OCED
Office of Clean Energy Demonstrations

THE OFFICE OF
CLEAN ENERGY DEMONSTRATIONS

Distributed Energy Systems Demonstrations Program
National Briefing on Project Selections

October 28, 2024

Office of Clean Energy Demonstrations

U.S. Department of Energy

Webinar Logistics

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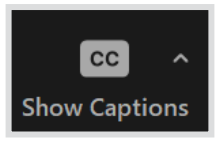

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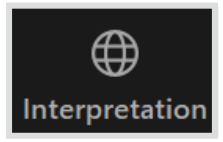

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Is this webinar being recorded?

Yes, this webinar is being recorded and will be available on the DOE YouTube channel and the OCED website within the next week.

Will the slides be shared?

Yes, a copy of the presentation slides will be shared via email with registrants and on the OCED website within the next week.

Disclaimer

As DOE is actively engaged in financial assistance planning, we are subject to constraints during this period to ensure fairness of the process:

- **DOE can only communicate public and non-privileged information during this meeting or event.**
- **DOE cannot discuss the details of active or planned financial assistance matters [e.g., Requests for Information (RFI), Notices of Intent (NOI), Funding Opportunity Announcements (FOA)] or entertain requests for a specific outcome or benefit related to a financial assistance activity.**

Agenda

- Opening Remarks
- Office of Clean Energy Demonstrations Overview
- Distributed Energy Systems Overview
- DES Demonstrations Program Projects Selected for Negotiations
- Next Steps & Resources
- Wrap-up & Close

Opening Remarks

Office of Clean Energy Demonstrations (OCED) Overview

OCED Mission and Mandate

Deliver clean energy technology **demonstration projects at scale** in partnership with the **private sector** to **accelerate deployment**, **market adoption**, and the **equitable transition** to a decarbonized energy system."

SCALE EQUITABLE, CLEAN ENERGY

Help enable 100% clean electricity by 2035 & net -zero emissions by 2050 through an equitable energy transition

UNLOCK NEW INVESTMENT

Unlock and scale trillion-dollar clean energy follow on investment from the private sector and other sources of capital

DE-RISK TECHNOLOGY

Maintain risk-based, balanced, and defensible portfolio of investments

PROVIDE PROJECT OVERSIGHT

Serve as primary DOE office to deliver full scale clean energy demonstration projects and project management oversight excellence

ENGAGE & COLLABORATE

Leverage private sector and broader energy ecosystem to inform OCED and DOE technology commercialization efforts

OCED Scope

Advanced Nuclear
($3.3 billion)

Carbon Management
($7 billion)

Clean Energy Demonstrations on Mine Land ($500 million)

Distributed Energy Systems Demonstrations ($50 million)

Energy Improvements in Rural or Remote Areas ($1 billion)

Industrial Demonstrations
($6.3 billion)

Long-Duration Energy Storage ($505 million)

Regional Clean Hydrogen Hubs
($8 billion)

Liftoff Enabling Programs
($133 million)

Distributed Energy Systems Overview

Distributed Energy Resources (DER)

A Distributed Energy System (**DES**) is a made up of **DERs**.

Generation

Residential, commercial, and/or community solar; Distributed wind

Thermal and Electrochemical Storage

Thermal and/or electrochemical; Stand-alone, building integrated and/or associated with EV infrastructure

Building Loads

HVAC, lighting systems, water heaters; Residential, commercial and/or industrial

EVs

Private vehicles, public or private fleet, and/or public transportation vehicles

Sensing, Communication, and Control Systems Assets

Wired or wireless, appropriate bandwidth and security for use case

DES has the potential to…

DESs can be highly varied, due to local grid topologies, existing and new energy systems, and community characteristics. However, they all have the potential to provide value to the communities and to grid operations.

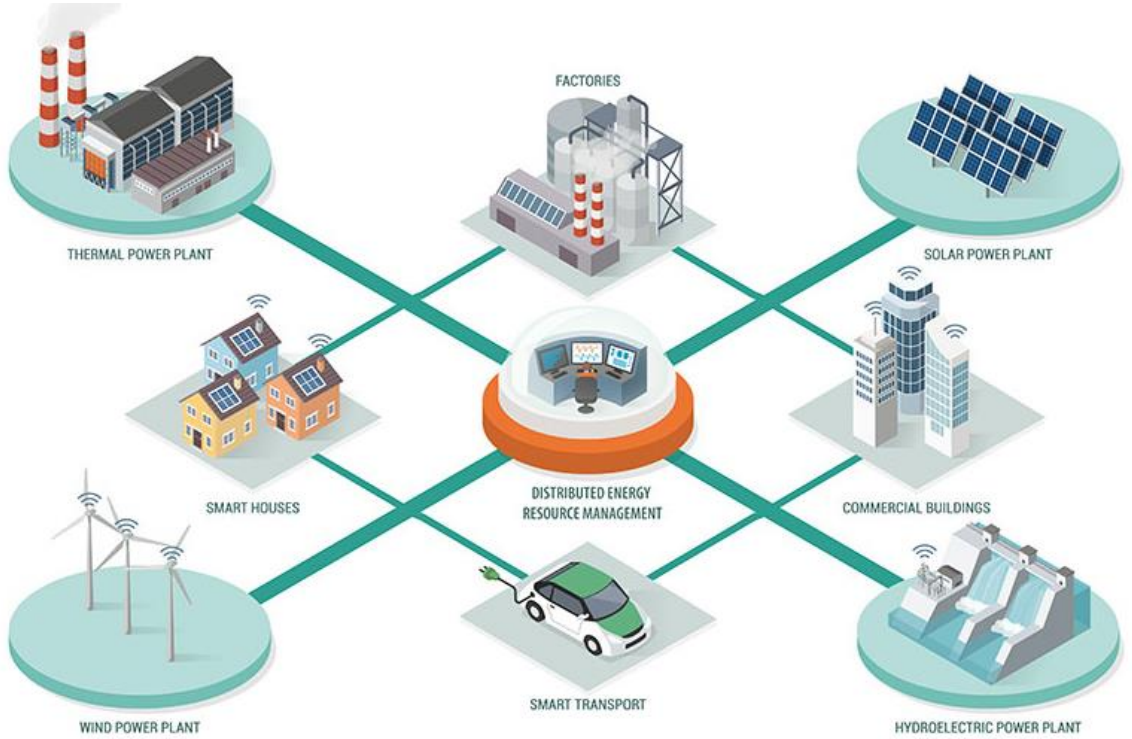
Reduce greenhouse gas emissions by deploying distributed-scale clean energy.

Improve grid reliability and resilience by reducing peak demand and decreasing strain on the transmission and distribution systems

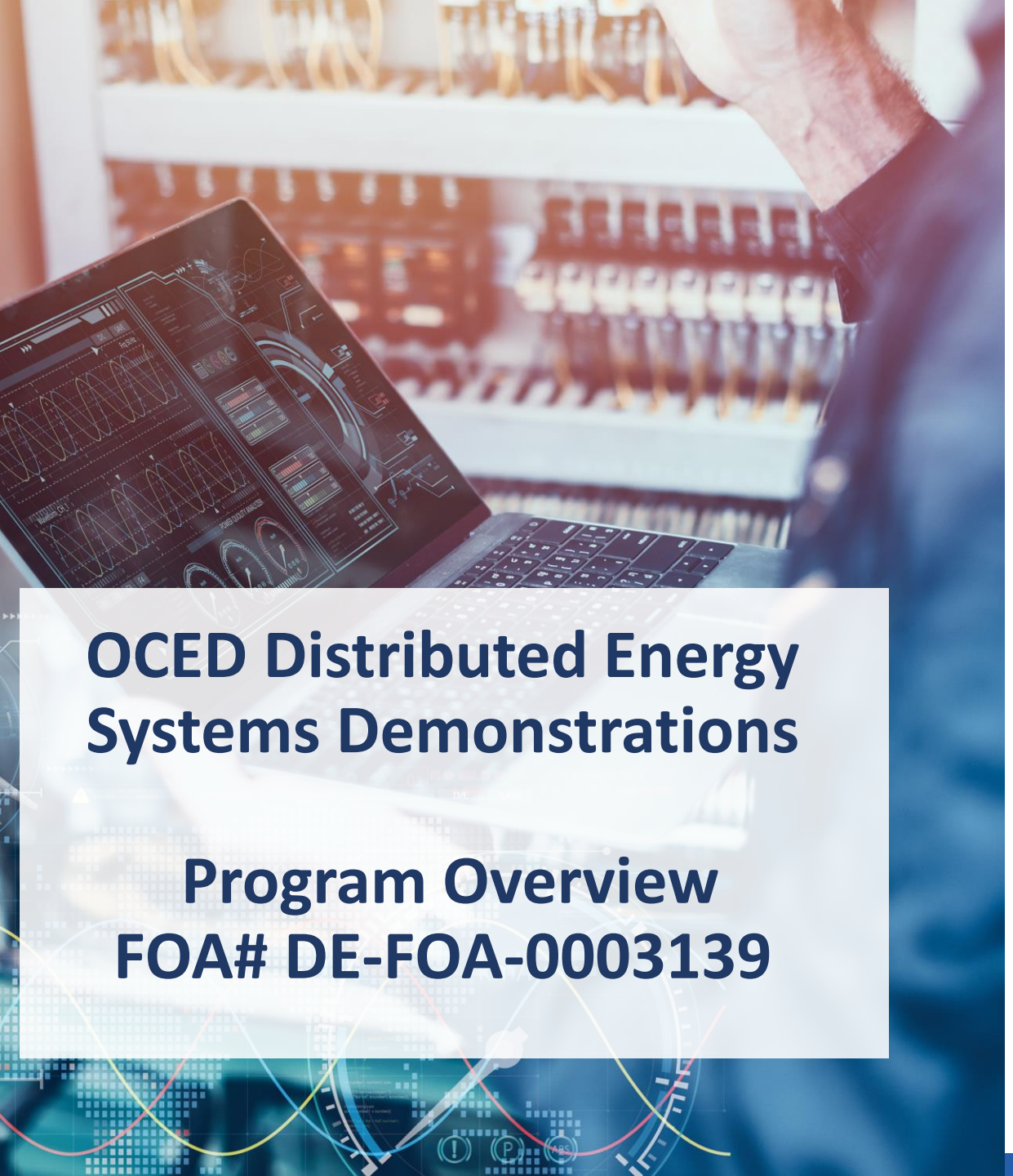
Advance energy and environmental justice by increasing electricity affordability and reliability and reducing pollution from alternative sources that disproportionately affect disadvantaged communities.

Lower energy costs for grid operators and energy consumers.

When combined DERs represent a DES



DES Demonstrations Program Projects Selected for Negotiations



OCED Distributed Energy Systems Demonstrations

Program Overview
FOA# DE-FOA-0003139

Program Goal

To build confidence that the design, control, and compensation approaches developed can be readily applied to other portions of the distribution grid and extended to other mixes of DERs, potentially extending the value of this approach to a more diverse set of communities, individuals, and entities as the distribution system continues to change.

Program Requirements

Projects will demonstrate aggregated approaches that integrate utility planning, sensors, communications and control infrastructure, and solutions to long-term operations.

Timeline

- **Sep 2024:** OCED announced 3 projects selected across 3 states for award negotiations
- **Apr 2024:** Deadline for full applications
- **Sep 2023:** Issued $50M funding announcement
- **Jul 2023:** Issued NOI & RFI for anticipated funding announcement

Prioritizing Community Benefits in OCED Projects

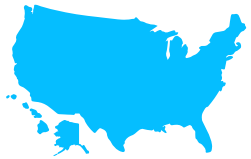
OCED **requires** applicants to include a Community Benefits Plan to help ensure broadly shared prosperity in the clean energy transition.

By **prioritizing community benefits**, we can ensure the next chapter in America's energy story is marked by greater justice, equity, security, and resilience.

Community & Labor Engagement

Diversity, Equity, Inclusion, & Accessibility

Investing in the American Workforce



Justice40 Initiative

DISTRIBUTED ENERGY SYSTEMS DEMONSTRATION PROGRAM SELECTION SNAPSHOT

~$50 MILLION

in funding to be distributed

OCED

Office of Clean Energy Demonstrations

Boosting workforce development opportunities across

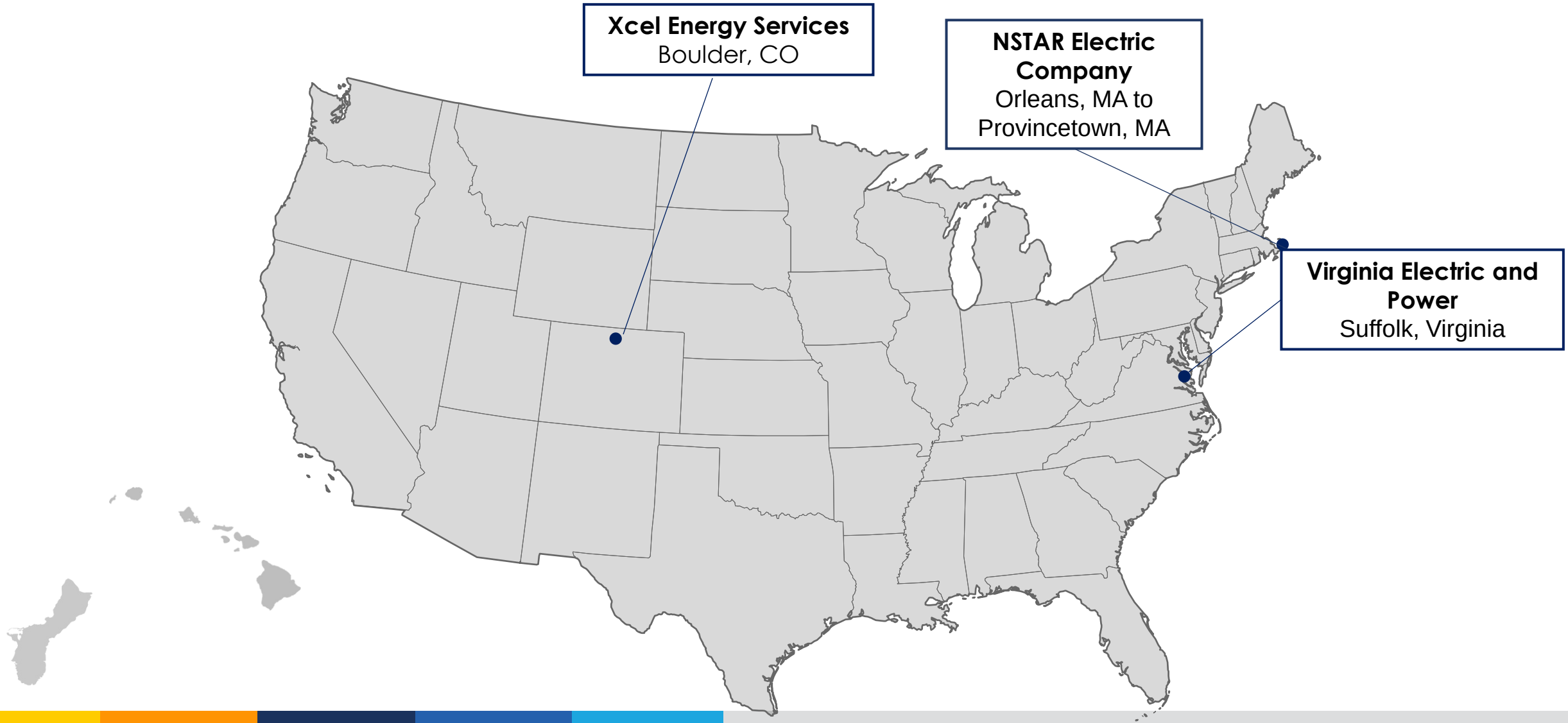
3 states

- Colorado
- Massachusetts
- Virginia

5 types of distributed energy resources

- Solar
- Smart Thermostats
- Electric Vehicles
- Battery Energy Storage Systems
- Microgrids

Selected DES Project Locations



EVERSOURCE

DISTRIBUTED ENERGY SYSTEMS DEMONSTRATIONS

Outer Cape Microgrid Optimization Project

October 28, 2024

Reliability Challenges in Cape Cod, MA

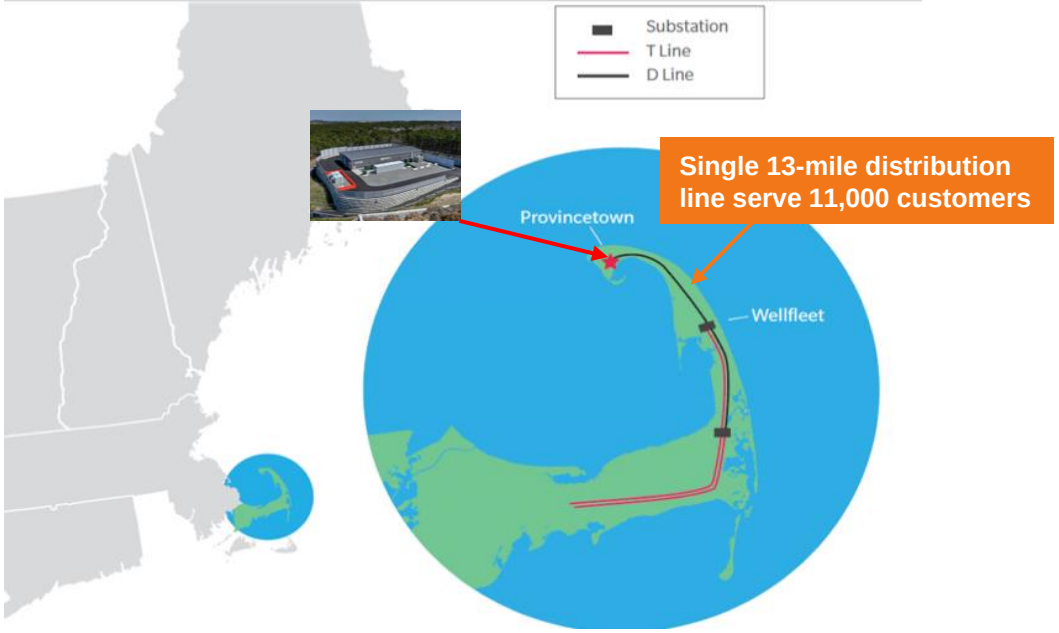
The Cape Cod region is a relatively remote area of MA that is served by a single distribution line and experiences reliability issues due to peak load and frequent extreme weather events

Challenges with Traditional Solutions: Building a second distribution line would not be cost-effective and would pass through environmentally sensitive areas

Opportunity: While Eversource has deployed a 24.9 MW / 38 MWh BESS in Provincetown in 2022 as the centerpiece of a microgrid to improve reliability in the area, it is currently unable to leverage customer-owned clean DERs to further support reliability in the microgrid

Proposed Solution: Augment the current microgrid using a Distribution Energy Resources Management System (DERMS) to coordinate and control customer-owned DERs to cost-effectively improve reliability

Cape Cod Region in Massachusetts



Source: Eversource

Outer Cape Microgrid Optimization Project Overview

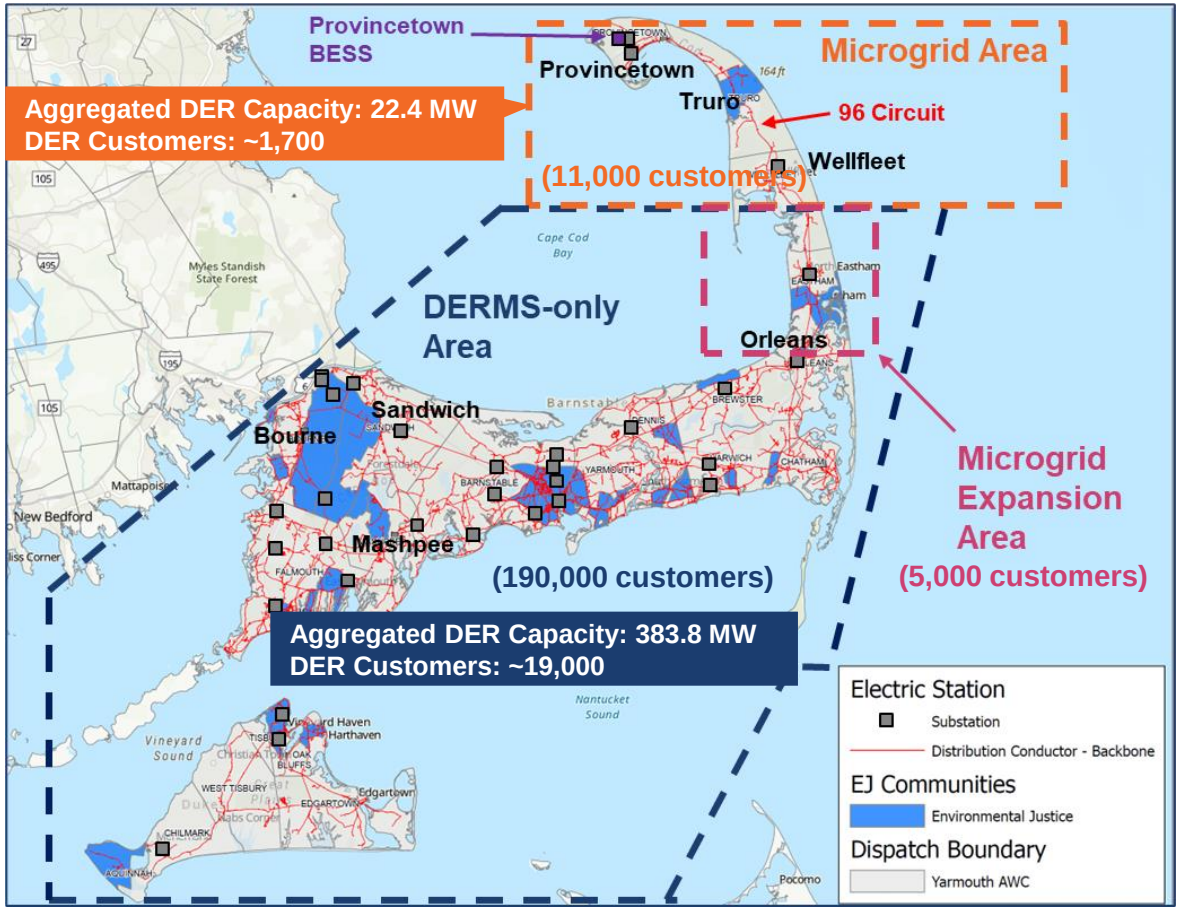
EVERSOURCE

Utilizing a DERMS to leverage customer-owned DERs to augment the existing Provincetown BESS is a cost-effective solution to improve reliability, resiliency, and provides the following:

- **Reduces Peak Load.** Delivers peak load reduction and T&D integration benefits cost-effectively by dispatching up to 400 MW of customer-owned DERs
- **Provides Compensation for DERs.** Opportunities to compensate customers with DERs for providing local grid services, which incentives DER adoption
- **Decreases Carbon Emissions.** Reduces line losses and associated carbon emissions
- **Partnerships** with the National Renewable Energy Laboratory and Cape Light Compact to maximize customer enrollment, optimize project benefits, and reduce project costs

Regulatory support, high DER penetration, and the reliability needs in the area presents a unique opportunity for the OCMO project to serve as a vision for future deployments at scale

System Diagram of the OCMO Demonstration Project Area



Notes: Capacity estimates are from current and in-queue customers with an assumed 10% growth in smart thermostat customers. Capacity estimates includes distributed generation as of April 2024.

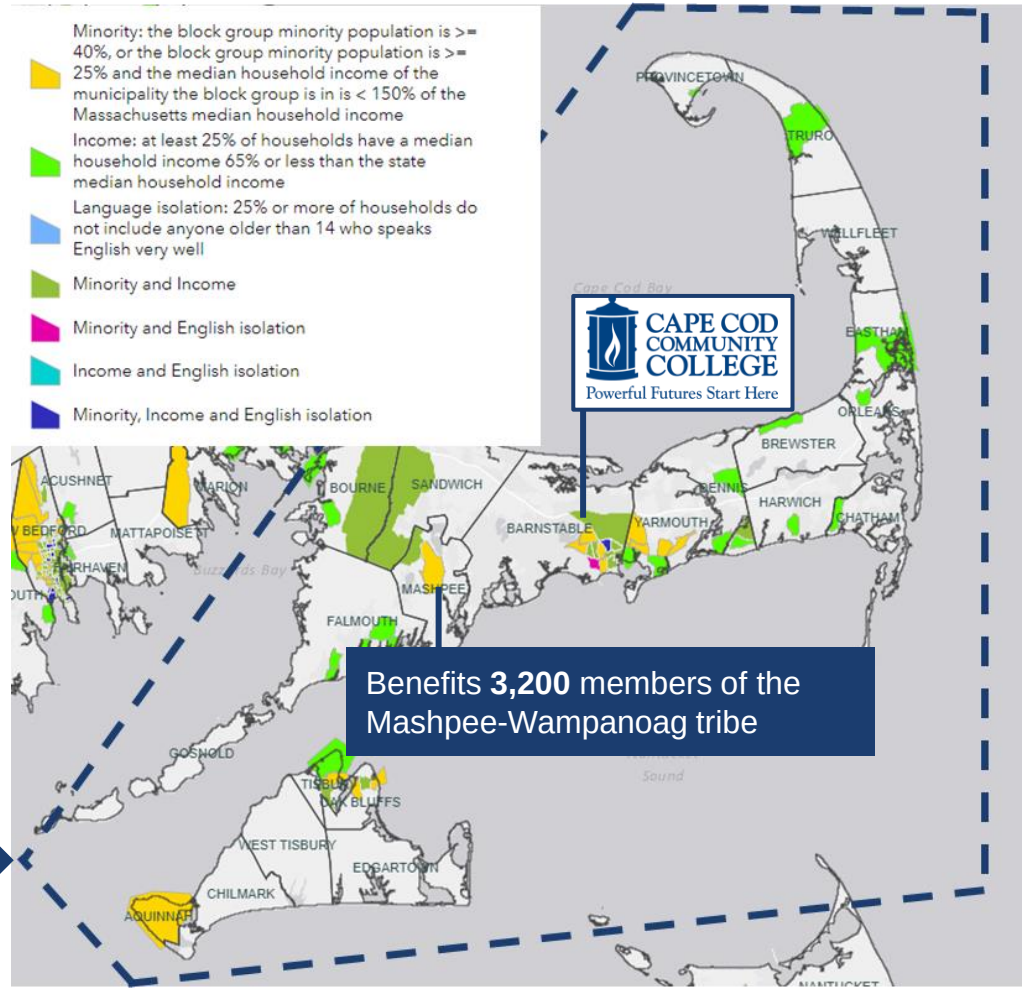
Community Benefits Plan

As part of the Justice40 initiative, our Community Benefits Plan (CBP) will benefit over 48,000 residents in EJ communities, including 3,200 members of the Mashpee-Wampanoag tribe

- **Inclusive Engagement.** Engaged with and garnered letters of support from community-based organizations, environmental organizations, municipalities, and tribal leaders to improve access to DERs in EJ communities
- **Workforce Development.** Develop a clean-energy jobs pipeline in the Cape in partnership with the Cape Cod Community College directed towards EJ, LMI, and Tribal residents to foster diversity and inclusion in the clean energy industry
- **Community Focused-Process.** Create a Community Advisory Council where participants will be compensated to lead the implementation of the CBP and relay community concerns about the program
- **Lessons learned** will help design equity and EJ programs across the Eversource service territory in MA with opportunities to expand to CT and NH

14%
of residents live in EJ communities

Massachusetts Environmental Justice Map (2020)



Sources: Massachusetts 2020 Environmental Justice Population

DE-FOA-0003139 – Distributed Energy Systems Demonstrations

DOE Stakeholder Briefing
October 28, 2024

Project Title: **GRid Integration and Demonstration of FLEXible Energy Resources (GRID-FLEXER)**
Control Number: **3139-1514**
Applicant: **Virginia Electric & Power Company d/b/a Dominion Energy Virginia (DEV)**
Demonstration Project Manager: **Dr. Santosh Veda**
Team Member Organizations: **National Renewable Energy Laboratory (NREL), Generac, Julius Education, Community Stakeholders, & other DEV vendor partners**

Dominion Energy®

GRID-FLEXER Project Overview

- Advanced planning tools, flexible interconnection methods for large-scale clean energy resources, and innovative distributed energy resource (DER) aggregation/adoption programs to increase clean energy adoption
- Distributed Energy Resource Management System (DERMS) will optimize grid performance and manage DERs in real-time to support safe, reliable, and affordable operation of distribution grids with high DER levels

DER Assets to be controlled:

- Demand Side Management programs: smart thermostats, electric vehicle chargers, etc.
- Electrification programs: school bus vehicle-to-grid, battery aggregation
- Edge-optimized DER aggregation programs
- Front-of-the-meter assets, including solar photovoltaic and battery storage
- Net-metered assets, including solar photovoltaic and battery storage

Dominion Energy®

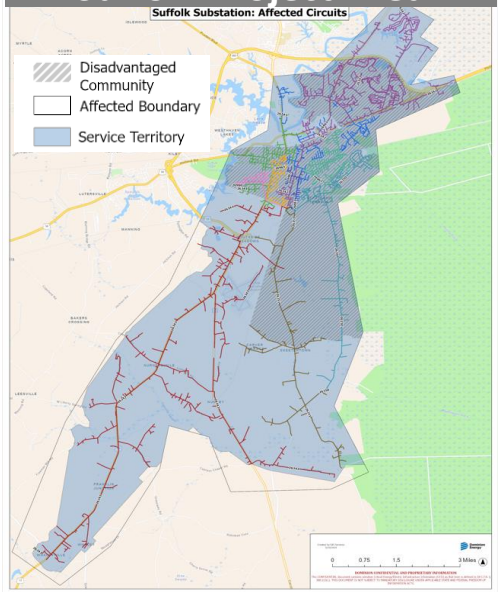
Project Demonstration

- Project demonstration in Suffolk, Virginia.
- Selected project area includes ten circuits serving 10,000 residential homes and 1,300 commercial and industrial customers
- Project area features urban, suburban, and rural areas including 6 disadvantaged communities (DACs)
- Peak load of 75MW and expected DER capacity of 148.6 MW through a diverse types of DER technologies

Community Benefits

- Community Engagement: Community-driven Advisory Board
- Equitable Opportunities: Empower DAC residents to participate in the clean energy transition through job creation and program access
- Clean Energy Future: Promote sustainable practices by reducing reliance on fossil fuels and lowering emissions
- Grid Resilience: Enhance grid reliability for all residents through improved infrastructure and grid management strategies
- Economic Growth: Stimulate local economies through job creation in the clean energy sector

Suffolk Project Area



Suffolk Community Advisory Board

- Hon. Karen Jenkins, Suffolk School Board
- Al Moor, Suffolk City Manager
- Hampton Roads Alliance
- Hampton Roads Chamber
- Paul D. Camp Community College
- Virginia Community College System
- Metropolitan Washington Council of Government (COG)
- Julius Education
- GED Testing Service

Dominion Energy®

Thank you

DEVGridFLEXER@DominionEnergy.com

Prime Time VPP

DE-FOA-0003139: Distributed Energy Systems Demonstrations

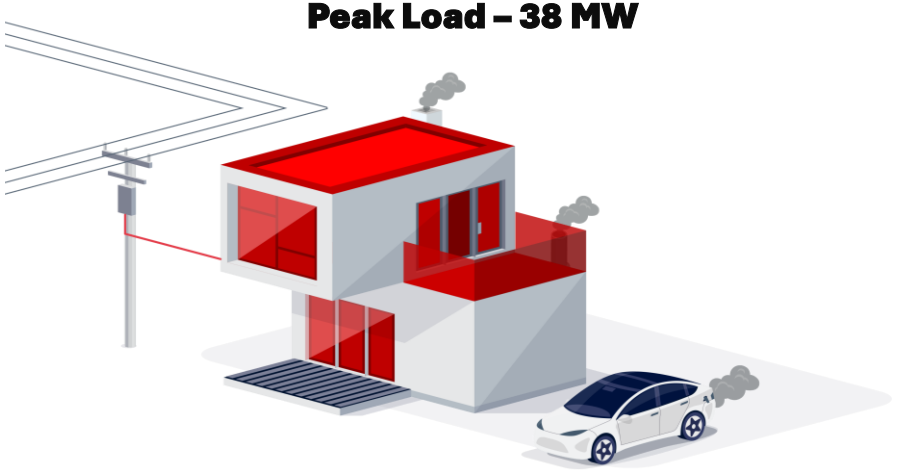
Project Partnership | Alignment to enable shared decarbonization goals

	2030	2035	2050
Xcel Energy®	**80%** lower carbon emissions		**ZERO** carbon emissions
City of Boulder	**Zero Emission** electricity	**Carbon-Neutral** City	**Carbon-Positive** city (2040)
University of Colorado Boulder	**50%** lower carbon emissions		**ZERO** carbon emissions

Project Overview | Operationalizing the next phase of the clean energy transition

TODAY

Peak Load – 38 MW



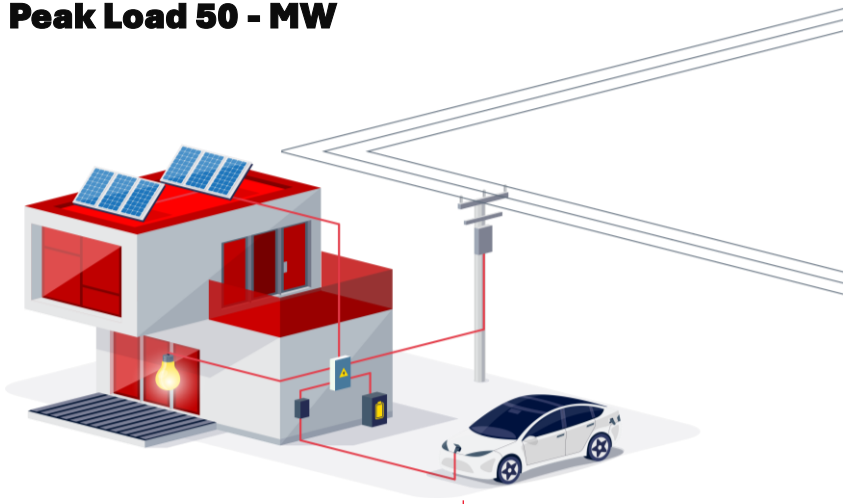
Solar | 11.2 MW
Batteries | 0.18 MW
EVs | 0.036 MW
Heating/Cooling | 1.8 MW

VPP

Over the next 8 years:
31% Peak Load Growth
61% DER Growth

FUTURE

Peak Load 50 - MW



Solar | 19 MW
Batteries | 2.4 MW
EVs | 2.3 MW
Heating/Cooling | 2.9 MW

Technology Stack

- Dispatching DR via Separate Platforms
- Scheduling via Legacy Systems
- Notifications sent from several third-party systems

- Dispatching and Scheduling via Single Integrated Platform
- Serving as an Integration Hub for 3rd Party DERs
- Centralized Automatic Notifications

Operating Model

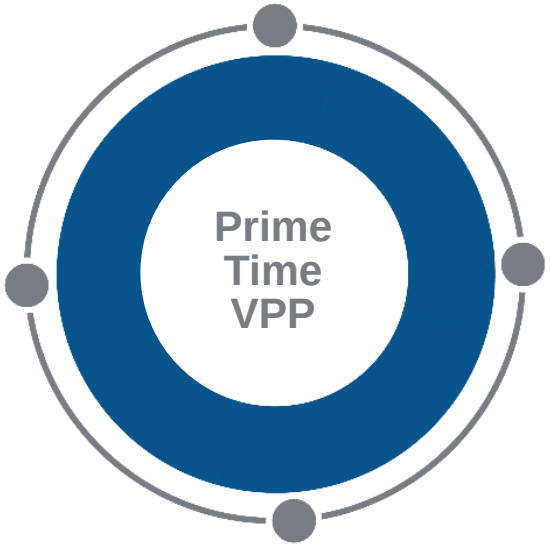
- Limited visibility/control; more deterministic planning and operating model
- Focus on Bulk System Benefits
- Mostly Fixed Incentive Programs

- Enhanced visibility/control; more dynamic planning and operations
- Both Distribution and Bulk System Benefits
- Performance/service-based incentives

Customer & Community Benefits of Prime Time VPP

Reach Net Zero Responsibly

- **Help CU & Boulder Achieve Clean Energy Goals –** greater utilization of renewables
- **Avoided Peak Generation CO2 Emissions –** avoided CO2 emissions



Customer Benefits

Incentives and Programs for:

- **Participating Customers –** Pay for performance; upfront incentives & variable annual incentives
- **Non-participating Customers –** bulk system benefits; avoided fuel, capacity purchases, and deferral of infrastructure to lower bills
- **Third Party DER Aggregators –** new price models & VPP customers

Strengthen Communities

- **Lower Bills -** Offset high costs of traditional infrastructure build-out
- **Reduced Outage Duration (SAIDI) –** reduced rebound effect, reduced risk, increase reliability

Operate With Integrity

- **Comprehensive VPP** Cyber Security Approach
- **Equity Study** to address VPP participation barriers

Next Steps & Resources

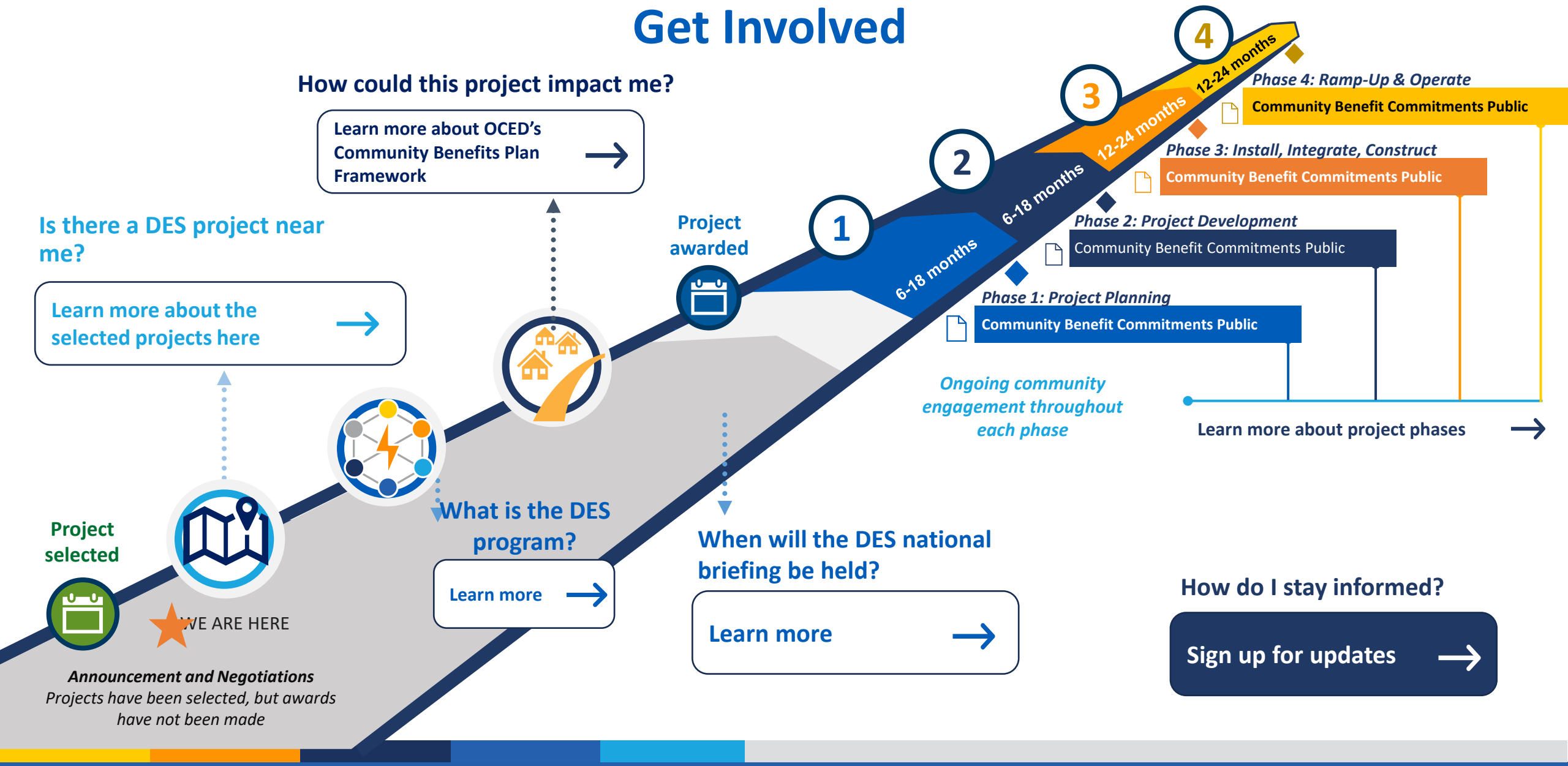
Get Involved

How could this project impact me?

Learn more about OCED's Community Benefits Plan Framework →

Is there a DES project near me?

Learn more about the selected projects here →



What is the DES program?

Learn more →

When will the DES national briefing be held?

Learn more →

How do I stay informed?

Sign up for updates →

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Community Benefit Commitments Public
Go/No-Go Decisions

National Environmental Policy Act

What is NEPA? NEPA is a federal law that requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions.

Does NEPA Apply? All projects, including any potential connected actions (40 CFR 1501.9(e)(1)), receiving financial assistance from DOE must be reviewed under NEPA. There are three levels of NEPA reviews:

Categorical Exclusion (CX)

- Categories of actions that DOE has determined, by regulation, do not individually or cumulatively have a significant effect on the human environment and for which, therefore, neither an EA nor an EIS normally is required
- **Categorical exclusions do not typically involve public review/comment, but are posted for public review once they are complete**

Environmental Assessment (EA)

- A brief analysis to determine whether an EIS is required
- **Two public review/comment periods (optional):**
  - **Public scoping comment period and meeting**
  - **Comment period and public meeting after the draft EA is released**

Environmental Impact Statement (EIS)

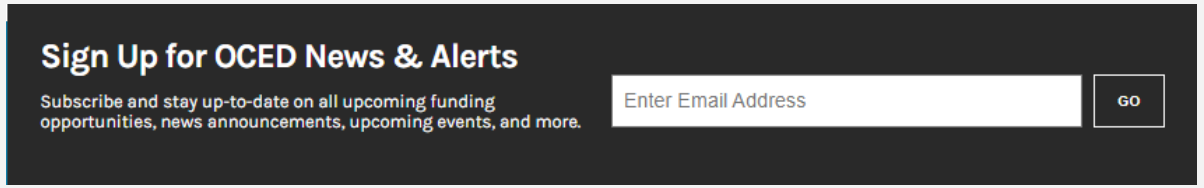
- A detailed statement for major federal actions significantly affecting the human environment
- **Two (required) public review/comment periods:**
  - **Comment period and public scoping meeting after the notice of intent to prepare an EIS is released**
  - **Comment period and public hearing after the draft EIS release**

NEPA Resources: https://www.energy.gov/oced/oceds-guide-nepa

For more information

- **For questions regarding DES projects email Engage_DES@hq.doe.gov**
- **OCED Website & Newsletter Sign-up energy.gov/oced**

  Scroll to bottom to sign up here:



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Thank you!

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