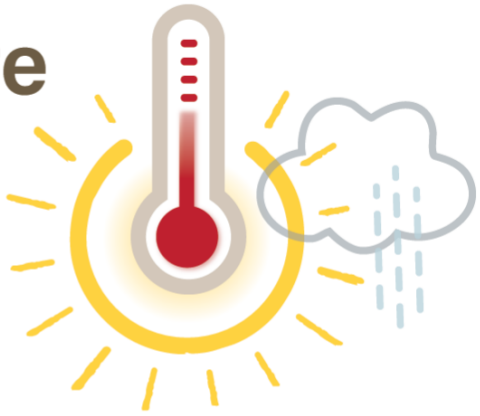
Climate Adaptation Forum

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION



The Microgrids webinar is set to start at 9:30 a.m.

Agenda

Climate Adaptation Forum

dvrpc Delaware Valley Regional Planning Commission

9:30 **WELCOME AND INTRODUCTION**

Robert Graff, Manager, Office of Energy &Climate Change Initiatives, DVRPC

Orientation to Webinar Software and Procedures

9:45 **PANEL OF EXPERTS**

Baird Brown – Principal, eco(n)law LLC. Co-counsel to the Microgrid Resources Coalition

Ben Parvey – Founder and CEO, BlueSky Power

Joseph Sullivan – Vice President of Energy Policy and Development, Concord Engineering

10:30 **MODERATED PANEL DISCUSSION AND PARTICIPANT Q&A**

Robert Graff – Manager, Office of Energy &Climate Change Initiatives, DVRPC

11:00 **EVENT ENDS**

CM APA AICP Certification Maintenance

Approval for 1.5 APA AICP CM credits is pending

Certificates of Participation available upon request to rgraff@dvrpc.org

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The Delaware Valley Regional Planning Commission (DVRPC)

- Metropolitan Planning Organization (MPO) for the Philadelphia region, created in 1965
- Bi-state (PA/NJ), nine counties
- Board made up of representatives of the counties, major cities, key state agencies, Governors' representatives
- Staff of over 120

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DVRPC Areas of Activity

Transportation, Air Quality, Smart Growth, Environmental Planning, Housing and Economic Development, Population and Employment forecasts, Long Range Planning, and…

Energy and Climate Change Initiatives:

Understand and advance effective and practical policies to reduce greenhouse gas emissions and prepare the region for the inevitable long-term impacts of climate change.

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Who has Joined
the Webinar
???
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How the webinar will proceed

- Only panelists/host have the ability to show video or share screens.
- Orientation to toolbar and other controls.
- Participant microphones are muted by default.
- Use “Q&A” box to ask questions. Clarifying questions after each presentation. Discussion questions held until all presentations are completed.
- The host may choose to unmute participants so they can ask questions they entered. Please unmute yourself if asked by clicking on the microphone in the lower left.
- Use the Chat Box to message everyone or specific individuals.
- This meeting is being recorded as of now. If you do not wish to be recorded, note that in the Q&A box when you ask a question, and the host will ask the question.

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More logistics . . . .

- For APA AICP CM credit you must sign in. Instructions will be provided at the end of the webinar.
- Certificates of participation are available upon request to rgraff@dvrpc.org
- All participants are asked to complete a survey on the quality and value of the webinar. Link will be provided at the end of the webinar.
- Please join us for the companion webinar:

Preparing the Electric Grid for a Changing Climate
Tuesday, July 14th, 2020 from 1:00 p.m. - 2:30 p.m.

Registration link is dvrpc.ticketleap.com/GridResiliency
Also in the chat box

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PANEL OF EXPERTS

Baird Brown – Principal, eco(n)law LLC. Co-counsel to the Microgrid Resources Coalition

Ben Parvey – Founder and CEO, BlueSky Power

Joseph Sullivan – Vice President of Energy Policy and Development, Concord Engineering

Link to bios is in the chat box.

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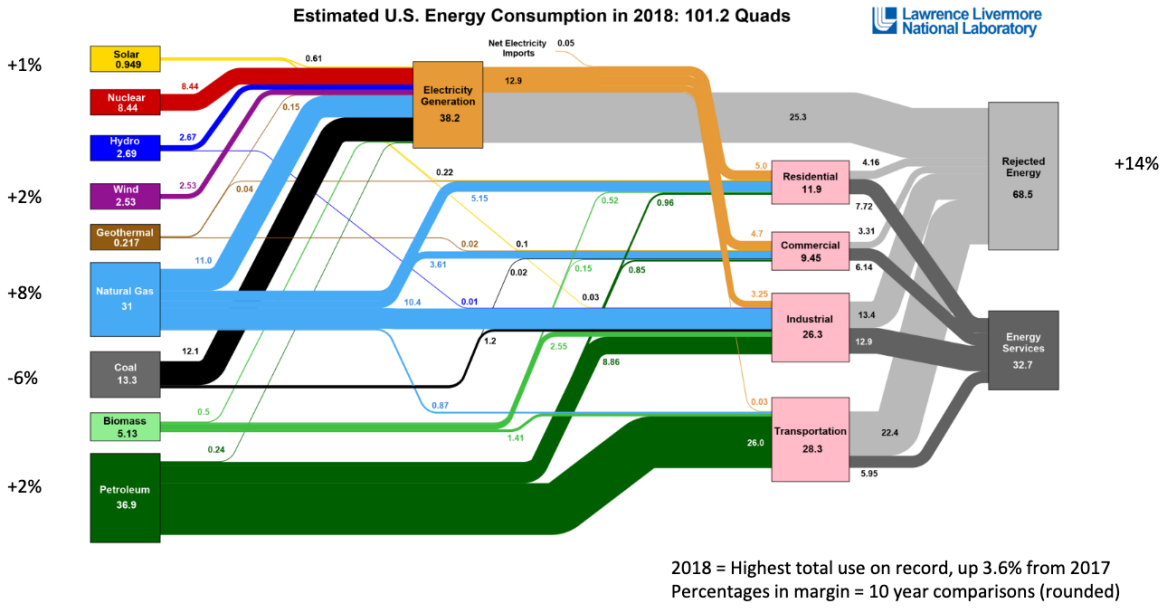
Microgrids:
Resilient Electricity for a Changing Climate

Climate Adaptation Forum
DVRPC Webinar
June 23, 2020

C. Baird Brown
eco(n)law

Energy Obesity



Taking Climate Action

- Use less energy
  - Building and industrial energy efficiency
  - Smart cities
- Use cleaner electricity
  - But don't pick technology winners
- Convert majority of transportation to electricity
- Generate more energy at the grid edge
  - Resilience
  - Reduce line losses, transmission expansion costs

Microgrids

- A microgrid is a local electric system or combined electric and thermal system:
  - that includes retail load and the ability to provide energy and energy management services needed to meet a significant proportion of the included load on a non-emergency basis
  - that is capable of operating either in parallel or in isolation from the electrical grid
  - that, when operating in parallel, is capable of providing energy, capacity or related services to the grid

Microgrid Resources Coalition

Microgrid Value

- Resilience
  - All resilience is local
- Saving money
  - Internal efficiencies and arbitrage
  - Buildings serve as thermal storage
  - Time of day pricing and fuel arbitrage
- Reduced carbon footprint
- External sales
- Incorporation of renewables

What Can PA Communities Do?

- PA Utility definition
  - Person who owns or operates facilities for generating, transmitting, or distributing electricity
    - Problem for separated facilities
    - Virtual net metering – 2 mile limit
  - OK if not serving the public – perhaps 10 customers
  - Serving building or facility occupants
- Paths forward
  - Being an "Electric Generation Supplier"
  - Forming one or more co-ops?

What Can NJ Communities Do?

- NJ Utility definition
  - Person who owns, operates, manages or controls electricity distribution equipment for public use
    - Problem for separated facilities
  - Excludes
    - 10 customers within ten miles – virtual metering
    - On-site renewables (or contiguous, OK to cross roads)
    - Cogeneration
- Paths forward
  - Being an "Electric Power Supplier"

PA Guaranteed Energy Savings Act

- Includes all microgrid components
  - Energy efficiency
  - Renewable energy
  - Smart controls
  - Alternative energy suppliers
- That create savings or revenues
- Provides flexible procurement mechanism
  - 20 year contracts
- Not subject to Local Government Unit Debt Act
  - Subject to appropriations

Clairfying Questions?

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"The economy is a subset of the ecology."

Ben Parvey

Founder and CEO, BlueSky Power

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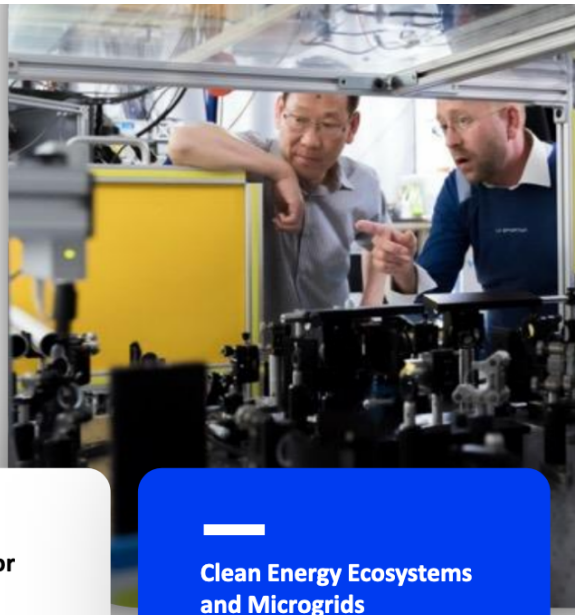
Energy should never be a concern in times of uncertainty

The overloaded, aging electrical Grid threatens the critical operations and missions of governments, institutions, commercial and industrial facilities every day, costing billions in lost productivity and endangering worker lives.

The strain on the Grid increases by the day and forward thinkers have begun to harness their energy to reduce or even eliminate their dependence on century-old infrastructure.

Technological advancement and capital investment has made energy certainty both achievable and cost effective



Increased effectiveness of well-known technologies

Such as:
Solar
Battery Storage
Cogeneration
Fuel Cells
Linear Generators

Abundance of capital for clean energy projects

Energy Services Agreements (ESA) and Power Purchase Agreements (PPA) allow municipalities and institutions to accomplish and benefit from large-scale energy projects without making large capital purchases.

Clean Energy Ecosystems and Microgrids

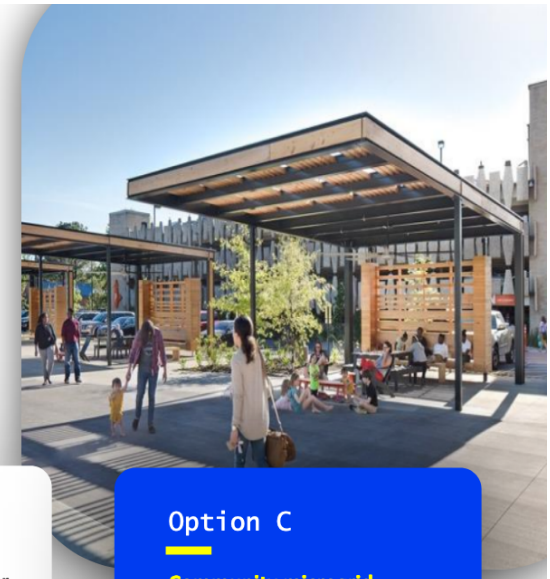
Combining new and well-known technologies to create islanded microgrids, reducing or eliminating dependence on utilities.

BlueSkyPower CEO BEN PARVEY

Local Power

Power generated in the community that uses it is cleaner, more reliable and less expensive than power generated by distant fossil fuel- fired plants. Bills are never confusing, and customer service is always attentive, friendly and helpful.

That is to say, community power does away with the archaic standards of utility power.



Option A

Smaller scale project utilizing some distributed generation at each meter to offset demand

Result: Lowered energy costs and reduced carbon emissions

Option B

Grid-tied microgrid with master meter that combines several technologies to ensure critical load resiliency

Result: Greater utility power offset plus enhanced energy resiliency with island mode capability

Option C

Community microgrid completely powered by on-site generation

Result: Total independence from the electrical grid using resilient clean energy

All options can by fully financed by BlueSky

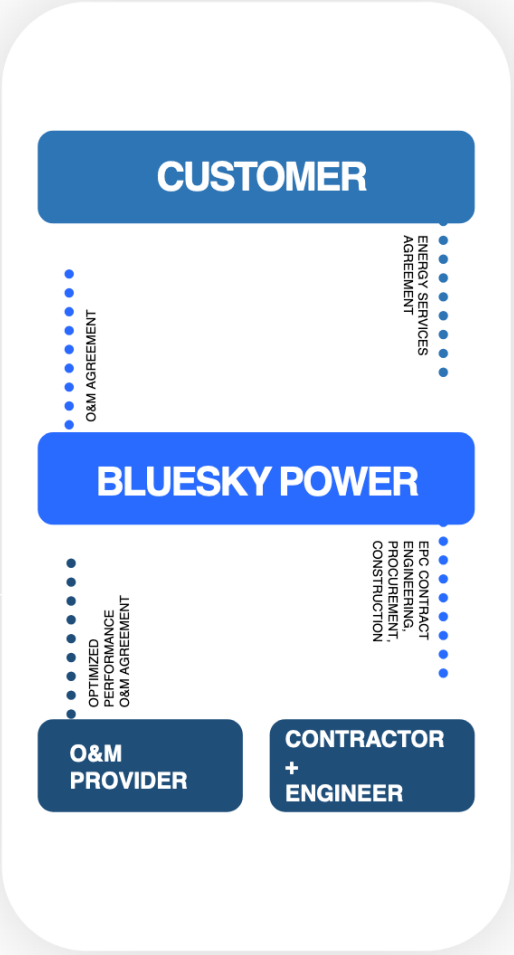
BlueSkyPower CEO BEN PARVEY

Project Financing

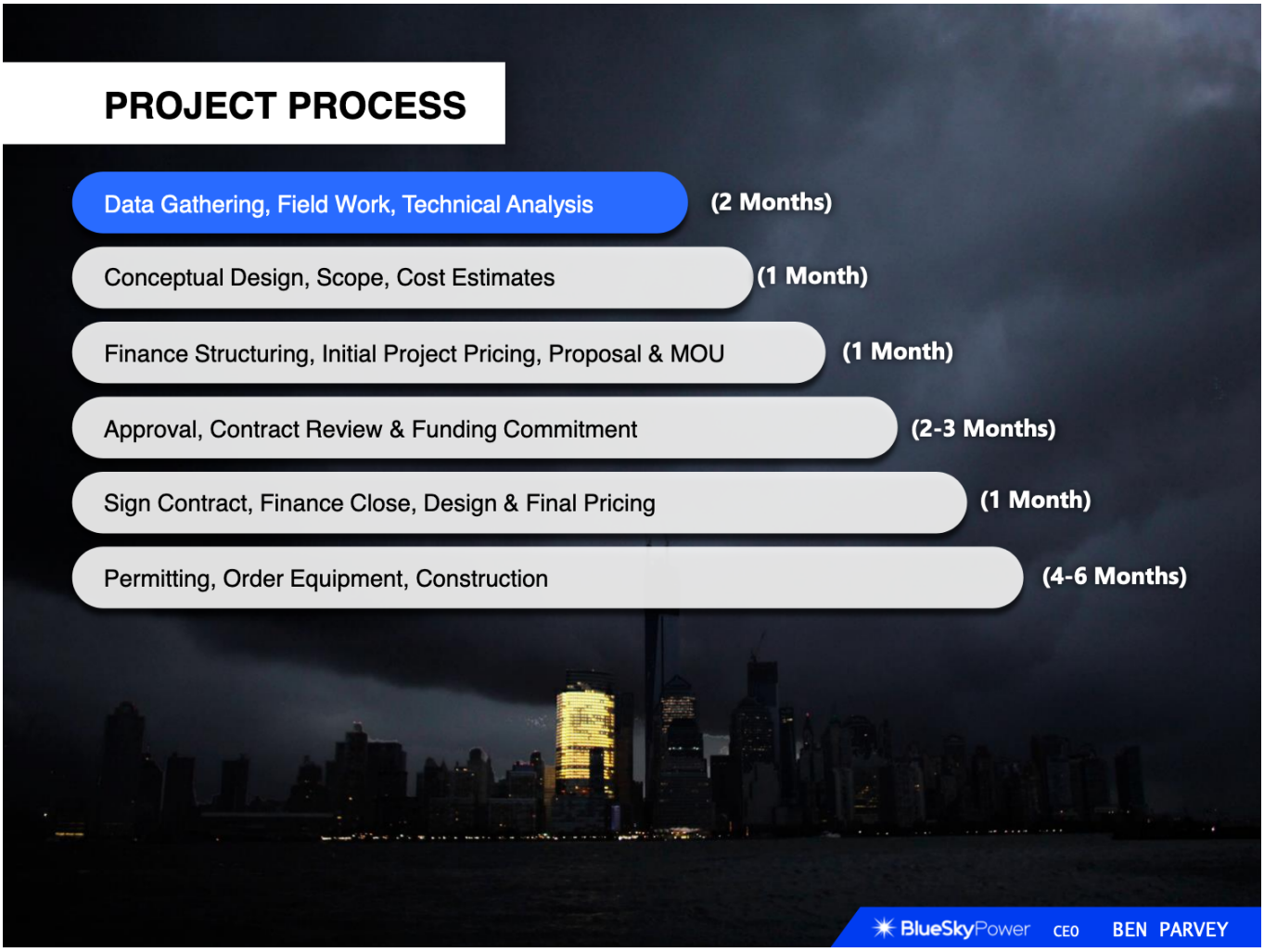
Each project is fully financeable by BlueSky under an Energy Services Agreement (ESA).

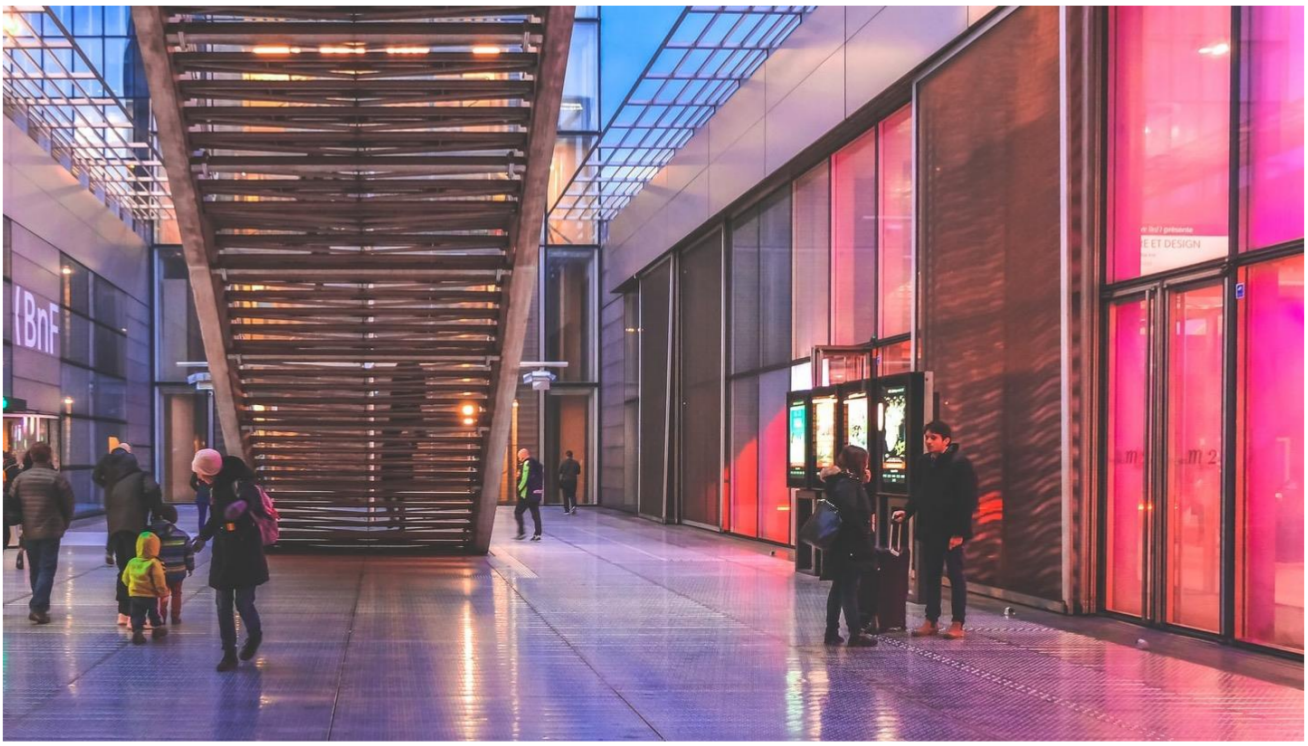
An ESA is an agreement whereby BlueSky Power agrees to finance, develop and construct energy infrastructure and clean energy projects over the long term, while saving the customer on capital and operating budgets. The Project Team bids out construction contractors and major equipment to realize the most cost-effective and efficient project for the customer.

BlueSky Power will operate & maintain the project. Operating the most efficient updated infrastructure will reduce lifecycle costs and ongoing O&M will reduce deferred maintenance costs.



BlueSkyPower CEO BEN PARVEY


PROJECT PROCESS
Data Gathering, Field Work, Technical Analysis
(2 Months)
Conceptual Design, Scope, Cost Estimates
(1 Month)
Finance Structuring, Initial Project Pricing, Proposal & MOU
(1 Month)
Approval, Contract Review & Funding Commitment
(2-3 Months)
Sign Contract, Finance Close, Design & Final Pricing
(1 Month)
Permitting, Order Equipment, Construction
(4-6 Months)
BlueSkyPower CEO BEN PARVEY



STEP ONE

Find out what's possible

In order to harness your energy and create certainty for your facility and stakeholders, the first step is to communicate your goals with an energy expert to determine which solutions best fit your need to Get Off the Grid.

BlueSkyPower CEO BEN PARVEY

Clarifying Questions?

Benjamin S Parvey II | CEO
Blue Sky Power
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Introduction to Microgrids
DVRPC

Local Government Models For Microgrid Deployment

Introduction

Joseph Sullivan
VP Energy Policy and Development

jsullivan@concord-engineering.com
Office 856-427-0200
Mobile 856-298-9016

Topic

Microgrid Implementation Models

In this session we will examine the various development and ownership models currently being used and proposed for Microgrids.

- Privately Owned Campus or single user microgrids
- Third Party Owned Campus microgrids on contiguous property
- Utility owned microgrids on contiguous property
- Utility owned microgrids on non-contiguous properties (Urban systems)
- Hybrid Utility and private owned microgrids.

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Key Definitions

- Microgrid (DOE & EPRI)
- A microgrid is a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid and that connects and disconnects from such grid to enable it to operate in both grid-connected or “island” mode
- MRC adds that a microgrid also provides a significant amount of normal power on-site generation

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Key Definitions

Combined Heat and Power (CHP)

The production of electric power and thermal energy from one source of fuel

Distributed Generation

Generation on-site can be CHP, generators w/emissions control, emergency generators, solar PV, battery or Storage

Resiliency

The ability of an onsite power system or microgrid to be able to operate for an extended time period (minimum 72 hours) disconnected from and independent of the electrical grid. Providing the host site with all critical power needed to sustain essential operations.

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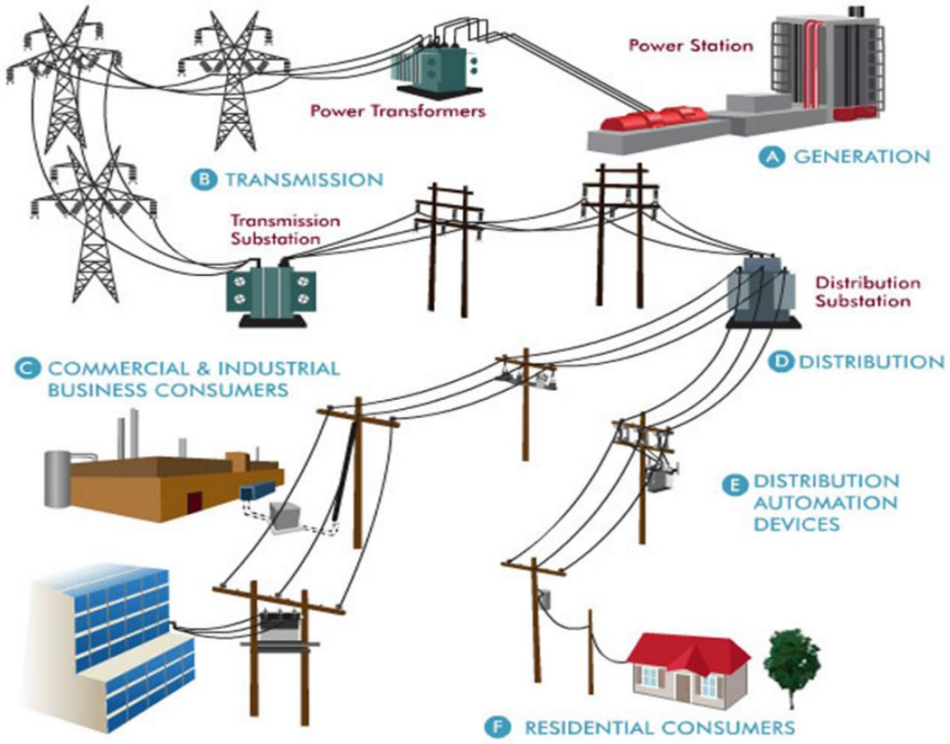
Current Electric Grid



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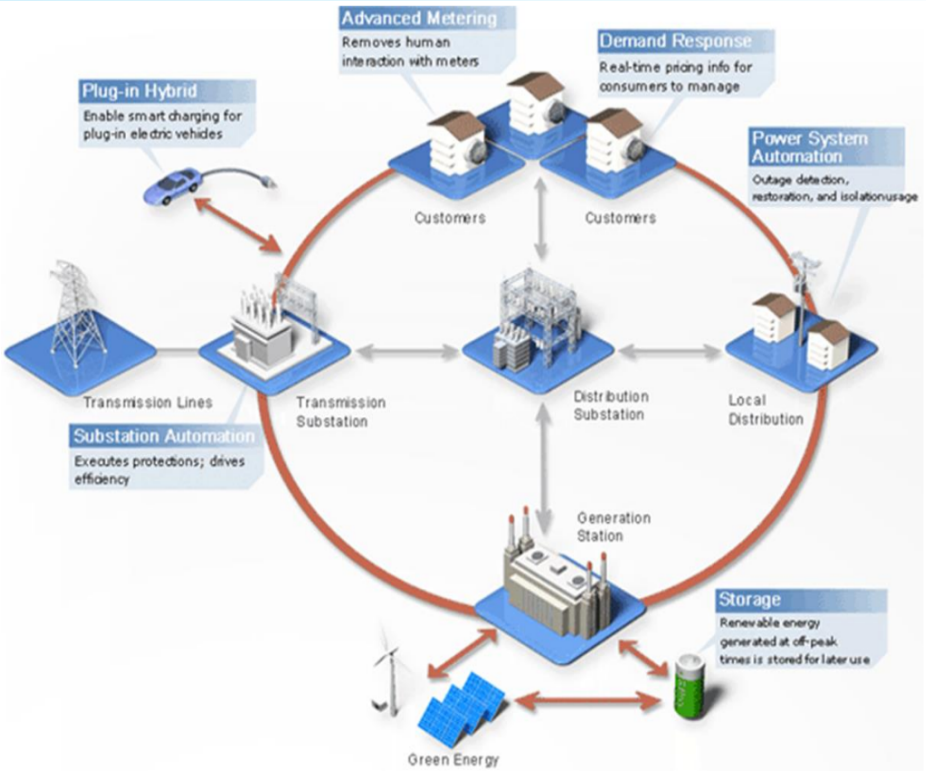
Future Electric Grid



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Ownership or Development options

1. Privately Owned Campus or single user microgrid
2. Third Party Owned Campus Microgrid on Contiguous property
3. Utility owned microgrid on contiguous Property
4. Utility owned microgrid on non-contiguous property (urban)
5. Hybrid utility and private owned microgrids

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Privately Owned Campus or Single User Microgrid (Traditional Private Wires)

- Single contiguous property
- Electric power integral to microgrid typically CHP
- Electrical distribution by owner
- Chilled Water distributed from Central Plant
- Hot Water/Steam distributed from Central Plant

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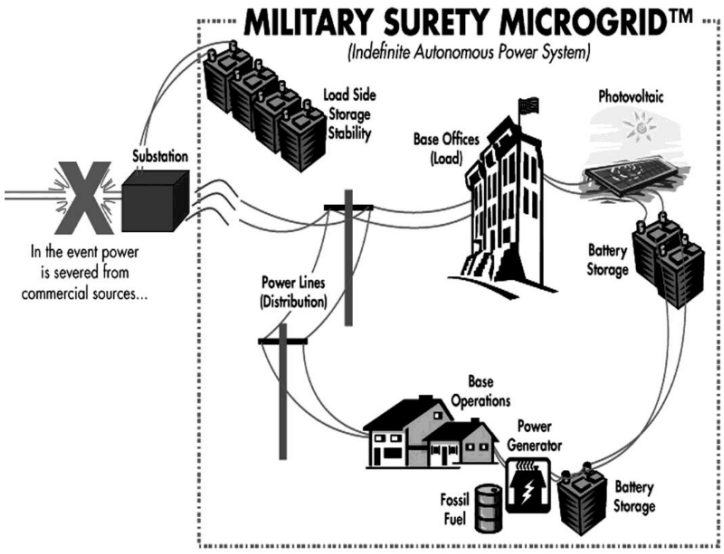
Private Owned Campus Contiguous Property Military Base Example for Single User Microgrid (Private Wires)



Ownership Options

1. Privately owned generation and wires and pipes Campus, Hospital, Base
2. Third party owned generation private wires and pipes (U MD)
3. Third party owned generation, wires and pipes (MSU)
4. Proposed Utility owned (mostly prohibited in deregulated markets)

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Utility Owned on Contiguous or Non Contiguous Property (Urban)

- Multiple properties/buildings within defined area individually metered EDC service
- Microgrid islandable power source DG, solar & batteries, CHP
- Electric power sold/delivered to participants through regulated utility
- Chilled Water may be distributed from Central Plant
- Hot Water/Steam may be distributed from Central Plant

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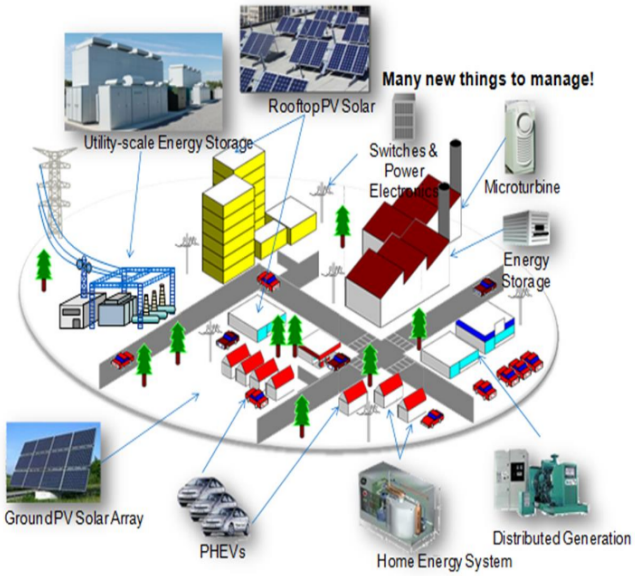
Community or Urban Microgrid



Ownership Options

- Utility owned electrical power source utility owned wires and no district energy/pipes
- Utility owned electrical power source private wires and private district energy/pipes (Shands Hospital Gainesville Municipal Power)
- Utility owned electrical power source and wires with private district energy/pipes (TDEC)
- Third party owned electrical power source Utility owned wires no district energy/pipes
- Third party owned electrical power source, Utility owned wires and private district energy/pipes (Proposed Connective Thermal and TDEC)

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The Current Regulatory Environment

- General regulatory climate has been favorable to DG and net metering, but ambivalent or frequently adversarial about microgrids (DUKE "microgrids are ok as long as we own them")
- PURPA QF paved the way for onsite CHP
- First most frequently cited barrier: requirement for microgrid to have public utility status as precondition for electric sales to others (with exception of onsite or sometimes contiguous property)
- Second most frequently cited barrier: franchise violations when selling to utility customers or running wires across public rights-of-way
- Interconnection issues exist, but these have substantial precedent for CHP and DG and are manageable
- Utility and regulatory common perception: if utilities are doing their jobs, then microgrids should not be necessary (Storm Hardening)

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Obstacles

- Standby Charges
- Who pays (i.e. all customers on microgrid, owners, generators, etc.)
  - What is appropriate level?
  - Tariff design ISO, EDC
- Exit Fees Recovery of System Costs (California) Poison Pill
- Interconnection Costs
  - Engineering Studies
  - Distribution System Upgrades
- Siting of power sources
- Relationship with Incumbent Utility

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Some Proposed Favorable Regulatory Approaches

- Establish a clear (but sufficiently broad and flexible) definition of microgrids, with corresponding rights and responsibilities within the electrical grid
- Provide an equitable methodology for compensation of services provided by microgrids to the regulated grid, and for standby-services provided to the microgrids by regulated entities
- Support unbundling and the growth of a diversity of services on the grid, both by and to microgrids, and where these are competitively provided, allow market-based pricing and/or unregulated offerings
- Establish and maintain a level playing field for all services provided on the grid, with utilities, their affiliates, and third parties given the right to provide any or all of these services, subject to appropriate codes-of-conduct
- Identify when and under what conditions utilities can own, operate, and/or partner with microgrids – either completely, or in part

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Clarifying Questions?

Joe Sullivan Concord Engineers
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856-298-9016

Micro break

- We will start with a poll
- Take a deep breath and stretch
- We will return in 90 seconds

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Moderated Discussion and Q&A

PANEL OF EXPERTS

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MODERATOR

Robert Graff – Manager, Office of Energy &Climate Change Initiatives, DVRPC

How this works:

- Use “Q&A” box to ask questions. Questions may be “upvoted”.
- Host may choose to unmute participants so they can ask the questions they entered.
- If asked, please unmute yourself by clicking on the microphone in the lower left.
- Recall this meeting is being recorded. If you do not wish to be recorded, note that in the Q&A box when you ask a question, and the host will ask the question.

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A few more things before we go . . .

- To get APA CM credit, type “APA, Full Name, Organization, Title, email” in the chat box. Send to host and panelists, not to everyone.
- Certificates of participation are available upon request to rgraff@dvrpc.org
- Also enter information in the Google doc linked in the chat box.
- Please let us know what you thought about the webinar. Survey link is in the chat box.
- Please join us for the companion webinar:

  Preparing the Electric Grid for a Changing Climate

  Tuesday, July 14th, 2020 from 1:00 p.m. - 2:30 p.m.

  Registration link is dvrpc.ticketleap.com/GridResiliency
- Slides, brief summary, link to recording, attendee list will be on DVRPC’s website. We will e-mail you when they are posted.

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A message from our sponsor!

- DVRPC is actively developing the region's next Long-Range Plan, *Connections 2050*
- Let us know what you value and what your concerns are for the future.
- DVRPC invites you to share your thoughts, either at an online workshop or by taking a 5-minute online survey.
- Share your ideas and you could win a $50 gift card to a local restaurant of your choice! DVRPC is giving out 20 gift cards throughout the month of June.
- For details, visit www.dvrpc.org/2050

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Roll the credits!

- Panelists – Baird Brown, Ben Parvey, and Joe Sullivan
- My DVRPC colleagues:

  Chris Linn, Adam Beam, Al-Jalil Gault, Mari Gonzalez, Natalie Scott, Elise Turner, Miles Owen, and Alison Hastings
- Each of you for making time in your busy schedules to join us.

Again, please join us on July 14th for the companion webinar

Preparing the Electric Grid for a Changing Climate

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That's all Folks!
Rob Graff
rgraff@dvrpc.org