FEMP
Federal Energy Management Program

TVA

Utility Open House for Federal Customers: Tennessee Valley Authority

July 16, 2024 | 9:00 AM – 1:00 PM CT

This Training Offers IACET CEUs

How to obtain your CEUs:

1. Visit the Whole Building Design Guide (WBDG) at wbdg.org to log in or create an account
2. Enroll in the training
3. Attend the training in full
4. Return to your WBDG account's Enrolled courses
5. Select the training's "Proceed to Course" button
6. Complete an assessment
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.

Agenda

9:00 AM (CT)	Welcome and Opening Remarks
9:25 AM	Demand Response
9:55 AM	Energy Efficiency Incentives
10:15 AM	Carbon Pollution-Free Electricity (CFE)
10:40 AM	Break
10:55 AM	Utility Energy Service Contracts (UESC)
11:35 AM	Fleet Electrification
11:50 AM	Resilience
12:15 PM	Final Q&A, Resources and Next Steps
12:40 PM	Adjourn

FEMP Welcome

Anna Siefken
Deputy Director, Federal Energy Management Program
U.S. Department of Energy

Federal Goals Lead to Electrification

Energy Act of 2020

- Use performance contracting to address at least 50% of cost-effective ECMs identified in facility audits (w/in 2 years)

Executive Order 14057

- Net zero federal operations by 2050
- 100% net zero buildings, zero-emission fleets, 100% carbon pollution-free electricity by 2030

Utility Partnerships

Federal Building Performance Standard

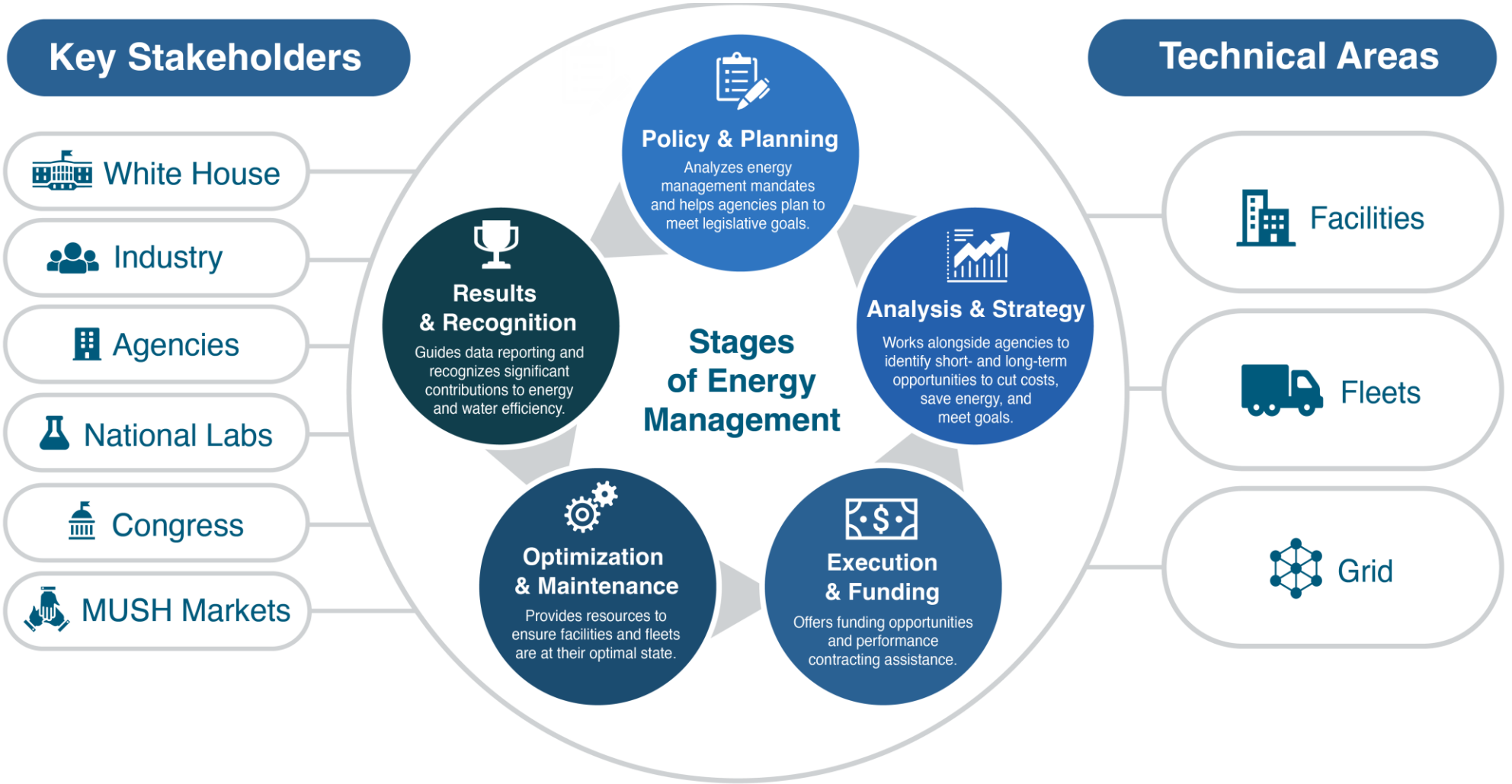
- Support achievement of net-zero emissions for federal building portfolio
- Zero scope 1 emissions from on-site fossil fuel use in 30% of federal buildings by 2030

Climate Smart Building Initiative

- Establish emissions reduction targets delivered through performance contracting
- Increase on-site clean electricity generation

FEMP Focuses on Federal Agency Support

FEMP works with key stakeholders to support all stages of energy management in federal agencies' critical areas



FEMP Support Moves Agencies Forward

Access off-the-shelf resources and request specialized support.

Request Technical Assistance

FEMP's technical experts learn about your needs and provide customized support.

Access Tools

Available tools help collect data, assess resilience, identify opportunities for carbon pollution-free electricity, and much more.

Join a Community

Communities are available for federal employees & industry stakeholders to share lessons learned and drive decision-making.

Apply for Funding & Access Support

$250M in AFFECT funding is available as well as performance contracting support.

Get Recognition

Nominate individuals, projects, and sites for a variety of available federal recognition programs.

Take Training

On-site, in-person, and on-demand FEMP-delivered training supports an informed, capable workforce.

FEMP Tools & Support

- Smart Facility Accelerator
- FEDS Spotlight
- REopt
- ESPC
- Technical Resilience Navigator
- Federal Utility Partnership Working Group
- Re-tuning Trainings
- EVI Locate
- UESC
- CDF Calculator
- Treasure Hunts
- Interagency Task Force
- Federal Energy & Water Management Awards
- Energy Exchange
- AFFECT Funding
- Electricity Procurement Analysis

and much, much more...

FEMP's Goal for Today: Agencies Take Action!

Request a consultation with FEMP or your utility to:

- *Discuss your site's energy goals, challenges, and priorities*
- *Identify program offerings that align with your needs*
- *Sign up for incentives*
- *Connect with subject matter experts to learn more about any of the topics discussed today*

Consultation Request Form

Fill out this *linked form* or scan the QR code below.

FEMP will connect you with the appropriate party for follow-up, which may include FEMP technical experts, utility POCs, and/or the relevant Utility Lead Agency.

Welcome

Monika Beckner
Vice President, Energy Services & Programs

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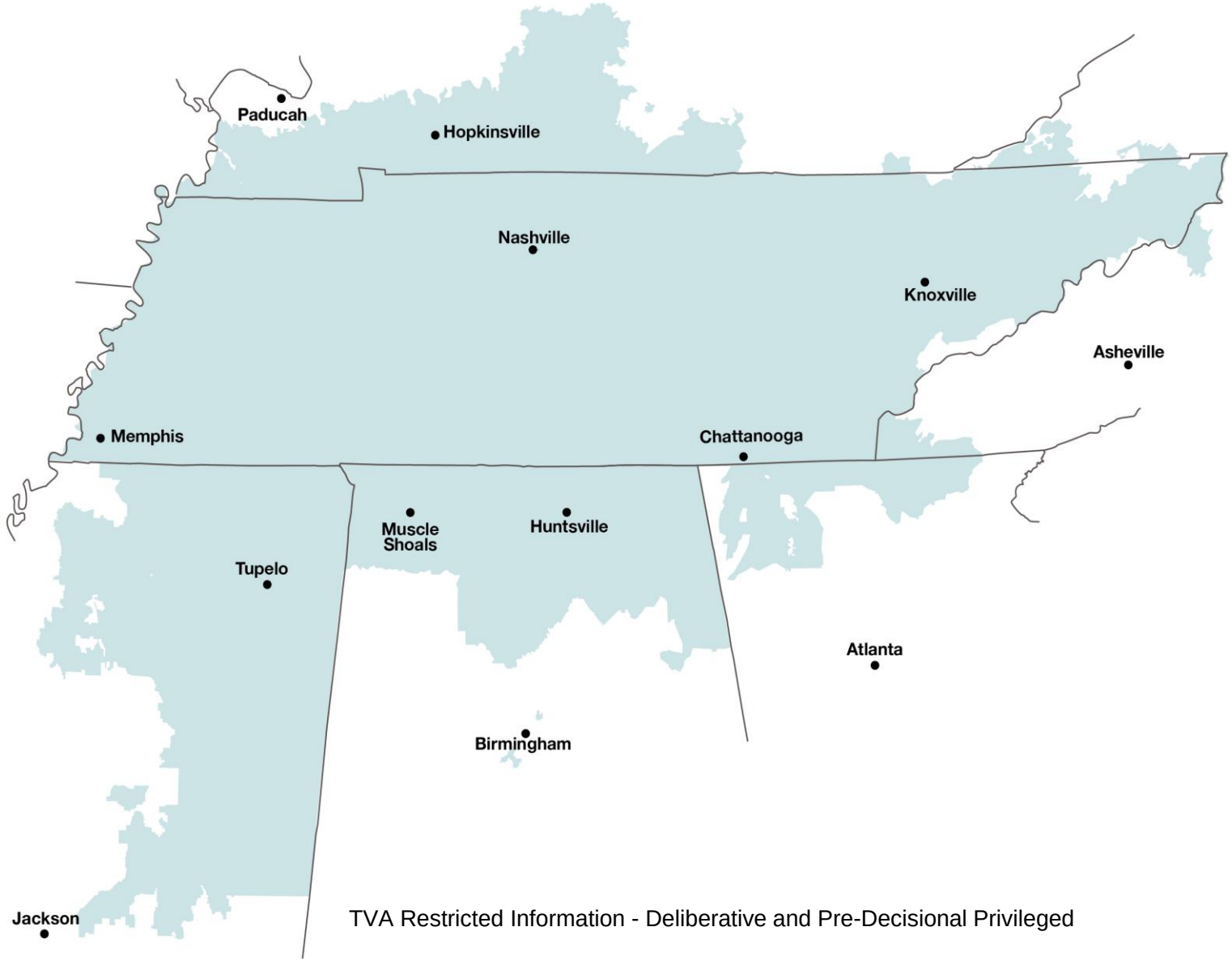
TVA Service Area



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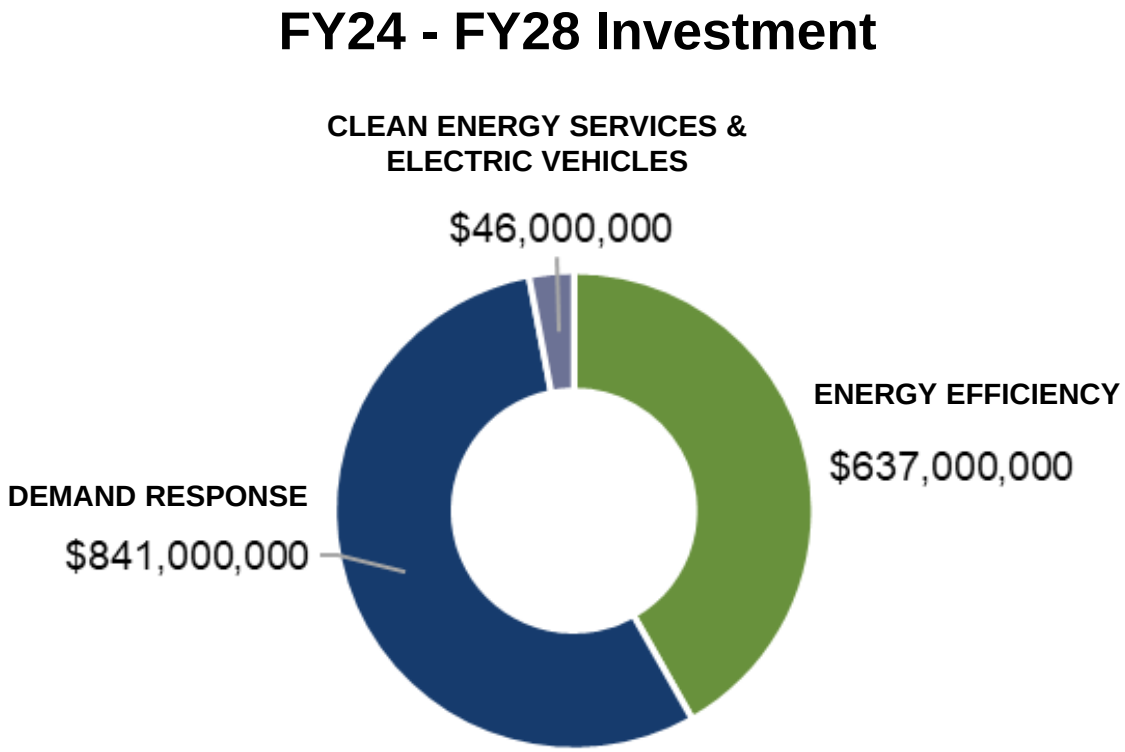
Growing Our Demand Management Impact



TVA plans to invest $1.5 billion in energy efficiency and demand management programs through FY28, which is estimated to offset 30% of TVA's new load growth over the next decade.

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Demand Response and Time Variable Pricing (DR/TVP)

Billie Holecek
Research Associate
Lawrence Berkeley National Lab

What is Demand Response?

Demand response is a short-term, voluntary decrease in electrical consumption by end-use customers to stabilize the grid, triggered by:

- compromised grid reliability,
- high wholesale market prices, or
- supply/demand imbalance

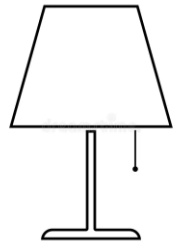
Image Source: DOE (www.energy.gov/oe/demand-response)

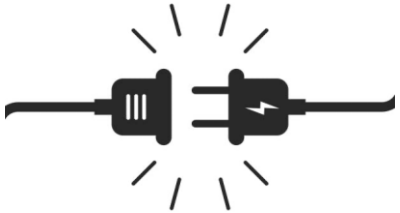
Program Types

- **Formal DR Programs**
  - Run by utilities and ISO/RTOs
  - Reliability-based and price-based programs
- **“Informal” DR – load management to:**
  - Reduce demand charges
  - Lower electricity costs by optimizing TVP rates

Load Management Techniques (Common Examples)

- **Lighting**
  - Dimming via control
  - “Bi-level” switching: 2 or 3 lit lamps/fixture to 1 or 2
- **Cooling**
  - Raising set points of space or chilled water
  - “Demand-limiting” air handling unit (AHU) fans
- **Plug Load**
  - Notifying employees to minimize lighting and office equipment power (via on-off switch or sleep settings)
- **Miscellaneous**
  - Shut down (and power off) bank of elevators
  - Shut down pool and irrigation pumps





DR/TVP Programs Benefits

Participating in DR/TVP programs can help agencies meet federal goals by:

- Lowering the price of energy consumed
- Enabling greater use of on-site storage and generation
- Reducing carbon emissions during periods of peak demand
- Contributing to federal resilience and grid stability through reduced peak energy consumption

Authorizing Law

Both informal (tariff-based) and formal DR Programs are legal

- 10 USC 2913/2919 (DoD) and 42 USC 8256 (civilian)
  - "Agencies are authorized and encouraged to participate in programs to increase energy efficiency and for water conservation or the management of electricity demand conducted by gas, water, or electric utilities and generally available to customers of such utility"
  - "Each agency may accept financial incentives, goods, or services generally available from any such utility, to increase energy efficiency or to conserve water or manage electricity demand."

Case Studies

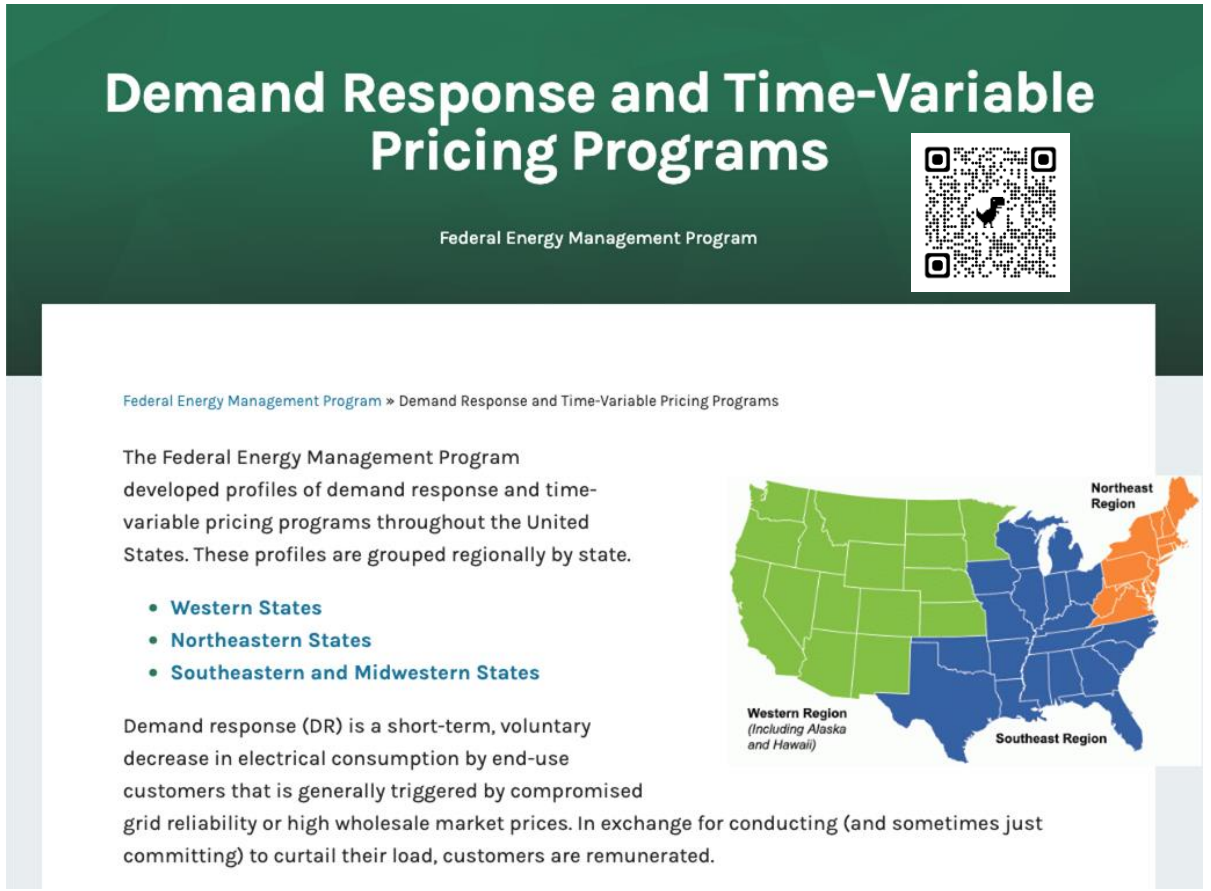
William S. Moorhead Federal Building in Pennsylvania enrolled in a TVP rate and **implemented load shifting resulting in $285k of savings (12%) over the first 3 years.**

VA MD Health Care System enrolled 1-3 MW annually in a demand response program. Using small generators and manual curtailment strategies **they have been able to save over $490,000 to date**.

GSA Region 9 enrolled facilities in California's statewide Emergency Load Reduction Program. Sites enrolled **receive $2/kWh for reduction** when an event is called. In 2023, these facilities delivered over 0.5 MWh in load reduction

Resources and Support

- FEMP's Demand Response and Time-Variable Pricing Website
- FEMP's Technical Assistance Portal
- FEMP's On-Demand Training on Demand Response and Time-Variable Pricing



https://www.energy.gov/femp/demand-response-and-time-variable-pricing-programs

Demand Response

Claire Moore
Manager, Demand Response

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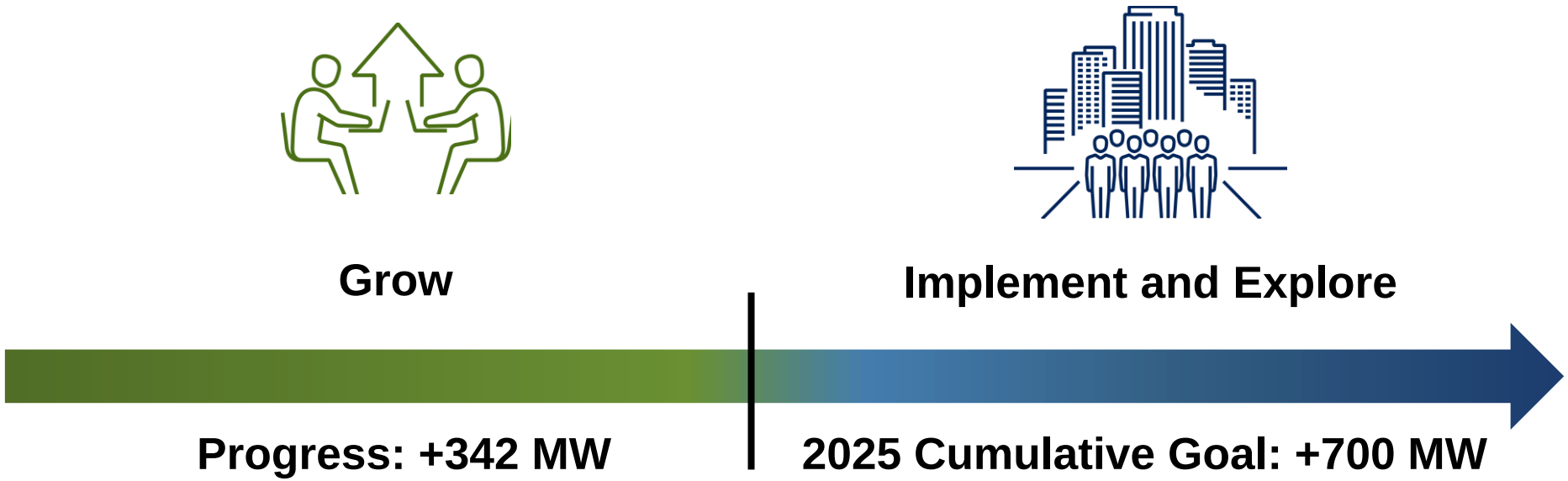
Ramping Up Demand Response

By FY26, we aim to curb 700+ MW of peak demand by growing existing programs and launching programs for untapped markets in our region.



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PowerFlex

Meet PowerFlex

Designed for >1MW facilities already in the region with a 500 kW annual average on-peak interruptible demand.

Former Interruptible Power (IP) participants are encouraged to transition to this program.

Participants will earn monthly demand credits up to $9.47/ kW-month plus incentives and event-specific energy credits of $100/MWh.

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What is PowerFlex?

PowerFlex is an **emergency** and **capacity** program.

Emergency

Events reserved for TVA system emergencies with unlimited availability.

Capacity

Events to supply capacity and avoid emergencies, as determined by TVA's real-time dispatch strategy, with a defined number of callable hours per year.

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IP vs. PowerFlex

How do they compare?

IP

- Max Base Demand Credit: $5.75/kW
- Notice Period Options: 2
- Hour Block Options: 1
- Energy Credit: ~$30/MWh
- Emergency–Only Energy Credits? NO
- Additional Incentives? NO
- Protected Load Flexibility? Seasonal only

PowerFlex

- Max Demand Credit: $11.62/kW*
- Notice Period Options: 5
- Hour Block Options: 7+
- Energy Credit: $100/MWh
- Emergency–Only Energy Credits? YES
- Additional Incentives? YES
- Protected Load Flexibility? Seasonal and between Emergency/Capacity

* With full incentives applied.

PowerFlex Features

Event notification options

EMERGENCY:

5 min emergency

30 min emergency

60 min emergency

CAPACITY:

30 min capacity

4 hr capacity

12 hr capacity

Event capacity options

ANNUAL CAPACITY BLOCKS:

Emergency calls are unlimited. Each Capacity call is 2 hours minimum to 4 hours maximum.

Example Annual Participant Credits

FOR EVERY **5 MW** OF INTERRUPTIBLE	CAPACITY HOURS 24	CAPACITY CREDIT RANGE $309,600 - $438,600 ENERGY CREDITS $12,000
	CAPACITY HOURS 96	CAPACITY CREDIT RANGE $568,200 - $697,200 ENERGY CREDITS $48,000

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Valley Growth Partners

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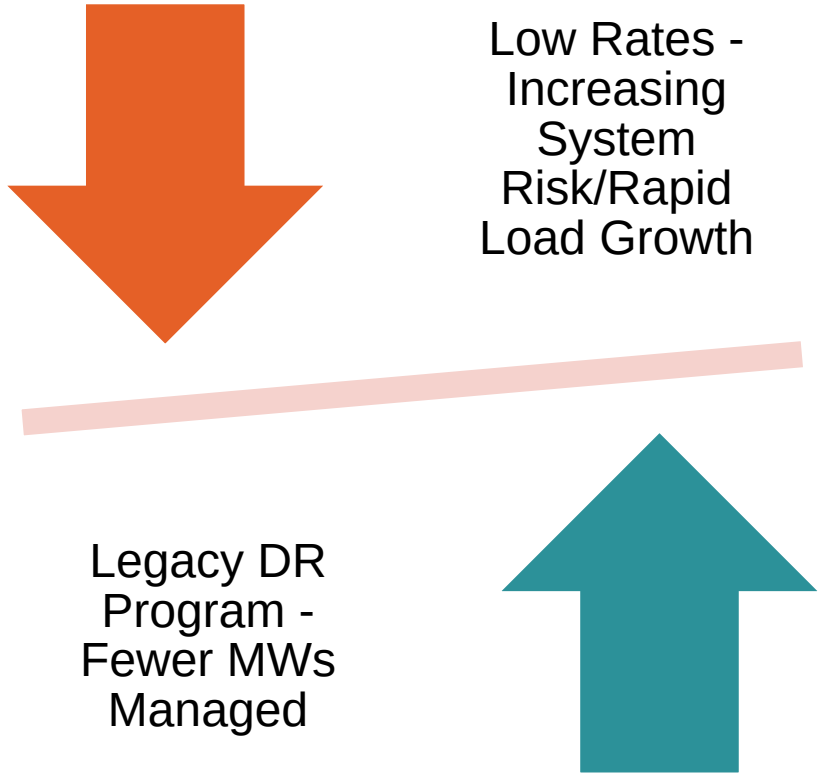
Background

- While TVA executes generation and fleet resiliency plans, managing the risks of new load is important.
- Mandatory curtailments as a condition of service is not required, making voluntary Demand Response enrollment a key strategy.



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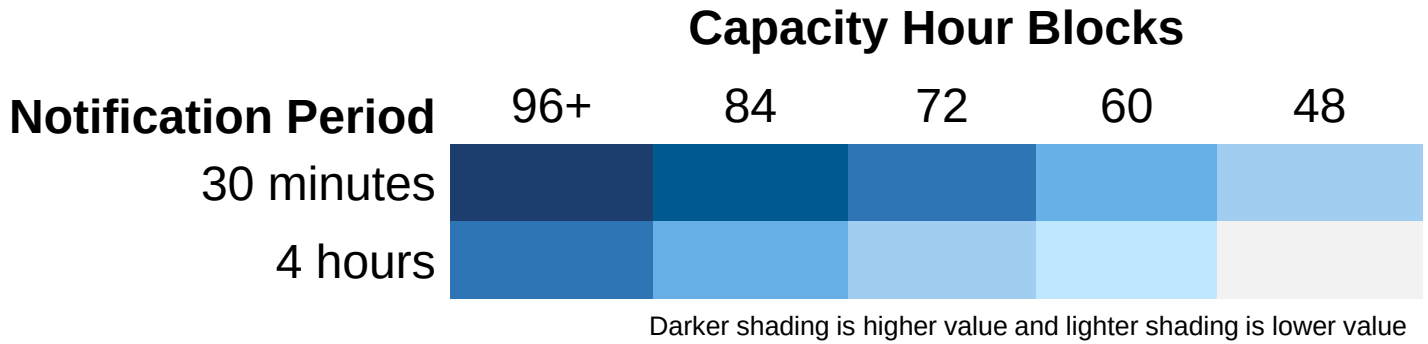
Valley Growth Partners Program Features

- Energy Credit: $75/MWh
- Must have TVA power contract to sign Valley Growth Partners contract.
- Contracts available this summer.
- Availability and pricing subject to quarterly evaluation.



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Demand Response Structure

PowerFlex features and pricing are designed for customers with existing power contracts and small load growth.

Valley Growth Partners features and pricing are appropriate for new loads to the Valley or existing customers with contract demand growth >5 MW.

PowerFlex

- Existing Customers with no growth who want to participate
- Existing Customers <5 MW growth
- Existing Customers >5 MW growth (current DR program participant)

Valley Growth Partners

- New Customers >1 MW
- Existing Customers >5 MW growth (not current DR program participant)

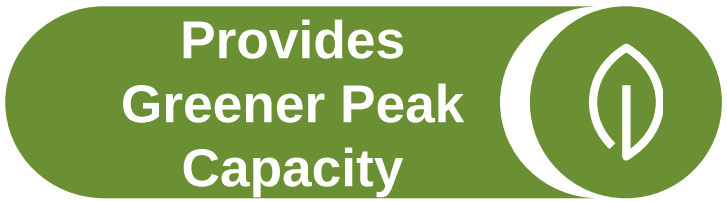
Enel

TVA & Enel Partnership

For the past **15 years**, Enel (formerly Enernoc) has worked with TVA to provide reliable Demand Response services

- Responded to over 85 dispatches over the past 10 years
- Over 56 GWh of energy delivered since 2010
- DR portfolio performed over 100% during Winter Storm Elliot

This Demand Response program provides **sustainability benefits** for local communities and **financial incentives** for participants:



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Enel Program Guidelines

Demand Response Type	**Curtailment, properly permitted backup generators, storage (Peak Shaving)**
Payments	Capacity Payments (for being on stand-by): $30/kW-year Energy Payments (for dispatch performance): heat rate x gas index, currently $20-30/kW-year
Costs	No upfront, out-of-pocket costs for customers to participate
Program Period & Hours	April 1 – October 31; 5 a.m. – 8 p.m. CT November 1 – March 31; 5 a.m. – 8 p.m. CT
Dispatch Notification	At least 30 minutes for any event
Dispatch Duration	1-4 hours
Maximum Dispatches	1 event per day; 6 events per month; 32 economic dispatch hours per year
Annual Dispatch Frequency	8-12 dispatches on average
Baseline	Highest 4 days of the last 5 business days with symmetric pre-event adjustment
Emergency Events	TVA reserves the right to call Emergency Events anytime - customers shall use commercially reasonable efforts to respond

Resources for participating & interested organizations

View our full list of **Demand Response Seasonal Webinars here**!

Resource Library Program Information

- One-stop resource for DR success:
  - How-to videos & guides
  - Program FAQs
  - Communications Overview

Participation Guide

Enel Software Application

- With Enel, customers can access:
  - Real-time energy data
  - Current and past DR performance
  - DR payment history

Application Tutorials

Application Login

Customer Support 24x7x365

- Our team of market experts have answers to customer questions:
  - Dispatch performance
  - Payments
  - Program rules

+1 888 363 7662

support.enelx@enel.com

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Questions

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Energy Efficiency

Ethan Epstein
Program Manager
DOE FEMP

Federal Facility Energy Efficiency: Goals & Statutory Requirements

Executive Order 14057

- Agencies shall:
  - Increase facility energy and water efficiency.
  - Establish targets for FY2030 for agency-wide energy use intensity (EUI) and potable water use intensity.

Energy Act of 2020

- Agencies are required to:
  - Install all life cycle cost-effective energy and water conservation measures in owned buildings to the maximum extent practicable, as soon as practicable after October 1, 2022.
  - Report non-compliance to Congress every two years, beginning January 1, 2022.

EISA 2007 & EPAct 2005

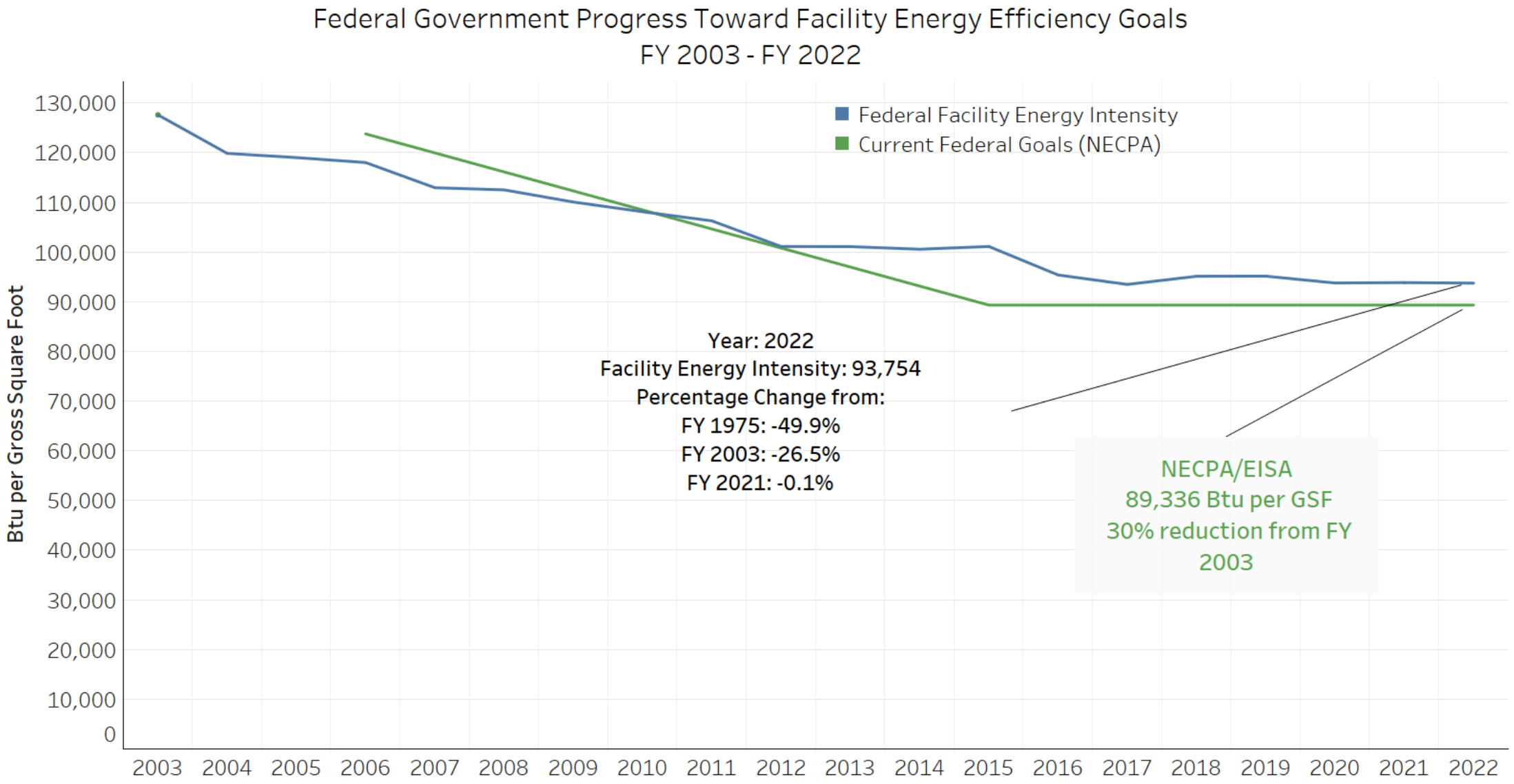
- Agencies must reduce energy consumption per gross square foot of Federal buildings relative to a FY2003 baseline by:
  - 27% by FY2014
  - 30% by FY2015

EISA = Energy Independence & Security Act

EPAct = Energy Policy Act

[Facility Energy Efficiency | Federal Laws and Requirements Search]

Federal facility energy use intensity (Btu/GSF)



Energy Efficiency Incentives

Kevin Wren
Manager, Business & Industry Operations

TVA TENNESSEE VALLEY AUTHORITY

Business & Industry Incentives

Helping you save

Designed to reduce project payback period and offset the cost of efficient upgrades to help you meet ESG goals and improve competitiveness.

Eligibility

All federal and LPC served federal customers may participate with eligible projects. Company cap is $3 million/incentives/year.

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Incentives as of February 2024

- **Outdoor LED lighting & street lighting:**
  - $0.04/kWh
- **Indoor LED lighting**
  - **$0.10/kWh**
- **Thermal Ice Storage**
  - $9.00/ton-hour (partial)
  - $11.00/ton-hour (full)
- **HVAC**
  - $80/ton Tier 1 Efficiency
  - $175/ton Tier 2 Efficiency
  - $250/ton Electrification
- **Custom Energy Efficiency**
  - **$0.12/kWh**
- **Forklift Class 1 and 2**
  - $1,000/leased
  - $2,000/purchased
- **Refrigeration**
  - $50 per EC motor
  - $200 per evaporator fan
  - $100 per LP open cases
  - $200 per LP medium low cases
- **Variable Speed Drives (VSD)**
  - $100 per HP
- **Program FY Cap per Customer**
  - **$3M**

Questions

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Carbon Pollution-Free Energy (CFE) Purchasing Programs

Tracy Niro
Program Manager
DOE FEMP

Executive Order 14057 CFE Goals

Catalyzing Clean Energy Industries and Jobs through Federal Sustainability
(12/8/2021)

100% **carbon pollution-free electricity** (CFE) by 2030, including 50 percent 24/7 CFE

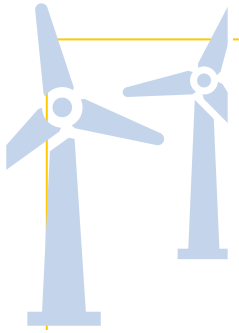
A **net-zero emissions building** portfolio by 2045, including a 50% emissions reduction by 2032; and

*100% **zero-emission vehicle** (ZEV) acquisitions by 2035, including 100% zero-emission light-duty vehicle acquisitions by 2027*

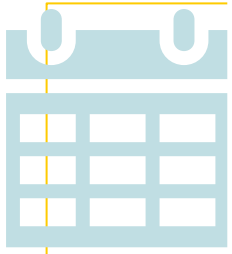
Net-zero emissions from overall federal operations by 2050

Implementing Instructions for Federal Agencies

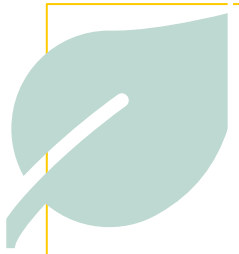
What Qualifies as CFE?



CFE Technology



Placed in service 10/1/2021 or newer



EACs delivered or retired

Delivered to balancing area

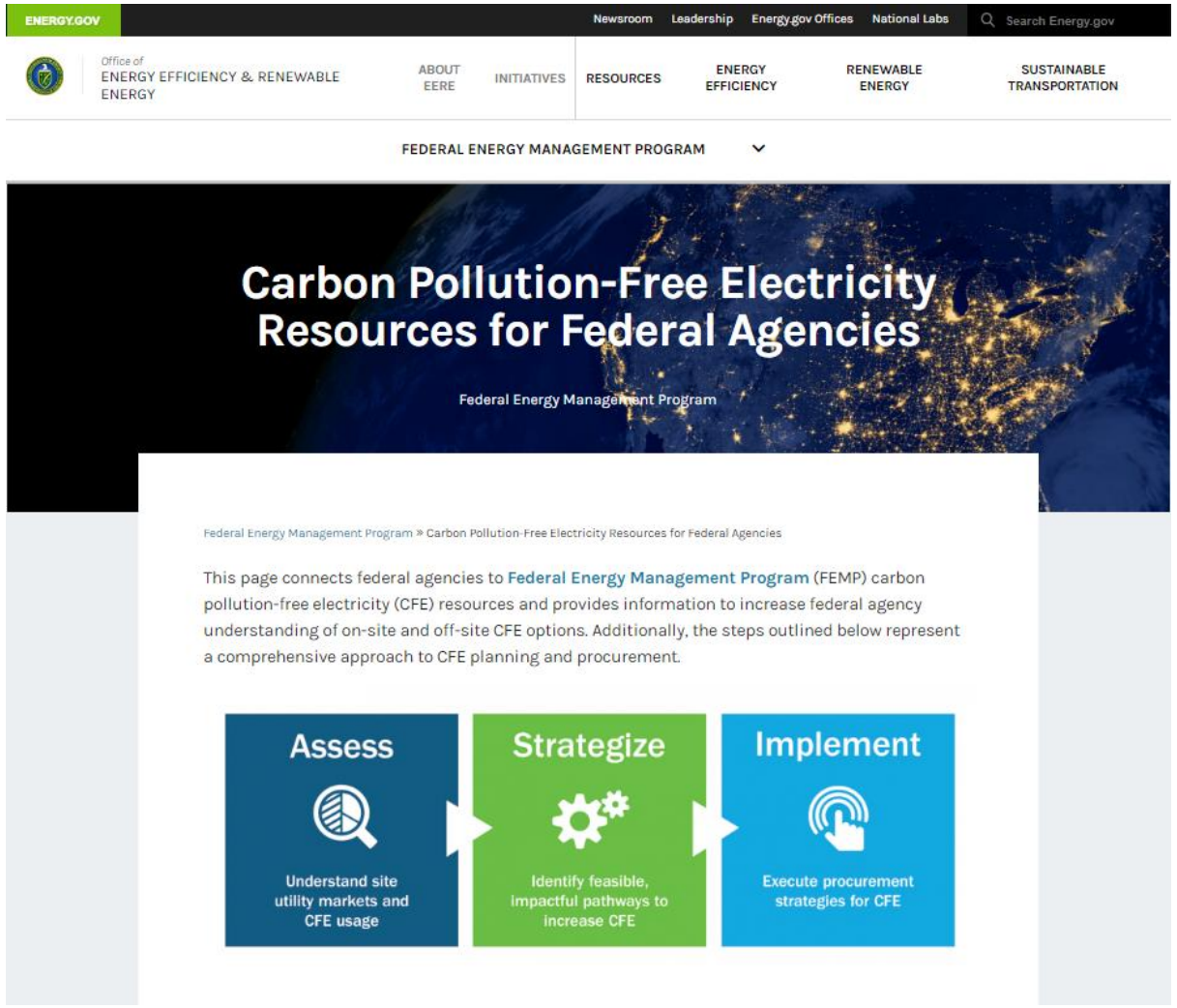
What Technologies Are Considered CFE?

Per E.O. 14057 Section 603(d):

- Solar
- Geothermal
- Wind
- Renewably-sourced hydrogen
- Hydroelectric
- Generation from fossil resources with active carbon capture and storage
- Nuclear
- Marine and hydrokinetic

Other technologies may also be eligible with carbon capture and storage

CFE Resources on the FEMP Website



Assess

Assess the options available to your site based on the utility regulatory environment in which it is located. Available options will differ depending upon the market structure.

- UNDERSTAND AGENCY ELECTRIC UTILITY REGULATORY ENVIRONMENT +
- IDENTIFY BALANCING AUTHORITIES +
- REVIEW AVAILABLE DATA RELATED TO IDENTIFIED ECMS FOR EFFICIENCY OPPORTUNITIES +
- CONSIDER FUTURE LOAD +

Strategize

Identify feasible, impactful pathways to increase CFE.

- UNDERSTAND POTENTIAL FOR ADDITIONAL ON-SITE CFE GENERATION CAPACITY +
- IDENTIFY CURRENT ELECTRICITY PROCUREMENT STRATEGY +
- UNDERSTAND OPTIONS FOR OFF-SITE CFE PROCUREMENT +

Implement

Implement energy efficiency measures, off-site CFE procurement, and on-site CFE generation and/or energy storage projects.

- EXECUTE STRATEGIES TO INCREASE ON-SITE CFE GENERATION +
- EXECUTE STRATEGY TO INCREASE CFE FOR SITES IN VERTICALLY INTEGRATED MARKETS +
- EXECUTE STRATEGY TO INCREASE CFE FOR SITES IN RETAIL ELECTRIC CHOICE MARKETS +
- REPORT CFE USAGE +
- MEASURE PROGRESS +

Learn more: CFE Resources for Federal Agencies

Where to Start to Purchase Qualifying CFE?

- **Identify the regulatory environment:**
  - In TVA's service territory, electricity is a vertically integrated market.
- **Identify the balancing area:**
  - Your balancing area is TVA.

Evaluate Options to Determine What Qualifies as CFE

CFE Technology

solar/wind/non carbon emitting, etc.

Placed in service 10/1/2021 or newer

EACs delivered or retired

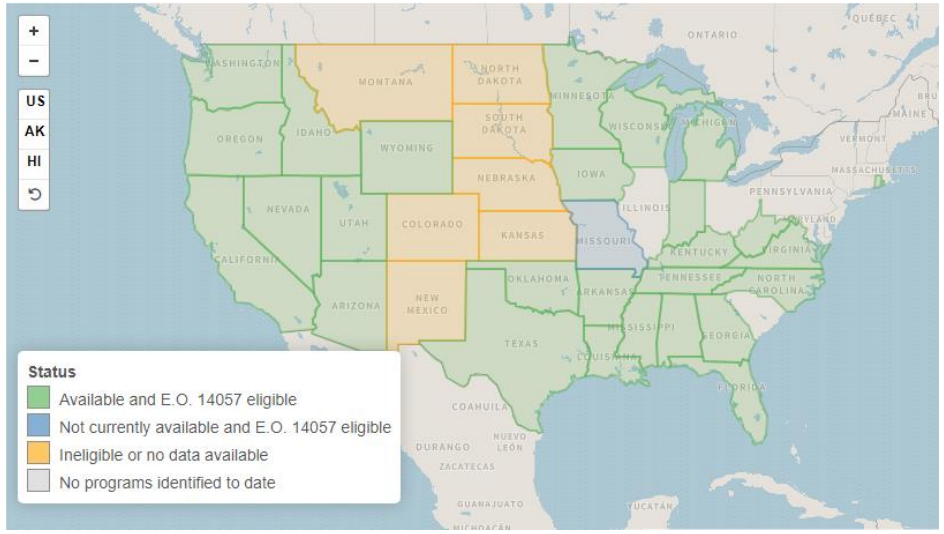
Delivered to **TVA** balancing area

Tools for CFE Planning

Utility CFE Program Availability Map Tool

- Identify clean energy purchasing programs offered by vertically integrated utilities.
- Filter by state, program availability, E.O. 14057 eligibility, and existing areawide contract to identify programs of interest.

New programs/utility offerings added quarterly!



Balancing Authority Lookup Tool

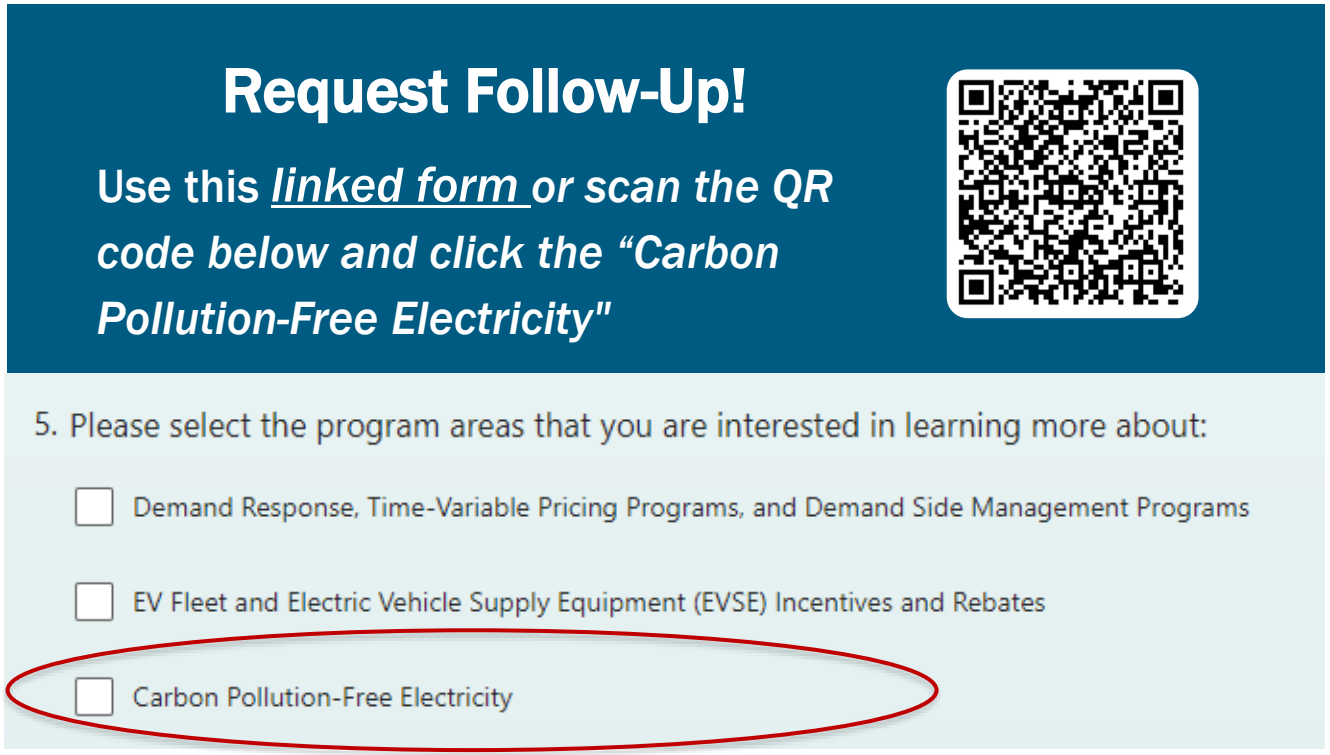
- Identify a site's balancing authority by entering its ZIP code.

REopt (Renewable Energy Optimization Tool)

- Evaluate economic viability of on-site technologies at a given site.
- Perform single- or multi-site analysis.
- Set clean energy goals (i.e., can specify % of load to be met by on-site CFE).

Request Follow-Up to Be the First to Know About New Options

- TVA's Green Invest program is available for enrollment and meets the CFE requirements from Executive Order 14057.



TVA Renewable Programs

Eric Murray
Senior Manager, Distributed Energy Solutions

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Carbon Reduction Leadership

TVA is a national leader in carbon reduction.

50%

Accomplished*

70%

Plan by 2030

~80%

Path by 2035

Net-Zero

Aspiration by 2050

**For CY22, mass emissions of carbon dioxide were at 54% reduction and TVA's carbon emission rate was at 50% reduction from 2005 levels.*

TVA Green Portfolio Overview

Deliver renewable solutions that drive economic development, secure committed load and strengthen Valley partnerships.

Connect Switch Flex Invest DPP

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Green Invest

Program Highlights

Utility scale renewables

Competitive procurement

Lowest cost option

Project pool offering or site specific

Long-term load

Aggregate projects

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Questions

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Break until 10:50 AM

Video – Learn how TVA's Federal Energy Services Program has helped NASA pursue energy goals.

https://www.youtube.com/watch?v=B3SrJxGhz20

Utility Energy Service Contracts (UESCs)

Chandra Shah
Sr. Project Leader, FEMP Utility Program
National Renewable Energy Laboratory

What are Utility Energy Service Contracts (UESCs)?

Performance contracts that allow agencies to do energy and water projects with little to no up-front costs and appropriations from Congress.

- Savings from reduced consumption and improved efficiency used to pay for a variety of measures
  - Infrastructure upgrades
  - Replacement of aging, inefficient equipment
  - Renewable energy systems
- Capital costs paid for through financing and available agency funds

Federal Drivers: EA 2020 and Energy Management Requirements

42 U.S.C. § 8253 Energy and Water Management Requirements

- Annual requirements for evaluation of 25% of covered facilities (EISA audits)
- EA 2020 - Requires installation of life-cycle cost (LCC) effective energy conservation measures within 2 years of audit
- EA 2020 – Requires use of performance contracting to address at least 50% of LCC ECMs
  - Applies to measures identified in evaluations completed on or after ***December 27, 2020***

FEMP Guidance

Performance Contracting Requirements Related to the Energy Act of 2020

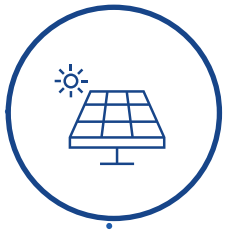
How do UESCs Work?

Select contractor

Competition limited to serving distribution utilities

Conduct assessments* to evaluate energy/water savings opportunities

Contractor identifies cost effective energy conservation measures (ECMs)



Implement ECMs

Utility secures financing and installs measures

Make payments from cost savings

Contract term of up to 25-years to pay for ECMs

Implement Performance Assurance Plan to monitor and sustain savings

Via operations & maintenance / savings verification/other

**Preliminary Assessment provided by TVA at no cost*

Authorizing Law: Utility Energy Service Contract (UESC)

Authorized and encouraged under the Energy Policy Act of 1992 (42 U.S.C. § 8256 and 10 U.S.C. § 2913 for DOD)

- Agencies are authorized to participate in utility incentive programs and accept any financial incentives, goods, or services generally available
- Defined as a limited-source acquisition between a federal agency and serving utility for energy management services, including:
  - Energy efficiency improvements
  - Water efficiency improvements
  - Demand reduction services
  - Distributed Energy

UESCs are Limited Source Acquisitions

Competition is limited to serving distribution utilities (electricity, natural gas, and water).

Key Advantages of UESCs

- **Intended to achieve savings or be budget neutral**
  - Paid for through energy/water savings and/or available agency funds
  - Utility is responsible for obtaining financing
- **Contract term up to 25 years**
- **Sites/facilities within TVA's service territory may be bundled in a single task order**
- **Performance Assurance Plan required (TVA does not offer a savings guarantee)**
  - Utility can perform operations & maintenance, repair/replacement, measurement and verification
- **Contracts are firm-fixed-price**
- **TVA is single point of contact for entire project – evaluation, design, installation, post-installation services**

Energy Conservation Measures

Common Examples

(not exhaustive)

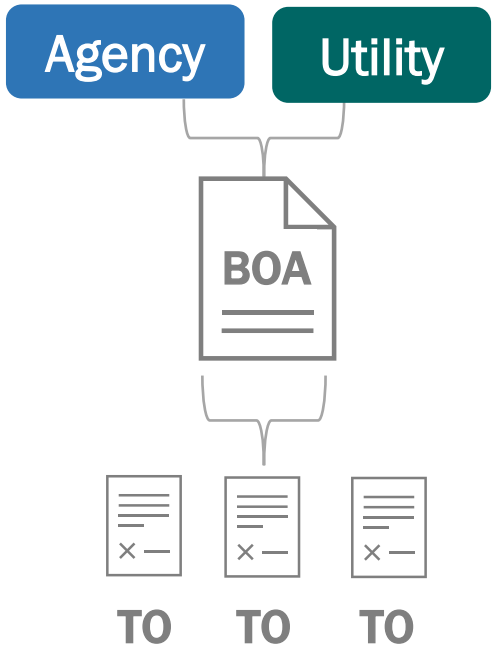
- Boiler and chiller upgrades
- Energy management control systems
- Commissioning/Retro-commissioning
- Building envelope
- HVAC
- Chilled/hot water, steam distribution
- Lighting and lighting control improvements
- Electric motors/drives
- Refrigeration
- Renewable Power Generation Systems
- Electrical peak shaving/load shifting
- Rate adjustments
- Appliance/plug load reductions
- Energy consuming devices and support structures
- Water and wastewater



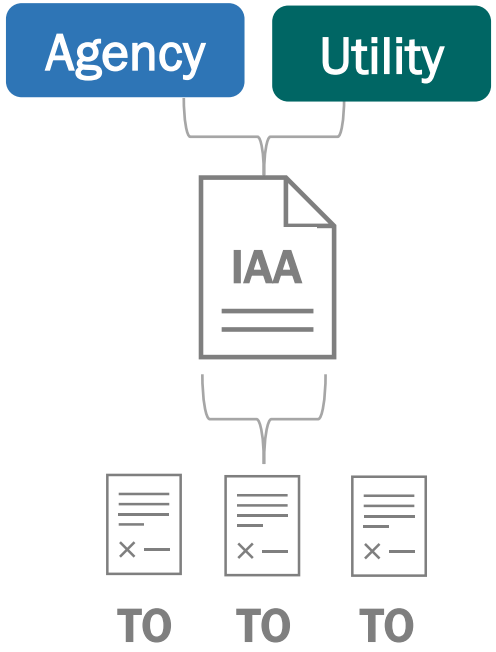



UESC Contracting Options with TVA

Basic Ordering Agreement (BOA)



Interagency Agreement (IAA)



Areawide Contract (AWC)

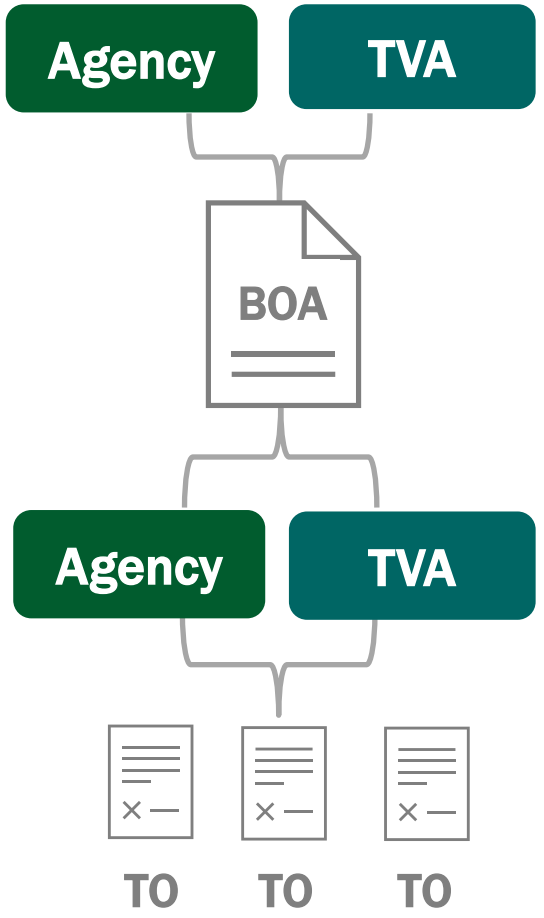
Separate Contract

FAR Part 16.703 Basic Ordering Agreement | FAR Part 41.206 Interagency Agreements | FAR Part 41.204 GSA Areawide Contracts | FAR Part 41.205 Separate Contract

Basic Ordering Agreement (BOA)

A BOA is an effective contracting vehicle for executing UESCs:

- Executed as a written instrument of understanding,
- Negotiated between an agency and TVA for issuing UESC orders (a BOA is **NOT** a contract)
- A single BOA may be used to issue multiple UESC task orders
- Establishes terms and conditions applicable to future task orders
- Like AWC, helps maximize economies of scale and reduce administrative lead-time related to individual task orders



Getting Started with a UESC

- **Set goals for your project**
  - Energy/water efficiency, equipment replacement, decarbonization and electrification, resilience, etc.
- **Review facility/energy consumption data and identify known ECM opportunities**
  - Leverage existing audits, multi-year site plans, and facility data
- **Identify eligible utility providers (*other than TVA*)**
  - Contact your serving utilities (electricity, natural gas, water) to learn about program availability and experience
- **Evaluate funding options**
  - Identify available appropriations, grants, and incentives that may help expand scope or shorten contract term
- **Contact FEMP for training and technical support**

UESC Support and Resources

FEMP offers various types of support to set projects up for success:

- General consultations with Federal Project Executives
- Project Facilitators (PF) to act as advisors through the Preliminary Assessment
- *PF at cost starting at IGA
- Project support provide by technical and contracting SMEs through DOE National Labs
- Training on contracting and technical topics for agency teams
- Online templates and other resources
- Federal Utility Partnership Working Group
  - 2024 FUPWG Seminar on Wednesday/Thursday August 21-22, 2024 in Houston, TX
  - Free one day UESC training on Tuesday, August 20

How much does FEMP support cost?

Nothing!

Most support can be provided at no cost*

Visit the FEMP UESC website to learn more

Federal Energy Services Program
Utility Energy Services Contracts (UESC)

Daryl Williams
Manager, Federal Energy Services Program

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TVA's Federal Energy Services Program (FESP)

- Supporting the grid.
- Strengthening the community.
- Empowering federal agencies.

That’s our mission.

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Here To Support Your Mission.

We help…

Federal agencies reach energy goals, innovate, and remain resilient in an ever-changing energy landscape.

Local power companies retain and grow lucrative jobs within our footprint.

TVA on its mission to keep life in the Valley thriving by reducing energy burden and carbon emissions while ensuring federal agencies remain here.

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TVA's UESC Process

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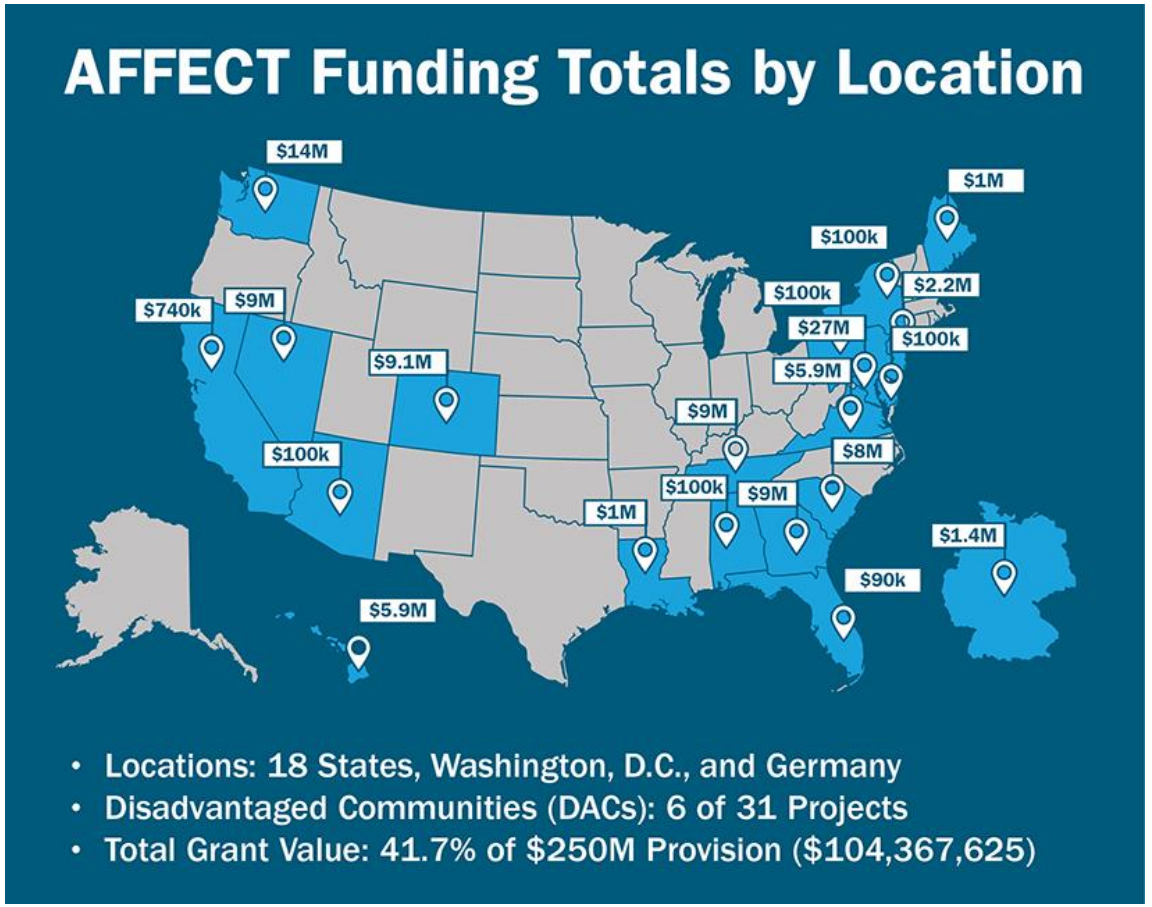
UESC Project Funding

- Federal agencies are authorized to use **“any combination”** of appropriated funds and financing
- Appropriations can be used to shorten term and/or expand scope
- Appropriations can directly fund ECMs

Other Funding Sources

- TVA energy efficiency incentives $$$$
- DOE AFFECT grants - $250M for energy and water efficiency upgrades
- TVA UESC projects awarded $11.9 Million AFFECT dollars



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How Funding Flows

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Why Participate in FESP

Solve challenges	Respond to legislative requirements, executive orders, resiliency, decarbonization and cybersecurity needs.
Save $$$	FESP-driven UESCs can reduce costs compared to Energy Savings Performance Contracts (ESPCs).
Affordable	ZERO upfront costs, flexible financing, pay for improvements with energy savings.
Peace of mind	Turnkey solutions led by FESP's team of energy efficiency experts.

As one of the largest energy consumers in the U.S., the federal government has a tremendous opportunity and responsibility to lead by example with smart energy management.

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Technical Solutions for Resilient Operations

- Assessments
- Audits
- Engineering and design
- Project management
- Construction and installation
- Training
- Operations and maintenance services
- Measurement and verification
- Performance assurance

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Financial Services

A FESP-led UESC can reduce costs compared to an ESPC.

Project financing has:

- Flexible payment terms.
- Low interest rates.
- No prepayment penalty.
- No interest during the construction period.

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Examples of Facility Upgrades

- Boiler improvements
- Building envelope
- Carbon free electricity (solar, etc)
- Chiller retrofits and/or replacements
- Combined heat and power
- Cooling tower retrofits
- Energy management control systems
- Faucet replacement
- Geothermal heat pumps
- HVAC upgrades
- High-efficiency motors
- Insulation
- Lighting controls
- Lighting retrofits and upgrades
- Metering
- Occupancy sensors
- Pumping systems
- Resiliency (microgrids, storage)
- Retro-commissioning
- Transformer replacement
- Water conservation systems
- Weatherization

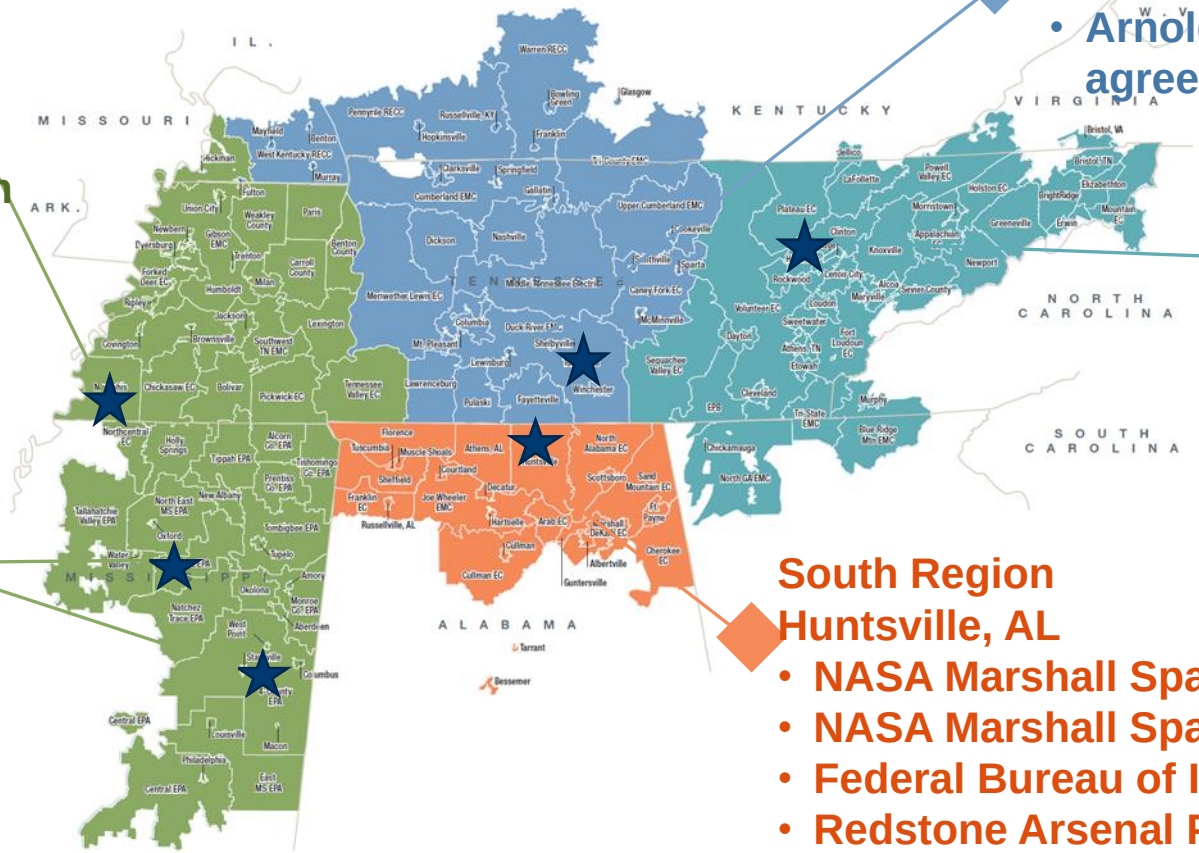
Current UESC Projects June 2024

West Region
Millington, TN
- **Naval Support Activity Mid-South $40 M**

North Region
Tullahoma, TN
- **Arnold AFB (AEDC) agreement under review**

East Region
Oak Ridge, TN
- **DOE Y-12 $1 Billion**

Southwest Region
Oxford & Starkville, MS
- **U.S. Dept. of Agriculture, $750,000**



South Region
Huntsville, AL
- **NASA Marshall Space Flight Center Phase 1 $15 M**
- **NASA Marshall Space Flight Center Phase 2 $20 M**
- **Federal Bureau of Investigation (FBI) $7 M**
- **Redstone Arsenal Phase 3-5 $10 M**
- **Redstone Arsenal Phase 6 $8.9 M**
- **Redstone Arsenal Data Center $0.5M**
- **Redstone Arsenal Phase 7 $20M**

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UESC Participants - Past and Present

- Arnold Air Force Base
- Columbus Air Force Base
- Federal Bureau of Investigation (FBI)
- Fort Campbell – U.S. Army Garrison
- GSA Aberdeen, MS Federal Courthouse
- Internal Revenue Service (IRS)
- Meridian Naval Air Station
- National Aeronautics and Space Administration (NASA)
- National Nuclear Security Administration Y-12 National Security Complex
- Naval Support Activity (NSA) Mid-south
- Redstone Arsenal – U.S. Army Garrison
- U.S. Department of Agriculture
- U.S. Missile and Space Intelligence Center (MSIC)
- U.S. Department Of Energy – Paducah Gaseous Diffusion Facility

Let's Get Started With a No Cost Preliminary Assessment!

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Questions

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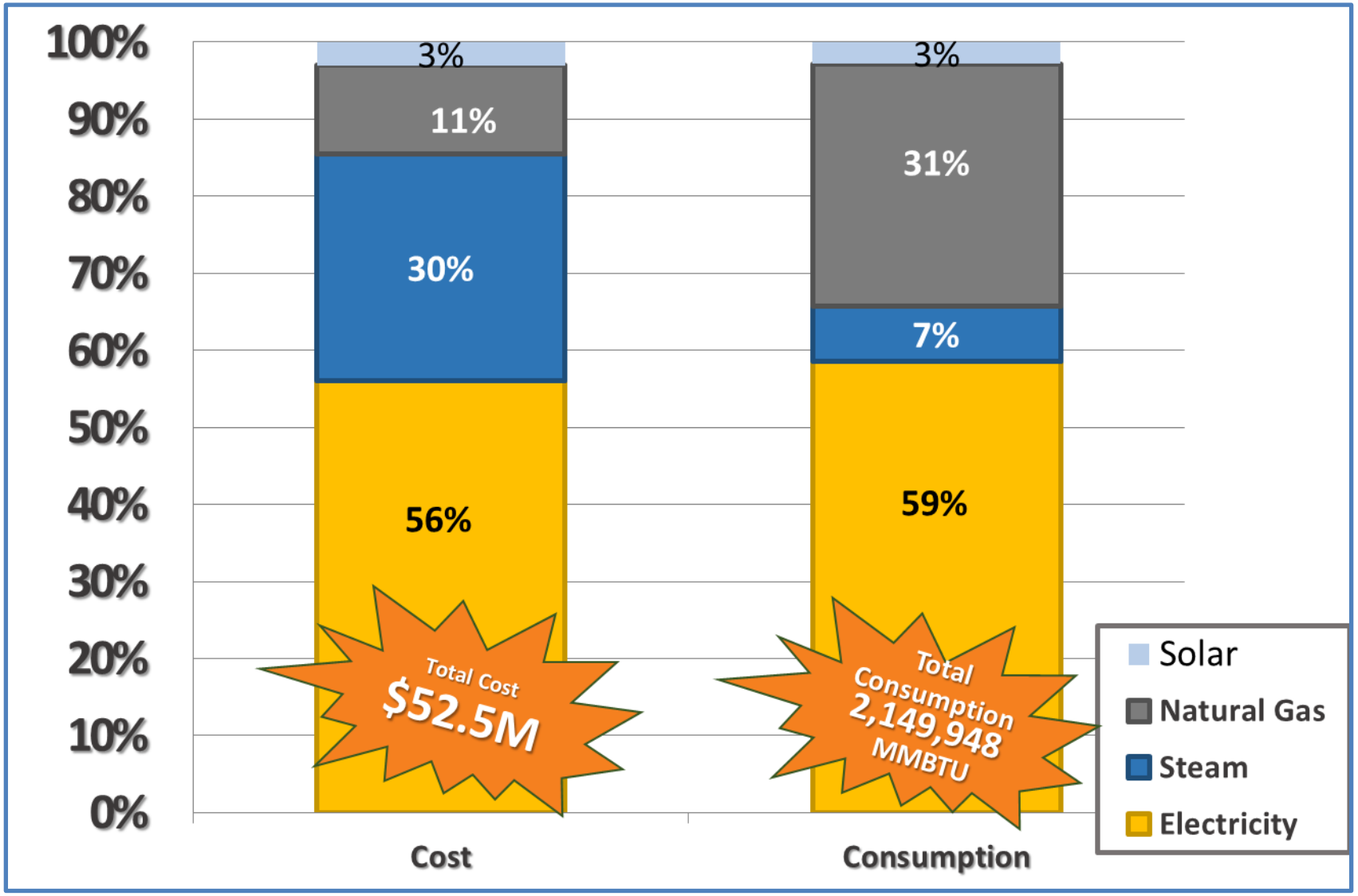
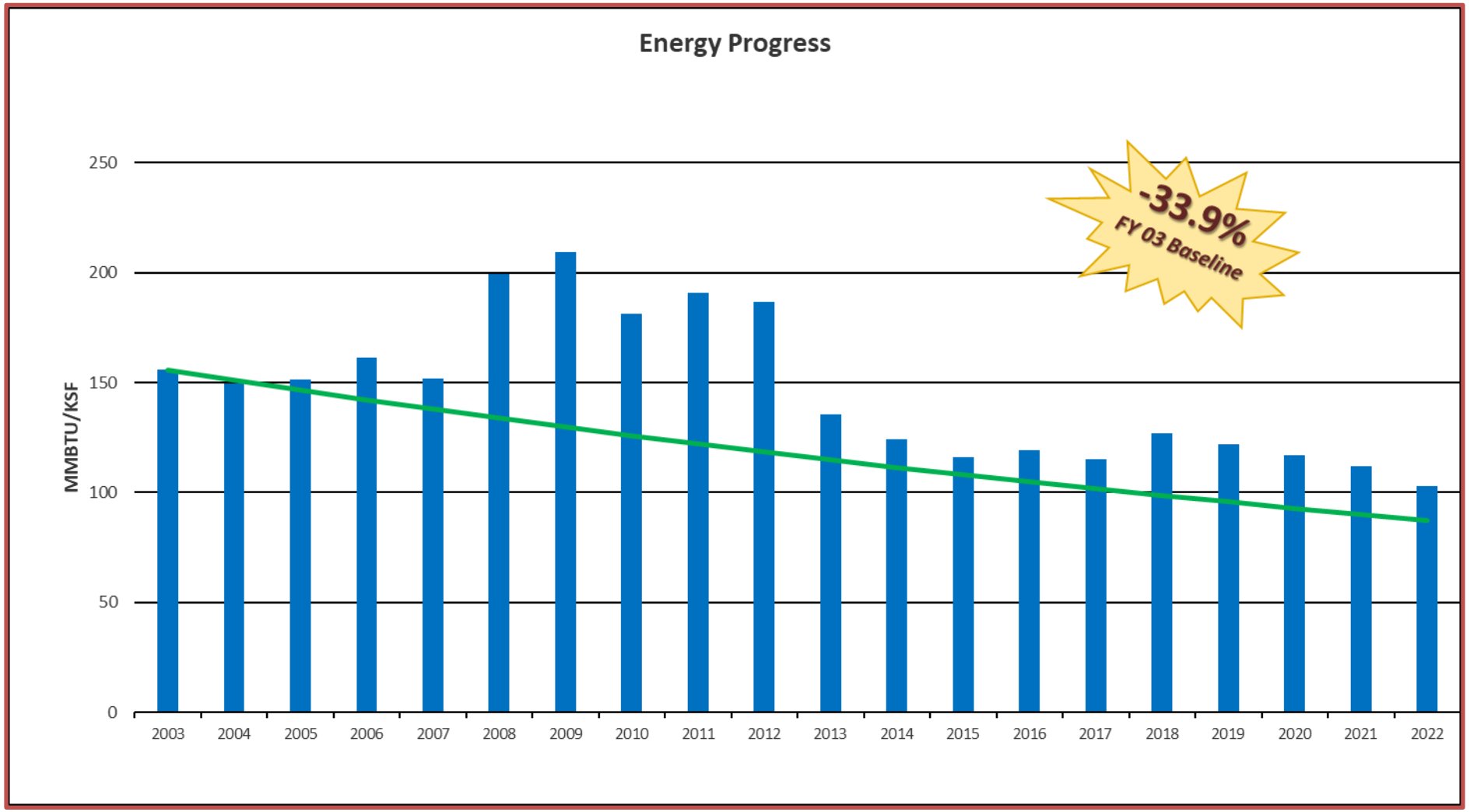
REDSTONE ARSENAL & TVA:
Past, Present, & Future of a Successful Partnership

Don Henderson, CEM
Energy Manager, USAG-DPW, Redstone Arsenal
donald.s.henderson1.civ@army.mil

Redstone's Energy Sources (2022)

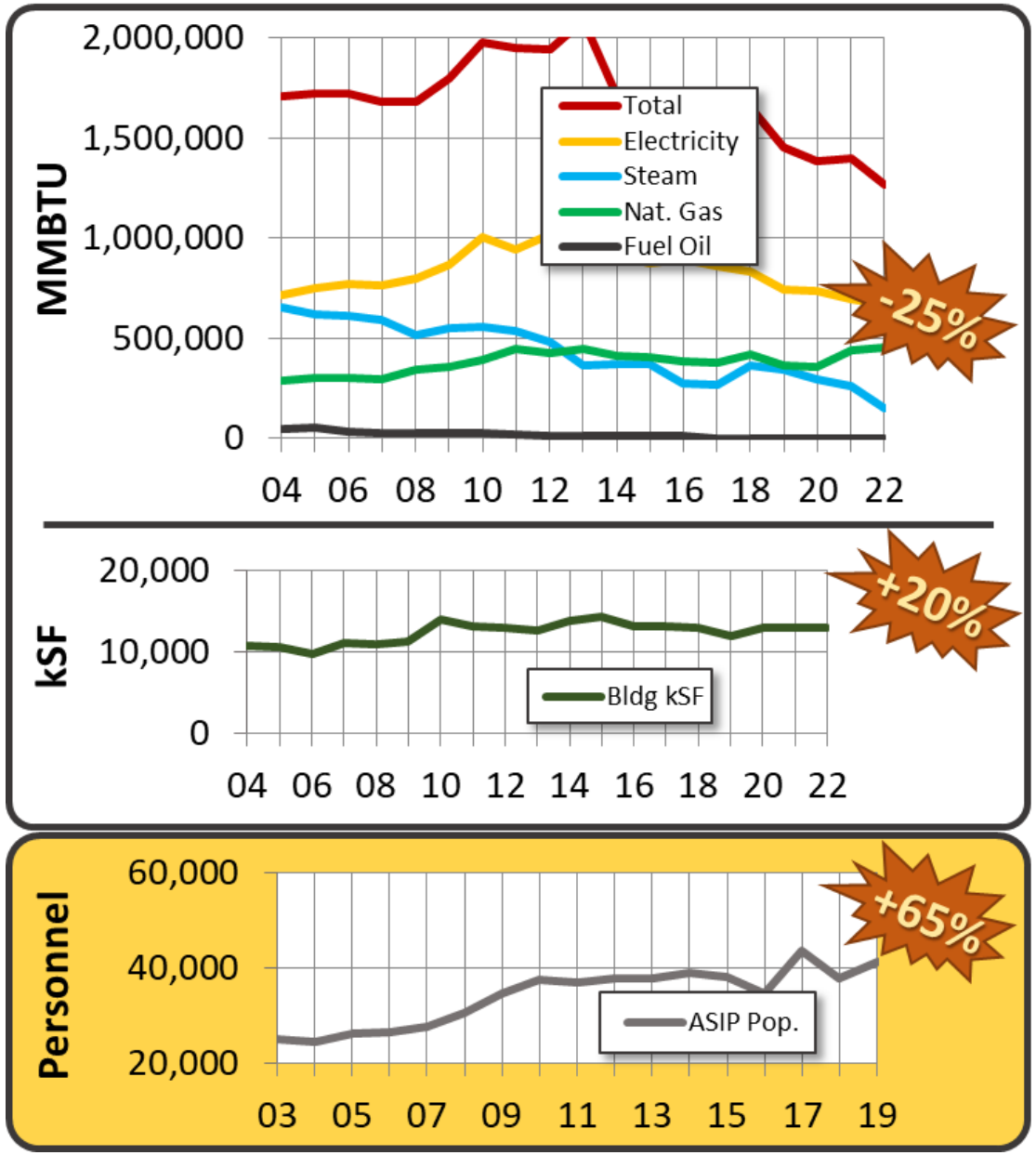


Energy Use Intensity, 2003-2022



Redstone Arsenal:

Energy Use vs. Growth, 2003-2022



Redstone Partnership with TVA

- Direct-Serve Customer
  - 2 separate power feeds
    - Guntersville Dam
    - Browns Ferry Nuclear Plant
  - Resiliency Support
    - Third 161 kVA power feed
      - » Additional 180 KW power availability
      - » Operational by 2027
    - 2023 EPRI Microgrid Integration Study
      - » Preliminary Assessment for interconnecting generators
      - » Centralizes backup power distribution
    - Steam/Electric Co-gen WTE plant interconnection
      - » 8-12 MW continuous power from city's waste-to-energy plant
      - » Protects TVA grid from back-feed
      - » Reduces RSA's TVA consumption

- UESC Projects
  - UESC = Utility Energy Services Contract
  - $64M in projects over past 15 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)

Current & Future Projects

- Current UESC Project
  - Sparkman Center and RTC HVAC Upgrades
    - 1.3M square feet of office, lab, and high bay spaces
    - Equipment Replacement
    - Reconfiguration of Chilled Water Loops
    - Fan & Duct Mods to Enable Economizer Mode
    - HVAC System retuning
    - Lighting upgrades (Fluorescent to LED)
    - $9.8M, ~10-year simple payback
- Future UESC Project
  - Address Select Lighting, HVAC, & Steam Inefficiencies
    - 2024 Preliminary Feasibility Assessment
    - Exterior & Roadway Lighting Upgrade to LED
    - Eliminate (2) onsite boiler houses, replace area steam w/ facility level NG Hot Water Boilers
    - HVAC Equipment & Controls upgrades/retuning

Other Partnership Opportunities

- Demand Response
- Consumption Analysis
- Resilience Project Development
- GHG Reduction
- On-site Power Generation
- Incentive Programs

Questions?

???

Fleet and Electric Vehicle Supply Equipment (EVSE) Programs

Emily Kotz
Federal Fleet Team Lead
NREL

Electric Vehicles as an Administration Priority

WH.GOV

Executive Order on Tackling the Climate Crisis at Home and Abroad

January 27, 2021

GSA, Council on Environmental Quality, and Office of Management and Budget in coordination with DOE, Department of Labor, and Department of Commerce to develop a plan to convert Federal, state, local, and Tribal fleets to zero-emission vehicles (ZEVs)

WH.GOV

Executive Order on Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability

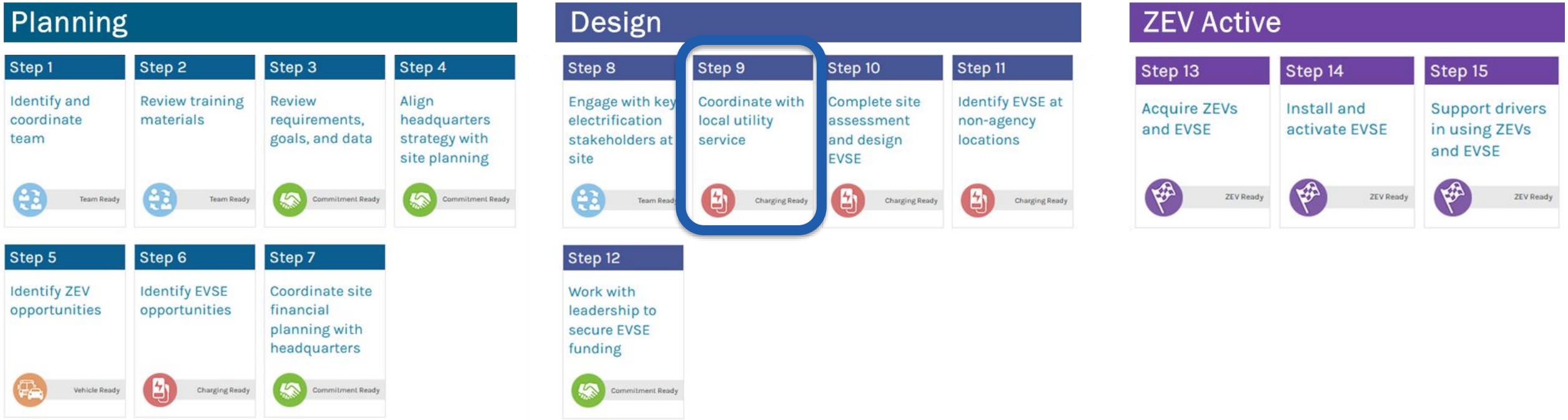
December 8, 2021

Transition to a zero-emission federal fleet

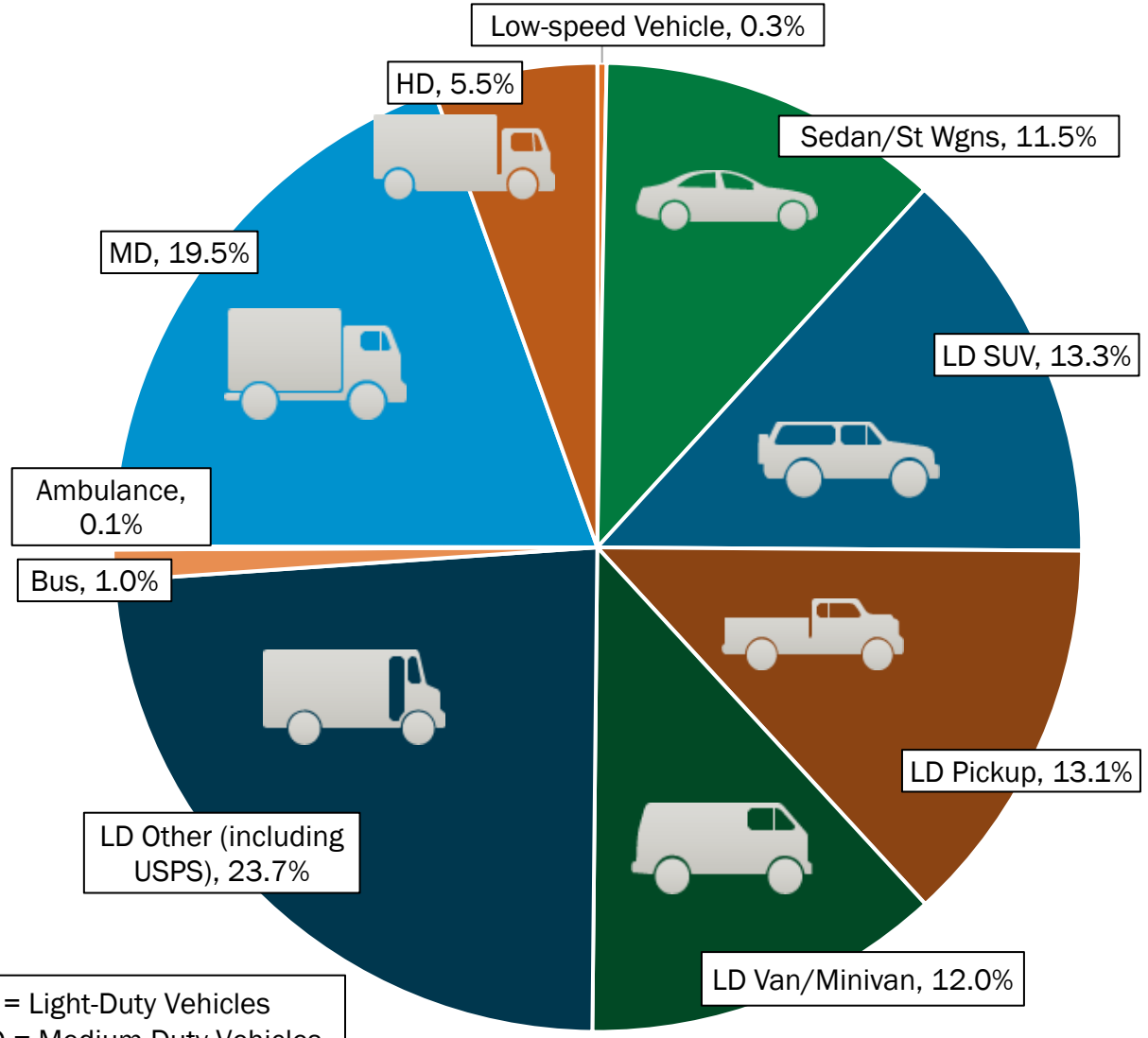
- Annual targets for ZEVs by agency
- 100% light-duty (LD) acquisitions by 2027
- 100% medium-duty (MD)/heavy-duty (HD) acquisitions by 2035

ZEV Ready Framework

FEMP's recommended site-level fleet electrification planning process consists of 15 process steps organized into 3 phases.



Federal Fleet Electrification is Accelerating (FY23 FAST)



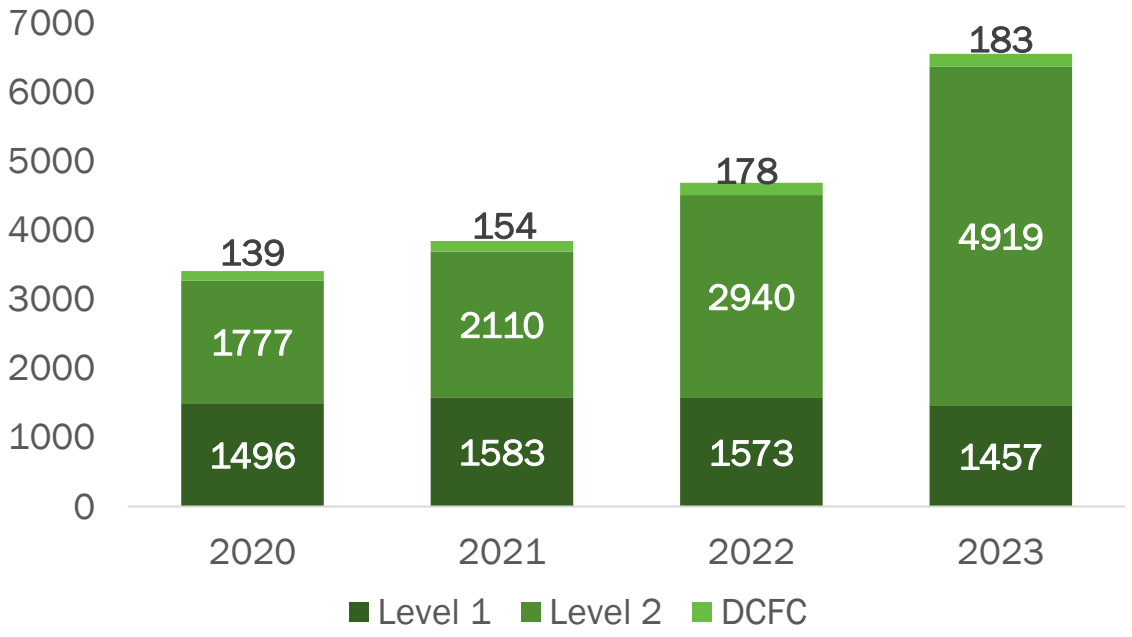
LD = Light-Duty Vehicles
MD = Medium-Duty Vehicles
HD = Heavy-Duty Vehicles

3.6k FY22 ZEV orders
(9% of Federal Fleet Purchases)

5.8k FY23 ZEV orders
(14% of Federal Fleet Purchases

5.1k FY24 ZEV orders as of 2/29/24
(18% of Federal Fleet Purchases)

Source: GSA, Excludes USPS



Step 9 – Identify Utility Point of Contacts and Incentives

FEMP's EV Utility Finder (EV U-Finder)

Database that helps federal agencies connect to electric vehicle supply equipment (EVSE) utility partners and incentives available by ZIP Code

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

72863

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.

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

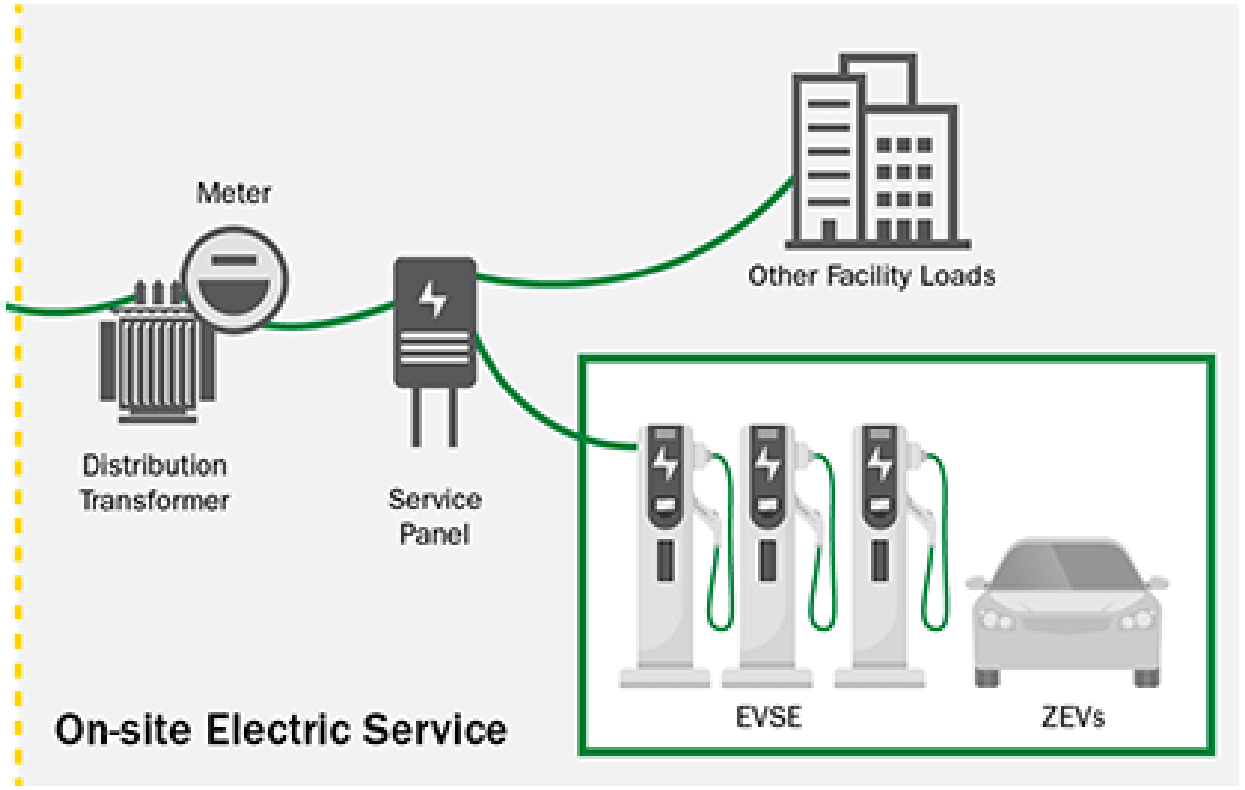
Identified active utilities in 72863

Utility	Utility Name	Utility Ownership	Known EVSE Funding Eligibility?*	Known Advisory Services Eligibility?*	Known Federal EVSE Incentives?	GS
1	Entergy Arkansas Inc	INVESTOR	GCR		Y	
2	Arkansas Valley Elec Coop Corp	COOPERATIVE				
3	Village of Brainard, Nebraska (Utility Company)	PUBLIC				

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

Step 9 – Coordinate with Local Utility Service

- **Evaluating EVSE impacts on electrical service equipment**
  - Facility versus utility equipment ownership
- **Evaluating EVSE impacts on power requirements**
  - Power Capacity
  - Power Load at the Service Panel Level
  - Power Load at the Facility Level
- **Utility Equipment Upgrades**
  - Plan for the future
  - Scale back when practical
  - Use managed charging



Electric Vehicles Programs

Drew Frye
Manager, Commercial Energy Solutions

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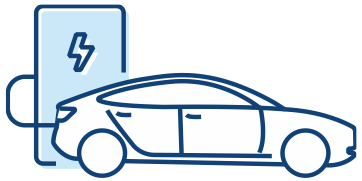
TVA's Approach to Electric Vehicles



Charging Infrastructure Availability

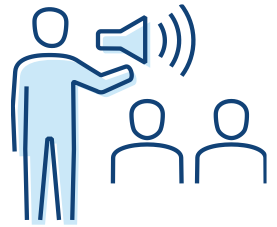
- Remove "range anxiety."
- Foundational EV charging network.
- Partner with local power companies (LPCs).

EV Availability and Offerings

- Partner with automakers and fleets.
- Support making a wide range of EVs available.

Innovative and Supportive Policies

- Remove utility policy or pricing barriers.
- Craft policies and pricing that encourage investment and enable a market.



Consumer Awareness

- Help consumers make sound choices.
- Educate, inform, and promote.

Removing market barriers in key areas

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TVA's Vehicle Fleet

Our goal is to electrify our fleet with all EV purchases for light-duty vehicles by 2027 and 2035 for medium-duty.

Initial vehicle rollout focused on infrastructure. Investigating vehicle and infrastructure tax credits.

Progress

- 136 PEVs/2,700 LD/MD vehicles total

Charging Infrastructure at TVA Facilities

- ~300 Level 2 (non-networked) chargers installed
- ~7 DC Fast Chargers installed (non-public)
- New RFP for "smart" (networked) charging stations for better operations, maintenance, visibility and control

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EV Rate & Regulatory EV Policy

Our Approach

Optional wholesale-retail electricity rates that provide a stable, economical, energy only structure to encourage private investment in charging infrastructure.

Regulatory policy update **allowing $/kWh consumer pricing for EV charging** without violating resell contractual language.

By local power company request.

How It Helps Customers

Traditional rate structures (demand charges) result in unpredictable billing and difficult business cases for private charging developers.

Energy-only rate structure is stable and economical.

$/kWh EV charger pricing is the most transparent and familiar pricing model ($/gallon equivalent) for consumers to understand.

Building the Fast Charge Network

TVA is collaborating with state agencies, local power companies and other partners to pave the way for EV adoption.

The Fast Charge Network will place public fast chargers at least every 50 miles along the interstates and major highways across TVA's service area by 2026.

- 24/7 driver access.
- Near convenience stores, restrooms and restaurants.
- TVA-provided co-branded charger wraps.
- TVA and its partners provide 80% of funding for each charger, up to $250,000.
- Fast chargers already in the network are owned and operated by 28 local power companies.

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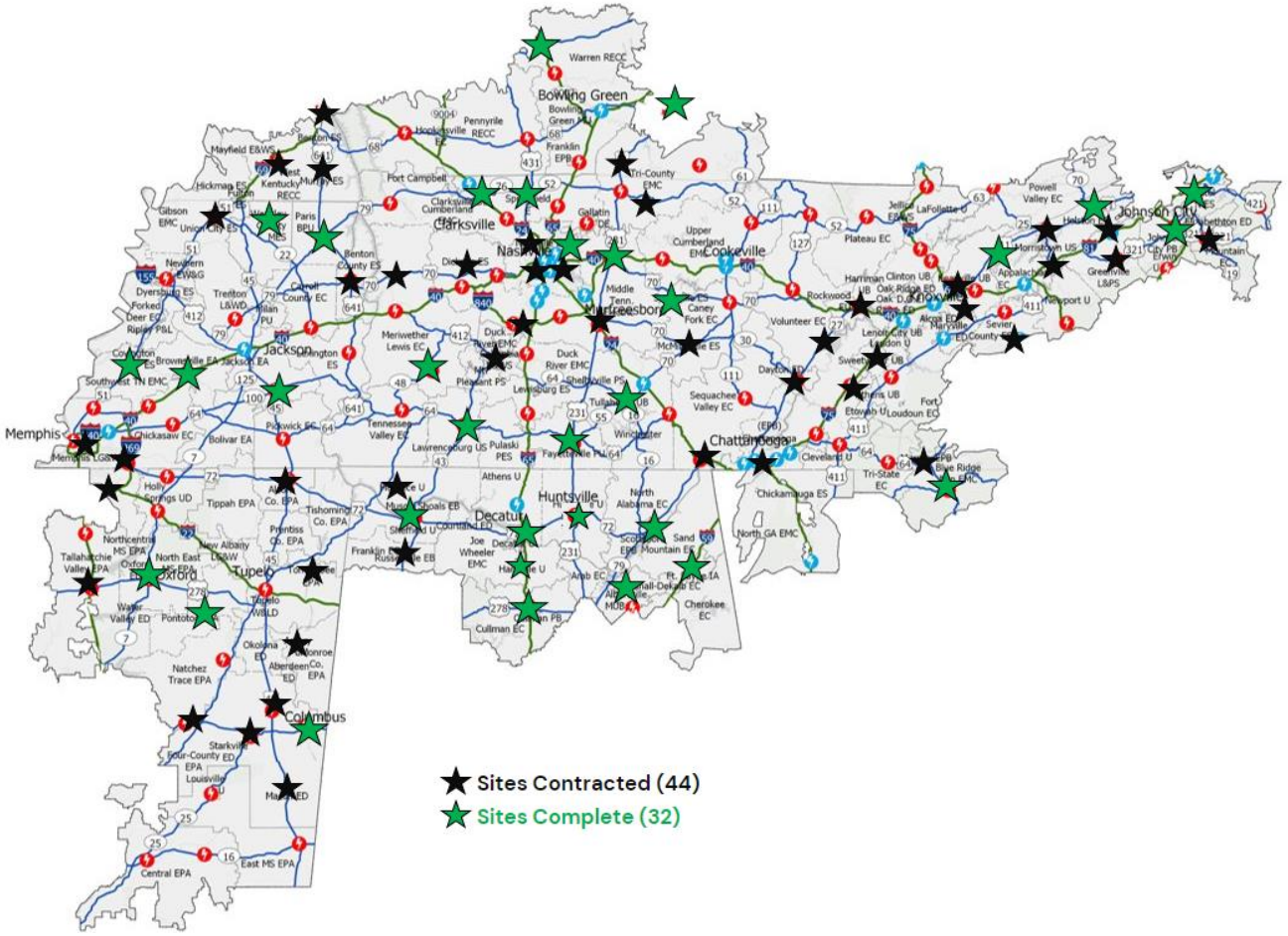
Fast Charge Network Progress

- Partnerships with state agencies have leveraged **~$6M** in state funding
- 76 sites have been contracted or completed
  - 62 local power companies
  - 6 states
- 32 sites opened so far
  - 74 charging stations
  - ~2,000 charging sessions a month
- Goal: Complete by end of 2026



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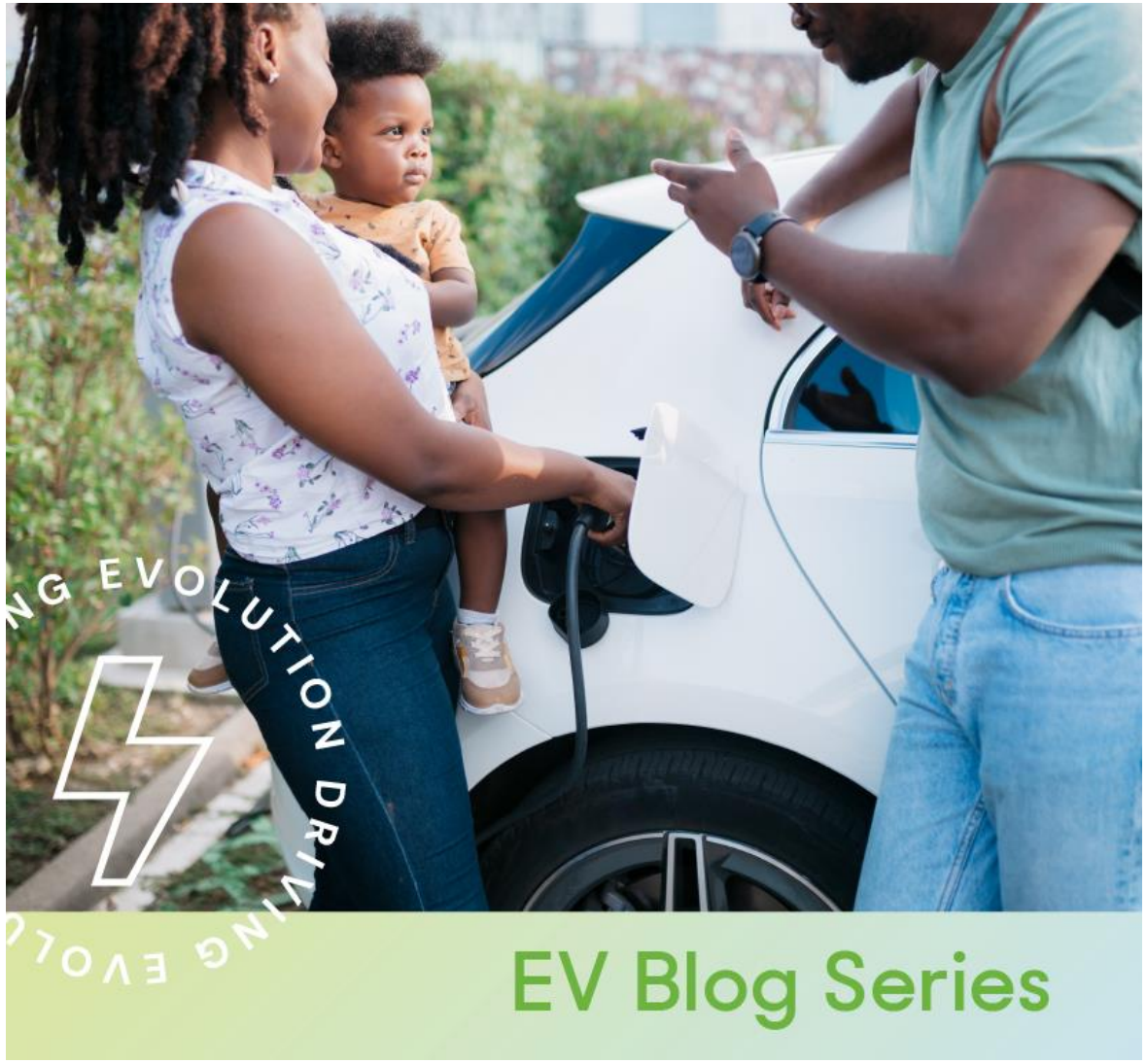
Growing Consumer Awareness

TVA's EV education efforts are anchored by our **Driving EVolution Blog** and related promotion**.**

The blog covers common consumer information gaps, such as:

- Types of EVs
- Charging 101
- Battery Basics
- Choosing an EV that's right for you



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Questions

TVA TENNESSEE VALLEY AUTHORITY

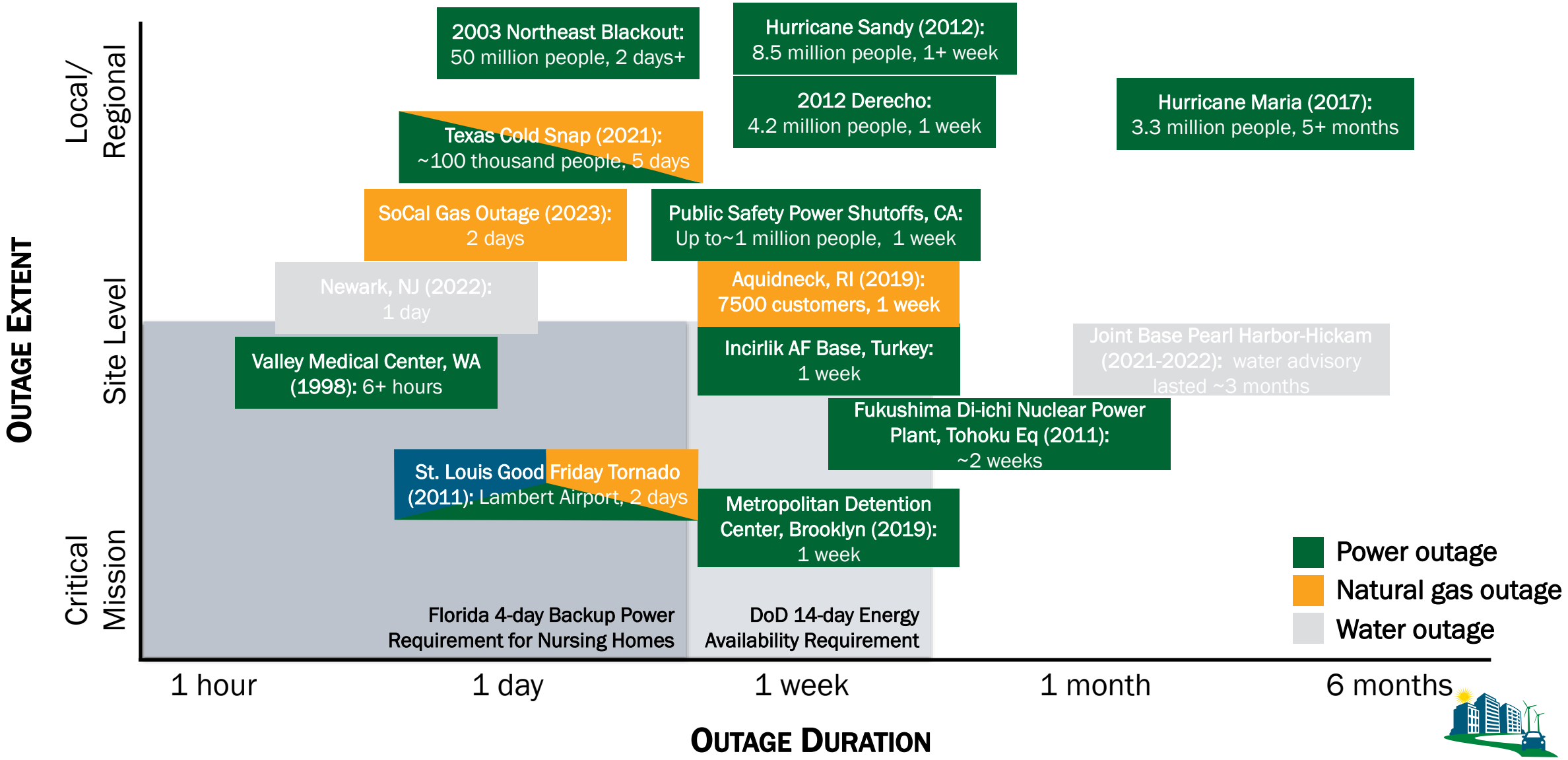
Resilience

Ethan Epstein
Resilience Program Manager
DOE FEMP

What is Resilience?

The ability to anticipate, prepare for, and adapt to changing conditions and to withstand, respond to, and recover rapidly from disruptions.

Energy and Water Resilience is Increasingly Important



High Impact Hazards Occurring More Frequently Over Time

- NOAA analysis of “billion-dollar disasters” demonstrates an increase in hazards that are likely to be impacted by climate change over time
- Increasing cost of natural hazards is likely a combination of increasing population and climate change effects

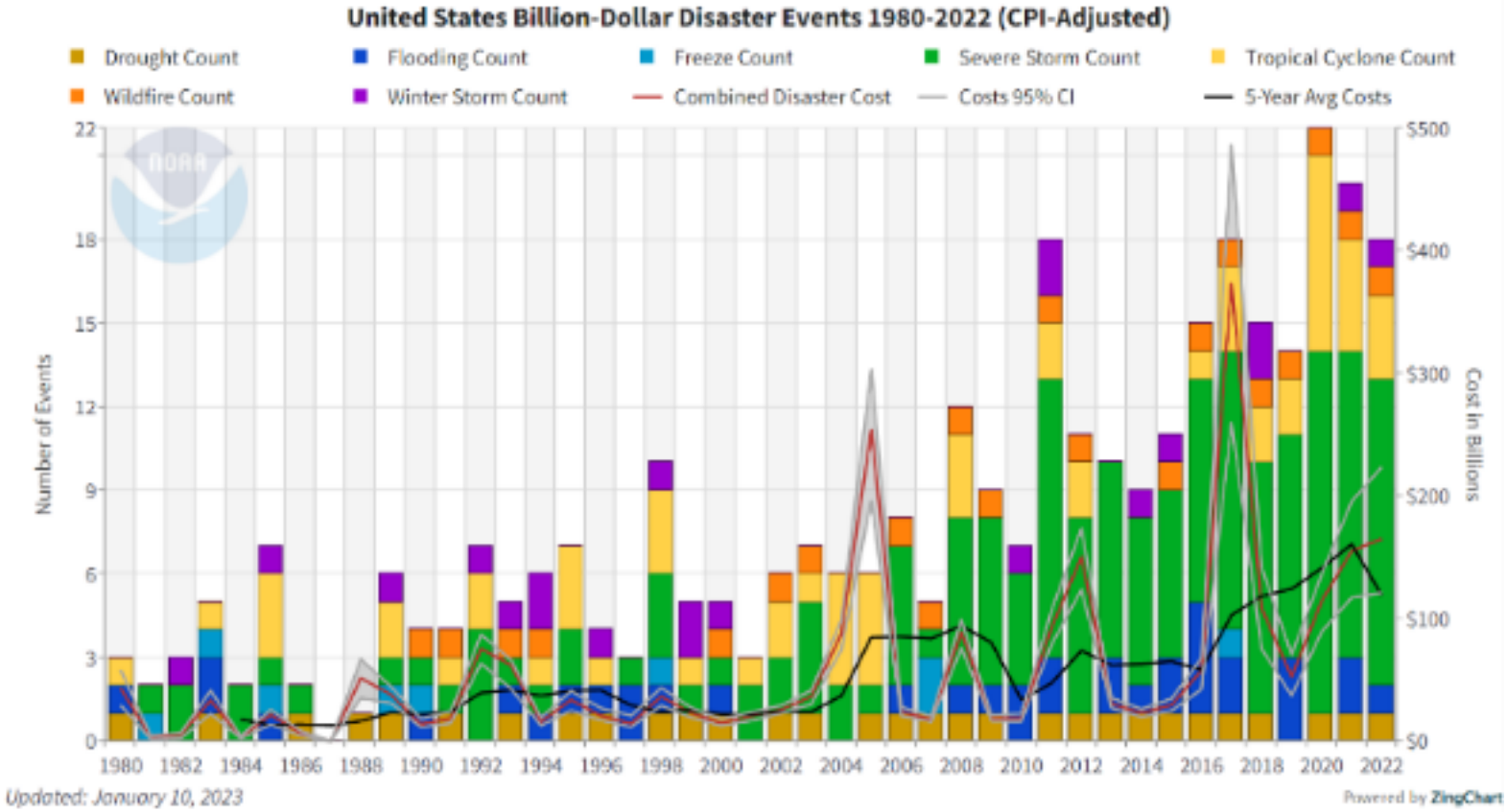
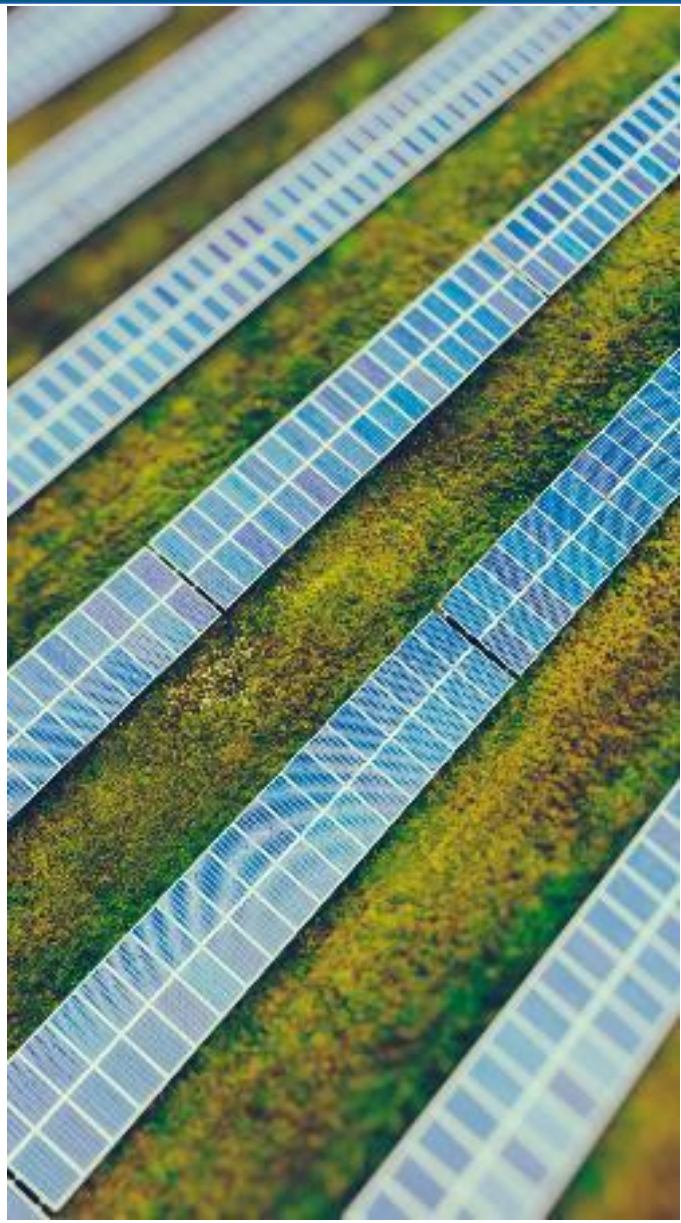


Figure Source: NOAA/NCEI, https://www.climate.gov/news-features/blogs/2022-us-billion-dollar-weather-and-climate-disasters-historical-context

Federal Utility Resilience Projects - Funding Approaches*

- Real property arrangements such as lease, easement or license for on-site generation/storage
- Utility Service Contracts (using GSA Areawide Contracts)
- Direct Funded Projects/Appropriations
- Utility Incentives
- Utility Resilience Tariffs
- Utility Energy Service Contracts (UESCs)

** There are other options for achieving resilience goals, such as using ESPCs, that will not be covered in this webinar.*



Utility Resilience Tariffs

- New offering from a limited number of utilities in vertically-integrated markets
- Generation/storage systems designed, built, paid for, owned and operated by the utility; operates during a grid outage
- Typically require state PUC approval
- Important considerations:
  - Resilience uptime guarantee
  - Cost
  - Contract length
  - Terms/conditions
  - REC ownership (if applicable)

Resiliency Program

Jimmy Allen
Senior Consultant, Business Development

TVA TENNESSEE VALLEY AUTHORITY

Resilience 360°

TVA is implementing a commercial resiliency initiative that seeks to support the backup and resiliency needs of Valley federal customers, while providing near-term capacity to the TVA system.

Resilience 360° closely aligns to other in-flight TVA initiatives such as Valley Vision 2035, Regional Grid Transformation, and has the potential to serve as a catalyst for the Valley's overall DER strategy.

Resilience 360° will provide solutions that align and support TVA's mission, the bulk electric system, promote Valley partnerships, and end-use customer resiliency while filling short term capacity gaps to TVA.

U.S. Department of Defense

U.S.ARMY

Redstone Arsenal
Ft. Campbell

U.S. AIR FORCE

Columbus AFB
Arnold AFB

NSA Mid-South

Department of Energy

Key Program Elements

- Resources are located within the Valley.
- TVA controls dispatch of resilient energy; available to hosts during qualifying events.
- Customers provide operating space and share the cost with TVA.
- Initial focus on natural gas & battery storage.
- All aggregators will comply with qualified resiliency standards.

Next Steps

- Full approval of the aggregated BESS concept
- Finalize program standards & key contracts
- Execute go to market strategy across the Valley
- Collaborate with Federal Energy Services

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Questions

TVA TENNESSEE VALLEY AUTHORITY

Closing Remarks

Carrie Fogleman
Director, Energy Services & Demand

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Let’s work together.

Questions about FESP or UESCs for federal agencies?
Email Daryl Williams at ldwilliams@tva.gov or call 256-702-4284

www.energyright.com

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Final Questions?

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Final Q&A, Resources, and Next Steps

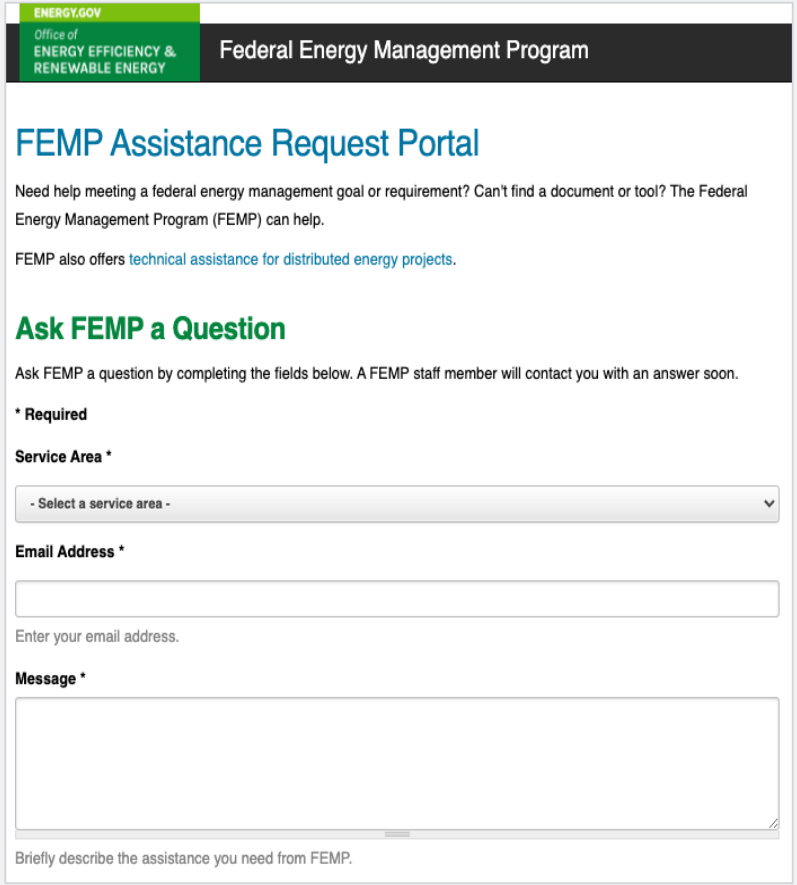
FEMP Technical Assistance

FEMP offers free support to federal agencies via the Assistance Request Portal:

- Staff training
- Project assistance
- Analysis* (utility rates, renewable energy optimization, resilience, etc.)
- Resources (guides, templates, etc.)

** Subject to available funding and scope of request*

FEMP Assistance Request Portal



AFFECT BIL: $250M to Advance Net-Zero Facilities

FEMP Federal Energy Management Program

Assisting Federal Facilities with Energy Conservation Technologies (AFFECT)
Bipartisan Infrastructure Law (BIL) Federal Agency Call (FAC)
Advancing Net-Zero Federal Facilities (DE-FOA-0003026)

Topic Areas (updated March 22, 2024)	
Topic Area 1A	Assistance with Net-Zero Buildings Project Development
Topic Area 1B	Assistance with Net-Zero Buildings Program and/or Procedures Development
Topic Area 2	Modify Existing Projects for Net-Zero Buildings
Topic Area 3	New and/or In Development Net-Zero Buildings Projects

Resources

- FAC and Application Forms
- FAC Informational Webinar Recording and Slides
- Slides Summarizing Recent FAC Modifications
- Applicant Questions and Answers
- Training and Guidance Information

Only Federal Agencies May Apply for AFFECT

Upcoming Application Deadlines	
Phase 1	May 31, 2023 (closed)
Phase 2	June 27, 2024 (closed)
Phase 3	**April 18, 2025 (forthcoming)**

Selected projects are announced approximately 6 months following the submission deadline.

Questions? Email AFFECTBIL@hq.doe.gov.

FEMP Webinars and On-Demand Training

Live and on-demand webinars can be accessed through the FEMP Training Catalog

- Continuing Education Units available
- Curriculums include:
  - UESC and DR/TVP
  - Distributed Energy Procurement
  - Resilience Planning and Integration
  - Facility and Fleet Optimized Design
  - Legislative and Mandate Guidance
  - Energy and Cyber Security Integration

Utility Engagement			
Title	**Level**	**Length**	**CEUs**
Evaluating Your Utility Rate Options	Introductory	1 hour	0.20
Taking Advantage of Demand Response and Time-Variable Pricing Offerings	Introductory	1.5 hours	0.20
UESC Comprehensive Training: Day 1 - Fundamentals and Planning	Introductory	2 hours	.3
UESC On-Demand Webinar Series: Phase 1 - Acquisition Planning	Introductory	1 hour	0.20
UESC On-Demand Webinar Series: Phase 2 - Utility Selection and Preliminary Assessment	Introductory	1 hour	0.20
UESC On-Demand Webinar Series: Phase 3 - Project Development	Introductory	1 hour	0.20
UESC On-Demand Webinar Series: Phases 4 and 5 - Project Implementation and Construction and Post-Acceptance Performance	Introductory		0.20
UESC On-Demand Webinar Series: UESC Introduction Part 1 - Overview and Background	Introductory	1 hour	0.20
UESC On-Demand Webinar Series: UESC Introduction Part 2 - Legislation and Contracting	Introductory	1 hour	0.20
Utility Energy Service Contracts (UESC) New Utility Toolkit	Introductory	1 hour	0.2
Financing for UESCs: Ensuring the Best Value for the Government	Intermediate	1 hour	0.20
UESC On-Demand Webinar Series: Special Topic - Performance Assurance for Utility Energy Service Contracts	Intermediate	1 hour	0.20

Click here to view all courses!

Federal Utility Partnership Working Group (FUPWG) 2024

Registration Open!

August 21-22, 2024 | Houston, TX

Register Here

Agenda coming soon. Visit the FUPWG webpage for more information!

Event Info

- 2-day seminar led by FEMP to cultivate lasting partnerships between federal agencies and utilities for improved energy and water management
- Sessions and panels led by industry experts
- Knowledge sharing around UESC best practices, new technologies, and approaches to achieving energy goals
- Full-day (no cost!) UESC Training held on August 20
- Hosted in partnership with CenterPoint Energy
- Space will be limited to 200 attendees

CenterPoint® Energy

Next Steps: Schedule a Follow-Up Meeting

Request a consultation with FEMP or your utility to:

- *Discuss your site's energy goals, challenges, and priorities*
- *Identify program offerings that align with your needs*
- *Sign up for incentives*
- *Connect with subject matter experts to learn more about any of the topics discussed today*

Consultation Request Form

Fill out this *linked form* or scan the QR code below.

FEMP will connect you with the appropriate party for follow-up, which may include FEMP technical experts, utility POCs, and/or the relevant Utility Lead Agency.

Next Steps: Review Available TVA Programs

- **Demand Response Program**
  - Demand Response - Business & Industry - TVA EnergyRight
- **Energy Efficiency Incentives**
  - Incentives - Business & Industry - energy incentives - TVA EnergyRight
- **Renewable Energy (CFE)**
  - Valley Renewable Energy (tva.com)
  - Green Invest
- **Utility Energy Services Contracts**
  - Federal Energy Savings Program - UESC - TVA EnergyRight
- **EV Programs**
  - All About Electric Vehicles - TVA EnergyRight

Contact Information

DOE FEMP / Lab Staff / GSA

Name	Program
John Michael Forrest	UESC
Tracy Niro	CFE
Ethan Epstein	Resilience
Jason Koman	GEB and Fleet/EVSE
Billie Holecek (LBL)	Demand Response and TVP
Chandra Shah (NREL)	UESC

Contact FEMP SMEs via the

FEMP Assistance Request Portal

TVA

Name	Program
Daryl Williams (ldwilliams@tva.gov)	Federal Energy Service Program - UESC
Claire Moore (cctaylor@tva.gov)	Demand Response
Kevin Wren (klwren@tva.gov)	Energy Efficiency
Eric Murray (eamurray@tva.gov)	CFE – TVA Green Invest
Drew Frye (agfrye@tva.gov)	Fleet Electrification
Jimmy Allen (jwallen3@tva.gov)	Resiliency 360

This Training Offers IACET CEUs

How to obtain your CEUs:

1. Visit the Whole Building Design Guide (WBDG) at wbdg.org to log in or create an account
2. Enroll in the training
3. Attend the training in full
4. Return to your WBDG account's Enrolled courses
5. Select the training's "Proceed to Course" button
6. Complete an assessment
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.

Stay in Touch

Ask Questions

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

Sign Up for FEMP Updates

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

Find More Trainings

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

Follow FEMP

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

Thank You!

Ethan Epstein
FEMP Resilience Program Manager

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