



# **Solar PPA**

## **American University**

**Chris O'Brien, Director of Sustainability**  
**EPA Webinar**  
**December 13, 2012**

# AU Climate Goal: Carbon Neutral by 2020



## Strategies

- ▶ Reduce consumption
- ▶ **Produce renewable energy on campus**
- ▶ Source renewable energy off-campus
- ▶ Offset remaining emissions





Progress

- ▶ Bldg energy audits
- ▶ Energy conservation competitions
- ▶ 100% wind energy RECs
- ▶ **Largest solar installations in Washington D.C.**



# Solar PV Project Profile

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- ▶ PPA owner: Washington Gas
- ▶ Installer: Standard Solar
- ▶ Capacity: 532 kW
- ▶ Energy: 800,000 kWh annually
- ▶ Value: \$4,500,000 (energy + SRECs)
- ▶ Racking: Sunlink ballasted mounting system
- ▶ Inverters: PV Powered 75kW & 100kW
- ▶ Panels: 2,150 Trina panels, 25 yr warranty
- ▶ 6 buildings, each w/ separate inverter & meter
- ▶ Commissioned Summer 2011

# Project Development

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- ▶ Standard Solar had previously installed a direct-purchased solar PV system on campus
- ▶ AU contacted them to assess solar opportunities
- ▶ Standard Solar assessed campus roofs, proposed design, brought PPA financier to the table
- ▶ PPA proposed slight cost-saving structure (~1 cent/kWh cheaper than conventional grid power)
- ▶ AU agreed to purchase power for 20 yrs at fixed price plus annual escalator
- ▶ Washington Gas owns & maintains system & retains SRECs

# Financing Options

## 1. Direct Purchase

Pros	Cons
Retain all financial savings	Significant capital investment
Eligible for local grants (see dsireusa.org)	Ineligible for tax incentives
Retain Solar Renewable Energy Credits (SRECs) to retire and count against carbon goals, or market for cash	Responsible for O&M (can also be a pro)
~15-20 year payback on 25 year lifecycle	

## 2. Power Purchase Agreement

Pros	Cons
No capital investment	Forfeit ownership of SRECs
Cash-flow positive on day one	Forfeit some financial savings to PPA owner
No O&M for 10 years	
PPA owner eligible for tax incentives	



School of International... ▾

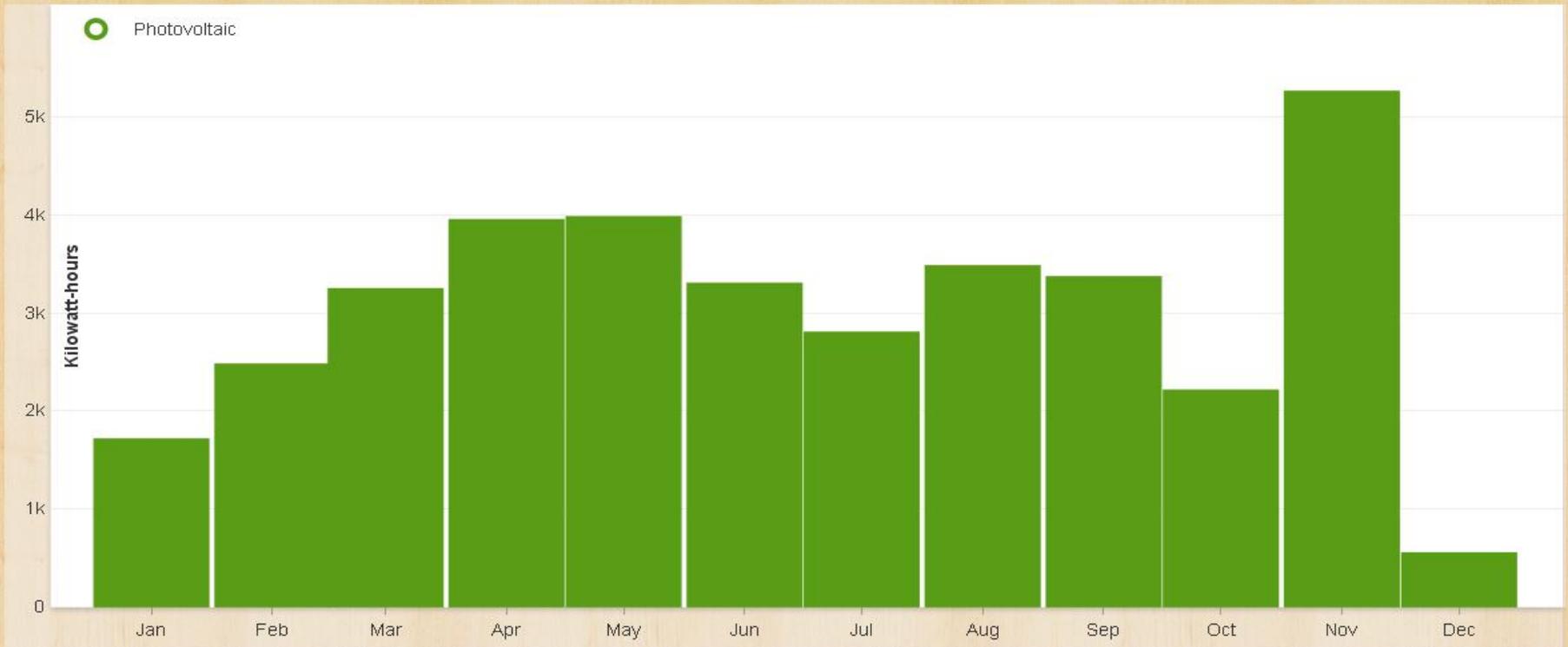
pv production ▾

over

year ▾

compared to

none ▾



Export data ▾





# SUSTAINABILITY MAP



american.edu/sustainability  
sustainability@american.edu

twitter.com/GreenAU  
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community garden  
solar panel  
bike repair station  
bike share  
rain garden  
green roof  
electric vehicle charging station  
LEED certified building  
zero waste  
habitat

**Kay Spiritual Life Center & Ward Circle Building**

- Permeable pavers test site between Kay and Ward allows water to infiltrate soil
- Largest campus green roof on Ward

**Katzen Arts Center**

- View solar photovoltaics from museum third floor (during open hours only)
- Public electric vehicle charging station (garage 1st floor)



**Capital BikeShare**

- Nation's largest bike sharing system
- Over 110 bike stations in DC
- Sign up at [www.capitalbikeshare.com](http://www.capitalbikeshare.com)



**Kogod School of Business**

- Green roofs built by volunteers
- Visit north green roof patio above shuttle stop
- Rain garden filters and cleans water

**Woods Brown Amphitheatre**

- Campus is a certified arboretum
- Over 2500 trees, 150 species
- Certified Wildlife Habitat (National Wildlife Federation)
- Tree Campus USA (Arbor Day Foundation)

## START

**Mary Graydon Center**

- Four green roofs
- Solar photovoltaic panels
- Solar hot water tubes
- View green roofs in second floor courtyards, including north courtyard "WONK" topiary
- Honey beehives in north courtyard
- Vegawatt cogenerator
- Trayless dining
- Compost collection



**School of International Service**

- LEED Gold
- Solar photovoltaic panels
- Solar hot water tubes
- Rainwater collection & reuse
- LED lighting in parking garage
- Green materials throughout building
- Bioretention ponds
- Green roof over parking garage
- White roof
- Xeriscaping

**Letts, Anderson, & Centennial Halls**

- Student-run bike lending station
- Solar hot water tubes
- Bike repair station

**Osborn & Asbury Buildings**

- Yard waste composting & construction debris recycling
- Electric vehicle charging
- Biodiesel-fueled buses

**Community Garden**

- Managed by students, faculty, & staff
- Herbs used in Terrace Dining Room
- Donations to Bread for the City

# AU Office of Sustainability

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