



Building an Advanced Energy Economy, State by State

An Advanced Energy Economy Webinar
February 8, 2022

Panelists



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Moderator:
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Director, Federal
Policy
**Advanced Energy
Economy**

Advanced Energy Infrastructure: A Roadmap For State Implementation



About Advanced Energy Economy (AEE)

- **Clean Energy Businesses:** AEE is a national association of businesses that are making the energy we use secure, clean, and affordable.
- **Pan-Technology:** AEE represents the full range of advanced energy technologies and services, both grid-scale and distributed. These technologies include energy efficiency, demand response, energy storage, wind, solar, nuclear, electric vehicles, and more.
- **Multiple Venues of Engagement:** AEE pursues policy transformation in the states, in wholesale power markets, and at the federal level for executive actions, legislation, and regulations to expand market opportunities for advanced energy technologies



AEE Areas of Focus for Implementation



Electrified Transportation



Energy Efficiency



Grid Infrastructure



Advanced Energy Manufacturing

Implementation Roadmap

ADVANCED ENERGY INFRASTRUCTURE: A ROADMAP FOR STATE IMPLEMENTATION

Overview

With the passage of the Infrastructure Investment and Jobs Act (IIJA), funds are available to state, local, and tribal governments for a variety of advanced energy infrastructure. The bill provides funding to address some of state and local policymakers' top energy priorities, such as ensuring a reliable electric grid, lowering energy bills, and supporting advanced energy jobs. This document outlines key federal funding streams for supporting these priorities, as well as information about how to access the funds.

ELECTRIFYING TRANSPORTATION

Electric School Buses

The IIJA establishes a \$5 billion grant and rebate program for the replacement of existing school buses with clean and zero-emission buses, with 50% of the funds reserved for zero-emission buses and 50% for clean and zero-emission buses.

- **Relevant agency:** Environmental Protection Agency (EPA)
- **Eligible to receive funds:** States, tribal governments, local governments, nonprofit school transportation associations, or eligible contractors
- **Type of funding:** Competitive grant (or rebate) funding
- **Match requirement:** Awards can be for up to 100% of costs
- **Funding timeline:** NEW PROGRAM. EPA must develop an education and outreach program to promote and explain the program no later than 120 days after enactment (March 15, 2022). \$1 billion is available each fiscal year between 2022 and 2026. First applications open spring 2022.

Electric Transit Buses

The IIJA provides \$234 billion for Bus and Bus Facilities Competitive Grants and \$375 million for the Low- and No-Emissions (Low-No) Program and specifies that entities receiving funding for projects related to zero-emission vehicles must submit a zero-emission fleet transition plan.

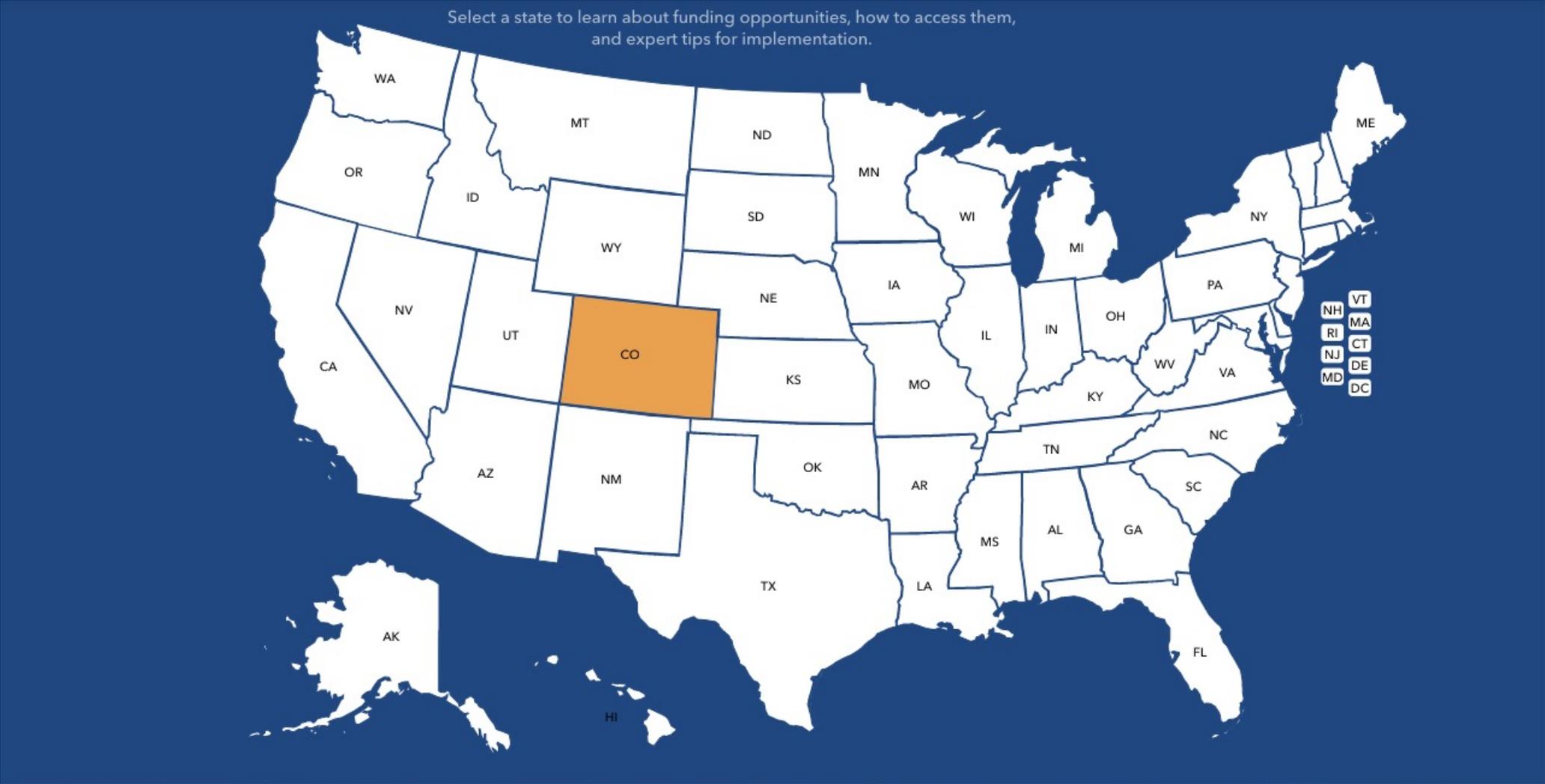
Information about over 30 programs in four categories:

- Electrified Transportation
- Energy Efficiency
- Grid Infrastructure
- Advanced Energy Manufacturing

Found online at aee.net/aee-reports



Coming Soon...



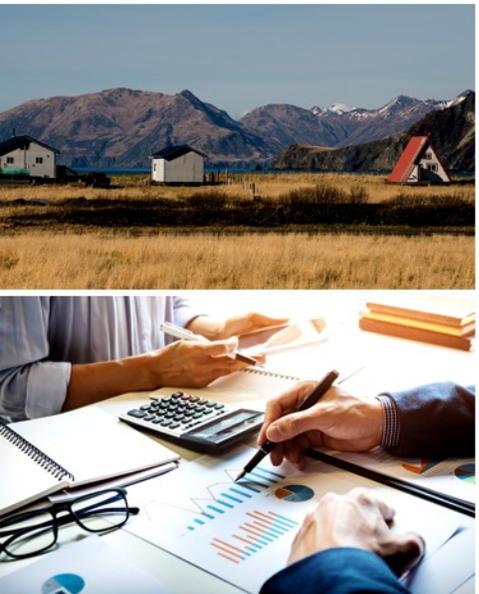
Federal Government Perspective



Bipartisan Infrastructure Law

Briefing for Advanced Energy Economy

Carla Frisch | Acting Executive Director/Principal Deputy Director of the Office of Policy



Investing in American Manufacturing and Workers

Revitalizing domestic supply chains and America's manufacturing leadership

- Invest more than **\$7 billion** in the supply chain for batteries
- Provide an additional **\$1.5 billion** for clean hydrogen manufacturing and advancing recycling RD&D
- Create a new **\$750 million** grant program to support advanced energy technology manufacturing projects in coal communities
- Expand the authority of DOE's Loan Program Office
- Made in America requirements

Investing in America's workforce

- Requires all construction workers on projects funded by the law to be paid prevailing wages
- Invest **hundreds of millions** in workforce development
- Establish a multi-agency Energy Jobs Council

Expanding Access to Energy Efficiency and Clean Energy

- Invest **\$3.5 billion** in the Weatherization Assistance Program that will reduce energy costs for low-income households by hundreds of dollars every year
- Invest **\$500 million** to provide cleaner schools for our children and teachers
- Invest **\$550 million** in the Energy Efficiency and Conservation Block Grant Program and **\$500 million** in the State Energy Program to provide grants to develop and implement clean energy programs and projects that will create jobs

Delivering Reliable, Clean, and Affordable Power to More Americans

Bringing the electrical grid into the 21st century

- Invest **\$11 billion** in grants for states, tribes, and utilities to enhance the resilience of the electric infrastructure against disruptive events such as extreme weather and cyber attacks
- Establish a **\$2.5 billion** Transmission Facilitation Program for DOE
- Back a **\$3 billion** expansion of the Smart Grid Investment Matching Grant Program

Maintaining our existing clean generation fleet

- Allocate **\$6 billion** for the Civilian Nuclear Credit program to prevent premature retirement of existing zero-carbon nuclear plants
- Invest more than **\$700 million** in existing hydropower facilities

Clean Energy Demonstrations

The law will provide **\$21.5 billion** in funding for clean energy demonstrations and research hubs, including:

- **\$8 billion** for clean hydrogen
- **\$2.5 billion** for advanced nuclear
- **\$1 billion** for demonstration projects in rural areas and **\$500 million** for demonstration projects in economically hard-hit communities
- More than **\$10 billion** for carbon capture, direct air capture and industrial emission reduction

Funding Distribution & Timelines

- Most of the programs will operate over a **five- to ten-year timeline** to provide states, cities, and localities the ongoing support they need to deliver these transformative projects for their communities.
- The funding will be delivered through a combination of formula funds to states and competitively awarded grant funding to states, cities, tribal, and other local partners
- Some will be a competitive selection process that will begin with a request for information, while others will be through existing formula and application processes.

How to Get Involved

- Requests for information on a wide range of projects will continue to be released in the coming weeks and months
- Seek opportunities to partner with states and others in certain programs
- Watch for new funding opportunity announcements on our [Bipartisan Infrastructure Law page](#) and be prepared to submit proposals to DOE

Where to Go for Information

Bipartisan Infrastructure Law page for updates on events, Requests for Information (RFIs), and Funding Opportunity Announcements (FOAs):

<https://www.energy.gov/bipartisan-infrastructure-law-programs>

Building a Better America Guidebook for information on specific program funding and application timelines:

<https://www.whitehouse.gov/build/>

State Government Perspective



Industry Perspective: AMPLY Power



AEE Webinar: "Building an Advanced Energy Economy, State by State"

February 8, 10 a.m. PST



AMPLY Power was founded to solve the major problems holding back fleet electrification:



Buying power
& managing
costs



Choosing the
right charging
equipment



Managing the
new functions of
EV technology



Paying for &
constructing charging
infrastructure

Our intelligent **charge management software, OMEGA™**, optimizes charging for lowest cost energy, while offering improved resilience and reliability, all in a user-friendly dashboard.

Paired with our **Charging-as-a-Service model**, our vehicle and charger agnostic approach allows us to handle all the details of charging a fleet's EVs, guaranteeing performance and dramatically reducing upfront capital.

The Command Center provides customers a user-friendly dashboard that enables:

- 24/7 network operations center
- Fleet management & telematics integration
- Reporting for compliance & energy programs
- Accessible & optimized for mobile
- Multi-device alerts & notifications in real-time





Logan Bus is the largest school bus operator for the New York City Department of Education, with over 2,500 school buses.

PARTNERS:



OVERVIEW

Logan Bus and AMPLY partnered on a demonstration project, funded by NYSERDA, to showcase innovative concepts for EV charging infrastructure and accelerate the use of electric school buses.

PROJECT FEATURES

- AMPLY is providing **Charging-as-a-Service**, assuming responsibility for all charging aspects of the Logan Bus EV fleet.
- UES is converting five existing Class C diesel school buses to electric, leveraging their 7-step process for **repowering vehicles**.
- Rhombus Energy is providing a **vehicle-to-grid (V2G)** EV charging system.
- A partnership between CPower and AMPLY is offering the local transmission and distribution grids flexibility to integrate the EV chargers as a **distributed energy resources** (DER).



Palermo Union School District is located in the northern part of California's Sacramento Valley.

PARTNERS:



OVERVIEW

AMPLY manages the charging of electric school buses for the Palermo Union Elementary School District. The zero-emission commitment from the school significantly lowers operating and fuel costs for the district.

PROJECT FEATURES

- Palermo has contracted an **energy rate of \$0.10/kWh** (or \$1.19 per gallon) through AMPLY's fully-managed, turnkey charging services. The cost of electricity without could be as high as \$0.20/kWh.
- AMPLY advocated for funding from the Butte County Air Quality Management District and PG&E, **eliminating the need for an upfront capital.**
- Based on early success, Palermo has requested AMPLY install an additional charger for an additional electric bus.



Expand federal funding eligibility to facilitate depot-based charging:

- The cost of infrastructure is still a big barrier to adoption for commercial fleets and investments are needed to provide depot charging accessibility and to support the business case of EV adoption.
- Depot-based charging will facilitate commercial electrification and adoption efforts, especially when considering short-haul return to base commercial vehicles.
- Electrifying our local, urban and regional fleets is an important opportunity to reducing pollution burdens on local and environmental justice communities.
- Consider funding for private and shared commercial charging.
- Transit and school buses also need funding and typically use private charging.

Federal Funding for Depot-Based Charging



Charger reliability is critical to increasing consumer and fleet operator confidence in EV technology:

- The joint Federal DOT and DOE office should establish a minimum reliability for all charging sites (uptime).
- Maintenance, operations, service level agreements should be set up for the useful life of a charger and include close coordination with charging manufacturers.

THE INFRASTRUCTURE

EV FLEETS REQUIRE GUARANTEED UPTIME AND ZERO CHARGING CHALLENGES

AMPLY Power's charging as a service model offers 99.9% uptime, critical to scaling EV deployments

By Charles Morris

Fleet charging management may not be the most glamorous segment of the EV industry, but it is emerging as an extremely important component of the future EV ecosystem. As commercial fleets electrify, they are finding that they need expert help to design, install and operate their charging infrastructure. During previous tech revolutions, third-party contractors emerged to provide turnkey services to companies for things like data centers and solar installations.



Now innovative companies are meeting the demand for similar services in the fleet charging realm. Charging as a service is the hottest trend in the EVSE world—it offers savings to fleet operators today, and once the nascent technology of V2G takes off, it could offer truly game-changing capabilities for utilities.

Three-year-old AMPLY Power is already providing charging management services to several fleet customers, and the company recently won a high-profile contract to provide managed charging for New York City's largest pilot of e-school buses, to be operated by Logan Bus, the city's largest school bus provider.

Charged had a chat with AMPLY CEO Vic Shao.

Q Charged: Could you explain a bit about why the charging as a service model is needed?

A Vic Shao: For new EV fleet operators, charging as a service can be a difficult concept to wrap their heads around without some sort of comparison to parallel industries, so

when I talk about charging as a service, I typically draw an analogy to solar PPAs [power purchase agreements].

You don't really find customers anymore that would select solar panels and inverters on their own, hire a construction crew to build a system, then work with the utility directly on the utility interconnect. You would have a solar developer figure out all that for you and install it, and for large enough deployments, you would do a 20-year solar PPA.

I also tell the story of data centers. Twenty years ago, large companies would put a whole bunch of server blades into electrical closets, thinking this can't be that hard—just servers in a closet and away we go. Well, as it turns out, it is a lot more complex than one would imagine—operating system upgrades and antivirus protection and batteries to back up the servers and cooling systems for that closet... all of this mess. So, what ultimately happened, of course, is that everybody started using Amazon Web Services or Microsoft Azure, and just buying the output and leaving all of the complexity to a data center operator.

USDOT should require States to submit their plans for review within 6 months of USDOT issuing joint guidance:

- Even if USDOT administers the funding quickly to state DOTs, significant time will elapse before state DOTs administer the funds through their individual infrastructure programs.
- Therefore, where possible, USDOT should minimize unnecessary delays from states to develop EV charging deployment plans.
- Many states are already engaged in EV charging planning and deployment work and have a readily available knowledge-base.
- USDOT should encourage the state DOTs to collaborate closely with their state Energy and Environmental offices to build upon and leverage best practices developed under the Volkswagen settlement.



THANK YOU

Heidi Sickler, Director of Policy

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Industry Perspective: Enel North America



Building an Advanced Energy Economy, State by State

Jack Thirolf
Enel North America



AURORA SOLAR FARM, MN



GILLETTE STADIUM, MA



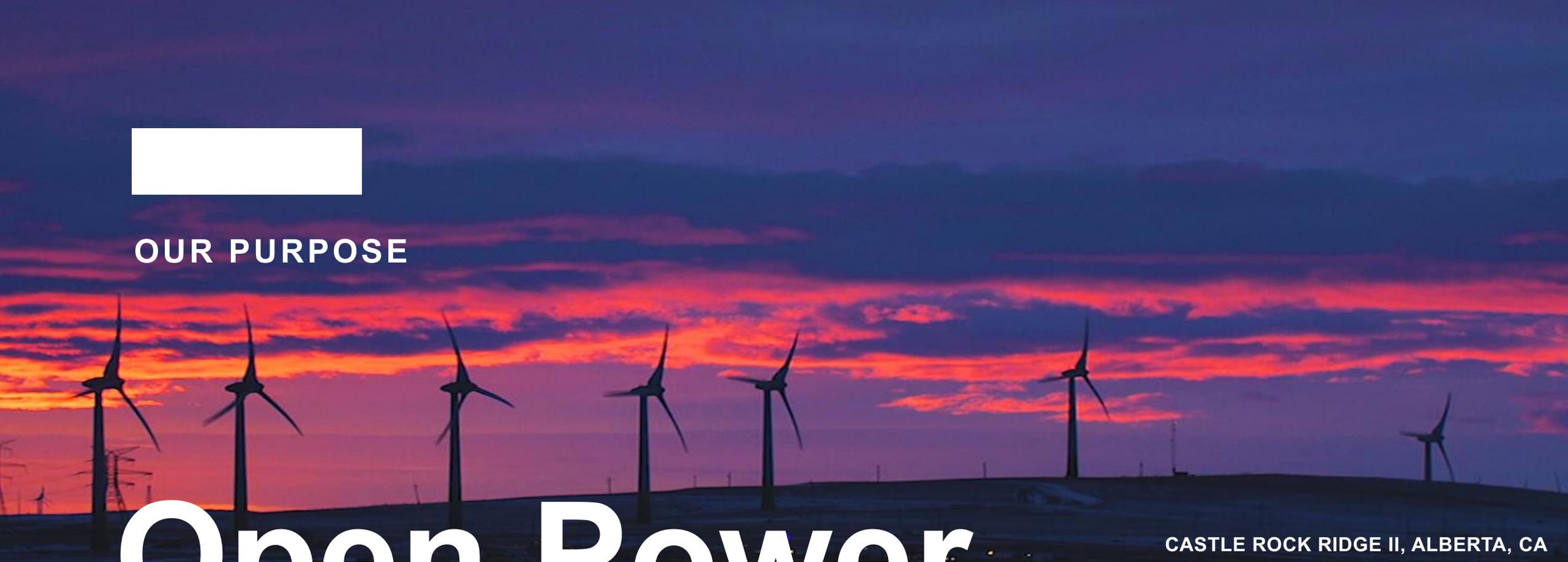
RIVERVIEW WIND FARM, CANADA

2022/02/08

enel



OUR PURPOSE



Open Power

CASTLE ROCK RIDGE II, ALBERTA, CA

for a Brighter Future:

We empower sustainable progress

Enel: A growing green energy giant

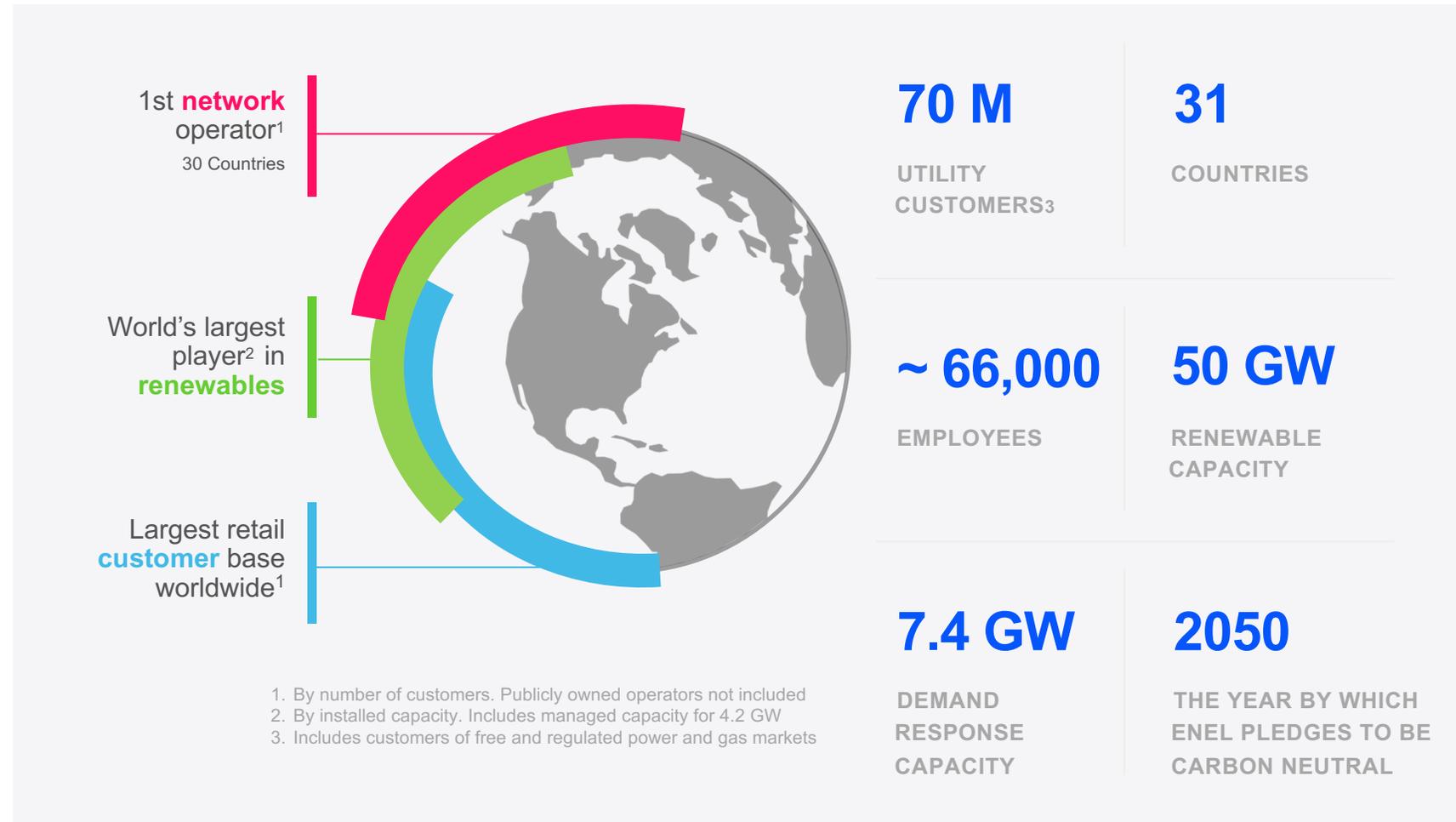


Accelerating the Energy Transition: The focus on decarbonization and electrification

Enel is a multinational power company and a leading integrated player in the global power, gas and renewables markets. We are changing the face of energy as a shaper, leader and enabler of the energy transition.

Enel began as an energy utility over 50 years ago, but today we are not the company we once were.

With a dedicated focus accelerating the energy transition through decarbonization and electrification, we have been listed on the *Dow Jones Sustainability Index* for 17 years and have been included on *Fortune Magazine's "Change the World" list (2015, 2017, 2018)*.



Enel Business Areas in North America



In the United States and Canada, Enel is driving toward a decarbonized future through its Enel Green Power, Enel X and Energy & Commodity Management divisions. Across these businesses, Enel provides a full spectrum of energy services to businesses, utilities, municipalities and other commercial energy users, as well as public and private EV charging.



Driving the future of sustainable energy

Enel Green Power is a leading developer, long-term owner and operator of renewable energy plants, working to build a sustainable future for communities and businesses across the U.S.



Making opportunities happen

Enel X provides smart value-added services and solutions that enable businesses and communities to create, store, use, and manage energy more efficiently, sustainably, and strategically.

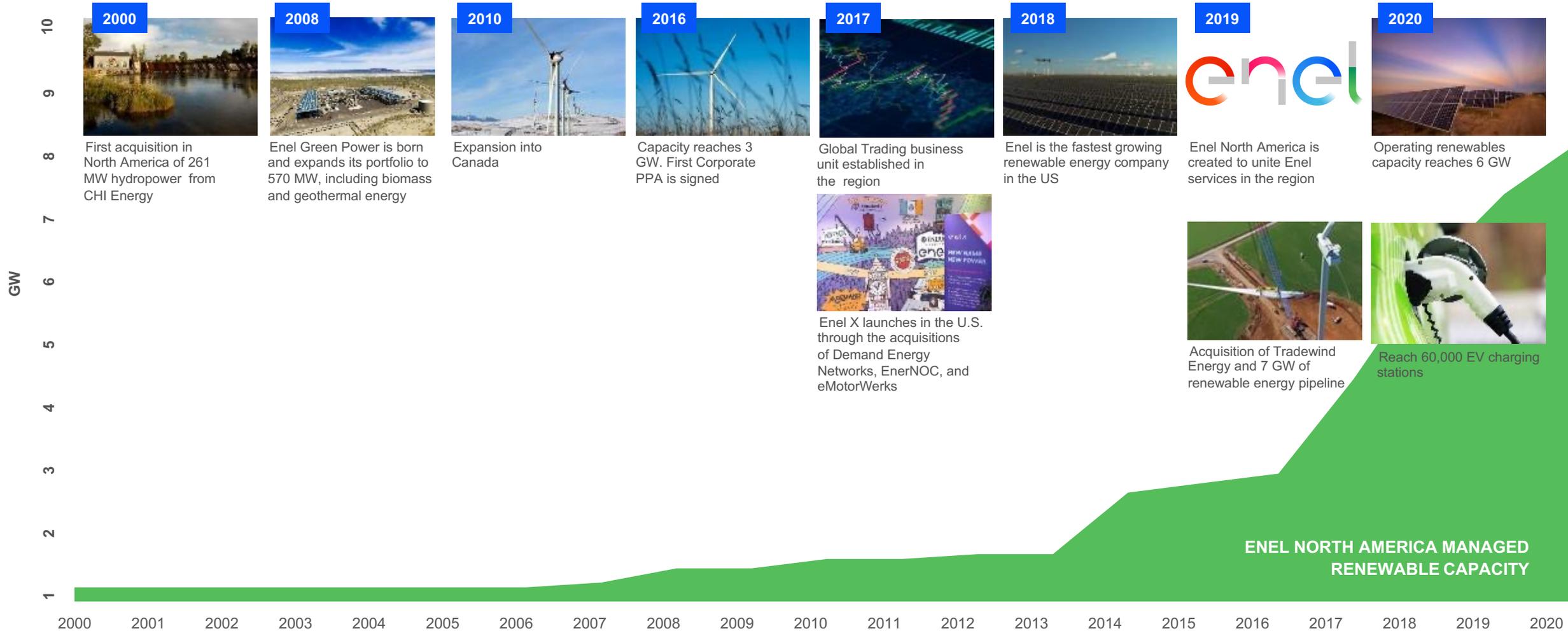


Creating connections

Energy & Commodity Management acts as the unique interface with the wholesale energy markets, managing and maximizing the integrated gross energy margin and dispatching local generation fleet.

20 years in the U.S. & Canada

Growing and diversifying services



Enel X launches in the U.S. through the acquisitions of Demand Energy Networks, EnerNOC, and eMotorWerks



Acquisition of Tradewind Energy and 7 GW of renewable energy pipeline



Reach 60,000 EV charging stations

ENEL NORTH AMERICA MANAGED RENEWABLE CAPACITY

Infrastructure Investment and Jobs Act



New – Recently enacted law invests \$1.2 trillion in infrastructure programs

- Signed into law on 15 November 2021
- Will make funding available for infrastructure programs across the transportation, energy and water sectors, through a combination of grants and loans
- Selected funding programs of *possible* interest to Enel:
 - \$2.5B for Charging and Fueling Infrastructure Competitive Grants
 - \$5.0B for National EV (Public Charger) Formula Program
 - \$6.4B for Carbon Reduction Formula Program
 - \$5.25B for Low-No (emission) vehicle discretionary grant program
 - \$5.0B for Grid Infrastructure Reliability Competitive Grants
 - \$5.0 for Energy Infrastructure Federal Financial Assistance Program
 - \$1.0B Energy Improvement in Rural or Remote Areas
 - Transmission Facilitation Program (capacity contracts, loans, etc)
 - \$7.712B to establish supply chains for clean energy tech
 - **\$8.0B for Regional Clean Hydrogen Hubs**
 - \$550M for Clean Hydrogen Manufacturing and Recycling Program
 - \$1.0B for Clean Hydrogen Electrolysis Program
 - \$500M for Clean Energy Demonstration Program on Current and Former Mine Land
 - \$355M for Energy Storage Demonstration Pilot Grant Program
 - \$150M for Long-Duration Demonstration Initiative



Major (to us) Simplified Hydrogen Components



Key kick-starting dates 180 days after enactment, *i.e.*, May 2022

- **Define Clean Hydrogen**
 - Develop a clean hydrogen production carbon intensity standard, in which clean hydrogen will mean hydrogen produced with carbon intensity equal to or less than 2kg of CO₂ per kg of H₂ at site of production
 - Need further clarity on how this definition will interact with proposed hydrogen PTC definitions
- **Regional Clean Hydrogen Hubs (\$8 billion)**
 - Four regional hubs, selected to meet feedstock, end-use, and geographical diversity requirements.
 - Feedstock – At least one hub each for fossil fuels, renewable energy, and nuclear.
 - End-use – At least one hub each to demonstrate use in power generation, industrial sector, residential and commercial heating, and transportation.
 - Geographic – At least two hubs in regions of greatest natural gas resources.



Thank you!

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Q&A



Thank you for attending this AEE webinar!

Download AEE's Implementation Toolkit:

aee.net/aee-reports/advanced-energy-infrastructure-a-roadmap-for-implementation

Learn more about AEE's state implementation work: lrubinshen@aee.net