CLIMATE CAPITAL GUIDEBOOK

MAY 2024

THE WHITE HOUSE
WASHINGTON

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A Note from President Biden's National Economic Advisor

In his 2024 State of the Union address, President Biden proclaimed: "I'm taking the most significant action ever on climate in the history of the world." Historic investments from the President's Investing in America agenda are putting the United States on the path towards achieving the President's ambitious goal to cut U.S. greenhouse gas emissions in half from 2005 levels by 2030 and reach net zero by 2050. This transition to a clean energy economy is also a once-in-a-generation opportunity to revitalize disadvantaged communities, bolster the U.S. manufacturing base, and create high-quality job opportunities for American workers.

The President's investments are strategically designed to mobilize the private sector to tackle the climate crisis and invest in the clean energy technologies of the future. The challenge of climate change is too great for the public or private sector alone to solve, which is why the President's climate strategy is designed to leverage both: it is government-enabled and private sector-led. The Investing in America agenda recognizes the essential role that the private sector plays in developing novel solutions to meet the demands of the world's greatest challenges, and it leverages the strength of American small businesses in delivering new ideas to power the American economy. This approach is already showing results. Since President Biden took office, the private sector has announced $866 billion in investments in clean energy and manufacturing.

The gains from the clean energy economy must be shared across communities, demographics, and geographies, so that *all* Americans benefit from this economic transformation. We need all the tools at our disposal to combat climate change. While larger climate technology enterprises may have the resources to navigate the many capital programs made available by the Biden-Harris Administration, smaller businesses and start-ups may face greater capacity constraints in navigating these programs. These programs can be crucial to the viability of capital-intensive companies focused on clean energy and technology. That is why the Administration is working hard to break down barriers to accessing capital and ensuring that American businesses from communities in every corner of the country can partake in the growing clean energy economy. This Climate Capital Guidebook is designed to provide a program-by-program overview of the resources across the federal government available to climate start-ups, small and medium-sized businesses, and their investors.

Action on climate change cannot wait. Tackling the climate crisis will require all hands on deck, particularly American innovators, workers, and small- and medium-sized businesses. The Administration looks forward to continuing to work together to build an inclusive clean energy economy.

Best,
Lael Brainard

Executive Summary

Through President Biden's historic Investing in America agenda, the Biden-Harris Administration has made the largest investment in history in climate, clean energy, and the environment. Under the Biden-Harris Administration, clean energy jobs are on the rise across the country, American manufacturing is booming, companies have announced hundreds of billions of dollars in clean energy investments, and the country is on a path to cutting climate pollution in half from 2005 levels by 2030 and achieving economy-wide, net zero emissions by no later than 2050.

To meet President Biden's ambitious climate goals, the United States must increase its deployment of commercially-available clean energy technologies and invest in innovative technologies with game-changing potential. The Bipartisan Infrastructure Law, Inflation Reduction Act, and annual appropriations fund hundreds of billions of dollars in grants, loans, tax incentives, and other programs to spur the financing and deployment of new clean energy projects, while also delivering benefits through the Justice40 Initiative—including cleaner air, good-paying jobs, and affordable clean energy—to disadvantaged communities that are marginalized by underinvestment and overburdened by pollution.

These public investments have crowded in a historical level of private capital. To date, private companies have already announced $866 billion in investments in industries including semiconductors, electric vehicles, batteries, clean energy manufacturing and infrastructure, and more. Manufacturing facilities are already being stood up across the United States, including for technologies like batteries, electric vehicles, nuclear energy, wind and solar power, hydrogen, and heat pumps.

The Biden-Harris Administration is committed to supporting small- and medium-sized companies investing in climate solutions, including those that have historically faced barriers to accessing lower-cost, non-dilutive forms of capital. While larger, institutionally-backed companies may have the resources to identify and access federal funding opportunities, smaller enterprises may face greater challenges in being able to access these federal incentives. Access to capital should not be a barrier to American businesses looking to build the clean energy economy of our country's future.

The Climate Capital Guidebook aggregates current federal funding opportunities—including grants, loans, loan guarantees, and cooperative agreements—for small- and medium-sized companies, both startups and established, focusing on clean energy technologies and other climate solutions. This resource includes programs funded by the Bipartisan Infrastructure Law (BIL) and the Inflation Reduction Act (IRA), as well as those funded by annual appropriations. The Guidebook also notes which programs are part of the Biden-Harris Administration's Justice40 Initiative, which set the goal that 40% of the overall benefits of certain federal climate, clean energy, and other investments flow to disadvantaged communities that are marginalized by underinvestment and overburdened by pollution. Each program is accompanied by a summary of the eligible entities, eligible projects, average deal or award size, application timeline, contact information, and additional useful information.

This Climate Capital Guidebook highlights relevant federal funding opportunities but does not necessarily encompass all federal resources that can directly and indirectly support climate solutions, including funding opportunities that may open to applications in the future.

This Guidebook complements existing resources—including the Bipartisan Infrastructure Law Guidebook, the Bipartisan Infrastructure Law Tribal Playbook, the Bipartisan Infrastructure Law Rural Playbook, and the Inflation Reduction Act Guidebook—which detail funding opportunities made possible through the President's Investing in America agenda.

Climate Capital Guidebook: Highlighted Programs

The below table of programs included in this guidebook is current as of May 30, 2024.

Agency	Program Name	Project/deal size	Description
USDA	Distributed Generation Energy Project Financing*	Up to 75% of the project cost	Direct loans and loan guarantees for renewable energy projects that provide electricity to rural electric utilities through power purchase agreements
USDA	Rural Energy for America Program*	Maximum loan guarantee of $25 million; maximum grant of $1 million	Loan guarantees and grants for installation of renewal energy systems, carbon capture, or energy efficiency improvements to small businesses in rural areas
USDA	Business & Industry Loan Guarantees	Maximum loan guarantee of up to $25 million	Loan guarantees for small businesses in rural areas for a variety of purposes (capex, M&A, refinancing, etc.)
USDA	Rural Energy Savings Program*	No specified limit; current average $10 million	Direct loans to utilities or companies that re-lend to qualified consumers in rural areas to implement energy efficiency improvements
SBA	Small Business Investment Company	Varies by SBIC but generally between $1 million to $10 million of equity investments or loans	A Small Business Investment Company (SBIC) is a privately owned investment company that leverages funds raised by private investors with SBA-guaranteed debt to provide debt and equity financing to small businesses
SBA	504 Loan Program	Up to $5 million generally; or up to $5.5 million for certain energy or manufacturing projects	Loan guarantees issued by SBA for buildings, facilities, and machinery/equipment financing for small businesses
SBA	7(a) Loan Program (standard)	Loans up to $5 million	Loan guarantees issued by SBA for general business uses by small businesses
SBA (administered across 11 U.S. agencies)	Small Business Innovation Research (SBIR) Program and Small Business Technology Transfer (STTR) Program	Up to $300,000 for early stage (Phase I) projects and up to $2 million for further development work (Phase II)	Contracts, grants, and/or cooperative agreements with federal agencies

EXIM	Make More in America Initiative	No maximum; generally loans of $10 million to $80 million	Direct loans and loan guarantees to finance capital investments that will facilitate exports and create jobs (includes renewable energy, energy efficiency, energy storage, and critical minerals as priority areas). Typically requires commercially proven technology
EXIM	Working Capital Guarantee Program	No maximum; generally loans of more than $1 million	Loan guarantees to support the working capital needs of U.S. exporters (includes renewable energy, energy efficiency, energy storage, and critical minerals as priority areas); typically requires commercially proven technology
DOE	Title 17 Clean Energy Financing Program (LPO)*	No minimum or maximum; usually $100 million or more	Loan guarantees for innovative energy and supply chain/energy manufacturing projects and/or energy infrastructure reinvestment projects
DOE	Advanced Technology Vehicle Manufacturing Loan Program (LPO)*	No statutory minimum or maximum; usually $100 million or more	Direct loans to support the manufacture of eligible advanced technology vehicles and qualifying components
DOE	Tribal Energy Loan Guarantee Program (LPO)*	Loan guarantees, including guarantees of Federal Financing Bank loans	Loan guarantees for Tribal investment in energy-related projects for federally recognized Tribes or a Tribal Energy Development Organization
DOE	Carbon Dioxide Transportation Infrastructure Loans* (LPO)	No statutory minimum or maximum; usually $100 million or more	Direct loans, loan guarantees, and grants for common carrier CO2 transportation infrastructure (e.g., pipelines)
DOE	Energy Efficiency and Renewable Energy Grants*	Grants generally between $2 million to $4 million, though awards can range from $20,000 to over $200 million	Grants with cost-sharing requirements to invest in R&D to lower the costs of clean energy technologies
DOE	ARPA-E SCALEUP program*	Cooperative agreements between $5 million and $20 million, though varies	Cooperative agreements with cost-sharing requirements to high-potential, high-impact energy technologies that are too early for private-sector investment, with funding and technical assistance
DOE	Grid Resilience and Innovation Partnerships (GRIP) Program *	Historically between $1 million and $500 million	Grants with cost-sharing requirements to fund technology focused on increasing transmission system capacity, preventing grid failures, integrating renewable energy, and facilitating integration of EVs and other new technologies

DOE	Carbon Capture Large-Scale Pilot Project Grants*	Grants of $76 million on average	Grants with cost-sharing requirements to support large-scale facilities to capture carbon dioxide from coal electric generation facilities, natural gas electric generation facilities, and industrial facilities
DOE	Long Duration Energy Storage Demonstrations and Pilot Grants*	To be determined	Grants with cost-sharing requirements to help reach commercial deployment of long duration energy storage technologies
DOE	Carbon Capture Demonstration Projects Program Grants*	Grants of $300 million on average	Grants with cost-sharing requirements to help accelerate the demonstration and deployment of carbon management technologies
DOE/IRS	Qualifying Advanced Energy Project (48C) Credit	$10 billion of allocated credits, with $4 billion set aside for projects in certain energy communities. There is no limit or maximum credit per project within this $10 billion amount.	Investment tax credit of up to 30% for clean energy manufacturing and recycling, critical materials processing, refining, and recycling, or industrial decarbonization projects
DOI	Indian Loan Guarantee and Insurance Program	Loan guarantees of $500 thousand individual limit; higher limits for Tribes, Tribal enterprises, and Indian-owned business entities based upon Program resources	Loan guarantees for individuals of a federally recognized Tribe, Tribes, Tribal enterprises, and Indian-owned business entities for economic development
USTDA	Project Preparation Assistance	Grants of $500,000 to $1.5 million	Grants with cost-sharing requirements to support feasibility studies, technical assistance, and pilot projects for infrastructure projects in low- and middle-income countries
DOD	Strategic Environmental Research and Development Program (SERDP) and Environmental Security Technology Certification Program (ESTCP)	Average deal size of $1 million to $3 million over three years	Contracts, grants, and cooperative agreements for environmental, resilience, and installation energy and water research programs at U.S. military installations, including funding for basic research, applied research, development, and technology transfer from proof-of-concept to in-the-field use.

* *An asterisk indicates programs discussed in this Guidebook that are part of President Biden's Justice40 Initiative.*

1. Note that deal size information included throughout the Guidebook (including averages, maximums, and minimums) may reflect award and loan sizes from previous funding rounds and are not necessarily indicative of future award (and/or loan/loan guarantee) sizes.

Distributed Generation Energy Project Financing

Federal Agency: Department of Agriculture

Bureau: Rural Development

Summary: Long-term loans at low interest rates for distributed renewable energy projects using commercialized technologies that provide electricity to rural electric utilities (cooperatives, municipals, and investor-owned) through power purchase agreements. This program advances the Justice40 Initiative.

Financial Product: Long-term loans and USDA-guaranteed loans

Deal Size: Up to 75% of the project cost with the loan size depending on rural eligibility and underwriting criteria. The minimum loan size is based on utility service, which is typically 1 MW and larger. The maximum loan tenure depends on the duration of the power purchase agreement and the lifetime of the project (not to exceed 35 years), and the typical loan tenure is 20 to 25 years. Interest rates are tied to U.S. Treasury rates for renewable energy projects.

Eligible Entities: Eligible entities include energy project developers for distributed energy projects, Electric Program borrowers, or other utilities that serve rural areas. Loans can be made to pre-revenue companies based on projections with reasonable assurance of repayment ability.

Eligible Projects and Uses: The program does not take technology risk; it is designed for commercialized technologies with a reliable operating history and data showing proven track record of performance, reliability, and costs specific to the proposed application, scale, and operation. Projects performing R&D activities, conducting trials, or undertaking demonstrations are not eligible. Project loans are usually used in the following typical situations:

- A project developer builds and operates the project that has power purchase agreements to serve rural electric utilities
- A wholly-owned subsidiary of an existing Rural Utilities Service borrower owns and operates the project and has a power purchase agreement for the entire output.

Other Requirements: For eligible projects, the Rural Utilities Service requires a minimum of 25% cash equity at the start and through the life of the project. The project must also show that its output is 100% subscribed. If less than 75% of the offtake power is going to rural beneficiaries, the loan amount will be limited to that rural percentage. There may be additional conditions depending on the borrower and project.

Program Website: www.rd.usda.gov/programs-services/electric-programs/distributed-generation-energy-project-financing

Point of Contact: Joseph Badin, Deputy Assistant Administrator, (202) 720-0409, Joe.Badin@usda.gov

Application Information: Applications are accepted at any time. Contact Joseph Badin to begin the application process.

Example Project: A solar startup will use a more than $7 million loan guarantee (loan maturity period of 25 years) from the Rural Utilities Service Electric Program to develop three solar photovoltaic facilities. The solar projects had a total estimated capitalized cost of roughly $11

million. The balance of the project costs is provided in equity. All three solar projects will increase the renewable energy portfolio of the municipalities and reduce their cost of energy. The Rural Utilities Service Electric Program recognizes that renewable resources are typically located near rural and remote areas and encourages the development of renewable energy projects that can create wealth in rural communities and promote local economic development.

Rural Energy for America Program

Federal Agency: Department of Agriculture

Bureau: Rural Development

Summary: USDA-guaranteed loans of up to $25 million and grants of up to $1 million to agricultural producers and rural small businesses to install renewable energy systems or to make energy efficiency improvements using commercialized technologies. This program advances the Justice40 Initiative.

Financial Product: USDA-guaranteed loans; grants; combined grant and guaranteed loans

Deal Size: USDA-guaranteed loans up to 75% of total eligible project cost and a maximum of $25 million; renewable energy system grants up to 50% of total eligible project costs up to a maximum of $1 million; energy efficiency grants up to 50% of total eligible project costs up to a maximum of $500,000. Loan terms are available up to 40 years with rates negotiated between the lender and borrower.

Eligible Entities: Eligible entities include (1) agricultural producers in which at least 50% of gross income comes from agricultural operations and (2) small businesses located in eligible rural areas of less than 50,000 residents that meet Small Business Administration size standards. For loans, applicants must demonstrate repayment ability, but startups may use projected revenue and cash flow as opposed to demonstrated history. For grants, the project must be financially feasible, meaning the project is able to achieve sufficient income, credit, and cash flow to financially sustain a project over the long term and meet all debt obligations.

Eligible Projects and Uses: This program is designed for commercially available technologies; projects performing research and development activities or conducting trials or demonstrations are not eligible. Eligible projects include the purchase and installation of renewable energy systems, such as biomass, geothermal for electric generation or direct use, hydropower below 30 megawatts, hydrogen, small and large wind or solar generation, ocean generation; the purchase, installation and construction of energy efficiency improvements, such as insulation, lighting, high efficiency HVAC systems, doors and windows, or the replacement of energy-inefficient equipment.

Other Requirements: Energy efficiency projects require an energy audit or an assessment of compliance with USDA Rural Development rules. For loans, applicants must provide at least 25% of the project cost; fees include an initial guarantee fee, an annual guarantee retention fee, and a reasonable and customary fee for loan origination. For grants, the federal cost share is up to 50% for renewable energy system projects that produce zero greenhouse gas emissions, projects located in an Energy Community, energy efficiency improvement projects, and projects proposed by a Tribal Corporation or Tribal Business entity. For other projects, the federal cost share is limited to 25%.

Program Website: www.rd.usda.gov/programs-services/energy-programs/rural-energy-america-program-renewable-energy-systems-energy-efficiency-improvement-guaranteed-loans

Point of Contact: Find your USDA State Coordinator

Application Information: For the loan program, connect with your State Coordinator before filling out forms or applications. Apply through the OneRD Guarantee Loan Program. For the grant program, speak to your Rural Development Energy Coordinator before filling out forms or applications; applications vary by state. Applications are accepted year-round.

Example Project: A hypothetical example would be a loan for a community-scale woody biomass combined heat and power facility that creates electricity, heat, and biochar through gasification of wood biomass feedstock. Like the B&I example below, USDA does provide loans to start-ups/early-stage companies. Both programs are governed under the OneRD guaranteed loan rule.

Business & Industry Loan Guarantees

Federal Agency: Department of Agriculture

Bureau: Rural Development

Summary: USDA loan guarantees of up to $25 million to commercial lenders for loans to eligible rural businesses projects that create or save jobs for rural U.S. residents.

Financial Product: USDA loan guarantees

Deal Size: Loans up to $25 million per borrower; interest rates are negotiated between the lender and borrower and rates may be fixed or variable

Eligible Entities: Eligible borrowers include for-profit or non-profit businesses, cooperatives, and individuals engaged or proposing to engage in a business. Repayment ability must be demonstrated, but revenue and positive cash flow can be projection-based for startups as opposed to a demonstrated history from existing operations. The individual borrowers must be U.S. citizens or permanent residents. Private-entity borrowers must demonstrate that loan funds will remain in the U.S., and the facility being financed will primarily create new or save existing jobs for rural U.S. residents.

Eligible Projects and Uses: This program does not take technology risk; it is designed for commercially available technologies. Projects must be in rural areas of less than 50,000 residents. Eligible uses include business conversion, enlargement, repair, modernization, or development; the purchase of infrastructure for commercial or industrial properties; debt refinancing; the purchase and installation of equipment or inventory; and business and industrial acquisitions. This program does not take technology risk and is designed for commercially available technologies. Projects performing R&D activities, conducting trials, or undertaking demonstrations are not eligible.

Other Requirements: The federal cost share is up to an 80% guarantee, no matter the loan size. Additional fees include an initial guarantee fee of 3% of the guaranteed amount, a guarantee retention fee of 0.55% of the guaranteed portion of the outstanding principal balance to be paid annually, and reasonable and customary fees for loan origination to be negotiated between the borrower and lender. There is also a fee for issuance of loan note guarantee prior to construction completion for certain construction projects.

Program Website: www.rd.usda.gov/programs-services/business-programs/business-industry-loan-guarantees

Point of Contact: Your local Rural Development office

Application Information: Applications are accepted at any time. Contact your local Rural Development office before filling out any forms or applications. Apply through the OneRD Guarantee Loan Program. Business & Industry loans are frequently paired with Rural Energy for America Program loans.

Example Project: A recent example is a $25 million Rural Energy for America Program loan in conjunction with a $7.5 million Business & Industry loan to construct a renewable natural gas facility to service an existing landfill and an existing anaerobic digester tied to a wastewater treatment plant to produce pipeline quality renewable natural gas.

Rural Energy Savings Program

Federal Agency: Department of Agriculture

Bureau: Rural Development

Summary: Loans to rural utilities, federally recognized Tribes, municipalities, and other companies who provide energy efficiency loans to qualified consumers to implement durable cost-effective energy efficiency measures. This program advances the Justice40 Initiative.

Financial Product: Loans

Deal Size: No limits specified. Loans generally range from $250,000 to $75 million. Terms of up to 20 years at a 0% interest rate to borrowers; terms of up to 10 years at up to 5% interest rate when relending to qualified consumers.

Eligible Entities: Current and former Rural Utilities Service borrowers and their subsidiaries, and entities that provide energy efficiency service needs in rural areas, including for- and non-profit corporations, any federally recognized Tribes, green banks, people's utility districts, and cooperative, nonprofit, limited-dividend, or mutual associations. Applicants must be able to demonstrate repayment ability, but revenue and positive cash flow are usually projection based for startups as opposed to a demonstrated history for existing operations. Early-stage companies may submit a Letter of Interest, but they must be well capitalized. Early-stage climate technology companies are not a focus under RESP.

Eligible Products and Uses: Projects must use commercially available technology; the program does not take technology risk. Generally, RESP is focused on funding energy efficiency projects using commercial technology (e.g., a new HVAC system, solar array, or EV charger) for rural citizens and businesses. Eligible projects include energy efficiency measures to decrease energy use or costs for rural families and small business such as weatherization, HVAC replacement, Energy Star appliances; renewable energy, energy storage or conservation, and EV charger projects; and the refurbishment or replacement of manufactured homes. Up to 4% of the loan total may be used for startup costs.

Other Requirements: N/A

Program Website: www.rd.usda.gov/programs-services/electric-programs/rural-energy-savings-program

Point of Contact: Bob Coates, Robert.Coates@usda.gov

Application Information: Applications are accepted at any time. To apply, begin with a letter of intent. View a sample here.

Example Projects: A well-capitalized rural manufacturer uses a Rural Energy Savings Program loan to help finance the installation of EV chargers, solar, and battery storage for peaking and emergency use, or an energy efficiency improvement such as weatherization.

Small Business Investment Company

Federal Agency: Small Business Administration

Summary: A Small Business Investment Company (SBIC) is a privately owned investment company that leverages funds raised by private investors with SBA-guaranteed debt to provide debt and equity financing to small businesses. The new SBIC Critical Technologies Initiative will deploy new SBIC funds to drive investment in critical technology areas, including certain clean energy technologies.

Financial Product: Varies by SBIC but equity or debt

Deal Size: Varies by SBIC but generally between $1 million to $10 million; interest rates are capped by SBA and vary by fund

Eligible Entities: Eligible entities vary by SBIC, but startup and growth-stage small businesses are generally eligible. Consult SBA size standards to confirm eligibility as a small business.

Eligible Projects and Uses: SBICs invest across many different industries and project types. The SBIC Critical Technologies Initiative focuses on 14 critical technologies areas, including: renewable energy generation and storage, space technology, directed energy, and supply chain and component-level technologies and processes that enable the capabilities stemming from the development of these critical technology areas. Each SBIC has its own investment strategy, and eligibility differs by fund. Consult the SBIC directory for more information, but projects could include:

- Leveraging early-stage investment to advance companies from prototype to production;
- Using follow-on equity investment and private debt to scale innovative technologies for broader commercial applications; and
- Integrating innovative technology developments into established businesses to bolster and secure critical technology supply chains.

Other Requirements: There is no standard timeline for receiving an investment.

Program Website: www.sba.gov/partners/sbics

Point of Contact: Consult the SBIC directory

Application Information: Use the SBIC directory to connect with a participating SBIC. Business owners may search for suitable funds by filtering for state and investment strategy (e.g., early venture, venture, early stage, or growth equity). The new SBIC Critical Technologies Initiative is a partnership between SBA and the Department of Defense to launch new SBIC funds focused on critical technologies such as clean energy. More SBIC Critical Technologies funds are expected to launch over the coming months – check this webpage for more information.

Example Project: A southwest-based startup solar panel engineering, manufacturing, and installation firm received $30 million in financing from two SBICs to expand their growing business.

504 Loan Program

Federal Agency: Small Business Administration

Summary: Long-term, fixed-rate loans of up to $5 million issued by SBA-qualified lenders to for-profit small businesses to support capital expenditures for fixed assets, such as real estate or equipment. Certain energy and manufacturing projects may receive up to $5.5 million per project.

Financial Product: Long-term, fixed-rate loans

Deal Size: The maximum generic 504 loan is $5 million, but certain small manufacturers and projects that meet an energy reduction goal are eligible for $5.5 million. Only the portion of the loan backed by SBA is capped at $5 million to $5.5 million, but the lender's size is not, so the SBA qualified lender may support larger capital projects of $10 to $15 million in size, for example. Maturity is generally 20 or 25 years for real estate; 10 years for machinery and equipment; and 10, 20, or 25 years based upon a weighted average of the useful life of the assets being financed. Interest rates are pegged to an increment above the market rate for 10-year U.S. Treasury issues.

Eligible Entities: Eligible entities include businesses that operate as a U.S. for-profit company, among other qualities. Small businesses are those with a tangible net worth of less than $15 million; average net income of less than $5 million after federal income taxes for the two years preceding the application; and/or fall within SBA size standards. 504 loans require a personal guaranty for owners with at least 20% ownership stake and have some limitations when combining with other federal programs. For additional information on eligibility criteria and loan application requirements, contact a Certified Development Company. Negative cash flow companies are not eligible.

Eligible Projects and Uses: A 504 loan can be used for assets that promote business growth and job creation, including the purchase or construction of existing land; building new facilities; long-term machinery and equipment with a useful life of 10+ years; and the improvement or modernization of land, streets, utilities, parking lots, landscaping, and existing facilities. Small businesses may bundle multiple 504 loans to finance projects that leverage clean energy technologies to lower production costs, improve energy efficiency, and/or contribute to emissions reductions goals. A project does not need to use fully commercialized technology to be eligible, though the structure of 504 loans is generally better suited for buying equipment or funding the construction of a facility/building rather than helping startups bridge the pre-revenue "valley of death."

Program Website: www.sba.gov/funding-programs/loans/504-loans

Point of Contact: 504Questions@sba.gov; find your Certified Development Company here.

Application Information: Applications are accepted at any time. 504 loans are available exclusively through Certified Development Companies. Find a Certified Development Company here, or use the Lender Match tool. Businesses must apply for the loan directly through the lender (not SBA), and the loan application will vary by lender.

Example Project: Greasecycle is a company that turns food waste material from restaurants and food manufacturers into renewable energy resources. To meet rising demand and reach new

markets, Greasecycle used a 504 loan to support a new capital investment of $6.4 million to purchase land and equipment and finance construction.

7(a) Loan Program

Federal Agency: Small Business Administration

Summary: SBA-guaranteed loans to small businesses that would otherwise not be able to access financing for a wide variety of projects, including acquiring new real estate, working capital, refinancing, and purchasing new equipment.

Financial Product: SBA-guaranteed loans

Deal Size: $5 million maximum; terms of 10 years or less unless the useful life of the project exceeds that window, in which case up to 25 years; lenders and borrowers negotiate the interest rate but it cannot exceed the SBA maximum of a base rate plus 3.0% for loans of greater than $350,000

Eligible Entities: Eligible entities include businesses that operate as a U.S. for-profit company, among other qualities. Small businesses are those with a tangible net worth of less than $15 million; average net income of less than $5 million after federal income taxes for the two years preceding the application; and/or fall within SBA size standards. 7(a) loans require a personal guaranty for owners of at least 20% ownership stake. The 7(a) program can incorporate projections into the underwriting process to allow a company to qualify for a loan based on their upcoming performance rather than their historical cash flow.

Eligible Projects and Uses: 7(a) loans can be used to:

- Acquire, refinance, or improve real estate and buildings
- Refinance business debt
- Purchase and install machinery, equipment, furniture, fixtures, and supplies
- Provide short- and long-term working capital to growing small businesses and help a business bridge the gap between product development and the marketplace
- Increase working capital to perform projects eligible for the Home Energy Rebates program, the Energy Efficient Home Improvement Credit, or the Residential Clean Energy Credit
- Upgrade the energy efficiency of facilities through the Department of Energy's IAC program by using the 7(a) Loan to meet the required 1:1 match.

Other Requirements: Find a participating SBA lender using the Lender Match tool. Businesses must apply for the loan directly through the lender (not SBA), and the loan application will vary depending on the loan size and the lender's processing method.

Program Website: www.sba.gov/funding-programs/loans/7a-loans

Point of Contact: SBA District Offices can provide in-person or virtual assistance. SBA's network of Resource Partners throughout the country is also available to help small businesses.

Application Information: Applications are accepted at any time. Use the Lender Match tool to connect with a participating SBA lender, and apply directly through the lender. The loan application varies by the size of the loan and the lender's processing method. The lender will help determine which documents are needed based on the borrower's circumstances.

Example Project: A solar power construction company that designs, builds, and services solar assets secured an SBA 7(a) loan to finance the construction of an innovative solar panel parking

canopy structure at a stadium that the company was contracted to help design, engineer, and build.

Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs

Federal Agency: SBA oversees and directs the administration of SBIR/STTR. Eleven agencies (USDA, DOC, DOD, ED, DOE, HHS, DHS, DOT, EPA, NASA, and NSF) participate in the SBIR program. Of these, six agencies (DOD, DOE, HHS, NASA, NSF, and USDA) also participate in the STTR program.

Summary: The SBIR and STTR programs help small private sector companies research, develop, and commercialize innovative technologies. Phase I funding is designed to support the technical merit, feasibility, and commercial potential of the proposed R&D activity. Phase II funding is designed to develop progress from Phase I, including demonstrating the scientific, technical, and commercial potential of the project.

Financial Product: Contracts, grants, and cooperative agreements (similar to grants though sponsor takes a more active role as a partner) with federal agencies for the performance of research, experimental, or developmental work

Deal Size: Roughly $50,000–$300,000 for Phase I projects (for 6 months via SBIR or 1 year via STTR) and $500,000–$2 million for Phase II projects (for roughly 2 years).

Eligible Entities: Eligible entities must be U.S-based for-profit small businesses (no more than 500 employees) that are more than 50% owned by U.S. citizens or permanent residents. The STTR program requires a partnership with a non-profit research institution (e.g., university, federally funded R&D center, or domestic nonprofit research organization) that is located in the United States. These programs fund companies developing early-stage technologies, including those that are pre-revenue and without a history of positive cash flows. Small businesses pursuing innovative and high-risk research and development projects with commercial potential are eligible to apply.

Eligible Projects and Uses: Eligible topic areas for funding depend on the specific SBIR/STTR program administered by each participating federal agency. Current and previous funding topics are available on the SBA SBIR/STTR webpage. Previous funding awards are also available online.

Program Website: More information on programs across all agencies are available on the SBA SBIR/STTR webpage as well as agency-specific webpages.

Point of Contact: Connect with SBA at technology@sba.gov

Application Information: More applicant information is available on the SBIT/STTR Get Started Page for entrepreneurs.

Example Project: Previous funding awards are also available online. Previous examples of awardees through the Department of Energy's SBIR/STTR programs are available on the DOE SBIR webpage.

Make More in America Initiative

Federal Agency: Export-Import Bank (EXIM)

Summary: Loans and loan guarantees—generally for deals of greater than $10 million in size—to businesses with an export nexus, especially for domestic manufacturing projects.

Financial Product: Loans and loan guarantees; interest rates depend on the risk of the project and duration of the loan. Interest rates on guaranteed loans are negotiated between the borrower and lender. On top of the interest rate, EXIM charges a risk-adjusted premium, ranging from 0.9–3.15%.

Deal Size: Generally greater than $10 million, no maximum

Eligible Entities: Eligible entities include U.S. businesses and foreign businesses building and/or expanding production facilities in the United States. Generally, pre-revenue companies would not meet EXIM's requirement for reasonable assurance of repayment; borrowers do not need to be cash flow positive initially if a clear path to profitability exists. Appropriate capitalization will be determined on a case-by-case basis depending upon the business risk associated with the project. Projects performing R&D activities, conducting trials, or undertaking demonstrations are not eligible.

Eligible Projects and Uses: Projects must meet EXIM's standard due diligence procedures and additionality requirements. Projects also must have an export nexus of 15% for small businesses, transformational export areas, and climate-related transactions. Projects in other sectors require an export nexus of 25% or more. The EXIM financing for a given project will be scaled based on the number of U.S. jobs supported, both during construction and over the life of EXIM's financing; each job year allows for up to $205,336 in financing.

Other Requirements: EXIM generally requires proven, commercial technologies for this program (Technology Readiness Level 8/9), though EXIM may be able to support corporate transactions with newer technology if EXIM can still meet its mandated reasonable assurance of repayment. For reasonable assurance of repayment, EXIM generally requires a minimum three-year revenue-producing history and proven debt service capacity. Loan cannot exceed 40% of the tangible net worth of the borrower.

Program Website: www.exim.gov/about/special-initiatives/make-more-in-america-initiative

Point of Contact: Domestic.Finance@exim.gov

Application Information: Applications are accepted at any time. Schedule a Free Export Consultation.

Example Project: A more than $160 million direct loan to a small business to expand capacity for electric aircraft and charging infrastructure manufacturing. The loan from EXIM will support the development of the company's net-zero manufacturing in the United States. Details here.

EXIM Working Capital Guarantee Program

Federal Agency: Export-Import Bank

Summary: EXIM-guaranteed loans, usually for more than $1 million, to U.S. businesses to provide working capital that supports growing exports.

Financial Product: EXIM guaranteed loans issued by Delegated Authority Lenders; can be transaction-specific loan or revolving line of credit. Interest rate is negotiated between borrower and guaranteed lender, with EXIM charging annual fees to the lender ranging from 0.25% to 1.10% depending on loan size.

Deal Size: No minimum or maximum (interest rate negotiated between lender and borrower). While there is technically no minimum loan amount, given due diligence costs, loans generally are for more than $1 million. The total size of the loan is dependent on the borrowing base (collateral for loan).

Eligible Entities: Eligible entities include businesses that have the potential to export but lack sufficient working capital through lenders to support export efforts. Generally, companies would likely need to have a positive cash flow and be using commercial technology (technology readiness level 8 or 9) for a lender to be willing to lend. Businesses must apply for the loan directly through the lender.

Eligible Projects and Uses: Guaranteed loans can help projects pay for materials, equipment, supplies, labor, and other inputs to fulfill export orders. Guarantees can also go toward posting standby letters of credit.

Program Website: https://www.exim.gov/solutions/working-capital

Point of Contact: Request a free consultation here. A list of delegated authority lenders can be found here.

Application Information: Applications are accepted at any time. Schedule a Free Export Consultation.

Example Project: $350,000 Loan Facility for Halogen Systems, Inc, a small business located in Reno, Nevada that manufactures sensors for ballast water treatment.

Title 17 Clean Energy Financing Program

Federal Agency: Department of Energy

Bureau: Loan Programs Office

Summary: Loans guaranteed by DOE to support project developers, clean energy technology manufacturers, service providers and regulated utilities retooling, repowering, repurposing or replacing energy infrastructure, or deploying technically proven but not yet widely commercialized energy or energy supply chain projects. This program advances the Justice40 Initiative.

Financial Product: Loan guarantees in the form of (1) direct loans from Treasury's Federal Financing Bank guaranteed by Department of Energy (interest rates equal to U.S. Treasuries of comparable maturity plus 0.375% and a risk-based charge[1]) or (2) DOE partial guarantees of commercial debt.

Deal Size: No minimum project size but the Loan Programs Office typically finances projects of $100 million or more due to fixed costs of the application process and loan monitoring.

Eligible Entities: Eligible entities include, but are not limited to, corporations, partnerships, joint ventures, regulated utilities, trusts, and public-private partnerships. Projects must avoid, reduce, or sequester anthropogenic greenhouse gas emissions or air pollutants and provide a reasonable prospect of repayment. Applications with a major equity sponsor have a better chance of securing a loan.

Eligible Projects and Uses: Projects in the U.S. that support clean energy deployment and energy infrastructure reinvestment to reduce greenhouse gas emissions and air pollution. Projects must be located in the U.S., have a reasonable prospect of repayment, involve technically viable technologies, not benefit from prohibited federal support, and be an energy-related project. There are four categories for funding:

- Innovative Energy or Innovative Supply Chain: Projects that deploy innovative clean energy technologies at commercial scale OR employ innovative manufacturing processes or manufacture innovative technologies at commercial scale.
- State Energy Financing Institution-Supported: Projects that support the deployment of qualifying clean energy technology and receive meaningful financial support or credit enhancements from an entity within a state agency or financing authority.
- Energy Infrastructure Reinvestment: Projects that retool, repower, repurpose, or replace no longer operational energy infrastructure or upgrade operating energy infrastructure to avoid, reduce, utilize, or sequester air pollutants or greenhouse gas emissions.

Other Requirements: There is no application fee. The borrower is responsible for paying expenses incurred by the Loan Program Office's external advisors during project due diligence, a facility fee due at financial close, and maintenance fees due annually after financial close. The application includes pre-application consultations, a two-part application, and financial and technical due diligence. Applicants should expect at least 12 months between submitting the first part of the application and the close of the loan, with timing based on applicant readiness for due

[1] The Loan Programs Office may waive or reduce the risk-based charge for certain projects.

diligence, project complexity, and completion of NEPA review. Borrowers must also create a Community Benefits Plan with the help of the Loan Programs Office. DOE cannot issue loan guarantees to projects that are expected to benefit from certain other forms of federal support, including grants, cooperative agreements, other loan guarantees from federal agencies or entities (otherwise allowable federal tax benefits are permitted).

Program Website: www.energy.gov/lpo/title-17-clean-energy-financing

Point of Contact: Request a no-fee, no-commitment pre-application: Title 17 - CEF Consultation Request (energy.gov)

Application Information: Applications are accepted at any time. Begin with a no-fee, no-commitment pre-application consultation to discuss the proposed project. The application process is standard across the four Title 17 project categories and is designed to identify strong candidates for LPO financing, support them in preparing comprehensive applications, and assess the risk and value of the proposed projects. The stages are: (1) pre-application, (2) two-part application and review, (3) due diligence, (4) conditional commitment, (5) financial close, and (6) monitoring. The duration varies based on the applicant's level of preparation and project complexity, but it typically takes a minimum of six months to more than a year.

Example Project: In June 2022, DOE LPO issued a more than $500 million loan guarantee for a clean hydrogen and energy storage facility to provide long-term, seasonal energy storage. The project uses electrolyzers and intermittent renewable energy resources to produce and storage hydrogen for future use.

Advanced Technology Vehicle Manufacturing Loan Program

Federal Agency: Department of Energy

Bureau: Loan Programs Office

Summary: Senior, secured debt at U.S. Treasury rates to support the manufacture of eligible advanced technology vehicles and qualifying components. This program advances the Justice40 Initiative.

Financial Product: Loans

Deal Size: Typically, $100 million or more (generally higher)[2] for up to 80% of project costs. Interest rates are set at U.S. Treasury rates of comparable maturity for the term of the loan with no credit spread.

Eligible Entities: Eligible entities include manufacturers of eligible advanced technology vehicles or of qualifying components at commercial scale. Projects must use technically viable and commercially ready technology and provide a reasonable prospect of repayment. Applications with a major equity sponsor have a better chance of securing a loan.

Eligible Products and Uses: Projects must meet all of the following requirements:

- Manufacture eligible advanced technology vehicles or components. Advanced technology vehicles are light-duty, medium-duty, heavy-duty vehicles that (1) meet or exceed a 25% improvement in fuel efficiency beyond a 2005 model year base-line of comparable vehicles, and/or (2) have a fuel efficiency of 75 miles per gallon or equivalent using alternative fuels. Advanced technology vehicles also include locomotives, maritime vessels, aircraft, and hyperloop technologies if those vehicles emit, under any possible operational mode or condition, low or zero exhaust emissions of greenhouse gases.
- Build new facilities; reequip, modernize, or expand existing facilities; and/or engineering integration related to the manufacturing of eligible vehicles or components.
- Be located in the United States and provide a reasonable prospect of repayment.
- Demonstrate that the applicant has sufficient funds to carry out the project and is not dependent on other federal support.

Other Requirements: There is no application fee. The borrower is responsible for paying expenses incurred by the Loan Program Office's independent advisors related to the project, as well as a closing fee at equal to 0.1% of the maximum principal amount of the loan. Applicants must include a Community Benefits Plan.

Program Website: www.energy.gov/lpo/advanced-transportation-financing

Point of Contact: Atvmloan@hq.doe.gov for a no-fee, no-commitment consultation.

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[2] Eligible project costs include those that are reasonably related to re-equipping, expanding, or establishing manufacturing facilities in the U.S.; the cost of engineering integration performed in the U.S.; and reasonably incurred advisory costs.

Application Information: Applications are accepted at any time. Potential applicants are encouraged to engage directly with DOE for no-fee, no-commitment consultations to start a conversation about the project and about DOE's process before formally applying. The stages are: (1) pre-application, (2) application, (3) preliminary due diligence/preliminary terms and conditions, (4) advanced due diligence and term sheet negotiation, and (5) loan closing. The duration varies based on the applicant's level of preparation and project complexity, but it typically takes a minimum of six months to more than a year.

Example Project: In 2022, DOE LPO closed a $2.5 billion loan to a battery company to help build three new lithium-ion battery manufacturing facilities in the United States. The batteries will be intended for use in light-duty electric vehicles.

Tribal Energy Loan Guarantee Program

Federal Agency: Department of Energy

Bureau: Loan Programs Office

Summary: The Tribal Energy Loan Guarantee Program supports Tribal investment in energy-related projects by providing loan guarantees to federally recognized Tribes, including Alaska Native villages or regional or village corporations, or a Tribal Energy Development Organization that is wholly or substantially owned by a federally recognized Indian Tribe or Alaska Native Corporation. This program advances the Justice40 Initiative.

Financial Product: Loan guarantees, including guarantees of U.S. Treasury Federal Financing Bank loans or guarantees of third-party loans

Deal Size: No statutory minimum or maximum

Eligible Entities: DOE's tribal energy financing is available to federally recognized Tribes, including Alaska Native village or regional or village corporations, or a Tribal Energy Development Organization that is wholly or substantially owned by a federally recognized Tribe.

Eligible Projects and Uses: Loan guarantees can be made for a variety of energy resources, products, and services that utilize commercial technology (innovative technology is permitted but not required). Projects utilizing innovative technologies may wish to consider the Loan Programs Office's Title 17 Innovative Energy Loan Guarantee Program. Projects may be located within or outside of tribal lands (including trust and/or non-trust land) in the U.S. or its territories, and can involve a single site or a distributed energy portfolio. Projects must demonstrate reasonable prospect of repayment.

Other Requirements: No additional cost share requirement. Applicants must include a Community Benefits Plan.

Program Website: https://www.energy.gov/lpo/tribal-energy-loan-guarantee-program

Point of Contact: Request a no-cost pre-application consultation: Tribal Energy Consultation Request

Application Information: DOE will evaluate applications in two phases. Following a favorable determination based on this two-phase review, DOE will commence more extensive due diligence and the negotiation of transaction terms. DOE would then proceed to offer a term sheet and conditional commitment for a partial loan guarantee. Upon satisfaction of conditions precedent, DOE would then provide the partial loan guarantee. Please read the solicitation for further information about the evaluation process.

Example Project: DOE announced a conditional commitment for an up to $72.8 million partial loan guarantee to finance the development of a solar-plus long-duration energy storage microgrid on the Tribal lands of the Viejas Band of the Kumeyaay Indians.

Carbon Dioxide Transportation Infrastructure

Federal Agency: Department of Energy

Bureau: Loan Programs Office and Fossil Energy and Carbon Management

Summary: Long-term, low-cost loans, loan guarantees, and/or grants for construction-ready common carrier carbon dioxide transportation projects with total project costs that exceed $100 million. This program advances the Justice40 Initiative.

Financial Product: Direct loans via the U.S. Treasury Federal Financing Bank guaranteed by DOE, DOE-guaranteed third-party loans, and grants

Deal Size: $100 million or more (generally higher) for up to 80% of eligible project costs[3] (rates equal to U.S. Treasury-equivalent yield curve with zero credit spread; long-term tenors equal to the shorter of thirty-five years or the useful life of the asset)

Eligible Entities: Eligible entities include corporations, joint ventures, and public-private partnerships at commercial scale. Projects must use technically viable and commercially ready technology and demonstrate a reasonable prospect of repayment.

Eligible Projects and Uses: The project must be a reasonably construction-ready common carrier carbon dioxide transportation project in the U.S. with total project costs of over $100 million that will transport captured carbon dioxide by pipeline, shipping, rail, or other transportation infrastructure for storage or use.

CIFIA loans cannot be drawn to finance the scope and/or phase of a project that is also financed through other federal assistance, like grants or other LPO loans. However, the sources of funding can be sequenced such that CIFIA loans are drawn for later stages of deployment after other funds have already been dispersed.

Other Requirements: The application involves pre-application consultations, a letter of interest, and a full application. Applicants should expect at least 12 months between submitting a letter of interest and the close of the loan, with timing based on due diligence and completion of NEPA review. A financing fee is due to the federal government from the obligor at financial close of the loan, loan guarantee, or grant; this fee will not exceed $3 million. The project must be able to attract additional investment to fund costs not covered by the federal government. Applicants must include a Community Benefits Plan.

Program Website: www.energy.gov/lpo/carbon-dioxide-transportation-infrastructure

Point of Contact: Request a no-fee, no-commitment pre-application consultation

Application Information: Applications are accepted at any time. Potential applicants are encouraged to engage directly with DOE for no-fee, no-commitment consultations to start a conversation about the project and about DOE's process before formally applying. The stages are: (1) pre-application, (2) letter of interest, (3) full application, (4) due diligence and term sheet

[3] Eligible project costs include development-phase activities, construction, reconstruction, and acquisition of real property, environmental mitigation, installing equipment, transaction costs associated with financing the project, and reasonably required Reserve Accounts and carrying costs during construction

negotiation, and (5) financial close. Applicants should expect at least 12 months between submitting a letter of interest and the financial close of the loan with timing based on the speed of due diligence and NEPA review. Full application guidance is available here. Request a pre-application consultation here.

Example Project: A hypothetical example would be a CO2 pipeline developer applying for a loan to construct pipelines that connect an emitter to a CO2 storage site. A CO2 pipeline operator may request a grant to incorporate additional capacity beyond what is currently required, such as longer laterals or larger diameter pipeline.

Energy Efficiency and Renewable Energy Grants

Federal Agency: Department of Energy

Bureau: Office of Energy Efficiency & Renewable Energy

Summary: Grants and/or cooperative agreements available on an annual basis for advancing the research, development, demonstration, and deployment of clean energy technologies that show viable pathways for decarbonizing the energy, transportation, agriculture, building, and industrial sectors. Each funding opportunity is tailored to specific clean energy technologies. This program advances the Justice40 Initiative.

Financial Product: Financial assistance such as grants, cooperative agreements (similar to grants, though sponsor takes a more active role as a partner)

Deal Size: Awards generally range from $20,000 to $300 million. Average grants and awards are roughly $2–4 million.

Eligible Entities: Eligible entities vary by financial assistance program type but generally include non-profit organizations, industry, small businesses, universities, national laboratories, and more. Revenue or cash flow requirements, technology readiness level (TRL), and other eligibility vary depending on the size, purpose, and issuing office of the funding opportunity announcements (FOAs).

Eligible Projects and Uses: Eligible projects include those engaged in clean energy technology development in a number of industries, including renewable energy, bioenergy, grid modernization, transportation, building efficiency and energy management, manufacturing process efficiency and supply chain innovation, industrial carbon management, and critical materials.

Other Requirements: Application processes vary by funding opportunity. Generally, applicants must submit concept papers, and will receive encourage/discourage notifications from the Department of Energy as to whether to submit a full application. Generally, research and development projects require a non-federal cost share of at least 20%, and demonstration and commercial projects require a non-federal cost share of at least 50%. Applicants must include a Community Benefits Plan.

Program Website: www.energy.gov/eere/funding/eere-funding-opportunities

Point of Contact: eere.funding.webmaster@ee.doe.gov; Learn more about funding contacts at https://www.energy.gov/eere/funding/eere-funding-contacts

Application Information: The EERE Funding Opportunity eXCHANGE portal serves as the home base for registering, monitoring, and applying for financial opportunities. Typically, funding opportunities are preceded by a request for information and/or a notice of intent to help DOE scope the need for the program and serve as advanced notice to applicants of a forthcoming funding opportunities. The application stages are: (1) concept papers, (2) full application, (3) selection stage, (4) negotiation stage, and (5) project performance. For more information, click here.

Example Project: An early-stage climate tech startup was awarded $5 million to validate and demonstrate their Argon Power Cycle (APC) to enable efficient and low-cost carbon capture

from low carbon fuels and boost the efficiency of combined heat and power (CHP) generation systems. APC can potentially enable decarbonization through retrofitting existing reciprocating engines to reduce NOx emissions by 100%, increase electricity generation efficiency by up to 45%, and increase CHP efficiency up to 75% compared to gas fired engines. The company was supported by National Laboratory project partners.

ARPA-E SCALEUP Program

Federal Agency: Department of Energy

Bureau: Advanced Research Projects Agency - Energy

Summary: Cooperative agreements with cost-sharing requirements to high-potential, high-impact ARPA-E-funded energy technologies that are too early for private-sector investment with funding, technical assistance, and market readiness to achieve commercial scalability. This program advances the Justice40 Initiative.

Financial Product: Cooperative agreements (similar to grants though sponsor takes a more active role as a partner), grants

Deal Size: Awards generally range between $5 million and $20 million

Eligible Entities: Eligible entities must own or control subject invention(s) or software arising from ARPA-E award(s). Entities must also include commercial partners, including end-users or suppliers. Pre-cash flow and pre-revenue companies are eligible to apply for ARPA-E awards.

Eligible Projects and Uses: Projects must focus on scaling-up transformative technologies that ARPA-E has previously funded and which would substantially build upon the innovations achieved under an original award. This program funds early-stage companies, including those developing innovative new technologies that have yet to be piloted, though applicants have previously benefitted from ARPA-E awards in order to be eligible for SCALEUP funding.

Other Requirements: Generally, research and development projects require a non-federal cost share of at least 20%, and demonstration and commercial projects require a non-federal cost share of at least 50%. Applicants must include a Community Benefits Plan.

Program Website: www.arpa-e.energy.gov/technologies/scaleup

Point of Contact: arpa-e-co@hq.doe.gov

Application Information: The ARPA-E Funding Opportunity eXCHANGE portal serves as the home base for registering, monitoring, and applying for financial opportunities. The application process involves a concept paper followed by a full application and oral interview.

Example Project: A start-up used ARPA-E support for a long-duration storage project to develop its modified pumped hydropower energy storage system. The company received a $10 million SCALEUP award to fund its first commercial development with a municipal utility in Texas.

Grid Resilience and Innovation Partnerships (GRIP) Program

Federal Agency: Department of Energy

Bureau: Grid Deployment Office

Summary: Grants with cost-sharing requirements to fund well established grid technologies ready to be deployed at scale focused on increasing transmission system capacity, preventing grid failures, integrating renewable energy, and facilitating integration of EVs and other new technologies. This program advances the Justice40 Initiative.

Financial Product: Grants

Deal Size: $1 million–$500 million, though not necessarily indicative of future award size

Eligible Entities/Projects and Uses:

Grid Resilience and Utility and Industry Grants

- **Eligible Entities:** Grid operators, storage operators, electricity generators, transmission owners/operators, distribution providers, and fuel suppliers.
- **Eligible Projects and Uses:** This program invests in projects that modernize grid infrastructure and improve energy resilience.

Smart Grid Grants

- **Eligible Entities:** Institutes of higher education, for-profit and non-profit entities, state and local governments, and tribal nations.
- **Eligible Projects and Uses:** This program invests in projects that increase transmission capacity, improve the visibility of the electrical system, and anticipate and mitigate the impacts of extreme weather.

Other Requirements: Applicants must include a Community Benefits Plan.

Program Website: https://www.energy.gov/gdo/grid-resilience-and-innovation-partnerships-grip-program

Point of Contact: GRIP@hq.doe.gov

Application Information: Please check the program website for updates about possible funding opportunities in the future.

Example Project: In a previous funding round, DOE announced up to $50 million to a private company to provide home battery systems, thermostats paired with heat pumps, and hot water heater load control switches to help provide load flexibility for households. Together, these technologies and grid services will help manage the load impact of electrification on the broader grid.

Carbon Capture Large-Scale Pilot Projects

Federal Agency: Department of Energy

Bureau: Office of Clean Energy Demonstrations

Summary: Awards for carbon capture pilot projects to test novel technologies under relevant conditions in both the power and industrial sectors. This program is covered by the Justice40 Initiative.

Financial Product: Grants, cooperative agreements (similar to grants though sponsor takes a more active role as a partner), or other products

Deal Size: To be determined. The current program average is $76 million per selectee.

Eligible Entities: Institutions of higher education, non-profit entities, for-profit entities, Tribal Nations, State and local governmental entities, incorporated consortia, unincorporated consortia. While there are cost share requirements, there are no pre-revenue or pre cashflow requirements to receiving funding. Previous funding opportunities have focused on carbon capture technologies with a technology readiness level of 5 or higher (laboratory scale technology, see page 91 of Funding Opportunity Announcement for more details).

Eligible Projects and Uses: Projects that (i) represent the scale of technology development beyond laboratory development and bench scale testing, but not yet advanced to the point of being tested under real operational conditions at commercial scale; (ii) represent the scale of technology necessary to gain the operational data needed to understand the technical and performance risks of the technology before the application of that technology at commercial scale or in commercial-scale demonstration; and (iii) are large enough to validate scaling factors; and to demonstrate the interaction between major components so that control philosophies for a new process can be developed and enable the technology to advance from large-scale pilot project application to commercial-scale demonstration or application.

Other Requirements: See website below. Additional requirements to be specified in future notices of funding opportunities. Applicants must include a Community Benefits Plan.

Program Website: https://www.energy.gov/oced/CCpilots

Point of Contact: OCED@hq.doe.gov

Application Information: Information on future rounds of funding may be found at Carbon Capture Large-Scale Pilot Projects | Department of Energy

Example Project: DOE has selected a project for award negotiations for up to $95 million in funding for a carbon capture system at an oil refinery. The project aims to capture 145,000 metric tons of CO2 per year. The pilot will help demonstrate a second-generation post-combustion carbon capture process to capture at least 90% to carbon emissions from one of the refinery's cracking units, and the associated captured CO2 will be transported by pipeline for storage and utilization.

Long Duration Energy Storage Demonstrations and Pilot Grants

Federal Agency: Department of Energy

Bureau: Office of Clean Energy Demonstrations

Summary: Awards with cost-sharing requirements to help reach commercial deployment of energy storage projects by demonstrating their commercial viability. This program is covered by the Justice40 Initiative.

Financial Product: Grants, cooperative agreements (similar to grants though sponsor takes a more active role as a partner), or other products

Deal Size: To be determined.

Eligible Entities: Eligible entities include technology developers, industry, state and local governments, Tribal organizations, community-based organizations, national laboratories, universities, and utilities. Pre-cash flow and pre-revenue companies are eligible to apply. Exact eligibility details are still under development.

Eligible Projects and Uses: Further details will be available when future funding opportunities are announced. Projects are anticipated to reduce risks and increase commercial viability of energy storage technologies in different use-cases.

Other Requirements: See website below. Additional requirements to be specified in future notices of funding opportunities. Applicants must include a Community Benefits Plan.

Program Website: www.energy.gov/oced/long-duration-energy-storage-demonstration-initiative-and-joint-program

Point of Contact: OCED@hq.doe.gov

Application Information: Future rounds of funding are expected to be announced by the end of 2024

Example Project: Previous selections in this portfolio include lithium ion, zinc anode, zinc bromide, iron air, and vanadium flow batteries, as well as compressed CO2 and pumped thermal energy storage, though this may not necessarily be reflective of future eligibility or selection criteria. Please see future funding opportunities for more details, when announced.

Carbon Capture Demonstration Projects Program Grants

Federal Agency: Department of Energy

Bureau: Office of Clean Energy Demonstrations

Summary: Cooperative Agreements with cost-sharing requirements to help accelerate the demonstration and deployment of carbon capture technologies. This program is covered by the Justice40 Initiative.

Financial Product: Grants, cooperative agreements (similar to grants though sponsor takes a more active role as a partner), or other products.

Deal Size: The current program average is approximately $300 million per selectee, though previous averages are not necessarily indicative of future award sizes.

Eligible Entities: Eligible entities include technology developers, industry, utilities, universities, national laboratories, engineering and construction firms, state, Tribal, and local governments, environmental groups, and community-based organizations. While there are cost share requirements, there are no pre-revenue or pre cashflow requirements to receiving funding. Previous funding opportunities have focused on carbon capture technologies with a technology readiness level of 7 or higher (system prototype demonstration in operational environment).

Eligible Projects and Uses: Of the demonstration projects carried out, two shall be designed to capture carbon dioxide from a natural gas electric generation facility; two shall be designed to capture carbon dioxide from a coal electric generation facility; and two shall be designed to capture carbon dioxide from an industrial facility not purposed for electric generation. OCED has already selected two natural gas electric generation facilities and one coal electric generation facility.

Other Requirements: See website below. Additional requirements to be specified in future notices of funding opportunities. Applicants must include a Community Benefits Plan.

Program Website: www.energy.gov/oced/Ccdemos

Point of Contact: CCdemoprojectsprogram@hq.doe.gov

Application Information: Future rounds of funding are expected. More information on future rounds of funding may be found here.

Example Project: DOE has selected a project for award negotiations for up to $270 million to implement carbon capture technology at the point of production at a natural gas facility. The project will use a solvent to help capture up to 2 million tons of CO2 annually. The project has incorporated community feedback to reduce non-CO2 air pollutants in addition to minimizing freshwater usage, and has committed to creating a strong Community Benefits Plan with local stakeholders that prioritizes equity, justice, and creation of quality, good-paying local jobs.

Qualifying Advanced Energy Project Credit (48C) program (Round 2)

Federal Agency: Treasury Department, in partnership with the Department of Energy

Bureau: Internal Revenue Service and DOE Office of Manufacturing and Energy Supply Chains

Summary: The Qualifying Advanced Energy Project Credit provides a tax credit of up to 30% for clean energy manufacturing and recycling, industrial decarbonization, or critical materials projects. Pre-revenue and pre-cash flow companies are eligible to apply.

Financial Product: Up to a 30% Investment Tax Credit

Deal Size: There is a total of $10 billion of allocated credits available ($6 billion for Round 2), with $4 billion set aside for projects in certain energy communities. There is no limit or maximum credit per project within the $10 billion amount ($6 billion for Round 2).

Eligible Entities: Eligible entities for the §48C tax credit include clean energy manufacturers and recyclers; critical materials processors, refiners, and recyclers; and industrial facilities planning GHG emissions-reduction projects. Revenue and positive cash flow are not required.

Eligible Projects and Uses: Demonstration projects are not eligible; this is designed for commercially viable projects that produce equipment or decarbonize. Projects that build, expand, or reequip manufacturing or industrial facilities are eligible to apply for an investment tax credit of up to 30%. These projects include:

- Re-equipping, expanding, or establishing an industrial or manufacturing facility that manufactures or recycles advanced energy properties including grid components, solar, wind, or nuclear.
- Retrofitting an industrial or manufacturing facility, particularly in energy-intensive sectors (cement, iron and steel, aluminum, and chemicals), which must include the installation of equipment specifically designed to reduce greenhouse gas emissions by at least 20%.
- Re-equipping, expanding, or establishing an industrial facility for the processing, refining, or recycling of critical materials.

Other Requirements: To receive the full value of the 48C credit, projects must meet prevailing wage and registered apprenticeship standards. Of the total $10 billion in tax credits available as a result of the expansion of the 48C program under the Inflation Reduction Act, at least $4 billion must go to qualifying projects in communities that have been directly impacted by the closure of a coal mine or coal-fired power plant.

Program Website: https://www.energy.gov/infrastructure/qualifying-advanced-energy-project-credit-48c-program

Point of Contact: 48CQuestions@hq.doe.gov

Application Information: Concept papers for Round 2 are due in June 21, 2024 at 5pm EST. The program website provides information on to Round 2 guidance, concept paper templates, and informational webinars. Applications will be evaluated across criteria including commercial viability; greenhouse gas emission impact; strengthening U.S. supply chains and domestic manufacturing for a net-zero economy; and workforce and community engagement.

Example Project: Tax credit for the construction of a new facility to manufacture underwater and underground cables for Offshore Wind and Grid Modernization applications. More details from Round 1 are available are available at the Department of Energy website.

Indian Loan Guarantee and Insurance Program (ILGP)

Federal Agency: Department of the Interior

Bureau: Bureau of Indian Affairs (BIA)

Summary: Through the Indian Loan Guarantee and Insurance Program, the Division of Capital Investment helps American Indian and Alaska Native Tribes and individuals overcome barriers to conventional financing and secure reasonable interest rates, while also reducing the risk to lenders by providing financial backing from the federal government.

Financial Product: BIA loan guarantees and loan insurance

Deal Size: The maximum loan amount guaranteed for individuals is $500,000. Loans, subject to program and policy limitations, can be guaranteed up to 90%. Loan insurance, primarily for loans of $250,000 or less, is up to the discretion of the lender who are typically Native Community Development Financial Institutions.

Eligible Entities: Borrowers must be an individual who is an enrolled member of a federally recognized American Indian and Alaska Native (AI/AN) Tribe or group; a federally recognized AI/AN group; or a corporation, limited liability company or other business entity with no less than 51% ownership by federally recognized AI/AN individuals. Borrowers must have at least 20% equity in the project being financed, and the project must benefit the economy of a reservation or Tribal service area. Most lending institutions may obtain a guarantee or insurance provided they regularly make and evaluate business loans. Positive revenue and cash flow are required for this program, though the program accepts Accounts Receivable and Inventory for pre-revenue and/or pre-positive cash flow businesses.

Eligible Projects and Uses: Loans may be used for a variety of purposes including operating capital, equipment purchases, acquisition and refinancing, building construction, and lines of credit. This program does not take technology risk; it is designed for commercially available technologies.

Other Requirements: If the loan will be used for refinancing, construction, renovation, or demolition work, there are additional requirements.

Program Website: https://www.bia.gov/service/loans/ilgp

Point of Contact: Onna LeBeau, Director, Office of Indian Economic Development, dci@bia.gov.

Application Information: Applications are accepted at any time.

Example Project: The program approved a project loan to finance expansion of a Tribal member's organic juice company with a $250,000 loan, later increased to a $350,000 line of credit. The pandemic boosted sales of healthy food products, and the company found a growing market. One hypothetical example would be a loan guarantee for a Tribal government-owned company looking to deploy a solar or wind energy project on Tribal land.

USTDA Project Preparation Assistance

Federal Agency: U.S. Trade and Development Agency

Summary: USTDA links U.S. businesses to export opportunities by funding project preparation and partnership building activities that develop sustainable infrastructure and foster economic growth in partner countries, including pilot projects for technologies that may be deployed domestically in the future.

Financial Product: USTDA grants for feasibility studies, technical assistance, or pilot projects for infrastructure projects.

Deal Size: Generally between $500,000–$1.5 million

Eligible Entities: Eligible entities include qualified and experienced U.S. companies to carry out the USTDA-funded project preparation work; this generally refers to financially solvent companies with the technical capability to conduct early-stage project development analysis. Pre-cash flow or pre-revenue companies are not eligible. The U.S. company may work with sub-contractors and local labor under the USTDA-funded grant.

Eligible Projects and Uses: USTDA provides grant funding for project preparation support at the early stage of the project development life cycle, prior to financial close. USTDA's project preparation tools include feasibility studies, technical assistance and pilot projects. USTDA grant funding supports labor, travel, and other associated costs for a U.S. contractor to carry out the scope of work of a grant agreement. USTDA does not provide project implementation financing or fund R&D activities, trials to prove the commercial viability of a new technology, or equipment purchases.

Program Website: https://www.ustda.gov/work/

Point of Contact: U.S. firms are strongly encouraged to contact the appropriate USTDA regional team to discuss specific project concepts prior to proceeding with a formal proposal. A list of contacts can be found here.

Application Information: Proposals are accepted at any time.

Example Project: USTDA provided funding for a feasibility study to support the National Institute of Ocean Technology (NIOT) of India in the development of clean energy to replace fossil fuel generation in the Andaman and Nicobar Islands. The study will assess the implementation of innovative ocean thermal energy conversion (OTEC) technology to produce renewable energy for electricity generation. The feasibility study will explore the viability and implementation of two OTEC power plants in the Andaman and Nicobar Islands, which are currently almost completely dependent on diesel generators for power generation. The project is the first of its kind in India. NIOT selected Virginia-based PCCI, Inc., to conduct the study. Washington, D.C.-based advisory firm Delphos International, Ltd. will carry out the study in coordination with Malaysian power utilities Tenaga Nasional Berhad and Sabah Electricity Sdn Bhd.

Strategic Environmental Research and Development Program (SERDP) and Environmental Security Technology Certification program (ESTCP)

Federal Agency: Department of Defense

Summary: The SERDP and ESTCP programs help fund environmental, resilience, and installation energy and water technologies to enhance capabilities and sustain operations at military installations. SERDP invests in basic research, applied research, and advanced development. ESTCP invests in bringing technologies with developed proof-of-concepts to the field or production use.

Financial Product: Federal Acquisition Regulation- and Other Transaction Authority-based contracts for research, development, test, and evaluation projects.

Deal Size: Typically $1 million–3 million over three years

Eligible Entities: Projects are led by researchers at companies, academia, and government labs. For-profit companies are eligible to apply. Start-up and early-stage climate companies are eligible. SERDP funds early-stage projects and technologies (TRL 2–4), and ESTCP funds demonstration and validation projects (TRL 4–7). Many ESTCP technologies transition directly into the commercial market.

Eligible Projects and Uses: All SERDP and ESTCP funding areas are available on the program webpage's Focus Areas website. One of the core focus areas is energy, including energy efficiency and energy resilience, as well as natural and built infrastructure (including climate change adaptation strategies and carbon sequestration).

Program Website: More information on both programs is available at https://serdp-estcp.mil/

Point of Contact: SERDP ESTCP Executive Director, Dr. Kimberly Spangler, (571) 372-6565

Application Information: To learn more about the funding process, see FAQs, and view additional information, visit DOD's SERDP and ESTCP Working With Us page. Solicitations are conducted on an annual basis with some opportunities for off-cycle submissions that are announced on the website and SAM.gov.

Example Project: DOD has previously supported, through the ESTCP program, funding for a feasibility study to design and demonstrate a Green Hydrogen System at DOD installations. The goal of the project will be to identify opportunities to leverage green hydrogen as energy storage for mission-critical operations.