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# Electric Sector Technology Transition and Emissions

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# 2022 Industry Priorities



Clean  
Energy



Resilience &  
Grid Security



Storm Response  
& Wildfire  
Mitigation



Infrastructure  
Investment &  
Jobs Act  
Implementation



Electric  
Transportation



Diversity,  
Equity &  
Inclusion

# Leading on Clean Energy

Changing U.S. Energy Mix

**40%**  
CARBON-FREE



↓ **CO<sub>2</sub>**

**CARBON EMISSIONS**  
From the U.S. Power Sector  
**ARE AS LOW AS THEY WERE IN 1984,**  
While Electricity Use Is Up 72% Since Then



Increasing Investments

**\$120 Billion+**

Per Year on Average  
**TO MAKE THE ENERGY GRID  
SMARTER, CLEANER, STRONGER**



**>1/2**

Over the Past 10 Years,  
More Than Half of New Electricity  
Generation Capacity Was  
**WIND AND SOLAR**



Nearly

**27 Gigawatts**

of  
**RENEWABLE TECHNOLOGIES**  
added in 2021



Investing More Than

**\$3.4 Billion**

to Deploy  
**EV CHARGING  
INFRASTRUCTURE**



Using

**96%**

of all  
**U.S. ENERGY STORAGE**

# Industry Capital Expenditures

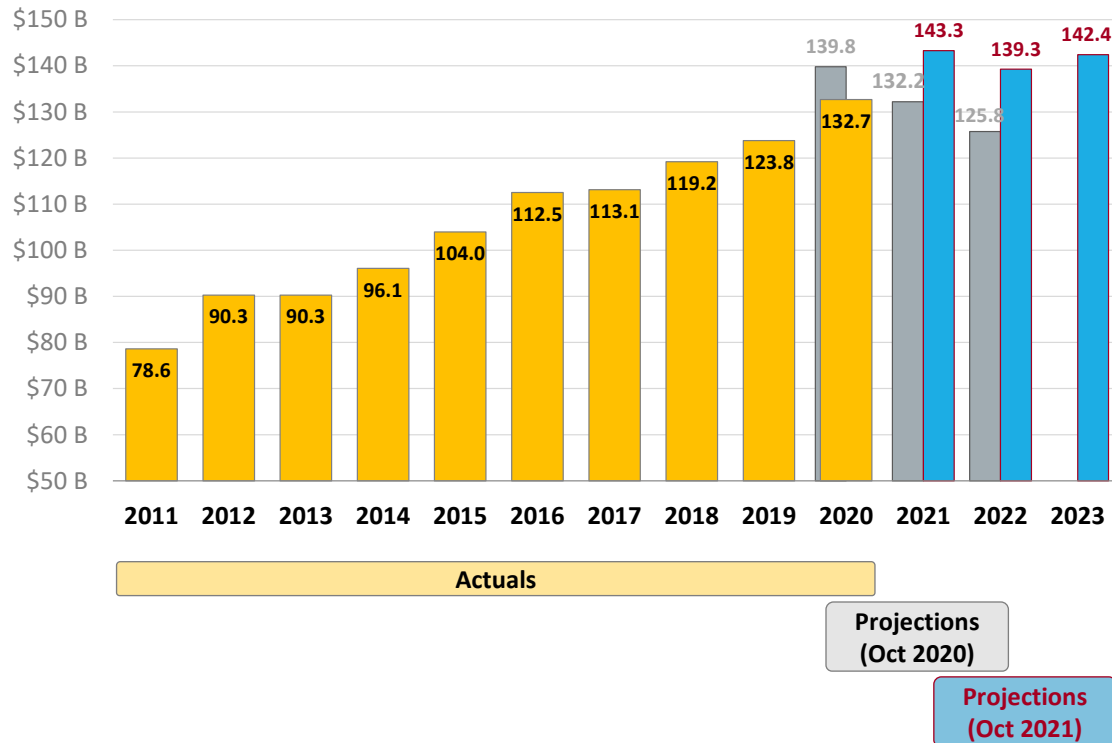
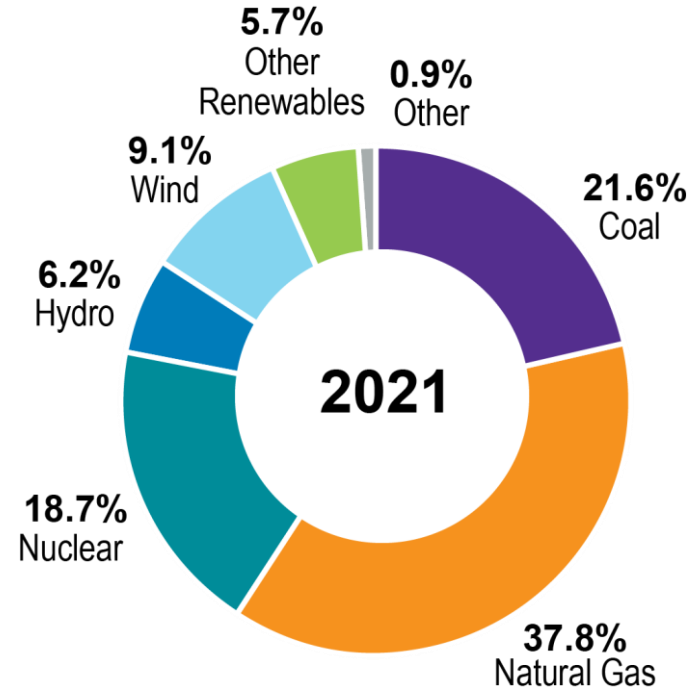
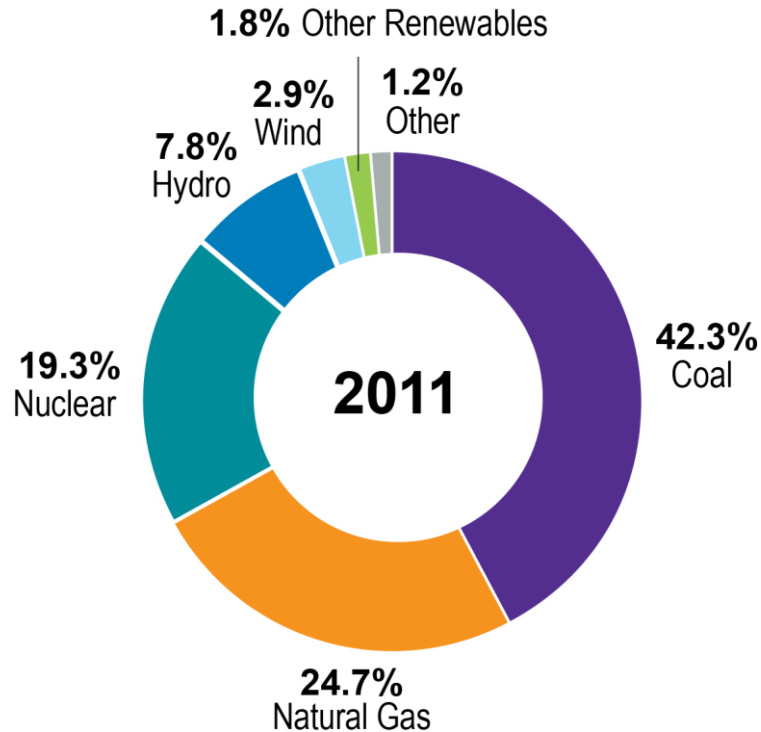


Chart represents total company spending of U.S. Investor-Owned Electric Companies, consolidated at the parent or appropriate holding company.

Note: At the industry level, CapEx tends to be overestimated for the current, or first, year's projection and underestimated for the two following years. Although the chart indicates investments are trending down in 2022 and 2023 relative to 2021 levels, we expect a continued level of elevated spending after accounting for the historical trend of over- and underestimation.

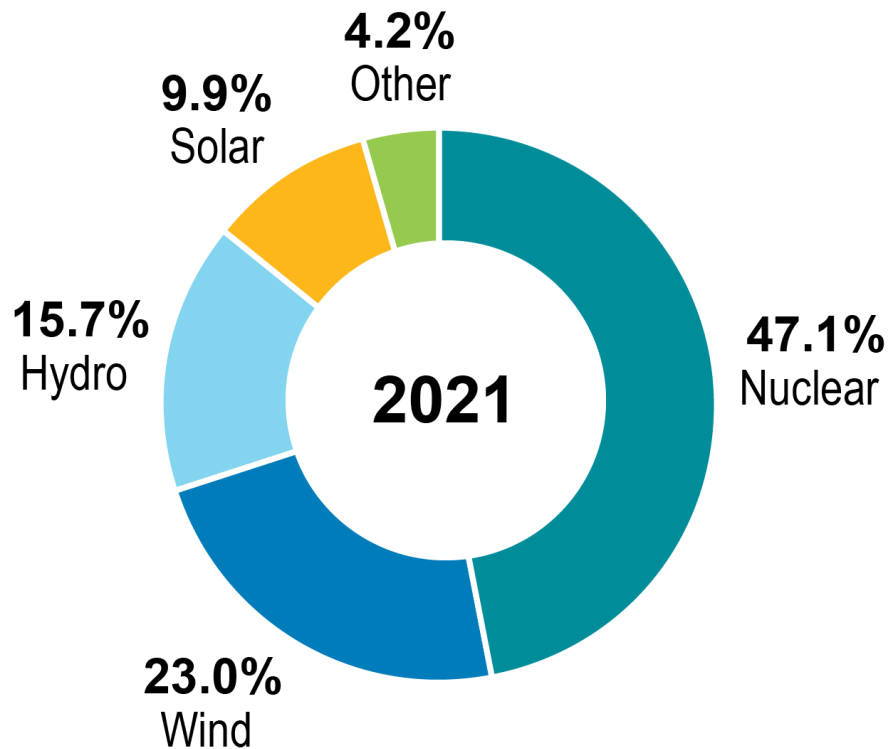
Source: EEI Finance Department, member company reports, and S&P Global Market Intelligence (updated October 2021).

# Transforming the Energy Mix



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

# Carbon-Free Electricity Generated



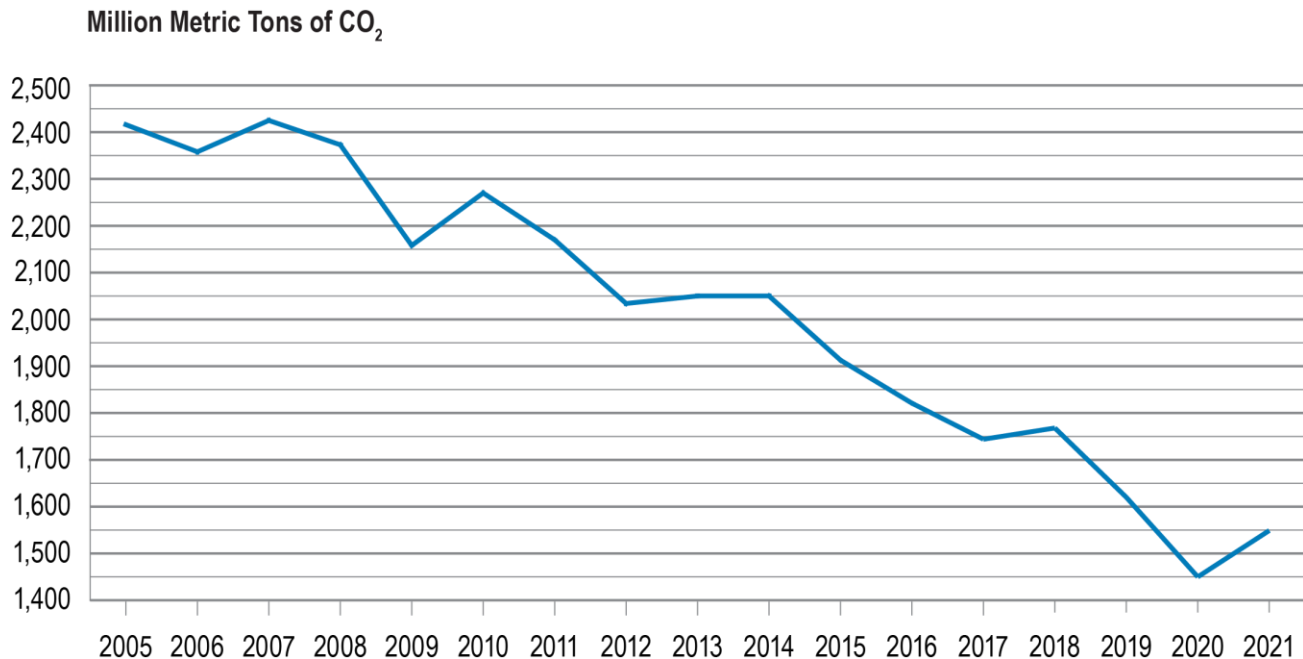
**Nuclear energy remains the largest source of carbon-free electricity.**

Currently, 93 reactors in 28 states produce nearly 20 percent of our nation's electricity and approximately 50 percent of our carbon-free electricity.

"Other" includes biomass, geothermal, and landfill gas.

Source: U.S. Department of Energy, Energy Information Administration.

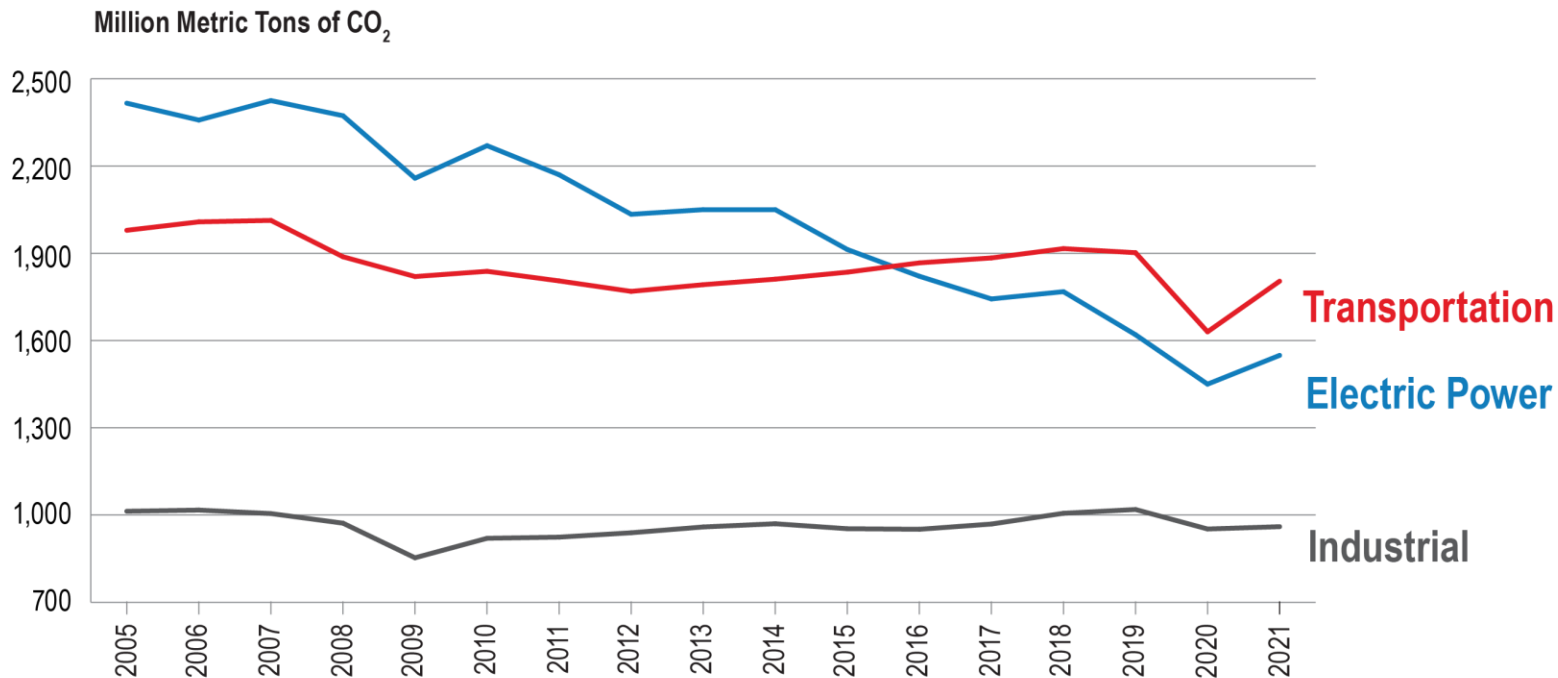
# Reducing Carbon Emissions



- Today, 40 percent of U.S. electricity comes from carbon-free sources
- As of 2021, electric power industry CO<sub>2</sub> emissions are 36 percent below 2005 levels
- Overall trajectory is expected to continue based on current trends

Source: Preliminary estimate from U.S. Department of Energy, Energy Information Administration (EIA), Monthly Energy Review, March 2022.

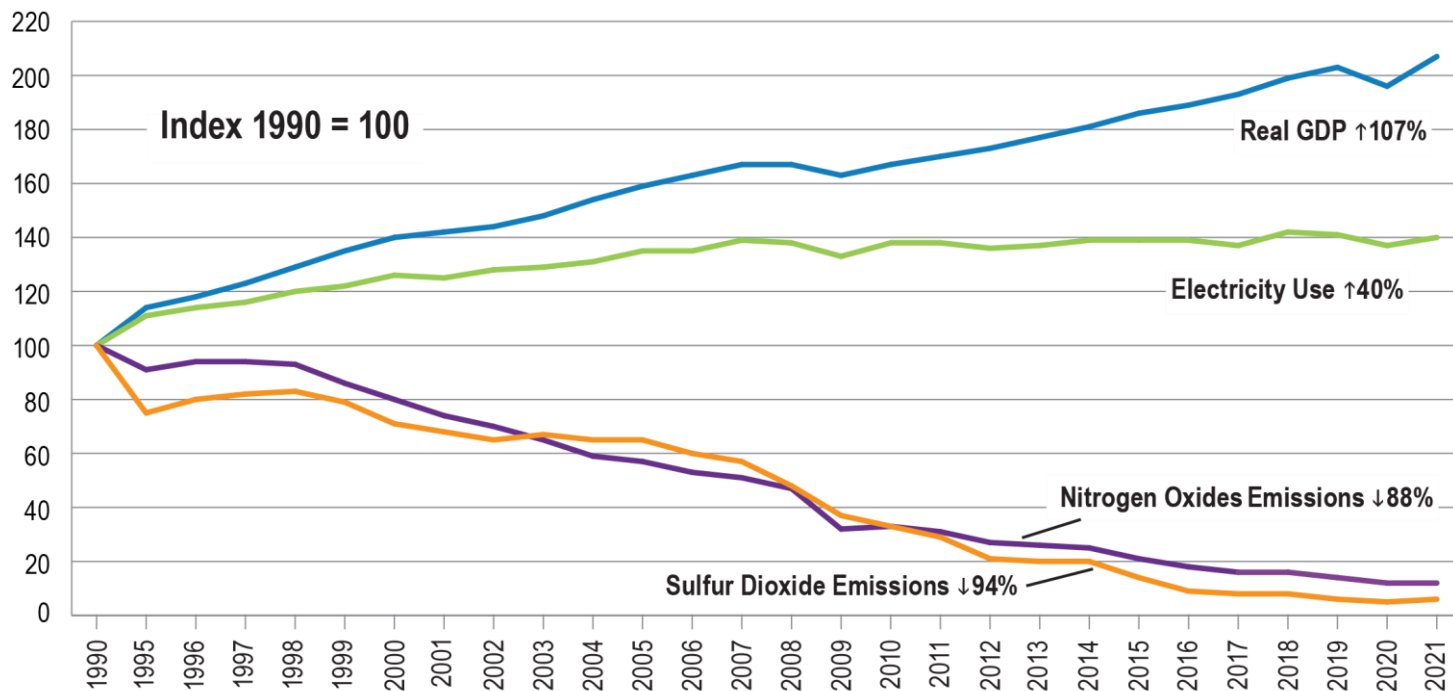
# Comparing CO<sub>2</sub> Emissions



Source: Preliminary estimate from U.S. Department of Energy, Energy Information Administration, Monthly Energy Review, March 2022.



# Power Plant SO<sub>2</sub> & NOx Emissions



1990 represents the base year. Graph depicts increases or decreases from the base year.

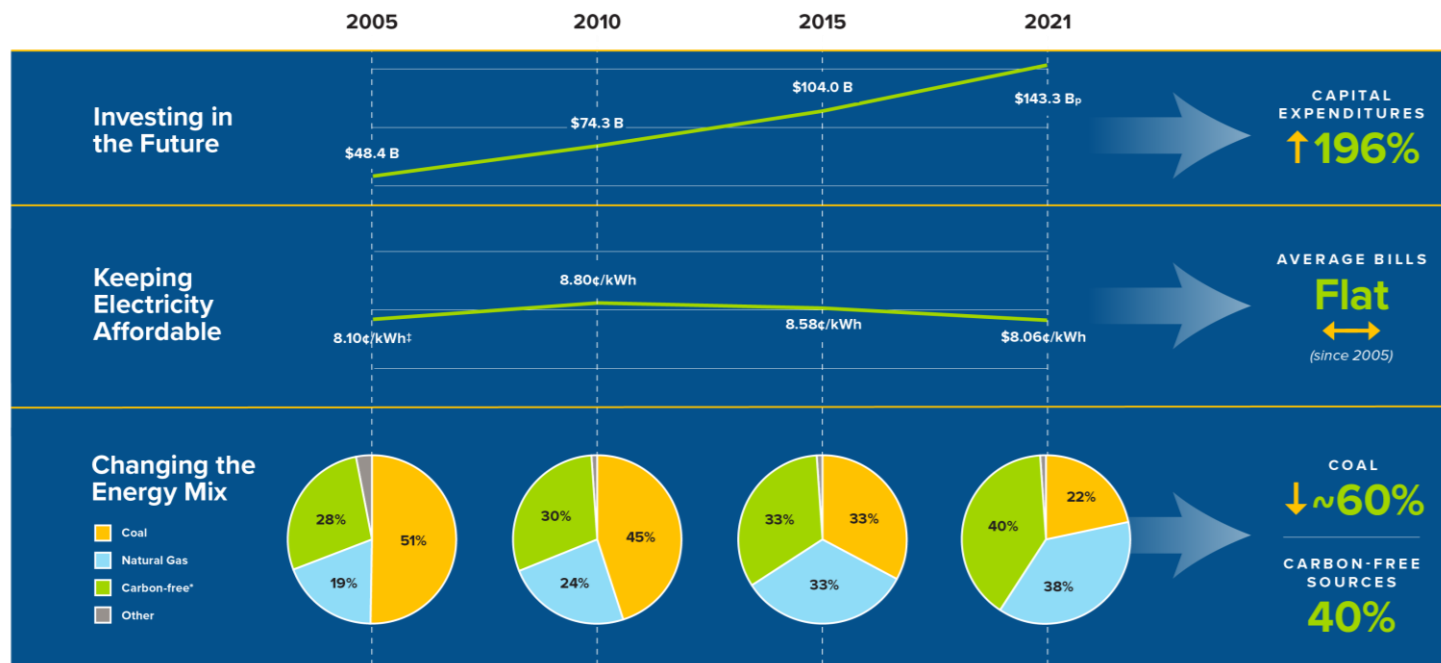
Sources: U.S. Department of Energy, Energy Information Administration (EIA), U.S. Environmental Protection Agency (EPA), and U.S. Bureau of Economic Analysis.

# Hazardous Air Pollutants (HAPs)

- Acid gases and total HAPs emissions down 96 percent (2010-2017)
- Mercury emissions down 95 percent, from 59 to 3 tons (1990-2020)

Source: U.S. Environmental Protection Agency

# Our Clean Energy Journey



From  
2005  
Levels

Electric Power Industry  
Carbon Emissions\*\*

↓36%

Sources and Notes: \*Average Annual U.S. Retail Electricity Rates 2005–2021 (real 2005 \$) | \*Carbon-free = nuclear, hydropower and other renewables | \*\*U.S. Department of Energy, Energy Information Administration, Monthly Energy Review, March 2022

# Data and Transparency

- Generating unit attributes – EIA, EPA and other
- SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, Hg, total filterable PM and TRI emissions reported to EPA and publicly available
- Integrated Resource Plans for PUC/PSC decision-making
- ESG Sustainability Template
- Natural Gas Sustainability Initiative

# EEI Member Company GHG Reduction Goals

- 50 EEI members have set GHG reduction goals
- 33 have goals of reaching net zero emissions by 2050 or earlier
- Members continue to accelerate their goals and progress

# CARBON<sup>●</sup>FREE

## TECHNOLOGY INITIATIVE

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[www.carbonfreetech.org](http://www.carbonfreetech.org)

# The Carbon-Free Technology Initiative

- CFTI is advocating for policies to support commercial availability of key technologies that can achieve net-zero emissions in the U.S. electricity sector:
  - Advanced, dispatchable renewables (e.g., superhot deep geothermal), advanced wind and solar, and advanced power electronics
  - Zero-carbon fuels, such as hydrogen and ammonia, produced from a variety of sources
  - Advanced nuclear energy (both fission and fusion)
  - Carbon capture, utilization, and sequestration, especially for natural gas generation
  - Advanced demand efficiency and long-duration storage

# Potential IIJA Funding Opportunities



**\$5.05B**

Expanding Access  
to Energy Efficiency  
& Clean Energy



**\$16.5B**

Grid Resilience &  
Improvements



**\$6.7B**

Maintaining our  
Existing Clean  
Generation Fleet



**\$21.5B**

Clean Energy  
Demonstration &  
Research Hubs



**\$43.4B**

Broadband  
Development &  
Infrastructure



**\$8.9B**

Electric Vehicle  
Infrastructure



# Electric Transportation Trends

TODAY



There are more than  
**2 million**

electric vehicles on U.S. roads.

**>\$3.4 billion**

EEl's member companies are investing more than \$3.4 billion in customer programs and projects to deploy charging infrastructure and to accelerate electric transportation.

BY 2030



The number of EVs on U.S. roads is projected to reach nearly

**22  
million.**



**>100,000**

EV fast charging ports will be required to support this number.



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*Power by Association<sup>SM</sup>*