

INTRODUCTION

To many people, the sprawling coal-fired power plant on the north end of Alexandria has long been an incongruous gateway to that city as well as the nation's capital.



Figure 1.
Potomac River
Generating Station (2011)

Dating from 1949, the Potomac River Generating Station (PRGS) was originally constructed in a warehouse and industrial district when cleaner generating fuels were unavailable and when other sources of electricity were inadequate. Sixty years later, the situation is quite different.

The PRGS is now surrounded by vibrant residential neighborhoods. Alternative and far less polluting sources of power are available. The capital area is now integrated into a regional electricity grid. These changes have led to persistent calls to close the plant.

Nearby residents and the City of Alexandria have charged the PRGS with serious public health and environmental violations, as has the Virginia Department of Environmental Quality. In 2008, these complaints led the plant's owner to escrow over \$30 million for additional air pollution controls. Since then, however, even stricter pollution controls proposed by the Environmental Protection Agency (EPA) have called into question the adequacy of the prior escrow (still unused, pending selection of an engineering vendor) and have led the plant's current owner, GenOn Energy, to caution investors about the facility's future.

At the same time, prior concerns regarding adequate local power supplies (i.e., reliability) that once led federal officials to mandate the plant's continued operation are no longer a controlling factor. Thanks to the construction of multiple new transmission lines and other network upgrades, the regional grid operator and Pepco, the local utility which still owns the land under the PRGS, have said that the facility will no longer be needed for reliability purposes. The Washington, D.C. area can now count on alternative electricity supplies.

In short, the time has come to start planning for what will come next. Today, the prime riverfront site the PRGS occupies (some 25 acres) is worth much more for alternative civic and commercial purposes than for generating electricity.

Our concept for Potomac River Green (PRG) reflects this new reality. It presents an innovative vision for transforming one of Alexandria's last remaining industrial sites into a thriving and sustainable 21st century residential and commercial neighborhood.

Potomac River Green will create hundreds of jobs, add over 500 new homes along the waterfront, generate millions of dollars in new tax revenues and open public access to a broad swath of Potomac River property that has been closed off since the 1930s.

In addition, the plan will put Alexandria and the greater D.C. Metro area at the center of the new energy economy. The energy museum and clean energy enterprise center that provide the architectural focus for Potomac River Green will create a hub for the region's energy R&D, start-up, consulting and investment communities. These unique energy efficient structures, complete with public meeting rooms, an auditorium, exhibition space and restaurants are also designed to provide a gathering place for local residents as well as a major new draw for outside visitors.

The concept presented here stems from an extensive year-long collaboration between the American Clean Skies Foundation (ACSF) – a Washington, D.C. based non-profit, environmental groups, community organizations and a talented multi-disciplinary group of consultants.

Principal roles were played by Matthew Slavin, founder of Sustainingrüp, an urban development consultancy, and the Alexandria office of the Cooper Carry architectural firm, led by David Kitchens, Layton Golding, and Allison Bickers. Major contributions were also made by Russell Archambault of RKG Associates, an Alexandria based fiscal and economic consultancy, and Pete Jervey of Westpath Real Estate. MJ Bradley and the Analysis Group advised on utility planning and reliability issues. The team also relied extensively on the advice of ACSF's outside counsel, David Lubitz of Schaner & Lubitz.

The American Clean Skies Foundation initiated Potomac River Green and brought this planning team together as part of its ongoing program to expand the country's clean electricity options. By showcasing the potential for repurposing sites now used by some of the oldest and least efficient power plants, we hope that the power sector's transformation will be accelerated and the constituency for change enlarged.

In the next decade, as stricter air and water pollution controls take hold across America and cleaner generation options increase, dozens of other aging coal and oil-fired power plants will be retired. As with the Potomac plant, many of these sites are likely to provide attractive redevelopment options. Indeed, numerous such projects have already been completed and a companion ACSF report, "Repurposing Legacy Power Plants," profiles some of the most instructive cases.

Realizing the promise of Potomac River Green will not be easy. It will take time and sustained commitment by all the major stakeholders. But it can be done and, in the months ahead, ACSF looks forward to working with the City, GenOn Energy, Pepco and interested community stakeholders to bring Potomac River Green to life.

Gregory C. Staple

CEO, American Clean Skies Foundation



Figure 2.
Potomac River Green (2015-2017)



Figure 3.
Potomac River Green
Neighborhood



Figure 4.
Potomac River Green
Neighborhood



Figure 5. Site Plan Before/After

EXECUTIVE SUMMARY

Potomac River Green will transform the waterfront site of Alexandria’s coal-fired power plant into an environmentally friendly, mixed-use community.

The concept envisions expanded river access and open space amenities; contains hundreds of new riverfront housing units; greatly improves community connectivity to the City’s Old Town area; and, at the heart of the site, creates a world-class new energy center for the Washington, D.C. region.

This redevelopment concept is designed to catalyze a market-based solution to the plant’s retirement.

The team creating this plan had three aims: (1) to design an economically viable redevelopment roadmap for a sixty-year-old waterfront coal power plant; (2) to bring increased recreational and social amenities to the waterfront site; and (3) to improve community connectivity.

These goals are the foundation for a larger vision – one that features sustainable neighborhoods with smart, energy-efficient buildings and provides space for a clean energy business and museum complex. Each element of the redevelopment plan plays an important part in fulfilling this vision.








The museum building offers an innovative and efficient 21st century energy model that captures and produces more energy than it uses and feeds the surrounding neighborhood excess power.

Interior and exterior energy systems utilize solar orientation, solar energy, site topography, natural water flow, airflow, fuel cells and geothermal systems. Building exhibits display these state-of-the-art energy systems for visitors. There are also community meeting rooms and research and development space. Just across the exterior plaza sits additional “incubator” office space for energy start-up businesses, research and development (R&D) activities and consultants.

The museum building also recycles wastewater and storm run-off for the new community. This process extracts energy that is returned to the surrounding buildings for use. The ground under adjacent neighborhoods hosts geothermal and air ventilation networks that help feed energy back to the development.



Figure 6.
Potomac River Green Building Guide

	Multifamily Residential - 556 Units		Hotel - 125 Rooms
	Townhouse Residential - 46 Units		Energy Buildings - 75,700 SF
	Retail - 105,000 SF		Relocated Substation
	Commercial Office - 99,100 SF		

The street plan for Potomac River Green, as well as the sidewalks and garden spaces, serve an important dual purpose. In the northern neighborhood, they are the conduit for moving water and energy between the central building and the community. They also connect the community to surrounding neighborhoods, parks and the waterfront. Trails traverse the site for pedestrians and cyclists, including the regional Mt. Vernon Trail.

The mix of uses and density planned for the site has been carefully thought out to create an environment where people can live, visit, shop, and work with minimal environmental impact. The placement of retail, recreation, entertainment and office space on the same site is designed to reduce car trips for residents and visitors alike. A natural gas refueling station and electric vehicle (EV) charging stations provide alternative fuel options for vehicles.

Public amenities are also aimed at supporting a lifestyle that has a lower impact on the environment. These amenities include a bike station for cyclists to store their bikes, shower, get a tune-up and rest on the Mt. Vernon Trail. Community gardens are located throughout the residential areas to grow food and increase site permeability. The waterfront area includes a plaza, a performance area, a boardwalk, a boathouse and a water taxi station. The site itself can be reached on foot, by bike or by boat.

From the start of construction in 2015 through planned completion in 2017 and operation, Potomac River Green is estimated to create over 2,200 new jobs. Compared with the approximately 150 jobs now provided by the power plant, Potomac River Green will strongly boost the local economy. Based on a build-out value of approximately \$450 million, the project is estimated to generate a net of more than \$27 million over 10 years in local and state taxes. Potomac River Green will also inject over \$1.5 billion of new spending into the regional economy.

The design concepts presented here are flexible. As new energy innovations are developed, the museum, its grounds and plaza can exchange older technologies for new ones. This transition begins by replacing a 1940s era coal power plant with clean 21st century energy technology, and integrating a sustainable new community into Old Town Alexandria's 18th century street grid. ➡

