrial users; and 8.42 cents/kWh for transportation consumers. Rates remain below the national average, at 90.5 percent of national rates in 2009.

Coal

- Virginia coal is used primarily for electric generation and industrial steam (steam coal), and coke for steel manufacturing (metallurgical coal). Virginia is a net exporter of coal.
- Coal prices have generally risen over time, with current steam coal prices averaging approximately $50/ton and metallurgical coal prices averaging about $120/ton.
- Coal mining is a significant economic driver of the Southwest Virginia economy, providing approximately 4,400 mining jobs and $1.7 billion in revenue from coal sales.

Nuclear

- Virginia is home to four nuclear units. Owned by Dominion, there are two units each at the North Anna and Surry Power Stations. These plants came on line between 1972 and 1980. Their operating licenses have been extended through 2032 and 2040. Dominion is considering constructing a third nuclear reactor at the North Anna Station.
- Virginia is a leader in nuclear technologies, with AREVA, B&W, and Northrop Grumman Newport News providing nuclear plant design, fuel services, nuclear plant maintenance, nuclear plant component manufacturing, and nuclear shipbuilding.
- Virginia is home to a commercially viable uranium deposit at Coles Hill in Pittsylvania County. There is a moratorium on mining due to questions whether the uranium can be safely mined in Virginia's environment. The Virginia Coal and Energy Commission is studying the safety and economic impact of possible uranium mining.

Natural Gas

- Natural gas is provided by ten investor-owned and three local government natural gas local distribution utilities. Large industrial and institutional consumers can also purchase their natural gas directly. Approximately 37 percent of Virginia's households and 90,000 commercial businesses use natural gas.
- Rates and terms of service for the investor-owned local distribution utilities are set through cases heard by the State Corporation Commission.
- Natural gas is delivered to Virginia through pipelines carrying natural gas produced in the Gulf of Mexico region, pipelines carrying natural gas produced in the Virginia and other Appalachian natural gas fields, and through the liquefied natural gas terminal in Cove Point, Maryland.

- Natural Gas prices have risen over time. In 2008, residential consumers paid on average $16.20/thousand cubic feet (MCF), commercial consumers paid $12.98/MCF, industrial consumers paid $1.49/MCF, and utility consumers paid $10.87/MCF.
- Virginia's natural gas companies produced 128.5 billion cubic feet of gas in 2008 from 6,428 wells, with approximately $0.5 billion in revenue from gas sales. Wells are located in Southwest Virginia. Approximately 80 percent of production comes from natural gas found in coal seams. There is potential to produce additional natural gas from Marcellus Shale formations and, subject to federal leasing, from offshore wells.

Renewables

- Renewable sources of energy provided approximately 2.8 percent of electricity generated in Virginia and approximately 6 percent of gasoline consumed in the state.
- The greatest potential for renewable energy production in Virginia comes from biomass, hydro power, and wind power. Solar power can provide distributed power to end users across the Commonwealth.
- Geothermal energy can provide heating and cooling through use of geothermal heat pumps. Virginia does not have high-temperature geothermal resources suitable for electric generation.

Petroleum

- Petroleum products are supplied to Virginia through pipelines carrying gasoline, diesel, aviation fuel, and other products produced in Gulf of Mexico area refineries; from the Western Refining refinery in Yorktown; and from water borne supplies delivered to coastal petroleum terminals.
- Western Refining has a production capacity of 70,000 barrels per day, slightly less than 15 percent of the state's consumption.
- Petroleum prices are largely set by national and international markets. Prices have been volatile over time. For example, gasoline prices have ranged from over $4.00 per gallon in September 2008, down to current prices of $2.70 per gallon.
- Virginia companies produce a nominal amount of petroleum from 75 stripper wells in Lee, Wise, and Russell Counties. There is potential to produce oil, subject to federal leasing, from offshore wells.

This plan sets out three goals and includes recommended actions.

1. Make Virginia the Energy Capital of the East Coast.
    - Grow both traditional and alternative energy production, jobs, and investment in Virginia.
    - Increase the use of conservation and efficiency in Virginia's homes and businesses and support the establishment and expansion of energy efficiency businesses.
2. Expand public education about Virginia's energy production and consumption, its effect on our economy, and how Virginians can use energy more efficiently.
3. Maximize the investment in clean energy research and development through the work of the Universities Clean Energy Development and Economic Stimulus Foundation.