

Recent Federal Climate and Energy Legislation

Michael B. Gerrard

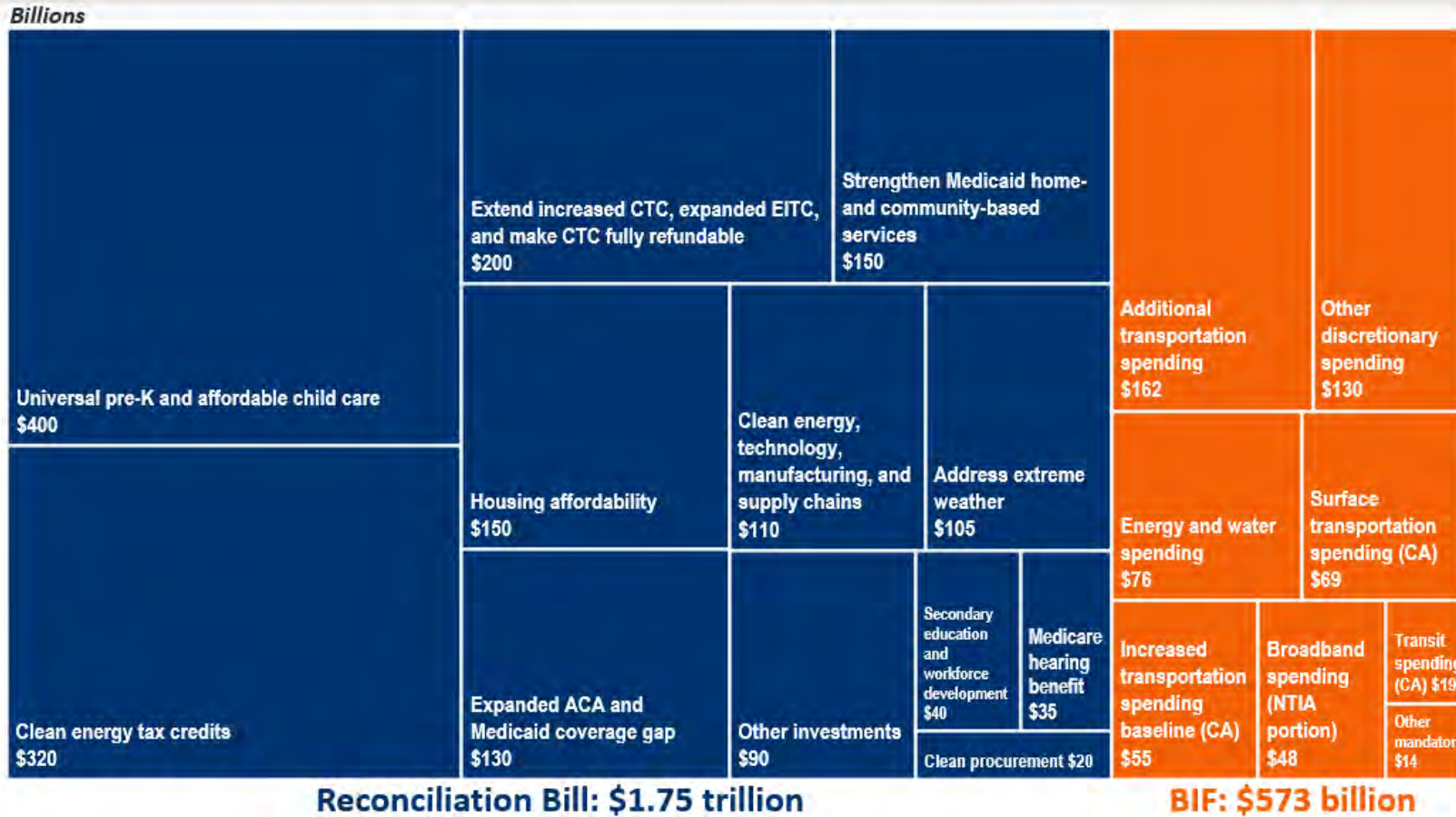
Andrew Sabin Professor of Professional Practice
Faculty Director, Sabin Center for Climate Change Law

April 2023

Bill	Year	House vote	Senate vote
National Environmental Policy Act	1969	372-15	Unanimous voice vote
Clean Air Act	1970	375-2	73-0
Clean Water Act	1972	366-11	74-0
Endangered Species Act	1973	390-12	92-0
Toxic Substances Control Act	1976	319-45	60-13
Resource Conservation & Recovery Act	1976	367-8	88-3
Clean Air Act Amendments	1977	326-49	73-7
Comprehensive Environmental Response, Compensation & Liability Act	1980	351-23	78-9
Clean Air Act Amendments	1990	401-25	89-10
Oil Pollution Act	1990	360-0	99-0
Lautenberg Amendments to TSCA	2016	403-12	Unanimous voice vote

Build Back Better proposal – April 2021

Spending in Build Back Better Agenda



Source: The White House, Congressional Budget Office, Joint Committee on Taxation.



Krysten Sinema, Joe Biden, Joe Manchin





All IIJA (\$863.7B)

Transportation
\$590.7B

Energy
\$98.1B

Broadband
\$64.4B

Water
\$57.4B

Watersheds and coastlines
\$27.9B

Other environmen
\$14.6B

All other
\$10.7B



President Biden Signing Bipartisan Infrastructure bill (IIJA) –
November 15, 2021
Senate: 69-30 House: 228-206





JUSTICE40

A WHOLE-OF-GOVERNMENT INITIATIVE



ENVIRONMENTAL JUSTICE

“We’ll create good jobs for millions of Americans...and we’ll do it all to withstand the devastating effects of climate change and promote environmental justice.”

PRESIDENT JOE BIDEN, 2022 STATE OF THE UNION

What is the Justice40 Initiative?

For the first time in our nation’s history, the Federal Government has made it a goal that 40 percent of the overall benefits of certain Federal investments flow to disadvantaged communities that are marginalized, underserved, and overburdened by pollution. President Biden made this historic commitment when he signed Executive Order 14008 within days of taking office.

What kinds of investments fall within the Justice40 Initiative? The categories of investment are: climate change, clean energy and energy efficiency, clean transit, affordable and sustainable housing, training and workforce development, remediation and reduction of legacy pollution, and the development of critical clean water and wastewater infrastructure.

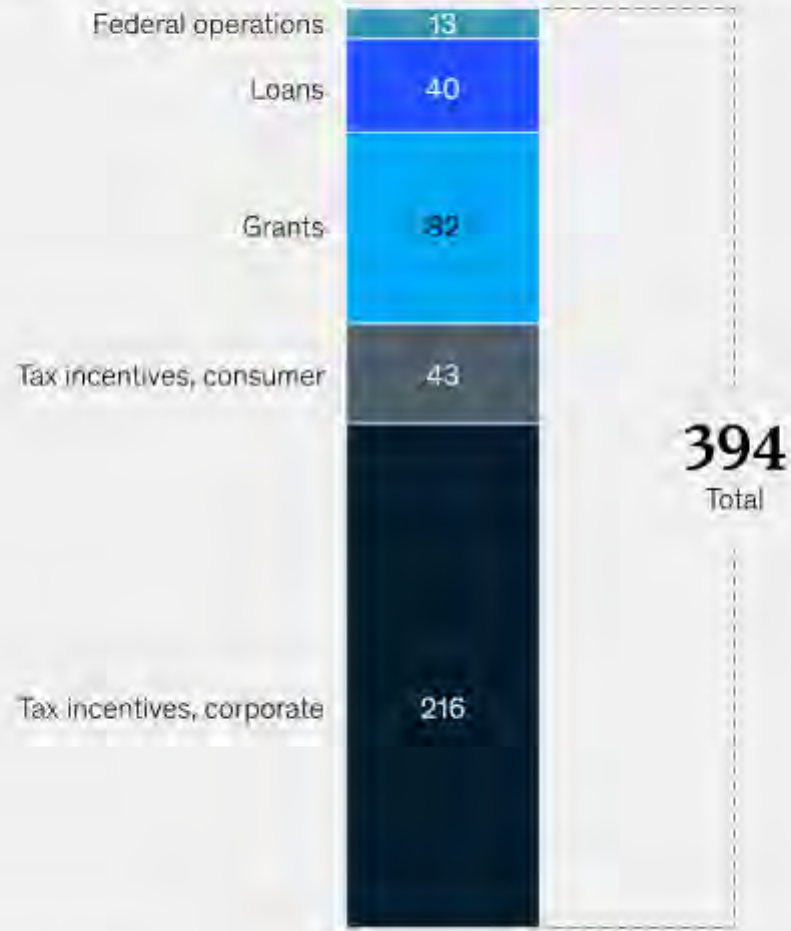
President Biden Signing Inflation Reduction Act

August 16, 2022
Senate: 51-50 House: 220-207



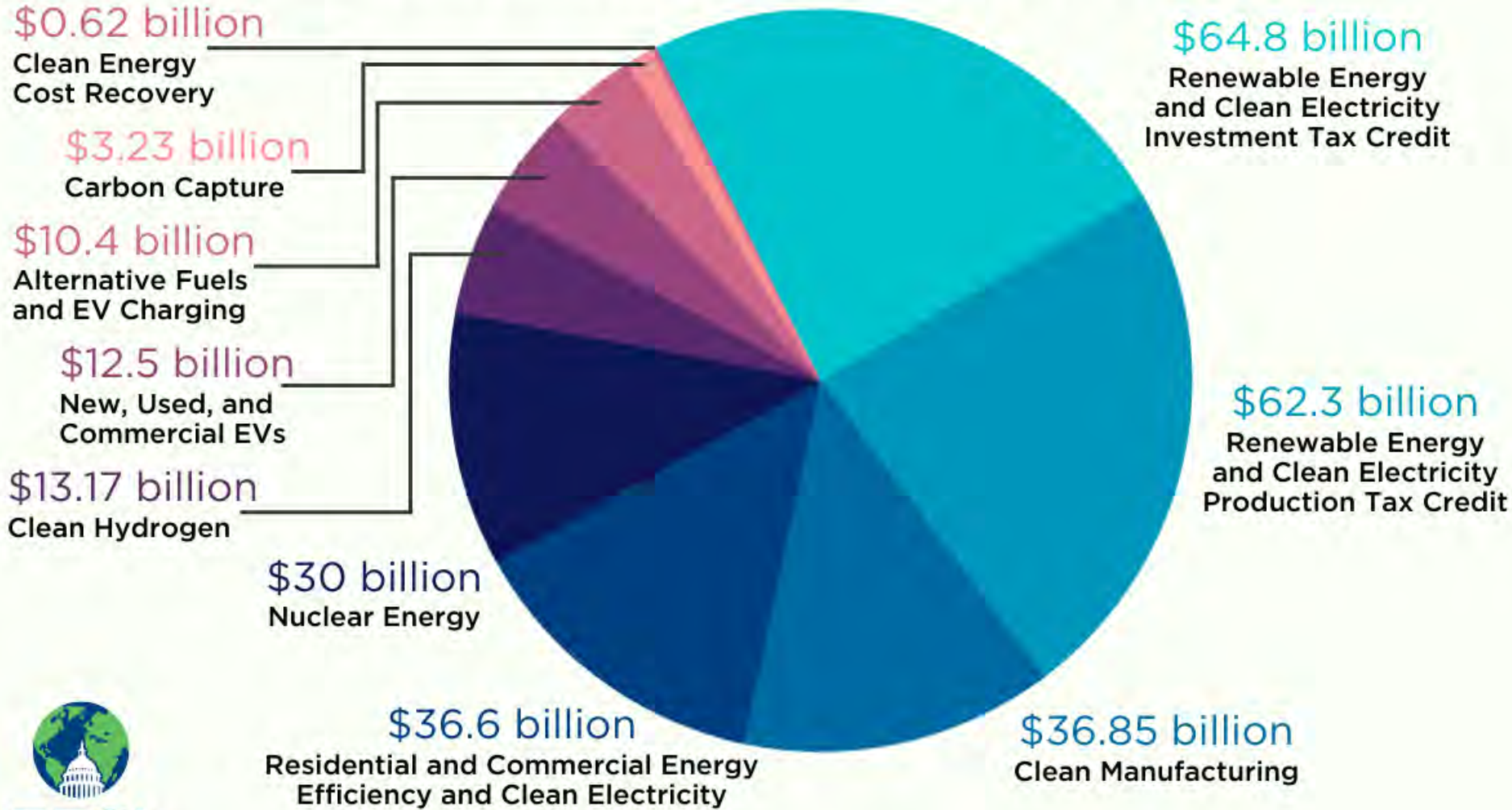
Corporations, individuals, and state and local governments are all eligible to receive funding in the energy portion of the Inflation Reduction Act.

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



Note: This chart reflects analysis of the appropriation figures contained in the Inflation Reduction Act, as well as those reported by the Congressional Budget Office and Joint Committee on Taxation. This analysis may differ from other analyses due to differences in methodology.
Source: Inflation Reduction Act of 2022, H.R. 5375, 117th Cong. (2023-22)

Carrots Over Sticks: Green Tax Credits in the Inflation Reduction Act

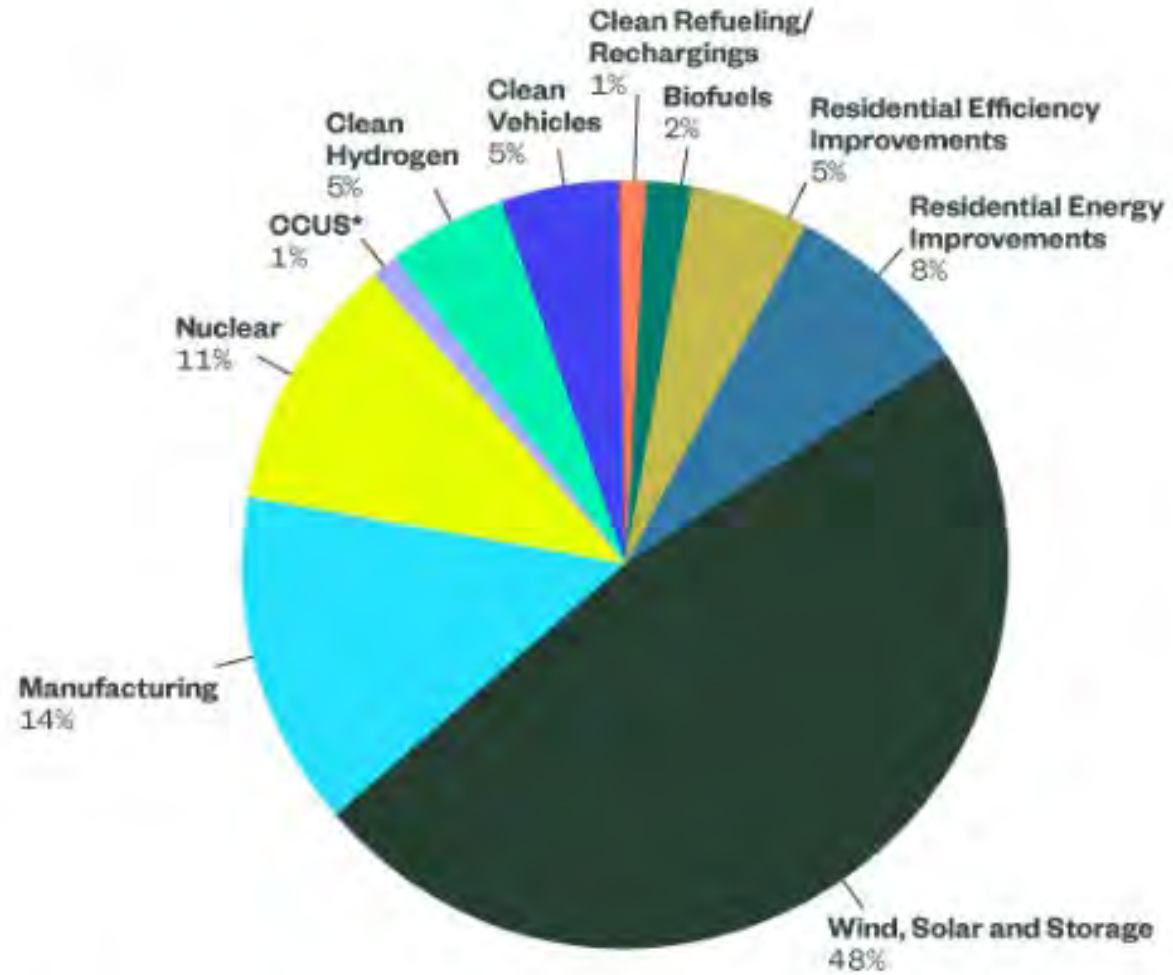


EESI

Source: Congressional Budget Office

Graphic by: Alison Davis

Figure 1: Estimated Energy Transition Spending in IRA (2022–2031)



Source: EIA, EPA, Joint Committee on Taxation, BloombergNEF.

Note: Chart only captures tax credits and incentives and not grant programs or loans.

* Carbon Capture, Utilization and Storage.

Goldman Sees IRA Spurring Trillions for Climate Fight

Government-outlay forecasts for green law have swelled since 2022 passage

■ Cost estimates



Source: CBO, CS, Goldman Sachs

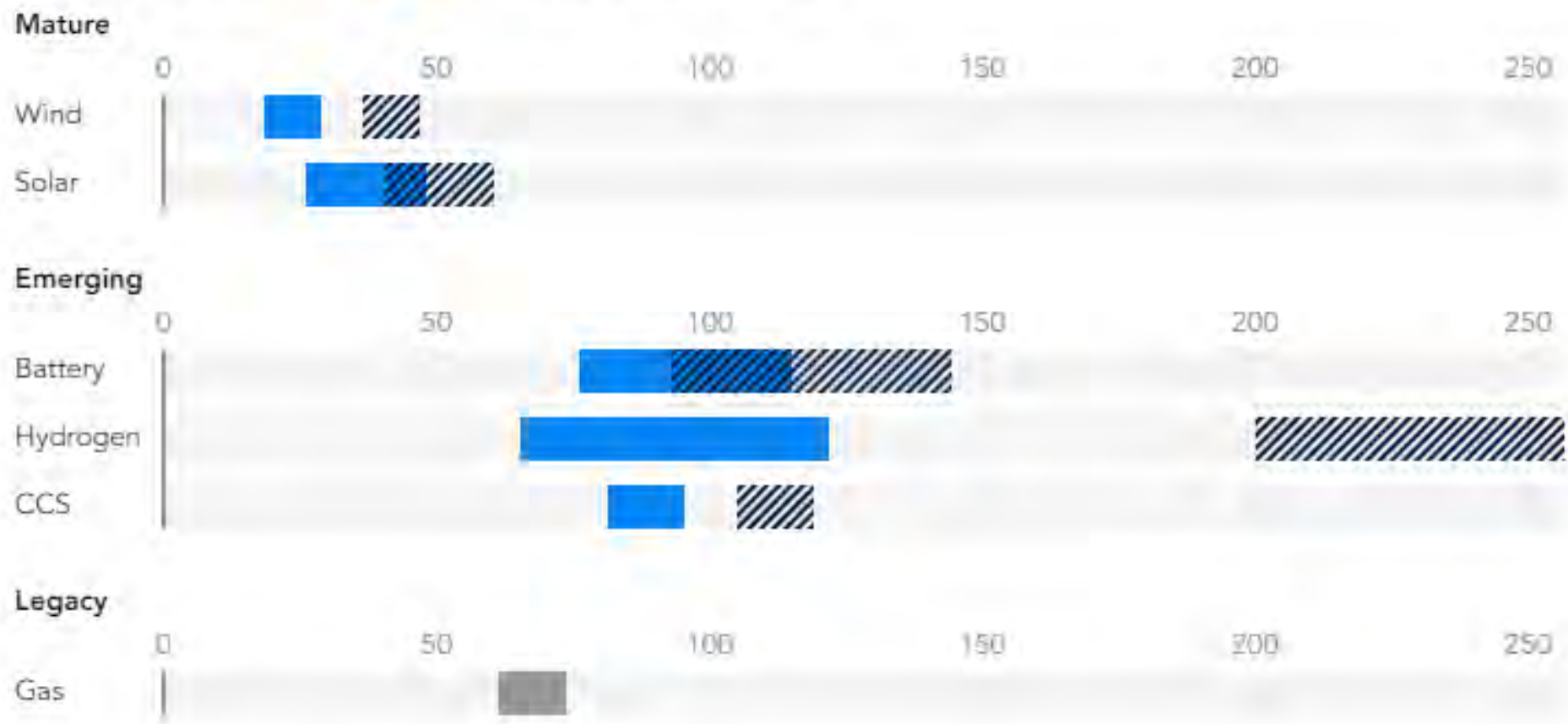
Bloomberg Green

1/25/23

Figure 1: Impact of the IRA on levelized cost of energy in 2030



▨ Pre-IRA LCOE (\$/MWh) ■ Post-IRA LCOE (\$/MWh) ■ N/A



Source: ICF



Historical Annual Capacity Additions vs. Modeled Annual Average Capacity Additions

gigawatts/year

250

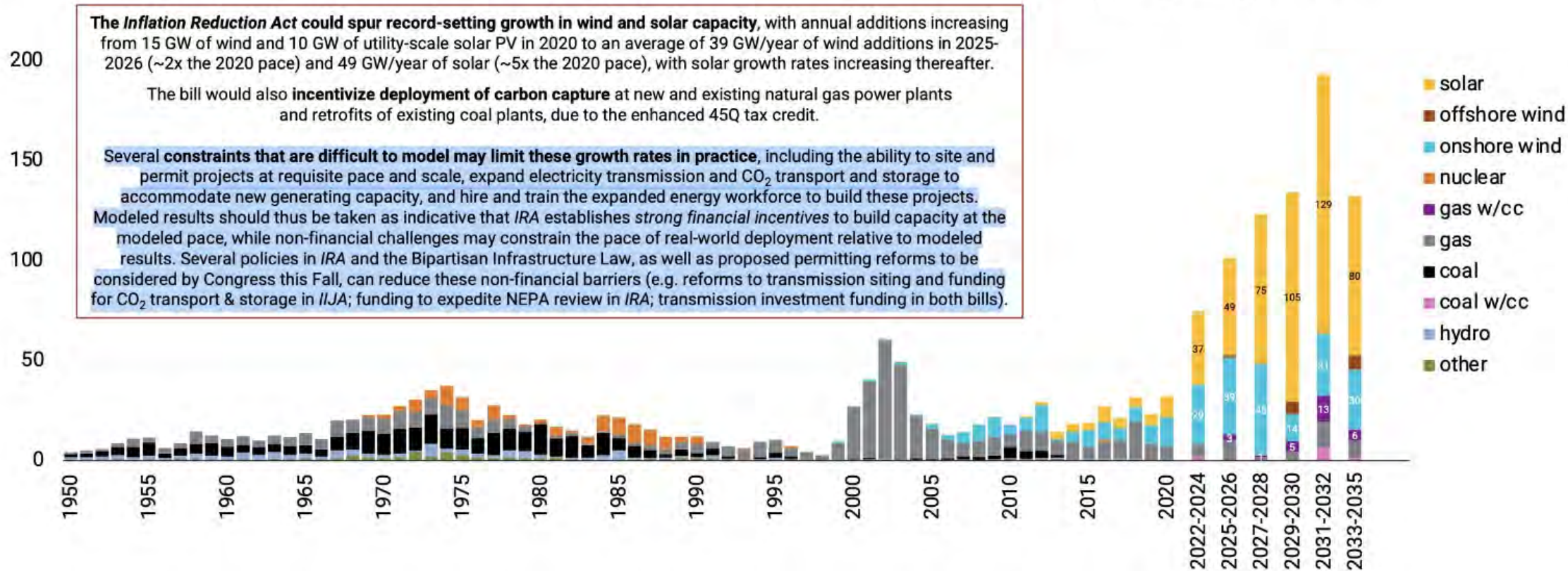
Senate Inflation Reduction Act

Historical (EIA 860) Modeled (REPEAT Project)

The Inflation Reduction Act could spur record-setting growth in wind and solar capacity, with annual additions increasing from 15 GW of wind and 10 GW of utility-scale solar PV in 2020 to an average of 39 GW/year of wind additions in 2025-2026 (~2x the 2020 pace) and 49 GW/year of solar (~5x the 2020 pace), with solar growth rates increasing thereafter.

The bill would also incentivize deployment of carbon capture at new and existing natural gas power plants and retrofits of existing coal plants, due to the enhanced 45Q tax credit.

Several constraints that are difficult to model may limit these growth rates in practice, including the ability to site and permit projects at requisite pace and scale, expand electricity transmission and CO₂ transport and storage to accommodate new generating capacity, and hire and train the expanded energy workforce to build these projects. Modeled results should thus be taken as indicative that IRA establishes strong financial incentives to build capacity at the modeled pace, while non-financial challenges may constrain the pace of real-world deployment relative to modeled results. Several policies in IRA and the Bipartisan Infrastructure Law, as well as proposed permitting reforms to be considered by Congress this Fall, can reduce these non-financial barriers (e.g. reforms to transmission siting and funding for CO₂ transport & storage in IJIA; funding to expedite NEPA review in IRA; transmission investment funding in both bills).



Inflation Reduction Act Amendments to Clean Air Act

- Codify that Clean Air Act covers GHGs (9 times)
- Fee for methane emissions from oil, NG systems; fee ends when all states have EPA-approved plans
- Provides \$41 billion to EPA for
 - Deployment of zero emission heavy-duty vehicles and port equipment
 - Help capitalize green banks
 - Reduce power sector emissions
 - Reduce oil and gas sector methane emissions
 - Assist subnational GHG reduction plans
 - Support environmental justice activities

Table 1. Number of Reporting Facilities and Methane Emissions from Petroleum and Natural Gas System Categories Subject to the IRA Methane Charge

Data for 2019; emissions in million metric tons of CO₂ equivalent (MMTCO_{2e})

Facility Type	Number of Reporting Facilities	Reported Methane Emissions (MMTCO _{2e})
Onshore petroleum and natural gas production	485	44.2
Onshore petroleum and natural gas gathering and boosting	361	21.9
Onshore natural gas transmission compression	624	4.2
Onshore natural gas transmission pipeline	39	2.9
Natural gas processing	457	2.9
Offshore petroleum and natural gas production	141	1.5
Underground natural gas storage	50	0.6
Liquefied natural gas import and export equipment	10	0.1
Liquefied natural gas storage	5	0.001
Total	2,172	78.3

Estimate of Methane Emissions Subject to Charge

	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031
CBO Revenue Estimate (Net)	\$850 million	\$1,350 million	\$1,400 million	\$1,200 million	\$1,050 million	\$500 million
Estimate of Gross Revenue from Methane Charge	\$1,133 million	\$1,800 million	\$1,867 million	\$1,600 million	\$1,400 million	\$667 million
Methane Charge (dollars per metric ton of methane)	\$900	\$1,200	\$1,500	\$1,500	\$1,500	\$1,500
Estimated Methane Emissions Subject to the Charge (million metric tons methane)	1.3	1.5	1.2	1.1	0.9	0.4
Estimated Methane Emissions Subject to the Charge (million metric tons CO ₂ e)	31	38	31	27	23	11

INFLATION REDUCTION ACT TRACKER

 Columbia Law School | COLUMBIA CLIMATE SCHOOL
SABIN CENTER FOR CLIMATE CHANGE LAW



[IRA DATABASE](#)

[IRA TRACKER](#)

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IRATracker.org is a joint project of Columbia Law School's [Sabin Center for Climate Change Law](#) and [Environmental Defense Fund](#). The IRA Database, linked below, compiles information about the climate change-related provisions of the 2022 Inflation Reduction Act (IRA). Actions taken by federal agencies to implement those provisions are recorded in the IRA Tracker.

[IRA Database](#)

[IRA Tracker](#)

CHIPS and Science Act – August 9, 2022

Senate: 64-33 House: 243-187



CHIPS and Science Act -- Energy and Climate Programs

Regional Clean Energy Innovation Program

Critical Minerals Mining Research and Development

Low-Emissions Steel Manufacturing Research Program

Basic Energy Sciences Program

Fusion Energy Research

Fission for the Future

University Nuclear Infrastructure Collaboration

Advanced Nuclear Research Infrastructure Enhancement Program

Greenhouse Gas Measurement Research

Climate Change Research

Ocean Acidification Interagency Working Group

Ocean Acidification Activities and Authorizations

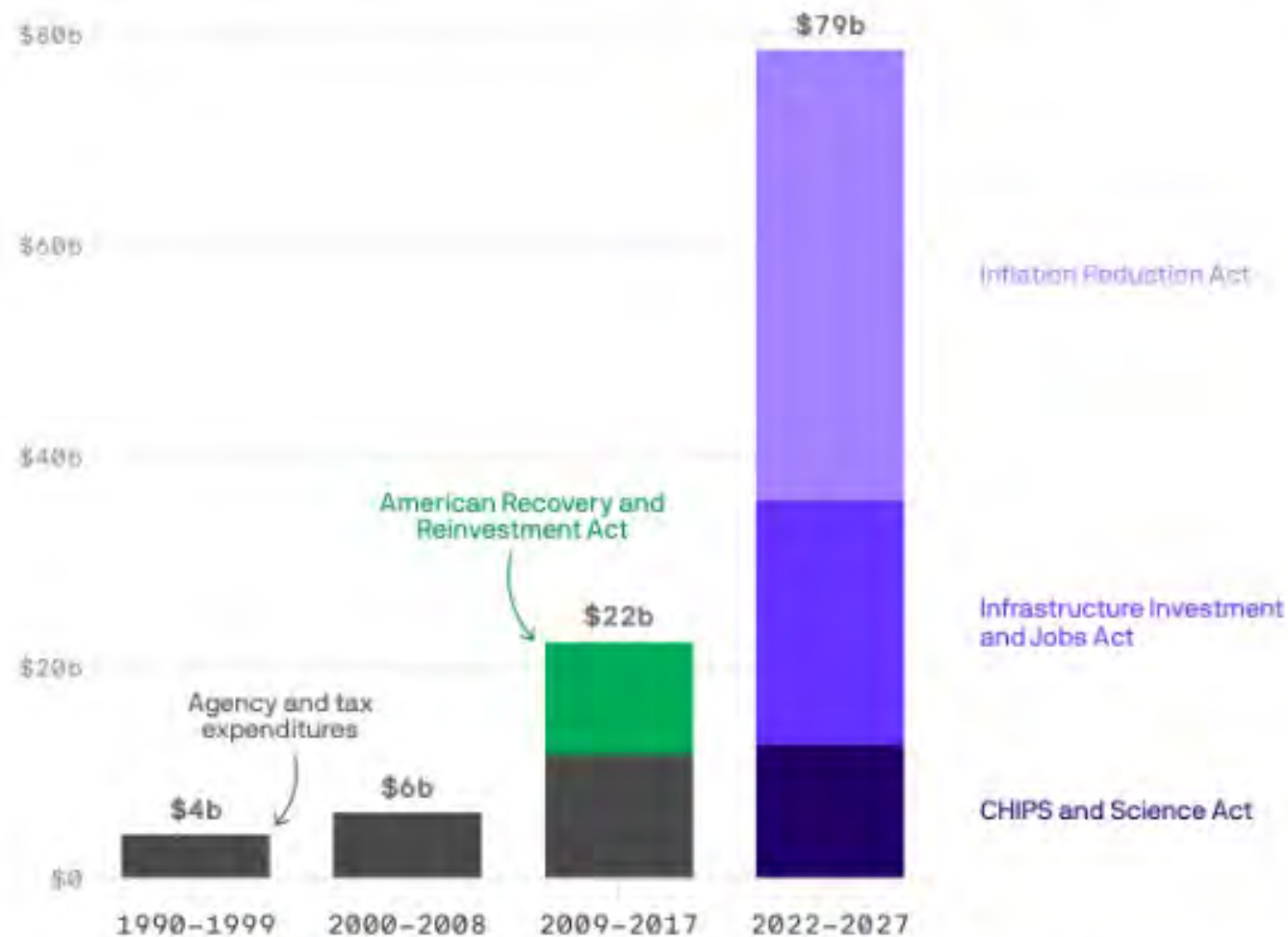
National Clean Energy Incubator Program

Clean Energy Technology Transfer Coordination

Clean Energy Technology University Prize Competition

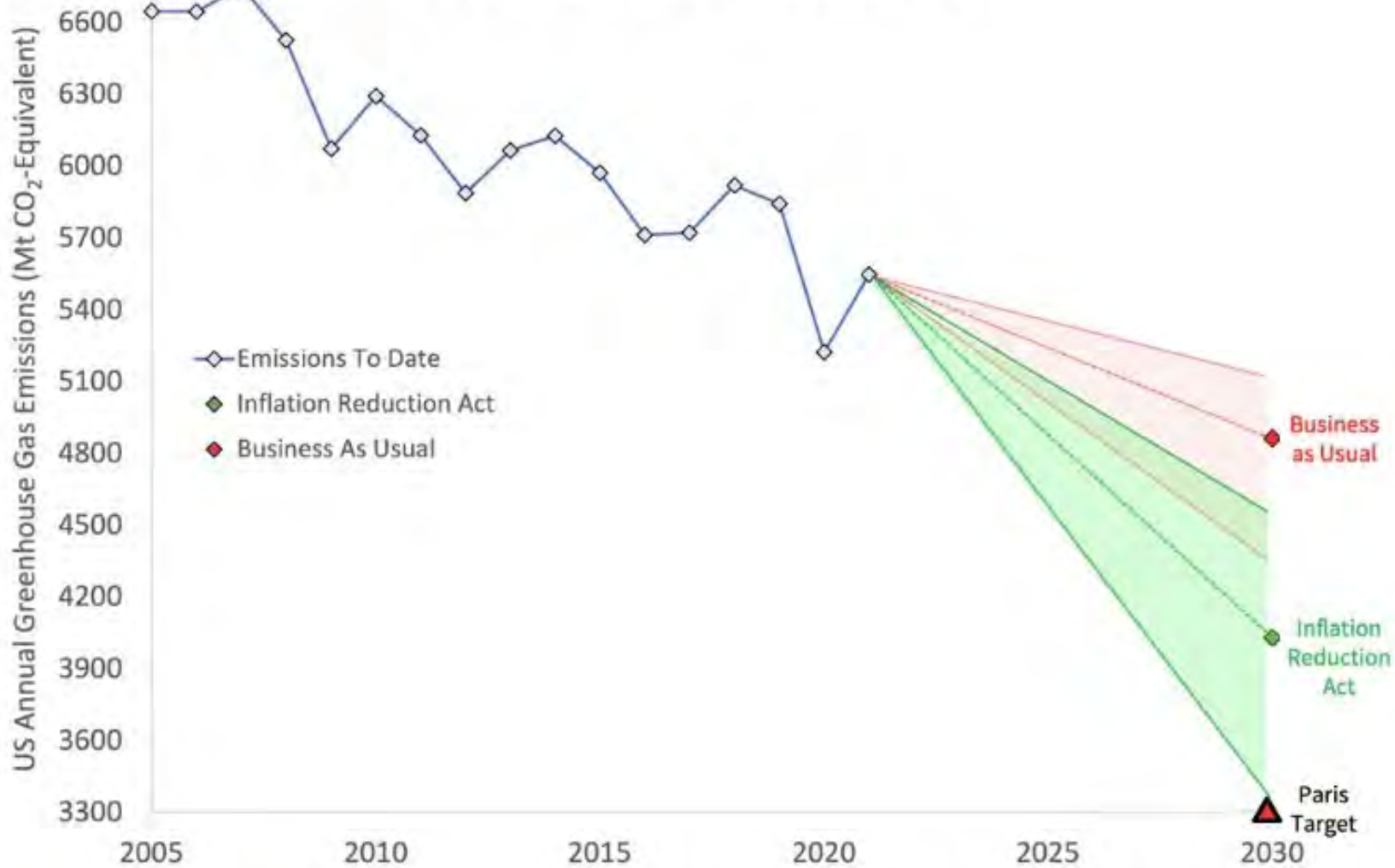
Average annual federal spending on clean energy

1990-2027 (projected)



Reproduced from [RMI](#); Note: Data not available between 2018 and 2021, and projected agency spending excluded from 2022-2027; Chart: Axios Visuals

US Greenhouse Gas Emissions



U.S. greenhouse gas emissions, projected emissions under current policy (red), and under the Inflation Reduction Act according to Princeton REPEAT, Energy Innovation, and Rhodium Group analyses. (Created by Dana Nuccitelli)



Chief impediments to IRA implementation

Electricity transmission and interconnections

Workforce shortages

Siting and permitting disputes

Supply chains

Republican opposition; uncertainty over 2024

House Republican Bill Lifting Debt Ceiling

- Sec. 221. Amendment of 1986 Code.
- Sec. 222. Modification of credit for electricity produced from certain renewable resources.
- Sec. 223. Modification of energy credit.
- Sec. 224. Repeal of increase in energy credit for solar and wind facilities placed in service in connection with low-income communities.
- Sec. 225. Modification of credit for carbon oxide sequestration.
- Sec. 226. Zero-emission nuclear power production credit repealed.
- Sec. 227. Incentives for biodiesel, renewable diesel, and alternative fuels.
- Sec. 228. Second generation biofuel incentives.
- Sec. 229. Repeal of sustainable aviation fuel credit.
- Sec. 230. Clean hydrogen repeals.
- Sec. 231. Nonbusiness energy property credit.
- Sec. 232. Residential clean energy credit reverted to credit for residential energy efficient property.
- Sec. 233. Energy efficient commercial buildings deduction.
- Sec. 234. Modifications to new energy efficient home credit.
- Sec. 235. Clean vehicle credit.
- Sec. 236. Repeal of credit for previously-owned clean vehicles.
- Sec. 237. Repeal of credit for qualified commercial clean vehicles.
- Sec. 238. Alternative fuel refueling property credit.
- Sec. 239. Advanced energy project credit extension reversed.
- Sec. 240. Repeal of advanced manufacturing production credit.
- Sec. 241. Repeal of clean electricity production credit.
- Sec. 242. Repeal of clean electricity investment credit.
- Sec. 243. Cost recovery for qualified facilities, qualified property, and energy storage technology removed.
- Sec. 244. Repeal of clean fuel production credit.
- Sec. 245. Repeal of sections relating to elective payment for energy property and electricity produced from certain renewable resources; transfer of credits.