



## II. BACKGROUND

The State of Virginia is projected to face up to a 4,000 mega watt power shortage over the next ten years and approximately 65 percent or 2,800 mega watts of the shortage will be in the Northern Virginia region. The Northern Virginia region energy production is limited with transmission constraints. Severe congestion in the Northern Virginia regional power grid inhibits the orderly distribution of power in the region which may cause rolling blackouts and power outages in the near future. Electric power is distributed within Virginia by an electric power transmission system. The transmission system consists of high-voltage, high-capacity transmission components, including 765kv transmission lines in the western Virginia service area of American Electric Power and 500kv transmission lines in other parts of the state.<sup>1</sup> The power lines traversing the site are 230kv. Northern Virginia and Loudoun County are leaders in the high technology industry and are facing escalating reliability problems with electrical power generation and transmission which has resulted in high prices, threats of rolling blackouts, appeals for voluntary curtailment by consumers and the proposal of numerous transmission lines throughout Loudoun County. Resolving electricity reliability problems in a crisis atmosphere undermines customer confidence and is almost always unnecessarily expensive. Electricity is an integral part life and electric system reliability is indispensable to support residential, commercial, industrial and governmental functions. Lack of reliable electricity is not just an inconvenience but it creates an economic loss. Loudoun County has become one of the prime locations for internet related companies. These internet related companies include numerous data centers that create high value tax revenues with few employees. With Loudoun County's foresight the issue of electrical self sufficiency and security in the future would allow for the continuation of the expansion of these high value tax paying companies to locate within Loudoun County.

Over 90% of the electrical energy generated by utilities in Virginia is produced from coal and nuclear sources. Bulk power is moved through the State on large transmission lines. A network of smaller, lower voltage lines distributes the power from the larger power lines and individual generating facilities to consumers in urban and rural areas.<sup>2</sup> Production and combustion of coal results in the largest environmental impacts of all of the fossil fuels. Technology for capturing and sequestering carbon dioxide is expensive and unproven. Natural gas has 27 percent less carbon content of coal and 20 percent less than petroleum. Natural gas has an additional advantage over coal when used in highly efficient combined cycle gas turbines<sup>3</sup>. The proposed Stonewall Hybrid Energy Park will provide the means to produce Green Energy of electric power in a clean and efficient manner.

---

<sup>1</sup> 2009 Virginia Center for Coal and Energy Research website: [www.energy.vt.edu/vept](http://www.energy.vt.edu/vept). Virginia Energy Patterns and Trends, Virginia Electric Energy

<sup>2</sup>Ibid.

<sup>3</sup> Virginia Chapter Sierra Club, "The Citizens Energy Plan for Virginia", 2007.

During congressional testimony, James Hansen, a noted climatologist and Director of NASA's Goddard Institute for Space Studies, told lawmakers that "phasing out the use of coal except where carbon is captured . . . is the primary requirement for solving global warming". Carbon capture technology will not be available for another 10 to 15 years<sup>4</sup> The Environmental Protection Agency data on individual coal-fired generating units found that in 2020, 68 percent of the 1,041 total coal-fired, electric-generating units in the eastern half of the U.S. will still lack scrubbers or advanced nitrogen oxides controls<sup>5</sup>

Virginia's electrical network is an integral component of the regional transmission system, which serves a number of important functions. In-state electric-power generation it is far from sufficient to satisfy the State's consumption. On average only 80 percent of the electrical energy used by Virginia consumers is generated in-state. Approximately 20 percent is imported from out-of-state generators on power transmission lines to supply Virginia residents and businesses<sup>6</sup>. Electricity loses power in distribution of electricity by line resistance in transporting it from other areas.

The Applicant is proposing to build a primary and peak demand facility including up to a 600 megawatt combined cycle gas turbine-waste water energy plant, up to two 150 megawatt simple cycle peaking power natural gas turbines and a 1 megawatt solar array. The solar array, combined cycle and peak generating turbines will provide a dedicated reliable source of power for the electrical grid. Additionally, uses within the Stonewall Secure Energy Park will be provided with redundant, efficient and reliable source of energy necessary for high tech and data center reliability. The Hybrid Energy facility will utilize up to 5 million gallons per day of waste water effluent for cooling water in the plant. This unique process could eliminate two billion gallons of effluent per year that is currently being discharged directly into the Potomac River that feeds into the Chesapeake Bay from the Leesburg Sewage Treatment Plant. This process will be the first one of its type in the Potomac River and will be a prime example of being able to show local governments ability to clean up the Chesapeake Bay. The Applicant is having discussions with the Town of Leesburg to use the waste water from the Leesburg Sewage Treatment plant.

There is a proposal for constructing a controversial \$1.8 billion overland power line to import power from several coal powered plants outside of the region due to the lack of facilities in this area. Green Energy Partners/Stonewall LLC has the viable solution for the long term health and long term security and prosperity of our region. Green Energy Partners/Stonewall LLC has the best location, the cleanest most efficient and proven modern technology for producing Green Energy clean power, and a process that produces clean energy utilizing natural gas, steam, solar and potentially the waste water from the Leesburg Sewage Treatment plant , contributing to the clean up of our vital water ways and the Chesapeake Bay.

---

<sup>4</sup> Northern Virginia Magazine. "Plant Life" by Travis Hicks, January 2009.

<sup>5</sup> NPR.org. "U.S. Power Plants Slow to Clean Up Their Act" by Elizabeth Shogren, August 20, 2006.

<sup>6</sup> Ibid.

According to studies by the RW Beck Company, a hybrid energy facility at the proposed location will relieve congestion of the regional power grid and will meet the future demand for power in the region. Due to the fact that this proposed plant is considered 'Green' and is within the Power Service Area ("PSA") a regional power supplier, may qualify for credits that would enable the closure of a coal plant within the PSA.

Stonewall Secure Business Park has the necessary existing resources for an energy park with two interstate natural gas transmission lines traversing the property and three 230KV Dominion Virginia transmission circuits on two separate aerial structure lines. These transmission lines serve Virginia from the eastern seaboard from South Carolina to Maine. By utilizing two separate gas supply lines and having direct access to the interstate and regional power grid, the proposed Hybrid Energy Park will make a major contribution to national and regional security and make Loudoun County energy self sufficient while making a substantial contribution to the cleanup of the Chesapeake Bay.

Power plants are generally long-lived investments; the majority of the existing capacity is 30 or more years old. Because of the expected near-term retirement of many aging plants in the existing fleet, growth of the information economy, economic growth, and the forecasted growth in electricity demand, America faces a significant need for new electric power generation. North America's world-class electric system is facing several serious challenges. Major questions exist about its ability to continue providing citizens and businesses with relatively clean, reliable, and affordable energy services. The recent downturn in the economy masks areas of grid congestion in numerous locations across America. These bottlenecks could interfere with regional economic development. The "information economy" requires a reliable, secure, and affordable electric system to grow and prosper. Unless substantial amounts of capital are invested over the next several decades in new generation, transmission, and distribution facilities, service quality will degrade and costs will go up<sup>7</sup>.

Energy prices are on the rise, Northern Virginia Electric Cooperative ("NOVEC") has increased in power cost from 2002 to 2008 of 62 percent and Dominion Virginia Power has received approval and has implemented an increase of 18 percent in 2008. The costs are associated with the availability of power and cost of fuel for the production of electricity.

### **III. PROPOSAL**

The Applicant is proposing a utility generating plant and transmission facility use by special exception in the PD-GI portion of the Stonewall Secure Business Park pursuant to Sections 4-604(I) and 4-607(H) of the Zoning Ordinance. More specifically, the Applicant is proposing to build a primary and peak demand facility including up to 600 megawatt combined cycle natural gas turbine-waste water energy plant, up to two 150 megawatt simple cycle peaking

---

<sup>7</sup> US Department of Energy Office of Electrical Delivery and Energy Reliability, GridWorks. "Overview of the Electric Grid" <http://www.energistics.com/gridworks.grid.html>

power gas turbines and a 1 megawatt solar array. The Hybrid Energy Park will utilize up to 5 million gallons per day of waste water effluent for cooling water. By turning the water into steam this will eliminate two billion gallons of effluent per year from being discharged into the Chesapeake Bay.

The primary waste water energy facility will incorporate two natural gas turbines with closed heat recovery steam generators (“HRSG”) to produce the heat to supply the steam injected turbines. This is called a combined cycle facility that captures 60 percent of the energy from the natural gas used to power the turbines. Coal fired energy plants have a less than 35 percent efficiency use of fuel energy. The waste water effluent is used in the cooling condenser which turns the turbine exhaust steam back into distilled water that may be recycled back through the HRSG. Excess steam and cooling produced by the plant is proposed to be used to heat and cool several million square feet of data centers and other buildings within Stonewall Secure Business Park. The use of the excess steam and cooling to heat and cool buildings is being utilized throughout Europe. Combined heat and power (“CHP”) plants capture heat and use it to provide space and water heating to local buildings. This type of system with the added benefit of cold water production from the facility could provide the ability to initiate power reduction requirements in future data centers. The capital cost of the facility is estimated over \$800,000,000 and will provide an economic engine for Loudoun County, in construction, tax revenues and in reliable source of Green energy. Real estate tax revenues for Loudoun County for the proposed Hybrid Energy Park at build out are estimated to be in excess of \$10,000,000.00 per year.

The property that is adjacent to the western boundary of the Subject Property is owned by the Luck Stone Corporation and Wildwood Farms, which is under contract for purchase by Luck Stone Corporation. The Issues for Consideration for special exception applications contained in Section 6-1310 of the Zoning Ordinance are addressed in the Attachment.

#### **IV. COMPREHENSIVE PLAN AND COMMISSION PERMIT**

The Subject Property is located within the Transition Policy Area and the Lower Sycolin Creek and Middle Goose Subarea as specified in the Loudoun County’s Revised General Plan (RGP). The Transition Policy Area serves as a visual and spatial transition between the Suburban and Rural Policy Areas and envisioned that it will provide some *unique development opportunities* (emphasis added). The non-residential component of the Transition Policy Area will be comprised of compatible uses that represent an appropriate transition from suburban to rural land uses. The proposed Stonewall Secure Business Park is a unique development that will provide a compatible transition from suburban to rural land uses while protecting the Luck Stone Quarry from residential development.

Development of the Hybrid Energy Park supports the RGP General Policies, as follows:

Policy 1: protect drinking water resources of Lower Sycolin subarea. The Hybrid Energy plant may utilize up to five million gallons of treated effluent per day produced by the Leesburg

Waste Water Treatment plant which will eliminate two billion gallons of effluent per year from being discharged into the Potomac River and the Chesapeake Bay. The cooling water will be turned into steam and proposed to be used to heat and cool the data centers and buildings in Stonewall Secure Business Park.

Policy 7: protect the extractive industry of Luck Stone quarries. The Hybrid Energy Park which is proposed in the northern eastern portion of the Subject Property is proposed as PD-GI which is compatible with the Luck Stone quarry. The Hybrid Energy Park is complimentary and compatible with the operations of a quarry and will protect the quarry from residential encroachment.

#### Lower Sycolin and Middle Goose Subareas

Luck Stone Quarry will be protected from encroaching residential development with the Stonewall Secure Business Park. Also, the creation of a buffer and voluntary open space are consistent with the River Stream Corridor Overlay District (RSCOD) policies which is a priority in this Subarea.

#### Community Design Policies

Policy 15: encourage the development of non-residential uses that provide a transition from suburban to rural. The proposed Stonewall Secure Business Park and the Hybrid Energy Park provides a transition from suburban to rural areas.

Policy 26: protect the Luck Stone Quarry in the Lower Sycolin Subarea from incompatible uses by ensuring that encroaching new development does not hinder the quarry operation. Stonewall Secure Business Park and the Hybrid Energy Park will be compatible to the Luck Stone Quarry and will not hinder the quarry operations.

#### Economic Development Policies

Policy 1: Loudoun seeks and promotes a diverse economic base in multitude of industries that it is not entirely dependent upon any single employer or employment sector. Stonewall Secure Business Park and the Hybrid Energy Park will diversify the economic base in Loudoun County that and it is not dependent upon a single employer or employment sector. The Hybrid Energy Park will provide Loudoun County with tax revenues and provide Green energy to help attract and support the industry cluster of high security governmental and business uses in Loudoun County.

Policy 4: The County recognizes that economic policy and land use policy must be coordinated. The County seeks to implement the economic goals as adopted and subsequently amended by the Board of Supervisors in Loudoun County's Economic Development Plan and Growth Strategy within the framework provided by the Comprehensive Plan. The proposed land uses combined with the positive economic impacts of Stonewall Secure Business Park and the

Hybrid Energy Park further the goals and policies of the RGP. The Hybrid Energy Park will provide Green energy for Loudoun County and northern Virginia, and keep costs more reasonable than importing electricity from other areas of the region. The capital cost of the facility is estimated over \$800,000,000 and will provide an economic engine for Loudoun County, in construction, tax revenues and in reliable source of Green energy. Real estate tax revenues for Loudoun County for the proposed Hybrid Energy Park are estimated to be in excess of \$10,000,000.00 per year.

#### Energy and Communications Policies

Policy 4: Electric generation facilities that use clean burning and environmentally sound and proven fuel sources for power generation can be located only where their impact on the surrounding land uses and the environment is compatible. The proposed Hybrid Energy Park is compatible with the surrounding land uses and environment. It will use efficient and proven modern technology for producing clean power. The production of power produces clean energy utilizing natural gas from the existing lines and potentially the waste water from the Leesburg Sewage Treatment plant will contribute to the clean up the Potomac River and the Chesapeake Bay.

#### Air Quality Policies

Policy 4: The County will comply with the requirements of the Federal Clean Air Act Amendments of 1990 through support of the State Implementation Plan. The proposed Hybrid Energy Park will be required to comply with the requirements of the Federal Clean Air Act Amendments of 1990. Natural gas has 63 percent of the carbon content of coal and 80 percent of petroleum; natural gas has an additional advantage of fuel to electricity efficiency over coal when used in highly efficient combined cycle gas turbines as proposed in the Hybrid Energy Park. Additional benefits for air quality are that the natural gas will not be transported by tanker trucks that would create more pollution. The Hybrid Energy Park will provide the means to produce electricity in a Green and clean efficient manner and the ability to reduce or eliminate high carbon emitters as quickly as possible.

Policy 5: Loudoun County acknowledges its location in the Washington, DC-MD-VA Non-attainment Area. The County will continue to play an active role on the Metropolitan Washington Air Quality Committee (MWAQC) and the National Capital Region Transportation Planning Board (TPB) and will do its part in the implementation of the Phase II Attainment Plan for the Washington Metropolitan Nonattainment Area, as well as future emissions reduction programs. Due to the fact that the proposed Hybrid Energy Park is considered 'Green' and is within the Power Service Area ("PSA") a regional power supplier, may qualify for credits that would enable the closure of a similar size coal plant within the PSA.

The proposed Hybrid Energy Park as demonstrated above is in substantial accord with the Comprehensive Plan, as required by Section 6-1100 of the Zoning Ordinance.

## **V. TRANSPORTATION**

Access to the Stonewall Secure Business Park will be from Sycolin Road at two locations with guard houses and secured access. All of the roads within the Business Park will be private and will be privately maintained due to the secure nature of the Park. For enhanced security the Hybrid Energy Park will only be accessed within the Stonewall Secure Business Park. The traffic study report titled "Stonewall Secure Business Park Traffic Impact Study Loudoun County, Virginia", prepared by Wells + Associates, Inc. and dated November 5, 2008, was submitted with ZMAP 2008-0017. The conclusions in this traffic study state that Stonewall Secure Business Park will be developed in three separate phases in order to minimize the development's impact on the surrounding road network. For specific information, please refer to the Study. A traffic memorandum is enclosed with the applications, which specifically addresses the trip generation associated with the Hybrid Energy Park. This traffic memorandum was prepared by PHR+A from John Callow and dated February 25, 2009.

## **VI. SUMMARY**

Approval of the proposed special exception and commission permit applications are the first steps in a long process for approval of the Hybrid Energy Park which requires additional Federal and State agencies approval.

Electricity will be generated by the most efficient and state of the art technology which will supply northern Virginia with power and address the shortage and congestion in the PSA. The Stonewall Hybrid Energy Park may reduce the need for additional overhead power transmission lines in Loudoun County that are importing power from outside of Virginia.

The proposed Hybrid Energy Park is consistent with the Comprehensive Plan. The Subject Property is located within the Transition Policy Area and the Lower Sycolin Creek and Middle Goose Subarea as specified in the Loudoun County's Revised General Plan (RGP). The Transition Policy Area serves as a visual and spatial transition between the Suburban and Rural Policy Areas and envisioned that it will provide unique development opportunities (emphasis added). The non-residential component of the Transition Policy Area will be comprised of compatible uses that represent an appropriate transition from suburban to rural land uses. The Luck Stone quarry which borders the Subject Property to the east will be protected from residential development by the Stonewall Secure Business Park. The proposed Stonewall Secure Business Park will fulfill the needs for a Federal Government Contracting Industry Cluster and provide Loudoun County with a significant increase in tax revenues while providing a location for uses that require high security.

For the reasons stated above, the Applicant respectfully requests a recommendation of approval from Staff and the Planning Commission and approval by the Board of Supervisors of the Hybrid Energy Park in the proposed Stonewall Secure Business Park.