2023 ICMA ANNUAL CONFERENCE | SEPTEMBER 30–OCTOBER 4 AUSTIN / TRAVIS COUNTY, TEXAS

Addressing Climate Adaptation through Collaboration – Building a Microgrid

Moderator: Michael Scanlon

Panelist: Jon Peacock, Lindsay Freeman & Bret Glendening

Speakers

Who will you be hearing from?

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Michael Scanlon

- Facilitator
- Retired City Manager, City Osawatomie, Kansas

Osawatomie
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Jon Peacock

- Panelist
- County Manager, Pitkin County, Colorado

PITKIN COUNTY

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Lindsay Freeman

- Panelist
- New Business Development Director, Evergy Energy Partner

evergy

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Bret Glendening

- Panelist
- City Manager, Osawatomie, Kansas

Osawatomie
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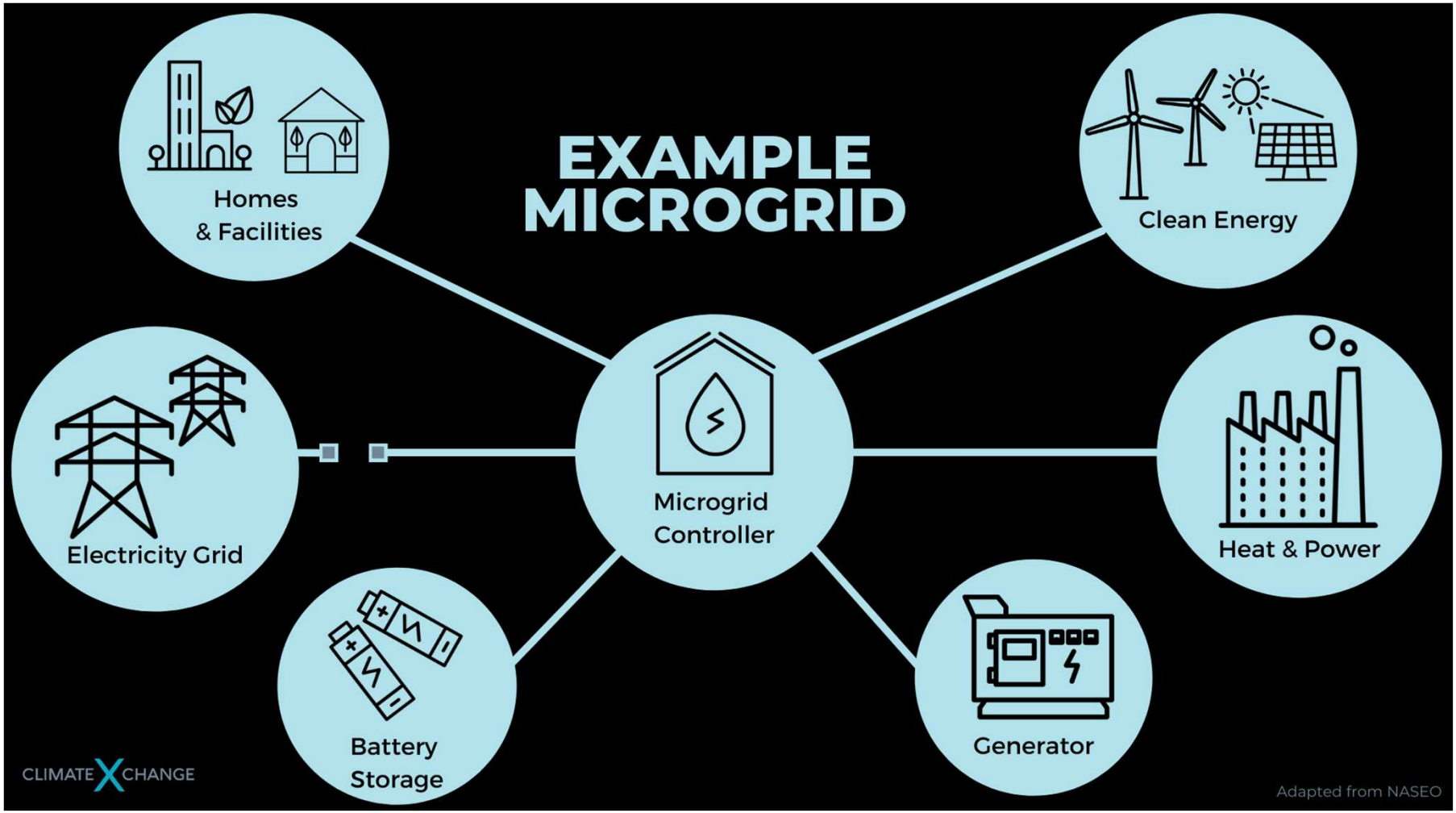
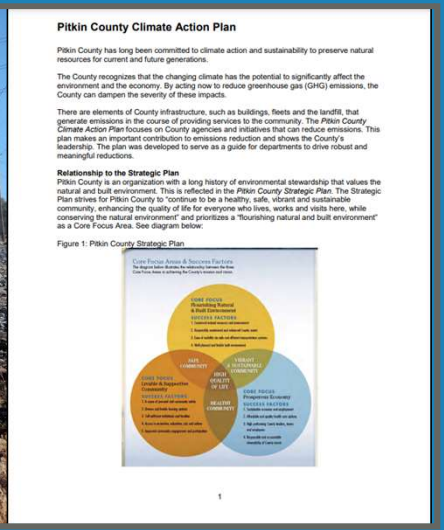
What is a Microgrid?

A microgrid is a local electrical grid with defined electrical boundaries, acting as a single and controllable entity.



Why is Pitkin County Involved In Creating a Micro Grid?

- We are not a utility provider.
- We do not have statutory authority to be a utility provider.
- We have multiple electric providers in the community.



Pitkin County Climate Action Plan

Pitkin County has long been committed to climate action and sustainability to preserve natural resources for current and future generations.

The County recognizes that the changing climate has the potential to significantly affect the environment and the economy. By acting now to reduce greenhouse gas (GHG) emissions, the County can dampen the severity of these impacts.

There are elements of County infrastructure, such as buildings, fleets and the landfill, that generate emissions in the course of providing services to the community. The *Pitkin County Climate Action Plan* focuses on County agencies and initiatives that can reduce emissions. This plan makes an important contribution to emissions reduction and shows the County's leadership. The plan was developed to serve as a guide for departments to drive robust and meaningful reductions.

Relationship to the Strategic Plan

Pitkin County is an organization with a long history of environmental stewardship that values the natural and built environment. This is reflected in the *Pitkin County Strategic Plan*. The Strategic Plan strives for Pitkin County to "continue to be a healthy, safe, vibrant and sustainable community, enhancing the quality of life for everyone who lives, works and visits here, while conserving the natural environment" and prioritizes a "flourishing natural and built environment" as a Core Focus Area. See diagram below.

Figure 1: Pitkin County Strategic Plan

1

Resiliency!

Pitkin County's Goals & Partners

Vision:

Create a regionally resilient and 100% clean energy system that balances production, storage and distribution across three distinct public facilities, generates additional clean energy to the community and create a model for net-zero, resilient public facilities across the state.

Who:

1. Aspen Pitkin County Airport
2. RFTA Aspen Maintenance Facility
3. Pitkin County Public Works
4. Holy Cross Energy electric system operations

What has Pitkin County done? *Feasibility Study*

- Site assessment of existing infrastructure and energy usage
- Evaluation of potential conservation measures for each facility.
- Establish an “energy box” based of facilities
- Develop Integrated Clean Energy System
- Economic, ownership, and administrative framework

What has Pitkin County done? *Solar Partnership*

- 5 MW, 35-acre solar installation In Pitkin County, Colorado.
- Energy sold to Holy Cross Energy, an electric co-op, under a 25 year power purchase agreement.
- Financed through tax-equity financing.
- First step in larger microgrid project that will add storage, load balancing systems, and additional 3.2MW solar on public facilities.

Phase I Microgrid Implementation

Phase I Goal:

1.5 MW batteries and 400 kw additional solar PV will achieve 24 MWh of energy storage capacity across all facilities and achieve resiliency and net-zero goals for 90% of average daily load needs, excluding “Peak Week” events

Phase 1 - Implementation

Infrastructure

- Switchgear
- Reclosers
- Fiber Optic Communication Lines
- 1500 kVA Transformer for BESS

Equipment

- Microgrid Controllers
- Microgrid Relays
- Microgrid Communication Equipment
- 1.5 MW BESS with 2.0 MWH of Capacity

Shelf Projects Ready to Go

- Pitkin County Public Works Solar Expansion – 30% Design Package
- RFTA AMF Solar PV – 30% Design Package

Phase I Microgrid Funding to Date

Feasibility Study

DOLA = $200,000

Pitkin County = $100,000

Holy Cross Energy = in kind

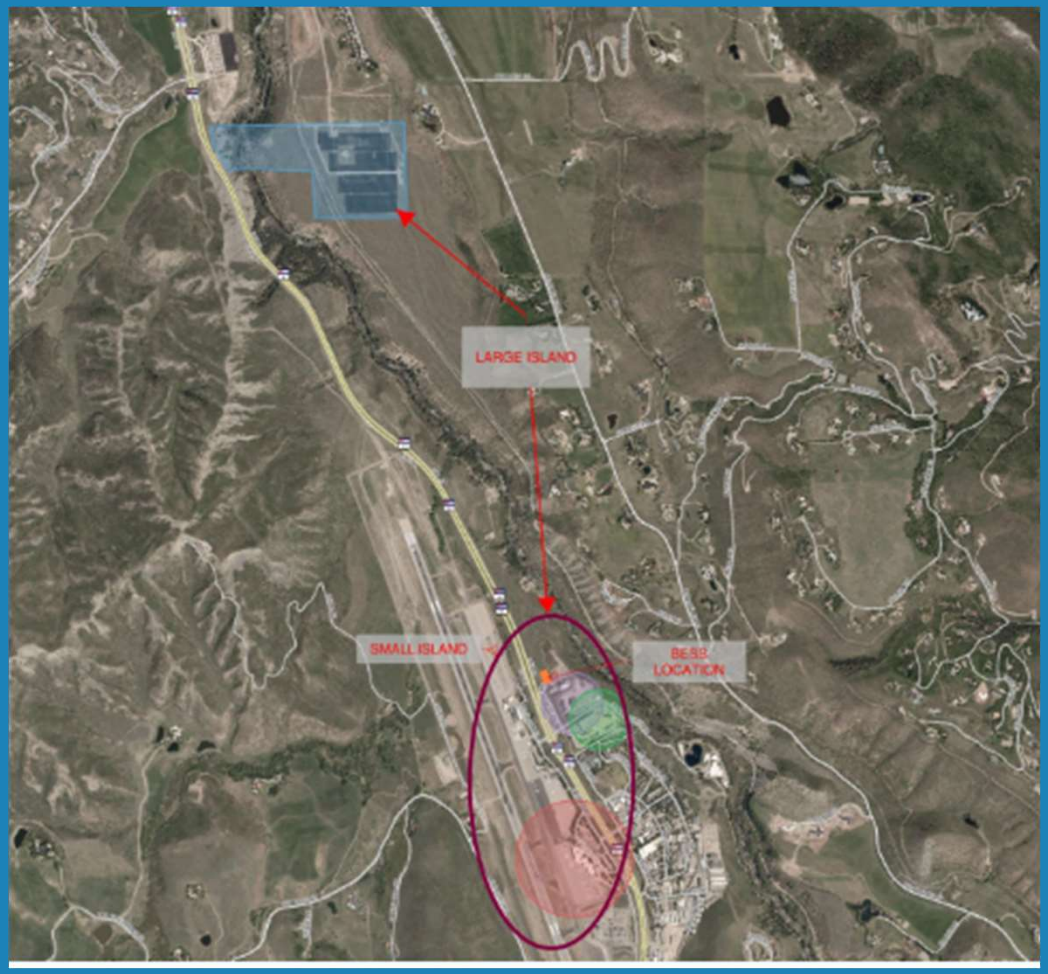
RFTA = in kind

Phase 1 Implementation Funding

DOLA:	$ 1,700,000
Airport:	$ 500,000
County - GF:	$ 727,500
HCE	$ 213,750
RFTA	$ 213,750
Total:	**$ 3,355,000**

Microgrid Black Sky Operations

- **Black Sky Operations**
  - Large Island
    - 5MW Solar Array to the AMF, PW, and Airport Facilities
  - Small Island
    - AMF, PW, and Airport Facilities fed power by the BESS



Microgrid Blue Sky Operations

Battery needs to be charged and depleted regularly

- Opportunity to buy/sell energy on and off the grid
- Adds a critical piece of infrastructure to both Holy Cross Grid and Microgrid

Phase I Project Schedule

- Civil Site Design - Summer/Fall 2023
- Planning Approval - Fall 2023
- BESS and equipment order - Current
- Operating and Ownership Agreement - Fall/Winter 2023
- Civil Site Construction - Spring of 2024
- BESS Installation - Summer of 2024
- Commissioning - Summer of 2024

What's Next?

- **Load Management**
  - Expand Microgrid Controls to manage site by site
- **BESS Expansion**
  - Existing BESS needs to be expanded from 2 - 8 MWH
- **Additional BESS**
  - 2 additional 8 MWH BESS to be located at airport and RFTA contemplated
- **Solar**
  - 100 KW additional solar at Public Works
  - 300 KW additional solar at RFTA AMF

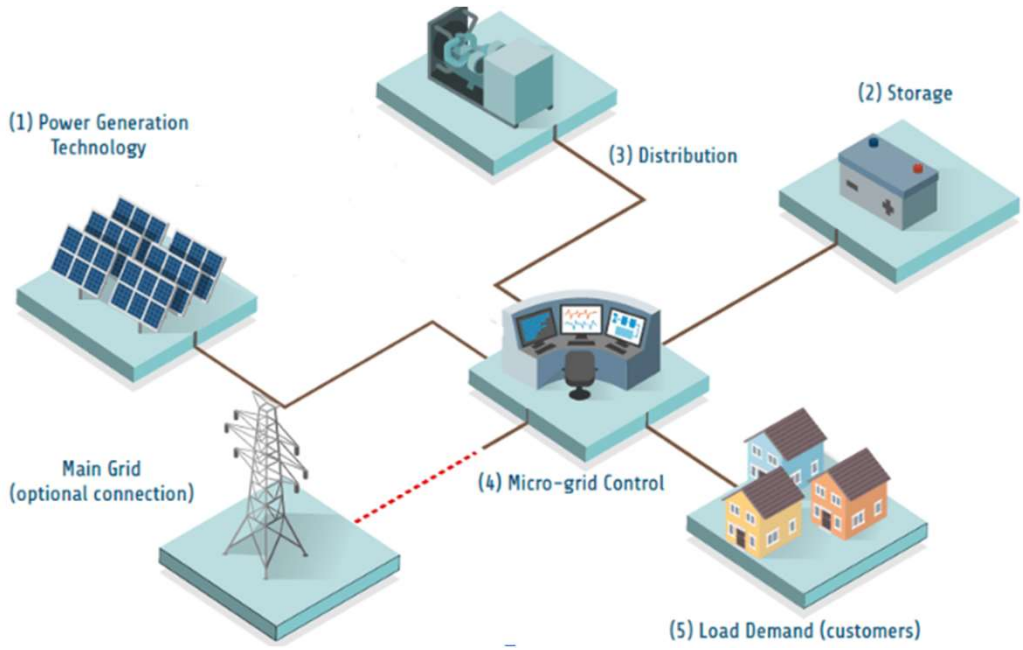
What are the benefits of a Microgrid?

Microgrid Benefits

- Integrating more existed and available renewables
- Reducing local emissions
- Improve local resilience / reliability
- Reduces energy costs
- Allows integration of distributed energy
- Reduces energy losses by co-locating generation and demand
- Provides power to critical facilities during outages
- Provides demand side management and leveling of load

Projects that Signal the Future of Microgrids

- 1. Schneider Electric is exploring the use of river currents. Their first project is in Alaska.
- 2. Oakland, CA project explores bi-directional EV charging stations and hydro-electric buses for a “vehicle-to-building” resilience hub at the library.
- 3. Marine Corps Air Station Miramar demonstrated it can be islanded for up to 21 days (population ~12,000).
- 4. JFK Airport is building 4 separate microgrids that can operate together as one if need be.



* Elisa Wood, Editor, Microgrid Knowledge

ENERGY TALK | BY **ELISA WOOD**, CHIEF EDITOR, MICROGRID KNOWLEDGE

Did Duke Energy Just Change the Game for Community Microgrids?

Duke Energy received a lot of attention earlier this winter for powering an entire town — Hot Springs, North Carolina — with a microgrid. But the project's real significance may lie in demonstrating a technology breakthrough that could open a new door to green energy for other communities.

First, some background. A remote mountain town of about 500-600 people, Hot Springs, gets power from the electric grid via a 10-mile, 22.86 kV feeder prone to extended outages.

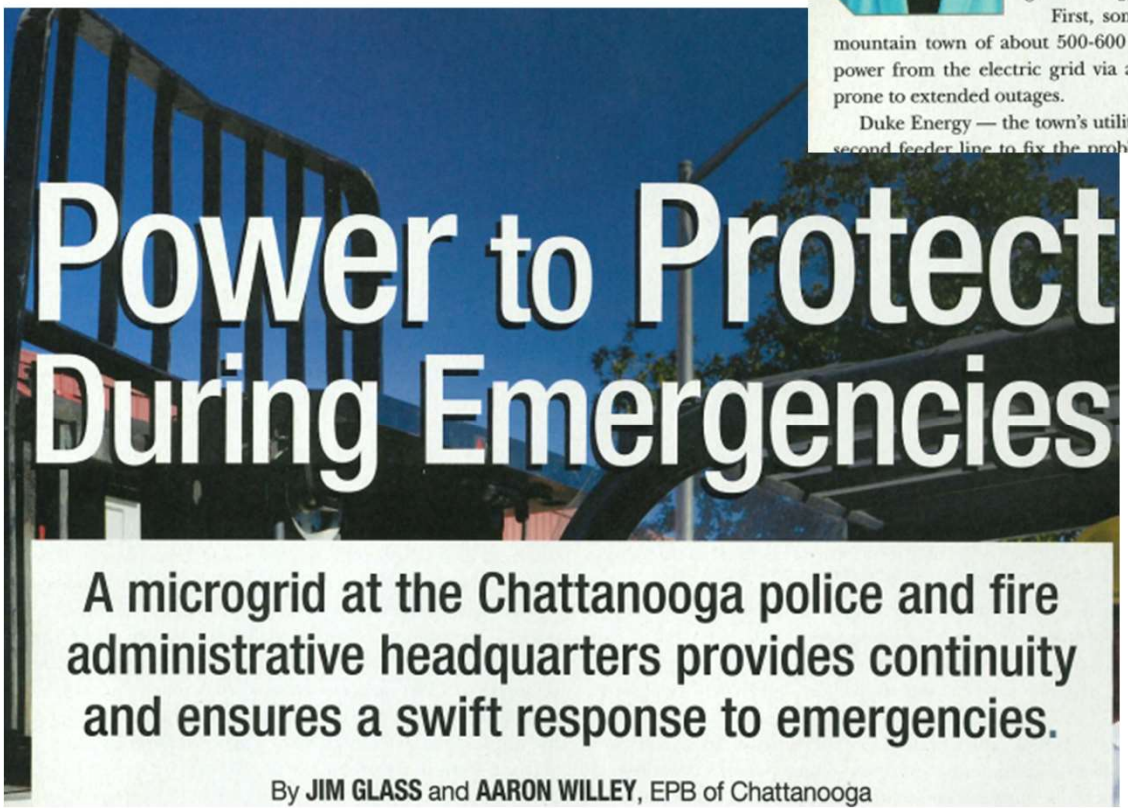
Duke Energy — the town's utility — considered building a second feeder line to fix the problem but determined that a

areas where they don't want the noise. To be quite honest, generators make noise," Handley said in an interview with Microgrid Knowledge.

What Sets Hot Springs Apart

A microgrid in the Western Australia town of Onslow achieved a similar accomplishment — powering the town on all renewable energy. Still, according to Handley, it did not do so from a black start position, which sets the Hot Springs microgrid apart.

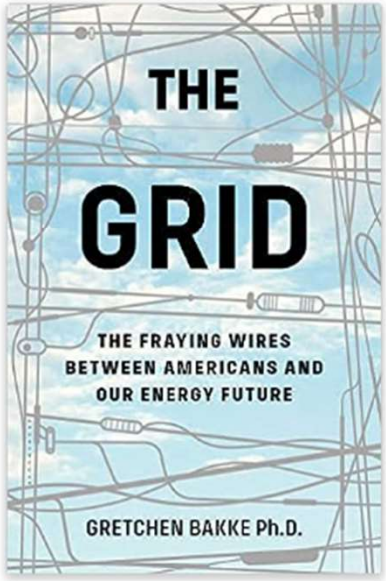
"We literally opened the switch at the substation and killed the line. Everything went dead. And then we brought everything back up," Handley said. "The battery came back in grid forming mode, setting the voltage, setting the frequency. And, then the solar inverter came back in grid following [mode]."



Power to Protect During Emergencies

A microgrid at the Chattanooga police and fire administrative headquarters provides continuity and ensures a swift response to emergencies.

By **JIM GLASS** and **AARON WILLEY**, EPB of Chattanooga



What is Osawatomie doing?

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First, find the right site!

- 327 acres of vacant, surplus state-owned land given to the city for Economic Development

- Marketing the land

- What does the “right site” look like?
  - Land has limited obstructions from surrounding properties (shade);
  - Clear and fairly flat;
  - Inclines of 5º or less.

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Second, find the right partner!

- Investor Owned Utility vs. Developer
- Know your state's regulatory commission rules/regs.
- Know your ISO/RTO rules/regs.

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Osawatomie Solar Array

- 5 MWac, 35-acre solar installation In Osawatomie, KS
- Energy is purchased from Evergy, a regulated investor–owned utility, under a 30-year power purchase agreement.
- Purchase option beginning year one.
- First step in our investments in renewable energy and energy storage for the Osawatomie Electric Utility.
- Second step is under way – Installation of 12 EV charging stations.
- STILL, waiting to take delivery of our EV vehicles.

THE MIAMI COUNTY REPUBLIC LOUISBURG HERALD OSAWATOMIE GRAPHIC

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TOP STORY

County's solar facility moratorium will not delay Osawatomie project

By Doug Carder doug.carder@miconews.com Aug 3, 2022 0

OSAWATOMIE – Miami County's six-month moratorium on solar facility construction will not delay Osawatomie's partnership with Evergy to build up to five megawatts of solar power – nearly double the originally proposed footprint – to serve the community, a city official said.

Deputy City Manager Bret Glendening confirmed in an email Monday, Aug. 1, the county moratorium only applies to unincorporated areas of the county, not properties that have been annexed into a ci

The City of Osawatomie, Evergy announce solar development agreement

Evergy selected as city considers 3 MW solar facility

Kansas City, Mo.– Feb. 7, 2022– The City of Osawatomie will partner with Evergy to explore building up to 3 megawatts of solar to power the Osawatomie, Kan., community.

"Osawatomie's strong leadership shows their investment to continued growth in renewable energy and commitment to our partnership," said Lloyd Jackson, managing director, Evergy Energy Partners. "Our Evergy team is proud to partner with Osawatomie as they expand their energy sources that will continue to serve the community."

City of Osawatomie Deputy City Manager Bret Glendening said, "We are very excited to work with Evergy and KMEA on this solar project, and they have been great partners to work with in the development process. This project is a great opportunity to diversify our municipal electric utilities' generation portfolio even further, and one of the best parts is that it's within the city limits of Osawatomie.

THE MIAMI COUNTY REPUBLIC LOUISBURG HERALD OSAWATOMIE GRAPHIC

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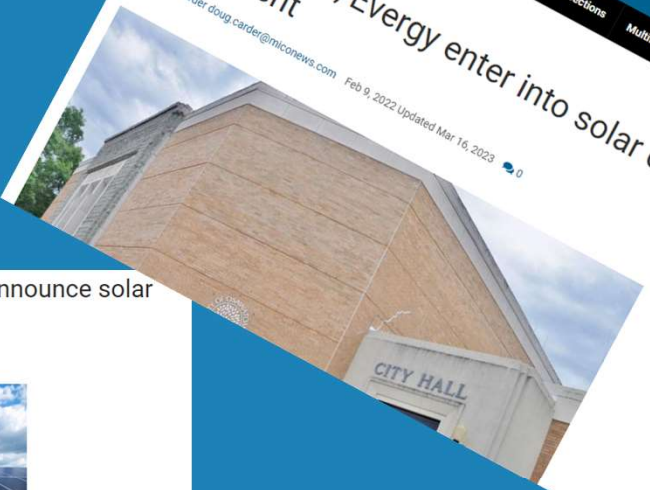
TOP STORY

Osawatomie, Evergy enter into solar development agreement

By Doug Carder doug.carder@miconews.com Feb 9, 2022 Updated Mar 16, 2023 0



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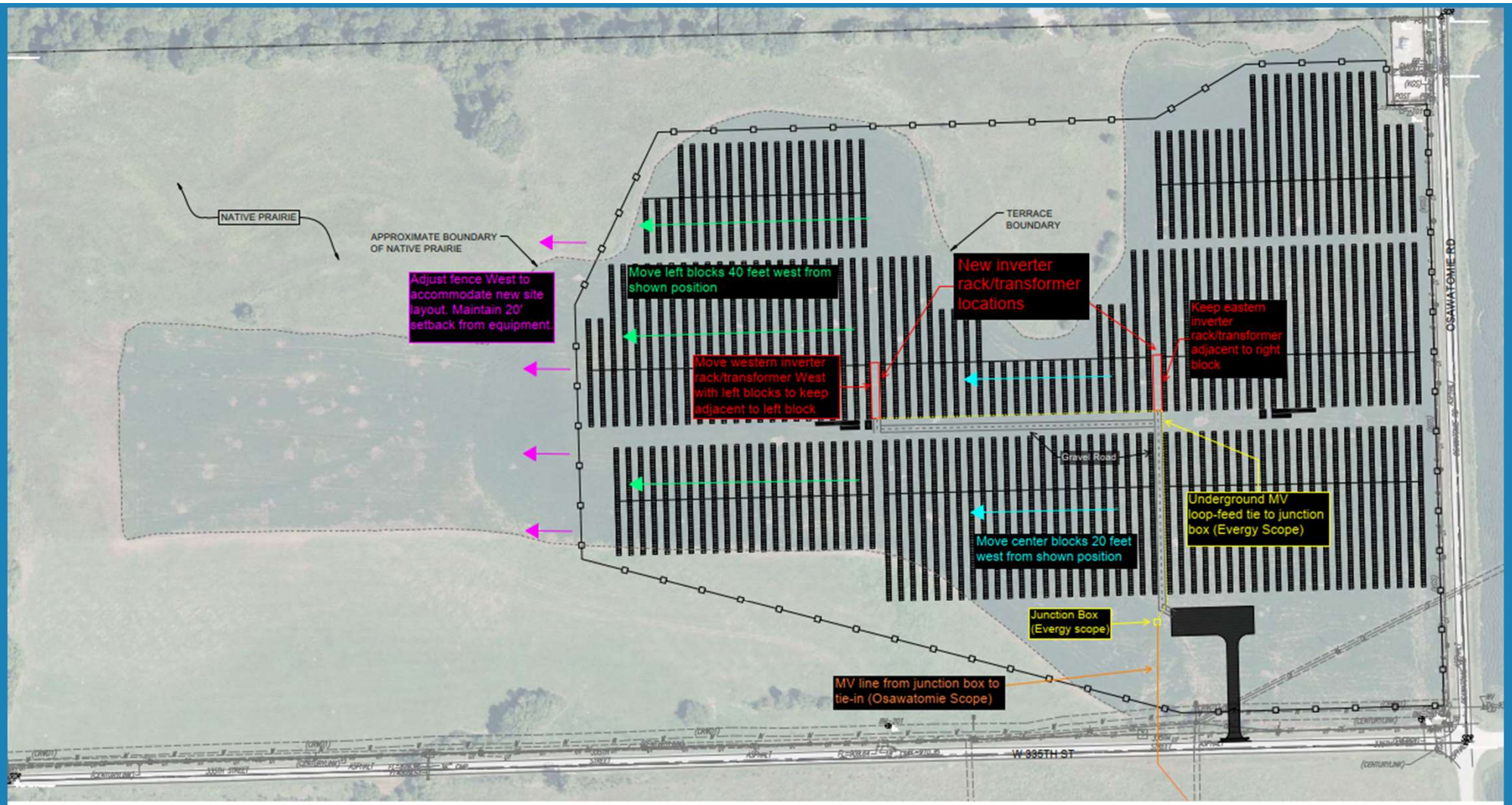

NOTE:

CONTRACTOR TO MINIMIZE THE REMOVAL AND IMPACT TO THE NATIVE PRAIRIE AREA.

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NOTICE OF PUBLIC HEARING

Published in the Miami County Republic/Osawatomie Graphic, August 9, 2023

OSAWATOMIE PLANNING COMMISSION

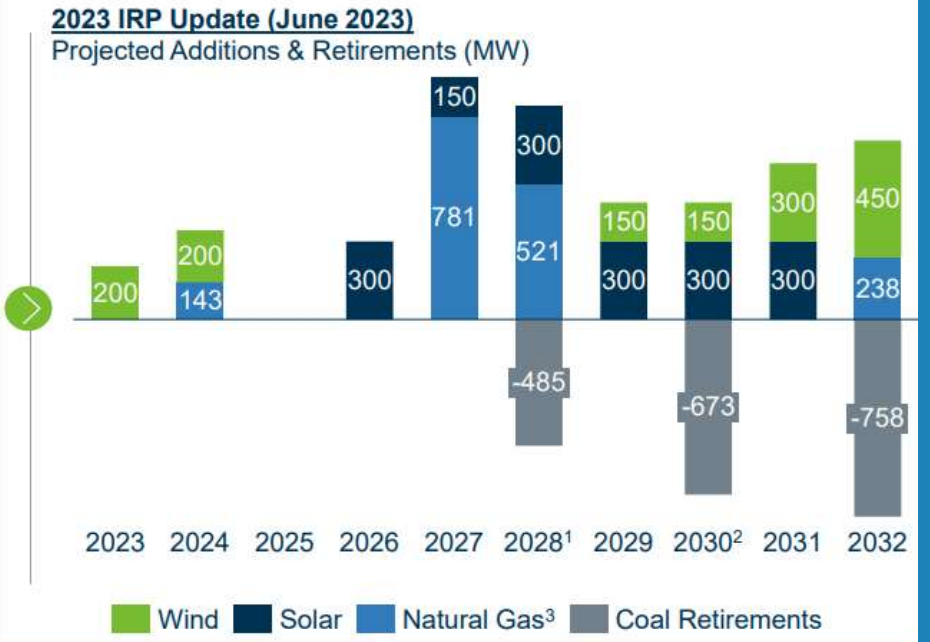
September 5, 2023

Overcoming Hurdles

- **Planning.** Answer the When's, where's why's and how's....
- **Secure the financing.** A lot of grant dollars, but competition is stiff.
- **Selecting Manufacturers.** Warranty, Performance, lead time. Prioritize these!
- **Ensure backup power.** Not just battery storage but energy from the grid. Islanding – is 21 days achievable for everyone?

What is Evergy doing?

2022 IRP Update vs. 2023 IRP Update



2023 IRP Update adds hydrogen-capable natural gas generation and reflects renewable project availability and timing as informed by recent RFP process. In tandem with beneficial grid modernization projects, 2023-2027 capital investment plan and rate base growth are in line with 4Q 2022 update.

What is Evergy doing?

Starting in October, Missouri is moving to time-based rate plans, and Evergy is dedicated to supporting you throughout this transition. We're here to help you understand your new rate options, choose the plan that's best for your home and show you how to save money on your new plan.

Why is Missouri changing?

Timing plays a crucial role in energy, especially when it comes to cost. As energy demand rises, the cost of generating electricity also increases. This usually happens during peak hours of 4-8 pm. During off-peak times (usually in the early morning and overnight) energy demand goes down, which means lower energy costs.

At the same time, reducing energy usage during high-demand times (like hot summer weekdays) also helps lower the strain on the energy grid.

Together, we can embrace the change in Missouri to time-based rate plans and unlock the potential for savings while making a positive impact on our environment and energy grid.

Small Scale Utility Solar

What grants/incentives are available?

Where do we even start?

Federal Programs

- Inflation Reduction Act
- PACE
  - https://www.rd.usda.gov/programs-services/electric-programs/powering-affordable-clean-energy-pace-program
- Rural Energy for America Program Energy Systems & Energy Efficiency Improvement Guaranteed Loans & Grants
  - https://www.rd.usda.gov/programs-services/energy-programs/rural-energy-america-program-renewable-energy-systems-energy-efficiency-improvement-guaranteed-loans
- Empowering Rural America New ERA Program
  - https://www.rd.usda.gov/programs-services/electric-programs/empowering-rural-america-new-era-program#overview
- Rural Resource Conservation
  - https://www.rd.usda.gov/programs-services/electric-programs/energy-resource-conservation

Questions

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