FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

Welcome to the Spring 2023 FUPWG Seminar

Co-sponsored by:

FEMP
Federal Energy Management Program

NRECA
America's Electric Cooperatives

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

NRECA Welcome

Paul Breakman

National Rural Electric Cooperative Association

U.S. DEPARTMENT OF ENERGY

DOE FEMP Welcome and Announcements

Tracy Niro
Utility Program Manager

Ethan Epstein
Utility Program Lead & Resilience Program Manager

May 1, 2023

FEMP
Federal Energy Management Program

Welcome to the Spring 2023 FUPWG Seminar

- Fire exits & restrooms
- Please silence your cell phone
- Thank you, NRECA – 2023 FUPWG Seminar co-sponsor:

- Special thanks to Lauren Khair for offering to co-sponsor this event and for her excellent coordination efforts. Thank you also to Leslie Tate and the rest of the NRECA planning team. Great job!
- Thank you to the FUPWG Fed Council for their assistance with agenda development (badge stickers)
- Thank you to our speakers (blue ribbons)
- Thank you to the Utility Program FUPWG Team

Announcements

- **Please wear your badge at all times and remember to bring it tomorrow. Your badge is required for entry.**
- **Lunch**
  - Provided today. Buffet in the foyer, return to this room for seating.
  - On your own tomorrow (several nearby options).
- **Networking event immediately following today's meeting. See you all there!**

Slides will be posted to the FUPWG website within 2 weeks.

Announcements: Special Sessions

GSA Areawide Contract Holders Meeting

- Registration required: Email agrejda@bgs-llc.com for registration link
- Tuesday, May 2 at 1pm

Energy Lawyers & Contracting Officers Forum

- Open to all – no registration required
- Tuesday, May 2 at 2:15pm

Two-Day UESC Training: Weds/Thurs May 3-4

- Registration required each day: https://www.wbdg.org/continuing-education/femp-courses/fempws05032023
- Open to all, taking place at NRECA

FUPWG Spring 2023

- **Welcome back!**
- **Who is here today?**
  - 112 Agency representatives
  - 64 Utility and Co-op representatives – are you listed on our website?
  - 53 Energy Service Companies
  - 91 Other
- **FUPWG Federal Council**
- **Say hello to the Utility Team**

143 first-time FUPWG Seminar Attendees

FUPWG LUNCH CHALLENGE 2023

Sit next to someone you do not know at lunch and introduce yourself!

FEMP Utility Team

DOE / FEMP

Tracy Niro
Utility Program Manager
DOE / FEMP

Ethan Epstein
Utility Program Lead &
Resilience Program Manager
DOE / FEMP

NREL

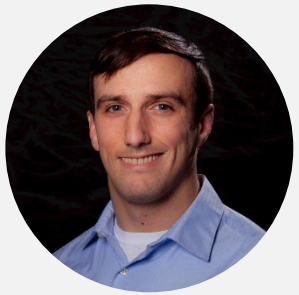
Chandra Shah
Senior Project Leader

Jeff Gingrich
Project Manager – Training

Phil Voss
Senior Project Leader

John Myhre
Project Manager – Technical

Katy Christiansen
Project Manager - DOD

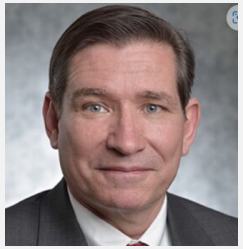


Matt Joyner
Project Manager - Technical

Peter Cali
Project Manager - Technical

FEMP Utility Team, Continued

ORNL



John Shonder
UESC

Michael Mungal
Federal Project Executive

Alex Callinan
Project Engineer

LBNL

Phil Coleman
Program Manager

Billie Holecek
Senior Research Associate

PNNL

Brian Boyd
DOD UESC

Christine Walker
UESC

BGS

Susan Courtney
Sr Program Analyst
DOE Support

Matt Roney
Program Analyst –
DOE Support

Andrew Grejda
Program Analyst –
DOE Support

Russ Dominy
Former Navy
Contracting Officer

CONGRATULATIONS ON YOUR RETIREMENT, DEB!

Thank you for your kindness, guidance, expertise, and friendship.

FUPWG Seminar Basics

- **Attendees agree to follow the Federal Utility Partnership Working Group Seminar Code of Conduct:**
  - Hospitality/social functions (on and off-site) and any related meetings must not conflict with the timing of official FUPWG Seminar activities listed on the Agenda.
  - Aggressive sales techniques are to be avoided while attending the Seminar. Signs and flyers may not be displayed or distributed in the seminar or areas of the venue reserved for FUPWG Seminar participants.

✓ Share information in a collaborative environment

Agenda Updates

- **Sourcing 100% Carbon Pollution-Free Electricity by 2030 Panel**
  - —New speaker: Priya Barua, Clean Energy Buyers Association

Take Advantage of Continuing Education Units (CEUs)

- **A total of 1.1 International Association for Continuing Education and Training (IACET) CEUs will be offered**
  - Monday AM: Cooperative Innovation – 0.3 CEUs
  - Monday PM: What's New in the Industry – 0.4 CEUs
  - Tuesday AM: Best Practices and Resources – 0.4 CEUs

- **IMPORTANT - You MUST either scan the QR code to indicate your attendance for EACH SESSION or fill out the hardcopy attendance form for EACH SESSION at the registration desk to be eligible to receive credit!**

- **For logistical questions related to CEUs, email Elena Meehan at elena.meehan@hq.doe.gov.**

NOTE:
We will send instructions & quiz links Weds 5/3

The National Institute of Building Sciences' Whole Building Design Guide (WBDG) hosts the FEMP training program's learning management system.

Step by Step Instructions to be Awarded CEUs for FUPWG

How to obtain your CEUs:

1. **Attend the training in full (no exceptions).**
2. **Scan the QR code** following each session, **or sign in and out with full name** on sheets at the registration desk, to verify event attendance for CEU certification and award.
3. Visit the Whole Building Design Guide (WBDG) at wbdg.org to log in or create an account.
4. Enroll in the training.
5. Select the training's "Proceed to Course" button.
6. Complete an assessment demonstrating knowledge of course learning objectives **within six weeks of the training (June 9th!), with a minimum score of 80%, or forfeit CEUs. No exceptions!**
7. Submit a training evaluation.
8. Download your certificate.

What's an IACET CEU?

An International Association for Continuing Education and Training (IACET) continuing education unit (CEU) is a unit of credit equal to 10 hours of participation in an accredited program designed for professionals with certificates or licenses to practice various professions.

Watch for the CEU Slide Following Each Session

FUPWG CEUs: May 1st Session 1

SCAN TO OBTAIN CEUs

Cooperative Innovation – 0.3 CEUs

- Scan the code to register your attendance and be able to visit the WBDG to earn CEUs
- https://www.wbdg.org/fupwg

Federal Utility Partnership Working Group
May 1-2, 2023 Arlington, VA

FEMP Federal Energy Management Program

NRECA America's Electric Cooperatives

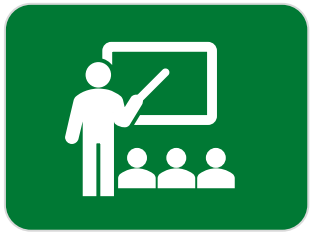
Upcoming Training

Upcoming Live Webinars and Training

- Post-FUPWG Comprehensive UESC Training Day 1, Day 2 | May 3-4, 2023
- Q3 & Q4 Webinars, Topics TBD – email us your ideas!

Trainings Upon Request

- Agency-specific training
- Strategic Partnership Meetings



On-Demand Courses

- FEMP On-Demand Webinar Series
- Visit the FEMP Training Catalog for the complete list of UESC-related trainings

Stay in Touch!

Ask Questions

- Visit FEMP's Technical Assistance Portal to ask questions ranging from general to project-specific.

Find More Trainings

- Search the FEMP Training Catalog to find upcoming live trainings, events, and on-demand courses.

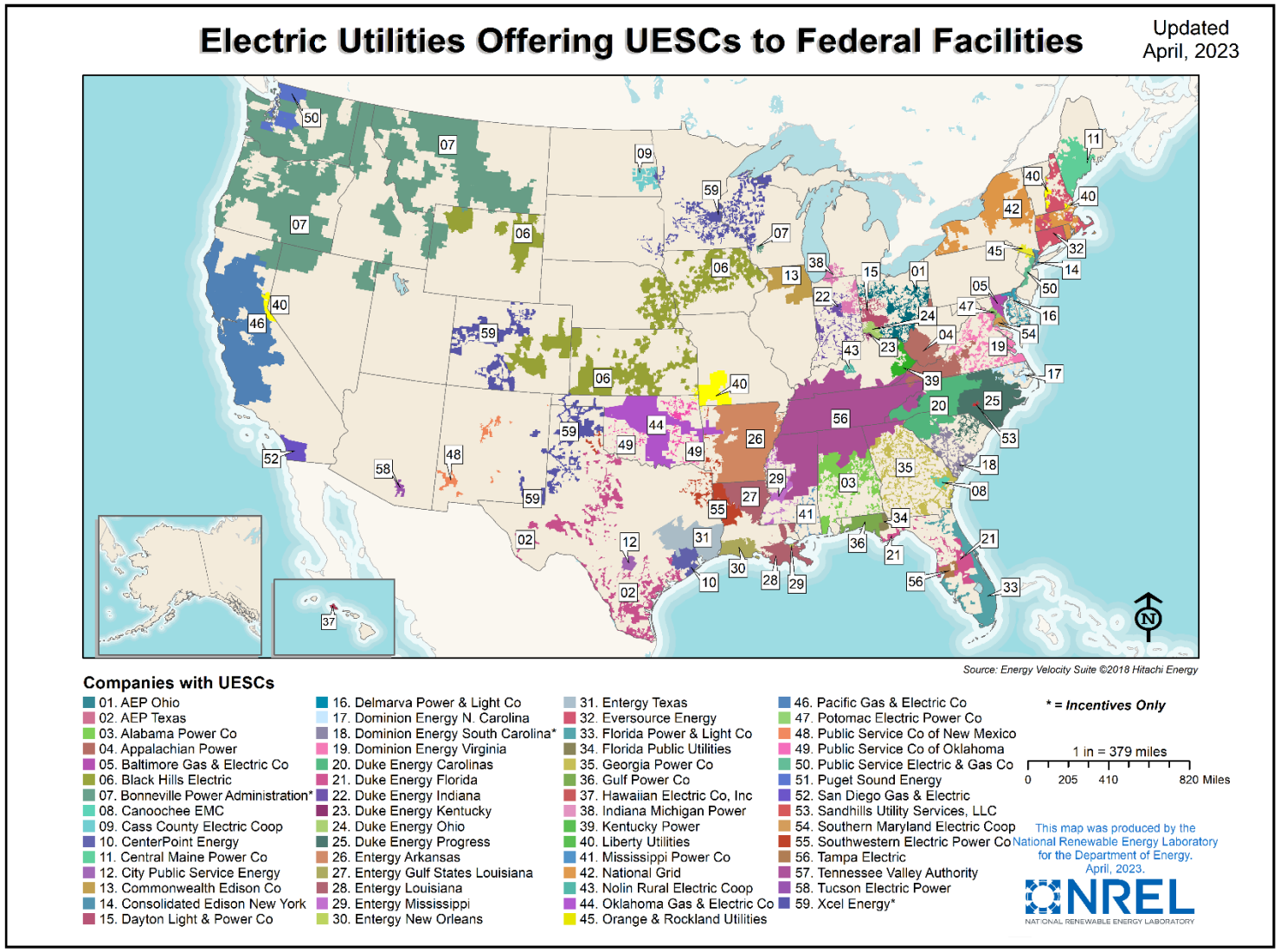
Sign up for Updates

- Receive periodic emails to stay informed of FEMP news, trainings, tools, resources, and more.

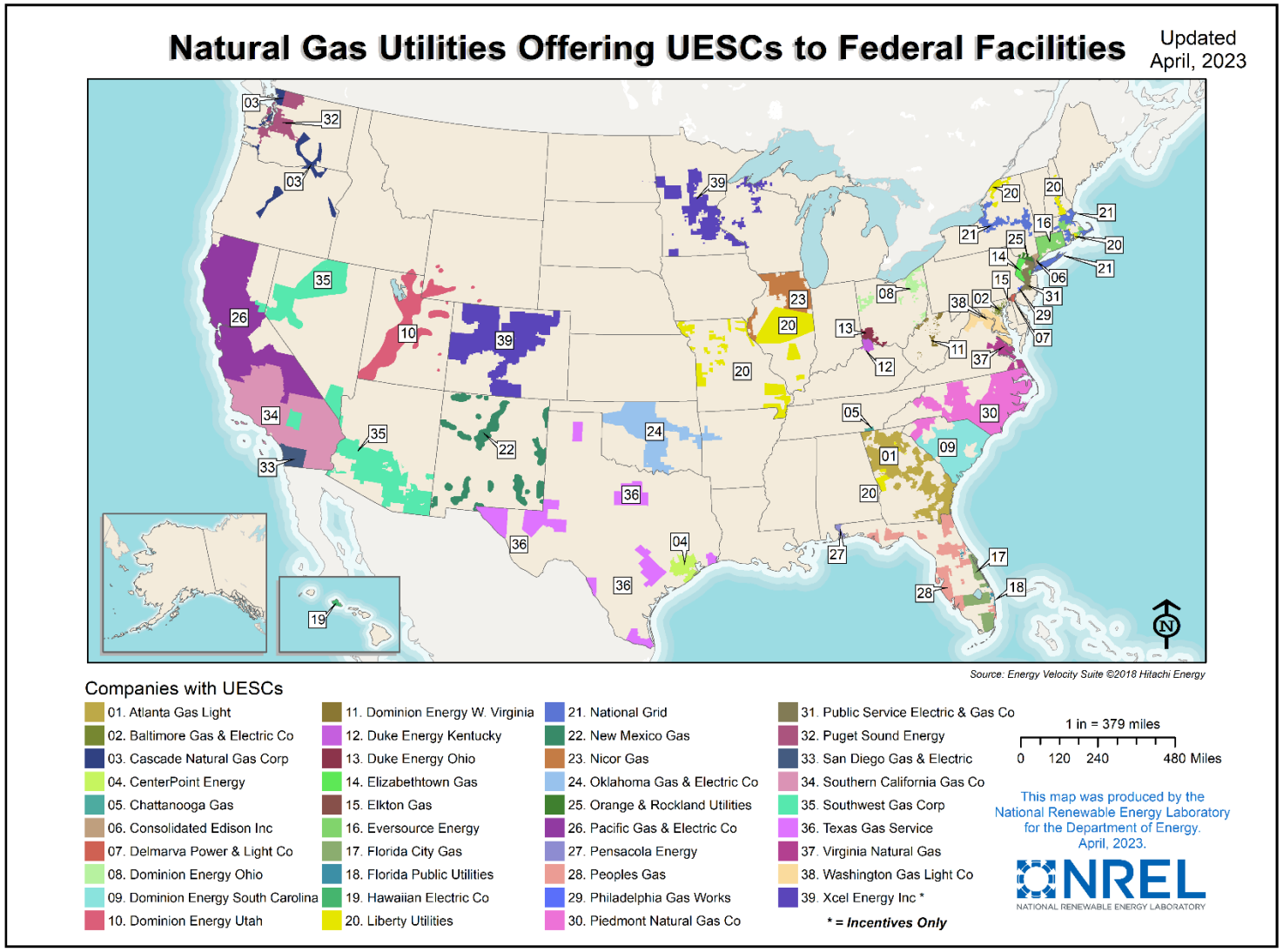
Follow FEMP

- Follow FEMP on LinkedIn for event announcements, examples of agency success, and of-the-moment news.

Utilities Offering UESCs – Electric

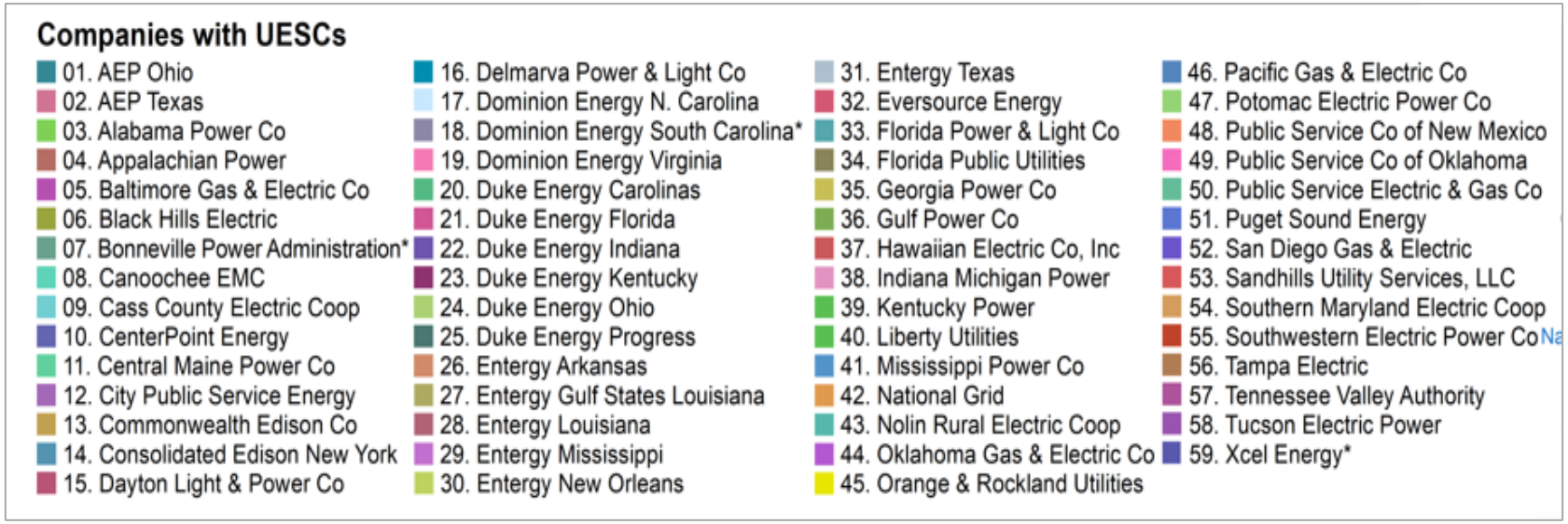


Utilities Offering UESCs – Natural Gas



Utility Partners Map – Call for Updates!

- **Visit the FEMP website for a list of utilities offering UESCs or related incentives to federal customers**
- **Utilities! Contact us to request an update:**
  - Add your company to the map and list of utility partners
  - Request an edit: remove/change company's name, update service territory boundaries, etc.
- **Feds! This list only includes utilities that have informed FEMP of an active UESC program or other related incentives.**
  - Contact your utility account representative to confirm.



UESC Data Collection - FEMP Needs Your Help!

FEMP needs your help to track aggregate UESC investment data.

- Self-Reporting award information helps FEMP track UESC utilization trends and estimate future investment
- This data helps to ensure sufficient resources are being allocated to provide training, technical assistance, and resources in support of UESC projects
- **Project-specific information is always kept confidential** and will not be shared without Agency consent

Please send template requests and data to Andrew Grejda

agrejda@bgs-llc.com

Future FUPWG Meetings

- **The next FUPWG Seminar: We would love to get your input! (Mentimeter Poll – Scan the QR code!)**
  - Question: Recognizing that Energy Exchange is in March of 2024, when should the next FUPWG Seminar be scheduled?
    - **Fall 2023 | June 2024 | August 2024 | November 2024?**
- **Please provide ideas for session topics including recommended speakers on the FUPWG website (link below)**

Your thoughtful ideas for session topics including speaker nominations are much appreciated—help us keep FUPWG interesting and relevant to you!

Federal Utility Partnership Working Group Seminar Session Suggestion Form

https://www.energy.gov/femp/federal-utility-partnership-working-group-seminar-session-suggestion-form

Thank You!

Tracy Niro on the approach to Mt. Conness
Inyo National Forest

Tracy Niro &

Ethan Epstein
Ethan.Epstein@hq.doe.gov
240-388-5218

Ethan Epstein in Grand Teton National Park

Note: FUPWG slides will be posted in 2 weeks.

U.S. DEPARTMENT OF ENERGY

FUPWG Washington Update

May 1, 2023

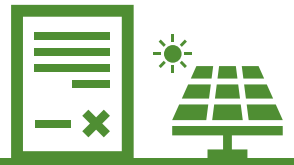
FEMP
Federal Energy Management Program

Washington has been busy

- **Congress: laws & funding for a bright, and clean, economic and energy future**
  - EA2020
  - Bipartisan Infrastructure Law
  - Inflation Reduction Act
  - Federal Building Performance Standard
- **The Administration: an inclusive Clean Energy Transformation to address Climate Change**
  - EO 14057
  - Climate Smart Buildings Initiative
  - Implementation of the Indian Energy Purchase Preference at Federal Facilities
  - J40
- **Agencies: policies and funding to ensure Mission Assurance and Decarbonization**
  - Facility resilience, Cyber security, Energy resources
  - FEMP: you'll hear more today and tomorrow!

Federal Agency Energy and Sustainability Goals and Requirements

Agency energy projects will enable progress toward several administration and congressional priorities focused on energy and water efficiency, decarbonization, investment, jobs and American manufacturing.



Energy Act of 2020

- Agencies to use performance contracting to address at least 50% of ECMs identified
- Agencies to implement all cost-effective ECMs identified within two years
- FEMP to establish a Federal Smart Building Program

Executive Order 14057

- Government-wide targets for long-term and mid-term GHG reductions
- 100% net zero buildings, zero-emission fleets, 24/7 carbon pollution-free electricity
- Net zero federal government operations by 2050 or sooner

Climate Smart Building Initiative (CSBI)

- Agencies to establish emissions reductions targets delivered through performance contracting
- Increase on-site clean electricity generation
- Support plan to reduce emissions from Federal buildings by 50% by 2032

Federal Building Performance Standard

- Support achievement of net-zero emission for federal building portfolio
- Zero scope 1 emissions from on-site fossil fuel use in 30% of agency's federal buildings (by GSF) by FY 2030
- Applies to federally-owned, EISA-covered facilities in U.S. and U.S territories

Note: Descriptions are illustrative and not comprehensive.

Performance contracting supports all these goals and requirements

Bipartisan Infrastructure Law: AFFECT Federal Agency Call

Assisting Federal Facilities with Energy Conservation Technologies (AFFECT)
Bipartisan Infrastructure Law (BIL) Federal Agency Call (FAC)
Advancing Net-Zero Federal Facilities

Total Funds Available: $250 million*

- **Topic Area 1:** Assistance with Net-Zero Buildings Opportunity Development
- **Topic Area 2:** Modify Existing Projects for Net-Zero Buildings
- **Topic Area 3:** New/In Development Net-Zero Buildings Projects

FAC Issue Date:	3/23/2023
Informational Webinar:	4/4/2023
Submission Deadlines for Applications:	5/31/2023 11/29/2023 5/29/2024 11/27/2024
Expected Date for Selection Notifications:	3 months following submission date

ONLY Federal Agencies are Eligible to Apply

*FEMP will consider individual awards greater than the historical average but **not in excess of $10 million**. FEMP does not intend to allocate more than 5% of AFFECT BIL grants for Topic Area 1 projects.

FAC and Webinar Info:
https://infrastructure-exchange.energy.gov

Questions about this FAC? Email AFFECTBIL@hq.doe.gov

Leveraging Appropriations to Maximize Project Scope

Original Performance Contracting Project ($9M)

Funded through (guaranteed) savings generated by the project ECMs

Appropriations-Funded Project ($1M)

Energy costs are reduced, but savings cannot be captured to fund additional scope

Combined Performance Contracting /Appropriations Project ($11M)

Over project term, savings from the appropriations are captured in the project, leveraged to fund additional scope

New Report (https://info.ornl.gov/sites/publications/Files/Pub192303.pdf)

**Analysis based on DOE ESPC IDIQ project awards*

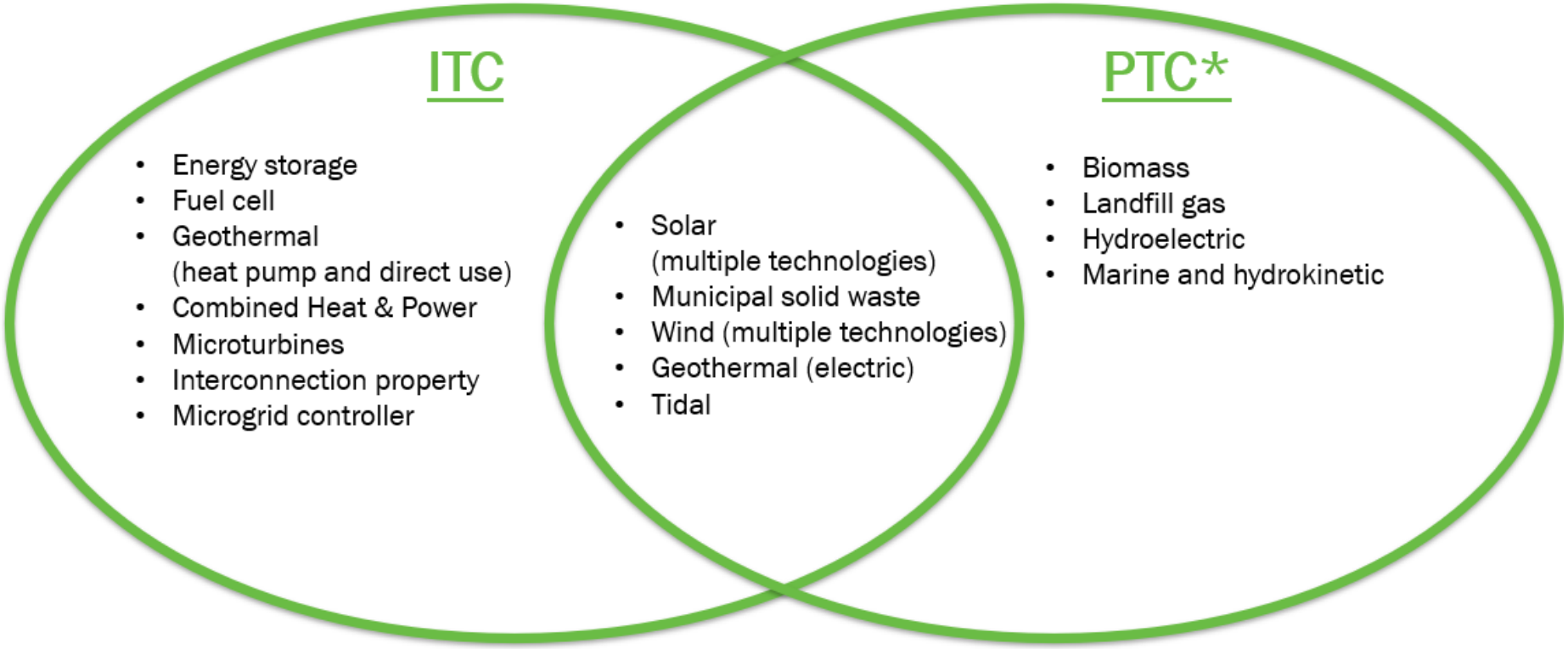
Inflation Reduction Act: Leveraging Tax Credits

- Due to recent passage of the Inflation Reduction Act, the ITC will remain at 30% and the PTC will start at 2.75¢/kWh until 2033 (assuming developers follow prevailing wage and apprenticeship requirements).
- For taxable developers only (federal agencies are not eligible)
- **Storage, microgrid controller and interconnection costs now standalone eligible for the ITC (certain limits apply)**
- Developers can qualify for additional credit amounts in certain cases, the table below describes these opportunities (see DOE Solar Tax Credits Webpage for more info):

Category	Amount* for Projects <1MW AC (Cumulative)	Amount* for Projects >1MW AC (Cumulative)
Base Tax Credit	ITC: 30% | PTC: 2.75¢/kWh	ITC: 6% | PTC: 0.5¢/kWh
Wage & Apprenticeship Requirements	N/A	ITC: +24% | PTC: +2.25¢/kWh
Domestic Content Minimums	ITC: +10% | PTC: +0.3¢/kWh	ITC: +10% | PTC: +0.3¢/kWh
Siting in Energy Community	ITC: +10% | PTC: +0.3¢/kWh	ITC: +10% | PTC: +0.3¢/kWh
Siting in Low-Income Community or on Indian Land (<5 MW AC)	ITC: +10% | PTC: N/A	ITC: +10% | PTC: N/A
Qualified Low-Income Residential Building Project or Economic Benefit Project	ITC: +20% | PTC: N/A	ITC: +20% | PTC: N/A

*The ITC amount is a percentage of the total qualifying project cost basis.

Tax Credits for Decarbonization and Resilience Technologies



ITC and PTC Technology Eligibility Comparison

***The PTC value is reduced by one-half for facilities using municipal solid waste or biomass. See 26 U.S.C. §45(b)(4) for additional detail.**

Indian Energy Purchase Preference at Federal Facilities

Implementation of the Indian Energy Purchase Preference at Federal Facilities. To ensure that investments in the clean energy economy reach Tribal lands, DOE—in coordination with WHCNAA and with involvement from DOD and the General Services Administration (GSA)—will launch a new initiative to increase federal agencies' use of Tribal energy through purchasing authority established by statute. Title V of the Energy Policy Act of 2005 established for federal agencies a preference for purchasing electricity and other energy products from Indian Tribes and Tribal enterprises. That authority has been unused for over 17 years. The Administration will hold listening sessions with Tribal Nations to better understand the market conditions for Tribes and Tribal majority-owned businesses developing carbon pollution-free electricity (CFE).

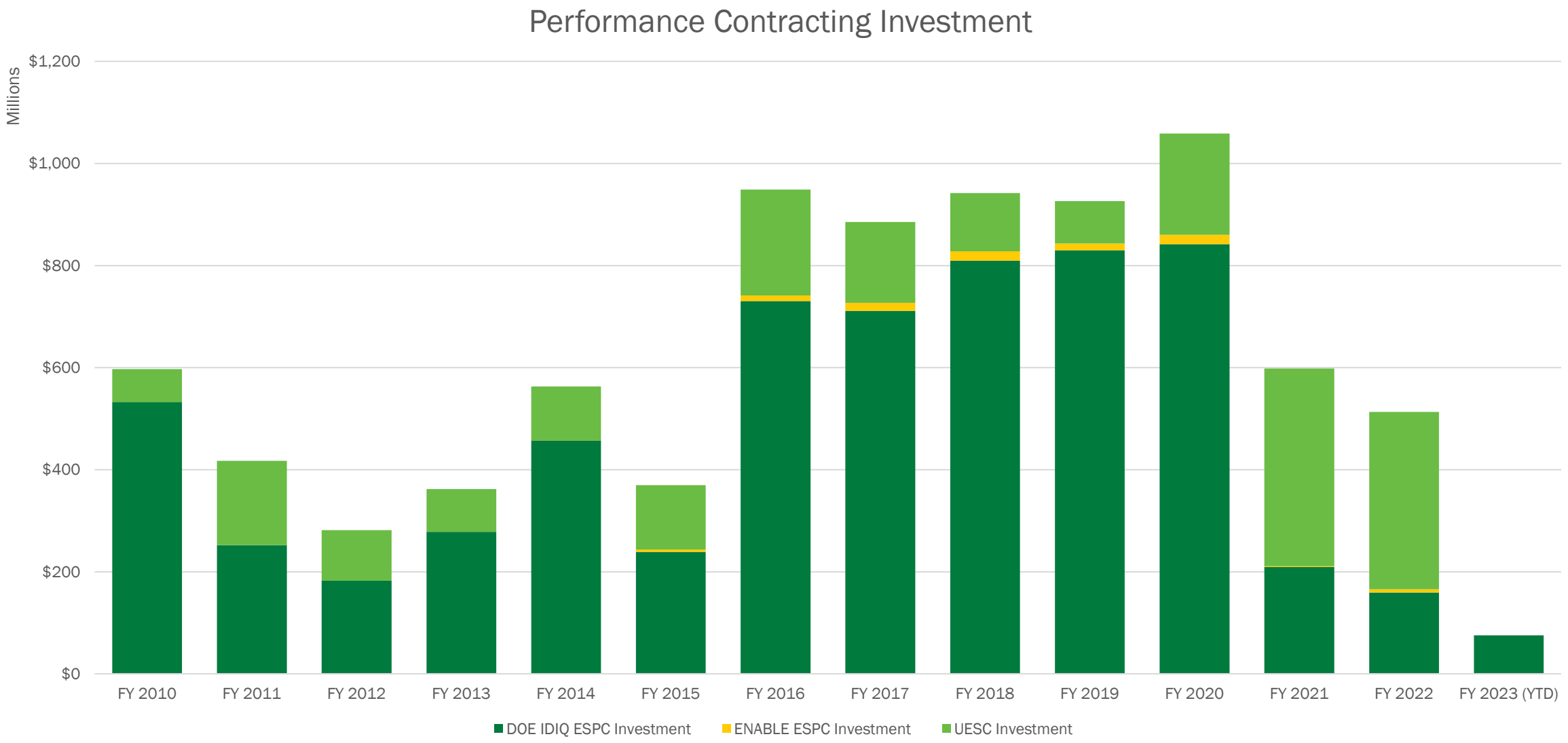
-DOD will integrate the Indian Energy Purchase Preference into electricity procurement strategies.

-GSA will lead a pilot focused on Tribal energy production to develop procurement strategies.

-Agencies will develop training and resources for Tribes and Tribal majority-owned businesses to foster technical expertise in the development of CFE projects, improve awareness of the Preference, and encourage partnerships for CFE development.

FACT SHEET: Biden-Harris Administration Announces New Actions to Support Indian Country and Native Communities Ahead of the Administration's Second Tribal Nations Summit - The White House

Agencies and Utilities also very busy: Congratulations on your UESC Investment Growth!



Federal Utility Partnership Working Group (FUPWG)

Today and Tomorrow: May 1-2, 2023

- Objective: cultivate lasting partnerships between federal agencies and utilities for improved energy and water management…electrification, decarbonization, resilience…
- Sessions and panels led by gov't and industry experts for gov't and industry experts.
- Dialogue and Knowledge sharing around new technologies, best practices, and approaches to achieving energy goals, decarbonization…
- The most knowledgeable person in the room, is the "room" (i.e., everyone sharing their view—please do!)

Followed by 2-day in-person UESC training on May 3-4!

Visit the FEMP Website to Sign Up for Updates

Federal-Utility Collaboration

Presentations from Past Seminars

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

Cooperative Innovation with Federal Facilities

Lauren Khair, NRECA, Moderator
Adam Mierzwa, Southern Maryland Electric Cooperative
Jeffery R. Brown, Sandhills Utility Services, LLC
Abraham Vasquez, Rio Grande Electric Cooperative, Inc.

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FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

Sandhills Utility Services, LLC

Innovation 2023

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Data Integration- Pilot Project – Fort Bragg

(1 of 2)

Key Points:

- Sandhills Facility Platform
- Six Independent Building Platforms
- Grid Interactive Controller Installations
- Sandhills Systems Interfacing (SCADA/GIS/AMI)
- Sensor Deployments – Associated Analytics

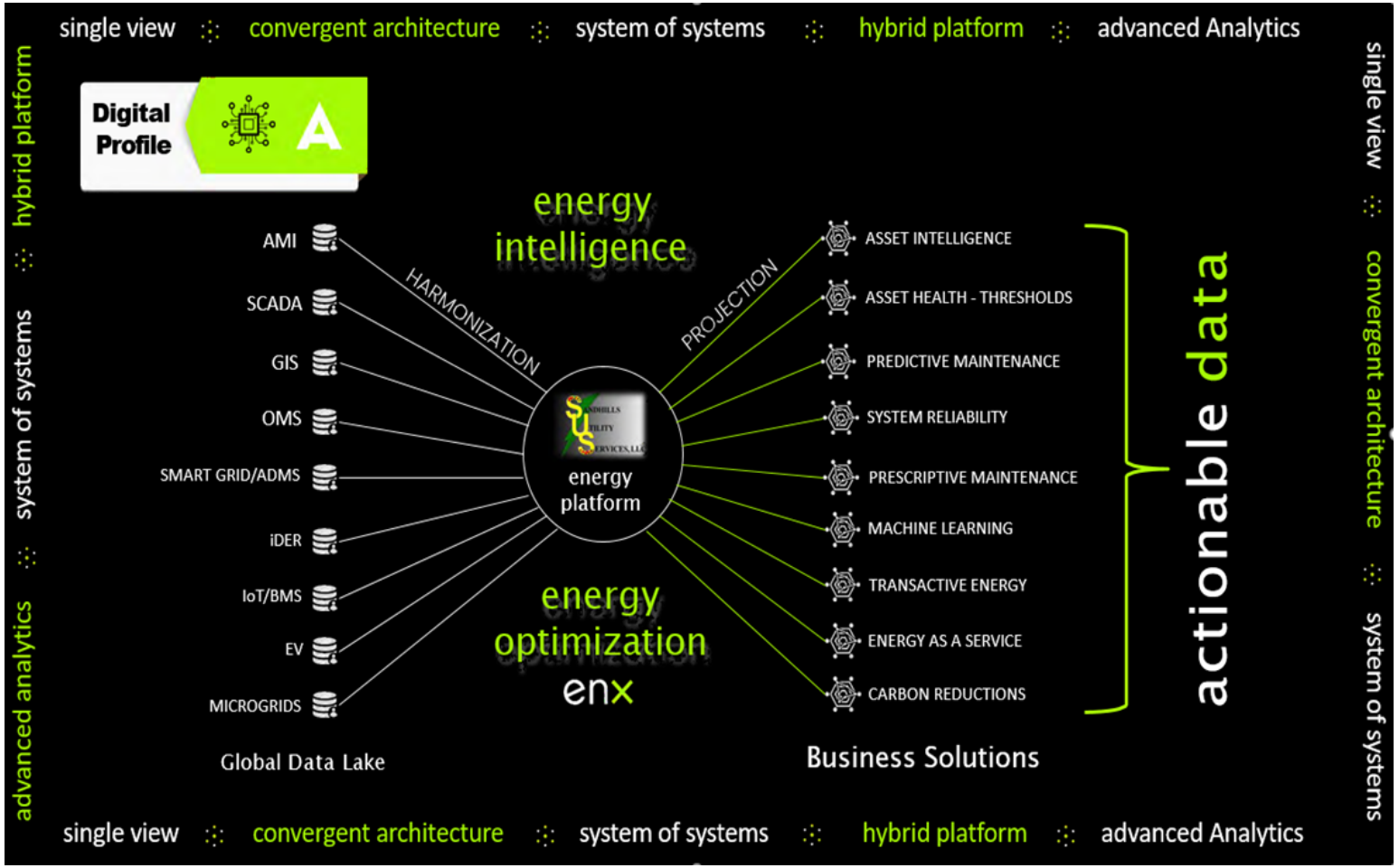
Data Integration- Pilot Project – Fort Bragg

(2 of 2)

Key Points cont.:

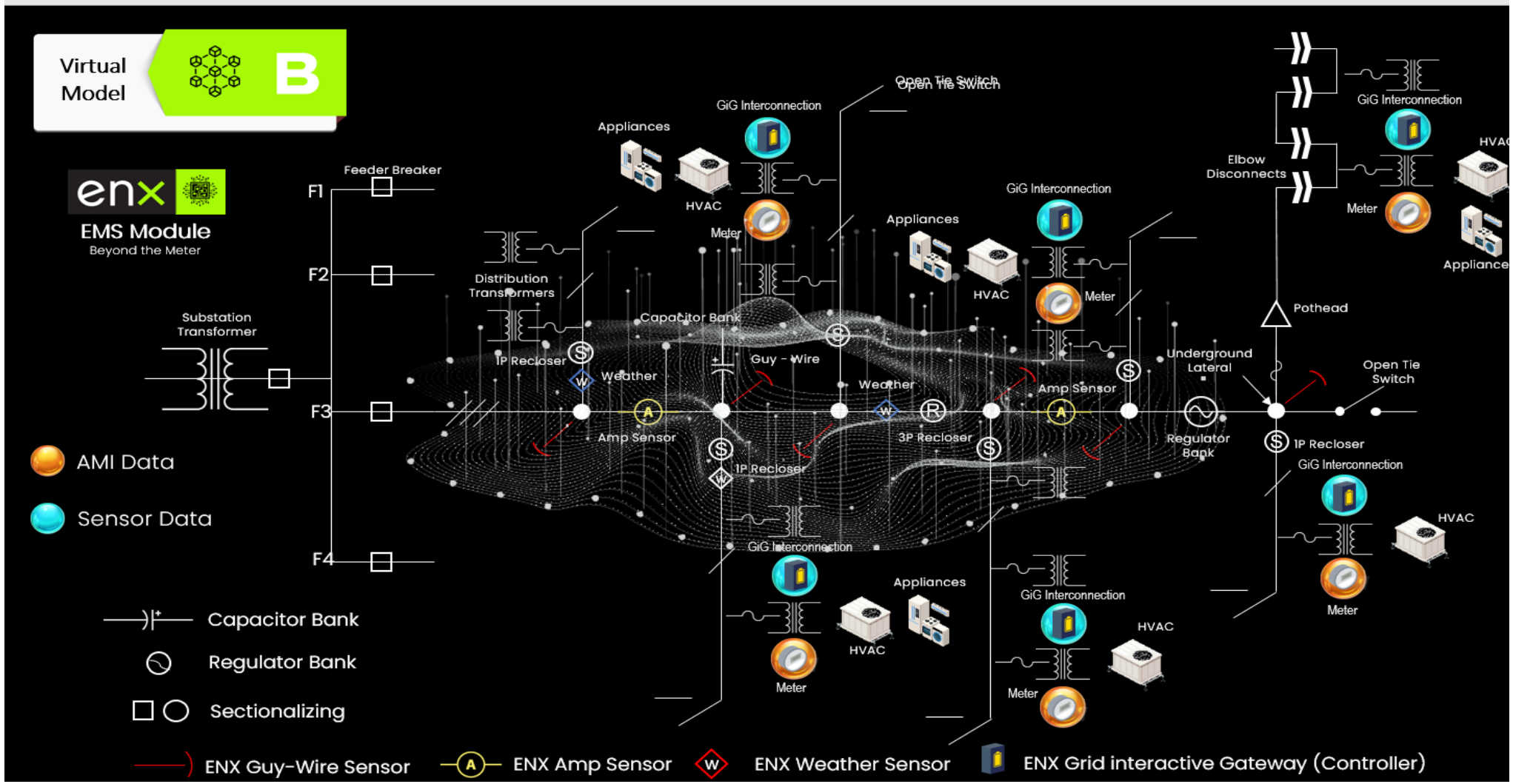
- Virtual Grid – Digital Twin (Energy Intelligence & Energy Optimization)
- Command Center Integration
- Simulations: EV & DSM
- Resiliency Plan Solution
- Microgrid(s) Solution

Data Integration- Pilot Project



- Ability to manage, monitor and control facility level assets, Utility level assets, EV infrastructure, microgrids, and external data (Real-time pricing, weather, etc.)
- Allows integration of data for campus-wide data analytics and predictive modeling.
- SUS is working on a pilot project for six facilities and utility assets to demonstrate the technology and capabilities

Data Integration- Pilot Project



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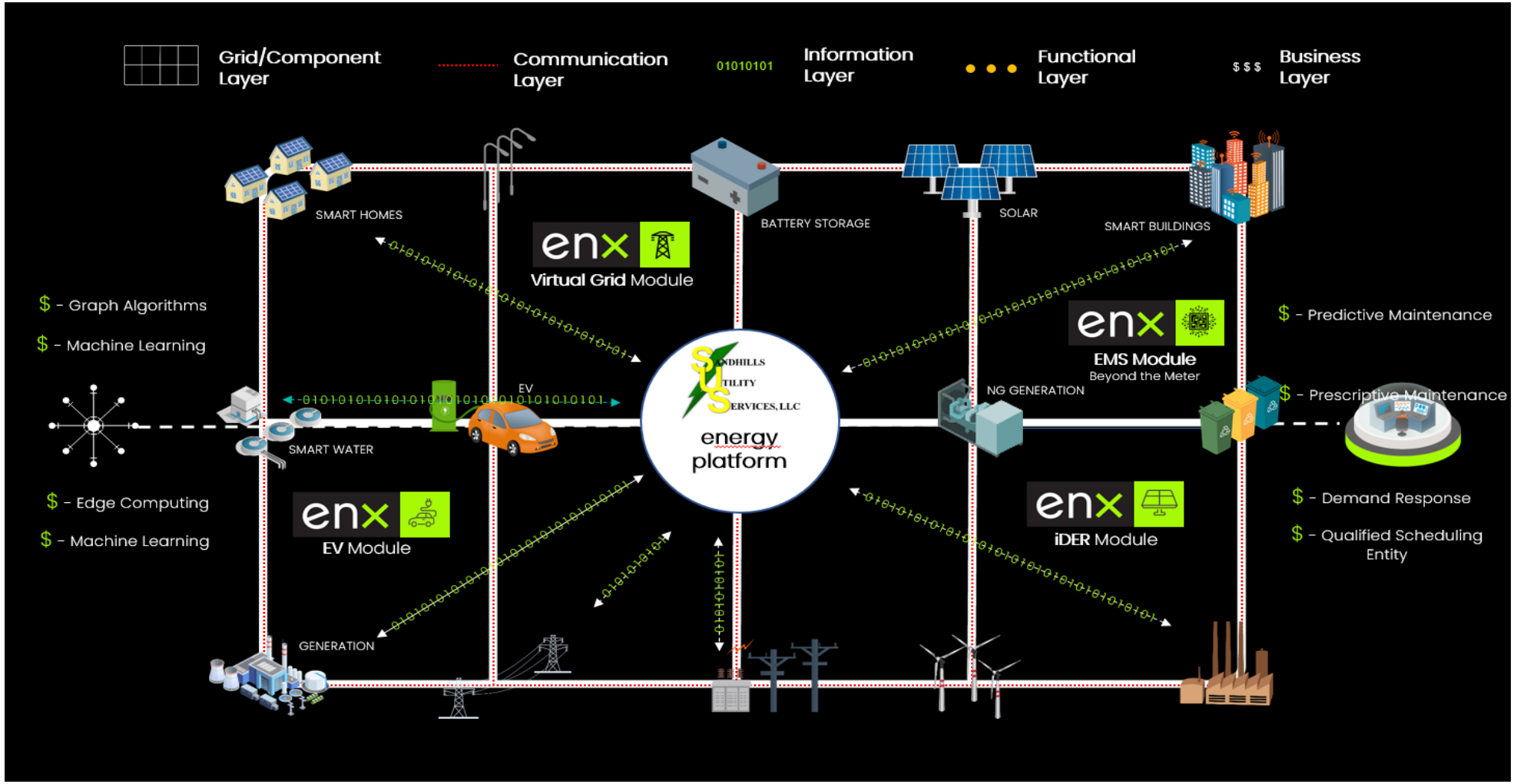
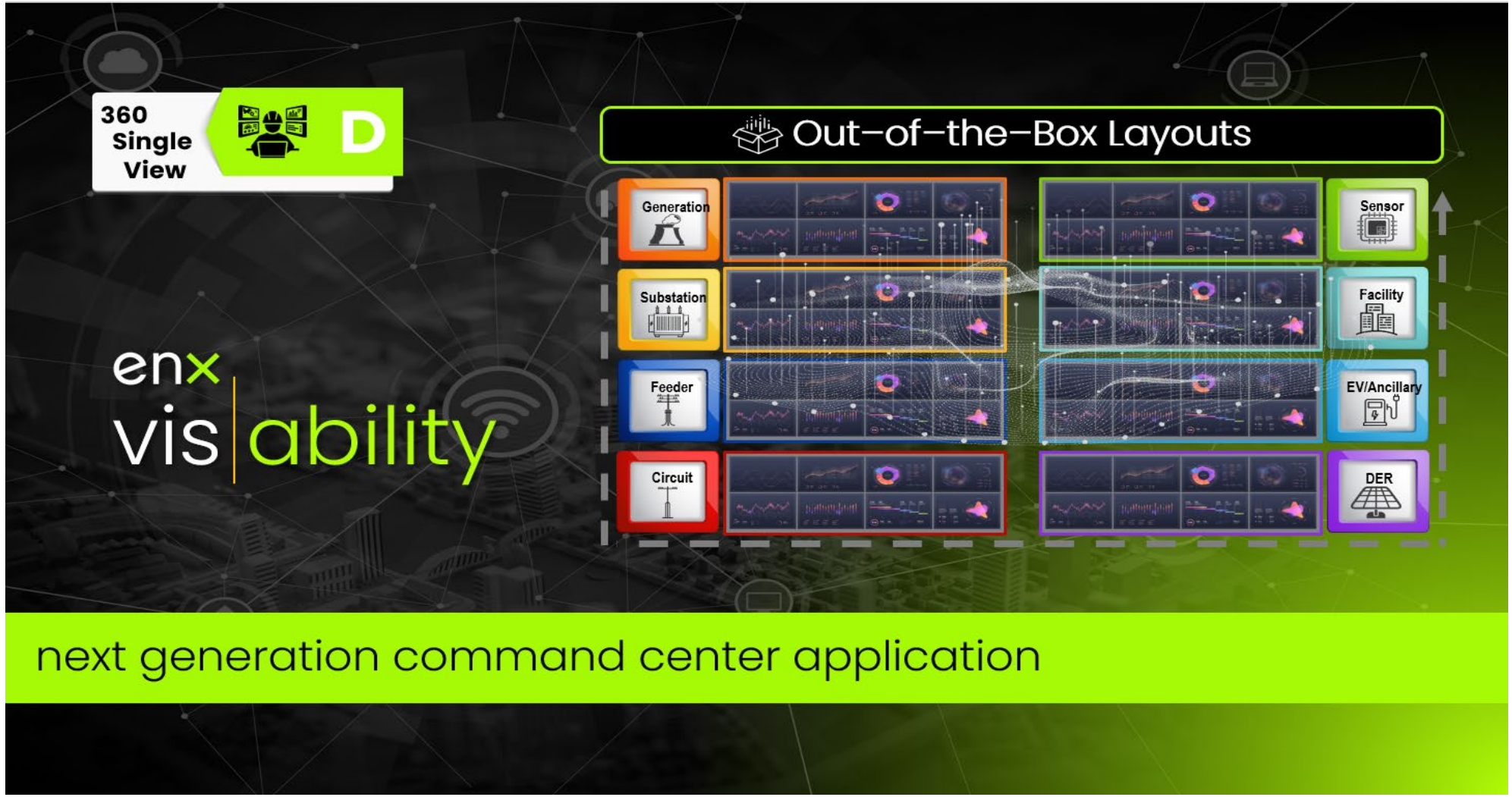
Data Integration- Pilot Project



Data Integration- Pilot Project



FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

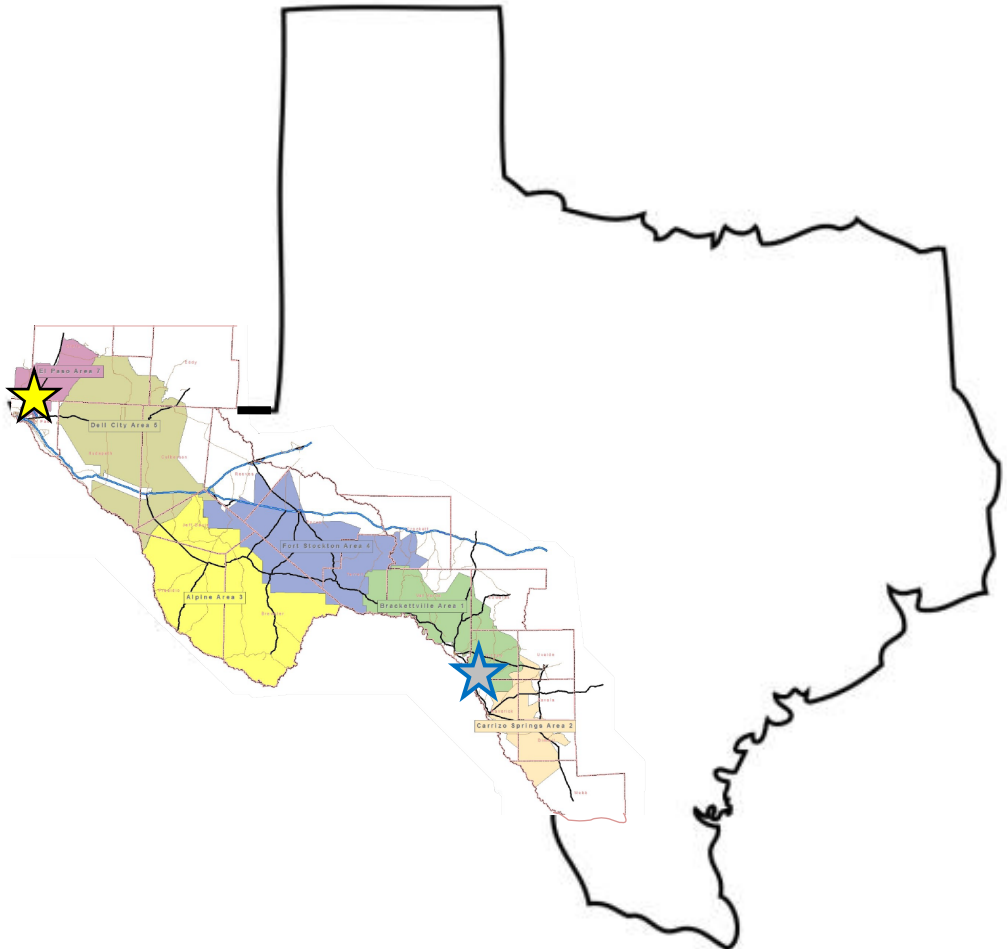
FEMP
Federal Energy Management Program

NRECA
America's Electric Cooperatives

Rio Grande Electric Cooperative, Inc.

Service Territory

- From Carrizo Springs in South Texas, to Southern New Mexico
- Over 35,000 Square miles of service territory and over 10,000 miles of energized line
- Includes two Privatized Utility Contracts (Fort Bliss Army Base and Laughlin Air Force Base)

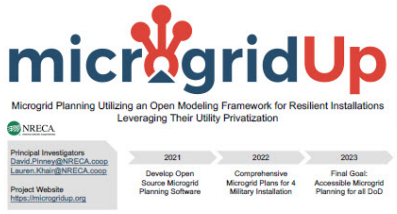


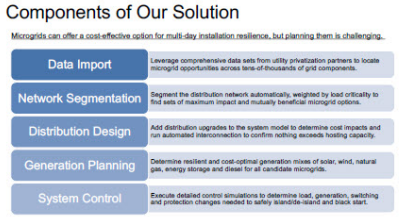
FEMP Federal Energy Management Program

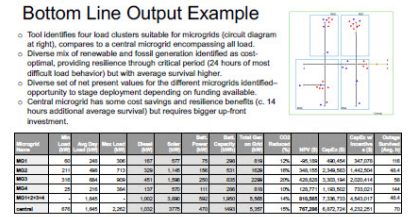
NRECA America's Electric Cooperatives

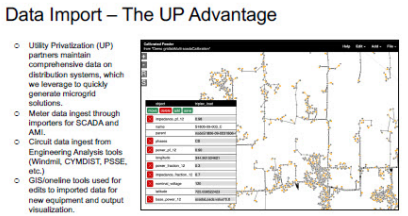
NRECA MicrogridUP

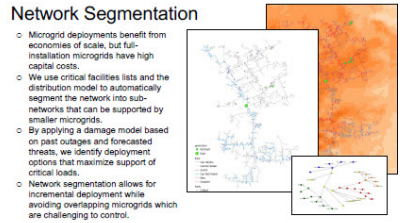
- 3-year research project funded by DoD Environmental Security Technology Certification Program (ESTCP)
- Microgrid planning utilizing an Open Modeling Framework (OMF) for resilient installations leveraging their utility privatization
- Leverage DOE technologies to lower soft costs of Microgrid planning implementation
- Uses all available utility data to quickly identify highest-value microgrids for any and all critical load.

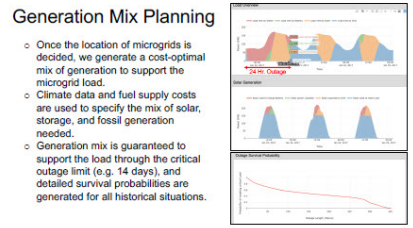


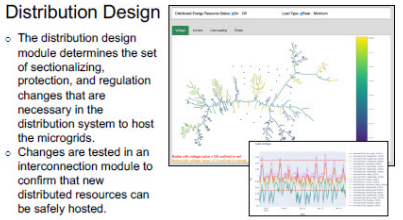


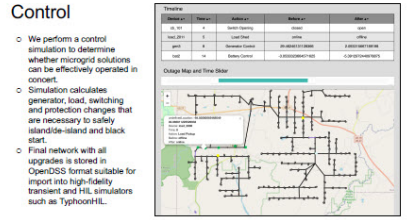


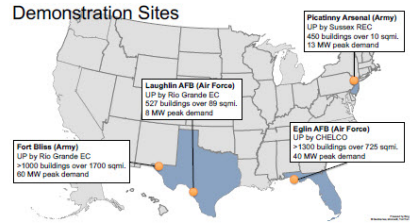












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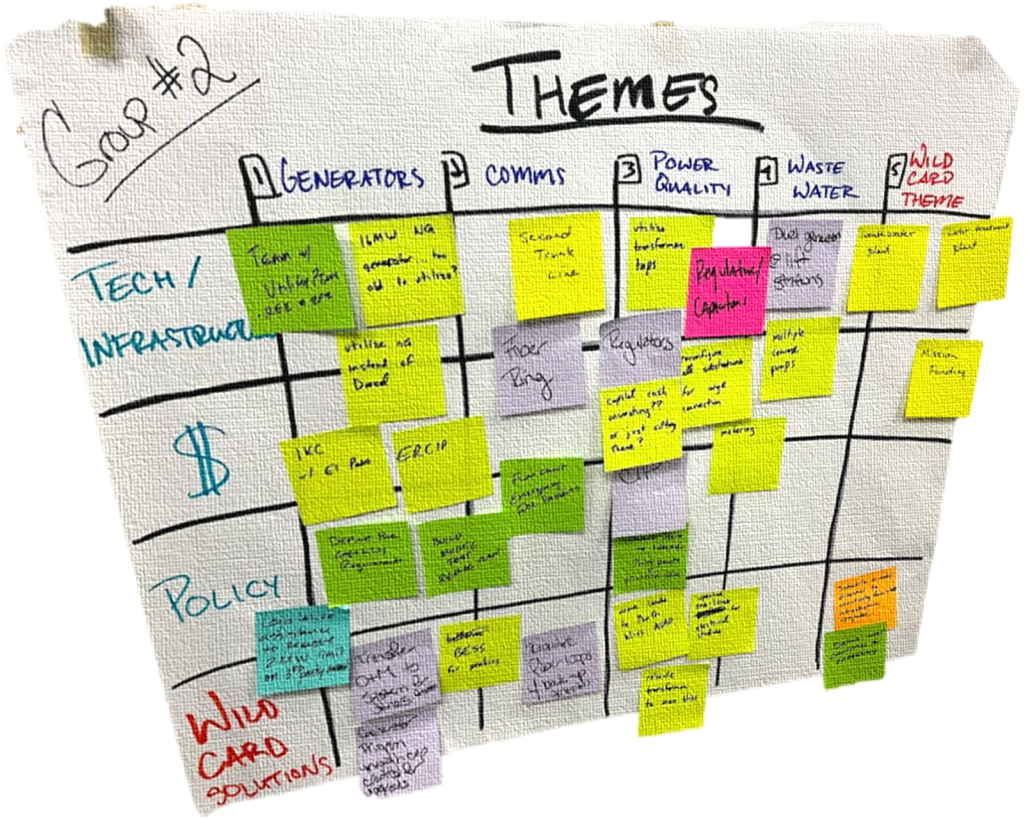
Fort Bliss MicrogridUP



Workshop

- Partnering with Converge Strategies, LLC, NRECA research team and RGEC conducted an installation site visit through ESTCP program MERC (Military Energy Resilience Catalyst)
- Met with installation leadership, mission owners and support staff to identify energy infrastructure and develop project concepts
- Highest priority project identified out of 5 candidates: microgrids identified by MicrogridUP for remote, mission-critical ranges.

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Oro Grande Range Microgrid

Project

- Install one or more microgrids that would provide back up power and the required resiliency to Range Control operations
- Utilizing a combination of both Battery Energy Storage Systems (BESS) and diesel generators
- Assistance from NRECA and Ameresco to facilitate, design and construct the Microgrid system

Funding

- Capital Credits (CC) allocated to the base will serve as the main source of funding for the installation, operations and maintenance of the Microgrid
- RGEC Board of Directors to amend By-Laws incorporating a “Unbundled Distribution Energy Service Members” class for early retirement purposes

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

Mobile Electric Vehicle Supply Equipment and Resilience

FEMP Federal Fleet Program

Sonya Smith-Pickel, Federal Fleet Program Manager

FEMP
Federal Energy Management Program

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America's Electric Cooperatives

What does the FEMP Fleet Team do?

Web Resources

Direct Technical Assistance

Training (Webinars, Videos, Meetings)

Data Reporting

Guidance on Statutory and Executive Requirements

Stakeholder Groups (FEVAR and INTERFUEL)

Fleet Requirements

Fleet Management Support

U.S. DEPARTMENT OF ENERGY

Federal Fleet Management

The latest fleet efficiency information, tools, and resources

Integration with Other Programs and Stakeholders

Integration with DOE National Labs

ZEV Ready Electrification Center

PLANNING PHASE		
GOALS	STEPS	ZEV READINESS
Create and Train Team	Step 1. Identify and coordinate team Step 2. Review training materials	Team Ready
Overall Fleet Planning & Strategy	Step 3. Review requirements, goals, and data Step 4. Align headquarters strategy with site planning	Commitment Ready
Identify ZEV and EVSE Opportunities	Step 5. Identify ZEV opportunities (5 years) Step 6. Identify EVSE opportunities (5 years)	Vehicle Ready Charging Ready
Financial Planning	Step 7. Coordinate site financial planning with headquarters	Commitment Ready

https://www.energy.gov/femp/overview-zev-ready-federal-fleet-electrification-process

ZEV Ready Electrification Center

DESIGN PHASE		
GOALS	STEPS	ZEV READINESS
Engage with Priority Staff and Utility	Step 8. Engage with key electrification stakeholders at site Step 9. Coordinate with local utility service	Team Ready Charging Ready
Design EVSE	Step 10. Complete site assessment and design EVSE Step 11. Identify EVSE at non-agency locations	Charging Ready
Obtain Commitment	Step 12. Work with leadership to secure EVSE funding	Commitment Ready

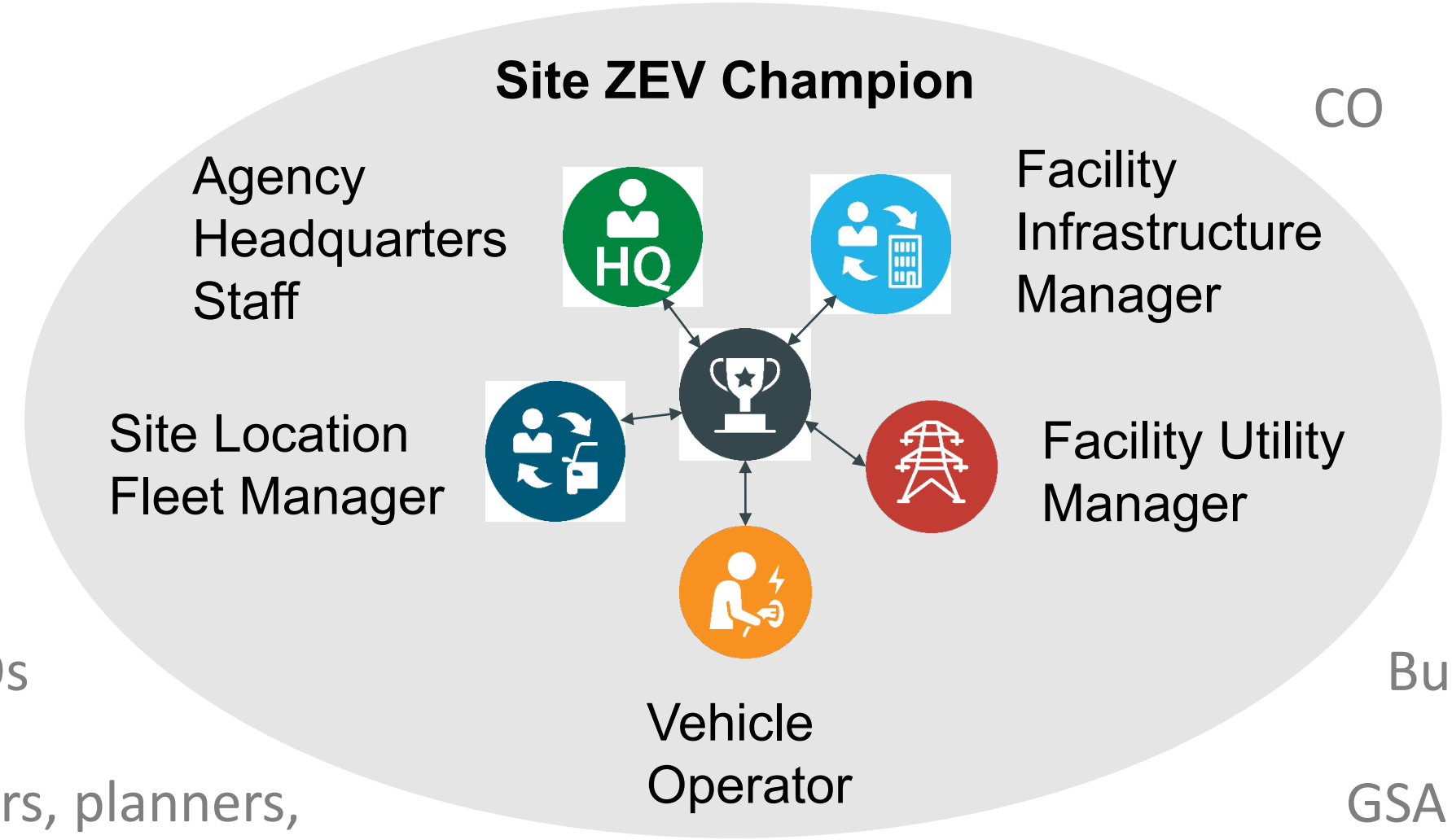
https://www.energy.gov/femp/overview-zev-ready-federal-fleet-electrification-process

ZEV Ready Electrification Center

ZEV ACTIVE PHASE		
GOALS	STEPS	ZEV READINESS
Acquire ZEVs and Install EVSE	Step 13. Acquire ZEVs and EVSE Step 14. Install and activate EVSE	ZEV Ready
Support Operations	Step 15. Support drivers in using ZEVs and EVSE	ZEV Ready

https://www.energy.gov/femp/overview-zev-ready-federal-fleet-electrification-process

Identify and Coordinate Team



Utility

CO

Property Managers

Workplace Charging

COR

CSOs

Budget or PMs

Engineers, planners, electricians

GSA FSRs

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EV Training Videos

https://www.energy.gov/femp/electric-vehicle-training

Driving Electric Vehicles

- Differences between operating EVs and gas vehicles
- Locating public EV charging stations using mobile applications

EV Technology Overview

- EV types and driving ranges

Financial Considerations

- Lifecycle cost calculations

EVSE Infrastructure

- EVSE compatibility and power ratings

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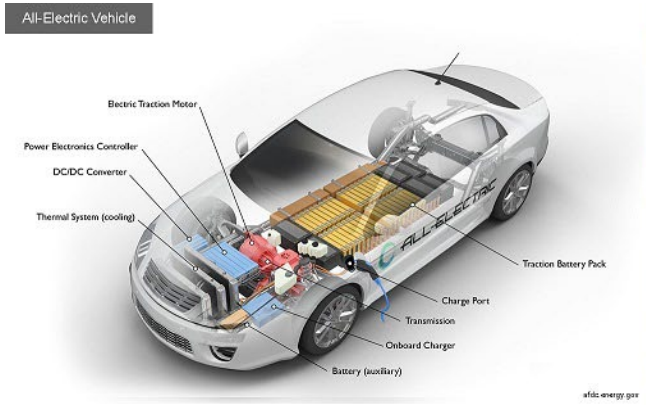
EV Champion Training

No Cost Virtual Training with Updated Content

Everything you need to know about planning for fleet electrification
Obtain FEMP certificate once successfully completed

Training 1: Electric Vehicle Technology and Financial Considerations
Training 2: EVSE Power and Utility Considerations
Training 3: Performing EVSE Site Assessments
Training 4: Advanced EV Site Assessments & Operations



https://www.wbdg.org/continuing-education/femp-courses/fempodw109

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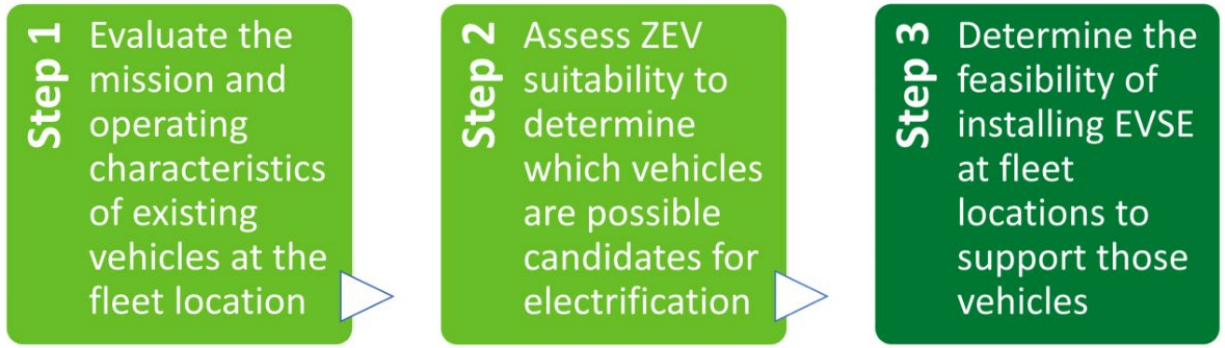
Identify ZEV and EVSE Opportunities

	Agency Headquarters Fleet Electrification Managers
	Site ZEV Champions
	Site Location Fleet Managers
	Facility Infrastructure Managers

- Identify EVSE Opportunities in the near and medium-term (next 5 years using ZPAC)



- Use ZPAC tool to identify ZEV opportunities then EVSE opportunities
  - For a copy, email Mark Singer mark.singer@nrel.gov

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Coordinate with Local Utility

	Site ZEV Champions
	Site Location Fleet Managers
	Facility Infrastructure Managers and Utility Staff
	Facility Energy Managers

- Evaluating Facility EVSE Impacts on Electrical Service Equipment
  - Conduct energy audit
- Evaluating Facility EVSE Impacts on Power Requirements
  - EVSE needs, service conductors, circuit breakers, service panels, meters, transformers, and feeder lines
- Utility Equipment Upgrades
  - Transformers, distribution feeder, managed charging

EV U-Finder: Locate Utility Contacts for EVSE Deployment

EV U-Finder: Electric Vehicle Utility Finder

Enter ZIP Code to identify local utilities, electric vehicle support programs, and Clean Cities Coalitions.

92313

Powered by the U.S. Utility Rate Database (https://openei.org/apps/USURDB/)
Utility territories last updated February 2021.

See Introduction worksheet for notes on using EV U-Finder.

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NREL Transforming ENERGY

***Customer Types:**
G: Government or Public; C: Commercial; R: Residential

Identified active utilities in 92313

Utility	Utility Name	Utility Ownership	Known EVSE Funding Eligibility?*	Known Advisory Services Eligibility?*	Known Federal EVSE Incentives?	GSA Areawide Contract?	Identified Utility Contact or Phone Number (as available)	Identified Utility Contact Email
1	Southern California Edison Co	INVESTOR	GC	GC	Y	Y	[redacted]	[redacted]
2	City of Colton, California (Utility Company)	PUBLIC	CR	CR			[redacted]	
3	NA	NA						

Utility Associations

Utility Ownership	Directory or Contact
INVESTOR	EEI Utility Federal Contacts
PUBLIC	APPA Utility Directory
COOPERATIVE	NRECA Utility Directory
Cooperative Contact	NRECA Federal Coordinator [redacted]

https://www.eei.org/about/affiliates/nationalkeyaccounts/Pages/Federal-Utility-Directory.aspx

https://www.publicpower.org/where-public-power

https://www.electric.coop/our-organization/nreca-member-directory

State Level Incentives

State:	CA
Known EVSE Funding Eligibility?*:	GCR

***Customer Types:** G: Government or Public; C: Commercial; R: Residential

Clean Cities Coalition

Coalition:	Southern California Clean Cities Coalition
Coordinator:	[redacted]
email	[redacted]
website:	http://www.scag.ca.gov/cleancities/

FEMP Federal Energy Management Program

NRECA America's Electric Cooperatives

EV U-Finder: Discover Incentives Offered by Utilities to Federal Agencies

FEMP Federal Energy Management Program

NREL Transforming ENERGY

Edison Electric Institute Investor Owned Utility Incentives

For more details see "EEI Database" worksheet Increase row heights to view complete details.

Incentive	EEI Electric Company	EEI Holding Company	Program Name	Description	
1	Entergy Mississippi	Entergy	Utility Owned Direct Current	EML filed an application in Docket No. EC-123-0082-00 for a pilot to construct, own,	https:/
2	Entergy Louisiana	Entergy	eTech Program	The eTech program provides customer support by dedicated field representatives	https:/
3	Entergy Mississippi	Entergy	eTech Program	The eTech program provides customer support by dedicated field representatives	https:/

American Public Power Association Public Utility Incentives

For more details see "APPA Database" worksheet Increase row heights to view complete details.

Incentive	Utility	EVSE Incentives	Program Website (if
1	City of Colton (CA)	Residential: Up to $500 for Level 2 charger.	https://www.ci.colton.c
2	-	-	

Alternative Fuels Data Center (AFDC) Laws and Incentives

https://afdc.energy.gov/laws/state Increase row heights to view complete details.

Incentive	State or Utility?	Title	Incentive Description
1	STATE	AFV Incentives - San Joaquin Valley	The San Joaquin Valley Air Pollution Control District administers the
2	STATE	Technology Advancement Funding - South Coast	The South Coast Air Quality Management District's (SCAQMD) Clean Fuels
3	STATE	Alternative Fuel and Vehicle Incentives	The California Energy Commission (CEC) administers the Clean
4	STATE	EVSE Incentive Program Support	The California Electric Vehicle Infrastructure Project (CALeVIP), funded

https://www.energy.gov/eere/femp/articles/ev-utility-finder-ev-u-finder

Design Onsite EVSE

Design EVSE, Complete EVSE Site Assessment, and Consider Advanced Charging Options (V2B, V2G, bidirectional charging)

- Identify EVSE Needs
- EVSE Siting Analysis
- Managed Charging and Advanced Charging
- EVSE Cost Estimates

EVI-LOCATE

Electric Vehicle Infrastructure – Locally Optimized Charging Assessment Tool and Estimator

User-driven web tool with built-in design and cost calculations

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Coordinate Procurement for EVSE

GSA Fleet

https://www.gsa.gov/electrifythefleet

Lease or purchase vehicles, SOWs, EVSE Sharing MOU template

1) EVSE Blanket Purchase Agreement (BPA)

www.gsa.gov/evse

- Level 1, 2, DCFC
- Portable, solar, off-grid solutions
- Metering, networked solutions, and power management
- Charging-as-a-service
- Operation and maintenance

Contact: GSAfleetAFVteam@gsa.gov

2) Governmentwide EVSE-related design-build and construction IDIQ contracts

- Includes planning, installation, site assessments, construction

Contact: PBS-EV-IDIQ@gsa.gov

3) ESPCs, UESC, and Exhibit A and D of an Areawide Contract (AWC)

https://www.energy.gov/femp/procuring-electric-vehicle-infrastructure

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

Mobile Electric Vehicle Supply Equipment & Resilience

Gary Dannar, Founder and CEO, DANNAR®

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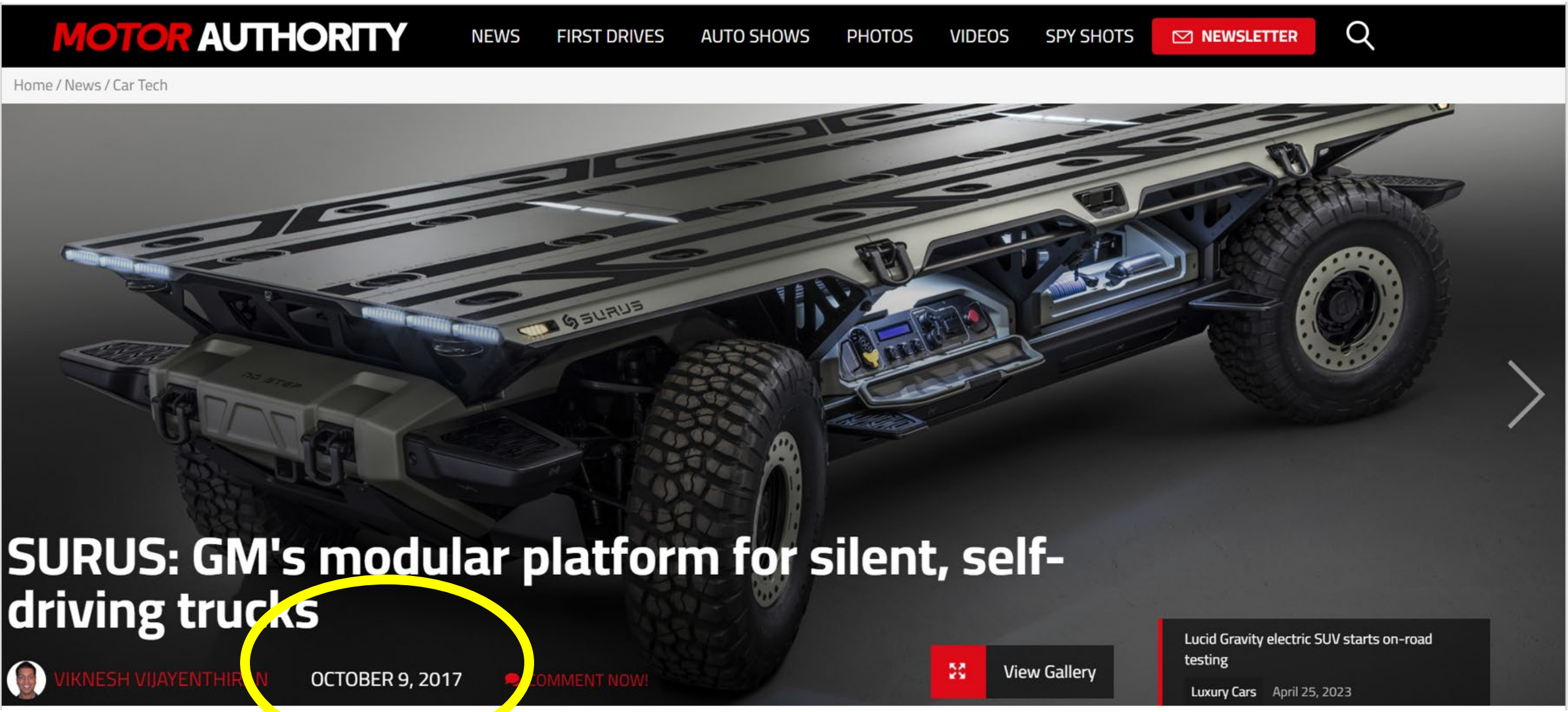
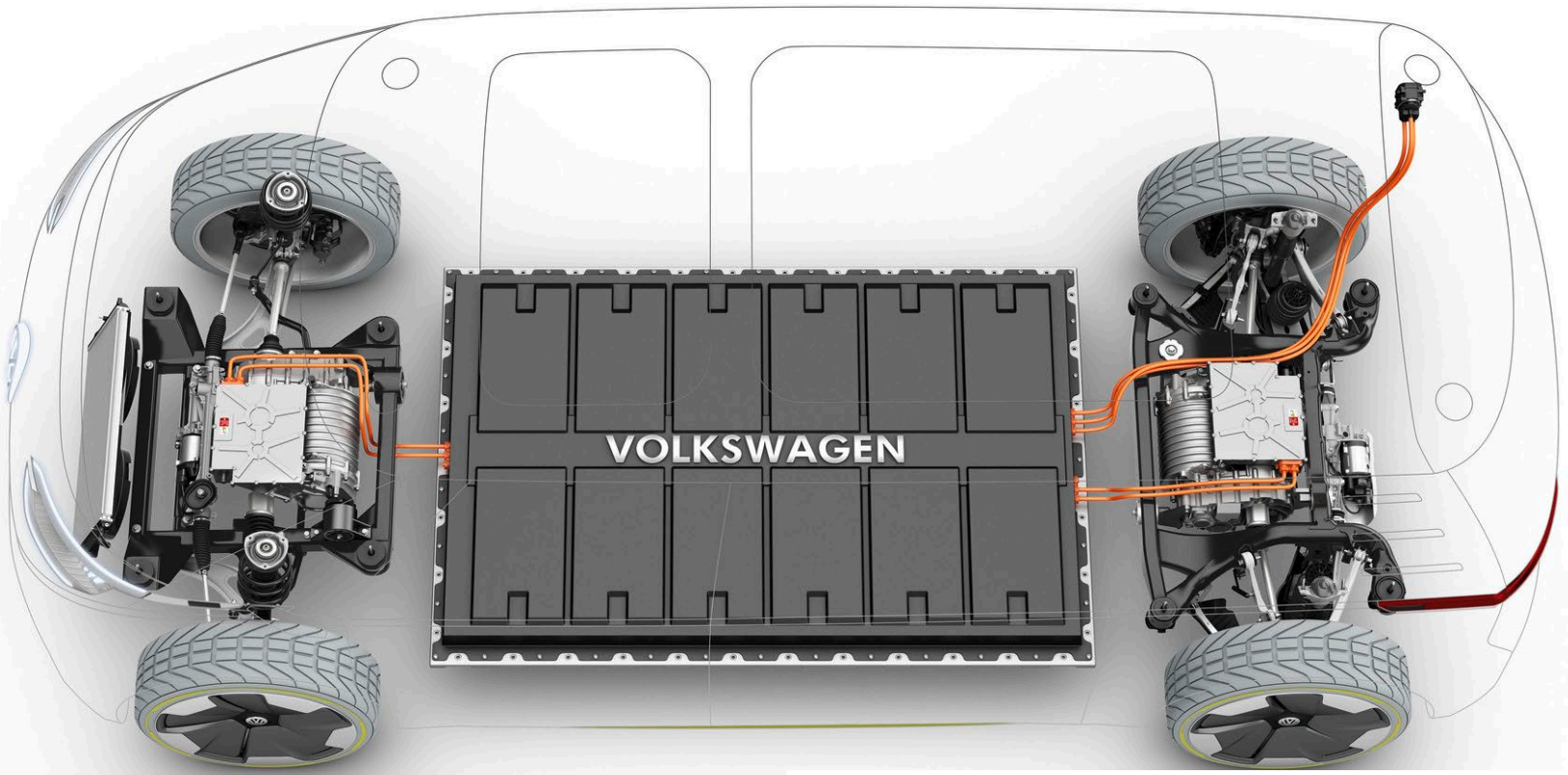
Mobile Electric Vehicle Supply Equipment & Resilience



Mobile Electric Vehicle Supply Equipment & Resilience



www.volkswagen-newsroom.com

01/09/17 | Image

Volkswagen Showcar ID. BUZZ

WIKIPEDIA
The Free Encyclopedia

Plans [edit]

The MEB platform is part of a Volkswagen strategy to start production of new battery electric vehicles between 2019 and 2025.[4] In 2017, the VW Group announced a gradual transition from combustion engine to battery electric vehicles with all 300 models across 12 brands having an electric version by 2030.[5]

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Mobile Electric Vehicle Supply Equipment & Resilience

CBS SACRAMENTO NEWS WEATHER SPORTS VIDEO MORE 52° Live TV

278 views Jun 26, 2018

The bustling international shipping port, in the middle of a valley community, will be adding zero-emission, battery-powered cargo equipment to load and unload vessels.

LOCAL NEWS ›

Port Of Stockton Rolling Out Power On Wheels

CBS NEWS SACRAMENTO JUNE 25, 201

STOCKTON (CBS13) – It's a new push to curb pollution, at the Port of Stockton.

The bustling international shipping port, in the middle of a valley community, will be adding zero-emission, battery-powered cargo equipment to load and unload vessels.

Mobile Electric Vehicle Supply Equipment & Resilience:

Planned Work Events, Public Safety Power Shut-Off (PSPS) Events, and Emergency Events

Request for Information:
Clean Temporary Generation Products for Electric Distribution Systems at Primary Voltage

Pacific Gas and Electric Company®

2019

RFI Power Advocate Event No. 99855

For: Clean Temporary Generation Products for Electric Distribution Systems at Primary Voltage

SOUTHERN CALIFORNIA EDISON
Energy for What's Ahead®

Southern California Edison Company's

Public Safety Power Shutoffs Request For Information Document

Mobile Electric Vehicle Charging UNIT Direct Current Fast Charger DISPENSER

12/29/2020

Crime & Safety

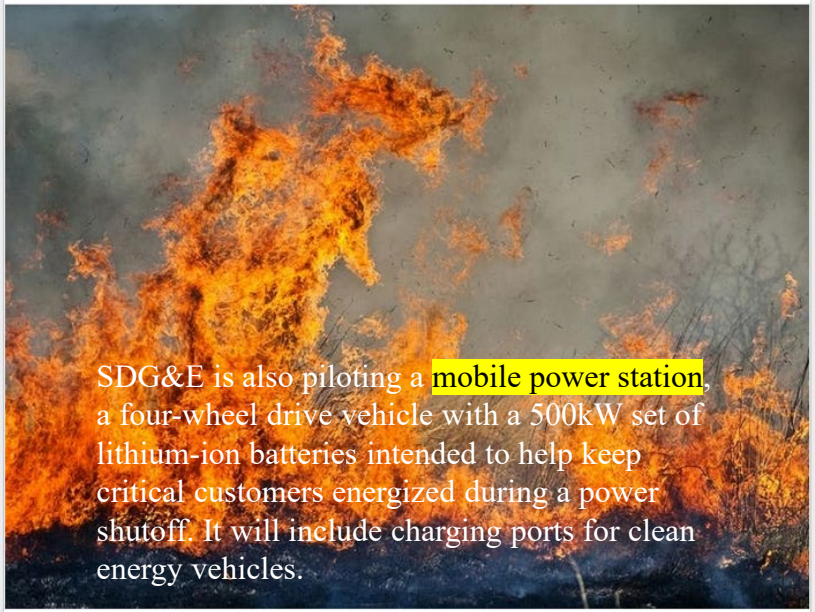
SDG&E Announces Wildfire Mitigation Advancements

San Diego Gas & Electric Tuesday unveiled several wildfire mitigation and resiliency advancements.

2021

City News Service, News Partner
Posted Tue, Aug 3, 2021 at 1:11 pm PT

Like 15 Share Reply (1)



SDG&E is preparing for this year's wildfire season. (Shutterstock)

SDGE
Residential Businesses More Info
Languages Outages NewsCenter Wildfire Safety Search

My Account | Customer Service | Pricing Plans | Electric Vehicles | Pay Bill | Savings Center | Solar | Builder Services

2020

Battery Energy Storage Systems (BESS) and Microgrids

- 2021 Tree Mortality Non-Bypassable Charge RPS REC Sale Request for Offers (RFO)
- Spring 2021 Disadvantaged Community Green Tariff Shared Renewables (DAC-GT) Solicitation
- Spring 2021 Community Solar Green Tariff Shared Renewables (CSGT) Solicitation
- 2022 DRAM RFO
- 2021-2023 IRP Reliability RFO
- 2020 EPIC-3 Project 7 EPIC Mobile Battery Demonstration - Module 2 RFP

Overview

SDG&E has been rapidly expanding its battery energy storage and microgrid portfolio. Within our service territory, we have around 20 battery energy storage systems (BESS) and microgrid sites with 95 megawatts (MW) of utility-owned energy storage, plus another 200+ MW in development.

Typically, these battery systems and microgrids are installed on SDG&E-owned property; they are adjacent to our existing substation facilities or in critical locations where grid reliability and resiliency is needed most.

Microgrids are small-scale electric grids that can operate independent of or parallel to the larger regional grid and can keep critical community facilities powered during outages. Battery storage is an important part of every microgrid.

Mobile Electric Vehicle Supply Equipment & Resilience:

Planned Work Events, PSPS Events, Emergency Events, Blackouts, and Brownouts

PSPS and Planned Work Events

Very similar needs for very different types of events.

Recently in CA, regulations dictate towable diesel generators, that utilities rent, will no longer be available for their use.

Therefore, EV solutions must include fleet and rental solutions.

MQ Multiquip WhisperWatt Super-Silent DCA180SSJU4F Single/Three-Phase Diesel Generator - 144kW

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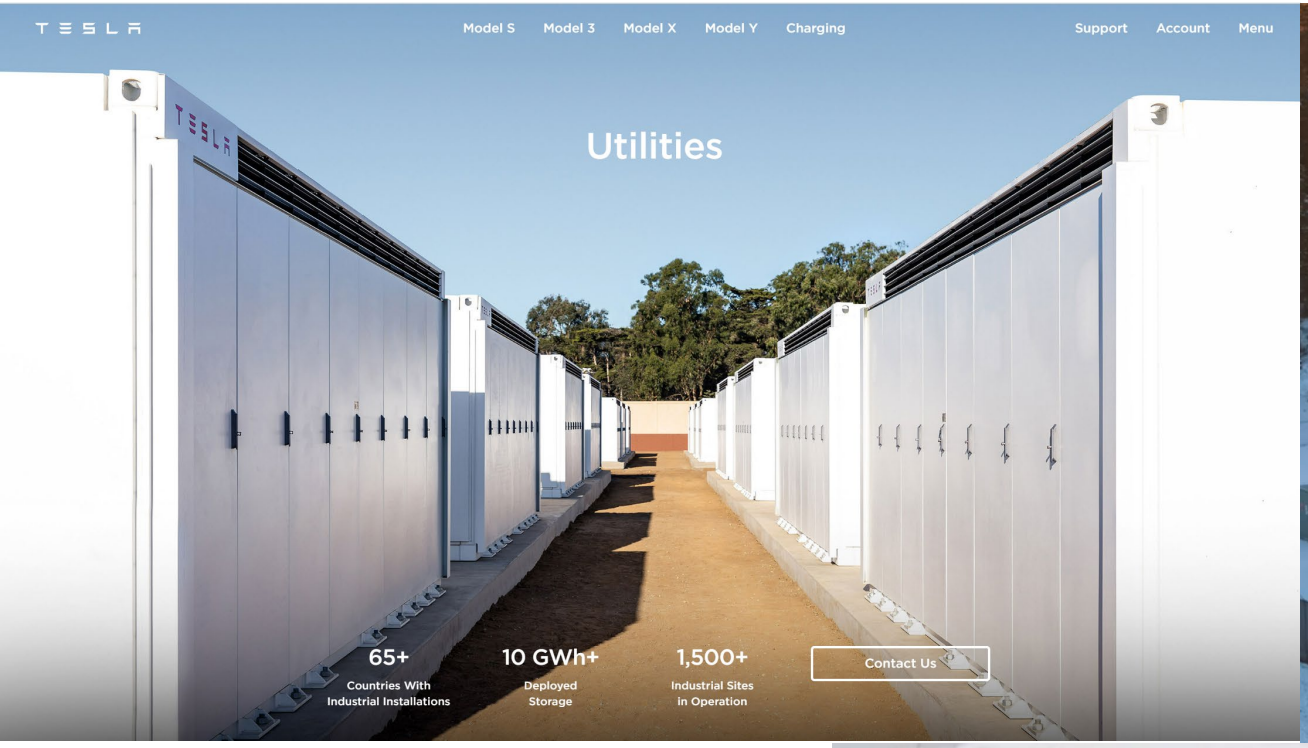
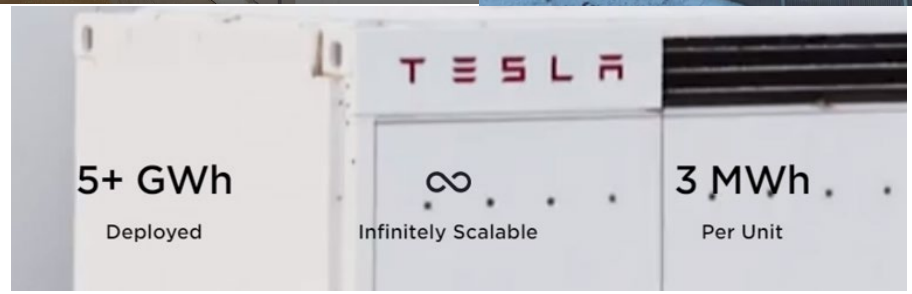
Mobile Electric Vehicle Supply Equipment & Resilience:

Utility needs, Mobile Electric Distribution, and On-site Energy Storage





Federal Utility Partnership Working Group
May 1-2, 2023 Arlington, VA

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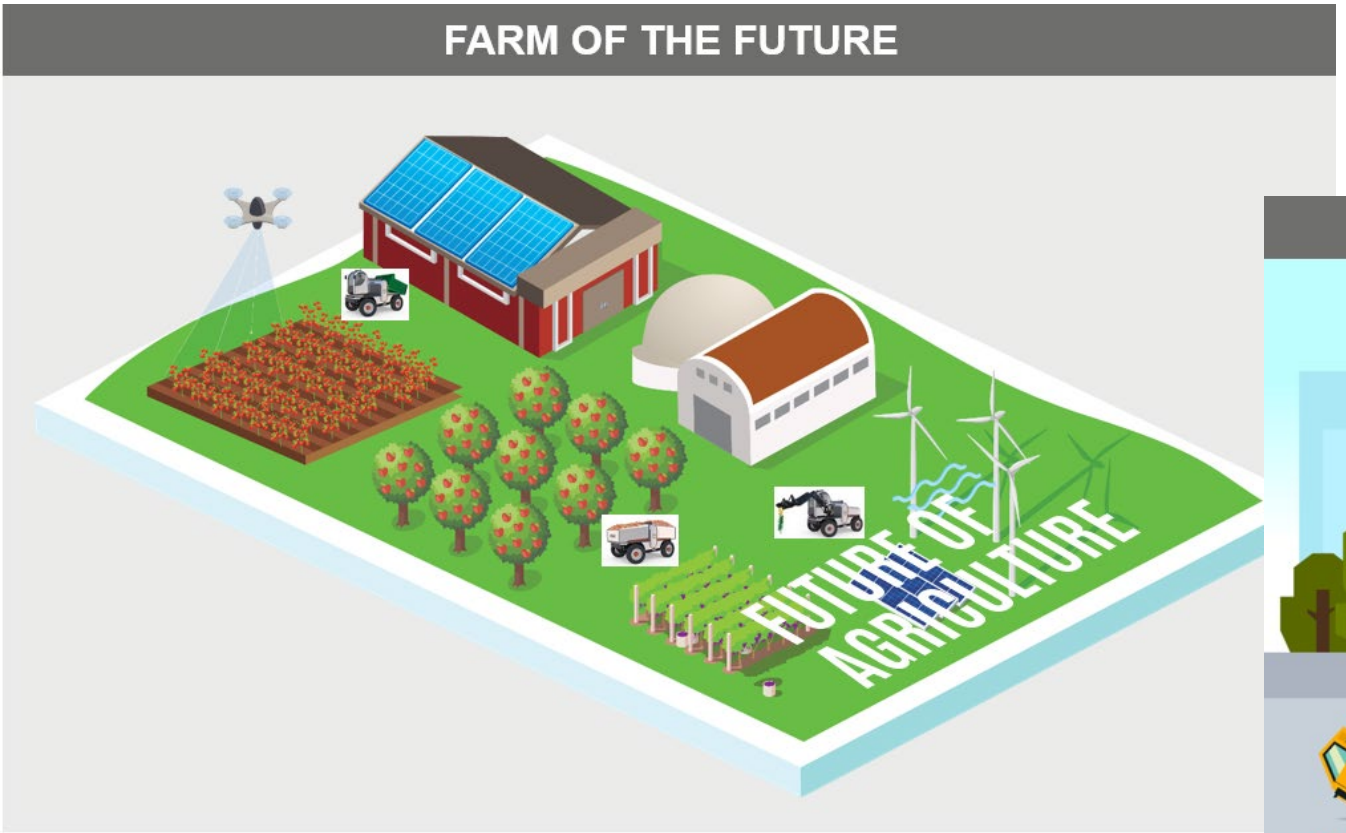
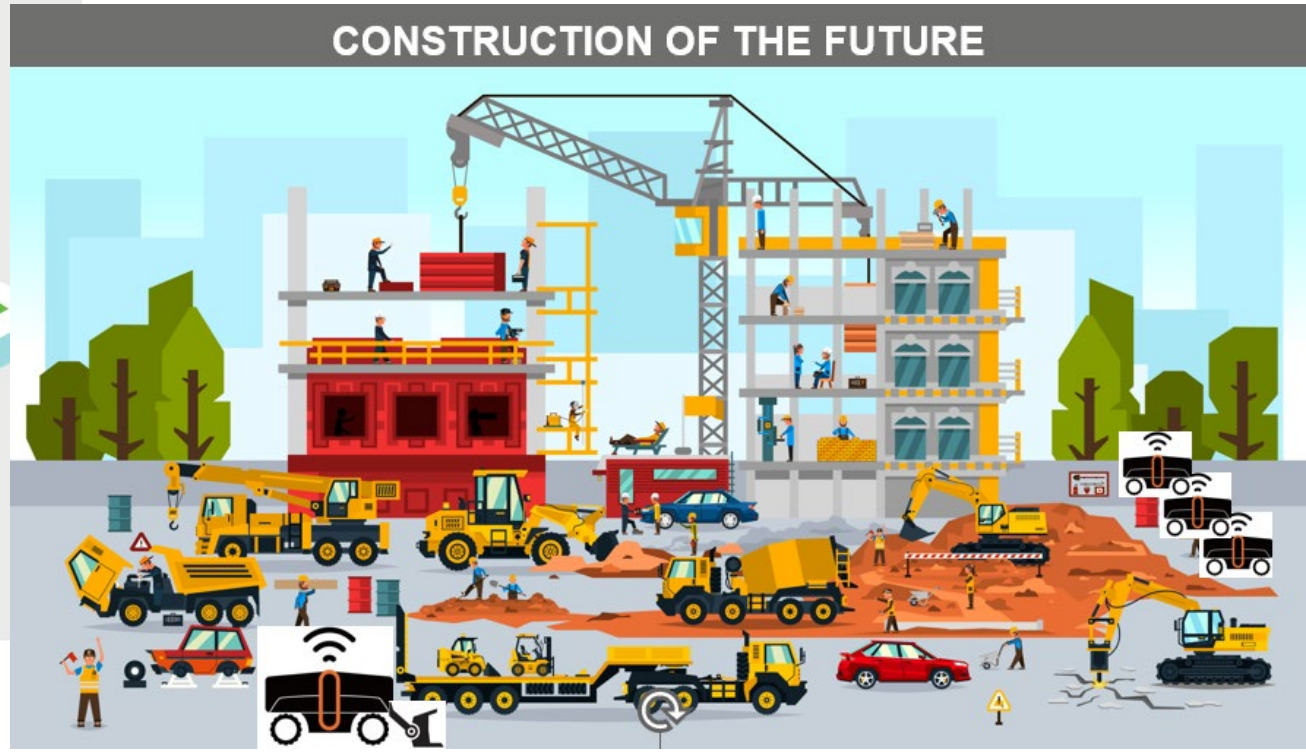
Mobile Electric Vehicle Supply Equipment & Resilience:

Mobile Electric Distribution Off-grid





Mobile Electric Vehicle Supply Equipment & Resilience:

Thank you and Questions?

Gary Dannar
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DD DANNAR, LLC
2200 Bunch Blvd
Muncie, IN 47303
www.dannar.us.com

Intro to DANNAR

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FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

U.S. DOD Priorities, Policies, Best Practices, and Other Updates

Susan Call, OSD, Moderator

Michael F. McGhee, OSD

Robert B. Hughes, U.S. Army

Sandy Kline, U.S. Navy

Douglas K. Tucker, U.S. Air Force

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DoD Priorities, Policies and Updates

Mr. Michael F. McGhee, SES, PE
Executive Director for Climate Resilience

Office of the Deputy Assistant Secretary
of Defense for Environment & Energy Resilience

May 1, 2023








Agenda

- OSD Organizational Update
- Evolving Statutory/Policy Landscape
- National Defense Strategy (NDS) and Installation Resilience
- Installation Resilience in the Context of Climate Change
- Installation Resilience Planning in the Context of Climate Change
- Installation Energy Planning
- Way-Forward
- OSD Points of Contact

OSD Organizational Update

Energy, Installations, and Environment

Honorable Brendan Owens

Assistant Secretary of Defense for Energy, Installations, and Environment

"Military facilities must adapt to an increasingly challenging threat environment. Improving energy resilience and reliability is key to that adaptation."

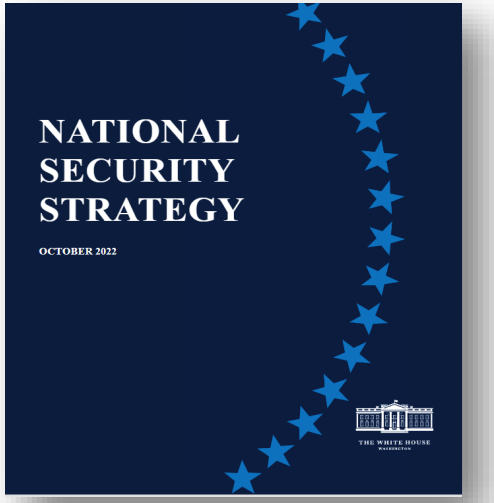
"As we continue to reduce our environmental impact, we will simultaneously enhance mission capabilities and the effectiveness of our warfighters. "

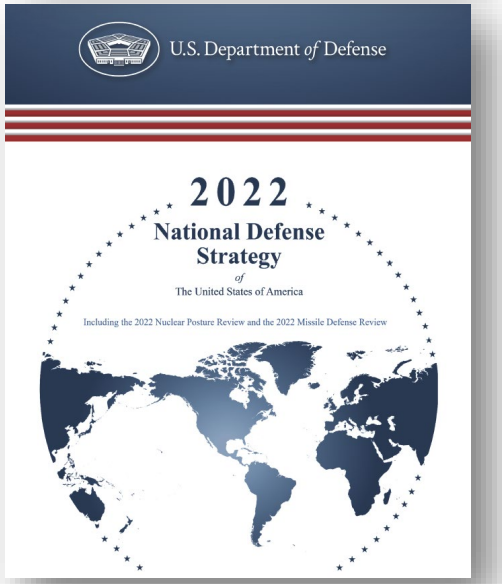
"We are working to ensure that efficiency and low embodied carbon are considered in the design specifications for new building construction and renovation projects."

"DoD [issued guidance] directing Components to maximize the use of all-electric technologies in their buildings. This will not only advance the Department's goals, as laid out in the 2022 National Defense Strategy, and the administration's goals outlined in Executive Order 14057, but also leverage the Department's growing investment in microgrid technology and electric vehicles to support mission assurance."

Evolving Statutory/Policy Landscape

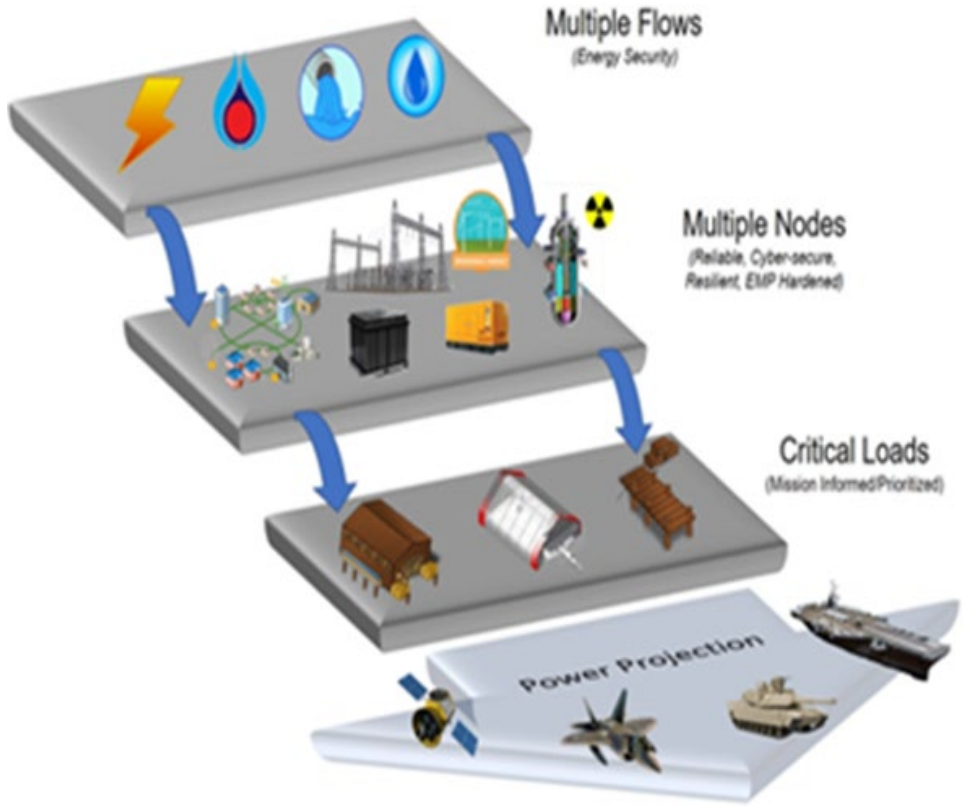
- **Statutes**
  - 10 USC 2911 and 2920 [Energy Resilience]
  - Energy Act of 2020 / Inflation Reduction Act of 2022 / Bi-Partisan Infrastructure Law
- **Administration Policy/Guidance**
  - National Security Strategy [Oct 2022]
  - E.O. 14008 - *Tackling the Climate Crisis at Home and Abroad*
  - E.O. 14057 - *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,* and Implementing Guidance
  - Federal Sustainability Plan
- **Department of Defense Policy, Plans, Guidance**
  - National Defense Strategy (NDS) [Oct 2022]
  - SECDEF Message to the Force
  - Defense Climate Risk Analysis (DCRA)
  - Climate Adaptation Plan (CAP) and Update [2022]
    - Military Service Level Climate Plans
  - DoD Sustainability Plan [2022]





National Defense Strategy (NDS) and Installation Resilience

- **NDS Top-Level Priorities**
  - Defend the Homeland [PRC is pacing threat]
    - All hazards/domain threats to our ability to project power
  - Deter strategic attacks against US, allies, and partners
  - Deter aggression while being prepared to prevail in conflict
  - Build a resilient Joint Force and defense ecosystem

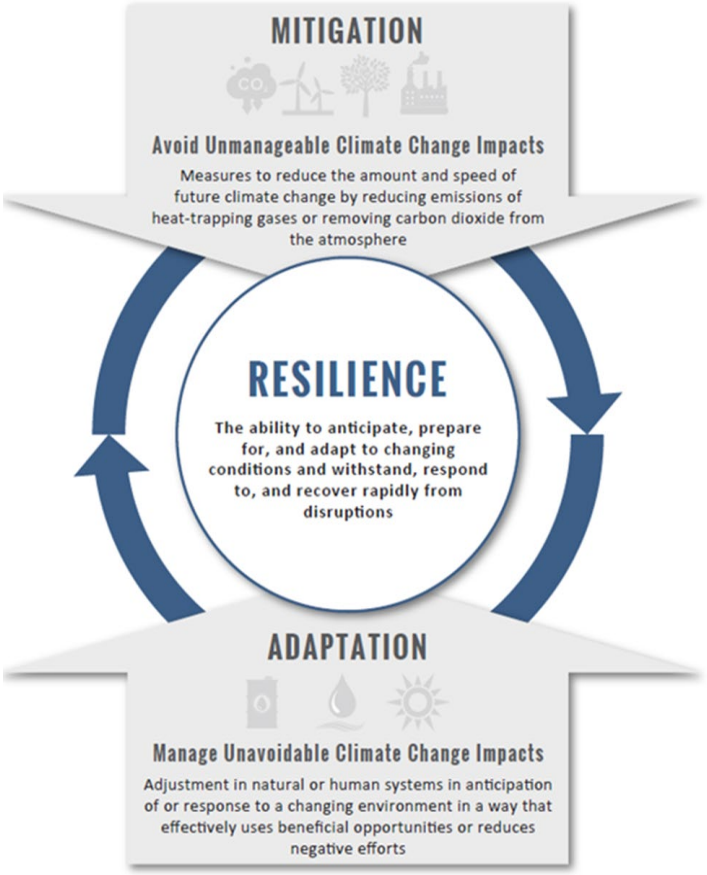


- **Advance priorities through integrated deterrence, campaigning, and building enduring advantages**
  - Increase resilience of installations and locations vital for deterrence and warfighting objectives
  - Right investments in technology including clean-energy

Installation Resilience in the Context of Climate Change

Energy, Installations, and Environment

100% Carbon Pollution-Free Electricity by 2030, including 50% on a 24/7 basis	100% Zero-Emission Vehicle Acquisitions by 2035, including 100% light-duty acquisitions by 2027	Net-Zero Emissions Buildings by 2045, including a 50% reduction by 2032
Net-Zero Emissions Procurement by 2050	Net-Zero Emissions Operations by 2050, including a 65% reduction by 2030	Climate Resilient Infrastructure and Operations
Develop a Climate- and Sustainability-Focused Workforce	Advance Environmental Justice and Equity-focused Operations	Accelerate Progress through Domestic and International Partnerships

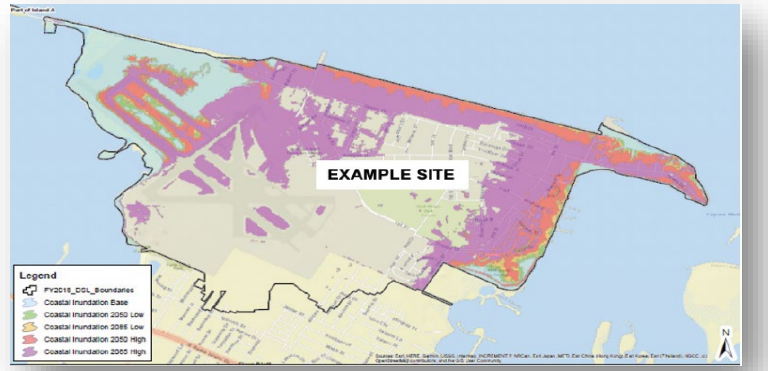


- **In accordance with Executive Order 14057, the Department has submitted initial plans to the Office of Management and Budget – Council on Environmental Quality (OMB-CEQ) addressing Zero Emission Vehicles (ZEV), Carbon Pollution Free Electricity, and Buildings Plan**
- **National Defense Authorization Act (NDAA) FY2022 – DoD Greenhouse Gas (GHG) Emissions Reduction Plan**

Installation Resilience Planning in the Context of Climate Change

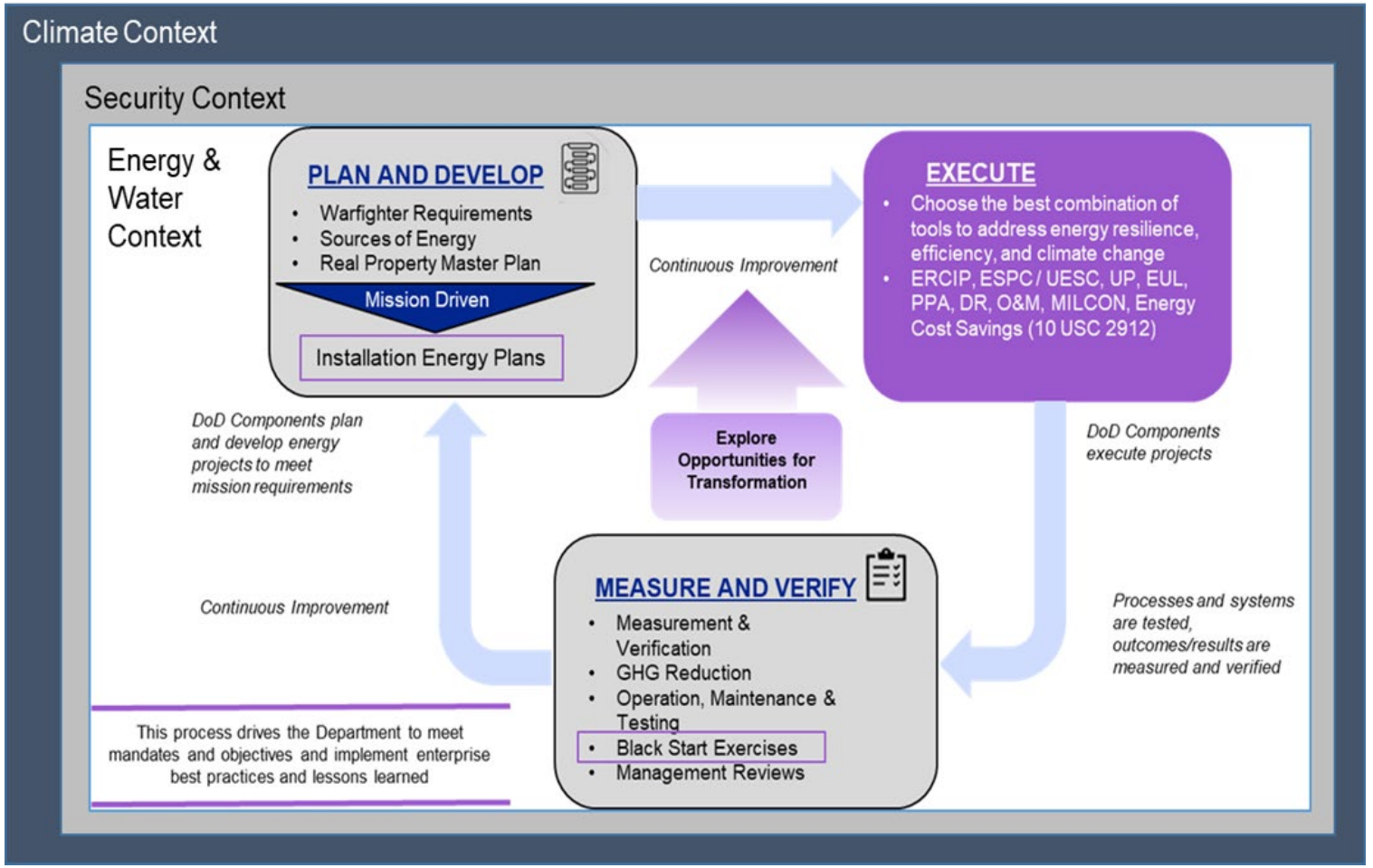
- **Installation resilience master planning *(UFC 2-100-01 / 10 USC 2864)***
  - Installation Resilience Planning – NDAA 2021
  - Installation Energy Plans (IEPs)
    - Address both Energy and Water Resilience

- **Climate Scenario Planning**
  - DoD Climate Assessment Tool (DCAT)
  - DoD Regional Sea Level Database (DRSL)



Installation Energy Plans (IEPs)

- Department continues to use the IEP process to close energy (and water) resilience gaps
  - Holistic IEP solutions should strike the right balance between resilience and efficiency
  - Utilities Privatization and UESCs are an important "tools in the toolbox"
    - Integration with ERCIP



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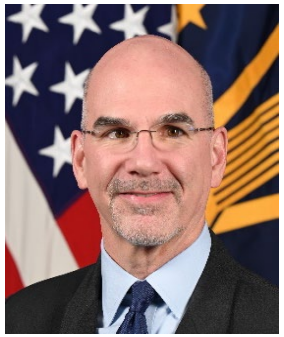
Way-Forward

- **Policy**
  - DoDI 4170.11 Installation Energy Management
  - OASD(A&S) Memo on Electrification of Standard Building Operations (March 2023)
- **Plans**
  - E.O. 14057
    - Carbon Pollution Free Electricity
    - Strategic Buildings Plan
      - Building electrification and efficiency
    - Zero Emission Vehicles (ZEV)
- **Governance**
  - DoD Data Driven Approach
  - Utilities Privatization and Performance Contracting integration with broader resilience, efficiency, and climate initiatives
  - OSD collaborating appropriately with the Services to enable efforts and remove impediments

OSD Points of Contact

Energy, Installations, and Environment



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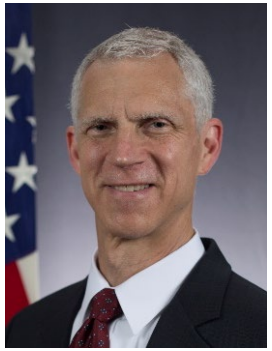

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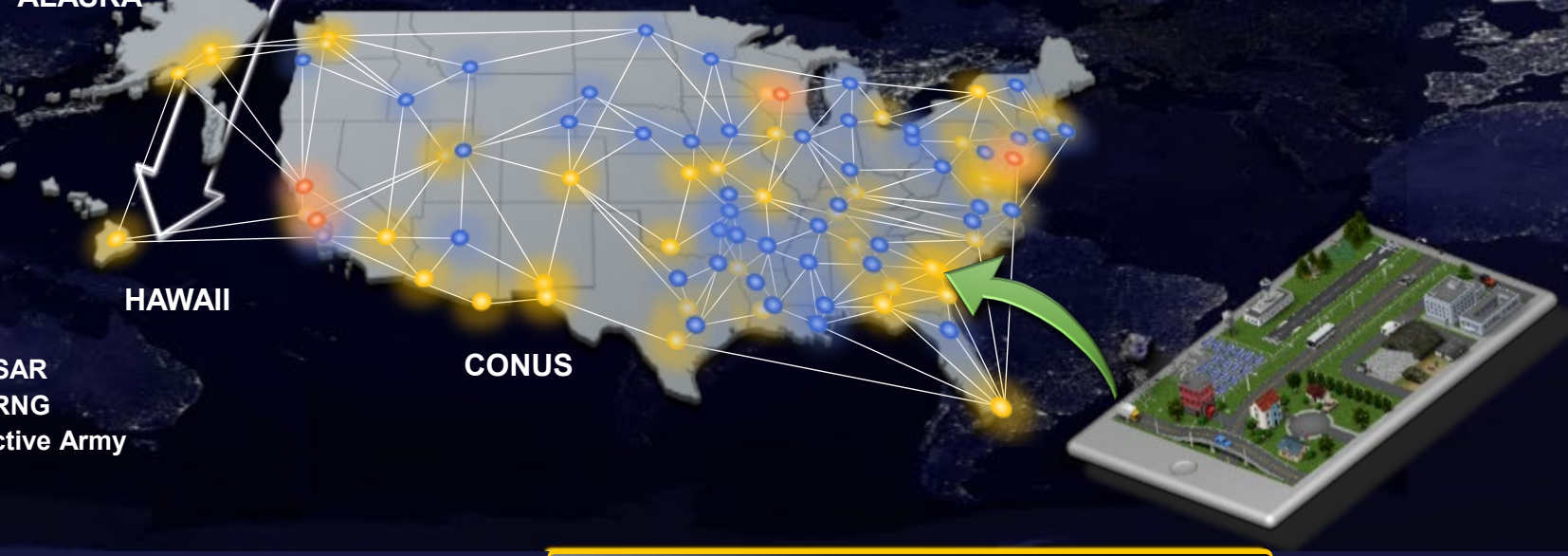
U.S. ARMY

Federal Utility Partnership Working Group Seminar

Mr. Robert Hughes
Executive Director
U.S. Army Office of Energy Initiatives

Modern Installations Support the Total Army

STRATEGIC SUPPORT AREA (SSA) and Enduring Bases



THE OPERATING ENVIRONMENT

- New Threats
- Multi-Domain Operations
- Technology

VISION

- Every Installation a Platform of Capabilities with a COP
- Constellations of Installations with Enterprise Connectivity
- Dispersed, Adaptive, Resilient

INFORMATION AGE INSTALLATIONS

Installations Strategy LOEs drive POM 23-27 funding requirements to support and enable the MDO Ready Force of 2035

- Take Care of People
- Strengthen Readiness & Resilience
- Modernize and Innovate
- Promote Stewardship

ENDSTATE

Modern, resilient, sustainable installations, enhancing strategic readiness in a contested MDO battlespace, while providing quality facilities, services & support to our Soldiers, Families & Civilians

PEOPLE READINESS MODERNIZATION

Strategic Outcomes

Enhance resilience and sustainability by adapting infrastructure and natural environments to climate change risks, securing access to training and testing lands into the future, and mitigating GHG emissions

Increase operational capacity while reducing sustainment demand and strengthening climate resilience

Prepare a force that is ready to operate in a climate-altered world

Objective Highlights

LOE 1 – Installations (29 Tasks)

- Installation Resiliency
- Microgrids on all installations
- Carbon-free energy generation
- Battery energy storage
- Reduction in GHGs
- Non-tactical vehicle fleet electrification (100% light- duty fleet by 2027)
- Energy and water conservation measures and facility retrofits

LOE 2 – Acquisitions and Logistics (36 Tasks)

- Tactical Vehicle Electrification Pathway
  - ➢ Light wheeled vehicles
    - ○ Anti-idle retrofits Hybrid to full electric drive
  - ➢ Armored tracked vehicles
  - ➢ Rapid battlefield recharge
- Promote Supply Chain Resilience
- Contingency basing, tactical microgrid, generators

LOE 3 – Training (17 Tasks)

- Improve climate literacy
- Update POIs for leader development and workforce training
- Climate effects and considerations included in wargaming

Endstate

Army increasingly resilient, capable, and ready in climate-altered environments

Army has coherent policy, resource-informed guidance, and prioritized direction

Investments optimized to protect and train people, maintain readiness, modernize equipment, and enhance partnerships

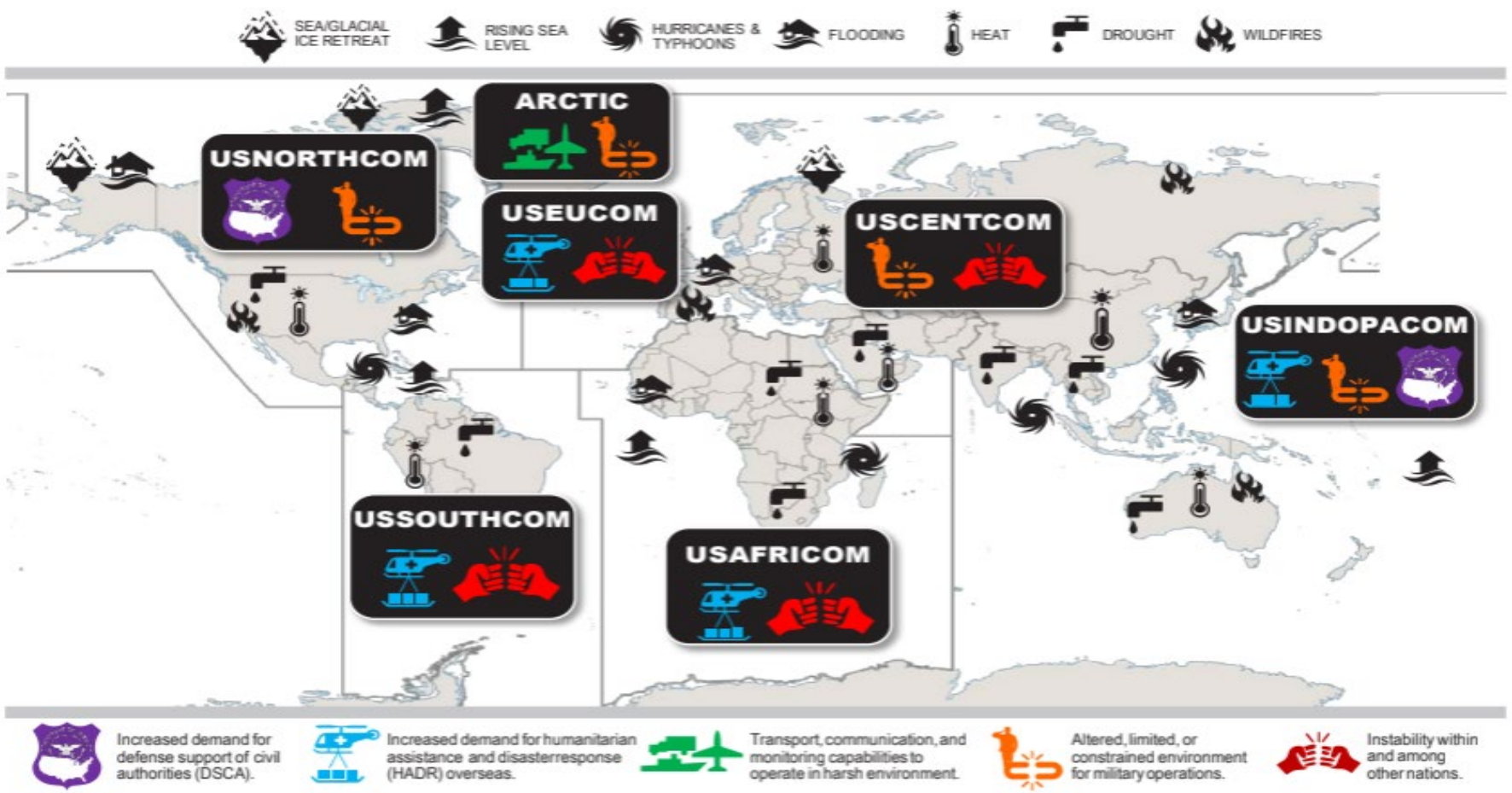
Army has and uses doctrine for a rapidly changing operational environment

Army is assisting the nation in mitigating and adapting to climate change

Why have an Army Climate Strategy?

To keep the nation secure, we must tackle the existential threat of climate change. The unprecedented scale of wildfires, floods, droughts, typhoons, and other extreme weather events of recent months and years have damaged our installations and bases, constrained force readiness and operations, and contributed to instability around the world.

- Lloyd J. Austin III, Secretary of Defense



Climate change is a threat to Army readiness.

Climate threats: coastal flooding, riverine flooding, heat, drought, energy demand, land degradation, wildfire, and extreme weather.

Climate impacts:
- **Disrupts the geopolitical balance**
- **Interrupts supply chains**
- **Damages our infrastructure**
- **Risks Soldier health through exposure to airborne irritants like smoke and dust, disease vectors, and temperature extremes.**

The Army Climate Strategy guides response to threats and mitigates risks.

Source: 2021 Department of Defense Climate Risk Analysis

- **Private Equity**
  - Real Estate Outgrants (e.g., lease, easement)
    10 U.S.C. § 2667, 10 U.S.C. § 2668
- **Private Equity capable with Army payments**
  - Power Purchase Agreements (PPA) *10 U.S.C. § 2922a*
  - Utilities Privatization (UP) *10 U.S.C. § 2688*
- **Third Party Financing**
  - Energy Savings Performance Contracts (ESPCs)
    42 U.S.C. § 8287 et seq. and 10 U.S.C. § 2913
  - Utility Energy Service Contracts (UESCs)
    42 U.S.C. § 8256(c) and 10 U.S.C. § 2866 and § 2913
- **Upfront DoD or Army Appropriated Funds**
  - Operations and Maintenance (O&M)
    - Sustainment
    - Restoration & Maintenance
    - Unspecified Minor Military Construction <$4 million
  - Military Construction (MILCON)
    - Major and Unspecified Minor >$4 million
  - Energy Resilience and Conservation Investment Program (ERCIP)
    10 U.S.C. § 2914, 10 U.S.C. § 2802
  - Availability and Use of Energy Cost Savings (REFoRM) *10 U.S.C. § 2912*
- **Qualified Recycling Program Revenues** *10 U.S.C. § 2577*
  - Up to 50% of QRP revenues can be used to fund pollution abatement, energy conservation, or safety

- **Department of Energy Grants**
  - Assisting Federal Facilities with Energy Conservation Technologies (AFFECT)
    42 U.S.C. § 8256 (b)
  - Office of Clean Energy Demonstration Programs *P.L. 117-58*
- **DoD Office of Local Defense Community Cooperation (OLDCC) Grants**
  10 U.S.C. § 2391
  - Installation Resilience
  - Defense Community Infrastructure Program (DCIP)
- **DoD Technology Grants** (RDTE approps)
  - Strategic Environmental Research & Development Program (SERDP)
    10 U.S.C. § 2901 - 2904
  - Environmental Security Technology Certification Program (ESTCP)
    10 U.S.C. § 2901 – 2904
  - National Defense Center for Energy & Environment (NDCEE) *P.L. 101-302*
- **Army Technology, Policy, Solution Studies** (OMA approps)
  - Installation Technology Transfer Program (ODCS, G-9)
  - Army Installation Modernization Pilot Program (AIMP2) (OASA (IE&E), SI)
- **State, Local, and Utility Company Rebates, Tax Deductions, and Grants**
  10 U.S.C. § 2913(b) and (c)
  - Location, contract-type, or asset ownership dependent
- **Alternative Contract Execution Authorities** (using existing Appropriated Funds)
  - Utility Service Contracts (*FAR Part 41*)
  - Other Transaction Authority (OTA), *10 U.S.C. § 2371b*
  - Intergovernmental Support Agreements (IGSAs) *10 U.S.C. § 2679*

UTILITIES

The Electric Company
El Paso Electric
Dominion Energy
Hawaiian Electric

EEI
Edison Electric Institute
TEP
Tucson Electric Power

Industry

American Water
AMERESCO
Green • Clean • Sustainable
SIEMENS
SC-B Consulting
Johnson Controls
leidos
Lockheed Martin

University of Georgia
ERDC
Engineer Research & Development Center
Pacific Northwest National Laboratory

Labs & Academia

NREL
National Renewable Energy Laboratory

Black Rapids Training Site
Fort Wainwright, AK
Alaska Energy Authority
Electric transmission lines extension
DCIP Grant: $12,752,540

Military Ocean Terminal Sunny Point
City of Boiling Springs Lake, NC
Restoration of four dams
DCIP Grant: $14,900,000

Communities

Contact OEI

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- Program Director, Project Development
- david.j.irwin22.civ@army.mil

OEI Mailbox
- usarmy.pentagon.hqda-asa-iee.mbx.energy-initiatives@army.mil

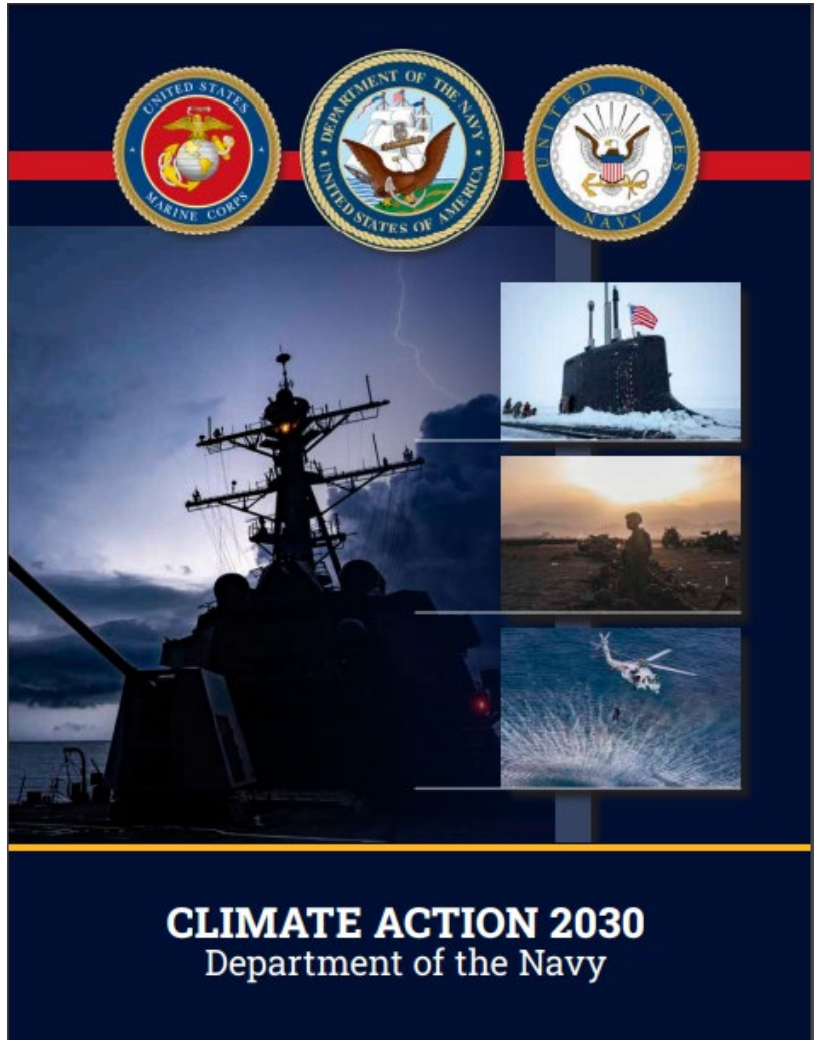
Regional Installation Energy Resilience and Security

Ms. Sandy Kline
Director of Installation Resilience
Assistant Secretary of the Navy (Energy, Installations and Environment)

1 May 2023

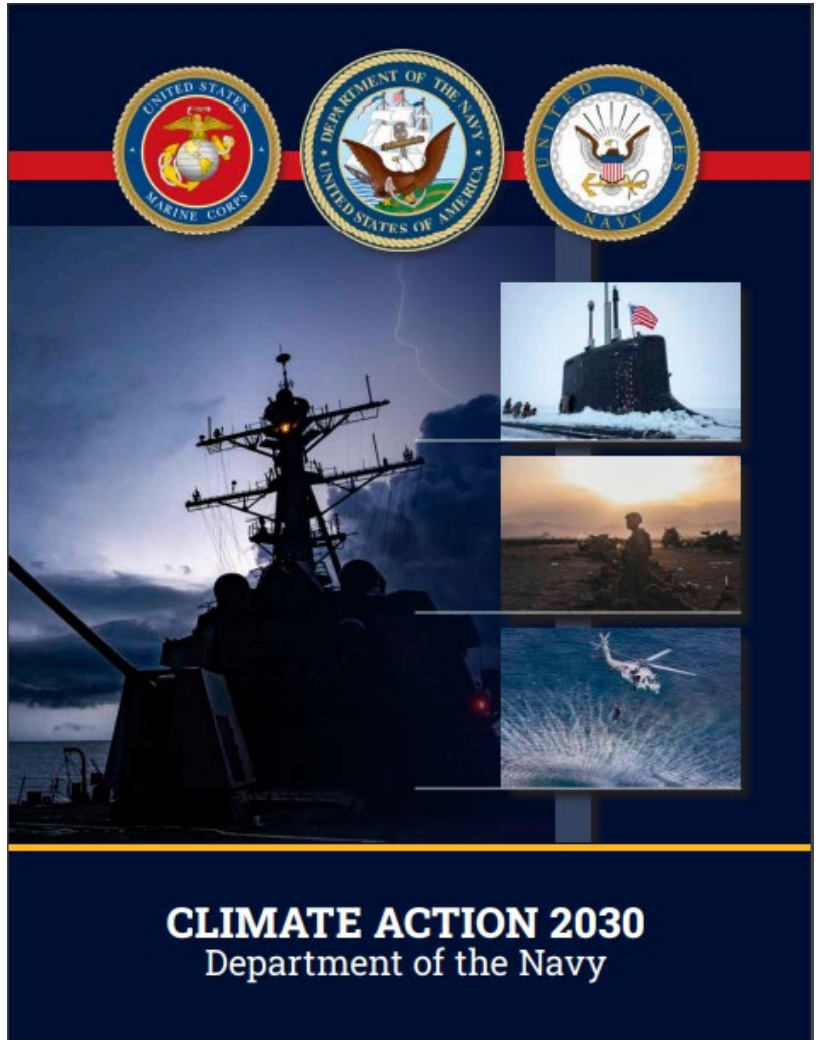
Climate Action 2030 Campaign Plan: Facilities & Land Goals

- **Complete: Installation Climate Resilience Plans (ICRP)**
  - 40 Additional Navy and Marine Corps Installations by 2025
- **Sustainable Building Materials Pilot, Building Decarbonization Pilots**
  - Building Materials Pilot – NSA Hampton Roads (September 2023)
  - Decarbonization Pilot – JEB Little Creek-Fort Story (September 2024)
  - Decarbonization Pilot – MCAS Cherry Point (September 2025)
- **Complete: Natural Infrastructure Opportunity Assessments**
  - 15 Installations by 31 December 2023
  - Assessments build resilience and reduce climate impacts
- **Reduce: Potable Water Use (-15% by FY30, from FY21 Baseline)**
  - Work with DOE on targets beyond initial 15% reduction target
  - Conducting water security assessments in the West for “at-risk” installations
- **Continue: Integrated Solid Waste Management Approach**
  - 12+ Installations Collect and Reuse Organic Waste by 2026
  - Increase diversion of waste from landfills



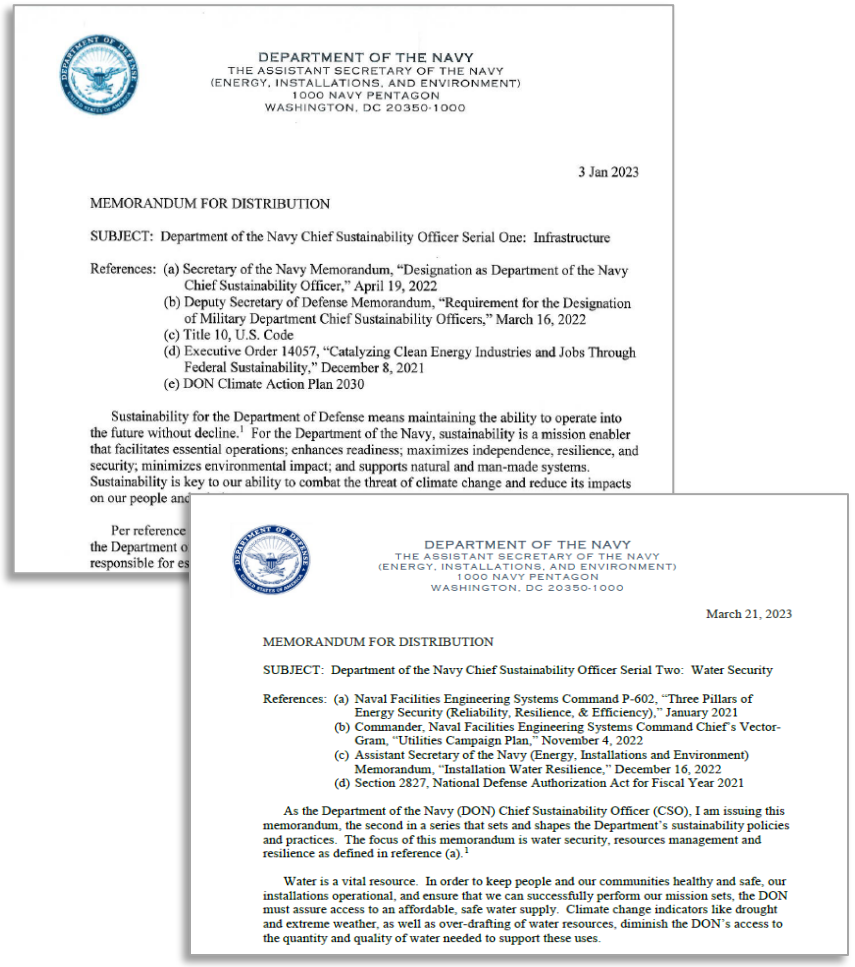
Climate Action 2030 Campaign Plan: Energy Goals

- Deploy cyber-secure microgrids at **30% of DON installations** where critical assets reside, on or before **1 January 2027**, to enable **14-day off-grid energy resilience**.
- Accelerate energy resilience, microgrid, renewable energy, and long-duration battery storage projects through DON and Energy Resilience and Conservation Investment Program (ERCIP) funding, to include at least **$1B in annual ERCIP submissions starting in POM FY2025**.
- Achieve **$1B in energy savings and/or cost avoidance** through Third-Party Financing on or before **30 September 2027**.
- Execute on-site renewable energy generation and distributed energy projects, to support the achievement of **100% CFE consumption on bases by 2030**.



Chief Sustainability Officer Series

Sustainability through Infrastructure, Water Security, Acquisition & Procurement



DEPARTMENT OF THE NAVY
THE ASSISTANT SECRETARY OF THE NAVY
(ENERGY, INSTALLATIONS, AND ENVIRONMENT)
1000 NAVY PENTAGON
WASHINGTON, DC 20350-1000

3 Jan 2023

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Department of the Navy Chief Sustainability Officer Serial One: Infrastructure

References: (a) Secretary of the Navy Memorandum, "Designation as Department of the Navy Chief Sustainability Officer," April 19, 2022
(b) Deputy Secretary of Defense Memorandum, "Requirement for the Designation of Military Department Chief Sustainability Officers," March 16, 2022
(c) Title 10, U.S. Code
(d) Executive Order 14057, "Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability," December 8, 2021
(e) DON Climate Action Plan 2030

Sustainability for the Department of Defense means maintaining the ability to operate into the future without decline.[1] For the Department of the Navy, sustainability is a mission enabler that facilitates essential operations; enhances readiness; maximizes independence, resilience, and security; minimizes environmental impact; and supports natural and man-made systems. Sustainability is key to our ability to combat the threat of climate change and reduce its impacts on our people and

Per reference
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DEPARTMENT OF THE NAVY
THE ASSISTANT SECRETARY OF THE NAVY
(ENERGY, INSTALLATIONS, AND ENVIRONMENT)
1000 NAVY PENTAGON
WASHINGTON, DC 20350-1000

March 21, 2023

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Department of the Navy Chief Sustainability Officer Serial Two: Water Security

References: (a) Naval Facilities Engineering Systems Command P-602, "Three Pillars of Energy Security (Reliability, Resilience, & Efficiency)," January 2021
(b) Commander, Naval Facilities Engineering Systems Command Chief's Vector-Gram, "Utilities Campaign Plan," November 4, 2022
(c) Assistant Secretary of the Navy (Energy, Installations and Environment) Memorandum, "Installation Water Resilience," December 16, 2022
(d) Section 2827, National Defense Authorization Act for Fiscal Year 2021

As the Department of the Navy (DON) Chief Sustainability Officer (CSO), I am issuing this memorandum, the second in a series that sets and shapes the Department's sustainability policies and practices. The focus of this memorandum is water security, resources management and resilience as defined in reference (a).[1]

Water is a vital resource. In order to keep people and our communities healthy and safe, our installations operational, and ensure that we can successfully perform our mission sets, the DON must assure access to an affordable, safe water supply. Climate change indicators like drought and extreme weather, as well as over-drafting of water resources, diminish the DON's access to the quantity and quality of water needed to support these uses.

Serial One: *Infrastructure*

- Focused on sustainable design and facility decarbonization
- Incorporates sustainable design elements into construction, quantifies consumption, intensity, and emissions reduction in sustainable design and directs electrification of systems, and the elimination of fossil fuel combustion systems
- Increases in energy efficiency & resiliency

Serial Two: *Water Security*

- Focused on water conservation, 14-day water availability, groundwater recharge, and water resilience manpower requirements
- Specific goals and requirements addressed and tasked via the DON Water Resilience Working Group to ensure goals and timelines are met

Serial Three: *Acquisition and Procurement*

- Focused on purchasing sustainable products and services identified by the EPA, incorporating supply chain resilience into risk and acquisition strategy of platforms, and training and educating acquisition workforce on climate risk and sustainability

Regional Resilience

Regional Resilience Approach:

Phase 1	Phase 2	Phase 3	Phase 4
Data Collection and Infrastructure Assessment	Stakeholder Interviews and Scenario Simulation	Facilitated Workshop(s) and Project Concept Development	Implementation Plan

Regional Resilience Work Products:

Infrastructure Assessment	Implementation Plan	Post-Workshop Engagement
A comprehensive analysis of regional infrastructure interdependencies, including electricity, water, wastewater, natural gas, and communications.	A summary report of project concepts explored at the workshop, including 30-60-90 day action plan for execution and applicable funding pathways.	A series of follow-up sessions with each project concept team.

Installation Energy Security

Energy security is critical to our mission. Improving our clean, distributed energy capacity improves the resilience and efficiency of our force and installations and provide costs savings.

Energy Resilience & Efficiency

- Deploying cyber-secure microgrids at 30% of DON installations where critical assets reside, to enable 14-days off-grid.
- Accelerating energy resilience, microgrid, clean energy, and long-duration battery storage.
- Employing third-party financing to achieve $1B in cost avoidance, energy savings, and energy infrastructure to reduce energy demand and emissions.
- Execute on-site clean energy generation and distributed energy projects to support national goal of 100% CFE on bases by December 2030.
- Conduct a minimum of 10 Energy Resilience and Energy Exercises per FY starting FY2024, to inform climate resilience investments.

Electric Vehicles

- Expanding charging infrastructure and 100 percent zero-emission light-duty vehicle acquisition by 2027.

Examples

- DON has awarded $3.75 billion in third party finance contracts to date. FY22 projects include:
  - UESCs – NAS Pensacola ($7.7M); NB Ventura County ($6.1M); MCB Camp Lejeune ($0.92M) that included a ($20.8M) ERCIP project
  - EUL – JBPHH Site 6 ($18M)
  - Privatization – NS Mayport Wastewater ($340M over 50yrs)

Lt. Col. Brandon Newell, Director of Technology and Partnerships for the Marine Corps Installation Next program observes solar panels at MCAS Miramar. Miramar's microgrid has supported California's grid to support demand response, availing enough energy to supply ~3,000 homes.

Installation Energy Status Update

Mr. Douglas Tucker
Dir., Installation Energy Policy & Programs
Office of the Deputy Assistant Secretary
(Environment, Safety, and Infrastructure)
Current as of 21 April 2023

Agenda

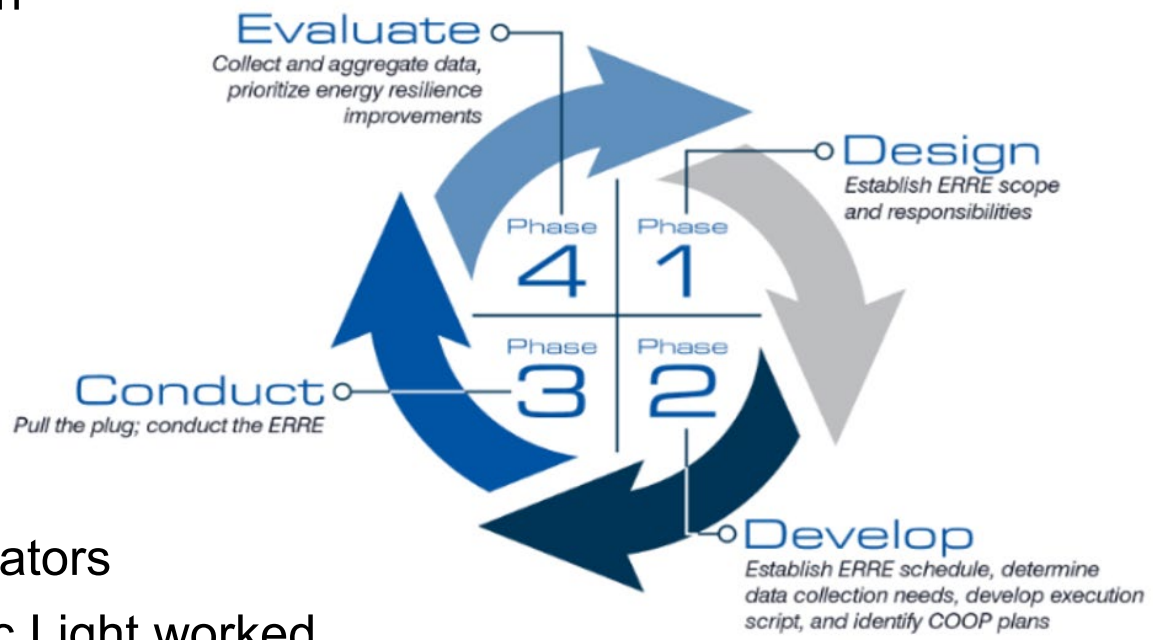
- DAF Priorities
- Resilience
  - Energy Resilience Readiness Exercises (ERREs)
  - Installation Energy Plans (IEPs)
- Zero Emission Vehicle Pilot Programs
- Carbon Pollution-Free Electricity
- Micro-reactor Pilot Program Development

DAF Priorities

- **DAF Climate Action Plan:**
  - **PRIORITY 1 – MAINTAIN AIR AND SPACE DOMINANCE IN THE FACE OF CLIMATE RISKS**
  - **PRIORITY 2 – MAKE CLIMATE-INFORMED DECISIONS**
  - **PRIORITY 3 – OPTIMIZE ENERGY USE AND PURSUE ALTERNATIVE ENERGY SOURCES**
- **SAF/IEE initiatives in support of climate-informed energy assurance:**
  - **Resilience:** Reliable access to energy and water
  - **Electrification:** Transition 100% of non tactical vehicle fleet acquisitions to zero emission vehicles by FY2035
  - **Carbon Pollution-Free Electricity:** 100% net annual CFE consumption by FY2030
- **Bottom Line:** Our work isn't about climate for climate's sake or energy for energy's sake. It's about ensuring the DAF can keep succeeding at its missions in the future like it has for the last 75 years.

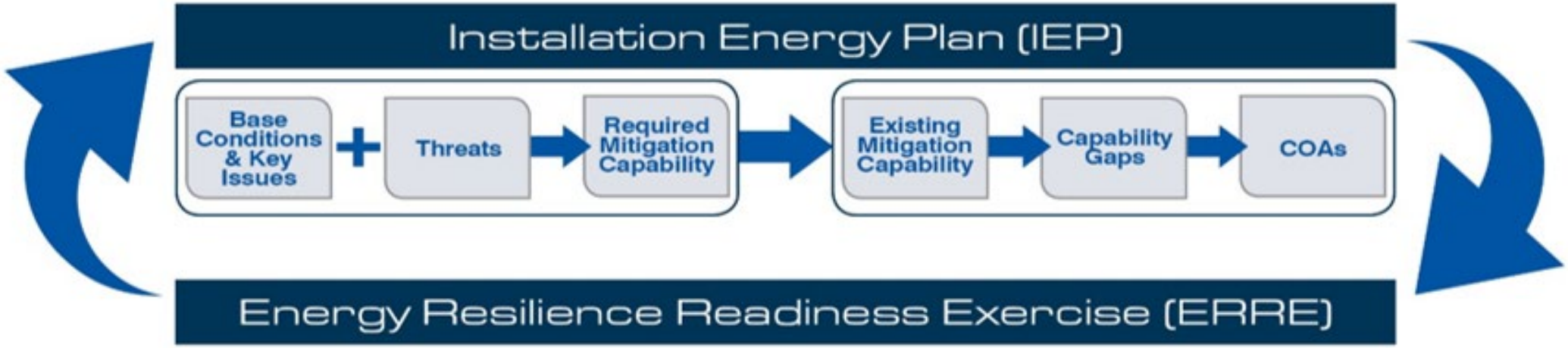
Energy Resilience Readiness Exercises

- **Purpose:** Test operations in a degraded energy environment (no commercial power for 8-12+ hrs) to identify hidden interdependencies among missions & enabling infrastructure
- **Efforts to Date:** Conducted 16 ERREs to date with plan for 5 ERREs/year
- **Utility Partnership:** Close collaboration with the serving utility is key
  - Joint Base Charleston: Worked with both Santee Cooper and Dominion Energy to receive real-time load depictions with event timestamps obtained from field observation from the technical facilitators
  - Westover Air Reserve Base: Chicopee Electric Light worked alongside our Civil Engineer Squadron to carry out the switching sequences



Building Resilience – ERREs and IEPs

- **Assess -** ERRE outputs inform installation and mission baselines (e.g., base conditions, key issues, potential threats) and required mitigation capabilities
- **Verify -** Installation Energy Plan outputs (e.g., resilience scorecard) inform ERRE scope
  - In turn, ERREs help verify noted mitigation capabilities, gaps, and planned or executed solutions
- **Track -** Relevant ERRE findings, recommendations, and proposed follow-up projects are tracked in an installation's IEP to ensure closure of resiliency gaps



Zero Emissions Vehicles

- **Translating Fleet Electrification into DAF's Strategic Energy Resilience Ecosystem**

MISSION RESILIENCE
Infrastructure and acquisition needs to be well timed to maintain and improve vehicles' mission performance. Host tenants needs should be communicated clearly from the beginning.

ENERGY RESILIENCE
Electrification efforts support mid- and long-term goals to improve energy use and reduce emissions. Planning takes into consideration on-base distribution generation and storage.

COMMUNITY RESILIENCE
Successful fleet electrification is supported by partnerships to provide electrification infrastructure and energy generation, transmission outside the fence line.

CYBER RESILIENCE
Will determine how we integrate telematics and data management into electrification.

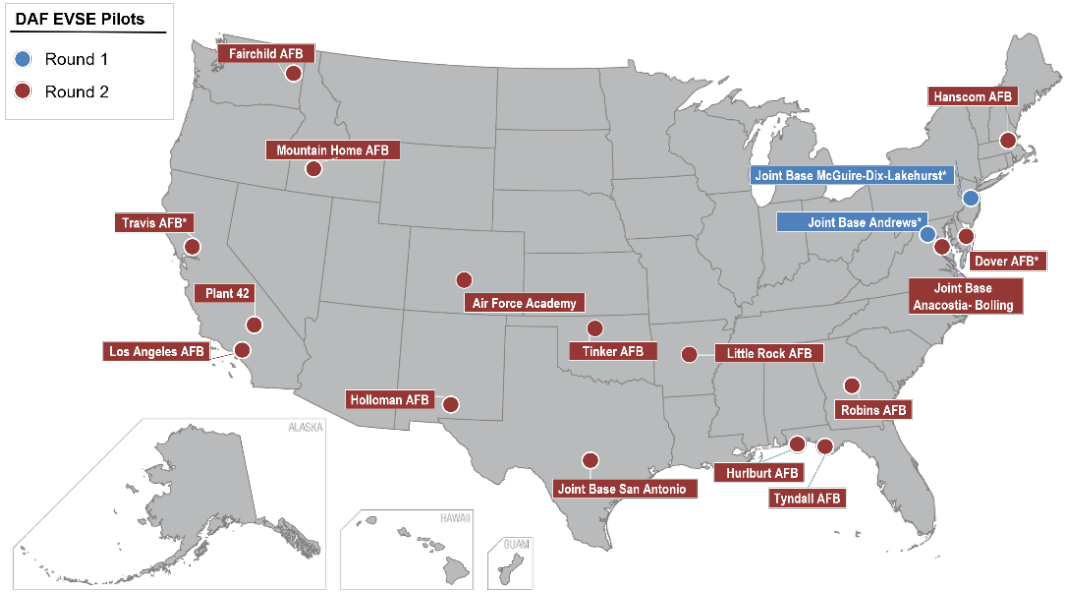
CLIMATE RESILIENCE
Transition to ZEV reduces the DAF's climate footprint through reduction of tailpipe emissions.

DAF Fleet Electrification

- **Zero Emission Vehicle (ZEV) Acquisitions**
  - Focus on leases while training is developed for blue fleet
  - 895 ZEVs ordered for FY23 (March 2023)
- **Policy Considerations**
  - Prioritizing Make-Ready Infrastructure
  - Integrating resilience opportunities
- **Fleet Electrification Pilot Program**
  - 6 sites contracting with Defense Innovation Unit's Charging as a Service Program
  - 18 pilot sites in progress
  - DAF Fleet Electrification Framework (Spring 2023) will provide installations guidance on charging infrastructure requirements and acquisition strategy

Project Components

	Make-Ready	EV Charger	O&M	Resilience
Phase Requirement	All conduit, wiring, and concrete work needed to support charging station	Station mounting and wiring. Cellular repeaters installed if optioned	Payment processing, cyber updates, utility optimization, and reimbursements	Distributed generation, energy storage, control systems



Carbon Pollution-Free Electricity (CFE)

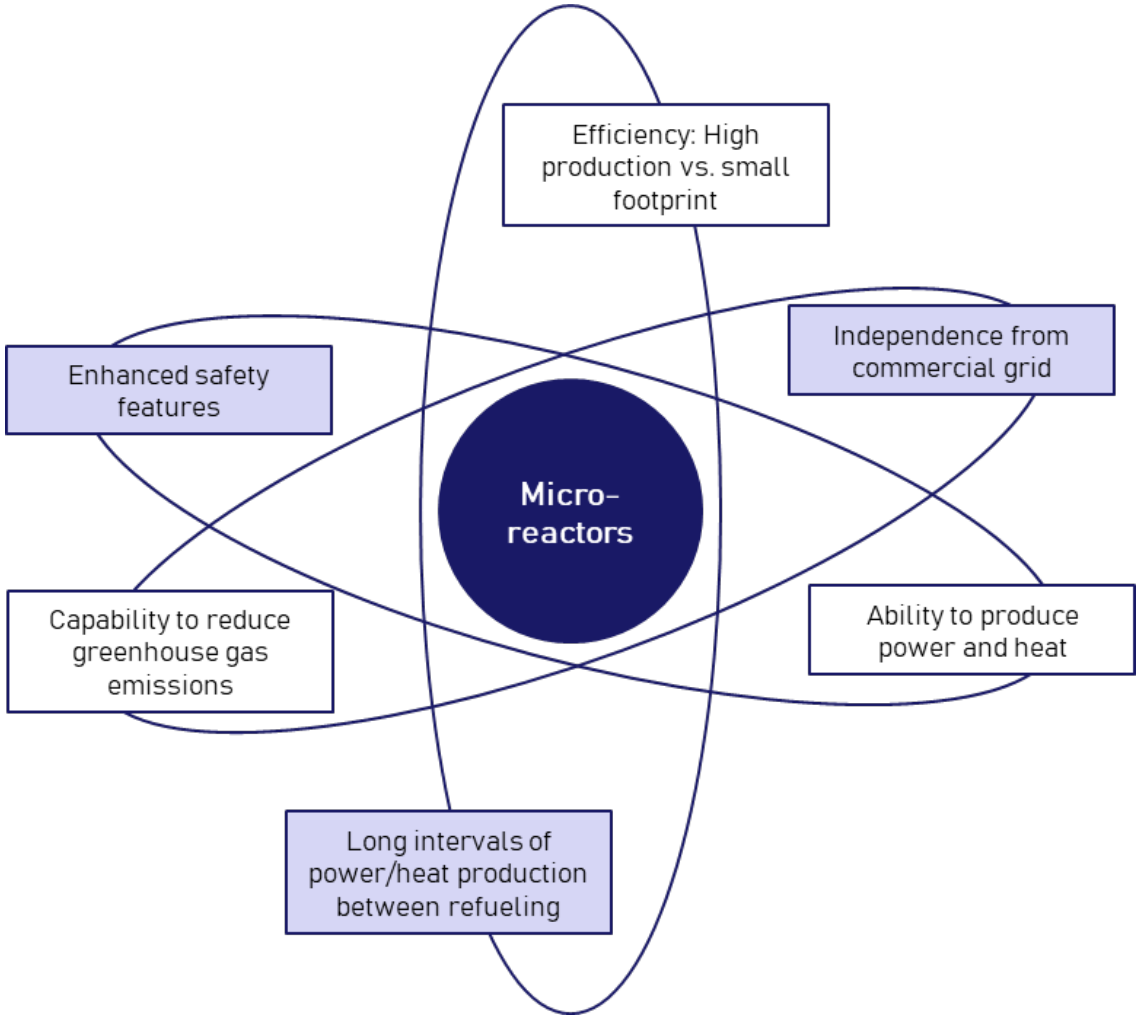
- **CFE Procurement & Sustainability Data Pilot Status**
  - DAF is supporting DoD pilots for CFE procurement at Seymour Johnson AFB, Shaw AFB, Dyess AFB, and with 147th & 149th TX ANG
  - Engaging with Entergy (AR) and Xcel Energy (CO) on potential CFE tariffs or green tariffs, which operate in regions where Little Rock AFB and Buckley SFB are located
  - DAF is supporting DoD pilots to work with utility partners to establish real-time electric utilities data feeds into Advana

- **Next Steps**
  - DAF pursuing CFE projects through variety of execution vehicles (PPA, EUL, UESC/ESPC, ERCIP) and utility CFE procurements

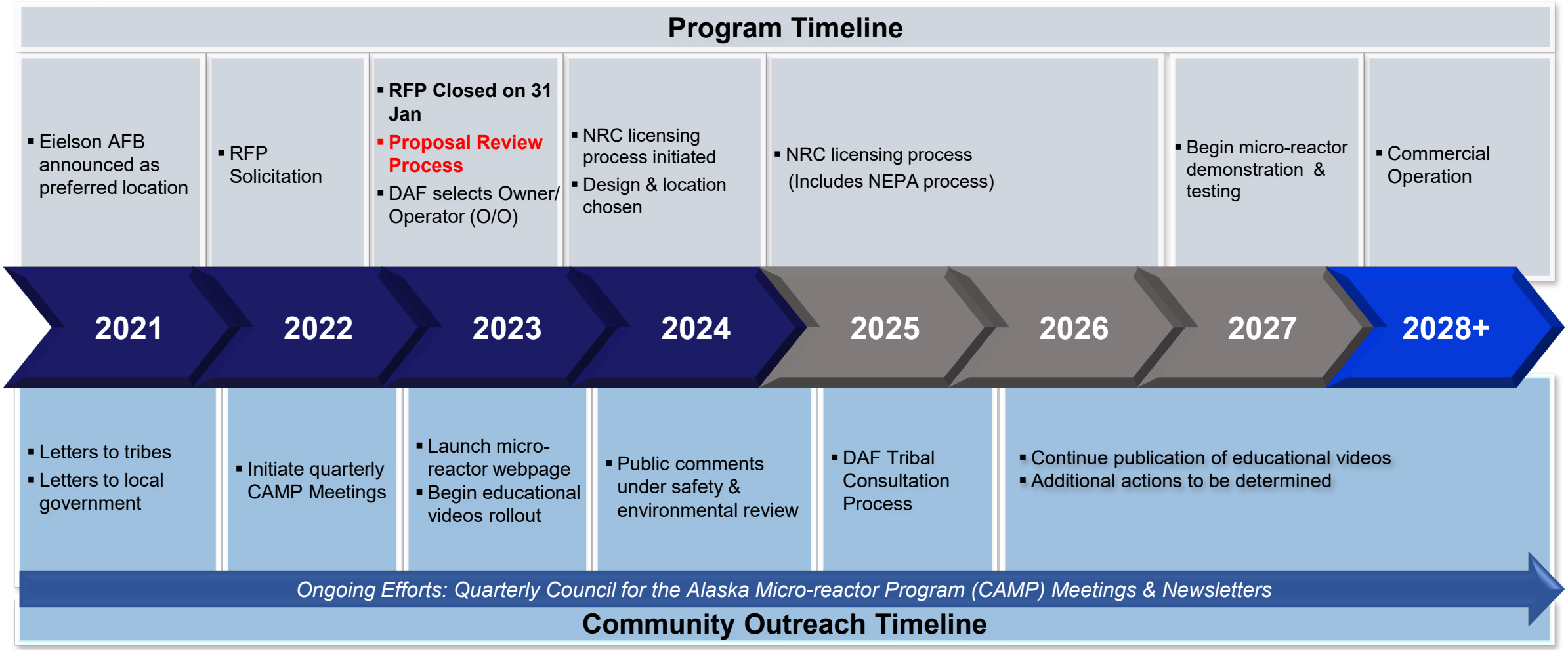
Eielson AFB Micro-Reactor Project

SAF/IEE is partnering with Defense Logistics Agency Energy Office to execute a power purchase agreement (PPA) with a third-party developer.

The developer will license, own, and operate a micro-reactor, to deliver electricity and steam to Eielson AFB property in exchange for DAF's long-term purchase of energy it generates.



Eielson AFB Micro-Reactor Project



U.S. DEPARTMENT OF ENERGY

FEMP Carbon Pollution-Free Electricity (CFE) Purchasing Options Web Lookup Tool

Nichole Liebov (FEMP)

May 1, 2023

FEMP
Federal Energy Management Program

Executive Order 14057 & CFE

- **Executive Order (E.O.) 14057: Catalyzing America's Clean Energy Economy Through Federal Sustainability** (Signed 12/8/2021)
  - E.O. 14057 (Section 102a) goals include:

100% CFE on a net annual basis by 2030 (incl. 50% 24/7 CFE)

100% zero-emission vehicle acquisitions by 2035

Net-zero emissions building portfolio by 2045

65% reduction in Scope 1 & 2 emissions by 2030

- **E.O. 14057 Implementing Instructions: Provide Federal executive departments and agencies with direction for implementing E.O. 14057**

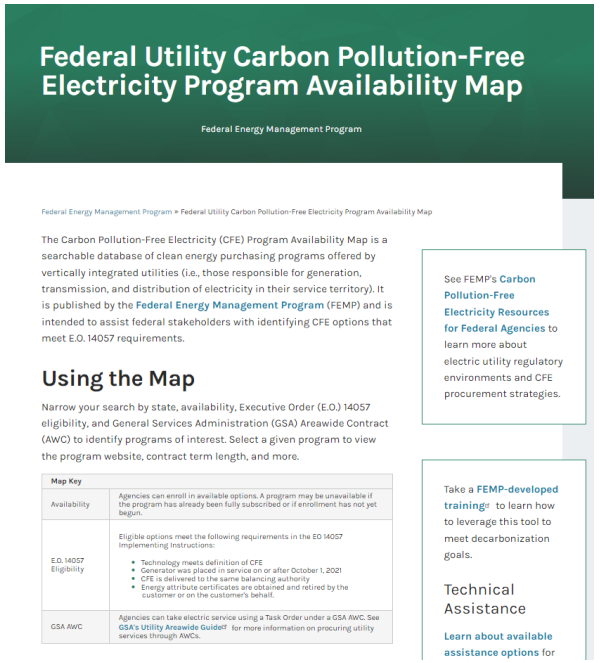
Key Terminology

- **Carbon pollution-free electricity (CFE):** Electrical energy produced from resources that generate no carbon emissions including **marine energy**, **solar**, **wind**, **hydrokinetic** (including tidal, wave, current, and thermal), **geothermal**, **hydroelectric**, **nuclear**, **renewably sourced hydrogen**, and **electrical energy generation from fossil resources** to the extent there is **active capture and storage of carbon dioxide emissions** meeting EPA requirements. (from E.O. 14057, Section 603d)
- **Energy Attribute Certificate (EAC):** "EACs are a tradeable, market-based instrument that represents the legal property rights to all non-power attributes of CFE generation. The EAC owner has exclusive rights to make claims about "using"… the electricity associated with that EAC. An EAC is issued for every megawatt-hour (MWh) of electricity generated and delivered to the electric grid from a CFE resource." Renewable Energy Certificates are a common type of EAC. (from Environmental Protection Agency)

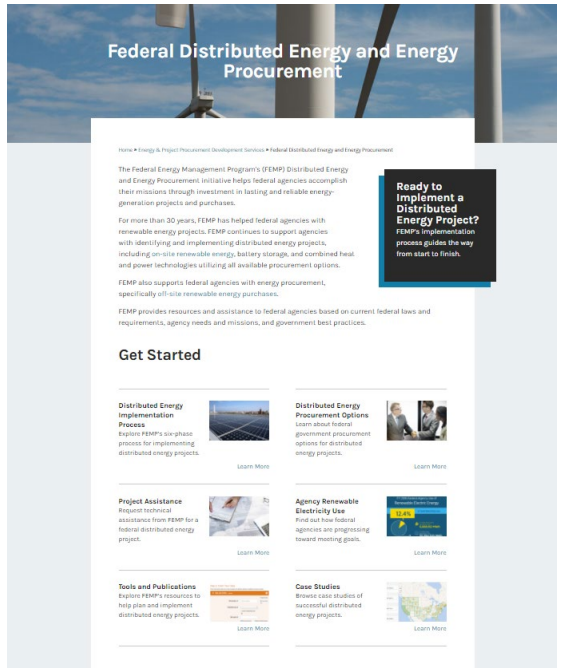
CFE and Distributed Energy FEMP Resources

FEMP facilitates the planning and implementation of cost-effective on-site projects and the procurement of CFE from off-site sources for federal agencies.

[CFE Resources for Federal Agencies Website]

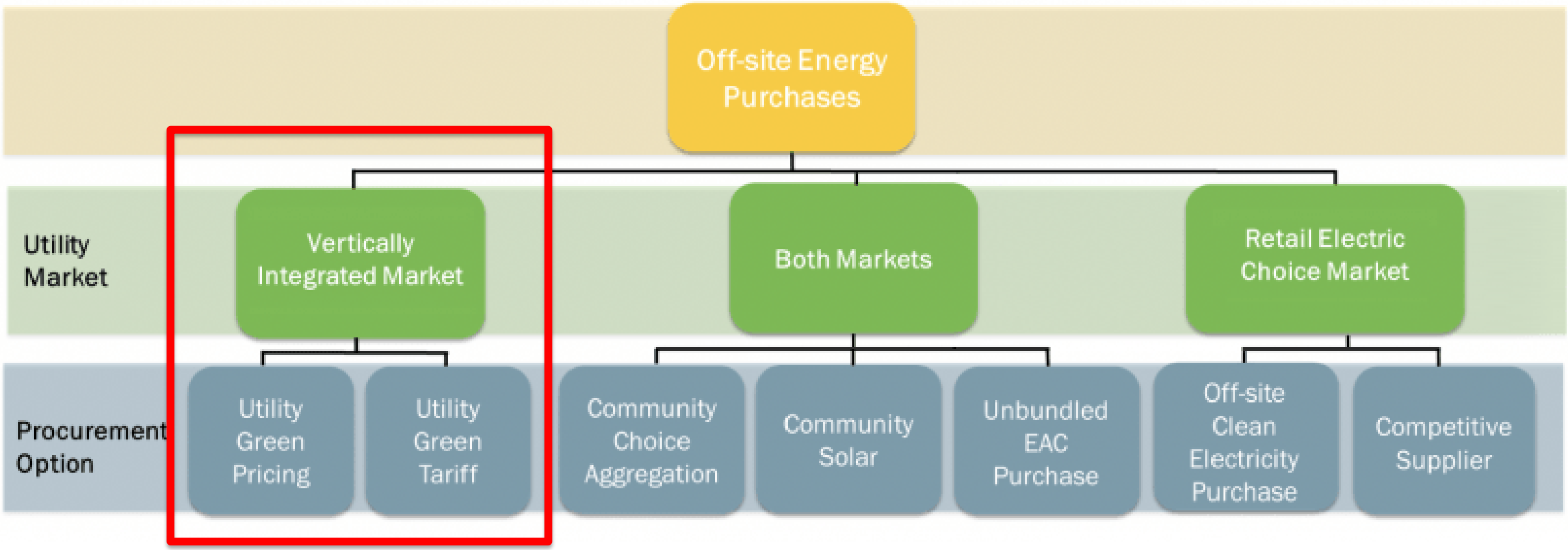


[Federal Utility CFE Program Availability Map Website]



[FEMP's Distributed Energy Program Website]

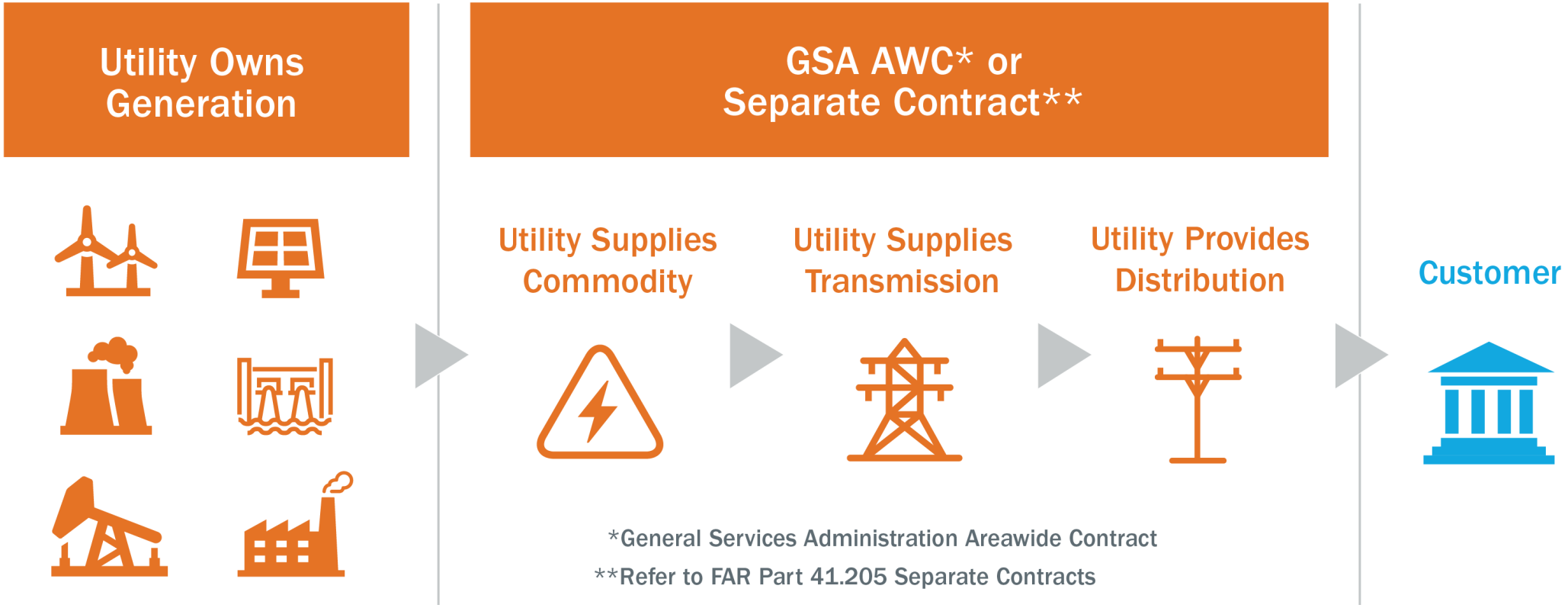
Current Federal Procurement Pathways – Off-Site



Federal Off-Site Clean Energy Procurement Options

Overview of Vertically Integrated Markets

Utilities offer electric service to their customers via tariffs, which are pricing schedules approved by the relevant state utility commission.

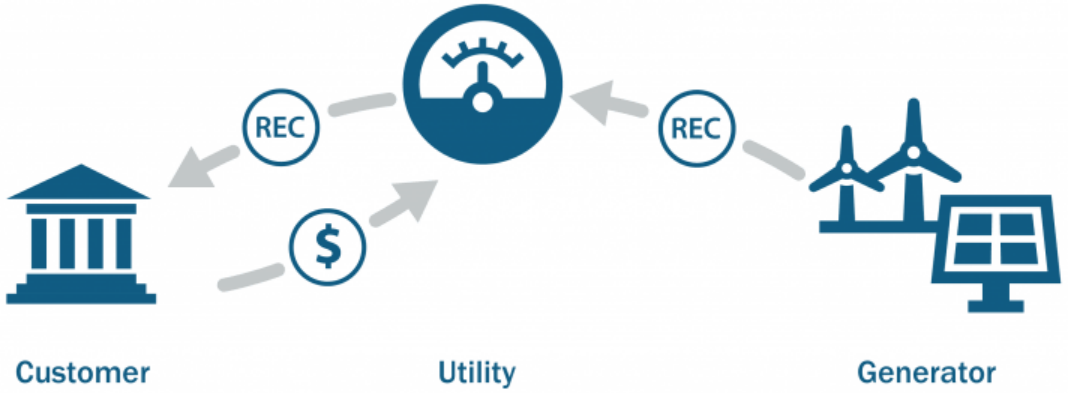


Note: Electric cooperatives are generally structured as vertically integrated providers, except that they are overseen by their board of directors, not by a state commission

FEMP's Carbon Pollution-Free Electricity Resources for Federal Agencies

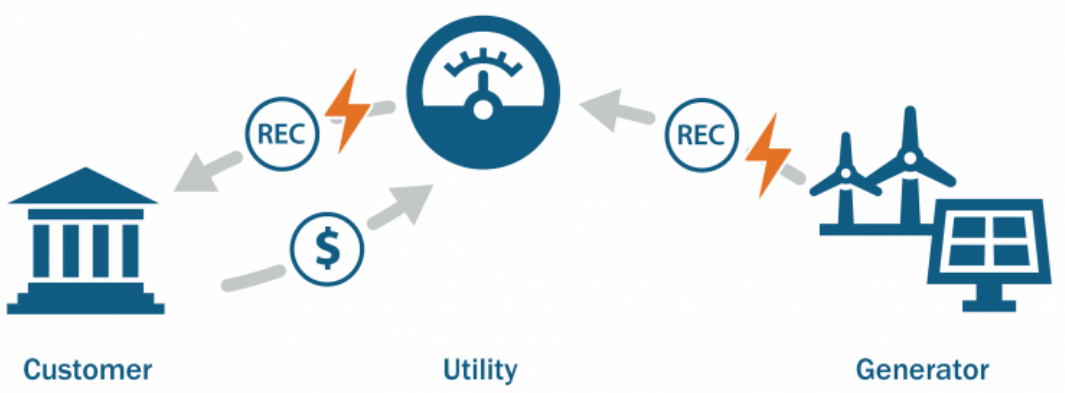
Program Types

Utility Green Pricing



- The utility either owns the generator or purchases EACs from a third-party owned generator.
- The utility retires the EACs on behalf of green pricing customers, who pay a premium on their utility bills.

Utility Green Tariff

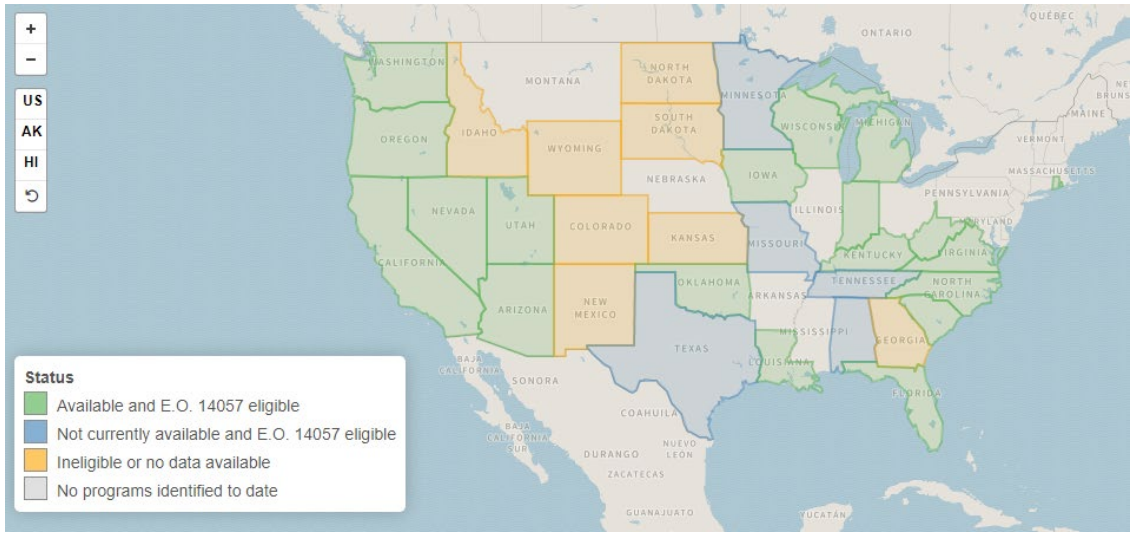


- Utility green tariff programs involve a customer purchasing both electricity and EACs.
- The customer continues to pay the utility under a modified green tariff, with potential for bill savings over time.

FEMP's Off-Site Clean Energy Procurement Options Page

Federal Utility CFE Program Availability Map

- **Searchable database with programs from a review of 89 utilities in vertically integrated markets with preponderance of federal electricity consumption**
- **Filter by:**
  - State
  - Program availability
  - E.O. 14057 eligibility
  - GSA Areawide Contract
- **Select a program for additional information (e.g., program website, contract term length)**



Utility	Program Name	State	Availability	E.O. 14057 Eligibility	GSA Areawide Contract
Ameren Corporation, formerly Union Electric Co (MO)	Renewable Solutions	Missouri	Fully subscribed/Not currently available	Yes	Yes
Appalachian Power Co (AEP)	Green Pricing Option	West Virginia	Available	Yes	Yes
Arizona Public Service Co	Green Power Partners Option A - Green Connect	Arizona	Available	Yes	Yes

Federal Utility Carbon Pollution-Free Electricity Program Availability Map

All information included in the database is to the best of our knowledge and is subject to change over time. Agencies should confirm program availability and E.O. 14057 eligibility with their serving utility.

Program Map Filter Criteria: Eligibility & Availability

- **E.O. 14057 Eligibility (default shows eligible options)**
  - Programs must meet all requirements:
    - Technology meets definition of CFE
    - Generator was placed in service on or after October 1, 2021
    - CFE is delivered to the same balancing authority as the federal agency site
    - Energy attribute certificates (EACs) are obtained and retired by the customer or on the customer's behalf
- **Availability**
  - **Available-** Agencies can enroll in available options
  - **Not Currently Available-** Program is either fully subscribed or enrollment has not yet begun

Program Map Filter Criteria: GSA Areawide Contract

- **Areawide Contract (AWC) -** Agencies may take electric service via a Task Order under the GSA AWC.
  - GSA establishes long-term (10-year maximum term) government-wide contracts with vertically integrated public utility companies across the US.
    - Services include electricity, natural gas, water, wastewater and steam.
  - GSA is the only agency authorized to sign an AWC, but once signed, the agreement can be used by any federal agency in that particular utility service territory.
  - Agencies could consider procuring CFE under Exhibit A of the AWC.

List of GSA Areawide Contracts

CFE Program Availability, Eligibility & Pricing

- 88 CFE programs identified across 38 states
- **35 programs are currently available and compliant with E.O. 14057 CFE requirements**
  - Others are either fully subscribed, not yet open for enrollment, or ineligible
- Identified cost premiums range from $0.00016 to $0.075 per kWh
  - Most of these programs are available to all customers
- Pricing for other programs is determined based on system construction cost, subscription size and contract term, among other factors
  - These programs are typically limited to non-residential customers with large demand

CFE Program Terms

- **Contract length:**
  - 6 available and E.O. 14057-eligible programs have month-to-month contract options
  - Contract terms ranging from 1-20 years are available for certain programs (depending on agency contracting authority)
- **Varying subscription size requirements:**
  - Some utilities use specific subscription "block" sizes
  - Some require customers to subscribe to a certain percentage of their total load (25%, 50%, 100%)
  - Some allow for subscriptions in any amount (dollar or percent of load)

Key Takeaways

Use FEMP's CFE Program Availability Map for sites in vertically integrated markets

Review program terms to understand utility cost implications of enrollment & confirm eligibility with your utility

The tool has identified 35 programs to date that are currently available and compliant with E.O. 14057 CFE requirements

Not every program has been evaluated; absence from the map does not imply ineligibility

Not every utility offers a CFE program that meets E.O. 14057 requirements

Map Updates, Corrections & Additions

- **FEMP is seeking input from utilities to ensure that program information is accurate and up-to-date**
- **Updates will be made quarterly**
- **To correct an existing entry:**
  - Please reach out indicating which fields need to be updated
- **To add a program to the map,**
  - Please complete and submit the following template:

CFE Program Template

(click icon to open spreadsheet)

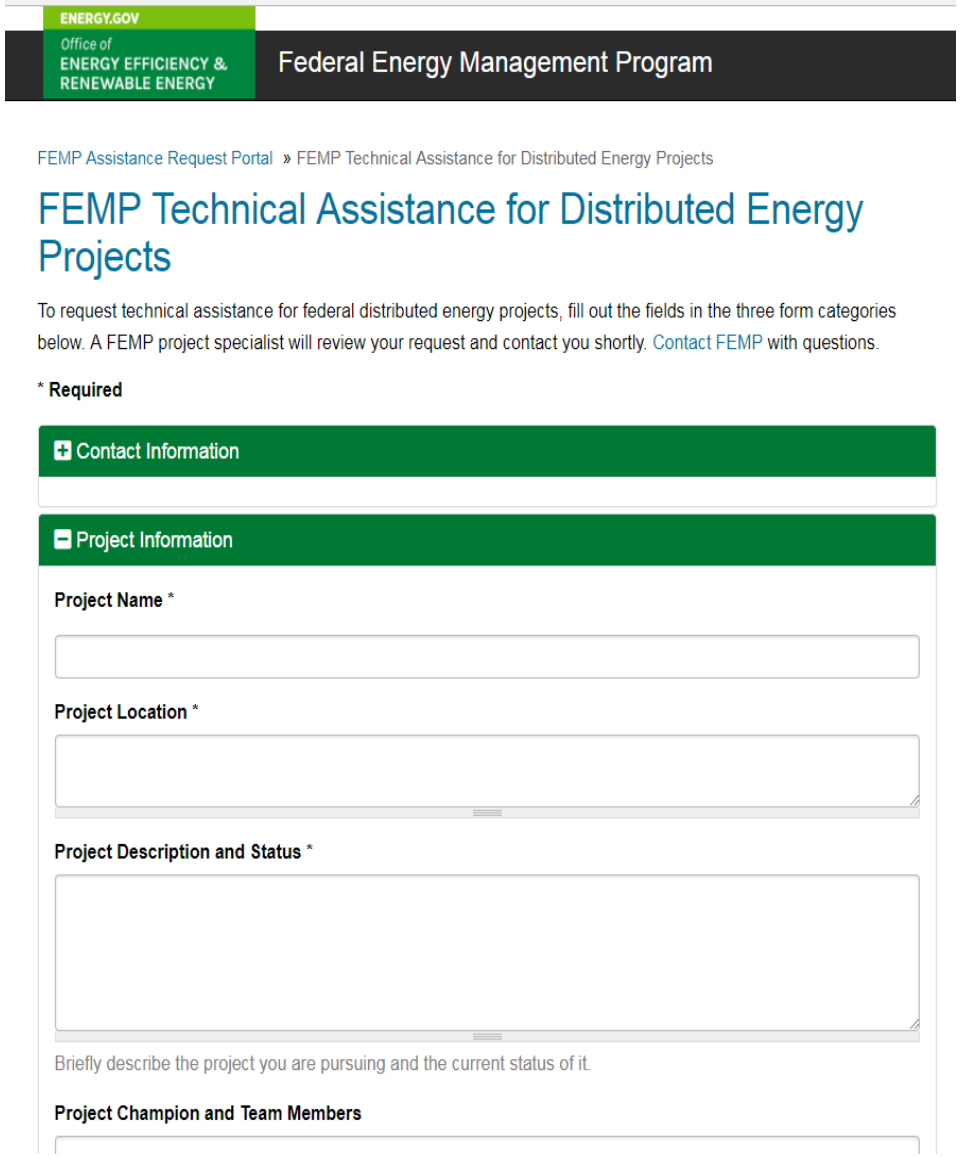
- **Please contact Nichole.Liebov@hq.doe.gov with corrections and additions!**

FEMP Support

- Project guidance and discussions with Federal Project Executives (FPEs)
- Technical assistance provided by DOE National Labs
- Tailored training for agencies

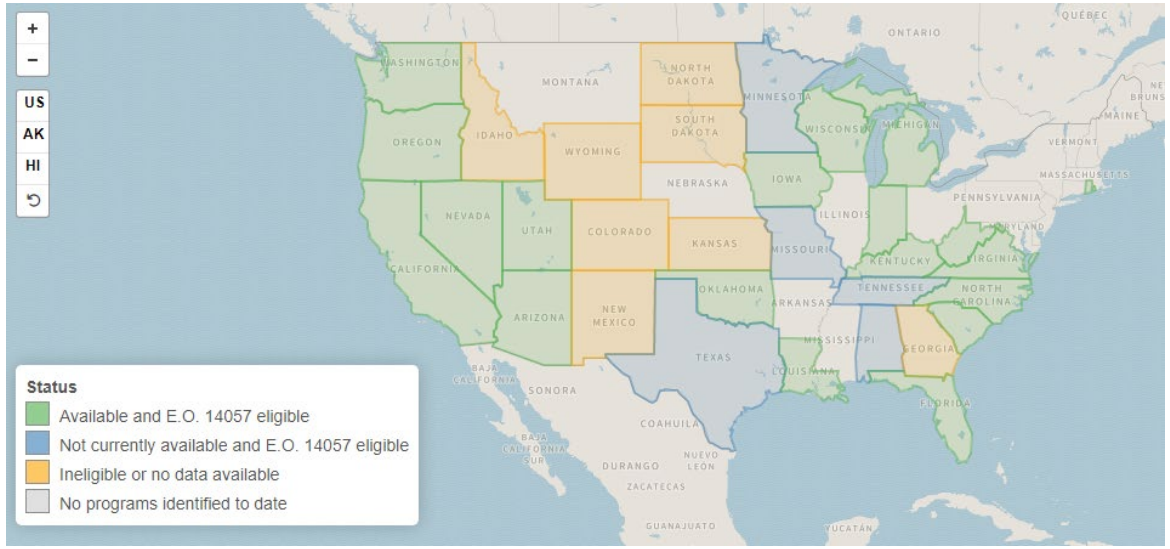
FEMP Assistance Request Portal

Submit questions or requests for support through the (*https://www7.eere.energy.gov/femp/assistance/*)



Resources & Training

- **FEMP Resources**
  - Federal Utility CFE Program Availability Map
  - Carbon Pollution-Free Electricity Resources
  - Off-Site Clean Energy Procurement Options
  - On-Site Distributed Energy Procurement Options
- **FEMP On-Demand Training**
  - Identifying Utility CFE Purchasing Programs
  - Decarbonization Considerations: Onsite Distributed Energy Projects and Offsite Purchases
- **Additional Resources**
  - E.O. 14057 and Implementing Instructions
  - OMB Memorandum M-22-06 (on E.O. 14057)
  - NREL's Voluntary Green Power Procurement Page
  - CEBA's Green Tariff Update



FEMP Federal Utility CFE Program Availability Map

Partnering with Utilities for CFE

U.S. DEPARTMENT OF ENERGY

- Craig Zamuda, DOE (Moderator)
- Tim Campbell, Tennessee Valley Authority
- Don Henderson, U.S. Army
- Douglas Hartman, FirstEnergy Utility Services
- Gregg Sawl, National Energy Technology Laboratory

Partnering with Utilities for CFE

U.S. DEPARTMENT OF ENERGY

2023 Federal Utility Partnership Working Group Seminar

Craig Zamuda, Ph.D.
Senior Advisor, Climate/Sustainability
Office of Management

DOE and Xcel Energy sign CFE MOU

Pictured from left to right are: Robert Kinney, President of Xcel Energy of Colorado; Deputy Secretary David M. Turk; and Martin Keller, Director of National Renewable Energy Laboratory.

On April 21, 2023, DOE and Xcel Energy Announced New Effort to Power Colorado's Federal Facilities, including the DOE's National Renewable Energy Laboratory, and GSA facilities with 100% Clean Energy by 2030

April 21, 2023 CFE MOU ANNOUNCEMENT

U.S. Deputy Secretary of Energy David M. Turk: *"At DOE, we are on the cutting edge of researching and developing clean-energy technologies, and it makes perfect sense that we partner with a company like Xcel Energy"*

Xcel Energy Chairman, President and CEO Bob Frenzel: *"Today's commitment to the Department of Energy is a model for collaboration with other federal and state agencies as well as all customers on innovative solutions to help our customers achieve their carbon-free goals."*

Andrew Mayock, the Federal Government's Chief Sustainability Officer with the White House Council on Environmental Quality: *"I look forward to seeing this partnership between DOE and Xcel Energy in Colorado replicated across the country, catalyzing new clean energy jobs, technologies, and markets."*

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

Tennessee Valley Authority (TVA) CFE Solutions

Tim Campbell

FEMP
Federal Energy Management Program

NRECA
America's Electric Cooperatives

About TVA

Created in 1933 to make life better

"Power is really a secondary matter…TVA is primarily intended to *change* and to *improve t*he standards of living of the people…"

President Franklin D. Roosevelt

FEMP Federal Energy Management Program

NRECA America's Electric Cooperatives

About TVA

- A federal utility owned by the U.S. government
- Ten million customers in seven southeastern states
- Energy prices below national average
- Receives no taxpayer money
- 153 local power companies, 57 large industries and federal installations

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Federal Customers

FEMP Federal Energy Management Program

NRECA America's Electric Cooperatives

UESC Program

- Implementing UESCs since 1998
- UESC projects
  - Redstone Arsenal
  - Ft. Campbell
  - Naval Support Activity Mid-south
  - FBI
  - DOE Paducah Site
  - NASA Marshall Space Flight Center
  - Arnold AFB

- Redstone Arsenal
  - Over $54 M of work
  - $7.4 M annual energy savings
  - DOE 2019 Federal Energy and Water Management Award

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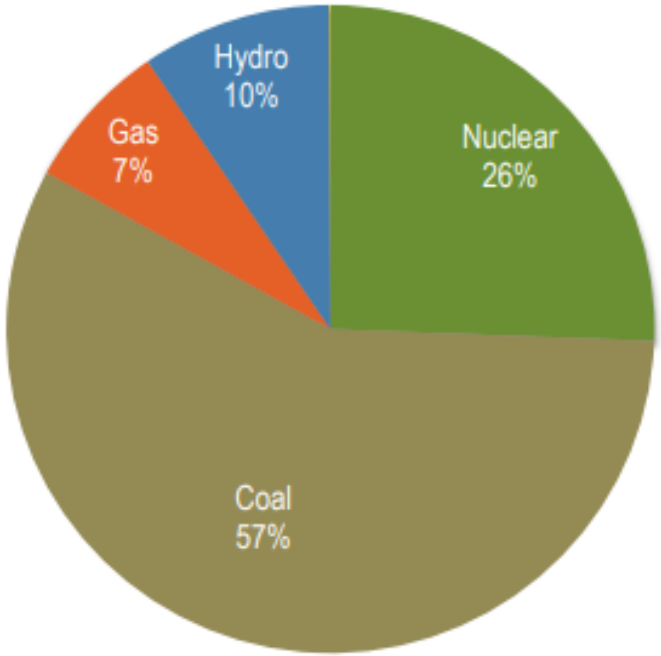
TVA CLEAN ENERGY

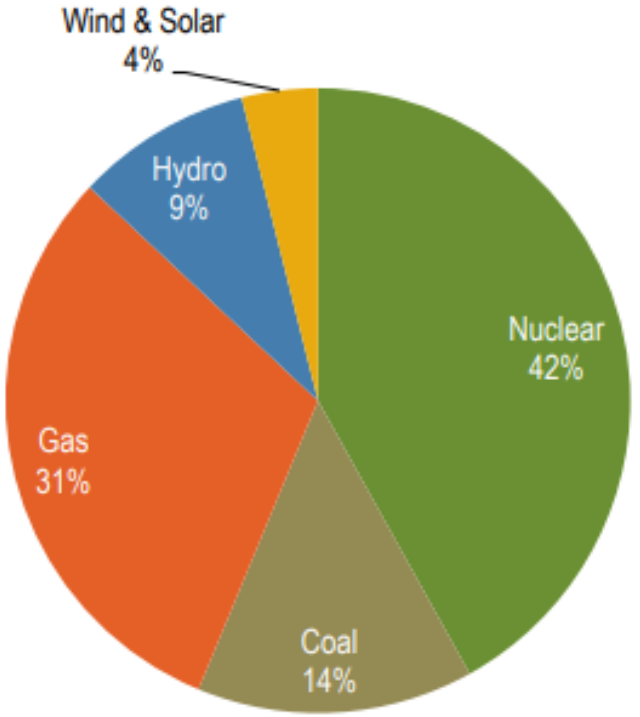
Cleaner Energy

Cleaner Energy Mix

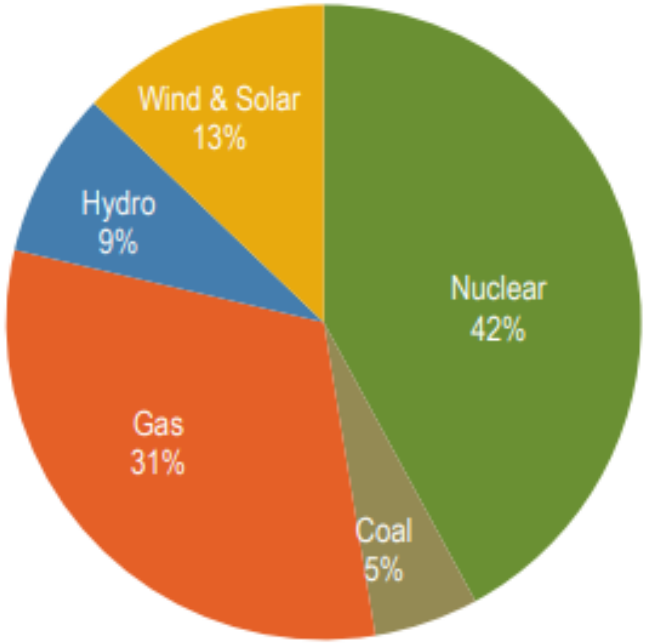
FY 2005
177 TWh



FY 2022
159 TWh



FY 2030
165 TWh



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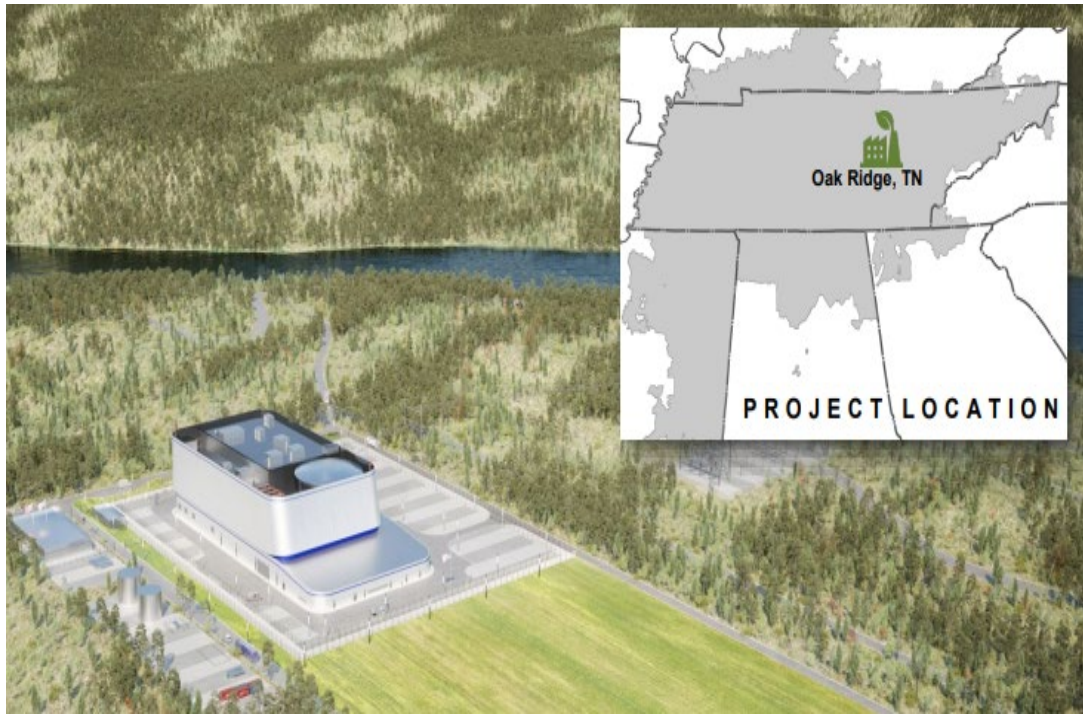
Small Modular Reactor (SMR)

- TVA teaming with Ontario Power Generation (OPG) and Synthos Green Energy (SGE) to deploy GE Hitachi SMRs
- TVA construction permit application for 300 MW WRX-300 SMR at the Clinch River site
- Assessing additional sites in the TVA service area for SMRs
- Exploring opportunities to provide CFE to DOE facilities from the SMR - MOU



New Pumped Storage Hydro

TVA is evaluating multiple areas for pumped storage hydro sites.

Currently, TVA is in the study phase – this evaluation will assess land, environment, and community impacts to help inform TVA planning and future construction.

Benefits of Pumped Storage Hydro

Rates	Lowest cost mature option for long-duration storage. Reduces risk in regulations, and fuel cost
Reliability	More energy storage is needed for continued electric reliability and to store power from traditional and renewable energy sources
Job Opportunities	Job opportunities associated with construction and ongoing facility operations and maintenance
Environmental Impact	Enables low-carbon energy generation, through additional solar, nuclear, and carbon capture technologies

TVA CFE SOLUTIONS

TVA CFE Solicitation

- Nation's largest CFE RFP
- Procuring 5,000 MW of carbon-free electricity from:
  - *Solar, wind, hydro, geothermal, biomass, nuclear, green gas, battery energy storage systems (BESS) paired with the above resources*
- Projects must be 2-500 MW
- Typically 15 and 20-year terms
- Projects must be operational between 2023 and 2029
- Will be enough CFE for all of TVA's federal customers

TVA CFE Solicitation

Release Date	July 12, 2022
Intent to Bid	October 11, 2022
Proposal Deadline	November 18, 2022
Proposal Evaluations	December 2022 – April 2023
Contract Execution	March 2023 – June 2023

TVA CFE Solutions

TVA Green Invest

- New to the world renewables
- TVA procures new renewables to meet up to 100% of customer's load
- Customers will purchase RECs from a new, in-Valley renewable project
- Minimum customer commitment is 10 MW
- Long term price stability

Green Invest Agreement Framework

Signing a Green Invest Agreement **does not** bind or commit anyone to subscription volume, dollars, etc.

It begins the process to achieve site specific renewable supply and ensures a commitment to the process from all parties

Green Invest Agreement

TVA – Federal customer

2

Tranche Agreement

TVA – Federal Customer

3

PPA

TVA – Developer

FEMP Federal Energy Management Program

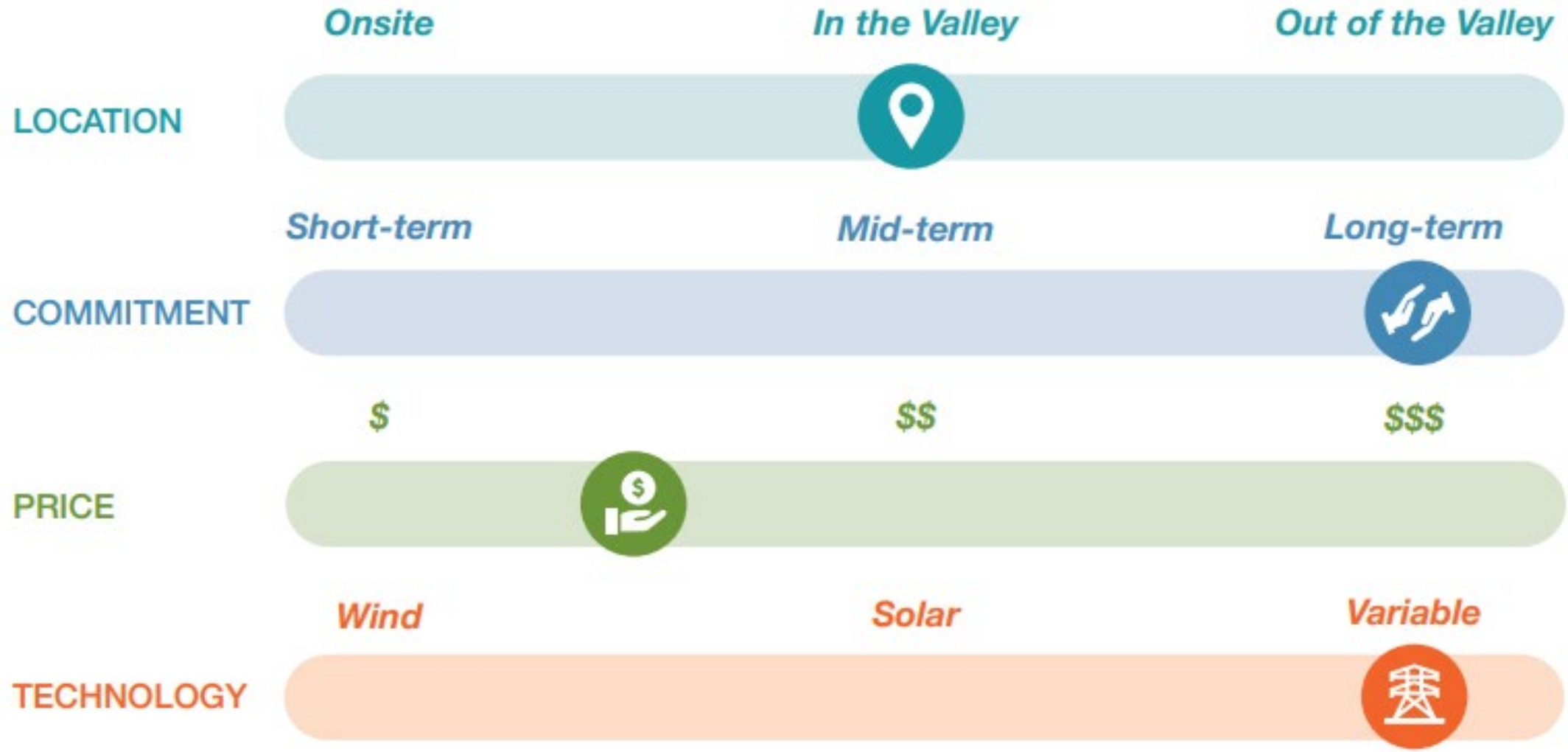
NRECA America's Electric Cooperatives

Green Invest

Program Highlights

- Utility scale renewables
- Competitive procurement
- Lowest cost option
- Site specific
- Long-term load
- Aggregate projects

TVA Green Invest



Muscle Shoals Solar Farm

TVA – Orsted, 227 MW, Muscle Shoals, AL

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River Bend Project

TVA - NextEra Inc, 75 MW, Florence, AL

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Naval Support Activity Mid-South

TVA - Silicon Ranch Corporation, 53 MW, Millington, TN

FEMP Federal Energy Management Program

NRECA America's Electric Cooperatives

Tim Campbell

Senior Program Manager, Energy Right Federal

tlcampbell0@tva.gov

615-653-5817

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

Redstone Arsenal – CFE Challenges

Don Henderson, CEM

Energy Manager, USAG-DPW, Redstone Arsenal

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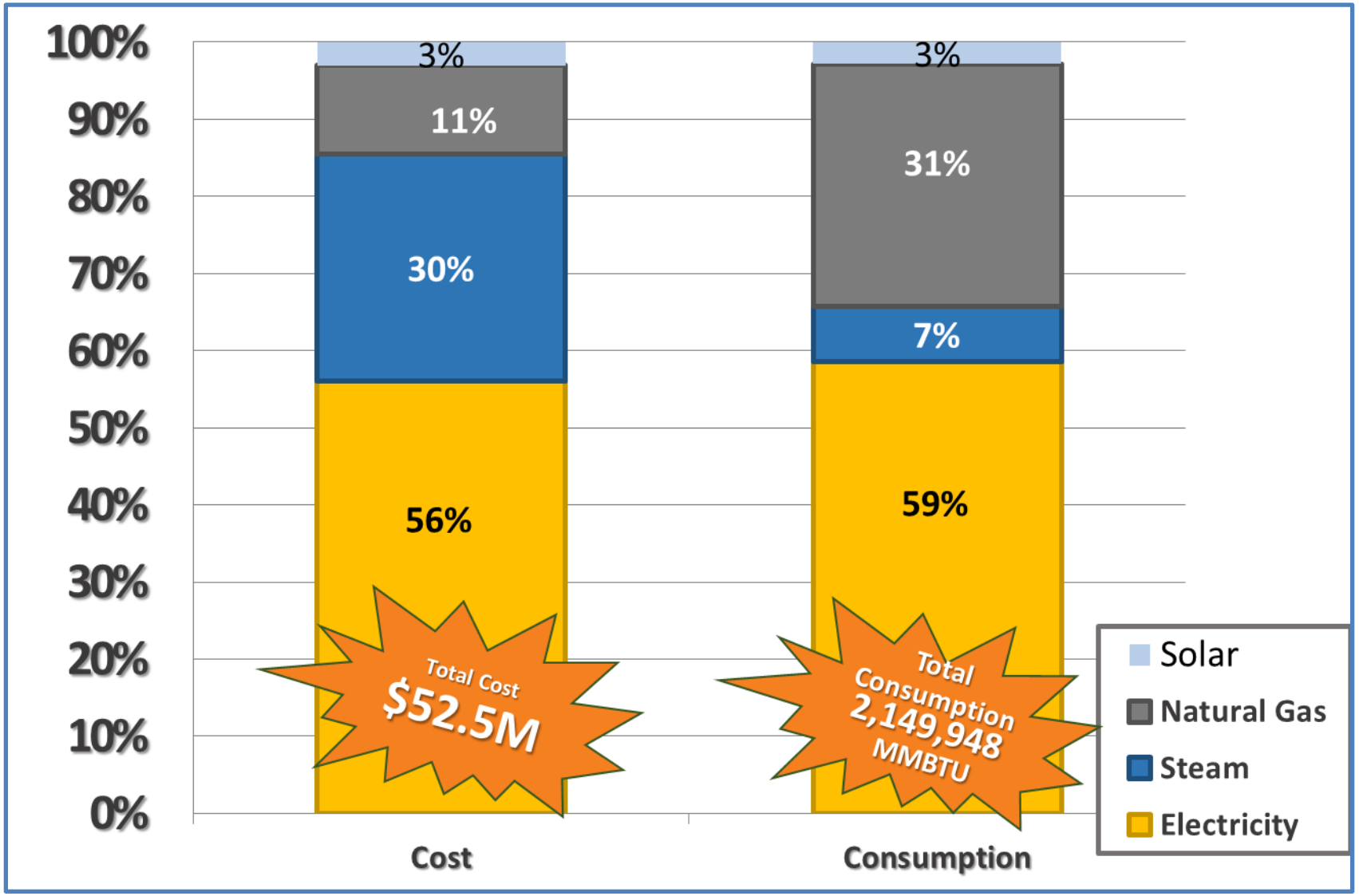
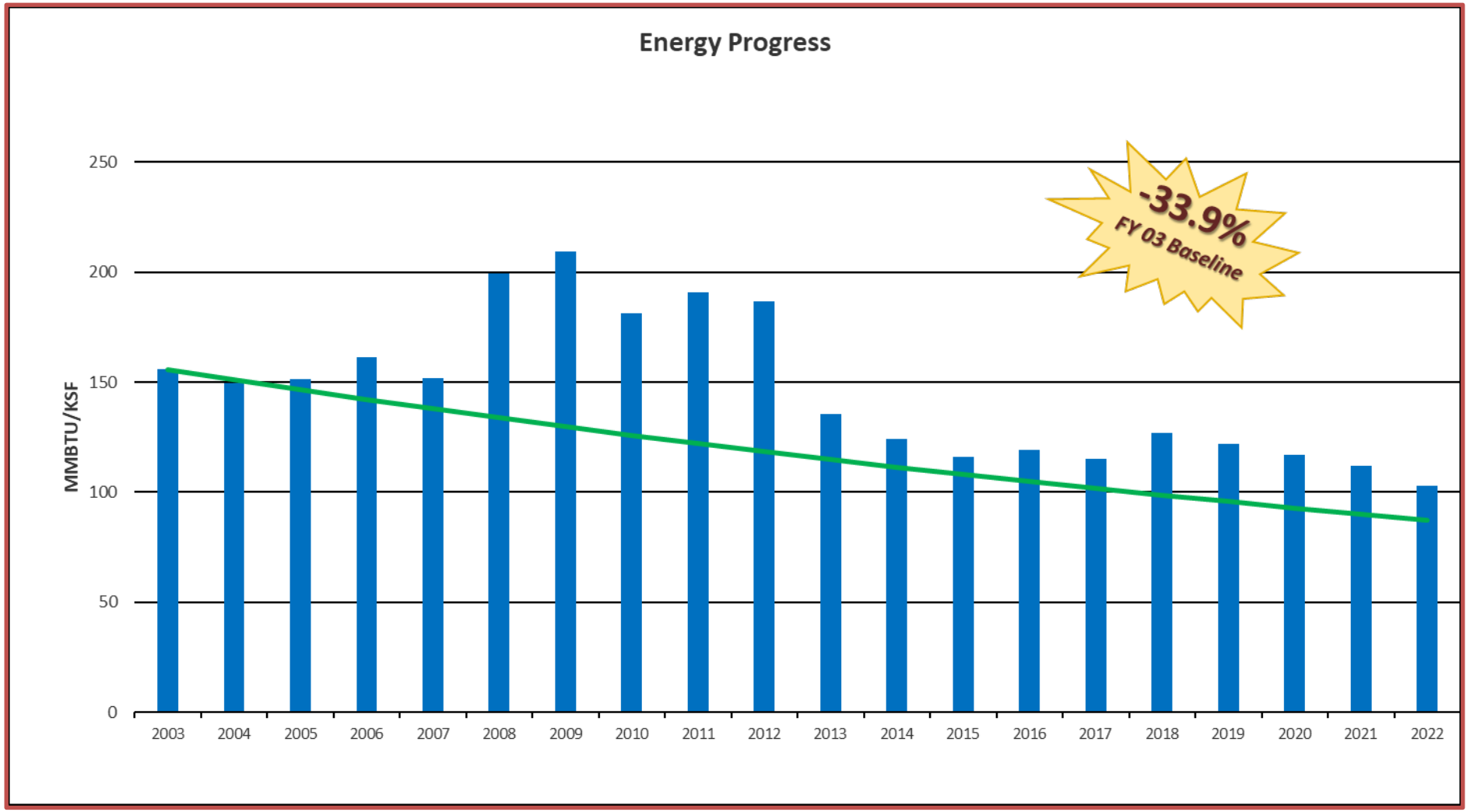
Redstone Arsenal

- Located in N. Alabama on the banks of the Tennessee River
- 1,600 facilities (19M SF) on 38,000 Acres
- Over 45,000 personnel
- DoD: Missile Defense Agency, Defense Intelligence Agency
- 11 US Army Commands
- 72 Tenant Organizations: NASA, FBI, ATF

Redstone's Energy Sources



Energy Use Intensity, 2003-2022



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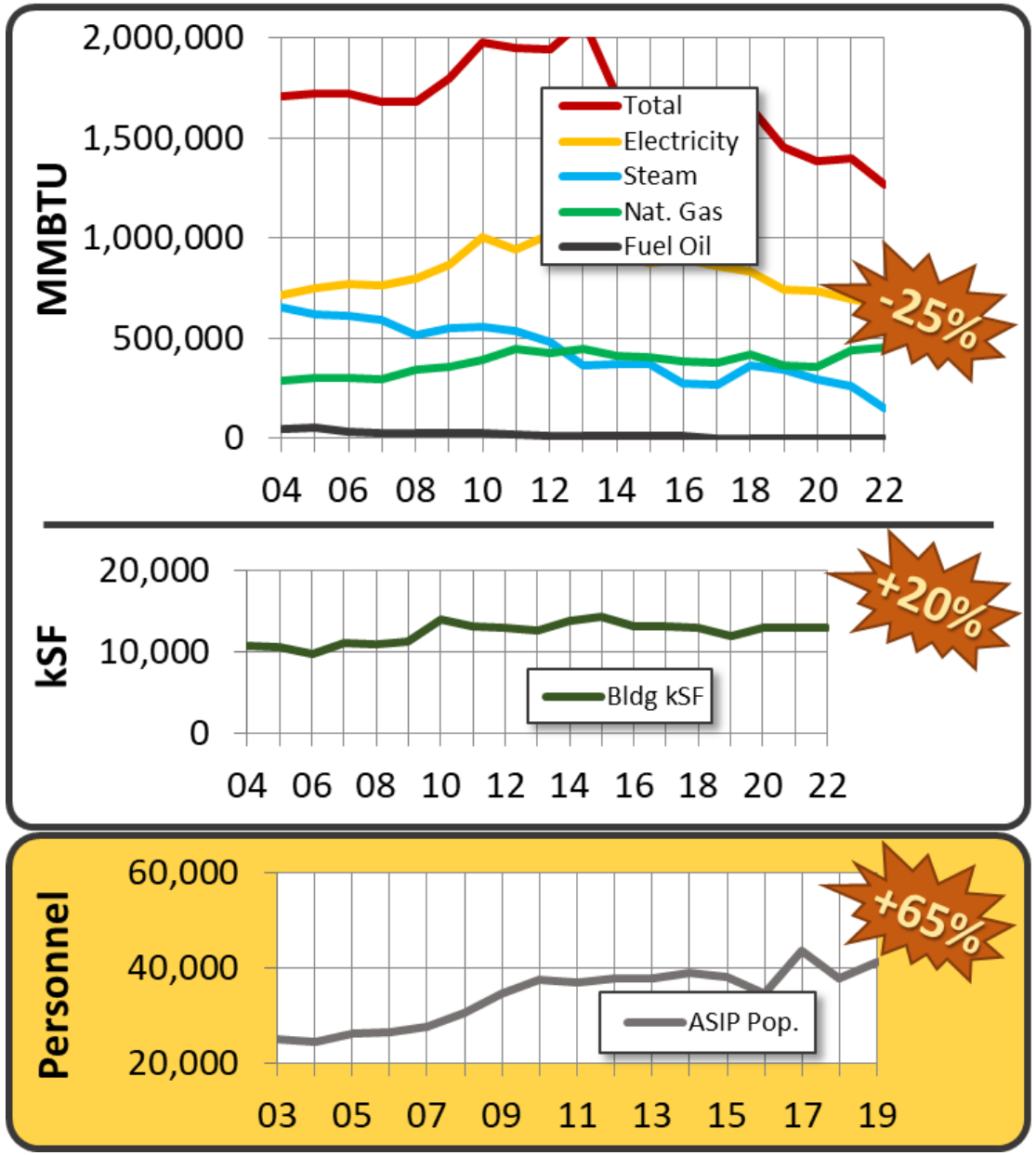
Redstone Arsenal:

Energy Use vs. Growth, 2003-2022



Redstone Partnership with TVA

- UESC Projects
  - UESC = Utility Energy Services Contract
  - $54M in projects over past 14 years
  - <8 year avg. simple payback
  - $7M annual energy savings
  - No escalation rate; fixed interest
  - No-risk Preliminary Feasibility Assessments
  - Steam pruning
  - Geothermal HVAC
  - HVAC Controls & equipment upgrades
  - Lighting upgrades (LED)

Redstone Partnership with TVA

- Continued Partnership
  - Demand Response
  - Interconnection Support
  - Consumption Analysis
  - Resilience Project Development
  - Microgrid Studies
  - Incentive Programs

Redstone's CFE Challenges

EO 14057

- 100% Carbon-Free Electricity by 2030
  - Half supplied locally to meet 24/7 demand
- 100% Zero Emissions Vehicles by 2035
  - 100% light duty vehicles by 2027
- 100% Net Zero Emissions Bldgs by 2045

Army Climate Strategy Goals

- Microgrid at every installation by 2035
- On-site CFE for all critical missions by 2040
- Installation-wide bldg. control systems by 2028

Redstone Arsenal is expected to grow by 50% over the next 6 years.
How do we still get cleaner AND more resilient?

Current CFE Status

TVA Provides 57% CFE to the Arsenal

- Potential agreement to receive power from only clean sources
- Demand Response Program

Solar Farm delivers 8MW power (peak)

- 3% of annual Arsenal Power
- Lacks BESS & Generators
- ERCIP Proposed for FY27
- FY26 ERCIP – Airfield PV/BESS Microgrid

City of Huntsville waste-to-energy steam plant (FY24)

- 12.5MW capacity using excess steam (8 MW avg. delivery)
- Potential for future 20MW capacity

Natural Gas

- ~1/3 of total RSA energy consumption

City of Huntsville Waste-to Energy Steam Plant

FEMP Federal Energy Management Program

NRECA America's Electric Cooperatives

Redstone's CFE Challenges

If we convert 100% of natural gas heat (boilers, furnaces, etc) to electric:

- Will require an additional 60MW in power (~2x current peak demand)
- Will require major upgrades to existing power grid
- Will require extensive facility-level electrical upgrades

On-Site CFE Production—Additional Solar

- Limited by available land
- Large BESS & generators needed for guaranteed 24/7 power

On-Site CFE Production—Small Modular Reactors

- Technology not currently readily available/affordable
- Lengthy approval process

A Combined Long-Term Approach

Small Modular Reactors (SMR)

- GE-Hitachi SMR in development
- $400M investment by TVA, Ontario Power Generation, & Synthos Green Energy

Waste-to-Energy (WTE) Co-Generation Plant

- Guaranteed cheap fuel source (City landfill)
- 24/7/365 steam & electricity production
- Redstone purchases steam, gets “free” electricity

On-site Solar Production

- Microgrids, EV charging stations, building-level arrays

Hydrogen Fuel Cells

- Generate & store hydrogen using off-peak SMR & WTE power

Questions?

???

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

Mon Power's CFE Program

West Virginia Solar

Douglas S. Hartman - Director, Energy Services

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Federal Energy Management Program

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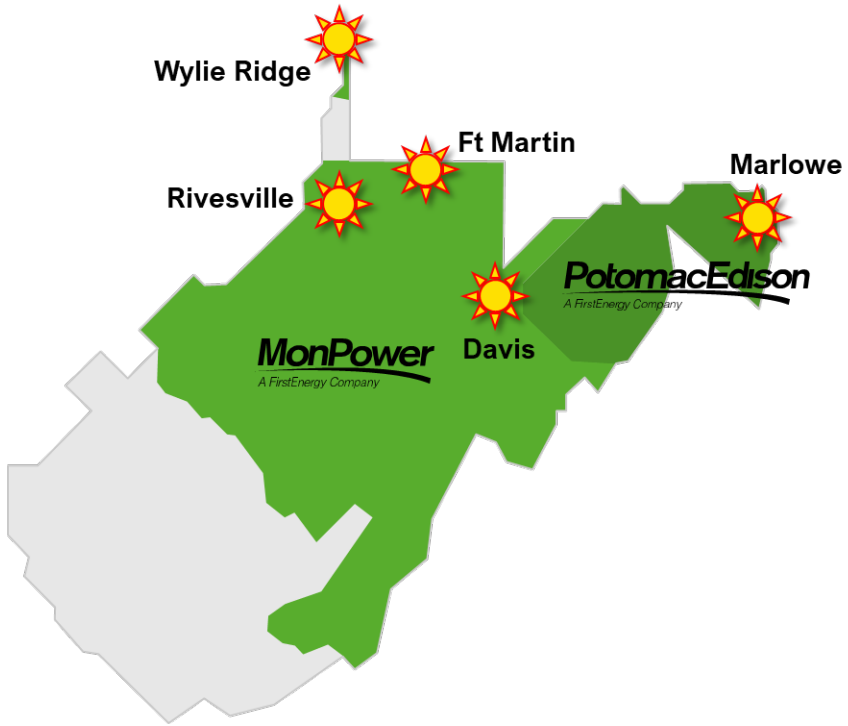
WV Renewable Legislation & MP Approach

- **2020 SB-583**
  - Support economic development
  - Target brownfield/low value sites
  - **200MW** opportunity in **50MW** increments
    - **85%** subscription rate necessary
    - Include storage options
- **Mon Power's Approach**
  - Self Build, Labor, Domestic Sourcing,
  - Site Control, Interconnection, Environmentally Friendly

Mon Power Solar Program: Phase I



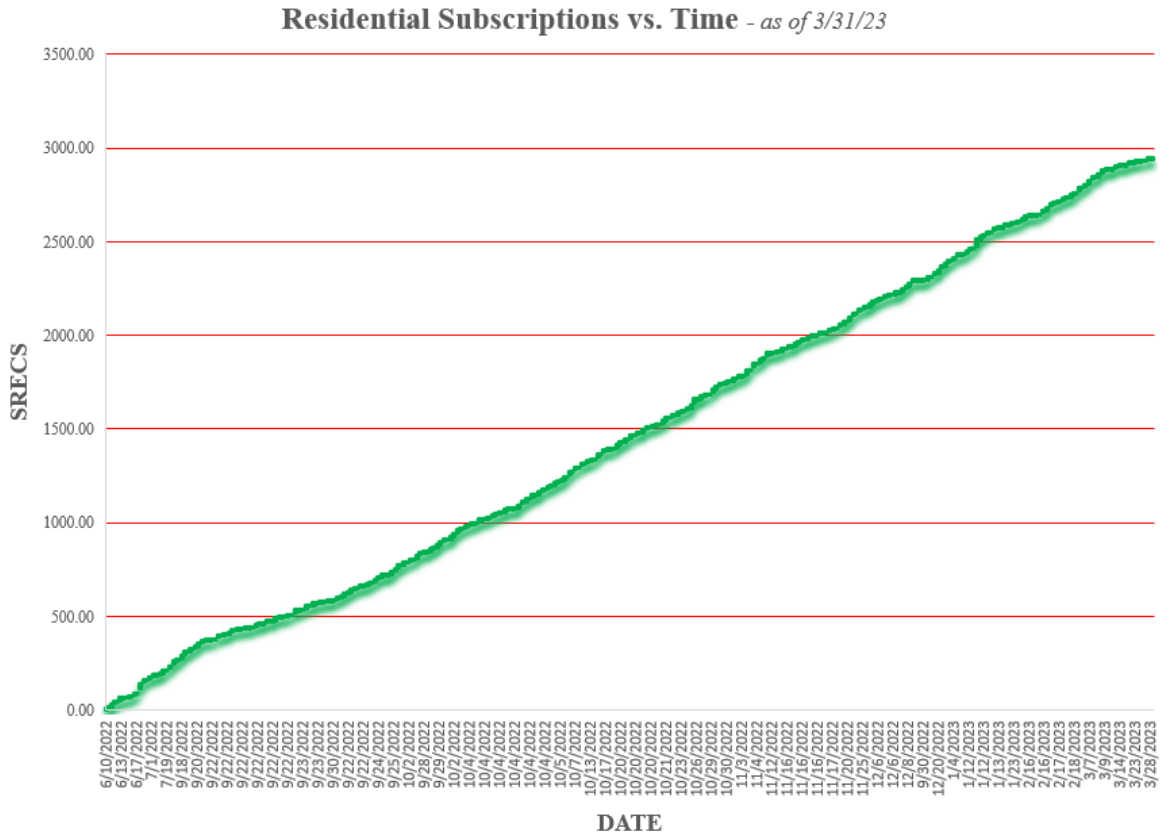
- **2024 Ft. Martin Site (19MW)**
  - Adjacent to ash disposal site
- **2025 Marlowe Site (6MW)**
  - Reclaimed ash disposal site
- **2025 Wylie Ridge Site (8MW)**
  - Adjacent to a Mon Power substation
- **2025 Rivesville Site (5MW)**
  - Retired ash sites
- **2026 Davis Site (12MW)**
  - Reclaimed strip mine

	Production			PSC Requirements	
Site	Capacity (nominal) **MW**	Annual Generation **GWhr/yr**	Annual Solar Renewable Energy Credits **SREC/yr**	PSC Required Subscribed Energy **GWhr/yr**	PSC Required Subscribed Solar Attribute **SREC/yr**
Fort Martin Solar	19	33.0	33,000	28.1	28,050
Wylie Ridge Solar	8	14.7	14,700	12.5	12,495
Marlowe Solar	6	10.0	10,000	8.5	8,500
Rivesville Solar	5	9.7	9,700	8.2	8,245
Davis Solar	12	20.0	20,000	17.0	17,000
Total	50	87.4	87,400	74.3	74,290

Assume 20% Capacity Factor

Mon Power Solar Program

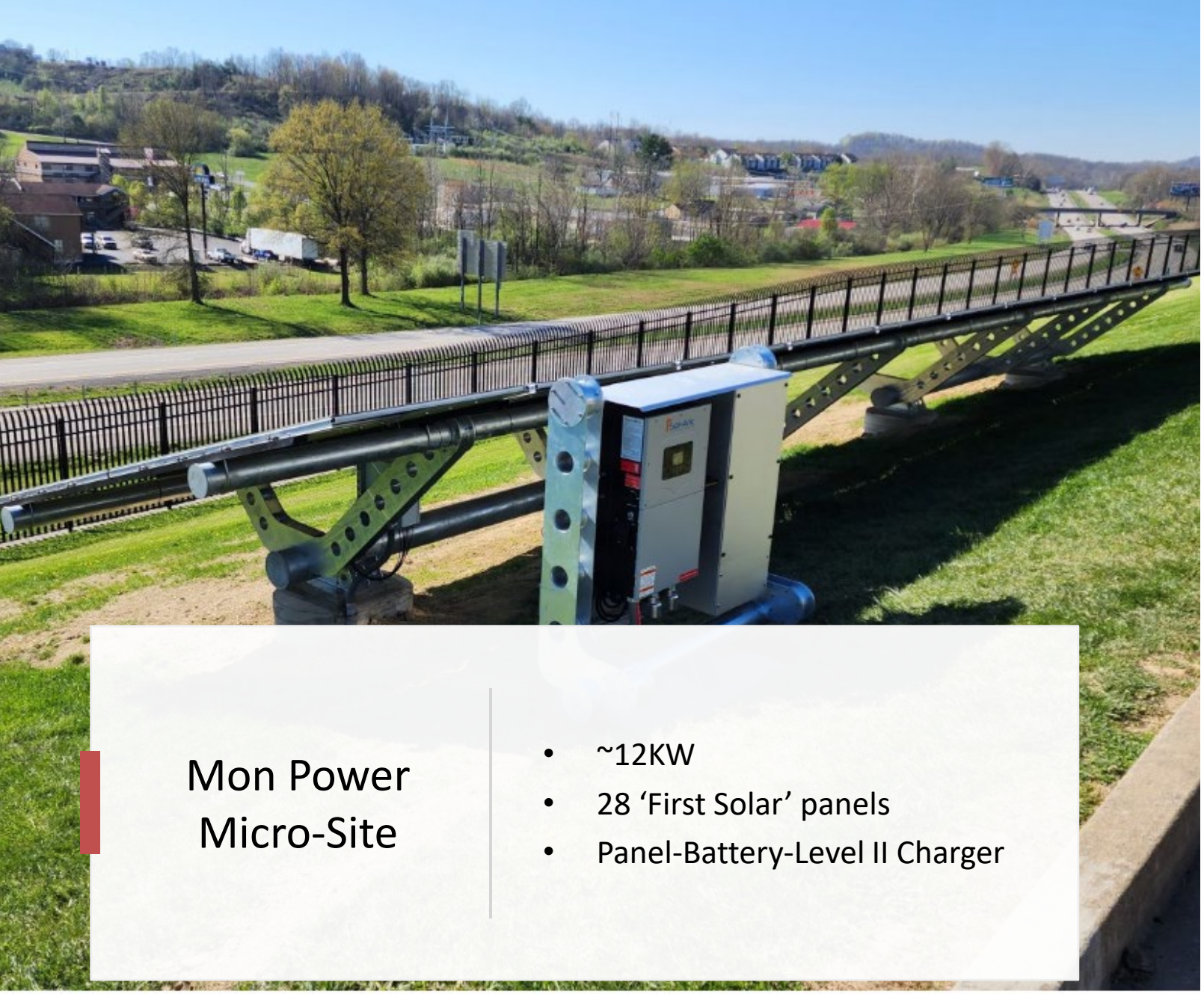
- Turnkey Program
  - Mon Power Solar Program aligns to EO 14057
  - WV PSC approved Solar Renewable Energy Credit (SREC)
    - **Delivery years 2025 & 2026**
    - **WV Solar SREC -$40**
  - Contract Flexibility – Term & %-CFE up to 100%
  - Mon Power retires SRECs on your behalf
  - **Subscription Link:**
    - **FirstEnergycorp.com/wvsolar**



MON POWER SOLAR PROGRAM CONTACTS

- Rodney Liston, Mgr, Customer Accounts – West Virginia
  - Cell: 304-962-8103
  - rliston@firstenergycorp.com
- Lorraine Rader, Dir, Customer Solutions
  - Cell: 330-696-2992
  - raderl@firstenergycorp.com
- Douglas Hartman, Dir, Generation Services
  - Cell: 330-819-8447
  - hartmands@firstenergycorp.com

- WV Solar Web Page:
  - https://www.firstenergycorp.com/wvsolar



Mon Power Micro-Site

- ~12KW
- 28 ‘First Solar’ panels
- Panel-Battery-Level II Charger

Mon Power's solar array overlooks I-79. David Beard/The Dominion Post photos

MonPower®
A FirstEnergy Company

Focused on Our Future

Thank You

Q&A

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

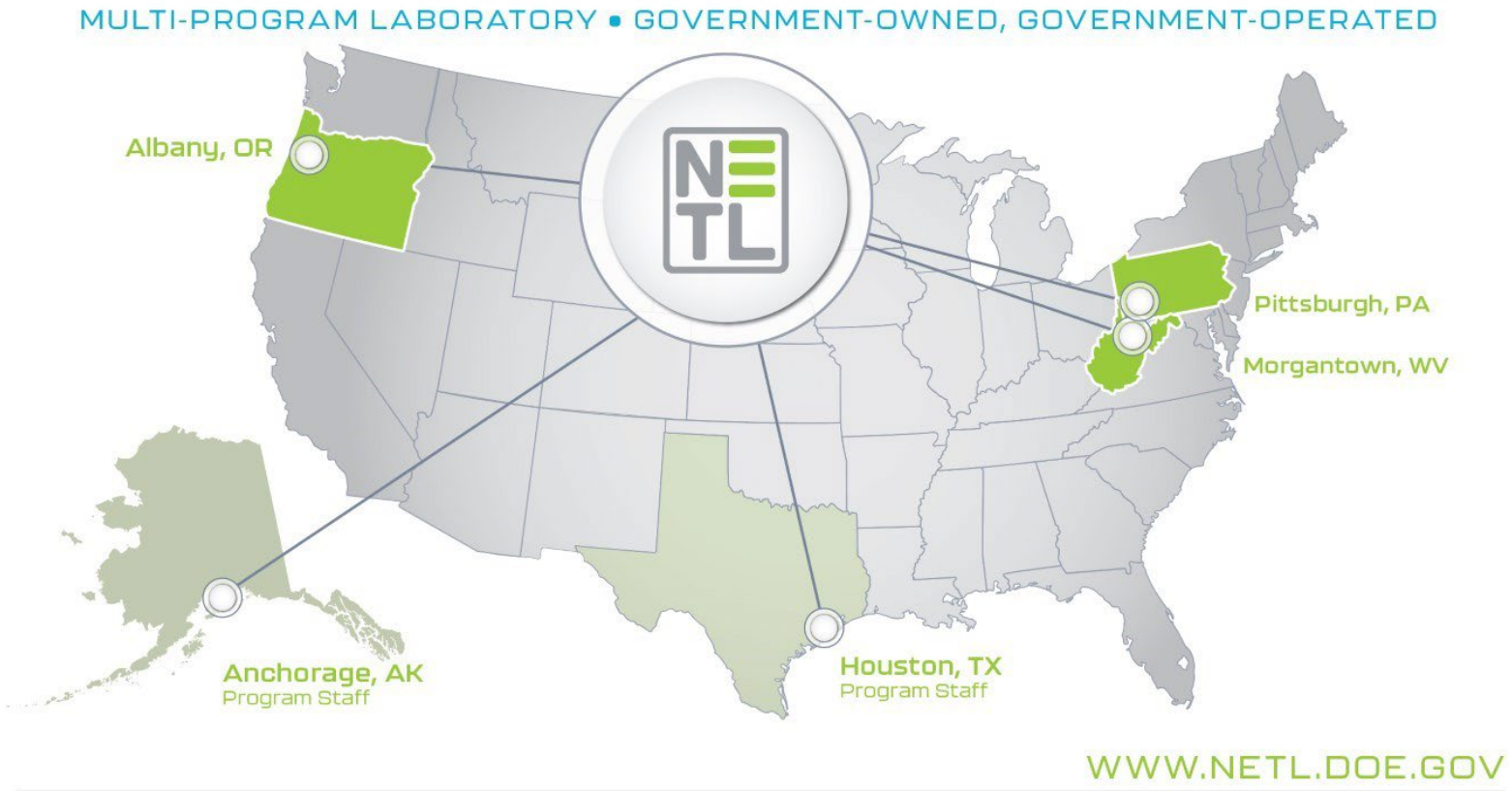
National Energy Technology Laboratory

Gregg Sawl

FEMP
Federal Energy Management Program

NRECA
America's Electric Cooperatives

Overview of NETL



NETL ASSETS

237 Acres
110 Buildings
1.1 million GSF

1,800 Employees

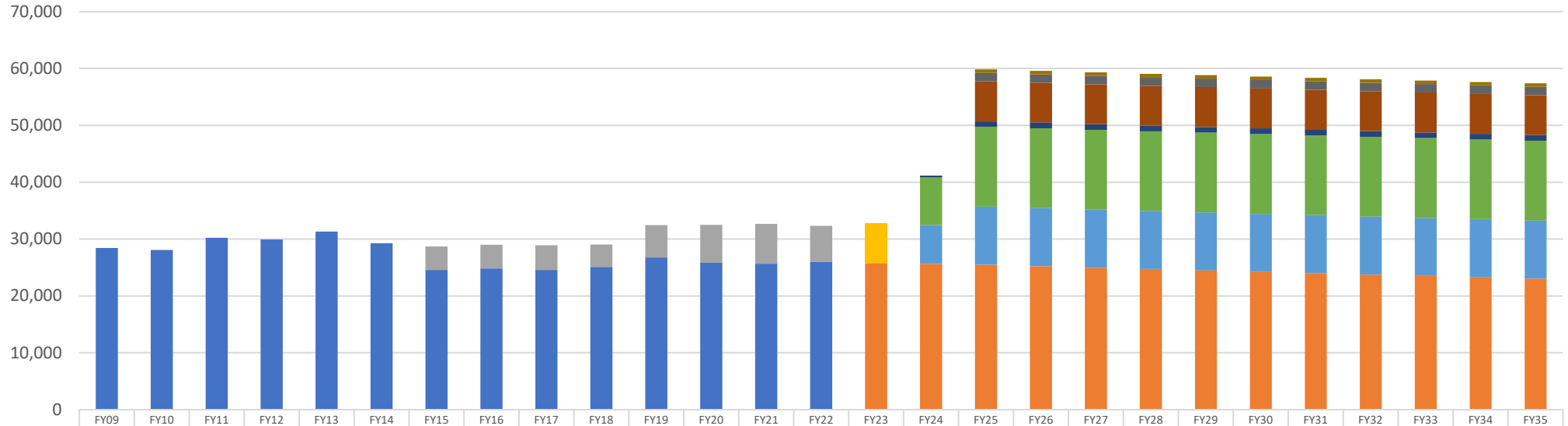
NETL CFE PLAN

Morgantown – October 3, 2022: Signed Addendum to NETL Electric Service Agreement with First Energy/Mon Power. Morgantown Site will be 100% Solar by FY25. Cost for Solar CFE $0.04/kWh.

Pittsburgh – Apply Energy Attribute Certificates (from Morgantown/Mon Power First Energy Agreement) as well as other potential CFE sources, including green tariffs, power purchase agreements and onsite generation to supplement grid supplied CFE to achieve 100% CFE.

Albany – Installation of 1 MW Solar Array to supplement grid supplied CFE to achieve 100% CFE.

NETL Actual and Projected Electricity Consumption 2009 -2035



	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
PDL																	600	600	600	600	600	600	600	600	600	600	600
DACC																	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
GEM																	7,013	7,013	7,013	7,013	7,013	7,013	7,013	7,013	7,013	7,013	7,013
AADF/GAIA (Mwh)																300	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
CSE/Joule 3.0 (Mwh)																8,415	14,025	14,025	14,025	14,025	14,025	14,025	14,025	14,025	14,025	14,025	14,025
CAML (Mwh)																6,834	10,200	10,200	10,200	10,200	10,200	10,200	10,200	10,200	10,200	10,200	10,200
Joule Projected															7,000												
Joule Actual	0	0	0	0	0	0	4,120	4,130	4,320	3,950	5,700	6,660	7,000	6,330													
Base Projected															25,750	25,621	25,493	25,238	24,986	24,736	24,489	24,244	24,001	23,761	23,524	23,288	23,055
Base (Mwh)	28,450	28,070	30,230	29,910	31,305	29,270	24,580	24,860	24,600	25,090	26,760	25,850	25,690	26,010													

Base (Mwh) Base Projected Joule Actual Joule Projected CAML (Mwh) CSE/Joule 3.0 (Mwh) AADF/GAIA (Mwh) GEM DACC PDL

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

Utility Industry Perspectives, Priorities, and Other Updates

Tanuj Deora, CEQ, Moderator

Steve Kiesner, EEI

Lauren Khair, NRECA

Carole Plowfield, APPA

Rick Murphy, AGA

FEMP Federal Energy Management Program

NRECA America's Electric Cooperatives

Edison Electric INSTITUTE

FUPWG

Utility Industry Perspectives, Priorities, and Other Updates

Steve Kiesner

May 1, 2023

2023 Industry Priorities

Clean Energy

Resilience & Grid Security

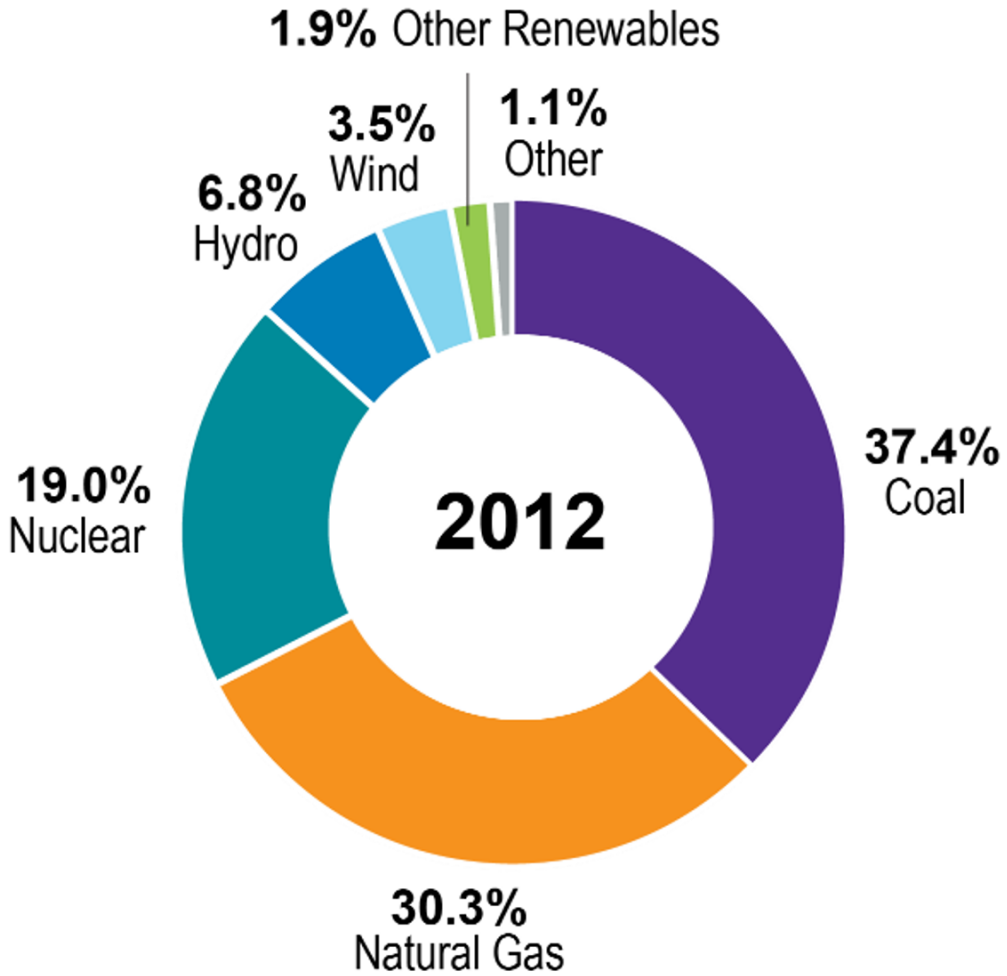
Storm Response & Wildfire Mitigation

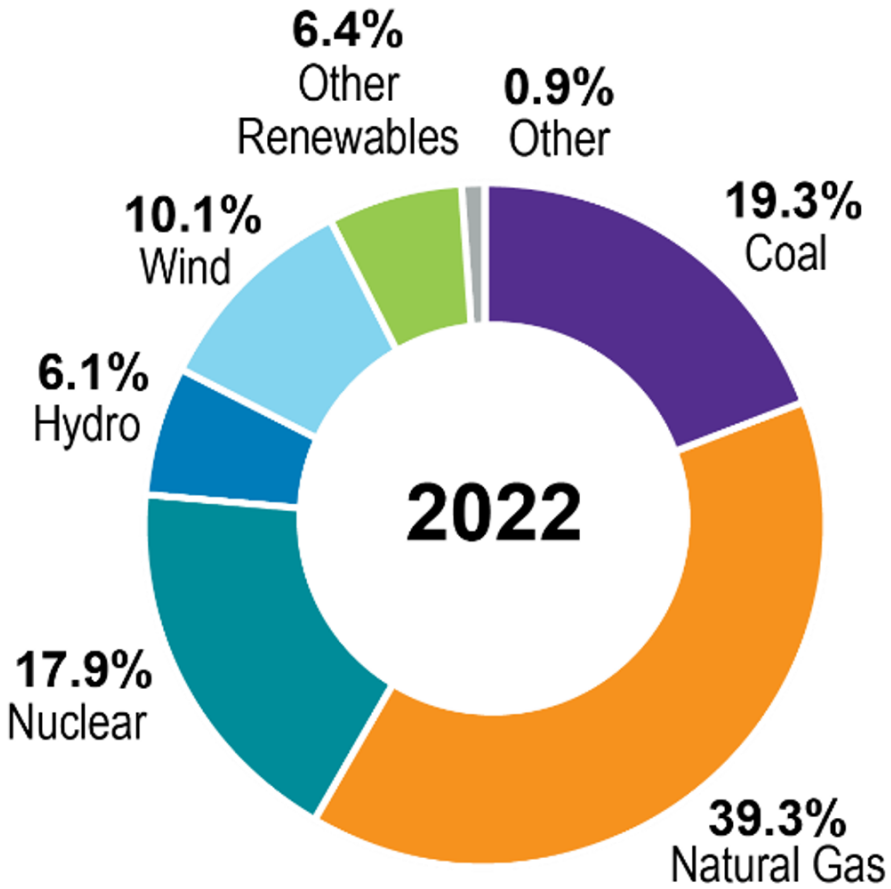
Siting & Permitting Reform

Electric Transportation

Workforce Development & DEI

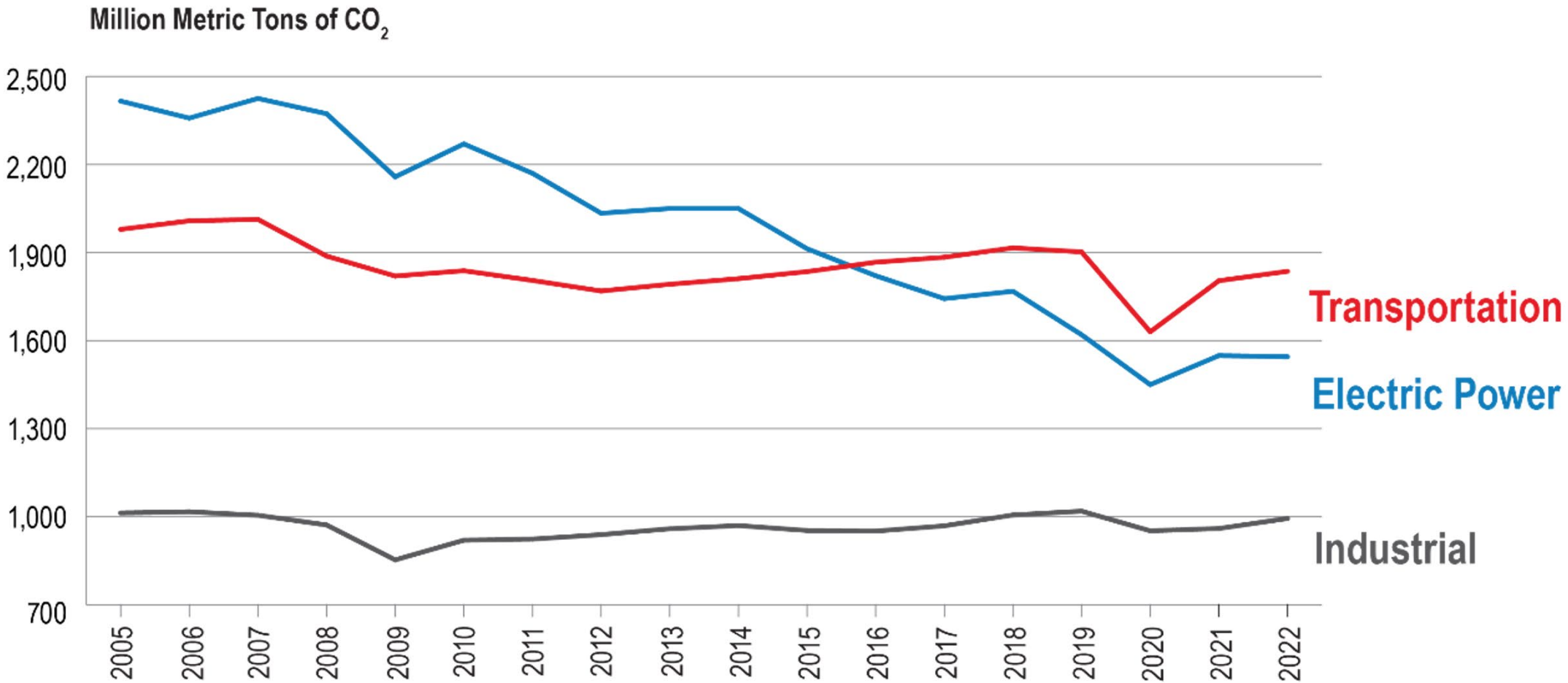
Transforming the Energy Mix





Note: "Other Renewables" includes universal (or large-scale) solar, private (or rooftop) solar, geothermal, and generation from biomass sources (agricultural waste, landfill gas recovery, municipal solid waste, wood, non-wood waste). Source: U.S. Department of Energy, Energy Information Administration (EIA).

Comparing CO_2 Emissions



Source: Preliminary estimate from U.S. Department of Energy, Energy Information Administration (EIA), *Monthly Energy Review*, March 2023.

Accelerating Our Efforts on Clean Energy

- Expanding the deployment of **renewables** and preserving **existing clean energy** technologies, including nuclear energy.
- **Promoting essential innovation** across a range of new, high-potential, and affordable carbon-free technologies.
- **Building new energy infrastructure** critical for bringing greater resilience and more clean energy to customers and for helping other sectors of our economy reduce their emissions, while keeping electricity affordable for all customers.


EEI
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Power by Association℠

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

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Electric Cooperative Innovation with Military

Lauren Khair, NRECA

FEMP
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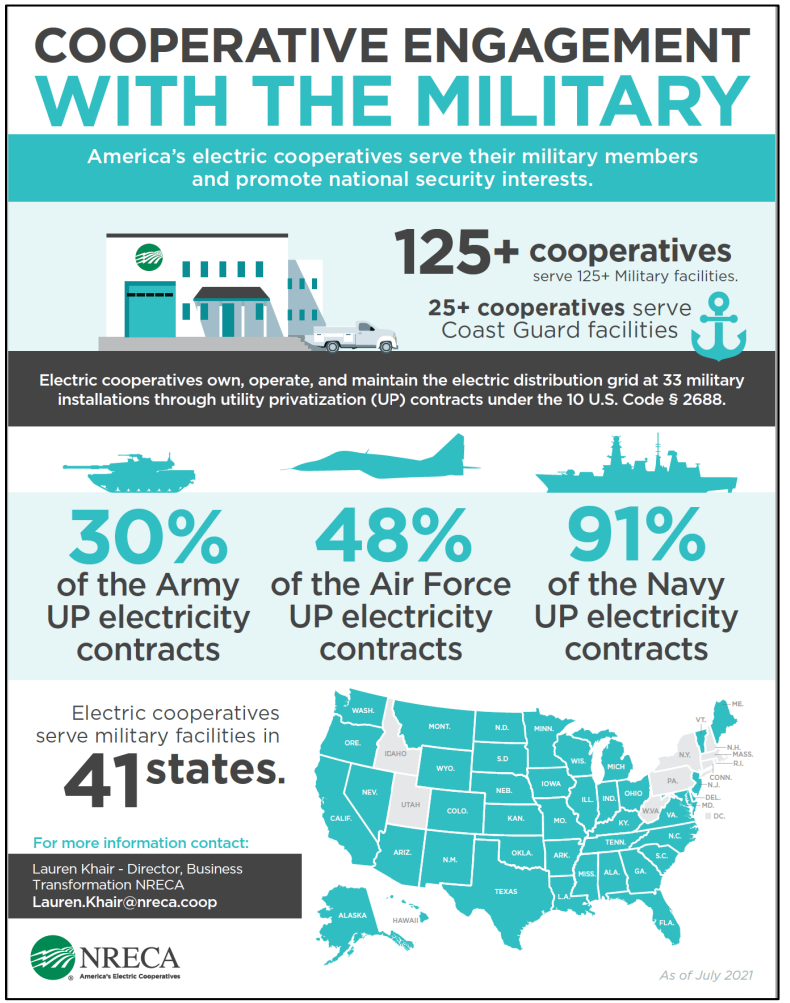
NRECA
America's Electric Cooperatives

What is a Rural Electric Cooperative?

- Not-for-profit, member-owned distribution utilities
- Locally governed
- Return excess revenue
- Community Builders



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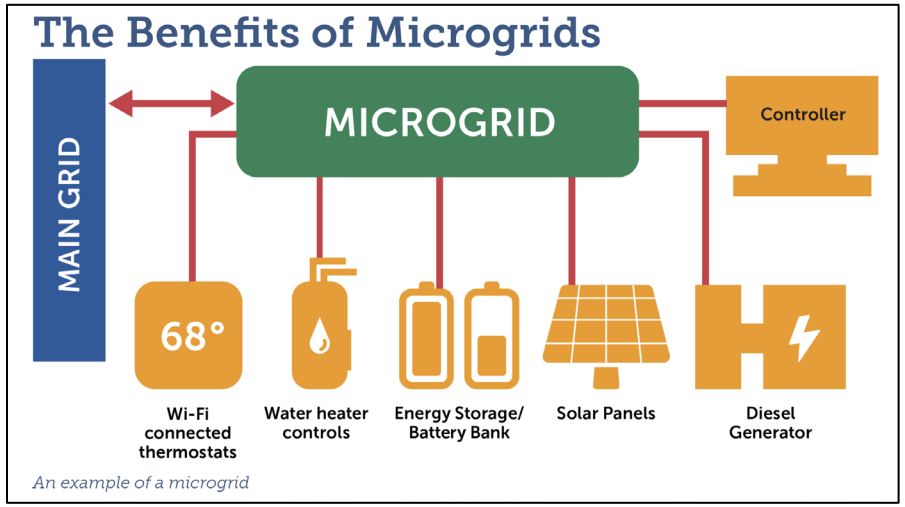
Power Supply Innovation Through Microgrids

- Nolin Rural Electric Cooperative: Fort Knox – 44 MW
  - Can island the entire system on microgrid
- Brunswick Electric Membership Corporation: Military Ocean Terminal Sunny Point: solar + battery – ~ 2MW
- Flint Energies: Fort Benning – NG generators – 9.75 MW
- Canoochee EMC: Fort Stewart – 1.5 MW
- Rio Grande Electric Cooperative: Fort Bliss – in development



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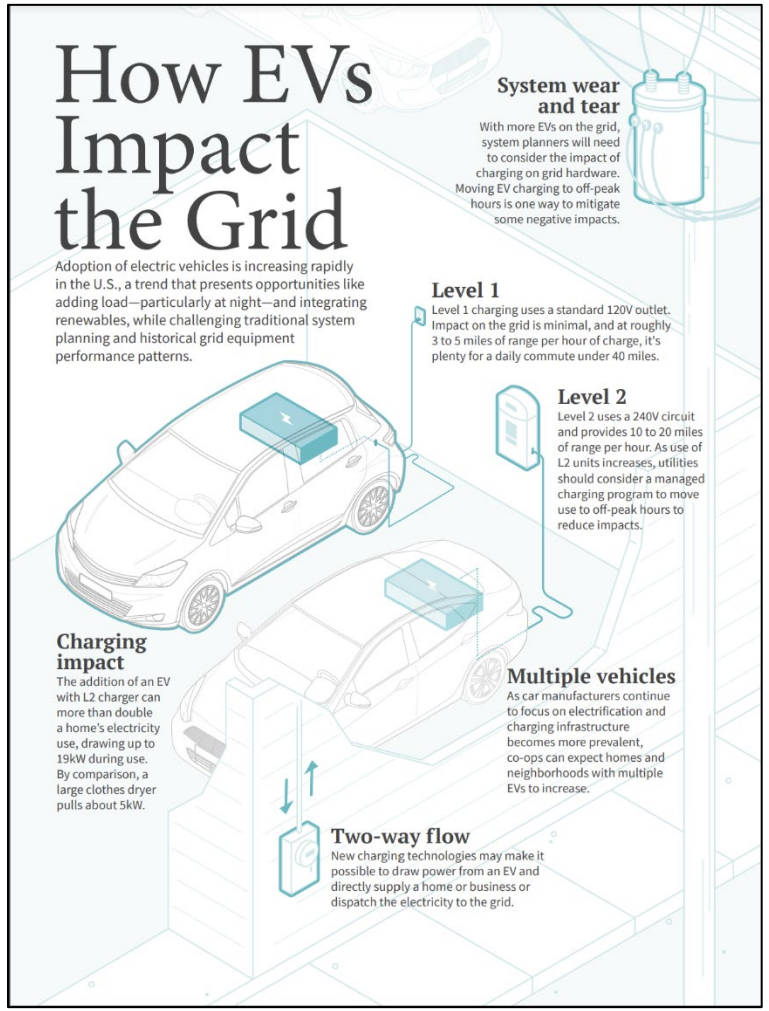
Electric Vehicle Innovation

- Cooperatives are deploying EV and EVSE at multiple military installations across the country
- Exploring potential opportunities for electric school buses
- Some cooperatives are investigating whether Infrastructure Investment and Jobs Act (IIJA) funding could support EVs



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Research Innovation

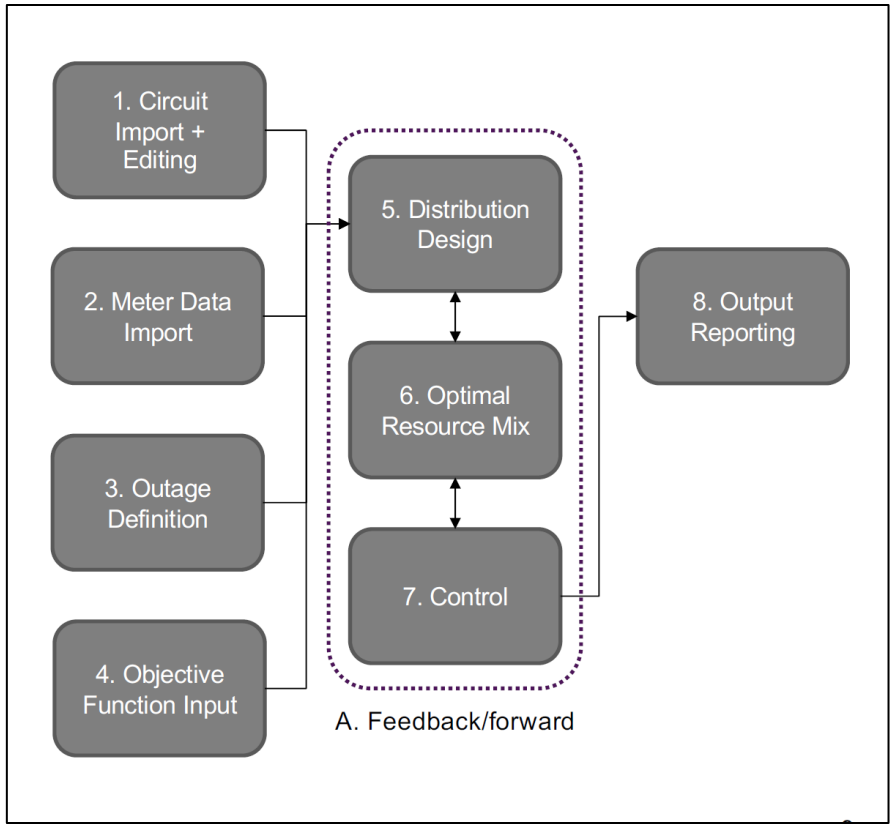
Microgrid Planning Utilizing an Open Modeling Framework for Resilient Installations Leveraging Their Utility Privatization (MICROGRID UP)

- ***Installations: Fort Bliss, Eglin AFB, Picatinny Arsenal, Laughlin AFB***

Energy Resilience for Mission Assurance (ERMA)

– This project seeks to answer the question: what is the degree to which resilience of the power grid impacts national security, and what are realistic opportunities to improve that resilience both inside and outside of Department of Defense owned facilities?

- ***Installation: Kodiak Coast Guard Station***



Contact

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AMERICAN
PUBLIC
POWER
ASSOCIATION
Powering Strong Communities

About APPA

The voice of not-for-profit, community-owned utilities that power 2,000 towns and cities nationwide

Public power is locally operated and employs 96,000 people

We serve our nearly 1,500 utility members & 220 corporate members through:

Offering education and professional development opportunities

Sharing information and building connections across the industry

Advocating for policies and regulations that support public power

APPA's Strategic Priorities

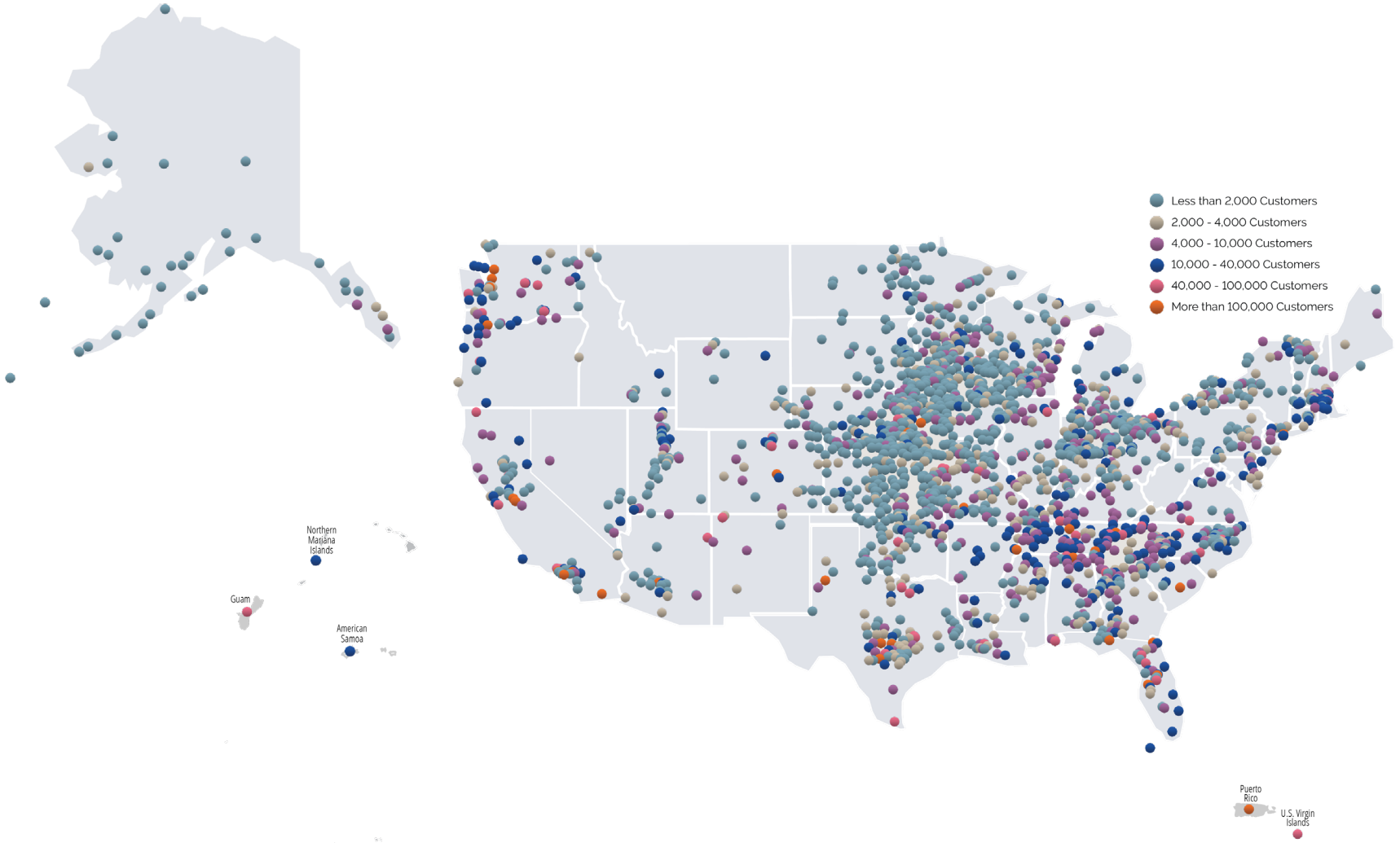
Moving Public Power Forward

Technological and regulatory changes

Research and development

Meeting workforce challenges

Public Power Serves 1 in 7 Americans



What is APPA'S Energy Transition Community?

What is the objective?

- Envision and communicate how public power utilities will achieve low emissions goals and continue to deliver safe, reliable, and cost-effective electricity.

Who is participating in the ETC/ES Working Groups?

- Representatives from public power utilities, joint action agencies, and state/regional associations to provide real world input and experience.
- Member participation is a key part of the work, so please let us know if you can join us!
- The ETC Working Group is addressing grid operations, reliability, resiliency and recovery as public power utilities move toward low-emission electricity delivery systems, including advising APPA's work on its DOE Cooperative Agreements.
- The ES Working Group is focused on exploring options and providing energy storage solutions for public power

Advancing Emissions and Energy Resilience Goals for Federal Buildings with Gas Utilities

Rick Murphy | Managing Director, Energy Markets
May 1, 2023

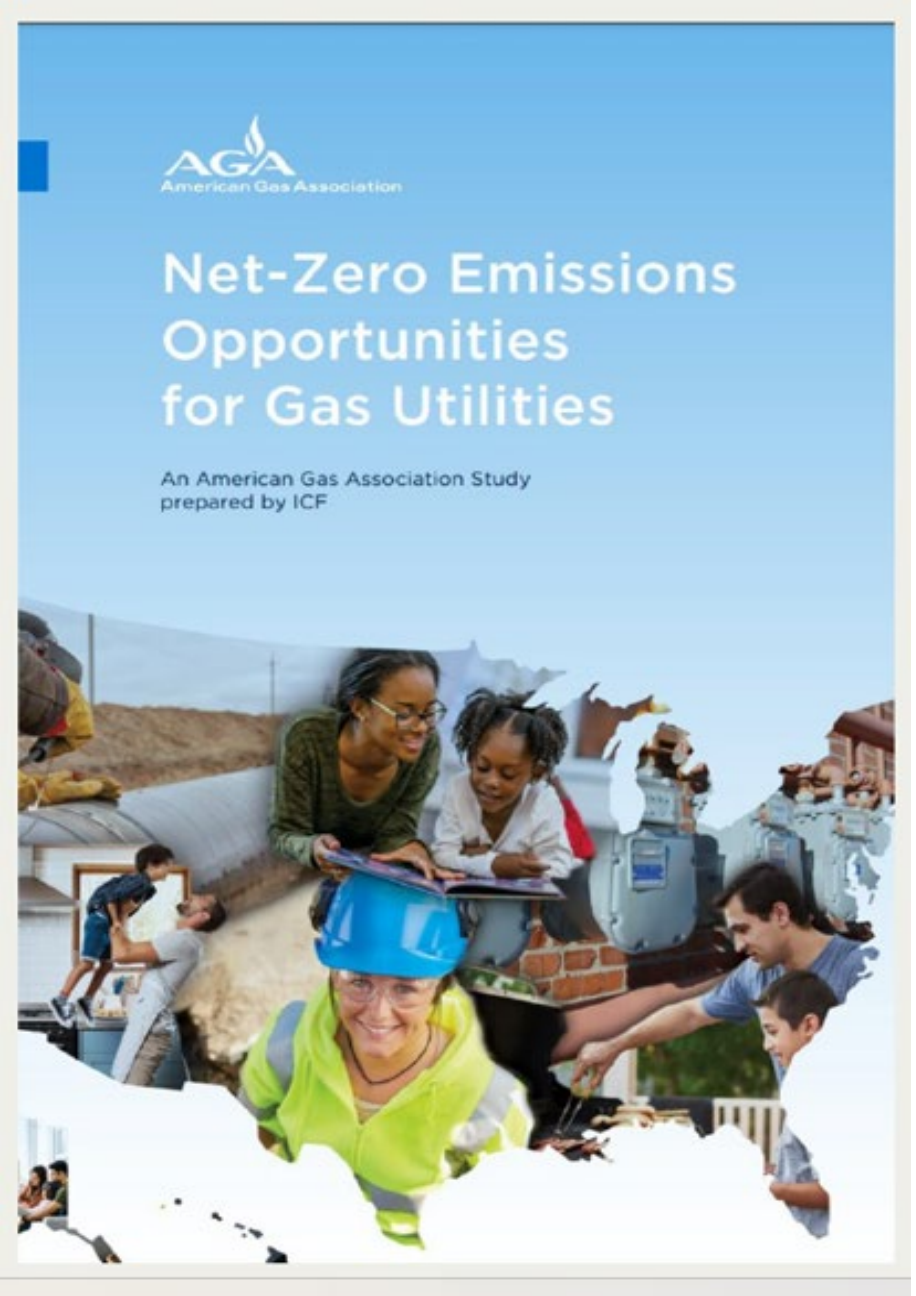
AGA
American Gas Association

Innovating Today for a Cleaner and Resilient Energy Future

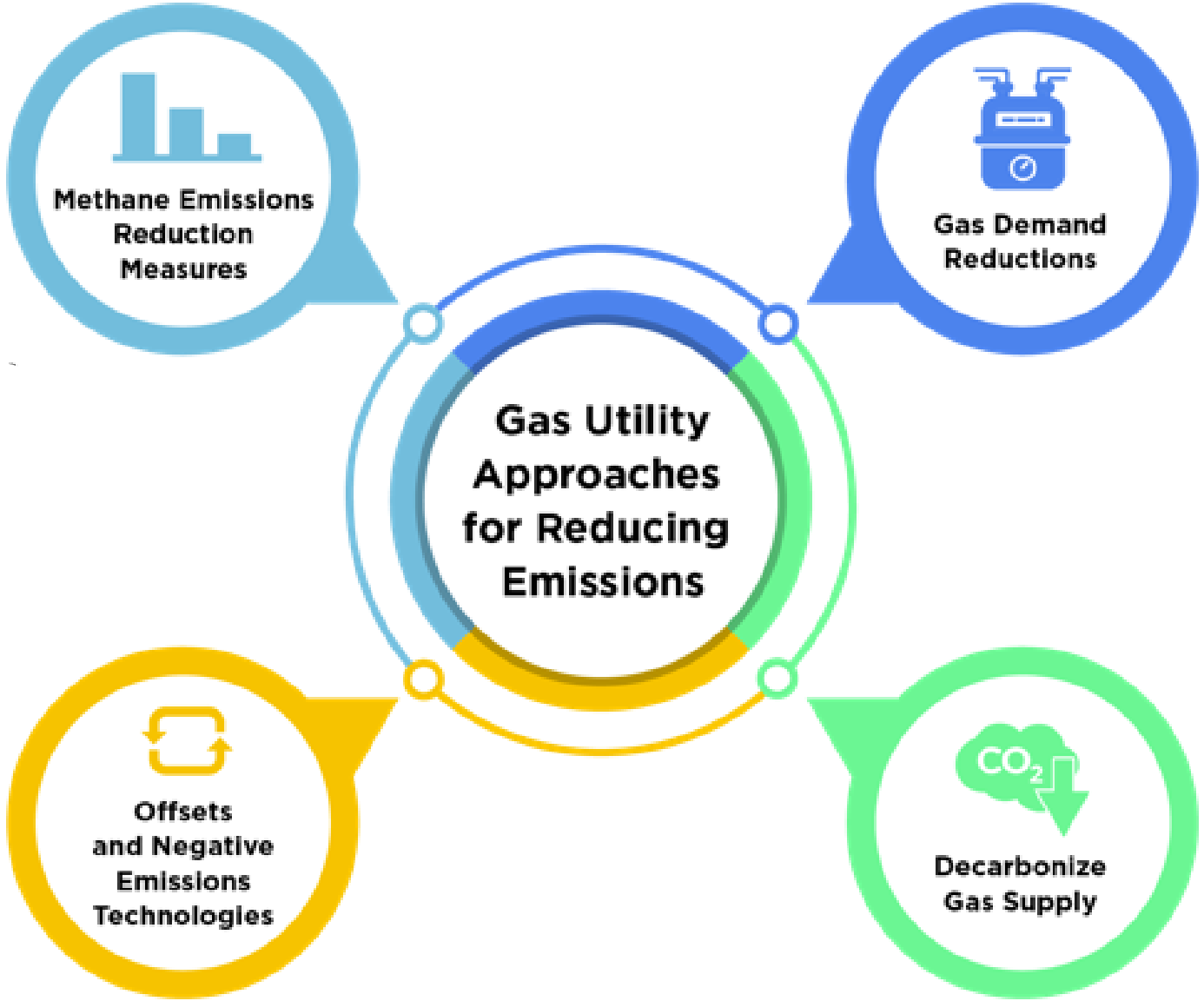
America's Gas Utilities Have Consistently Provided Solutions to Our Nation's Most Pressing Energy Needs

Pathways that utilize the vast gas utility infrastructure:

- Offer opportunities to incorporate renewable and low-carbon gas resources
- Provide optionality for stakeholders
- Help minimize customer impacts
- Maintain high reliability
- Improve overall energy system resilience
- Accelerate emissions reductions



There are many gas utility solutions to reducing emissions



AGA American Gas Association

Renewable Natural Gas State Activity

66 Bills introduced

28 Bills passed

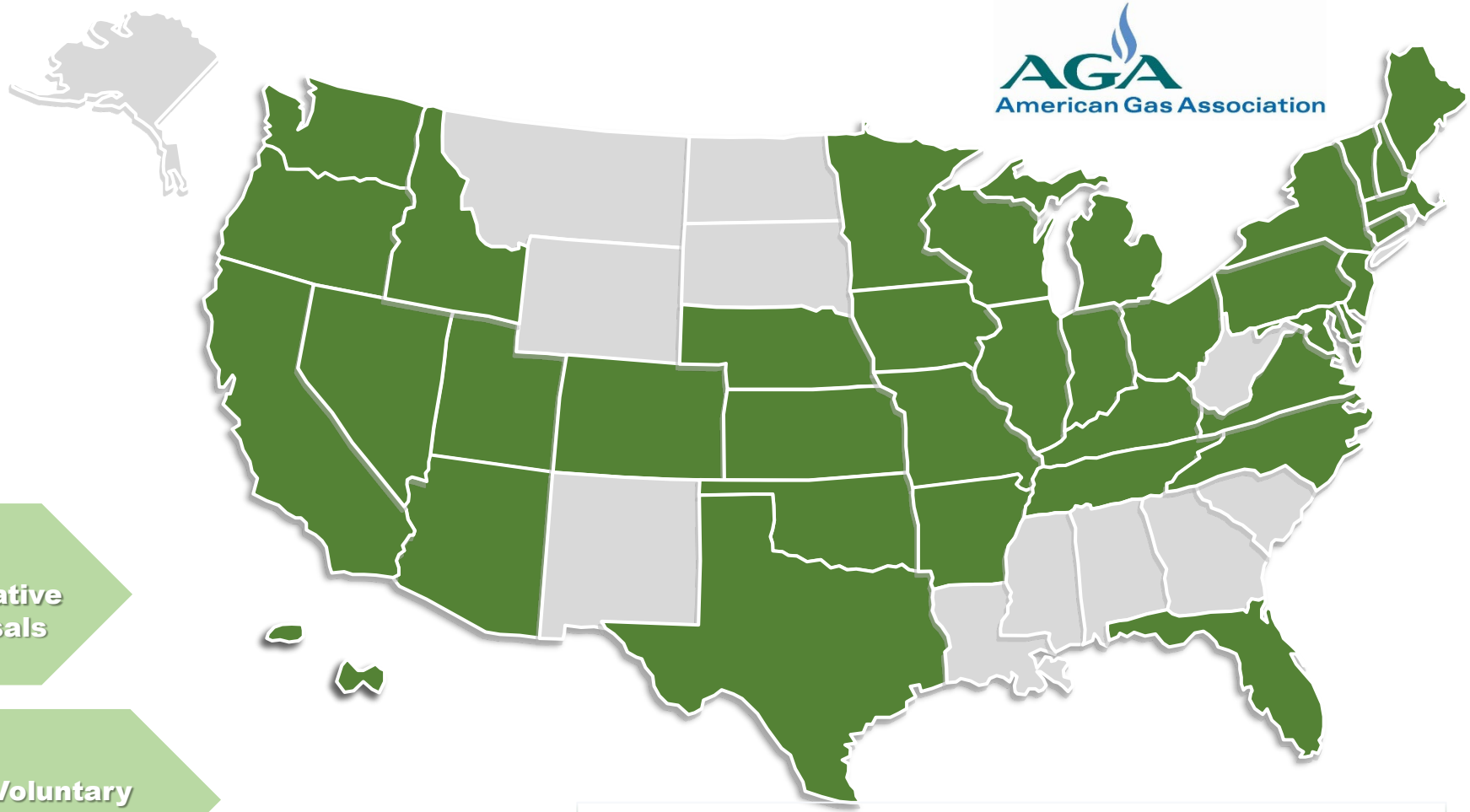
State Legislative Proposals

18 Natural Gas Utilities developing or offering Green Tariffs

Voluntary Programs

25 Natural Gas Utilities engaged in RNG production projects

Utility Led RNG Projects



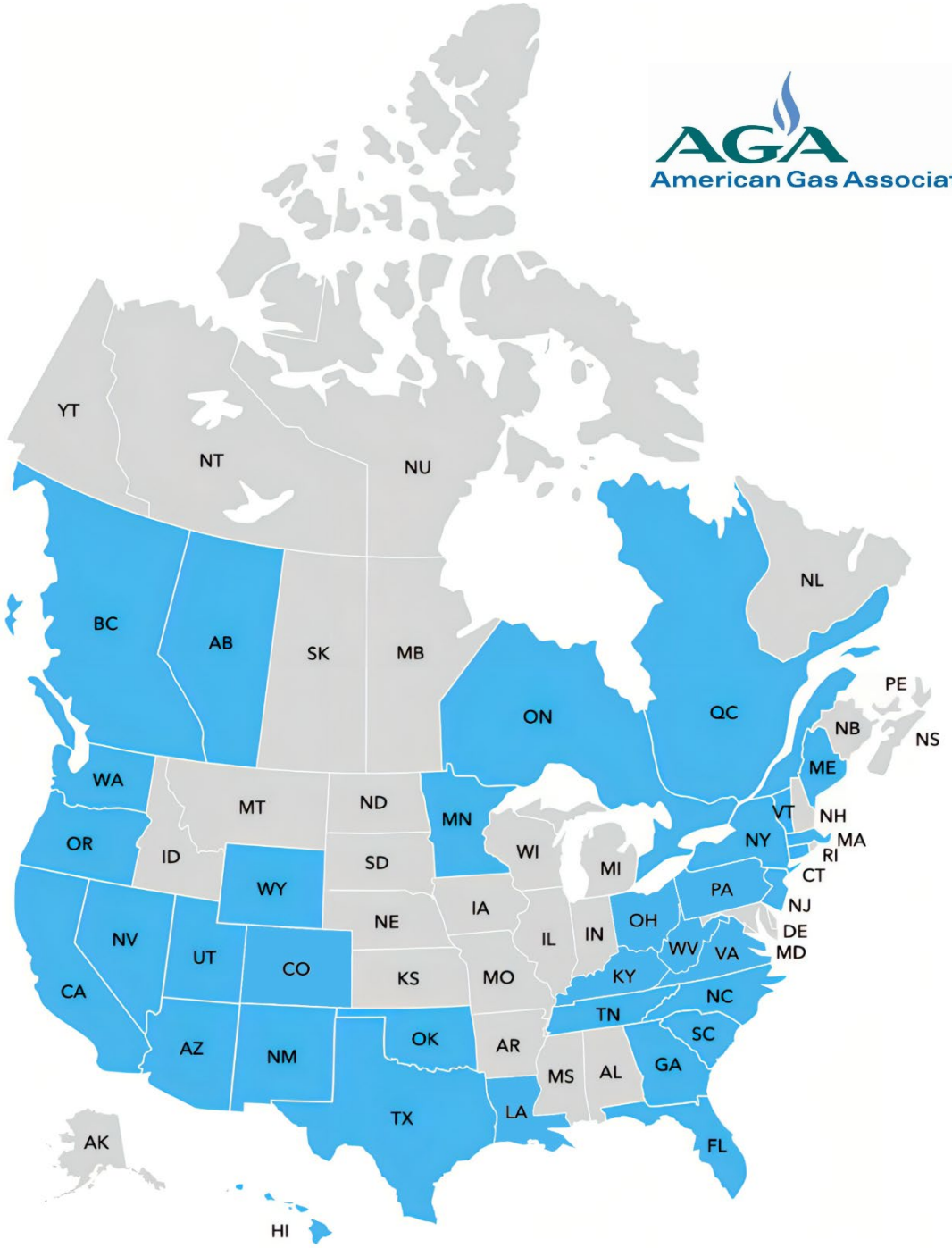
AGA American Gas Association

Activity in 37 states to promote the use of RNG in the residential or commercial sector through either legislative, regulatory, or utility led action.

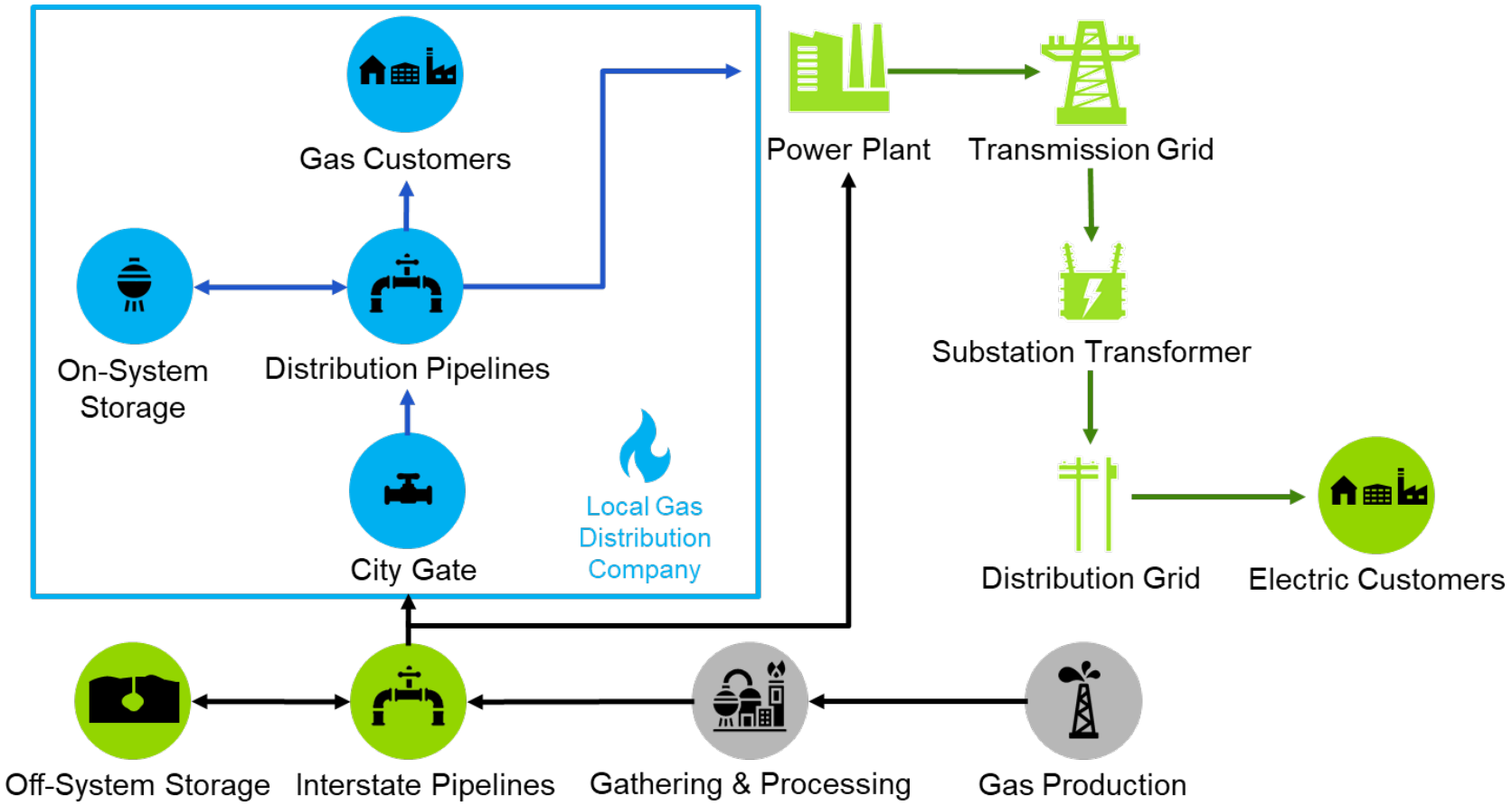
*this data does not include RNG interconnection activity

Hydrogen State Activity

Gas utilities are engaged in hydrogen research and testing in an increasing number of states and provinces.



An integrated approach that leverages the benefits of the gas and electricity systems to achieve decarbonization and resiliency is needed.



Questions/Discussion

Rick Murphy | Managing Director, Energy Markets
rmurphy@aga.org

AGA
American Gas Association

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

May 1-2, 2023

Welcome to the Spring 2023 FUPWG Seminar

Co-sponsored by:

FEMP
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America's Electric Cooperatives

Next up: Networking Event!
Don't forget your CEUs!