

# Building on Success: New Challenge across US economy

The United States and the world face a profound climate crisis; many organizations have set goals – what we need now is **action and pathways**

The government platform that provides transparency, accountability, technical assistance and collaboration to identify decarbonization pathways and provide recognition for leadership across the US economy



The Better Climate Challenge is a portfolio-wide reduction in GHG emissions **of at least 50% over 10 years**

- Reduction includes Scope 1 & 2 emissions
- No offsets
- Baseline up to 5-years back from join date
- Encouraged to establish an absolute target, but intensity-based targets will be accepted
- Pursue an energy efficiency target that will contribute towards the 50% emissions reduction

# Better Buildings Initiative (BBI)



The **Better Buildings Initiative** is a market transformation program for leading businesses, manufacturers, cities, states, universities, and school districts to partner with DOE to accelerate greenhouse gas emissions reduction, energy and water efficiency, and waste reduction and to share solutions broadly..

<b>600+ Partners</b> with Portfolio-wide Emissions and Energy Goals		
<b>3.1 QBtu</b> Energy saved	<b>\$18.5 B</b> Cost savings	<b>189 MMT</b> CO <sub>2</sub> avoided
<b>9.6 B</b> Buildings Sq. Ft.	<b>3,600</b> Industrial facilities	<b>\$32 B</b> Funding extended by Financial Allies

## Within the BBI:



Through the **Better Climate Challenge**, organizations commit to decrease portfolio-wide GHG emissions by at least 50% over 10 years and share their strategies and results.

In the first year of reporting, Better Climate Challenge partners shared GHG emissions reduction results across **more than 850 million square feet** of reported building space in addition to **more than 2,100 industrial facilities**. On average, Better Climate Challenge partners are achieving a **21% GHG emissions savings from base year**.



Through the **Better Buildings Challenge**, organizations commit to improving the energy efficiency of their portfolio by at least 20% over 10 years and share their strategies and results.



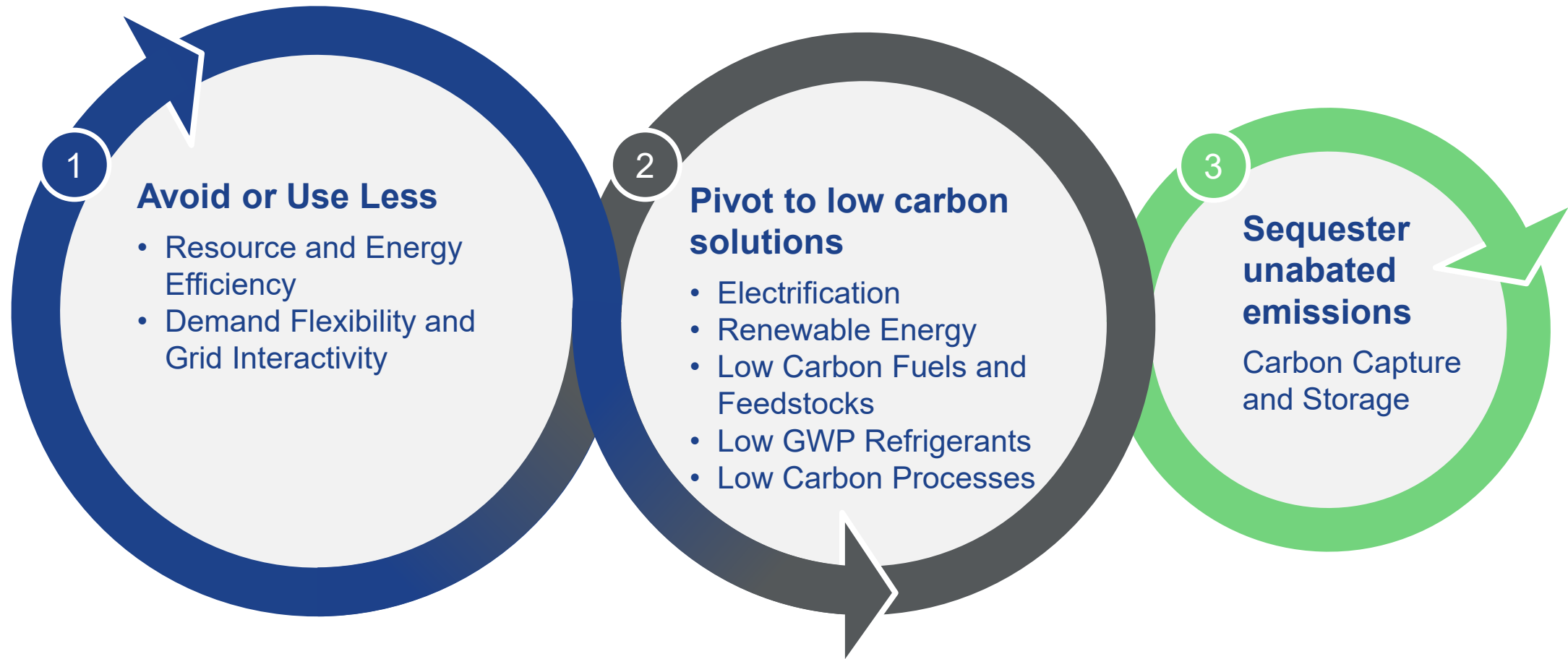
Through the **Better Plants Challenge**, manufacturing organizations commit to improving the energy efficiency of their portfolio of plants by at least 25% over 10 years and share their strategies and results.

### Additional Better Buildings Initiative partnership opportunities

- Better Plants Program
- Better Buildings Accelerators
- Better Buildings Alliance
- Better Climate Challenge Allies
- Better Buildings Residential Network
- Industrial Energy Management Workforce
- High-Impact Technology Field Validations
- Technology Teams and Campaigns
- Home Energy Score™

# Prioritization of GHG Mitigation

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# 200+ Better Climate Challenge Partners and Financial Allies

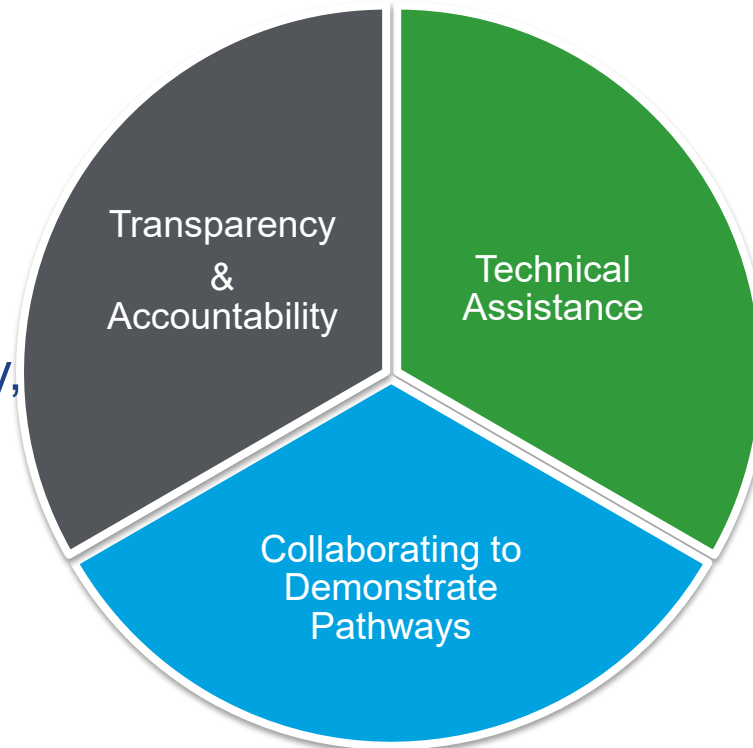


# Core Program Components – Transparency, Accountability, and Technical Assistance

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## Transparency & Accountability

- Annual energy and emissions data reporting for 10-year commitment
- Breakdown of emissions reductions by energy efficiency, renewable energy, and renewable energy certificates



## Technical Assistance

- Data driven solutions to address barriers and overcome hurdles, that can be deployed at scale to the market
- Identify technology gaps that can inform R&D

## Collaborating to Demonstrate Pathways

- Partners commit to work with DOE and showcase their barriers and solutions
- Regularly connect with DOE to provide updates and discuss progress
- Actively participate in a working group with peers and technical experts to discuss barriers, exchange best practices, and identify solutions

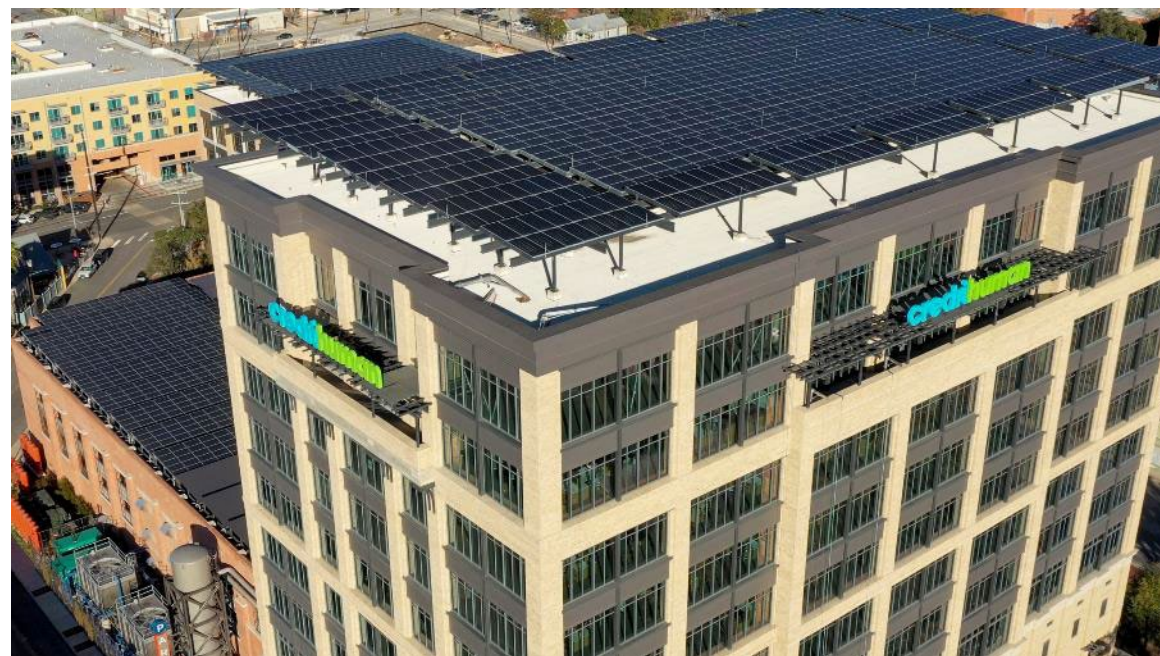


# Leading by Example: Credit Human

## Big decarbonization opportunities in new construction

Credit Human completed construction of a new 12-story headquarter building that is nearly 65% more efficient than similar buildings by utilizing a geothermal system for heating and cooling, by implementing state-of-the-art building envelope, space conditioning, and lighting designs, and by collecting rainwater.

- Reduced energy demand by more than 55% and saved 90% in utility costs compared to the previous, larger headquarters building
- Installed 1 megawatt of solar which produces almost 40% of annual electricity demand
- Uses 97% less potable water than a typical 200,000 square feet building



# Leading by Example: University of Virginia (UVA): Focus on Big Energy Use

At UVA, labs are 13% of space but 1/3 of energy use.

VA implemented a Sustainable Labs Program to increase energy savings in intensive lab buildings, enhance safety features, and promote engagement with UVA's research community, reducing annual costs by around \$5 million.

- Decreased CO<sub>2</sub>e by more than 20% and energy use by almost 20% in 2022
- Implemented Sustainable Labs in two research buildings and carried out targeted upgrades, lighting retrofits, and ventilation risk assessments
- Will help UVA reach its institutional goals of carbon neutrality by 2030 and fossil fuel-free by 2050



**Sustainable Labs**  
UVA SUSTAINABILITY





# Leading by Example: Los Angeles Unified School District

## Big advances sometimes need broad buy-in

## Setting goals drives collective action

LAUSD designed a pathway to achieve 100% clean, renewable energy in its electricity sector by 2030 that includes a task force of internal and external stakeholders and increasing its PV system from 19MW to 345MW

- Annual cost savings from displaced fossil fuels expected to be \$20 million, and annual GHG reductions expected to be more than 400 thousand metric tons of CO<sub>2</sub>
- More than 25 school sites currently undergoing technical evaluation review for solar PV installation
- Improved health benefits for LAUSD students, 80% of which come from disadvantaged communities





# Leading by Example: Lear Corporation

Partner Barrier: Decarbonization through energy efficiency – capturing easy to implement operational improvements

How Partner Overcame Barrier:

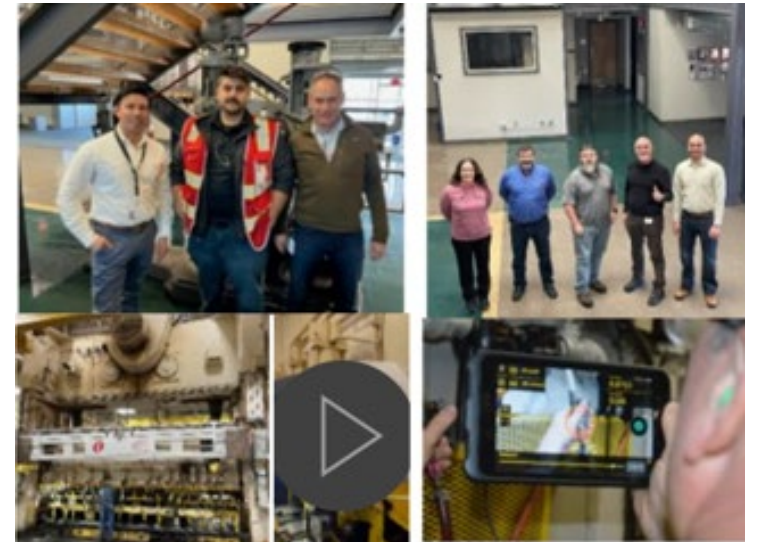
- Energy efficiency playbook
- DOE/ORNL Energy Treasure Hunt (ETH)
- Internal ETH teams set up / ETH Toolkit

Results / Outcomes:

- Conducted 20 energy treasure hunts at US Sites
- Energy Savings ~5,000,000 kWhr/yr
- CO<sub>2</sub> savings 1,888 MTCO<sub>2</sub>e
- Cost Savings \$609,000/yr

Lessons Learned:

- Value of energy efficiency in decarbonization
- Value of training and internal workforce development



# Better Buildings Solution Center

Designed to get real solutions to end users

Enhanced search platform

3,000+ solutions to discover the most relevant solutions technologies strategies

The screenshot shows the homepage of the Better Buildings Solution Center. At the top left is the logo for Better Buildings, U.S. Department of Energy. To the right are navigation links: Solutions, Programs & Partners, Leadership, Events & Webinars, Newsroom, and Join. Below the navigation is a search bar with the text "Search. Find. Save." and a search icon. Underneath the search bar, it says "Search 3,000+ solutions". The main banner features a green box with "APRIL 2-4 2024" and the text "Better Buildings, Better Plants SUMMIT". Below the banner is a "Register Now for the 2024 Summit" button with a subtext: "The Better Buildings, Better Plants Summit will return on April 2-4, 2024." Below the banner is an "About" section with a photo of two construction workers and a text block: "Better Buildings is an initiative of the U.S. Department of Energy (DOE) designed to improve the lives of the American people by driving leadership in energy innovation. Through Better Buildings, DOE partners with leaders in the public and private sectors to make the nation's homes, commercial buildings, and industrial plants more energy-efficient by accelerating investment and sharing successful best practices." At the bottom is an "Impact" section with four columns: "ENERGY SAVED 3.1 QBtu EQUIVALENT TO 189M METRIC TONS OF CO2 AVOIDED", "DOLLARS SAVED \$18.5 B", "WATER SAVED 16.2 B GALLONS OF WATER", and "FINANCED \$32 B ENERGY EFFICIENCY & RENEWABLE ENERGY PROJECTS". A "READ PROGRESS REPORT" button is at the bottom of the impact section.

[Betterbuildingsolutioncenter.energy.gov](https://betterbuildingsolutioncenter.energy.gov)

The screenshot shows the "Search Filter" sidebar. It has a blue header with the text "Search Filter". Below the header is a section titled "EXPLORE BY TOPIC" with two dropdown menus: "BARRIER" and "TOPICS & TECHNOLOGY". Below that is a section titled "FILTER BY PROJECT SPECIFICATIONS" with four dropdown menus: "SECTOR", "BUILDING TYPE", "BUILDING SIZE", and "LOCATION". Below that is a section titled "MORE WAYS TO FILTER" with three dropdown menus: "SOLUTION TYPE", "PROGRAM", and "PARTNER".

# BCC Partner's Results from First Year of Reporting

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**21%** average  
GHG emissions  
reduction from  
base year

**8**  
emissions  
reduction goal  
achievers

**850 million**  
square  
feet of building  
space reported

**2,100**  
industrial  
facilities  
reported

## Key Takeaways

- Many partners are in early stage **GHG emissions reduction planning**
- **Electrification** is key focus area across sectors
- Almost half identify **financing opportunities** and strategies as a priority
- About twenty percent want support with **data/emissions** calculations
- A third indicate **vehicle/fleet conversions** is important
- Many partners are focused on **heat pump implementation** pathways
- **Refrigeration/refrigerants** key area of focus for many sectors
- **Scope 3** opportunities and challenges
- **Workforce challenges**

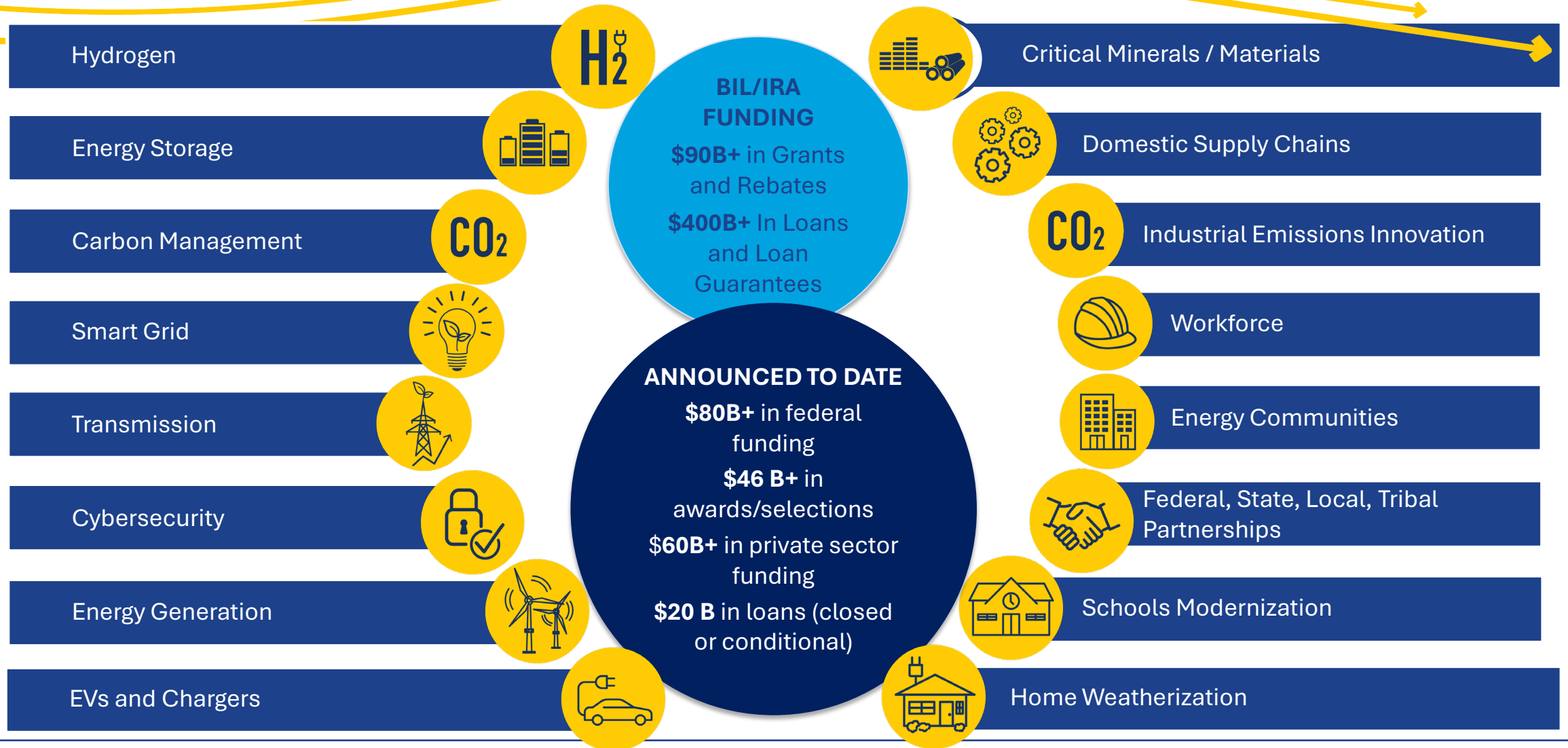


## Other Multipliers of Change

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- Infrastructure investments
- Electrification of buildings, homes, fleets
- Building Performance Standards
- Increased need for skilled workforce

# Historic Investment in Infrastructure



# Accelerating the Clean Energy Transition

## Expanding Affordable Clean Energy for All

Build out a better grid

Provide all Americans access to today's affordable clean energy

Reduce energy costs for homes, schools, buildings, and transportation

Secure our energy systems against all hazards

## Renewing American Manufacturing

Catalyze new manufacturing and support small- and medium-sized manufacturers

Secure key U.S. clean energy supply chains

Position U.S. energy-intensive industries to supply globally competitive products

Expand the U.S. industrial energy and manufacturing workforce

## Creating Jobs and Community Benefits

Ensure benefits flow to communities at risk of being left behind

Create high-quality, accessible, and career-track jobs

Partner with state, local, and tribal governments for the clean energy transition

## Catalyzing Private Sector Investment

De-risk new clean energy technologies


Galvanize broad and deep market demand

Deploy co-investment opportunities with the private sector




# Examples of Progress To Date


## Building out a Clean, Reliable, Secure Grid

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- **\$13.3 B** in total funding announced
  - **\$4.8 B** in competitive funding selected across 61 projects
  - **\$800 M** of the announced \$1.5 B available across 48 states, Washington D.C., three territories, and 169 Tribes through Grid Resilience State/Tribal Formula Grants Programs


## Reducing Costs through Building Upgrades

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- **\$13.7 B** in total funding announced for upgrades to homes, businesses, schools and non-profits
  - **\$180.5 M** selected to improve schools across 22 states
  - **\$3.2 B** available to make low-incomes homes healthier, energy efficient, and with lower bills.
  - **\$8.8 B** for Home Energy Rebates estimated to save households up to \$1 B annually on energy bills.

## Securing American Clean Energy Supply Chains

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- **\$13.4 B** in funding announced with additional support through loan guarantees
  - Manufacturing investments will spur 60+ new or upgraded manufacturing facilities to produce clean energy technologies like EV battery and heat pump components across 33 states.

## Supercharging Clean Industrial Innovation

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- **\$6 B** available to improve U.S. industrial competitiveness and reduce emissions for industry
  - **\$8.7 B** available for hydrogen, including \$7 B for 7 clean hydrogen hub, expected to produce 3 MMT /yr of hydrogen and create tens of thousands of good paying jobs.
  - **\$4.5 B** available with \$700 M selected for negotiations to fund carbon capture and storage.[\[1\]](#)

# Progress To Date



## Investing in Underserved Communities<sup>[1]</sup>

- \$1.2 B made available to revitalize energy communities
- \$596 M of funding directed to Tribes through formula funding
- \$483 M made available to specifically support rural and remote communities.

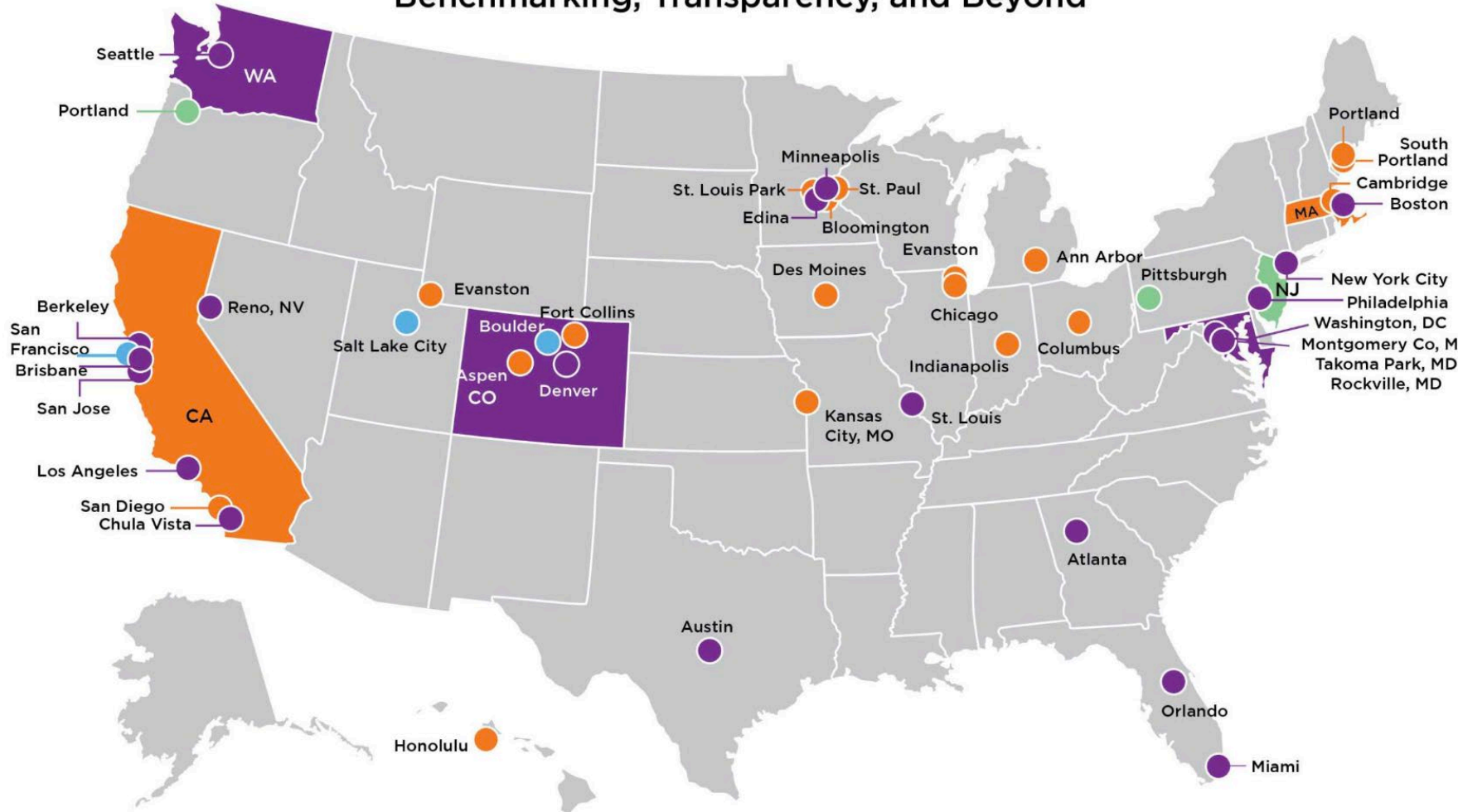


## Creating High-quality, Accessible Careers

- Create jobs with fair wages and benefits and the free and fair choice to collectively bargain and join a union.
- \$341 M to fund programs building up a clean energy workforce.

<sup>[1]</sup> Funding specifically for underserved communities and additional to funding for projects in or near disadvantaged communities from all other projects.

# U.S. City, County, and State Policies for Existing Buildings: Benchmarking, Transparency, and Beyond



- Benchmarking required for public and commercial buildings
- Benchmarking required for public, commercial, and multifamily buildings
- Benchmarking and additional actions required for public and commercial buildings
- Benchmarking and additional actions required for public, commercial, and multifamily buildings

**CURRENTLY:**

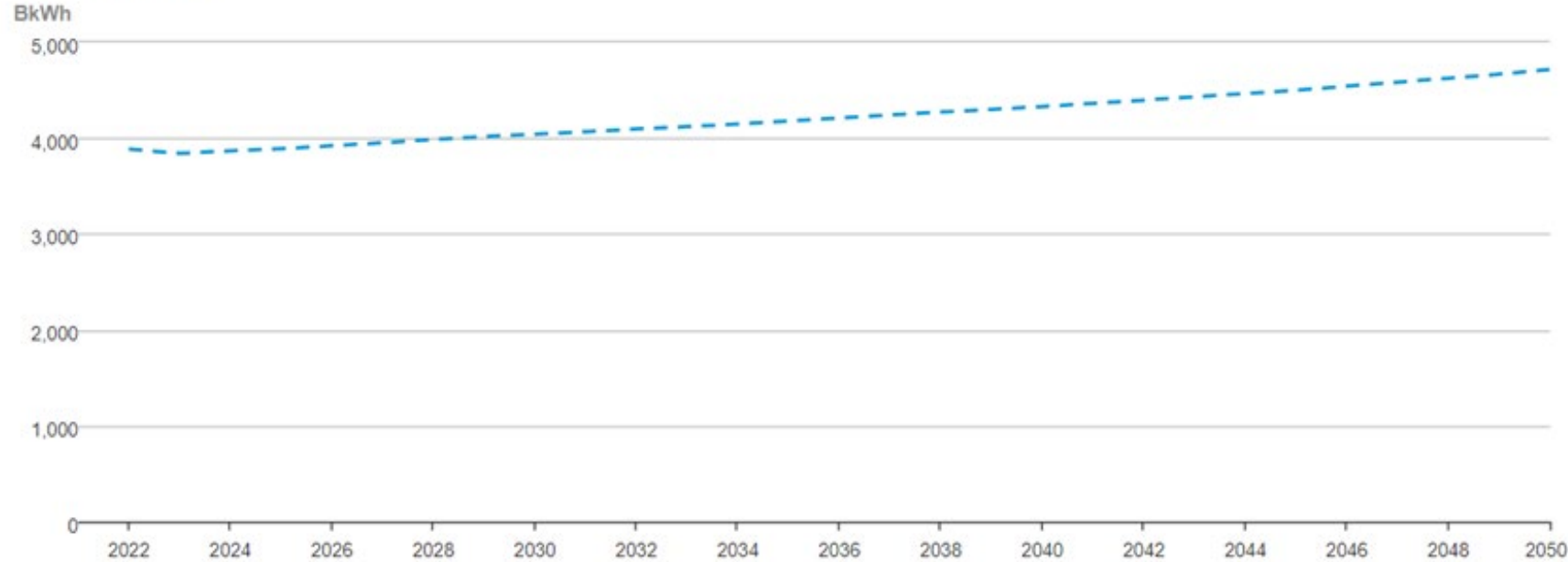
- 14 policies adopted
- 40+ considering BPS covering all federally owned and leased buildings
- Federal support for BPS through TA, funding, resources



# Electricity Consumption Over the Next 25 years

## Electricity: Electricity Sales by Sector: Total

Case: Reference case



eia Data source: U.S. Energy Information Administration

**21% overall increase driven by:**

EVs in the **transportation** sector (12x growth)

Heat pumps in the **residential** sector (20%)

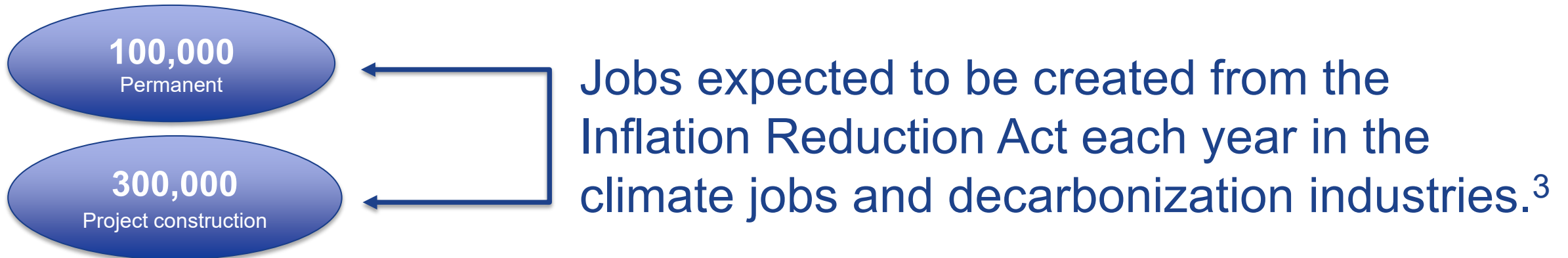
Economic growth in the **industrial** sector (17%) – new mfg (ie batteries)

Expanded **commercial** sector (11%)

# Electrician Workforce Status – A Unique Time



**73,500** new electricians needed each year to replace those that are retiring or transferring occupations: 7000 per year



# DOE's Blueprint for the Building Sector

## Strategic Objectives to Decarbonize the US by 2050

Increase Building Energy Efficiency	Accelerate on-site emission reductions	Transform Grid Edge	Minimize embodied life cycle emissions
Reduce on-site energy use intensity in buildings 35% by 2035 and 50% by 2050 vs. 2005	Reduce on-site GHG emissions in buildings 25% by 2035 and 75% by 2050 vs. 2005	Reduce electrical infrastructure costs by tripling demand flexibility potential by 2050 vs. 2020	Reduce embodied emissions from building materials and construction 90% by 2050 vs. 2005

### Electricians will be critical in the energy transition by:

<ol style="list-style-type: none"> <li>1. Installing new and repairing old wiring</li> <li>2. Installing energy efficient equipment, i.e. LED lighting systems</li> <li>3. Installing instrumentation and process control systems, including energy management systems</li> </ol>	<ol style="list-style-type: none"> <li>1. Understanding and selling fuel switching</li> <li>2. Providing power and controls to electrified equipment, such as motors, HVAC, etc.</li> <li>3. Incorporating renewable energy, such as solar and wind, into building systems</li> </ol>	<ol style="list-style-type: none"> <li>1. Maintain the grid edge</li> <li>2. Assembly, testing, commissioning, maintenance, repair, retrofitting, and decommissioning of energy storage and microgrid systems</li> <li>3. Installing, commissioning, and maintaining electric vehicle supply equipment (EVSE)</li> </ol>	<ol style="list-style-type: none"> <li>1. Specifying low carbon electrical equipment and longer-lived equipment,</li> <li>2. Understand environmental product declarations (EPDs)</li> <li>3. Focusing on retrofit solutions to encourage building reuse</li> </ol>
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**Electricians are also in the best position to educate buildings owners about the energy transition and instill confidence in electrification**



## Looking ahead

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Large changes in the US energy sector; electricity use

Focus on decarbonization means greater electrification

Your expertise is critical and in demand – opportunity to expand influence and scope

You are a vital part of the solution

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# THANK YOU

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