



Solar Microgrid Implementation in Prince George's County

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Agenda



**Background on
Microgrids**

**Social Benefits
of Microgrids**

**Prince George's
County Case
Study**

Recommendations

What is a Microgrid?

A localized electric grid that can connect to a main grid but operate independently (island mode) when needed

- can provide power through rechargeable batteries
- when connected, it feeds excess power back into the main grid
- can be gas-powered, photovoltaic (solar-powered), or a hybrid



Department of the Environment Project

DoE desires a solar microgrid for an underserved community to offer:

- Equity
- Resilience
- Clean energy
- Lower long-term costs



Social Benefits: Equity and Resilience

- would provide sustainable energy to low- and middle-income tenants who couldn't otherwise have access
- depending on site, state, and panel type, costs range from \$3,500 to \$35,000
- experts say the US must double its energy output to meet demand
- microgrids can support increased output and offer security by providing back-up power to residents and essential buildings like grocery stores and hospitals

Social Benefits: Environment and Public Health

Studies link income levels and living in urban environments to higher levels of chronic respiratory and cardiovascular diseases, caused by air pollution:

- higher risk of cancer and stroke
- children and elderly at greater risk—pollution exposure can harm brain development
- economic damage from lost productivity and medical bills

A solar microgrid can reduce power needed from burning fossil fuels and reduce greenhouse gas emissions:

- GHG emissions contribute to climate change, which causes irregular weather patterns
- agriculture and fishing sectors are hurt as harvests become less plentiful, leading to food shortages, price increases, and job loss

Prince George's County Case Study

Pepco sought approval to install two microgrids:

- Rockville, Montgomery County
- Largo, Prince George's County

Application was denied by the Maryland Public Service Commission:

- not in the public interest
- cost recovery and ratepayer impacts
- cost-effectiveness
- inconsistent with pilot study guidelines

Funding was the central issue

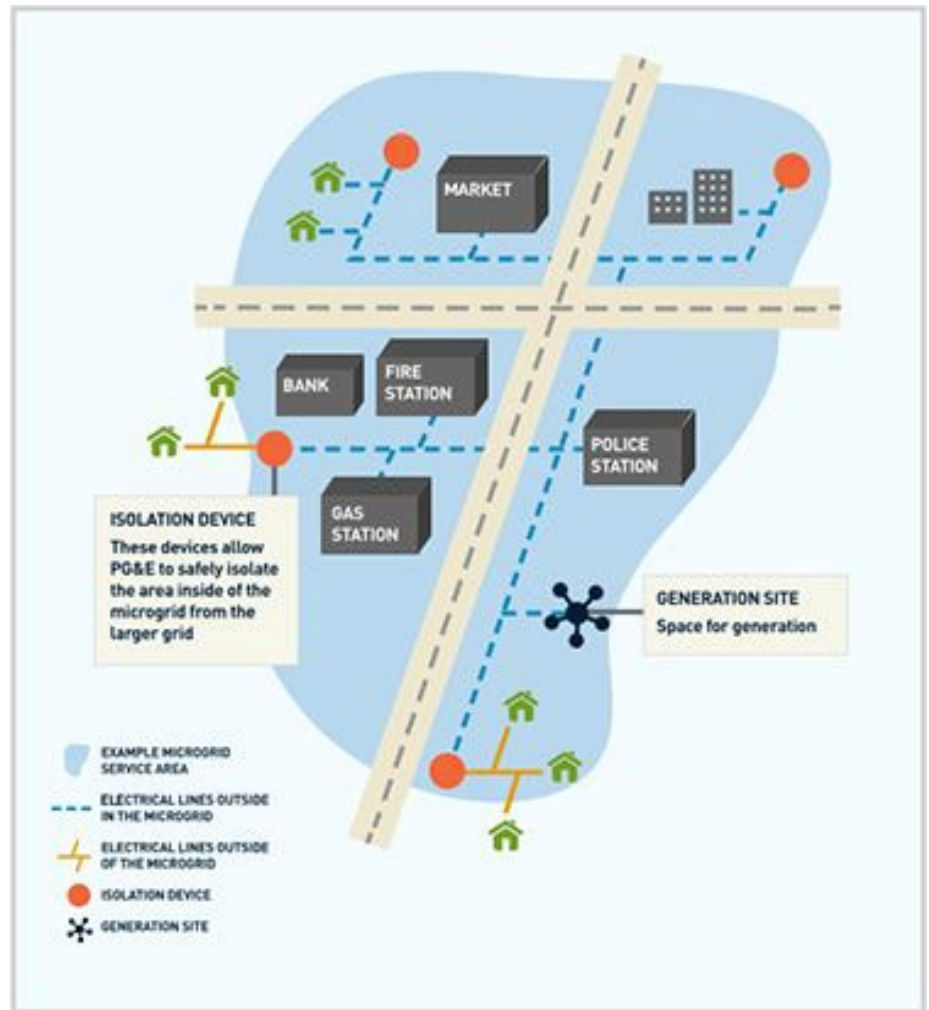


Background

Largo microgrid would power:

- County Administrative Building
- two medical facilities
- pharmacy
- gas station
- grocery store

The goal of the microgrid would be to supply power to essential businesses during an outage



Costs and Benefits



- total implementation: \$63.4 million
- Largo microgrid: \$18.8 million
- costs recovered by Pepco customers statewide
- serves 220,000 people, but statewide customers pay for its implementation
- protect community members from outages on the centralized grid (estimated value of \$7.2 million)
- transition Largo to clean energy
- establish best practices for future microgrids

Stakeholders



Proponents:

- University of Maryland Medical System, shoppers, County government
- most proponents are located with the microgrid area
- residents will also benefit

Opponents:

- Apartment and Office Building Assn., NEMA
- concerns about funding mechanisms
- oppose Pepco owning both generation and distribution (against State policy, unfair energy market)

Justification for Disapproval

- funding was primary reason for denial
- project serving some couldn't be funded by all
- Pepco could have been “more active” in pursuing outside funding—grants, private organizations, microgrid participants, its own funds
- analysis showed a 3:1 cost/benefit ratio--\$63.4 million cost compared to \$21 million benefit (unquantifiable benefits not included in the analysis)

Recommendations

Status Quo

- Largo microgrid estimate: \$18.7 million
- community-based funding: 220,000 participants—\$85/person over 20 years would cover \$4.25/resident/year or \$0.36/month
- Pursue other funding—federal grants and tax credits, private sector participation, Pepco funds
- FEMA Hazard Mitigation Assistance Grant, USDoE via Infrastructure and Investment Jobs Act, Inflation Reduction Act (30% tax credit through 2032 for microgrid technologies)

Recommendations

Alternative

- community solar solution
- Maycroft Apartments case study
 - low-income D.C. apartments installed a solar panel system
 - energy captured was loaded in batteries providing security during outages
 - connected to a larger community solar network increasing resiliency and expanding benefits
 - energy credited to residents' utility bills, reducing monthly costs by \$40-\$50
 - total cost: \$327,000
 - total financial benefit: \$750,000 (not including resilience benefit)

Largo Community Resilience Solar

- use the Maycroft model to develop community resilience solar for six buildings planned in the proposed microgrid
- each building would have its own solar panel system, and would create its own resilience center
- cost would be significantly less than the original \$18.7 million

Even if costs are higher than Maycroft's \$327,000, the benefits of a community-based solar portfolio would be valuable