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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Microgrids Playing a Crucial Role in Building Resilience: How to Prepare for Extreme Events with Appropriate Systems

Montgomery County Energy Summit

Montgomery County Energy Summit 2024

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Image courtesy of USDN

Montgomery County Energy Summit

BUILDING CLIMATE RESILIENT COMMUNITIES

Resiliency Hubs, Community Partners and the Path Forward

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AND HOMELAND SECURITY
MONTGOMERY COUNTY, MARYLAND

What Are Resilience Hubs?

Resilience Hubs are community-serving facilities augmented to support residents, coordinate communication, distribute resources, and reduce carbon pollution while enhancing quality of life.

Resilience Hubs can meet a myriad of physical and social goals by utilizing a trusted physical space such as a community center, recreation facility, faith-based facility, or multi-family housing building, as well as the surrounding infrastructure such as a vacant lot, community park, or local business.

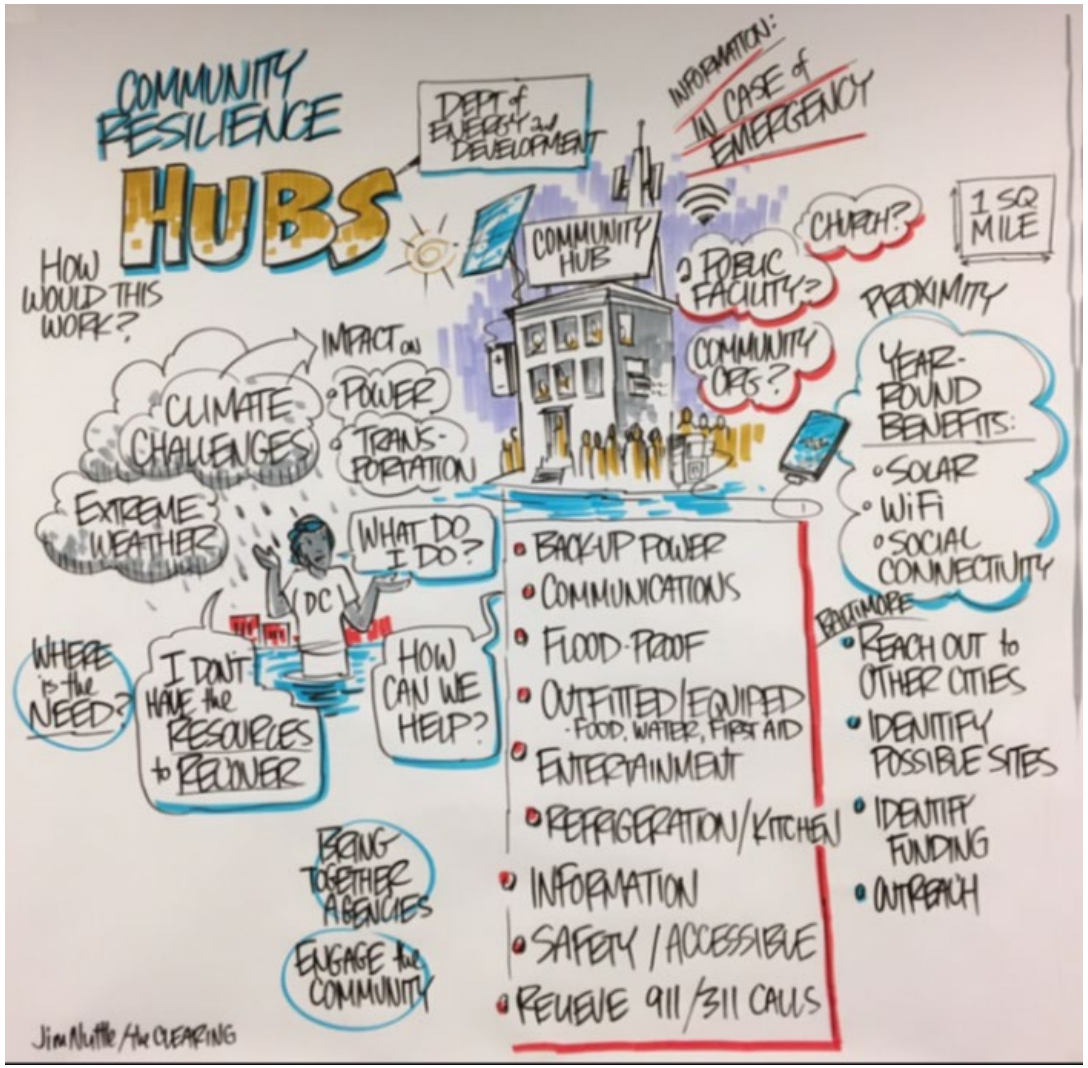

Image and Definition courtesy of USDN

Three Resilience Hub Modes

Everyday

A Resilience Hub serves as a community space with programming and services designed to support community needs and address root causes of vulnerability so the community can thrive. In addition, the Resilience Hub can deliver preparedness messaging to the communities the Hub serves, and site leaders can work with trusted community leaders to disseminate information and facilitate stronger community ties before a disruption.

Disruption

A community's Resilience Hub can be the central point for gathering, assessing impact, sharing stories, charging devices and safely storing medication if the power grid is down, assembling information, accessing resources, and spearheading response. Ideally, residents, businesses, and organizations will collectively manage the Hub including both internal and external communications.

Recovery

Resilience Hubs can play a critical role in post- disruption recovery and ongoing communications needs. For resilient communications, the site can remain a central point for gathering, sharing information, and accessing resources. Hubs can also provide space for additional experts, aid organizations, volunteers, and support networks to gather and better understand and help meet community needs.

Definitions courtesy of USDN

Five Foundational Areas of Resilience Hubs

SERVICES & PROGRAMS

Offering additional services and programs that build relationships, promote community preparedness, and improve residents' health and well-being.

COMMUNICATIONS

Ensuring the ability to communicate within and outside the service area year-around and especially during disruptions and throughout recovery.

BUILDING & LANDSCAPES

Strengthening the resilience of the facility to ensure that it meets operational goals in all conditions.

POWER

Ensuring reliable backup power to the facility during a hazard while also improving the cost-effectiveness and sustainability of operations in all three operating modes.

OPERATIONS

Ensuring personnel and processes are in place to operate the facility in all three modes.

Images and Definitions courtesy of USDN

Excluding any of the areas or focusing solely one aspect runs the risk of putting hazards over humans. To optimize community outcomes, a whole systems approach is key.

What does a Resiliency Hub look like?

Community Driven

Images courtesy of USDN

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Three Options for Resiliency Hubs

Base

Sites meet the minimum criteria for being a Resilience Hub across all three resilience modes including:

- Strong community support and leadership
- A site that is well-trusted
- Resilient energy and communications systems
- Base programming and services co-developed with community

Optimal

Site meets all the minimum criteria set for the Base Hub but will also incorporate a range of expanded services and resilience-enhancing retrofits that can include:

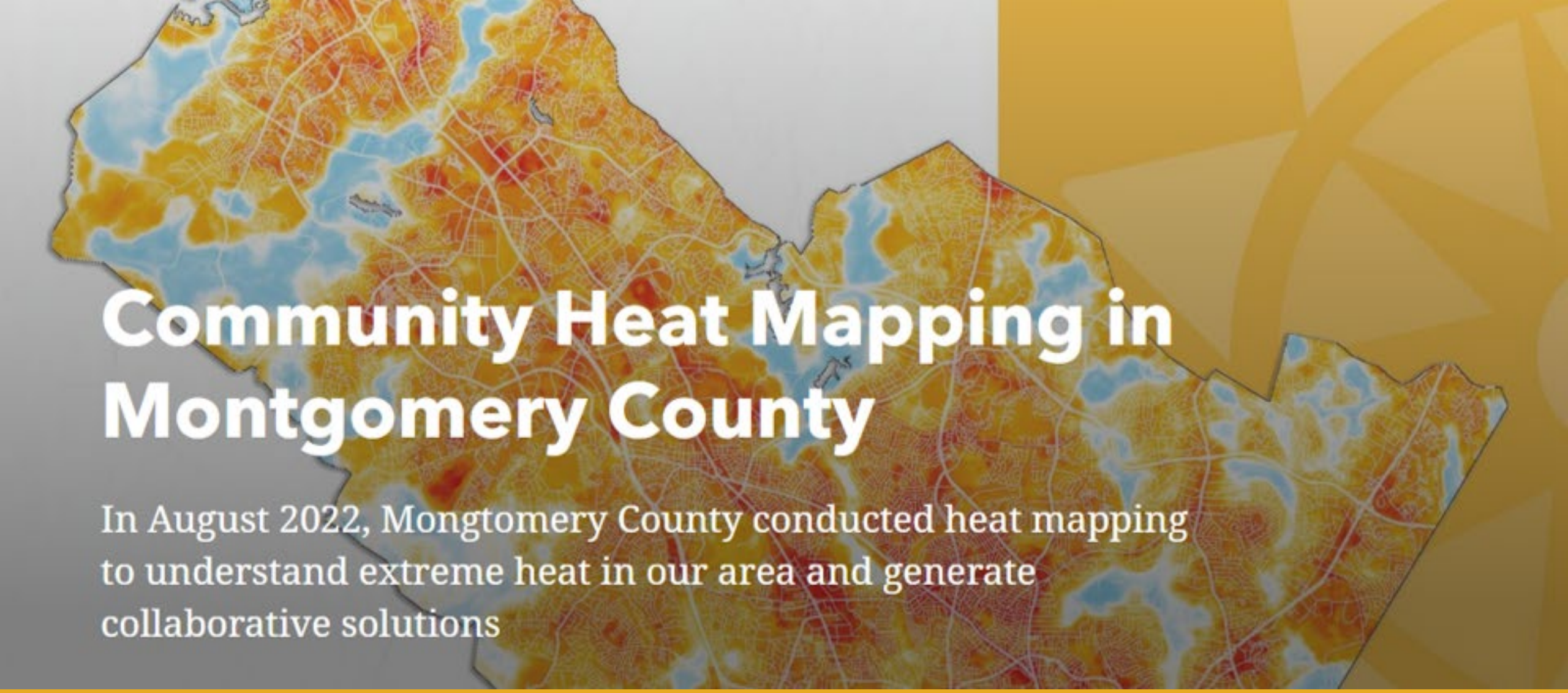
- Solar arrrays with battery backup
- Community gardens growing culturally appropriate foods
- Green infrastructure, including shade trees, parks, and nature-based solutions to climate hazards
- Water capture and filtration onsite

Ideal

Ideal Resilience Hubs will have (and meet) ambitious goals that provide community benefits year-round. Ambitious goals, co-developed with community members and partners, may include:

- Greywater reuse onsite
- Net zero energy
- Offering community solar benefits for the surrounding community
- Green job training programs

Definitions courtesy of USDN



Mapping Urban Heat

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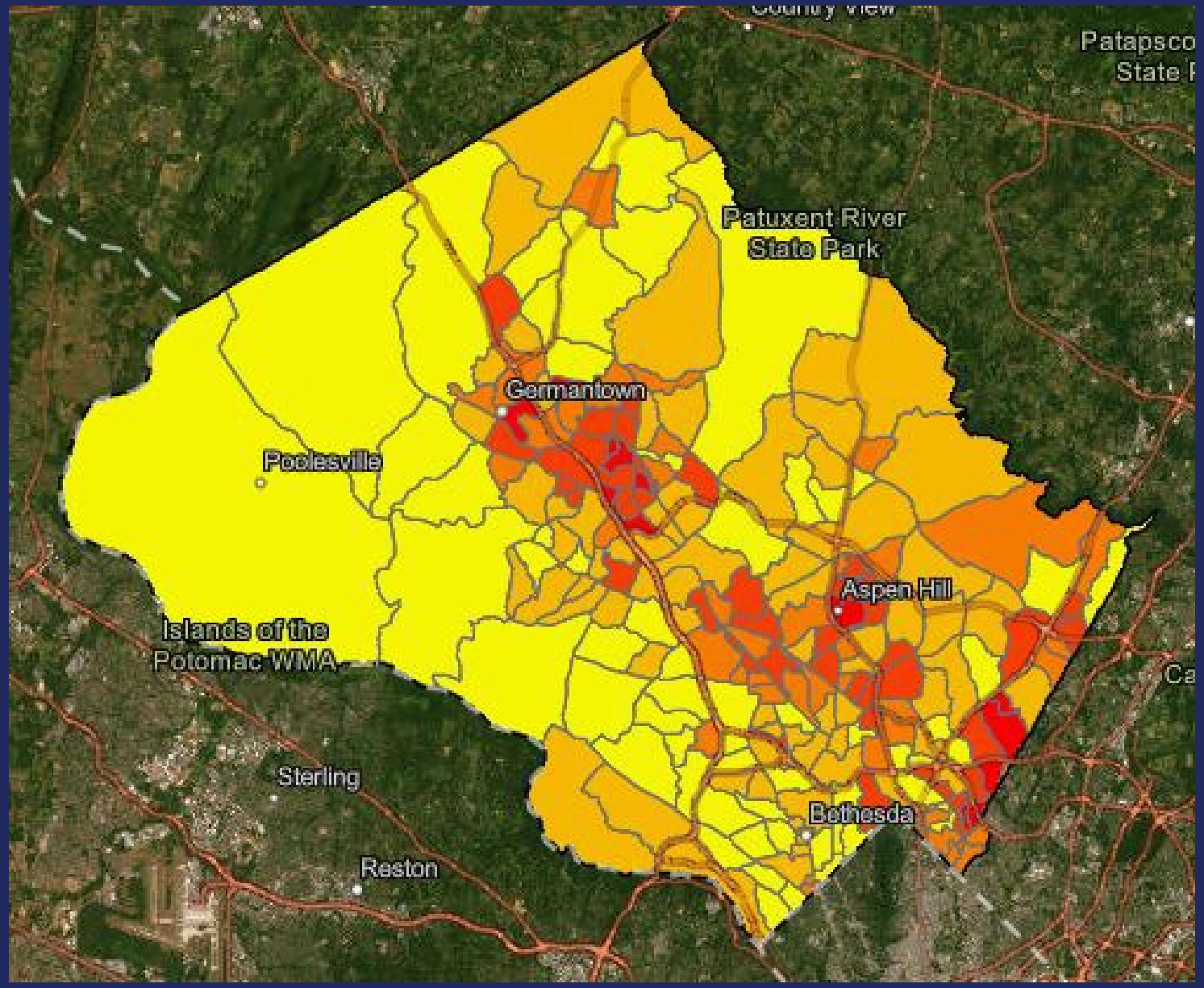
Mapping Risk

- Utilize concrete data to guide decisions about prioritization and locations of resources.
- This mapping tool incorporate Justice40 Tracks, CDC Social Vulnerability Indices, and MWCOG and M-NCPPC Equity Emphasis Areas.
- Similar mapping tool of tree canopy, land use, impervious surfaces and heat being designed through the Thriving Earth Exchange project.



- In a neighborhood with pronounced urban heat island effect, enhancing a local recreation or senior center may seem ideal. But what if our partners at DGS tell us that aging facility cannot support solar on the roof, or is slated for a complete renovation in the coming years?
- Does the community gather naturally at another location—a church or mosque, a nonprofit service organization or HOC meeting room?
- Does the community know and trust government representatives, or are there language or cultural barriers that might make a community-based organization with whom they have a relationship of trust a better site?
- What are the barriers to accessing existing facilities and how can other county staff help? Could it be transportation; an inability to move a family member with mobility issues; a language barrier or health issue?
- Can we as County government help identify funding?
- Involve the community in the process, from selection to operations.

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Why collaborate?

- Maximize funding opportunities.
- Achieve Resiliency Hub foundational area goals together.
- Locate resources where they are needed the most.
- Ensure we are meeting the needs of our communities through collaboration, not assumptions.

A Community-driven neighborhood hub

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Reflective of the Community it Represents

Meeting Community-Identified Needs

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Get Involved

- Attend the Resiliency Training and Exercise on May 21 at the Silver Spring Civic Building.
- Registration information and details will be available on our website.
- Spread the word about the training to your staff and community partners and encourage attendance.
- Read through the Resilience Hubs Guidance Document and the USDN Resilience Hubs website.
- Reach out to us if you are interested in exploring your options.

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Thanks to:

Laura Mondragón. Montgomery County Green Bank

Don Scheuerman, Department of General Services

Emily Mah Rogers, Glen Echo Park

Simon Lux, Former Climate Fellow

Urban Sustainability Directors Network

NOAA and CAPA Strategies

AGU's Thriving Earth Exchange

Resources

- Urban Sustainability Directors Network's Resiliency Hub Webpage: http://resilience-hub.org/
- OEMHS Resource Library: https://www.montgomerycountymd.gov/oemhs/resourcelibrary/index.html
- FEMA and the Changing Climate: https://www.fema.gov/fact-sheet/fema-and-changing-climate
- Community Heat Mapping in Montgomery County:
- https://storymaps.arcgis.com/stories/389babe7ce654fdd87701488ae72e8b6
- Climate Justice, Social Vulnerability, and Equity Emphasis Areas Maps:
- https://mcgov-gis.maps.arcgis.com/apps/instant/basic/index.html?appid=e33c83e8bf4b4dc58977e1dab9d997cc&locale=en-us

Microgrid Case Studies
Silver Spring, MD

April 16, 2024

Don Scheuerman

Office of Energy and Sustainability

Montgomery County Maryland

- Montgomery County, Maryland - Project Drivers
  - Environmental Goals
    - 80% Carbone Reduction by 2027
    - 100% Carbon Reduction by 2035
  - Solar Development Wherever Possible
  - Develop Resilience Facilities in accordance with the County’s Climate Action Plan

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- Two facilities Public Safety Headquarters (PSHQ) and Correctional Facility (MCCF)
- Microgrid as a Service”
- County purchases electricity for 25 years
- No significant impact on County budget caps
- Ridable public contract

PSHQ Microgrid Project

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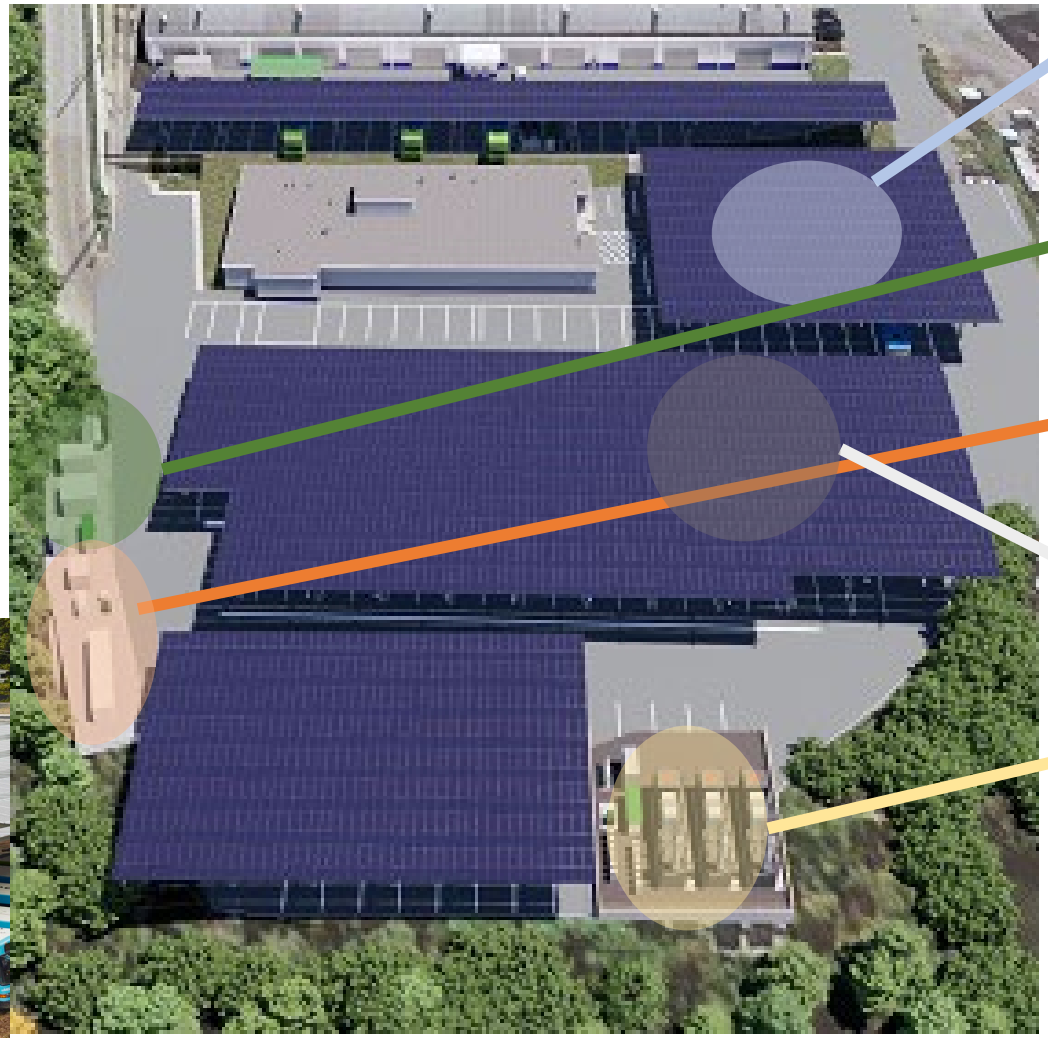
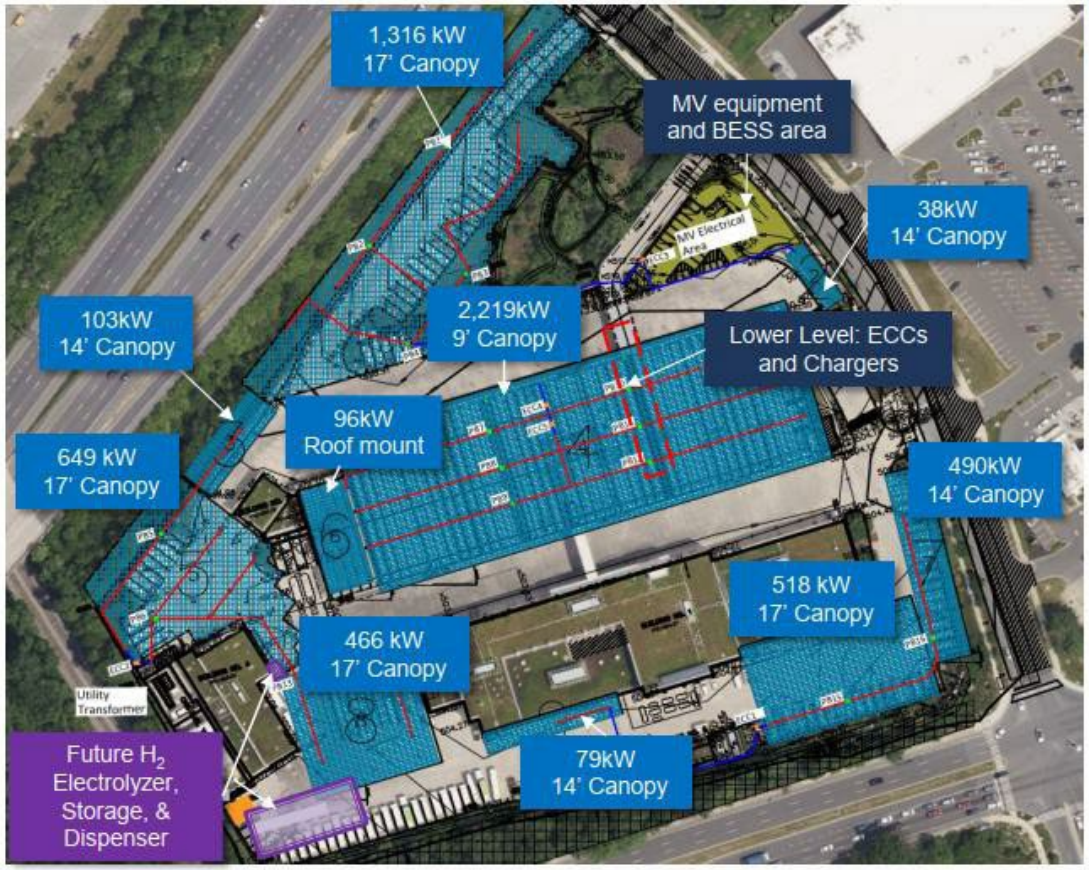
Brookville Smart Energy Bus Depot

- Integrated 6.5 MW Microgrid with on-site generation, electric bus charging, solar canopies, and battery energy storage
- Designed, built, owned, operated, and maintained by AlphaStruxure, a Schneider Electric & Carlyle JV
- No significant impact on County budget caps – Delivered with no upfront capital investment via the Energy as a Service business model
- Long-term cost predictability of energy supply and 100% operating capacity in the event of outages



Phase 1: Microgrid System Overview



EMTOC Microgrid Phase 1

- Solar PV: 5.65MW_{DC}
- BESS*: 1.5MW/7.35MWh
- Tie in (2) 725kW Back-up Cummins NG Generators
- 50% of 4.5MW Charging Capacity: (10) 180kW & (1) 450kW PCS
- (27) Charger reels & plug-in dispensers
- (4) Pantograph dispensers

*BESS to provide resilience to CNG refueling and later to support Hydrogen Electrolyzer

AlphaStruxure

Lessons Learned

- Engage early
- Keep it simple
- Understand regulatory constraints
- Engage all levels of each permitting organization
- Regular communication meetings
- Understanding who has authority

Contact Information

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Questions?