

Report of The Task Force to Study Energy Generation in Prince George's County

To the Maryland General Assembly and Prince
George's County Elected Officials



May 30, 2014

By Brad Frome, Chair of the Task Force to Study Energy Generation
And Task Force Members

Task Force Members

Senator Douglas J.J. Peters
Democrat, District 23, Prince George's County

Council Member Eric C. Olson
Prince George's County Council

Mario Giovannini
Pepco Holdings Inc.
Director of Supply Customer Energy

Kevin Lucas
Maryland Energy Administration
Director of Policy, Planning and Analysis

Vidal Hines
Sierra Club Maryland Chapter
Outreach Coordinator

Chinyere Tucker
Maryland Public Service Commission
Engineer

Delegate Aisha N. Braveboy
Democrat, District 25, Prince George's County

Bradley Frome, **Chair**
Prince George's County
*Interim Assistant Deputy Chief Administrative
Officer for Economic Development & Public
Infrastructure*

Charles Graham
International Brotherhood of Electrical Workers
Local Union 26
Business Manager

John Martin
Panda Brandywine Cogeneration Facility
General Manager

Dr. Ross Salawitch
University of Maryland, College Park, MD
*Professor, Department of Atmospheric & Oceanic
Science, Department of Chemistry & Biochemistry,
and Earth System Science Interdisciplinary Center*

Staff to the Task Force:
Erica Bannerman
Prince George's County
Energy Manager

CONTENTS

Task Force Members	2
Introduction	4
Maryland and Prince George's County Electric Generation Statistics	5
ELECTRICITY DISPATCH AND FORECAST	5
ELECTRIC GENERATION BY FUEL TYPE	6
FOSSIL FUEL GENERATION	6
RENEWABLE ENERGY GENERATION	7
Task Force Recommendations	7
CONCLUSION	8
REFERENCES	11

Introduction

A mere glance at the diversity of Prince George's County (the County) confirms its role as a cultural and economic leader of tomorrow. Located in the heart of the Baltimore/Washington corridor, the County borders Washington D.C. and is just 37 miles south of the city of Baltimore. Encompassing almost 500 square miles, Prince George's County has an urban atmosphere that still manages to provide a scenic and peaceful place to live, work, and play. The County serves nearly 900,000 residents and employs over 7,000 individuals.

The Task Force to Study Energy Generation in Prince George's County (henceforth referred to as 'The Task Force') was formed pursuant to House Bill 1145, Chapter 668 of the Laws of Maryland 2013. It consists of eleven (11) members, appointed by Governor Martin O'Malley and Prince George's County Government. The member represents the Senate of Maryland; House of Delegates of Maryland; Prince George's County Council; Prince George's County Executive Office; Maryland Energy Administration; Prince George's County Business Community; and representatives from the University System of Maryland, the environmental community, local electric companies, and local labor union.

The Task Force primary objective is to strategically examine energy generation in the County taking into account current and projected energy demand and make recommendations by May 30, 2014 regarding:

- 1) Whether energy generation should increase in the County and if additional generation is needed;
- 2) The appropriate forms of energy generation for the County (e.g. natural gas and renewables); and
- 3) The appropriate locations for energy generation in the county.

The Task Force appointed Bradley Frome as the Chair and hosted four meetings where nationally recognized energy experts presented information on the following:

- The regulatory structure governing electric generation, distribution, and siting at the federal, state, and local levels.
 - Energy generation supply and demand trends at the federal, state, and local levels.
 - Existing and proposed generation from conventional energy sources such as natural gas and coal.
 - Existing and proposed generation from renewable energy sources and innovative delivery methods such as solar photovoltaic (PV), fuel cells, energy from waste, and micro-grid technology.
-

Maryland and Prince George's County Electric Generation Statistics

The State and County are located in a deregulated energy supply market whereby distribution services are provided by regulated companies such as BGE and Pepco and electricity is "supplied" by companies that compete for customers such as Washington Gas Energy Services. The table below shows the existing electric generation capacity located in Prince George's County.

PLANT NAME/OWNER	LOCATION	CAPACITY (MW)	FUEL TYPE
Chalk Point, LLC Mirant	Eagle Harbor	2,647	Coal/Oil/Natural Gas
Brandywine Panda Energy	Brandywine	289	Natural Gas
Brown Station Road Landfill Prince George's County	Upper Marlboro	7	Landfill Gas
University of Maryland College Park CHP Plant Trigen	College Park	27	Oil/Natural Gas
Total Capacity		2,970	

ELECTRICITY DISPATCH AND FORECAST

PJM is a regional transmission organization (RTO) that operates the wholesale power market that includes the entire mid-Atlantic region and dispatches power plants to serve load on an economic bid/forecast basis, subject to transmission capacity availability. It coordinates the movement of wholesale electricity in all or parts of 13 states plus the District of Columbia. The 13 states are: Maryland, Delaware, New Jersey, Ohio, Pennsylvania, Virginia, West Virginia, Indiana, Illinois, Kentucky, Michigan, North Carolina and Tennessee. PJM currently manages a peak load of approximately 165,492 megawatts (MW), 62,556 miles of transmission lines, and serves 61 million customers.

Maryland's current estimated peak load is 13,700 MW and is a net importer of electricity. According to PJM, this load is expected to grow by approximately 0.8% annually over the next 10 years. Moreover, the Maryland Public Service Commission, *Ten-Year Plan (2010 – 2019) of Electric Companies in Maryland* indicates a shortfall of up to approximately 1,500 MW in the State due to aging electric generation infrastructure and the proposed retirement of coal-fired power plants. While some of the issues as noted in this report have been resolved, Maryland is still likely to be a net importer of energy in the years to come.

ELECTRIC GENERATION BY FUEL TYPE

FOSSIL FUEL GENERATION

According to PJM, the State's electric generation capacity from fossil fuels is approximately 4,711 megawatts (MW) for coal, 2,421 megawatts for natural gas, and 1,840 MW for oil. Of this total, the power production capacity in the County from coal is approximately 1,626,000 MWh, 3,660,000 MWh from natural gas and 10,000 MWh from oil.

Electricity generated from coal in the County is expected to decline due to NRG's announcement of its plans to retire the coal-fired units at Chalk Point Power Plant by 2017. Conversely, natural gas generation is expected to increase since the Maryland Public Service Commission (MD PSC) has received applications from Panda Mattawoman Energy Inc. and Keys Energy Center to build natural gas power plants in the County.

Panda Mattawoman Energy, Inc. proposes to build a 859-megawatt natural gas-fired, combined-cycle generating station in Brandywine, Maryland. If built as scheduled in 2017, the plant will supply the power needs of up to 859,000 homes. Moreover, the company expects to contribute approximately \$1.2 billion to the area's economy during construction and the plant's first ten years of operation.

Keys Energy Center proposes to build a 735 MW natural gas-fired, combined cycle generating station in Brandywine, Maryland as well. If built as scheduled in mid-2017, it will supply power to approximately 500,000 homes.

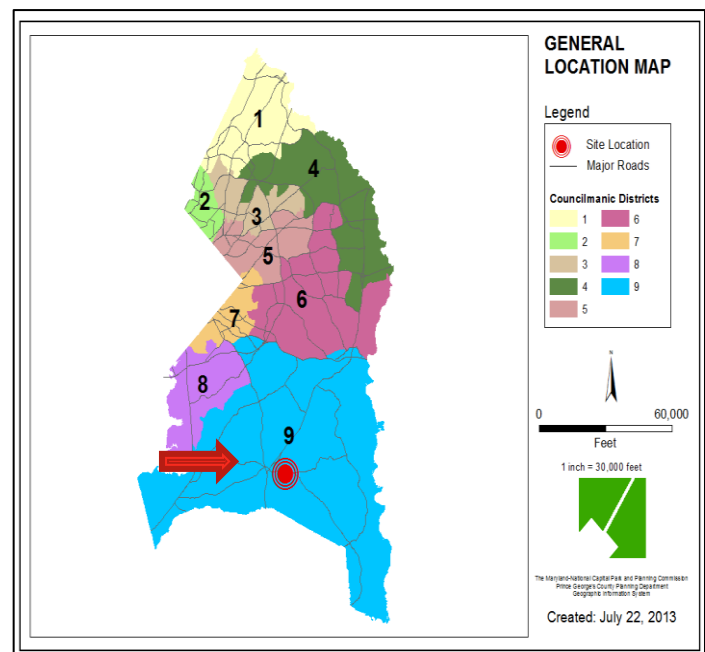


Figure 1: General Proposed Location of Mattawoman Energy and Keys Energy Center Plants

RENEWABLE ENERGY GENERATION

The Maryland Energy Administration (MEA) mission is to promote clean, reliable and affordable energy in the State. It accomplishes this mission by implementing three major programs: EmPOWER Maryland, the Renewable Portfolio Standard (RPS), and the Greenhouse Gas Reduction Act.

The Renewable Portfolio Standard (RPS) requires electricity suppliers to use renewable sources for 20% of the electricity sold in the state by 2022. This standard does not apply to distribution companies such as Pepco. Eligible renewable energy technologies include but are not limited to: solar, wind, hydropower, and landfill gas/biomass.

According to PJM, current interconnection requests for renewable energy generation in its regional market are approximately:

- 90 MW for solar
- 16,287 MW for wind
- 7,827 MW for hydropower:

Of the total 7,400,000 MWh consumed annually in the County, approximately 13,000 MWh is generated from solar and 25,000 MWh from landfill gas/biomass operations in the County. Note the County does not have wind or hydropower generation facilities.

In May, 2014, the County released a request for qualifications to build two solar farms at the Brown Station Road Sanitary Landfill and the Sandy Hill Creative Disposal Project. The projects will span several acres at the County facilities and is anticipated to supply 4 to 5 MW of renewable energy to the County's power grid, enough to power approximately 800 homes.

Task Force Recommendations

The Task Force was formed pursuant to House Bill 1145, Chapter 668 of the Laws of Maryland 2013. It consists of eleven (11) members, appointed by the Governor Martin O'Malley and Prince George's County Government. Its primary objective is to examine energy generation in the county taking into account current and projected energy demand and make recommendations regarding:

- 1) Whether energy generation should increase in the county and if additional generation is needed;
 - 2) The appropriate forms of energy generation for the county (e.g. natural gas and renewables); and
-

3) The appropriate locations for energy generation in the county.

CONCLUSION

The Maryland-National Capital Park and Planning Commission (MNCPPC) is a bi-county agency charged by the State of Maryland to acquire, develop, maintain, and administer a regional system of parks and to provide land use planning for Montgomery and Prince George's Counties. All federal, state, county and municipal governments, and publicly and privately owned utilities are required to submit public sector construction projects for Mandatory Referral by the Commission. During this process, the agency reviews project impacts related to:

- Environment
- Transportation
- Historic Preservation/Archeological
- Economics
- Consistency with Approved Plan(s)
- Consistency with Development/Regulatory Standards
- Evaluations of Existing Public Facilities
- Community Outreach Efforts
- Community Comments

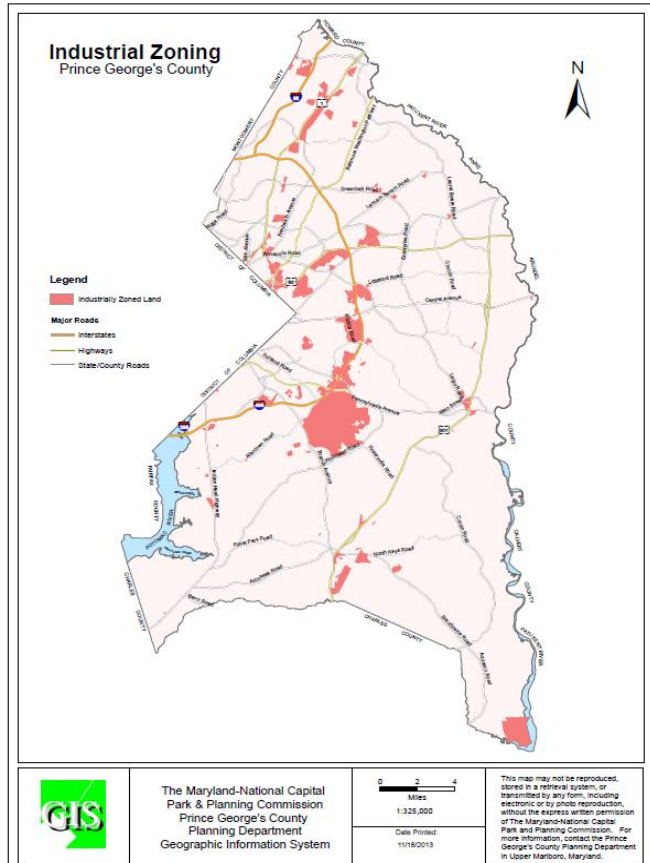


Figure 2: Industrial Zones in Prince George's County

At the conclusion of the review period, MNCPPC Planning Board develops recommendations for transmittal to Maryland Public Service Commission, Maryland Department of Natural Resource, Maryland Power Plant Research Group, etc. in an advisory role only. The final approval of a new energy generation facility and its location in a particular part of the State is decided by these agencies in consultation with the federal government

With regard to the questions posed to the Task Force (whether energy generation should increase in the County, the appropriate forms of energy generation for the County and the appropriate locations for energy generation in the County), it is logical to answer these questions in a singular and comprehensive response. This is due to the fact that the energy market transcends the jurisdictional boundaries of the county, as well as the state. Instead Prince George's County's demand for energy is

satisfied as part of the larger PJM transmission network as referenced earlier in the report. The same is true for electricity that is generated within the county, as this is also fed into the larger PJM region.

Having said that, as mentioned earlier, Maryland faces a deficit between demand for electricity and supply (information on supply and demand was not available on a County-wide basis though it would appear as though the energy supplied within the County exceeds the demand for energy within the County), as well as a growing demand for renewable electricity to meet the self-imposed renewable energy portfolio standards.

It is the conclusion of this Task Force that Prince George's County is well suited to contribute to the state's growing energy needs from a baseline energy generation perspective as well as to the state's need for increased amounts of renewable energy.

Due to the infrastructure that exists within Prince George's County, namely water lines, electricity transmission lines as well as supplies of natural gas, the County is ideally suited to host additional power plants that could provide baseline energy generation capacity based on the combustion of natural gas and/or renewables. This is demonstrated by the interest of two natural gas power plant operators to locate power plants in the County. The County can play a supportive role in delivering these plants to market by ensuring that the processes it controls run smoothly and efficiently as well as by working positively with utility companies in order to ensure that the required infrastructure is in place. This has an added benefit to the County of providing a significant amount of property tax revenue as the assessed value of power plants tends to be substantial.

The potential citing of two natural gas power plants in the County is advantageous, from an environmental perspective, in that air pollution issues (surface ozone, particulates, mercury, etc) associated with coal are nearly entirely alleviated. The most serious potential environmental consequence of a natural gas power plant could be the unintentional leakage of natural gas (methane, CH₄) prior to combustion, since methane is a much more potent greenhouse gas than carbon dioxide (CO₂). The task force suggests that, if future natural gas power plants are approved, the state of Maryland ensure an independent assessment of methane leakage along the natural gas supply lines.

In addition to attracting new baseline generating capacity, the County can also play a role in delivering renewable energy capacity. The County has already made progress in this regard by virtue of the landfill gas to energy generating plant it operates that is located at the County's landfill on Brown Station Road Sanitary Landfill. In addition, the County is home to the Washington Suburban Sanitary Commission's approximately 2 MW solar array located at the Western Branch wastewater treatment plant and the University of Maryland College Park 631 kW system. In addition, the County has recently issued a request for qualifications to install solar panels at the Brown Station Road Sanitary Landfill and the Sandy Hill Creative Disposal Project. The County can continue its positive role in the


development of renewable energy by continuing to explore opportunities to install solar generating facilities at County-owned land and on County-owned buildings.

The County can also play a role in supporting the development of innovative ways of delivering electricity via micro-grids by ensuring that its permitting and entitlement processes evolve to capture the unique methods by which these small-scale distribution networks are established. Micro-grids help to create redundancy in a localized setting and can also be used as a way of delivering renewable electricity from small scale generating facilities located on site to consumers; their establishment should be supported and encouraged.

While not directly related to the supply of electricity, reductions in the demand for electricity within the County have the potential to positively impact the deficit within Maryland of supply and demand. Prince George's County is home to one of the more innovative programs to reduce the demand for electricity on a neighborhood basis in the Small Town Energy Program for University Park (STEP-UP). Funded by the stimulus grant administered by the U.S. Department of Energy, the STEP-UP program provided energy coaching for home owners as well as assistance in securing grants and assistance in making energy efficient improvements. The County would be well served by exploring the expansion of similar types of programs and should work with the Maryland Energy Administration to support similar programs in the County.

In addition, the County created the Sustainable Energy Program which coordinates the County's efforts to reduce energy consumption, cost, and greenhouse gas emissions in buildings and the transportation sector. The mission of the Sustainable Energy Program is to provide reliable, sustainable, and environmentally sound energy solutions that enhance the quality of life of Prince George's County residents while concomitantly maximizing energy savings.

REFERENCES

- Lucas, Kevin. "Clean, Affordable and Reliable Energy for all Marylanders". PowerPoint Presentation. Maryland Energy Administration. 12 December 2013.
 - Berlage, Derick. "MNCPPC Mandatory Referral Process". PowerPoint Presentation. Maryland National Capital Park and Planning Commission. 12 December 2013.
 - Sherwell, John. "Overview of Maryland's Power Plant Approval Process". PowerPoint Presentation. Maryland Department of Natural Resources: Power Plant Research Program. 12 December 2013.
 - Larocque, Matthew. "PJM Overview for Prince George's County". PowerPoint Presentation. PJM. 12 December 2013.
 - Gausman, William. "Solar Technology and Micro-grids". PowerPoint Presentation. Pepco Holdings, Inc. 15 April 2014.
 - Public Service Commission of Maryland, "Maryland Public Service Commission, Ten-Year Plan (2010 – 2019) of Electric Companies in Maryland". August, 2011.
- 
-