



Comparison IRA vs NZIA

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ERCST

Roundtable on
Climate Change and
Sustainable Transition

Emerging landscape

- The introduction of the CBAM, working in conjunction with the EU ETS meant to provide an instrument for industrial decarbonization
- New measures, such as the IRA in the US, which objective is beyond decarbonization, and is essentially a tool for re-shoring of industry to the US, in the context of the transition to a low carbon economy.
- The NZIA is seen by many stakeholders as an EU response to the IRA, to help fill gaps that go beyond the carbon leakage mandate of the EU ETS & CBAM, and address broader issues such as industrial competitiveness.
- The NZIA cannot ensure continued competitiveness for industry in the transition. Additional measures, beyond the NZIA, are likely to emerge.

Components of the Commission's proposal of a Net Zero Industry Act

- NZIA commission proposal published in March 2023, awaiting committee decision in Parliament (expected October 2023)

- In commission proposal

Net zero strategic technologies:

- **Target:** 40% of the annual deployment needs for strategic net-zero technologies manufactured in the EU by 2030
- **Permits:** 9 & 12 months maximum permitting times, preferential treatment in terms of permitting procedures
- **Finance:** preferential treatment in terms of public procurement, and easier access to finance

Net zero technologies:

- **Permits:** simplified permitting procedures
- 12 & 18 month permitting times

Net zero technologies	Net Zero Strategic technologies
Renewable energy technology	Solar photovoltaic and solar thermal technologies & onshore wind and offshore renewable technologies, (<i>Sustainable biogas/biomethane technologies</i>)
Electricity and heat storage technologies	Battery/storage technologies
Heat pumps	Heat pumps and geothermal energy technologies
Grid technology	Grid Technology
Renewable fuels of non- biological origin technologies; (RFBOS)	
Sustainable alternative fuels technologies	
Electrolysers and fuel cells	Electrolysers and fuel cells
Advanced technologies to produce energy from nuclear processes with minimal waste from the fuel cycle, small modular reactors, and related best-in-class fuels	
Carbon capture, utilisation, and storage technologies	Carbon Capture and storage (CCS) technologies
Energy-system related energy efficiency technologies	

Carbon Capture and Storage (CCS) in the Net Zero Industry Act

- Target for oil and gas producers to provide annual injection capacity of at least 50 mt of CO₂ by 2030
- Chicken and egg solution vs. risk and cost for society
- Only addresses one aspect of the value chain without incentivising capture and transport.
- The mere presence of storage does not automatically generate demand for capture if there is no compelling market case for capturing and storing emissions.

Net Zero Industry Act – CO₂ injection capacity

- Annual injection capacity of at least 50 mt of CO₂ by 2030
- ‘CO₂ injection capacity’ means the annual amount of CO₂ that can be injected in an operational geological storage site, permitted under Directive 2009/31/EC, with the purpose to reduce emissions or increase carbon removals, in particular from large scale industrial installations and which is measured in tonnes per annum;
- Oil and Gas Sector
 - Individual targets for producers in EU to contribute on a pro rata basis to the 2030 target depending on their production between 2020-2023
- Member states
 - Require oil and gas producers to make data available
 - Detail their progress

Net Zero Industry Act – Remaining gaps

- **Clarity and Impact Assessment:** NZIA lacks clarity on its decarbonization impact and lacks an impact assessment for clean tech supply objectives.
- **Funding Instruments:** Funding instruments are scattered, leading to inefficiency for businesses and institutions, with a public investment gap.
- **Full Value Chain Integration:** Clean tech success requires a full value chain approach, considering upstream raw materials and downstream demand.

U.S. Climate Legislation: Track Record 2020-2022 (1)

- Origins: [Biden Climate Plan](#) (2019) and [Build Back Better Plan](#) (2020)
- Setbacks for the Build Back Better Plan: repeated attempts in Congress result in passage of pared-down compromise packages

American Rescue Plan (ARP)
American Jobs Plan (AJP)
American Families Plan (AFP)

} American Rescue Plan Act of 2021
Build Back Better Act (failed 2021)

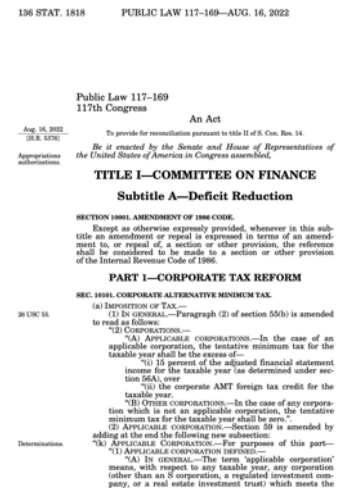


U.S. Climate Legislation: Track Record 2020-2022 (2)

- Signature laws retain features of Build Back Better plan:
 - [Infrastructure Investment and Jobs Act](#), Pub. L. 117–58 (2021)
 - US\$ 105 billion dollars for public transit
 - US\$ 15 billion for zero- or low-emission vehicles
 - US\$ 73 billion for electricity infrastructure
 - [CHIPS Act of 2022](#), Pub. L. 117–167 (2022)
 - US\$ 67 billion for clean energy technology and climate research
 - [Inflation Reduction Act of 2022](#), Pub. L. 117–169 (2022)

Widely varying estimates of overall expenditures on climate and energy:

- [Congressional Budget Office \(CBO\)](#) 2022 fiscal score: US\$ 392 billion
- Joint Committee on Taxation (JCT) 2023 revised fiscal score: US\$ 663 billion
- [Brookings](#) (2023) central estimate: US\$ 902 billion
- Goldman Sachs (2023): US\$ 1.2 trillion
- [Credit Suisse \(2022\)](#): US\$ 800 billion, mobilizing US\$ 1.7 trillion



Funding Allocation under the Inflation Reduction Act (1)

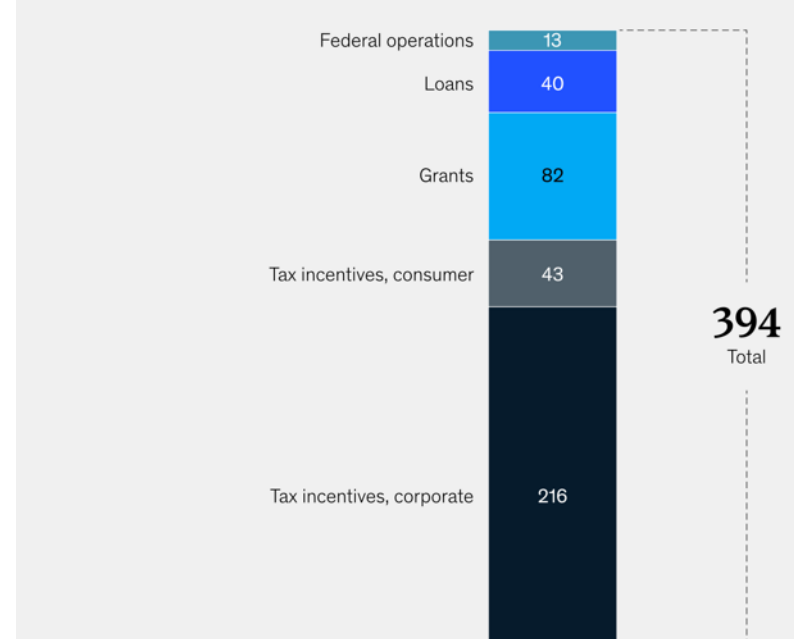
Clean Electricity Tax Credits \$51.0B Credit for Electricity Produced from Renewable Sources* The bill provides from \$5 up to \$25 per megawatt-hour (MWh) of electricity generated from renewables.		Air Pollution, Hazardous Materials, Transportation and Infrastructure \$30.0B Zero-Emission Nuclear Power Production Credit Nuclear power plants can receive from \$3/MWh up to \$15/MWh if they meet certain wage conditions.		\$20.0B Greenhouse Gas Reduction Fund	
\$50.9B Clean Electricity Investment Credit Clean electricity projects that begin construction before 2031 can qualify for a 6% to 30% investment tax credit.		\$14.0B Energy Investment Credit*	\$11.2B Clean Electricity Production Credit	\$4.0B Climate Pollution Reduction Grants	\$3.0B Hazardous materials Grants to Reduce Air Pollution at Ports
		\$3.9B Other		\$11.8B Other	
Individual Clean Energy Incentives \$22.0B Residential Clean Energy Credit Taxpayers can get a 30% credit on the total cost of residential solar panels, heat pumps, and battery storage systems.	Clean Manufacturing Tax Credits \$30.6B Advanced Manufacturing Production Credit Manufacturers of solar, wind, and battery components, including critical minerals, can qualify for this production tax credit.		Conservation, Rural Development, Forestry \$16.7B Conservation		\$9.6B USDA Assistance for Rural Electric Cooperatives
			\$8.4B Other		
Individual Clean Energy Incentives \$12.5B Nonbusiness Energy Property Credit*	Clean Fuel and Vehicle Tax Credits \$13.2B Clean Hydrogen	\$5.6B Biodiesel, Renewable Diesel, and Alternative Fuels*	\$3.6B Qualified Commercial Clean Vehicles	Building Efficiency, Electrification, Transmission, Industrial, DOE Grants and Loans \$9.8B DOE Loans and Grants	
\$2.4B Other	\$7.5B Clean Vehicle Credit	\$6.1B Other		\$5.3B Advanced Industrial Facilities Deployment Program	\$18.0B
		\$4.5B High-Efficiency Electric Home Rebates	\$7.7B Other		

Source:

[National Public Utilities Council](#), 2023

[McKinsey & Co.](#), 2022

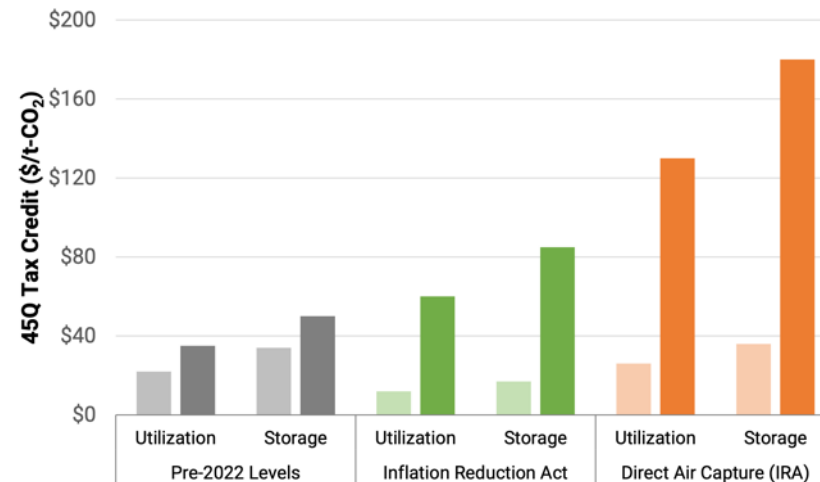
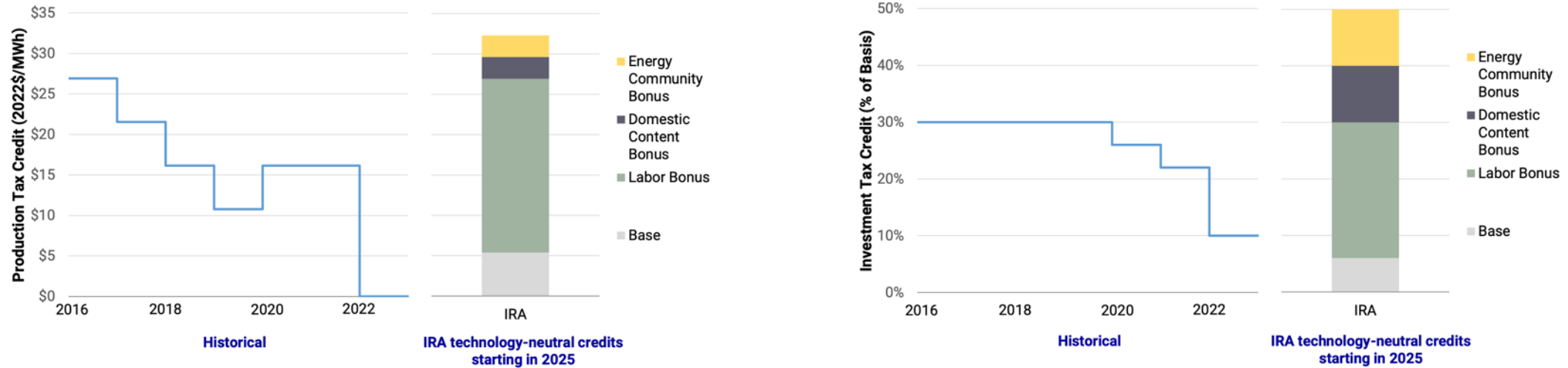
Energy and climate change funding in the Inflation Reduction Act, \$ billion



Funding Allocation under the Inflation Reduction Act (2)

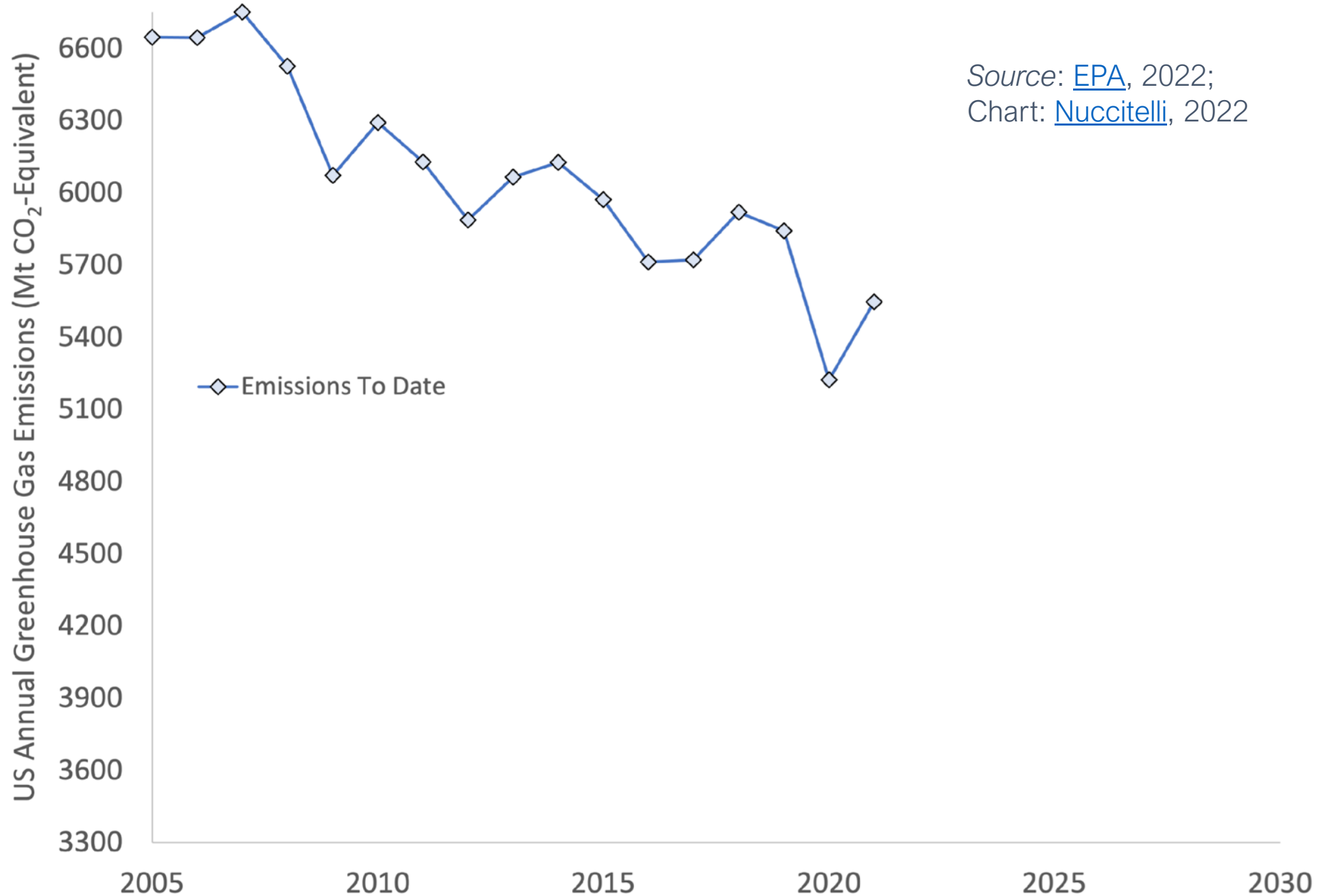
Tax Credit	Base Credit Amount	Bonus Credit Amount
Production Tax Credit for Clean Electricity	0.3 cents/kWh	<ul style="list-style-type: none"> • 5x for prevailing wage/apprenticeships • +10% for domestic content requirements • +10% for location in energy community
Investment Tax Credit for Clean Electricity	6% of qualified investment	<ul style="list-style-type: none"> • 5x for prevailing wage/apprenticeships • +10% for domestic content requirements • +10% for location in energy community
Sustainable Aviation Fuel Credit	\$1.25/gallon SAF	<ul style="list-style-type: none"> • Up to \$0.5/gallon based on lifecycle emissions relative to conventional fuel
Credit for CO ₂ sequestration/utilization	\$17 per ton sequestered (\$36 DAC) \$12 per ton utilized (\$26 DAC)	<ul style="list-style-type: none"> • 5x for prevailing wage/apprenticeships
Clean Hydrogen Production Tax Credit	Up to \$0.60/kg based on lifecycle emissions	<ul style="list-style-type: none"> • 5x for prevailing wage/apprenticeships
Clean Vehicle Credit	\$3,750 if vehicle meets threshold of critical minerals extracted/ processed in U.S. or FTA partner	<ul style="list-style-type: none"> • \$3,750 with threshold percentage of battery components manufactures in North America
Previously owned/ commercial vehicles	Used vehicles: lesser of \$4,000 or 30%, no conditions	<ul style="list-style-type: none"> • Commercial/leased vehicles: \$7,500 base, no conditions
Residential Credits: up to 30% (heat pump: \$2,000; insulation: \$1,200; \$600 other appliances; 30% solar, storage etc.)		

Funding Allocation under the Inflation Reduction Act (3)

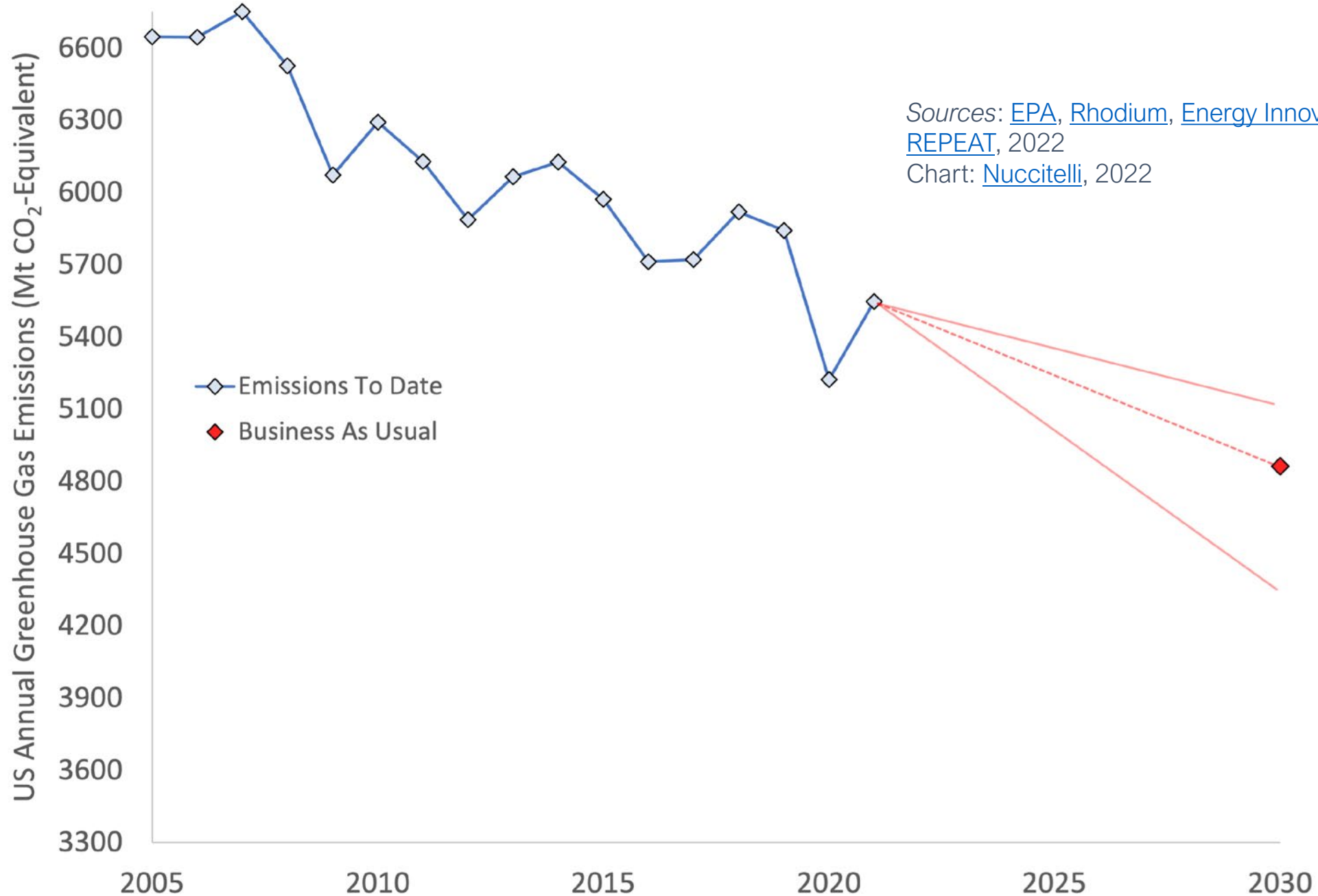


Environmental Impact of the Inflation Reduction Act (1)

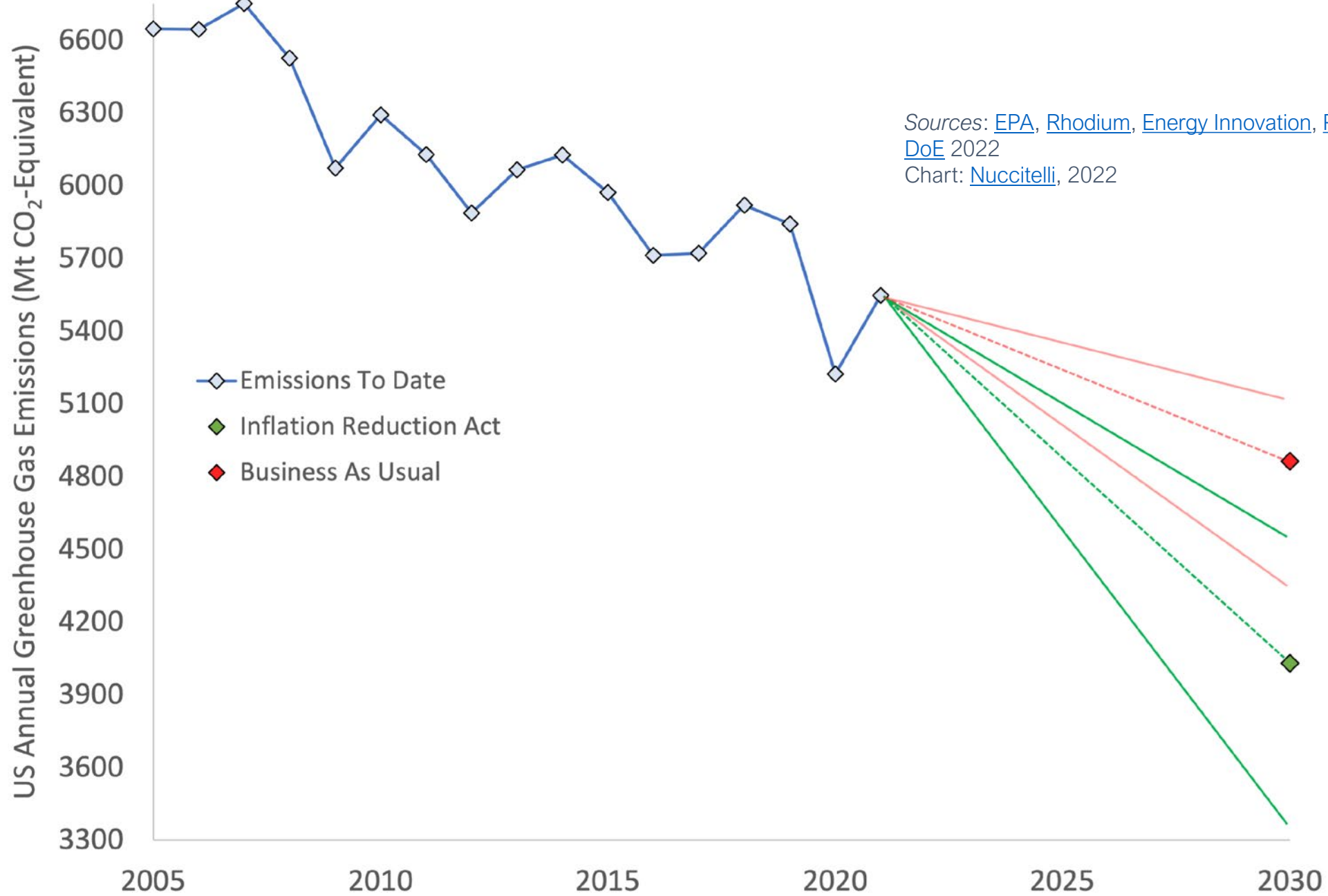
Source: [EPA](#), 2022;
Chart: [Nuccitelli](#), 2022



Environmental Impact of the Inflation Reduction Act (2)

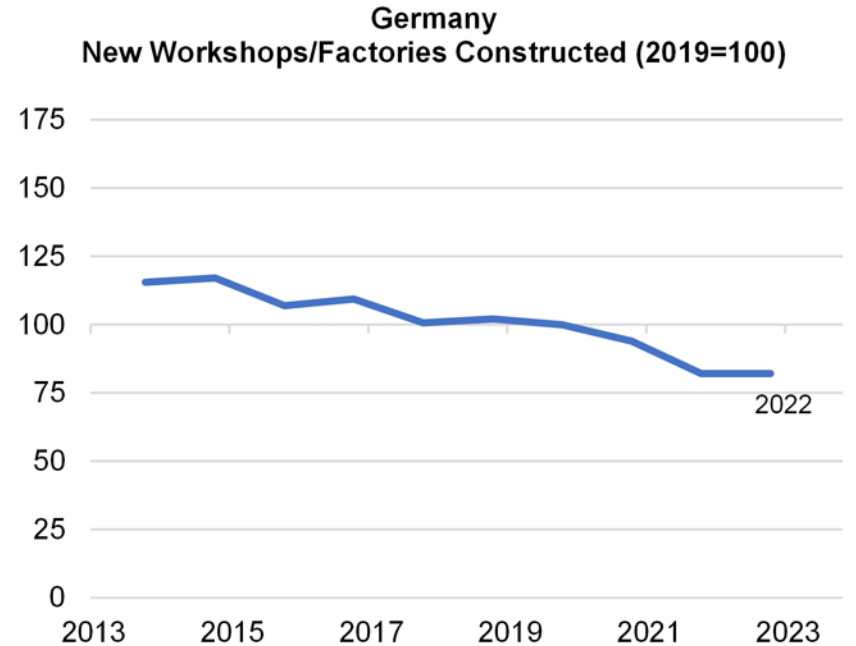


Environmental Impact of the Inflation Reduction Act (3)



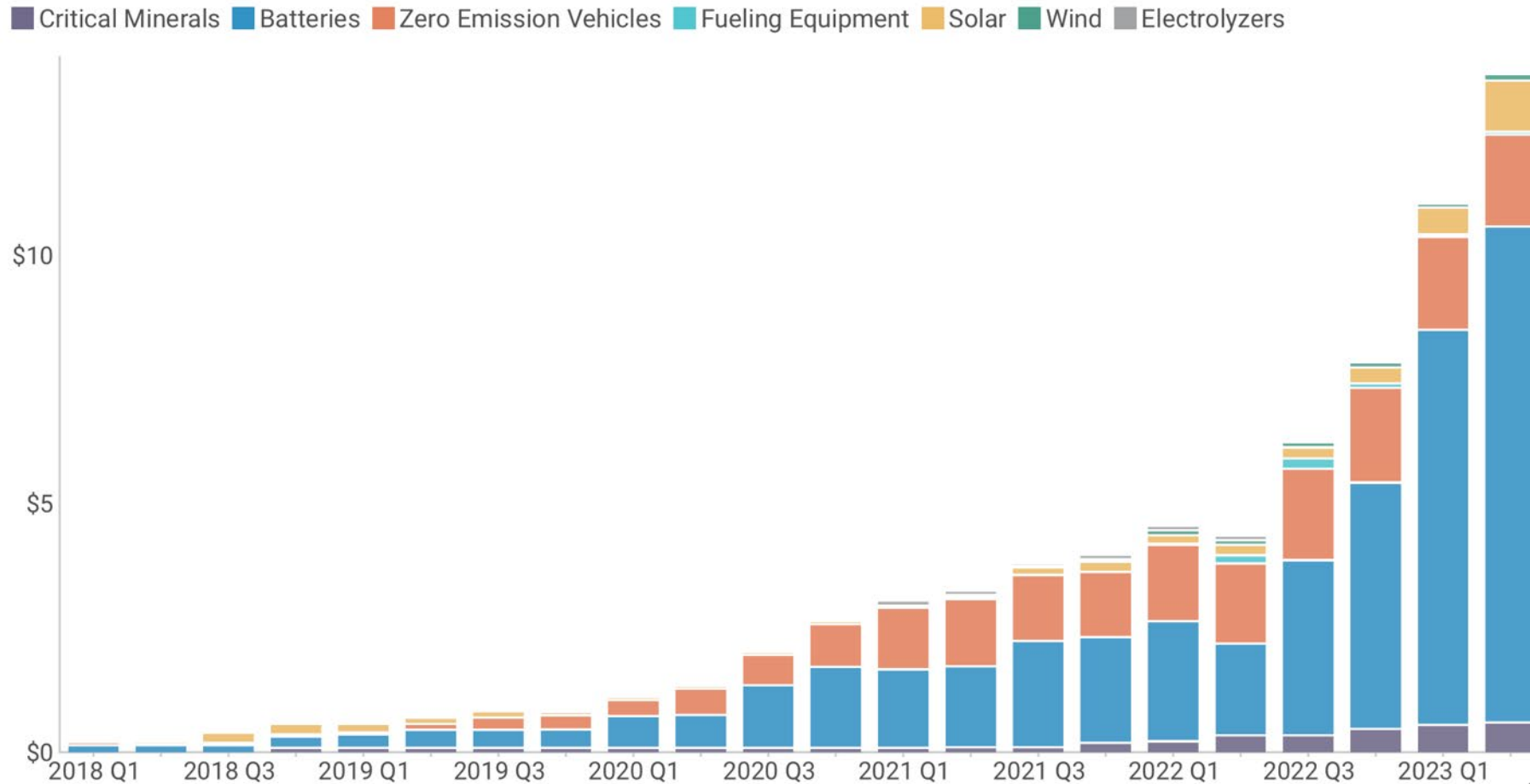
Sources: [EPA](#), [Rhodium](#), [Energy Innovation](#), [Princeton REPEAT](#),
[DoE](#) 2022
Chart: [Nuccitelli](#), 2022

Economic Impact of the Inflation Reduction Act: Manufacturing Construction Spending, U.S. and Germany



Sources: Bureau of Labor Statistics, Census Bureau, [Treasury](#), 2023

Economic Impact of the Inflation Reduction Act: Actual Manufacturing Investments, by Technology (in billion US\$)



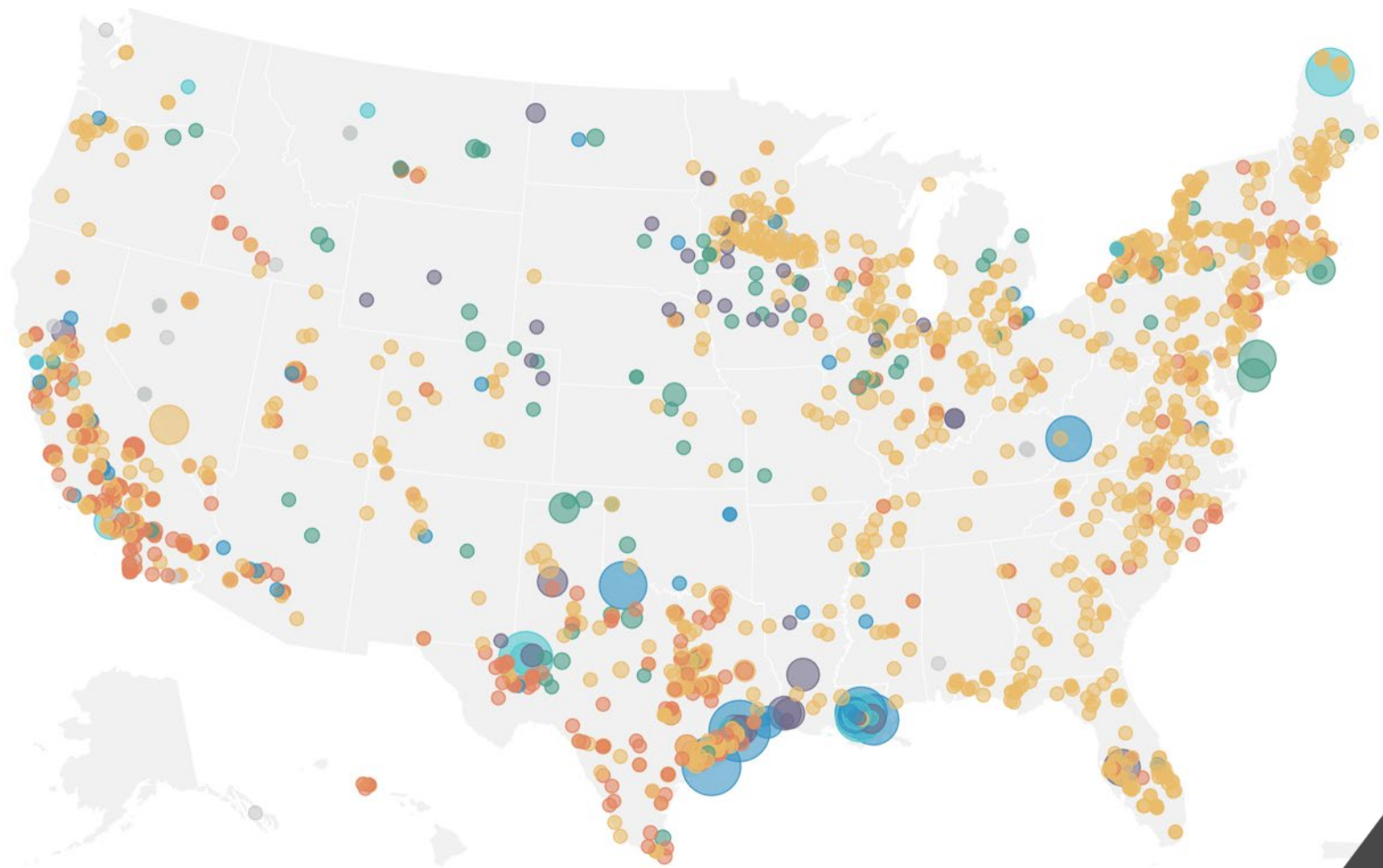
Source: Rhodium/MIT CEEPR [Clean Investment Monitor](#), 2023



CEEPR
MIT Center for Energy and
Environmental Policy Research

Economic Impact of the Inflation Reduction Act: Energy & Industry Investment Announcement Locations (July 2021-June 2022)

Storage Solar Wind Hydrogen Carbon Management SAF Other

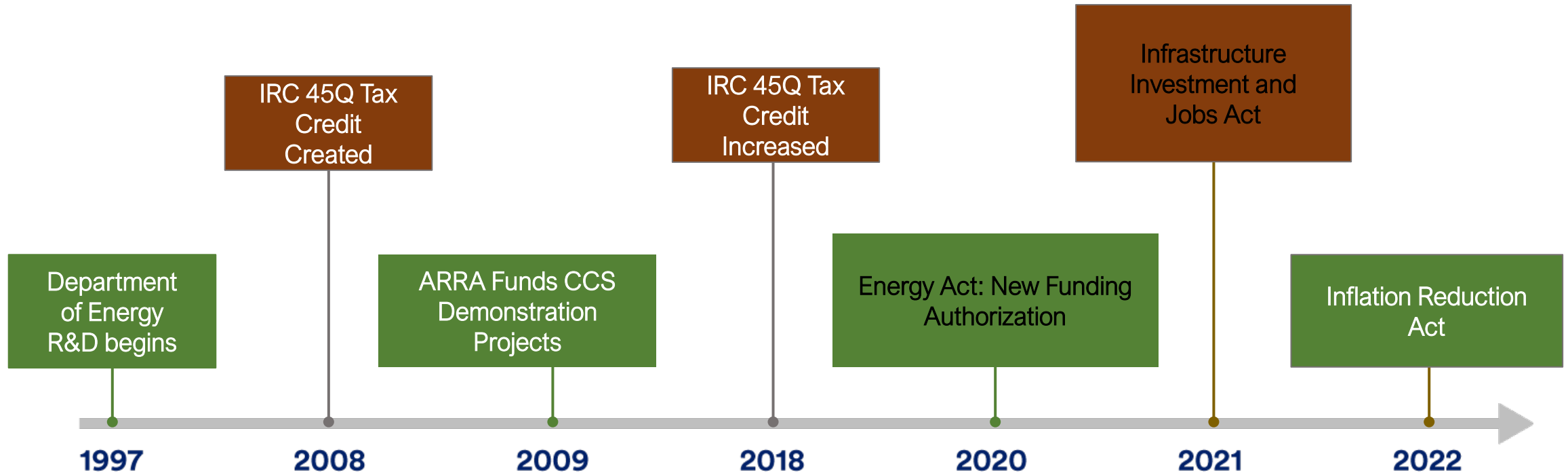


Source: Rhodium/MIT CEEPR [Clean Investment Monitor](#), 2023

Hydrogen in the Inflation Reduction Act and Beyond

- **Advanced Energy Project Credit:** 30% investment tax credit for manufacturing projects incl. fuel cell electric vehicles, hydrogen infrastructure, electrolyzers, and other products
- **Clean Hydrogen Production Tax Credit (45V):** up to US\$3/kg
Treasury Department is elaborating rules to measure the carbon intensity (CI) of hydrogen. Questions still under discussion for these **operational rules** include:
 - **Temporal matching** (e.g. annual v. hourly) of carbon intensity of grid electricity
 - Mechanisms to **offset emissions**, such as Energy Attribute Credits (EACs)
 - **Deliverability** and **additionality** requirements for EACs
- Complementary tax credits for alternative fuel refueling properties, carbon capture and sequestration, clean vehicles, clean energy investment, and energy storage
- IIJA: \$8 billion for Regional Clean Hydrogen Hubs, \$1 billion for a Clean Hydrogen Electrolysis Program, \$500 million for RD&D Activities; Roadmap mandate
- U.S. National Clean Hydrogen Strategy and Roadmap:
10 MMT/yr by 2030, 20 by 2040, 50 by 2050; production cost:
\$2/kg by 2026, \$1/kg by 2031 (“Hydrogen Earthshot”)

Carbon Management: Recent Legislative Developments (1)



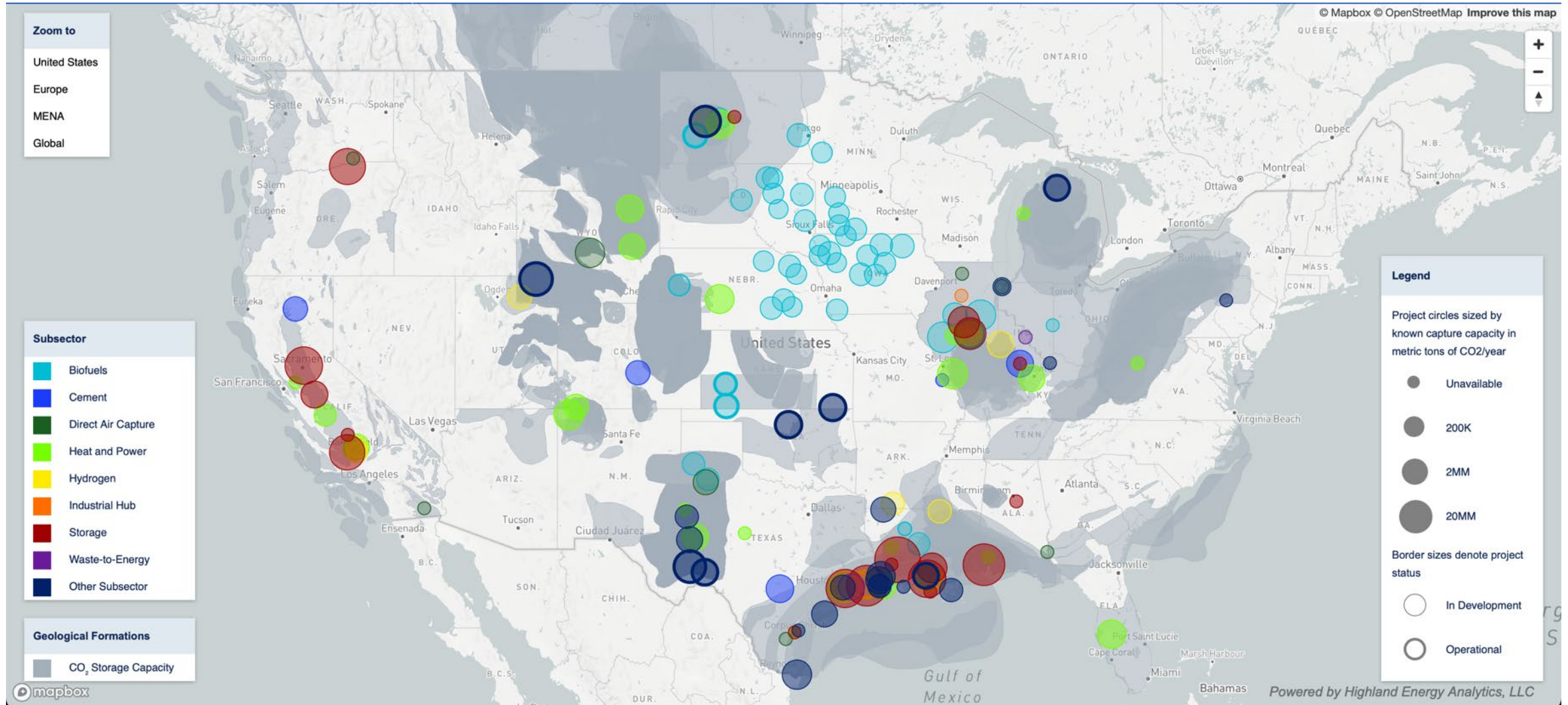
Source: Clean Air Task Force, 2023

Carbon Management: Recent Legislative Developments (2)

Year	Changes	Explanation
2018	IRC 45Q Tax Credit Increase	<ul style="list-style-type: none"> Increased credit values to US\$ 50/ton captured and stored Start of construction date by 2026
2020	Energy Act: New Funding Authorization	<ul style="list-style-type: none"> US\$ 7 billion for CCUS RD&D – including demonstration funding and feed studies, covering coal and gas power and industrial decarbonization stack capture as well as for Direct Air Capture (DAC) and early-stage R&D
2021	Infrastructure Investment and Jobs Act	<ul style="list-style-type: none"> US\$ 12 billion for CCUS RD&D including industrial stack capture and DAC demonstration projects, pipeline and saline storage hub development, permitting support
2022	Inflation Reduction Act	<ul style="list-style-type: none"> Increased IRC 45Q values to US\$60/ton utilized or EOR; US\$ 85/ton captured and stored; and US\$ 180/ton for DAC and stored or \$US 130/ton DAC and EOR/utilized Extends start of construction date to 2033, and direct pay Lower capture threshold for eligibility: DAC 1,000 tons; EGU 18,750 tons; all others 12,500 tons

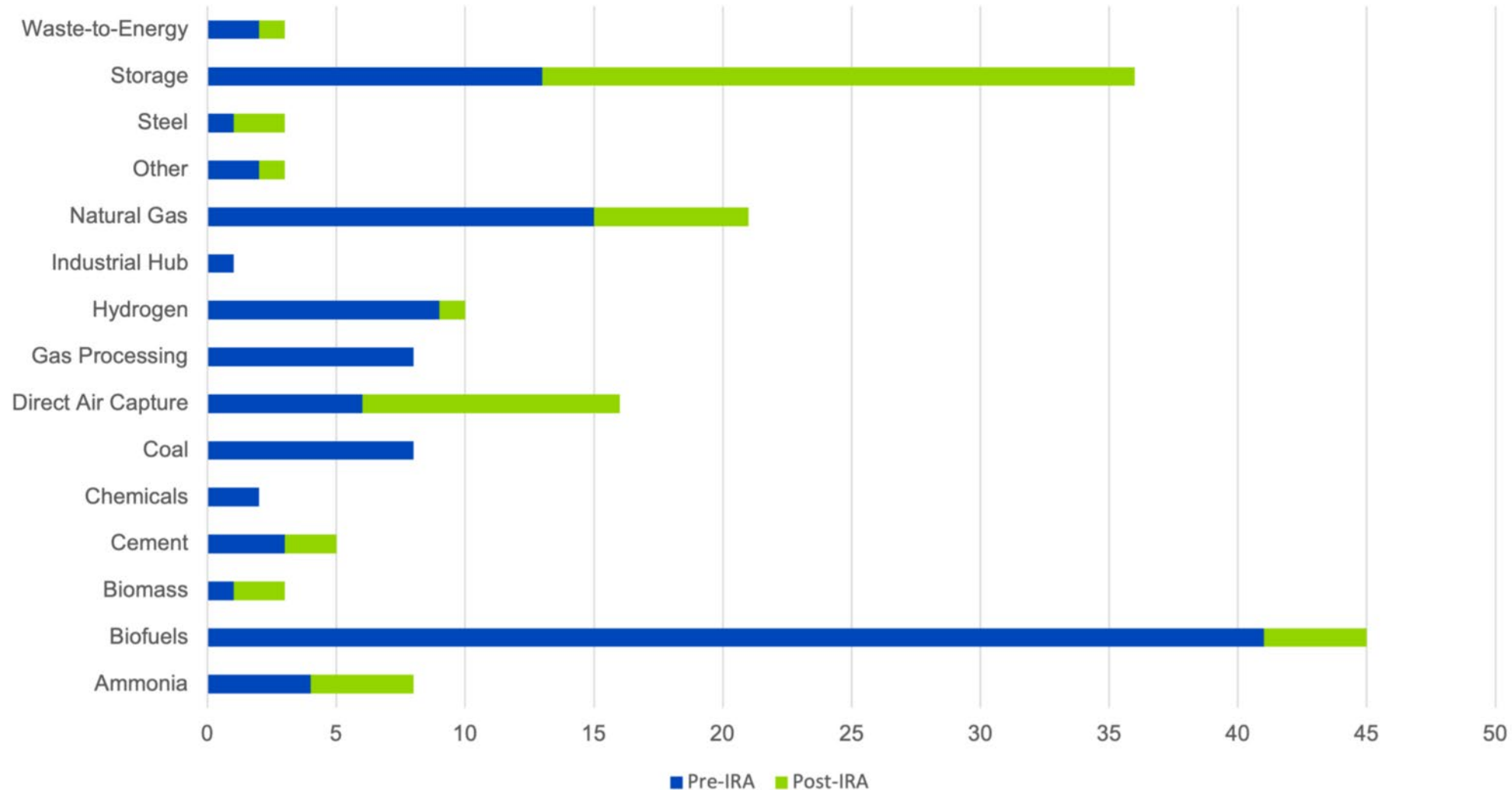
U.S. Carbon Capture Activity and Project Map (2023)

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Source: [Clean Air Task Force](#), 2023

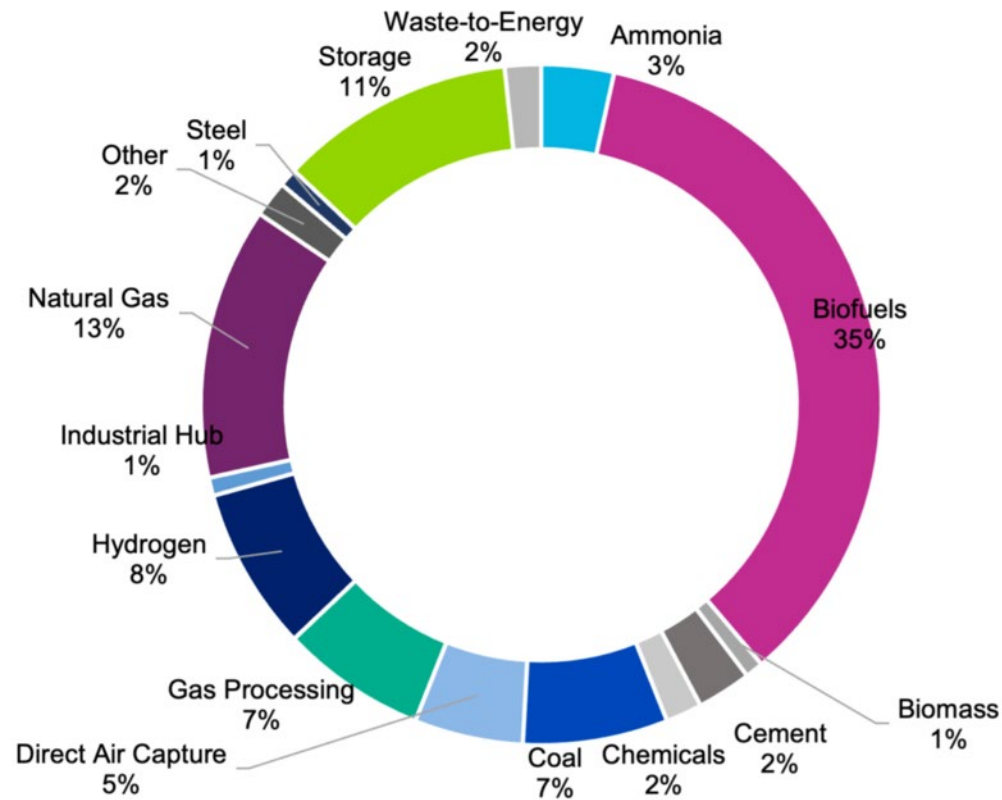
Carbon Capture & Storage Projects by Subsector (2018-2023)



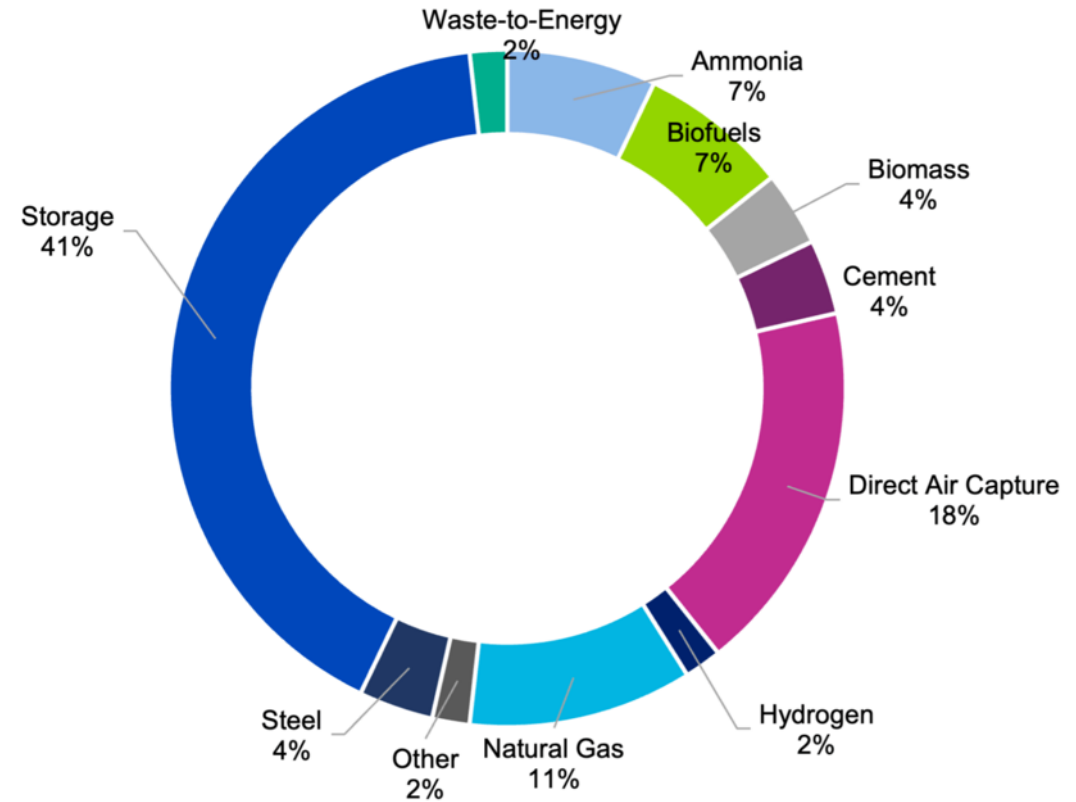
Source: [Clean Air Task Force](#), 2023

Carbon Capture & Storage Projects by Subsector, pre-/post-IRA

2018-2022



Since Aug. 2022



Source: [Clean Air Task Force](#), 2023

Choices

- There is literature that shows a number of options
 - Unconditional subsidies
 - Large scale deployment of renewables
 - Imports of some energy intensive products i.e. relocate energy intensive industries
- Energy crisis predates geopolitical events
- Choices have been made on energy sources – traditionally we moved from one energy source to another as there were options e.g. nuclear
- Speed and tools are still options and choices need to be made
 - Flexibility in areas such as hydrogen
 - Use of removals, including internationally