

## **Project Overview**

### **What is the significance of the project?**

Capital Partners Solar Project is a large non-utility solar power purchase agreement (PPA) with three buyers: The George Washington University, American University, and George Washington University Hospital. The project demonstrates that large organizations in an urban setting can join together to reduce their carbon footprints by sourcing off-site solar energy.

The three systems were installed on 500 acres, which is equivalent to 450 football fields, and required 243,000 individual solar panels. At the time of signing the contract in 2014, the project was the largest non-utility PPA in total megawatt hours contracted in the United States, and the largest solar panel project east of the Mississippi River.

### **Why is GW doing this?**

This project is one way for George Washington University and other large organizations to address climate change while meeting our energy needs. Specifically, this project helps GW meet its Climate Action Plan goal of reducing greenhouse gas emissions by 40 percent by 2025 and puts us years ahead of schedule. The project also is projected to save electrical costs over the course of the 20-year contract.

### **Why did GW choose solar?**

Solar power is a cost-effective and reliable source of renewable energy, and solar panels provide highly valuable power at peak times when energy is most in demand. When the partners examined all the options available, the solar project with Duke Energy Renewables presented the best opportunity.

### **How will it work?**

Solar power generated at the three sites in North Carolina will move through a North Carolina electrical grid into the D.C. regional grid, increasing the amount of solar energy in the region. The three buyers purchase the energy from the project in the form of a power purchase agreement with Duke Energy Renewables. The buyers retain the

renewable energy certificates from the project. Additionally, through a groundbreaking retail electric supplier model, GW integrates the purchase of the solar electricity with its purchase of conventional grid electricity, thus offsetting the total amount of its conventional grid electricity purchase, and helping to minimize the combined cost of both.

### **How does the technology work?**

The 243,000 individual solar panels are on a ground-mounted tracker system that optimizes solar energy by following the path of the sun throughout the course of the day.

### **When will it be fully operational?**

All three solar panel sites became fully operational and delivered power to the customers by the end of 2015.

### **Was DC ever involved in this project?**

The partners explored ways that they could work with the DC government on a renewable energy project. Ultimately our group went with solar, and DC went with wind. We were pleased to collaborate with the DC government and encourage other municipalities to consider increased use of renewables.

## **Financials**

### **How much is George Washington/American University/George Washington University Hospital saving?**

Our agreement with Duke Energy Renewables was priced to provide fixed renewable electricity at a lower cost than we are currently paying for conventional power. Over the 20-year term, as conventional power prices continue to rise and our solar price remains constant, we anticipate the project will create significant cost savings and mitigate future price uncertainties.

### **How much did it cost to build the solar farms?**

The customers made no investment in the generation facilities. Duke Energy Renewables manages the land leased for the project, oversees the installation, and is responsible for capital investment and long-term operation of the sites.

### **What price is GW paying Duke under the contract?**

For legal reasons we cannot disclose the power purchase agreement (PPA) price. However, we can say that our delivered cost of electricity

with solar is less than the price we paid for traditional electricity prior to the system and the PPA price will remain fixed over the 20-year term.

### **What is the impact on GW's electricity bill?**

The 20-year agreement provides fixed pricing for solar energy at a lower total price than traditional power solutions. It will likely yield greater economic savings as traditional power prices are anticipated to increase over the duration of the contract. Through a groundbreaking retail electric supplier model, GW integrates the purchase of the solar electricity with its purchase of conventional grid electricity, thus reducing the total amount of its conventional grid electricity purchase.

### **How many jobs will this create?**

At the time of development, the project created hundreds of construction jobs at the solar sites in North Carolina communities.

### **How do you know if today is the right time to lock in? Why now?**

Over the short term, conventional power prices can go up or down, but over the long term, prices have gone up consistently. By locking in prices today, we benefit from timely state and federal incentives for solar, as well as photovoltaic (PV) prices at record low levels.

### **Why not purchase 100 percent of your power this way?**

By design, solar panels provide highly valuable power at peak times when energy is most in demand, and we use other sources of energy to supplement the solar kilowatt hours to meet our ongoing needs. We continue to maintain a variety of power sources in order to monitor innovation in the market and allow for us to respond to other energy purchase opportunities that may arise.

## **Future**

### **Do you anticipate doing more projects like this one in the future?**

This project was sized for half of our total electricity needs for GW, AU, and George Washington University Hospital. We also took the positive economics associated with size into account. We will consider other renewable options in the future.

## **Differentiators**

### **What, if anything, is different about your project than ones pursued by others?**

This groundbreaking partnership model demonstrates how large urban organizations can work together to proactively satisfy and manage their energy demand, directly sourcing regionally accessible renewable energy to reduce their carbon footprint.

The three solar farms were constructed in response to the customers' demand for renewable energy. The customers are retaining ownership of all the solar renewable energy certificates generated from the project. Also, through a groundbreaking retail electric supplier model, GW integrates the purchase of the solar electricity with its purchase of conventional grid electricity, thus reducing the total amount of its conventional grid electricity purchase.

Most recently Massachusetts Institute of Technology, Boston Medical Center, and Post Office Square launched a similar [aggregation](#) project based on the Capital Partners Solar Project model.

**How does the size of this solar project compare with others across the country? Would the economies of scale/project costs be different if the project was half or double the contracted size?**

Together our projects comprise one of the largest non-utility solar photovoltaic (PV) power purchase agreement in the country in contracted megawatt hours over the life of the term. If it was halved, we likely would lose some of the economic benefit but it would still produce significant cost savings for our institution over the term of the contract. If it was doubled, the economics might be marginally better.

**What else is GW doing regarding solar projects?**

- GW is home to the [Solar Institute](#), which identifies and creates pragmatic solutions to public policy barriers preventing the adoption of solar energy.
- GW has installed solar thermal hot water systems on four campus residence halls. These systems offset the university's natural gas consumption and provide hot water heating to student residents.
- GW researchers are testing 'walkable' solar panels on our Virginia Science and Technology Campus.

**What are the major steps the university has taken to reduce climate change?**

- GW was the first school in the District to sign the American College and University Presidents' Climate Commitment (ACUPCC). We are committed to carbon neutrality, showing how sustainability is achievable in a complex urban environment and on a campus with historic buildings. GW has committed to carbon neutrality by 2040, and is on track to reduce its footprint by 40 percent by 2025.
- We are implementing a comprehensive energy efficiency plan in campus buildings.
- A cogeneration system on GW's campus generates a significant share of the power used by the Science and Engineering Hall and Ross Hall. The system reduces the carbon footprint of the buildings considerably by recovering heat and using fuel more efficiently.
- GW has thirteen LEED-certified building projects.