

Executive Summary

ENERGY IN A NEW VIRGINIA ECONOMY – DIVERSIFY TO COMPETE

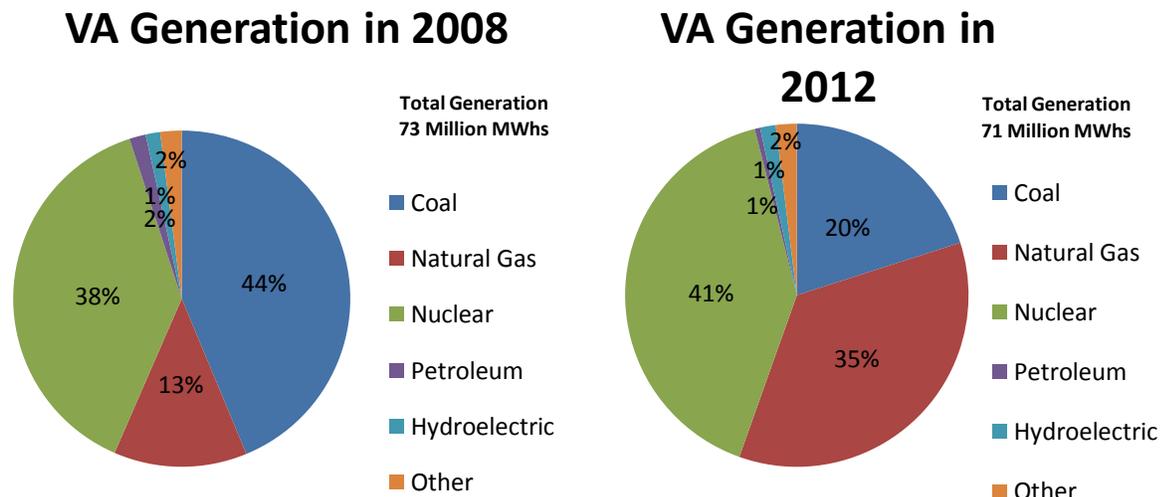
The Commonwealth of Virginia’s energy industry is a source of great pride, prosperity, and potential. Historically, Virginia has ensured reliable and affordable energy, helping businesses and consumers thrive. The Commonwealth boasts tens of thousands of energy-related jobs, including miners, gas well crews, manufacturing workers, engineers, mechanics, computer programmers, accountants, and managers. While Virginians can and should be proud of the energy industry, a changing energy market and environment requires decisive action to position the Commonwealth to be a leader in innovative energy generation and utilization. Virginia must continue to leverage its business-friendly climate, high-quality research and educational institutions, and varied energy resources to attract businesses and create jobs.

Virginia must implement policies that promote a genuine “all of the above” strategy that includes traditional energy sources, renewable sources, and energy efficiency. Broadening the number of sources utilized and consumed in Virginia will make the Commonwealth less reliant on imported energy, increase economic development and provide a hedge against future volatility that may affect particular resources and be detrimental to the Virginia economy.

The recommendations set forth in the 2014 Virginia Energy Plan are laid out in the form of four themes. Each theme contains a series of specific action items that, when implemented, will accomplish the overarching goal of transitioning to a New Virginia Economy.

Strategic Growth in the Energy Sector

Increasing renewable generation in Virginia is vital to ensuring a healthy and diverse fuel mix. The energy generation mix in Virginia continues to change as natural gas becomes more abundant and available, less expensive and prices become less volatile. Total generation in the Commonwealth has shifted from 82 percent of total megawatt hours (MWh) deriving from coal and nuclear in 2008 to 76 percent of total MWh’s deriving from natural gas and nuclear in 2012.



One consistent trend is the low percentage of renewable generation contributing to the overall fuel portfolio in Virginia.

2010 Renewable Generation Deployed in Virginia		
Type	Installed Capacity (MW)	Percent of State Total
Hydro	866	3.6
Solar	16	<1 (.0007)
Wind	<1	<1 (.00004)
Wood/Wood Waste	331	1.4
MSW/Landfill Gas	290	1.2

Given the relatively small deployment of renewable generation in Virginia, this industry has the potential to grow substantially and increase diversity within the energy sector specifically and the overall economy generally.

Virginia must create a regulatory and business environment that allows renewable energy development to prosper. A signal must be sent that Virginia is supportive of and enthusiastic about the role of renewable energy in the economy.

Localities must be prepared to address zoning and permitting uncertainties before projects are proposed in their communities. The Commonwealth must increase or lift caps on the size of renewable projects, both at the commercial and residential levels. Virginia citizens should be given the opportunity to work together to develop projects that increase renewable generation in their communities. And the Commonwealth should continue to aggressively support the timely development of offshore wind off the coast of Virginia.

The New Virginia Economy must be based on diversity and inclusion. The renewable industry holds significant economic potential in the Commonwealth, and energy policies should reflect a desire to see this potential reached.

Energy efficiency is considered by many to be the largest and least costly energy resource available today. Virginia must be committed to reducing energy consumption in both the public and private sectors. This will decrease costs to consumers, lessen the need to construct costly generation plants, and spur significant economic development.

Aggressive implementation of energy efficiency measures in both the public and private sectors will grow the existing energy efficiency industry in Virginia. One study estimates that robust energy efficiency policy in Virginia could increase the Gross State Domestic Product by \$286 million and increase employment by 38,000 jobs by 2030.

Estimated Employment and Economic Impacts of Energy Efficiency in Virginia		
Type	2020	2030
Annual Increase Employment (ACEEE Calculator)	28,500	38,000
Change in Gross State Product (in Million \$ 2007)	\$178	\$296

The Commonwealth is committed to leading by example on energy efficiency. Pursuing energy efficiency within State government will set an example for localities and the private sector and highlight the tangible benefits of increasing the productivity of the energy consumed.

The Governor will appoint a Chief Energy Efficiency Officer within the Administration to focus on maximizing opportunities in the public sector to increase energy efficiency, decrease energy consumption and be responsible stewards of taxpayers' dollars.

The Governor will also convene an Energy Efficiency Board comprised of leaders in the energy efficiency industry to develop a strategic plan for meeting the 2007 voluntary goal of a 10% reduction in retail energy consumption in Virginia. The Board will develop a mechanism of measurement and verification to determine where the Commonwealth currently stands in terms of meeting the goal and recommend policies that will accomplish the goal by 2020, two years faster than originally proposed. The Board will continue to robustly monitor progress.

Businesses in many sectors of the Virginia economy have placed an increased emphasis on tapping international markets to diversify their client base and expand their global footprint. This focus on diversification holds much economic potential for certain parts of the Commonwealth that have traditionally catered to a domestic or Virginia-specific clientele.

The coal industry supply chain, including those businesses based in Southwest Virginia, has developed significant and distinct expertise supporting the coal industry in Virginia. There are emerging economies in many parts of the world where this type of mining support experience and expertise would be valuable. The key is connecting these Virginia businesses with international markets that may be in need of their goods and services.

Traditionally, the Commonwealth has developed programs to help connect Virginia businesses with international markets. Now is the time to make these efforts a priority in Southwest Virginia. The first step is to increase educational outreach to the coal industry supply chain to ensure businesses understand potential opportunities in international markets.

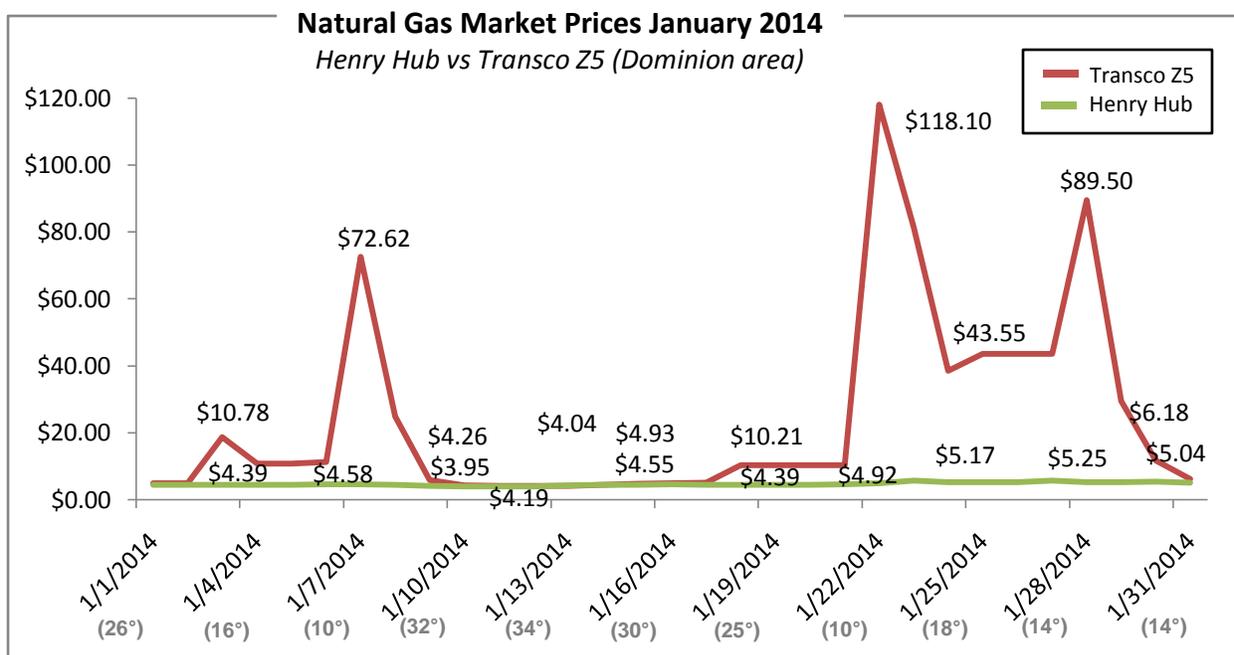
Current Virginia statute on offshore energy development favors permitting the production of offshore oil and natural gas resources 50 miles or more off of the coastline. It is critical that the development of these resources be conducted in a safe manner that is protective of Virginia's coastal environment and its broad economic and ecologic base.

Expand Best-in-Class Energy Infrastructure

A system of energy and electricity transmission and distribution that is reliable, resilient and cost-effective is the backbone of any healthy economy. This requires appropriate investments by the private sector, as well as responsible support and policies by the public sector. In many areas of Virginia, access to natural gas can mean the difference between a growing and vibrant economic base and one of stagnation. Virginia must be committed to giving localities throughout the Commonwealth all of the economic development tools they need to attract new businesses and grow existing businesses. A modern transmission and distribution system that provides the capacity needed in all parts of Virginia is an important component of building a truly diverse economy.

Collaboration between the State and local governments must be a priority in developing policies at all levels of government that chart a long-term path toward resilient, reliable and affordable access to energy. The Winter of 2014 offered an important case study in how natural gas transmission constraint can be costly to consumers.

Multiple days of very low temperatures placed a nearly unprecedented amount of pressure on the natural gas transmission system in many parts of Virginia. Due to the lack of sufficient



transmission infrastructure in the Commonwealth, market prices for natural gas prices spiked during the polar vortexes.

It is also important to take advantage of increased natural gas transmission capacity by increasing the fueling infrastructure for automobile and transport vehicles that are converting to Liquid Natural Gas (LNG) and Compressed Natural Gas (CNG). Virginia must work with local partners in areas of the Commonwealth where the potential for high volume alternative fuel vehicle fleet deployment exists and deploy the necessary fueling infrastructure to supply these fleets. Alternative fuel technologies can be significantly more cost-effective for both the private and public sectors. For the private sector, fuel-cost savings means more money to reinvest and

grow. For the public sector, using taxpayer dollars as efficiently as possible must be a priority to make each taxpayer dollar go further.

Given the nuclear industry's important role in the Commonwealth's economy, Virginia must continue to be a leader in nuclear generation, research, education and workforce development. Created in 2013, the Virginia Nuclear Energy Consortium is Virginia's primary resource for interdisciplinary study, research, and information on nuclear issues. The Consortium will play a critical role in providing the nuclear industry in Virginia with a viable, long-term and innovative strategic path forward.

Advanced Vehicle Technology and Alternative Fuels

Not only is promoting an increase in fuel mix diversity an important strategy in energy generation, it is also an impactful strategy in the area of vehicle fuel consumption. Virginia uses an enormous quantity of imported petroleum while falling behind other states with state-funded deployment programs for alternative fuel vehicles. Virginia's transportation sector is responsible for more than 50% of Virginia's greenhouse gas emissions. Creating a strategy to promote alternative fuel and advanced technology vehicles makes economic sense, diversifies the transportation fuel mix for improved energy security and resiliency, utilizes domestic resources and has the potential to substantially reduce air emissions, especially in areas of high population density.

The availability of non-traditional vehicle fuels and the advancements in vehicle technology provide an opportunity for significant diversification of the fuels consumed by the transportation sector in the Commonwealth. This diversity promotes growth in emerging sectors of the economy and can create a welcoming business environment for entrepreneurs with innovative ideas and business models. The Commonwealth can achieve great benefits by leading by example and emphasizing the use of more fuel-efficient vehicles and the deployment of a more diverse transportation fuel infrastructure. Virginia must show leadership by accelerating the conversion of its vehicle fleets to alternative sources of fuel.

As a leader in public private partnerships (P3), Virginia must look to previous P3 successes for best practices and apply that knowledge to the alternative vehicle fuels space. Working with the private sector, Virginia can find ways to increase deployment of fueling infrastructure in areas where large vehicle fleets are housed. Combining resources can reduce costs for both the public and private sectors and send a signal that Virginia is finding creative solutions to reducing fuel-costs and greenhouse gas emissions.

Virginia must also use existing resources to increase the conversion of State and local vehicle fleets to alternative fuels. Deploying existing State and federal resources in a creative manner will help lower initial capital costs for agencies and localities in purchasing alternative fuel vehicles that will increase fuel-cost savings in the long-term.

Talent Development in the Energy Sector

The Commonwealth must devise a long-term, comprehensive plan to equip Virginia's workforce with in-demand skill sets that will retain and attract businesses.

With 40 percent of the nation's energy workforce either eligible for retirement or departing their jobs due to attrition during the next five years, the energy sector needs to work to develop programs to attract and train new workers. The expansion of the Troops to Energy program is imperative to filling these upcoming vacancies. This initiative will train veterans in the skills

needed in the energy sector. In addition, it credits military experiential training in the attainment of a degree.

Clean energy jobs are the next generation of employment opportunity. The U.S. Bureau of Labor Statistics' Virginia green workforce estimates are skewed heavily to U.S. military and federal government employment. With these jobs removed, the Commonwealth's green jobs concentration drops to an unremarkable 2.6 percent share of workforce, or roughly 100,000 people. Not having a properly trained and ready workforce has prevented some clean energy companies from moving their businesses to Virginia.

With new technology and an emerging renewable energy field, Virginia should be a global leader and be ready to compete in this new Virginia economy.