

- Approximately **1M people**
- **High-tech**, knowledge-based **economy**
  - 400+ facilities, 9M sq ft of real estate, 3k vehicles, 9k employees
- **Leader in Advanced Energy**
  - 11 megawatts of solar across 18 sites
  - One of the largest green power purchasers in the US, acquiring more than 430,000,000 kWh of clean energy annually
  - Procure 100% clean energy for County facilities
  - Inaugural Partner in the U.S. DOE's Combined Heat and Power for Resiliency Accelerator



## Environmental Benefits



Generate **11 million kilowatt hours** of electricity each year. That's enough electricity to power more than **1,100 single family homes**.



Reduce greenhouse gas emissions by **7,700 metric tons** each year.



Reduce greenhouse gas emissions equivalent to taking **1,630 cars** off the road.



Reduce greenhouse gas emissions equivalent to planting **200,000 trees**.

## Financial and Resiliency Benefits



Save **\$15 million** over 20 years. The County has cut costs because the electricity generated by the solar photovoltaic systems is less expensive than other energy supply options.

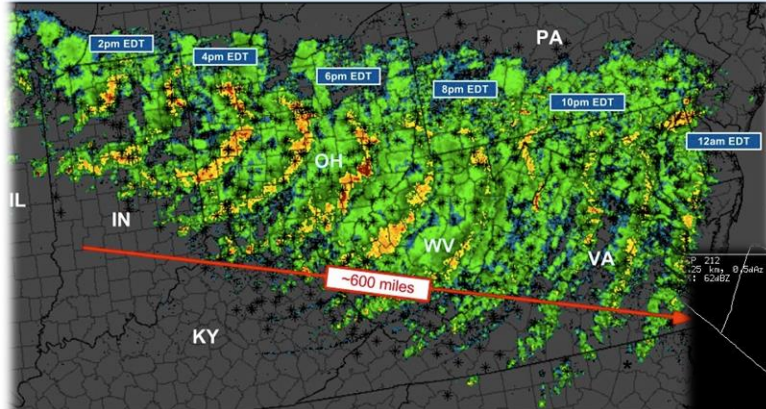


Support local green businesses and create more than **100 new jobs** across the supply chain, based on estimates by the Natural Resources Defense Council.



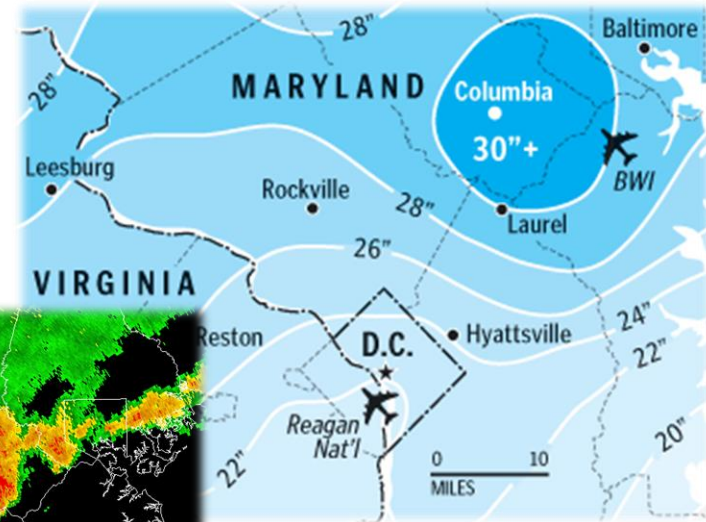
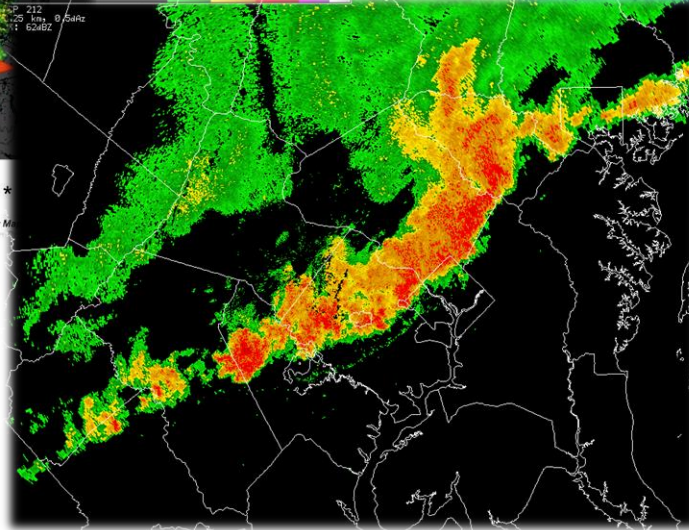
Reduce demand on the utility grid. That means fewer brownouts and blackouts during periods of peak electricity demand.

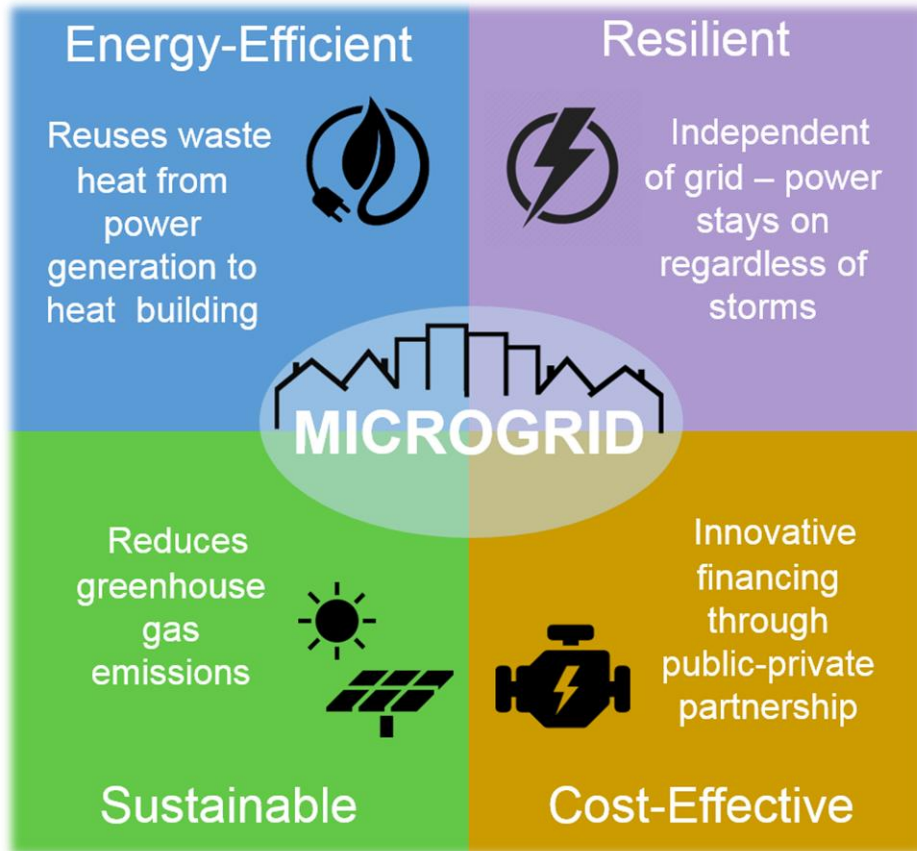
June 29, 2012 Midwest to East Coast Derecho  
 Radar Imagery Composite Summary 18-04 UTC  
 ~600 miles in 10 hours / Average Speed ~60 mph



Over 500 preliminary thunderstorm wind reports indicated by \*  
 Peak wind gusts 80-100mph. Millions w/o power.

Summary Map





## Why Microgrid as a Service

- Improve the resiliency of county operations
  - Majority of energy local
  - Ability to island > 7 days without grid support
- Upgrade existing aging electrical infrastructure without capex
- Control energy cost exposure
- Reduce greenhouse gases and other emissions
- Provide a contract vehicle to peer jurisdictions

## Challenges

- Capital Procurement not an option
- Some aspects of the solution can be tied to volumetric commodities (e.g., electricity) others cannot
- Technology risk
- Rebate, Tax Credit & Incentive uncertainty
- Approach new to utilities and permitting officials
- Ensuring competition and best value
- Packaging to multiple sites
- Difficulty in constructing “in situ”





## Campus Microgrid-as-a-Service

- Structured as a P3 built upon an enhanced Power Purchase Agreement
- Competitively solicited as energy supply + other tech
- **Schneider Electric** selected as the energy performance contractor/prime.
- **Duke Energy Commercial Renewables** provides capital and owns the system for 25 years
- **REC Solar Canopy** construction
- Maryland Energy Administration (MEA) funding along with utility incentives.
- Additional smart grid tech has been added (cyber, DC fast charging)

### Public Safety Headquarters



- Large electrical upgrades
- New 2 MW Solar
- Load management with BAS
- New Cogen
- Integrate Existing gas generator
- DC fast charging
- Improved HVAC

### Montgomery County Correctional Facility



- Minor Electrical Upgrades
- New 250 kW Cogen
- Integrate existing Diesel
- Potential future canopy installation over parking



## What's Next?

- Assessing portfolio for additional opportunities. Police stations, animal shelters, depots, housing
- Integrating microgrid concepts into new building design for future facilities  
Participating in Maryland Public Service Commission “Grid of the Future Proceeding”
- Sharing best practices through U.S. DOE Combined Heat and Power (CHP) for Resiliency Accelerator
- Addressing resiliency issues with transportation infrastructure
- Encouraging other agencies and private sector to seek similar approaches

