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## Summary of Clean Energy Investments in Inflation Reduction Act of 2022

After nearly two years of negotiations, in a development that stunned even Senate Democrats, Senators Schumer (D-NY) and Manchin (D-WV) announced a deal on climate and clean energy provisions within a budget reconciliation package. After minor revisions from Sen. Sinema (D-AZ), the Senate passed the bill on August 7th on a 51-50 party-line vote with Vice President Kamala Harris providing the tie-breaking vote. At a high level, the [Inflation Reduction Act of 2022](#) provides \$433 billion in spending for clean energy and healthcare. It also raises \$739 billion in revenue through a 15% minimum corporate tax rate on large firms, prescription drug pricing reform, enhanced IRS enforcement, and a 1% excise tax on stock buybacks. The package brings in more revenue than it spends to reduce the federal deficit by \$300+ billion. There are some concessions that Schumer made to earn Manchin's vote including a commitment to hold a vote on legislation to [streamline permitting of infrastructure projects](#) and embedding requirements within IRA for federal onshore and offshore lease sales for fossil fuel development. Early analyses suggest IRA would enable the U.S. to cut GHGs relative to 2005 levels roughly 40% by 2030 (estimates include [31-44%](#), [37-41%](#), & [42%](#)). Additional executive and state action may bring the 50-52% U.S. Paris Agreement goal within reach.

### What's in it for clean energy?

The IRA allocates \$369 billion in spending for energy security and addressing climate change. Much of these investments come through the tax code in the form of clean energy tax credits. Major tax credit wins include extensions for the Investment and Production Tax Credits; solar eligibility for the PTC; extension of the EV tax credit and removal of the manufacturer cap; ITC eligibility for stand-alone storage; extension/expansion of the CCS credit, and a new tech-neutral ITC and PTC beginning in 2025. IRA creates a new fee on methane emissions that rises to \$1,500/ton by 2026. The bill also includes grants, loan authority, direct federal procurement, and other support for cleantech that, when combined with tax credits, represents an unprecedented cleantech investment from the U.S. government. For context, the American Recovery and Reinvestment Act from 2009 provided a record \$90 billion for clean energy; IRA will inject four times that amount into cleantech deployment, including \$60 billion directly intended for environmental justice.

**Tax Credits:** The changes to the tax code include extensions and expansions of existing tax credits in addition to the creation of a new tech-neutral framework beginning in 2025. The IRA embeds incentives within some of these credits that encourage prevailing wages and apprenticeships and bonuses for domestic sourcing and manufacturing of cleantech. The EV credit includes income thresholds for higher-earning consumers as well as caps on the MSRP of vehicles. [Direct pay provisions](#) were only extended to tax credits for hydrogen, CCS, and advanced manufacturing. In addition, non tax-paying entities like government agencies and nonprofits now receive direct pay for all credits. All tax credits are now eligible for [transferability](#) to be sold to unrelated third-parties. Previously only parties with an ownership stake in a project could claim a tax credit. Below is a summary of tax code changes. Where listed, bonus rates apply to projects satisfying prevailing wage requirements and apprenticeship requirements for the duration of the credit period. The IRA allocates \$369 billion in spending for energy security and addressing climate change. Much of these investments come through the tax code in the form of clean energy tax credits.

- **[Renewable Energy Production Tax Credit \(Sec. 45\)](#):** The PTC is extended 5 years for facilities that begin construction before January 1, 2025. Solar is now an eligible technology (previously, solar could only access the investment tax credit). Wind facilities placed in service after 2021 receive the full credit. Projects are eligible for a credit of 0.5 cents/kWh (base rate) or 2.5 cents/kWh (bonus). Two additional 10% bonus credits can be

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claimed, one for meeting domestic content requirements and one for projects within an “[energy community](#)” (e.g., brownfields and legacy fossil energy production communities).

- **[Investment Tax Credit \(Sec. 48\)](#)**: The IRA extends the expiration date for the ITC one year through the end of 2024. Projects must begin construction by the end of 2024 and be placed in service before 2029. A new base credit of 6% and bonus credit of 30% (tiered based on whether or not projects meet prevailing wage and apprenticeship requirements) is set for projects placed in service after 2021 for solar, geothermal, fuel cells, small wind, offshore wind, CHP, and waste heat to power. Stand-alone storage, qualified biogas, microgrid controllers, and small interconnection property have all been added as eligible technologies. Geothermal heat receives a special extension through the end of 2032.
- **[Low-Income Solar and Wind Investment Tax Credit Bonus](#)**: Beginning in 2023, solar and wind projects will qualify for a 10% bonus on any Sec. 48 credit claimed if projects are built in a low-income community or on Indian land. Project built on a low-income residential building or through a low-income economic benefit project qualify for an additional 20% bonus credit.
- **[Carbon Capture and Sequestration Tax Credit \(Sec. 45Q\)](#)**: The 45Q credit is extended 7 years and applies to facilities that begin construction by the end of 2032. Projects claiming 45Q are eligible for direct pay for the first 5 years of a project. The value of credits is boosted to \$85 per ton of CO<sub>2</sub> captured and sequestered in geologic storage and \$60 per ton captured and stored in oil and gas projects. Direct air capture projects receive bumped up credits of \$180 per ton placed into geological storage and \$130 per ton that is otherwise utilized.
- **[Zero-Emission Nuclear Power Production Tax Credit \(Sec. 45U\)](#)**: Provides a new base credit of 0.3 cents/kWh and bonus credit of 1.5 cents/kWh produced and sold for existing nuclear facilities. The provision applies for electricity sold from 2023-2032.
- **[Alternative Fuel Refueling/EV Charging Property Tax Credit](#)**: Extends through 2032 and expands base rate to 6% and bonus rate to 30% for expenses up to \$100,000. Starting in 2023, the credit will be limited to low-income and rural locations.
- **[Biodiesel Tax Credit](#)**: Extends the credit through 2023 and applies it to the income and excise tax credit for biodiesel, renewable diesel and alternative fuels, and the income credit for second generation biofuels.
- **[Sustainable Aviation Fuel Tax Credit](#)**: Creates a new credit through 2026, replacing the \$1.00 credit for biodiesel aviation fuel. To qualify, SAF must have at least 50% lower lifecycle emissions. The credit has a minimum value of \$1.25/gallon with potential increases for lower emissions.
- **[Residential Energy Efficiency Tax Credits](#)**: Increases the maximum deduction for Energy Efficient Commercial Buildings Deductions. Base rates depend on energy cost savings or energy usage intensity and bonus rates are available. Extends the New Energy Efficiency Home Credit through 2032 and increases it to \$2,500 for energy efficient single-family homes and \$500 (base rate) with a possible \$2,500 bonus for multifamily homes. Zero-energy ready homes also receive a credit of \$1,000 with a possible \$5,000 bonus.
- **[Residential Clean Electricity Tax Credit](#)**: Increases credit for nonbusiness energy credit to 30%, raises caps, and expands to cover audits up to \$150 and improvements up to \$600. Extends the resident clean energy property credit through 2032, then phases down in 2033 and 2034. Also expands the credit to include battery storage.
- **[Clean Manufacturing Investment Tax Credit \(Sec. 48C\)](#)**: Revives advanced energy property credits with additional \$10 billion, \$4 billion for coal communities, with a base credit of 5% and a bonus rate of 30%. Projects reducing emissions at existing facilities by at least 20% also are eligible.
- **[Wind, Solar, and Battery Manufacturing Production Tax Credit](#)**: Creates a new credit through 2030 for applicable manufacturing components, which reduces by 25% a year for all except critical minerals. Credit amounts depend on mass, watt-capacity, sale price, or production cost.
- **[Clean Hydrogen Production Tax Credit](#)**: Creates a new credit, which is applied for a 10-year period to eligible projects starting by 2032. Credit amounts are calculated based on lifecycle emissions multiplied by a \$0.60/kg base rate or \$3.00 bonus rate.
- **[Clean Vehicle Tax Credits](#)**:

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- Fuel cell vehicles are now eligible in addition to EVs. For new cars, the credit is expanded through 2032 and has a maximum of \$7,500 depending on domestic content critical mineral or battery component requirements. Individual taxpayers making over \$150,000 (\$300,000 for couples) are ineligible. Credits do not apply to vehicles assembled outside of the U.S., for critical mineral inputs sourced from countries not in a free trade agreement with the U.S., or for vehicles priced above \$80,000 for SUVs and trucks or \$55,000 for light-duty cars. IRA also repeals the manufacturer cap.
- For used vehicles, a new credit of \$4,000 or 30% of sale price is created through 2032. The used vehicle credit does not apply to taxpayers making over \$75,000 (\$150,000 for couples) or on vehicles over \$25,000.
- Finally, a new credit for commercial electric vehicles is created for \$40,000 or 30% of cost.

**Technology Neutral Tax Framework:** Previous iterations of a reconciliation package introduced a tech neutral tax credit framework beginning in 2026. The IRA includes a similar framework, but it begins one year earlier for projects placed in service in 2025-2032. This tech-neutral framework allows a power facility of any technology to qualify for either credit if carbon emissions are at or below zero. [The Treasury Secretary](#) will publish an annual list of technologies and emission rates for purposes of determining eligibility. Prevailing wage and apprenticeship requirements apply to bonus rates.

- [Clean Electricity Production Tax Credit \(45Y\)](#): Projects that produce electricity with zero or below-zero emissions are eligible for a credit of up to 2.5 cents/kWh for the 10 years after a project is placed in service. Power must be either sold to a third party or, if consumed by the taxpayer, a facility must be equipped with a metering device owned and operated by a third party.
- [Clean Electricity Investment Tax Credit \(48D\)](#): Projects that produce electricity with zero or below-zero emissions are eligible for a 30% tax credit provided prevailing wage/apprenticeship requirements are met. Stand-alone storage is eligible for this credit. Projects under 5MW can include the cost of interconnection.

### What other investments are in IRA for cleantech deployment?

IRA dedicates a significant amount of resources for cleantech deployment through grants, loans, financing mechanisms, federal procurement, technical guidance, and other support. These resources are intended to advance markets for cleantech, energy efficiency, and advanced transportation and reduce costs. Investments target hard-to-decarbonize sectors such as industrial emissions and construction materials and rural or low-income areas where private sector may lag. There is also a significant level of focus on environmental justice, with \$60 billion dedicated for underserved communities that disproportionately bear harmful impacts of pollution and climate change. Programs are listed below.

#### Spurring Cleantech Deployment:

- [Greenhouse Gas Reduction Fund \(National Green Bank\)](#): This funding mechanism provides \$27 billion to be allocated to states, municipalities, and tribes for financing cleantech deployment.
- [Cost recovery for qualified facilities, qualified property, and storage technology](#)

#### Transmission:

- [Transmission Facility Financing](#): \$2 billion for transmission loans
- [Interstate Transmission Line Grants](#): \$760 million
- [Interregional Transmission Planning, Modeling, and Analysis](#): \$100 million

#### Rural Development:

- [Electric Loans for Renewable Energy](#): \$1 billion
- [Rural Energy for America Program \(REAP\)](#): \$1.175 billion
- [Rural Electric Cooperative Loans](#): \$9.7 billion

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### **Transportation:**

- [USPS Clean Fleets \(Federal procurement of Electric Vehicles\): \\$3 billion](#)
- [Grants to reduce Air Pollution at Ports: \\$3 billion](#)
- [Clean Heavy-Duty Vehicles: \\$1 billion](#)

### **Research, Development, & Demonstration:**

- [Funding for National Labs: \\$2 billion total](#)
  - Office of Science: \$1.55 billion
  - Office of Fossil Energy and Carbon Management: \$150 million
  - Office of Nuclear Energy: \$150 million
  - Office of Energy Efficiency and Renewable Energy: \$150 million
- [High Assay Low-enriched Uranium \(HALU\): \\$700 million](#)
- [Loan Programs Office: \\$3.6 billion \(doubles LPO loan authority from 40 to 80 billion\)](#)

### **Manufacturing:**

- [Advanced Industrial Facilities Deployment Program: \\$5.8 billion](#)
- [Defense Production Act: \\$500 million](#)
- [Low-Embodied Carbon Labeling for Construction Materials](#)
- [Advanced Technology Vehicle Manufacturing Loans: \\$3 billion](#)
- [Domestic EV Manufacturing Grants: \\$2 billion](#)

### **Environmental Justice:**

- [Neighborhood Access and Equity Grant Program: \\$3 billion](#)
- [Tribal Energy Loan Guarantee Program: Raises loan authority from \\$2B to \\$20B](#)
- [Reinstatement of Superfund Pollution Tax](#)
- [Black Lung Disability Trust Fund](#)
- [Climate Pollution Reduction Grants: \\$5 billion](#)
- [Environmental and Climate Justice Block Grants: \\$3 billion](#)
- [Tribal Climate Resilience: \\$230 million](#)
- [Native Hawaiian Climate Resilience: \\$25 million](#)
- [Tribal Electrification Program: \\$150 million](#)
- [Emergency Drought Relief for Tribes: \\$12.5 million](#)

### **Carbon Emissions from Fossil Fuels:**

- [Methane Emissions Reduction Program: Creates a fee on methane emissions that rises to \\$1,500/ton by 2026.](#)
- [Offshore Oil and Gas Royalty Rates](#)
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- [Provisions on Fossil & Renewable Development on Federal Lands/Waters](#)

### **Small Businesses:**

- [R&D Small Business Tax Credit: Annual cap raised from \\$250,000 to \\$500,000 \(used to offset payroll taxes\)](#)