

The Inflation Reduction Act: A Boon for American Clean Energy—But When?

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The IRA Is Pro-Clean Energy and Pro-American

The Inflation Reduction Act (IRA) has been called historic, transformative, and imperfect. But despite detractors' criticisms, the IRA is the most significant piece of climate change legislation US lawmakers have ever passed—albeit some 57 years after an American president (Lyndon B. Johnson) was first briefed on the potential crisis. With the recent rise in extreme weather events, drought, heat waves, and forest fires, the detrimental impacts of climate change can no longer be denied, and Congress has taken action. **Negotiating a bill all parties could support, however, required compromises that could limit the law's effectiveness or even generate unintended negative consequences in the near term.**

The IRA commits nearly \$370 billion in funding and tax incentives to clean energy investment and emerging technologies, and emphasizes the decarbonization of manufacturing in the US, domestic sourcing of materials, the creation of new energy economy jobs for Americans, and support for electrification and energy efficiency in disadvantaged communities. It takes a significant step toward the Biden administration's stated goal of cutting greenhouse gas (GHG) emissions to just half of 2005 levels by 2030; indeed, according to several early analyses, the IRA could result in a ~40% reduction in GHG in the next seven years.

The IRA represents a massive policy shift that can benefit green energy economy stakeholders over the long term, but it includes some provisions that could slow or inhibit immediate investment. For example, **domestic content requirements for materials such as lithium immediately disqualify certain EVs available in the US today from the IRA's attractive tax incentives.**

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In this white paper, Guidehouse Insights provides its early-stage analysis of key provisions of the IRA and suggests how vendors and OEMs should prepare to meet its requirements and take full advantage of the funding and incentives offered to maximize their—and their customers'—benefit.

What Does the IRA Mean for Greentech Vendors and OEMs?

Guidehouse Insights has identified several overarching themes and goals of the IRA that will affect greentech vendors and OEMs; each of these is discussed further in the following sections.

The IRA Encourages Energy Stakeholders to:



(Source: Guidehouse Insights)

Materials Sourcing and Supply Chains

COVID-related supply chain challenges notwithstanding, there are certain components critical to green energy technologies that will continue to create bottlenecks that impede accelerated deployment. In particular, **the IRA’s aggressive stance on domestically produced critical minerals could limit the bill’s effectiveness, particularly in the near term.**

Hi Ho, Hi Ho: Critical Mineral Mining Encouraged

The IRA emphasizes development of domestic materials sourcing over foreign sources. In particular, the legislation addresses supply chain and environmental issues in the mining and processing of rare earth and other critical minerals.

US supplies of critical minerals are an existential constraint to the clean energy transition. The country relies heavily on foreign sources of critical minerals, such as copper, lithium, nickel, and cobalt. It also relies on rare earth minerals, where production is dominated by China and where US access is threatened by tense political pressures.

A typical EV requires 6x the minerals of a conventional car; an onshore wind plant may take 9x more mineral resources than a similarly sized gas-fired power plant.

According to a recent US Geological Survey report¹ and updated Critical Mineral Summaries², the US was reliant on foreign sources for half or more of its resources for 31 of 35 critical minerals, and totally

¹ US Geological Survey, [Investigation of U.S. Foreign Reliance on Critical Minerals—U.S. Geological Survey Technical Input Document in Response to Executive Order No. 13953 Signed September 30, 2020](#), Open-File Report 2020–1127 Version 1.1, December 7, 2020.

² US Geological Survey, [Mineral Commodity Summaries 2022](#), US Geological Survey Report, January 31, 2022.

reliant on foreign sources for 13 of these, including tellurium, which is used in certain solar cells, and niobium, which is critical to improving the performance of lithium-ion batteries. These minerals are critical to the energy transition, and global demand is set to surge in coming years. A typical EV requires 6x the minerals of a conventional car; an onshore wind plant may take 9x more mineral resources than a gas-fired power plant of similar capacity.

Technology vendors and OEMs are clearly being encouraged to identify and make use of domestic minerals—but, for now, that could be difficult.

The Biden administration's intent to promote domestic mineral production was also evident in the 2021 Bipartisan Infrastructure Law (BIL), which funds mapping of critical mineral resources in the US and promises to improve the mining permitting processes with the Bureau of Land Management (BLM) and US Forest Service. The BIL also included grant programs to support research into mineral recycling.

The IRA enhanced these efforts, codifying significant tax credit bonuses for domestically sourced components and restricting tax incentives for buyers of EVs or other equipment made with foreign sourced materials.³

Technology vendors and OEMs are clearly being encouraged to identify and use domestically sourced minerals—but, for now, that could be difficult. Critics of both the BIL and the IRA note that mining disproportionately impacts disadvantaged communities such as Native American reservations and low-income rural communities, and litigation to prevent domestic mining operations is already underway. For example, a proposal to start mining a large lithium deposit in Nevada was approved by the BLM in January 2021, but legal action initiated by tribes and environmental groups halted mine construction.

Finding adequate domestic sources for these critical minerals could prove challenging for manufacturers, limiting the upside benefits of the IRA's tax incentives in the early years. There are, however, numerous projects underway in support of domestic mineral production.

The Biden administration's 2021 supply chain assessment⁴ found that the US is over-reliant on foreign—and often adversarial—sources for critical minerals and this over-reliance poses serious threats to national and economic security. In response to the assessment's recommendations, the administration highlighted a number of programs and pilot projects intended to address these threats:

- The US Department of Defense's Industrial Base Analysis and Sustainment program awarded **MP Materials** \$35 million to separate and process heavy rare earth elements at its facility in Mountain Pass, California, establishing a full end-to-end domestic permanent magnet supply chain. MP Materials has committed to invest another \$700 million in the magnet supply chain by 2024. Permanent magnets are used in EV motors, defense systems, electronics, and wind turbines.
- **Berkshire Hathaway Energy Renewables** is building a demonstration facility in

³ Of note, however, materials sourced from countries with which the US has free trade agreements are permissible in some cases.

⁴ The White House, [**Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth**](#), June 2021.

Imperial County, California, to test the commercial viability of its sustainable lithium extraction process from geothermal brine as part of a multibillion-dollar investment in sustainable lithium production over the next five years. If successful, the company plans commercial-scale production of battery-grade lithium hydroxide and lithium carbonate by 2026.

- **Redwood Materials**, in partnership with **Ford** and **Volvo**, is working on a pilot for the collection and recycling of end-of-life lithium ion (Li-ion) batteries at its Nevada facilities to extract lithium, cobalt, nickel, and graphite. In addition, Redwood has announced a joint venture with Ford to build a recycling facility in Tennessee.
- The **Department of Energy** (DOE) has a \$140 million demonstration project⁵ funded by the BIL to recover rare earth elements and critical minerals from coal ash and other mine waste.
- Another \$3 billion in BIL funding⁶ will invest in refining battery materials such as lithium, cobalt, nickel, and graphite, and battery recycling facilities.
- **MP Materials** is building a rare earth metal, alloy, and magnet manufacturing facility in Texas and has a long-term supply agreement with **General Motors** (GM) to power the motors in more than a dozen of GM's EV models. The facility is expected to produce enough magnets to power 500,000 EV motors annually.
- **Tesla** intends to source high-grade nickel for EV batteries from **Talon Metals'** Tamarack nickel project under development in Minnesota. Talon Metals and the United Steelworkers have established a workforce development partnership⁷ for the project to train workers on next-generation technologies in the local community and from mining regions facing declining demand.

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⁵ Energy.gov, "[DOE Launches \\$140 Million Program to Develop America's First-of-a-Kind Critical Minerals Refinery](#)," February 2022.

⁶ Energy.gov, "[Biden Administration, DOE to Invest \\$3 Billion to Strengthen U.S. Supply Chain for Advanced Batteries for Vehicles and Energy Storage](#)," February 2022.

⁷ Talon Metals Corp and United Steelworkers, "[Talon Metals and Steelworkers Union Partner to Advance the Tamarack Nickel Project for US EV Battery Supply Chain](#)," July 2022.

Tax Credits Endure for Critical Minerals, but are Phased Out for Downstream Solar and Wind

The IRA establishes a new Advanced Manufacturing Production Tax Credit in Section 45X of the Internal Revenue Code. The credit will provide critical mineral mining companies with a credit equal to 10% of their production costs for some 50 metals named in the Act. The new tax credit will also apply to several downstream products, including solar energy components, wind energy components, power inverters, and battery components. Tax credits for downstream products will begin phase-out in 2030 and will be completely phased out by 2033. The IRA, however, does not phase out tax credits for production of critical minerals. Critics of the IRA's domestic mining incentives point to mining's impact on air and water quality in surrounding communities, which often are disadvantaged and lower-income. The IRA's near-term focus on national economic security could undermine progress toward the law's climate and social equity objectives if domestic mine development comes at the expense of environmental protections and social justice efforts intended to remedy the damages of previous mining actions.

Companies working with critical mineral producers should engage local stakeholders early and collaborate with state and local governments to minimize negative environmental impacts on local communities.

Interconnection Delays Remain a Significant Challenge

Phasing out credits for downstream solar and wind could speed the development of clean energy generation in areas where inadequate transmission exists to deliver the electricity to urban centers. Even before the IRA became law, the backlog of transmission interconnection requests forced many proposed clean energy projects to languish for four years or more in the interconnection queue awaiting permits. The delay often would cause projects to lose financing as investors grew weary of waiting for promised returns and uncertain that they would ever materialize. Indeed, as of 2021, fewer than 25% of all projects survived the US transmission interconnection queue and became operational.

Although the IRA supercharges investment in solar, wind, and other clean energy production, it is silent on the backlog of interconnection requests delaying most projects. A recent Lawrence Berkeley National Laboratory study⁸ found that more 1 TW of solar and energy storage capacity—more than the entire capacity of the US power system—was sitting in the interconnection queue awaiting permits. Efforts to negotiate the IRA's passage included discussions about establishing national transmission corridors to address interconnection permitting, legislation which did not make it into the Act's final language but is presently being debated by Congress under separate legislation.

The Federal Energy Regulatory Commission has issued a notice of proposed rulemaking that would reform permitting of transmission interconnection requests and bundle similar projects together to streamline assessments of their impact on transmission grid stability. Some critics fear that streamlined interconnection permitting could jeopardize grid reliability. Similarly, some analysts have suggested⁹ that the IRA's lack of attention to transmission issues risks increasing energy price volatility if the IRA

⁸ Lawrence Berkeley National Laboratory, [Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection](#), Electricity Markets & Policy study, 2021.

⁹ Robert Walton, Utility Dive, "Inflation Reduction Act Could Raise Prices on Clean Energy, Warns Bank Of America," September 2022, <https://www.utilitydive.com/news/inflation-reduction-act-clean-energy-boia-bank-of-america/631608/>.

incentives development of clean energy projects in areas where transmission constraints make it more difficult for system operators to balance supply and demand.

Vendors supporting solar and wind projects should monitor policy and regulatory efforts to address transmission interconnection and identify methods to speed interconnection permitting or bypass the transmission interconnection queue altogether.

Advanced Energy Manufacturing and Green Industry

The IRA represents a significant shift in policy designed to revitalize American industry through direct investments in advanced energy manufacturing, building a US manufacturing base for the products that

By linking green energy to domestic manufacturing, and emphasizing job creation, the legislation won support from industries not known for promoting urgent action on climate change.

decarbonize the electric power and transportation sectors. More than \$50 billion in the IRA is reserved for clean energy manufacturing, the largest public investment of its kind in American history, which, according to one estimate,¹⁰ could create as many as 9 million new jobs over a 10-year period.

Of the \$50 billion included in the IRA, \$40 billion is for investments in domestic production and is available through two types of tax credits: \$30 billion is

allocated for a new production credit that narrowly targets large-scale projects such as solar, wind, battery manufacturing, and critical minerals processing. The remaining \$10 billion expands Section 48C manufacturing tax credits, established under the American Recovery and Reinvestment Act of 2009,¹¹ which are available for new projects that the DOE determines meet clean energy criteria the agency has yet to finalize.¹²

Let's Get Green: Industrial Processes

Nearly one-quarter of all US carbon emissions come from the industrial sector, according to the Environmental Protection Agency (EPA)¹³, and prior to passage of the IRA, it was the only sector in which emissions were expected to rise.¹⁴ The IRA is designed to decouple the growth in domestic manufacturing from the continued growth of GHG emissions by incentivizing manufacturers to source their materials from US producers who use clean energy to produce them. **By linking green energy to**

¹⁰ Pollin, R, et.al, ***Job Creation Estimates Through Proposed Inflation Reduction Act Modeling Impacts of Climate, Energy, and Environmental Provisions of Bill***, Political Economy Research Institute, University of Massachusetts Amherst, August 2022.

¹¹ Energy.gov, *Fact Sheet: 48c Manufacturing Tax Credits*, <https://www.energy.gov/sites/prod/files/FACT%20SHEET%20--%2048C%20MANUFACTURING%20TAX%20CREDITS.pdf>.

¹² The White House, ***Fact Sheet: \$2.3 Billion in New Clean Energy Manufacturing Tax Credits***, January 2010.

¹³ US Environmental Protection Agency, ***Sources of Greenhouse Gas Emissions***, www.epa.gov, GHG Emissions and Removals Home >> Overview of Greenhouse Gases, accessed October 19, 2022.

¹⁴ Energy Information Administration, ***Annual Energy Outlook 2021***, 2021.

domestic manufacturing and emphasizing job creation, the legislation won support from industries not known for promoting urgent action on climate change.¹⁵

The IRA reserves nearly **\$6 billion for projects designed to reduce the emissions of energy-intensive industries like steel, aluminum, and cement manufacturing.** The resulting emissions reduction strategies are projected to reduce GHG emissions by nearly 70 million metric tons in the next five years.¹⁶

The IRA's strict sourcing provisions also address important labor and human rights violations overseas—like cobalt mined with child labor in the Democratic Republic of the Congo or polysilicon produced through the forced labor of the Uyghurs in China, which have been the target of vocal criticism against US manufacturing supply chains.

Vendors and OEMs are cautioned, however, that it will take time for domestic manufacturing inputs to reach cost parity with foreign sourced materials and are advised to weigh carefully the delay in price parity with the social impact risk of foreign-sourced materials when considering potential supply chain alterations.

By reducing the cost of domestic manufacturing inputs produced with clean energy, the IRA intends to make domestic inputs cost-effective with foreign sourced inputs. The IRA's domestic manufacturing incentives, moreover, are intended to generate US job growth while addressing inhumane labor practices overseas.

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Flexible Financing and Social Equity

The IRA creates new incentives for equity investment and the financing of clean energy and cleantech manufacturing and production. Importantly, it also establishes a secondary market for clean energy tax credits and, for the first five years, opens that market to individual taxpayers.

In addition to \$50 billion for clean energy manufacturing, the IRA offers \$127 billion in clean electricity tax credits that create incentives for clean energy generators to use domestic parts and materials. Electricity producers that use domestically produced iron and steel, for example, qualify for an additional 10% in clean energy tax credits. These additional incentives are also available to nonprofits and government entities that choose direct-pay options.

Social Equity: Efficiency Rewarded, but Pollution Impacts Still Concentrated in Disadvantaged Communities

¹⁵ See Ceres and Business Forward, [Business Support Statement for Inflation Reduction Act](#), August 5, 2022.

¹⁶ BlueGreen Alliance, [FACT SHEET: Clean Manufacturing Investments in the Inflation Reduction Act](#), 2022.

The IRA offsets the cost of residential electrification with \$9 billion in available funds. Low- and moderate-income households will receive direct rebates for the installation of efficient electric appliances, including heat pumps, electric stoves, heat pump water heaters, electric clothes dryers, electrical panels, wiring upgrades, and insulation. Many rebates range in the thousands of dollars (for example, up to \$8,000 for a heat pump or \$1,750 for a heat pump water heater). In many cases, these subsidies make electric appliances more affordable than conventional gas or oil-fueled appliances.

In addition to direct rebates, new tax credits up to 30% of equipment and installation costs will be available to a range of low- and middle-income households to purchase the same categories of equipment.

Manufacturers and OEMs should partner with state and local governments applying for these competitive grants to ensure participation in awarded funds and projects. They should also understand that the competitive grant process can be time consuming.

The IRA also targets \$4 billion for communities that have faced disproportionate economic consequences of the energy transition. The Act prioritizes investments in economically disenfranchised regions by providing incentives to develop energy communities on former brownfield sites, areas that have experienced significant employment losses related to oil, gas, or coal development, or which within or adjacent to a census tract in which a coal mine closed after December 31, 1999, or in which a coal-fired electric power plant was retired after December 31, 2009.

State and Local Governments, Tribes, and Nonprofits Will Compete for “Free” Money

Credits are available to tax-exempt entities such as state and local governments as direct payments from the US Treasury Department. Because these credits can be transferred, moreover, the IRA provides a whole new pool of potential equity financing for clean energy startups.

The combination of transferrable credits and direct-pay options under the IRA is expected to broadly expand capital markets and foster new financing pools dominated by public agencies, tribal governments, and nonprofit organizations acting as pass-throughs for and beneficiaries of federal funds. While manufacturers and OEMs are encouraged to seek early partnerships with tax-exempt entities that qualify for these incentives, until federal regulators articulate the precise rules governing these new markets, they are encouraged to adhere strictly to conventional accounting practices.

Manufacturers and OEMs should partner with qualified tax-exempt entities to take advantage of available incentives, but are cautioned to take a conservative accounting approach to avoid running afoul of new regulations intended to govern this nascent market.

Carbon Capture and Alternative Fuels

The IRA supports investments in alternative fuels with subsidies designed to make these cleaner energy sources competitive with carbon-based fuels. The bill authorizes DOE to make commitments for \$40 billion in loan guarantees under Title XVII of the Energy Policy Act of 2005, on top of DOE's existing

commitment authority of approximately \$24 billion. Title XVII (also known as the Innovative Technologies Loan Guarantee Program) authorizes the Secretary of Energy to make loan guarantees for projects that:

- (1) “Avoid, reduce, utilize, or sequester” air pollutants or anthropogenic emissions of greenhouse gases.
- (2) Employ “new or significantly improved technologies” as compared with commercial technologies in service in the US at the time the guarantee is issued.

This program should be beneficial to developers and vendors of emerging technologies such as carbon capture, utilization, and storage (CCUS), green hydrogen, and biofuels.

Extending Carbon Capture Credits

CCUS has long struggled with commercial viability due to high cost of capturing CO₂, which can exceed \$300 per metric ton for direct air capture (DAC). Since the first CCUS project came online 50 years ago, most projects either captured CO₂ cheaply, either by seeking highly diluted sources, such as natural gas, or by using the captured CO₂ for enhanced oil recovery (EOR), which creates a revenue stream that is particularly valuable when oil prices are high.

The 45Q federal income tax credit for carbon sequestration, introduced in 2008 and then enhanced in 2018, has encouraged new CCUS investment. Prior to the IRA, the 45Q credit was set to rise annually before capping out in 2026, when it would pay projects \$35 per ton of CO₂ if the emissions were utilized (for EOR, for instance) or \$50 per ton if the CO₂ was permanently stored underground in secure geologic formations.¹⁷

The IRA substantially increases the availability of credits, makes it easier for CCUS projects to qualify, provides significant new avenues for monetizing 45Q credits, and extends the deadline to begin construction on eligible projects from 2026 to 2033. The new law increases the value of the credit for industrial facilities and power plants to \$85 per ton if the captured CO₂ is sequestered, \$60 per ton if the CO₂ is utilized, and \$60 per ton for CO₂ stored in oil & gas fields. For DAC, which filters CO₂ from ambient air and is among the most expensive CCUS technologies, the credit increases to \$180 per ton for sequestration, \$130 for utilization, and \$130 for CO₂ stored in oil & gas fields.

Leveling the Playing Field for Green Hydrogen

The IRA includes tax credits for clean hydrogen projects designed to eliminate the biggest barrier to industry scale-up: a lack of cost competitiveness with grey hydrogen produced from unabated fossil fuels. **Until recently, green hydrogen produced from renewable electricity was the most expensive source available, averaging around \$5-\$6/kg.** Cost targets of \$2/kg, required to reach cost parity with grey hydrogen, were not expected to be achieved until the 2030s in most locations. Recent fossil fuel

¹⁷ See the following Guidehouse Insights articles and reports for in-depth analysis of CCUS tax incentives:

[Enhancements to the 45Q Tax Credit Can Boost CCUS Deployment](#), January 2022.

[Carbon Capture Is Emerging in the Cement Industry, Part 3](#), August 2022.

[When It Comes to Pulling CO₂ Out of the Air, the Bigger the Better](#), July 2022.

price spikes have shifted this outlook over the short term—however, volatile prices aren't sufficient to justify investments in projects with lifetimes measured in decades.

With the IRA, green hydrogen can be produced at an effective rate of \$2/kg well ahead of schedule. Hydrogen projects that begin construction prior to 2033 will be eligible to receive a credit of \$3/kg produced providing life cycle emissions are below 0.45 kg of CO₂ equivalent. In practice, this level of emissions intensity is likely to be achieved only by hydrogen produced using zero emissions electricity generated by renewables or nuclear energy. Credits will be awarded over a 10-year period, with developers given the option to receive the credit as a direct payment for at least the first five years. Developers will also need to meet a variety of employment-related requirements to be eligible for the credit.

Cheaper sources of clean hydrogen will enable usage across a range of applications that had previously been uneconomical, provided that supplies and infrastructure are able to scale effectively.

Less-generous credit rates will be awarded to projects with higher emissions intensity levels, i.e., blue hydrogen. The lowest credit rate of \$0.6 will be granted to projects with GHG emissions of between 2.5 kg and 4 kg of CO₂ equivalent per kilogram produced. Although production costs are lower for blue hydrogen than green hydrogen under ordinary gas

pricing conditions, life cycle emissions are higher due to incomplete capture rates and upstream methane leakage. Linking credits to emissions intensity will incentivize producers to opt for autothermal reformers with high capture rates and natural gas supplies with limited methane emissions.

By leveling the playing field between different hydrogen sources, the IRA builds on the technology-neutral approach established in BIL. The BIL provided \$8 billion to establish hydrogen hubs across the US, targeting a mix of green hydrogen, blue hydrogen, and pink hydrogen produced from nuclear energy.

Cheaper sources of clean hydrogen will enable usage across a range of applications that had previously been uneconomic, provided that supplies and infrastructure are able to scale effectively. Interest is likely to be focused on applications that are difficult or impossible to electrify, including existing feedstock uses for grey hydrogen, iron and steel production, shipping, aviation, and long-haul trucking, which accounts for a disproportionate share of emissions from the heavy-duty vehicle segment.

Cleaning Up Transportation with Biofuels

The IRA establishes tax credits for sustainable aviation fuel (SAF),¹⁸ clean transportation fuels, and clean hydrogen, and extends several existing tax credits that benefit transportation biofuels, such as renewable diesel and biodiesel. The EU is considering similar mandates, and both the EU and US laws should stimulate growth and investment in the use of low-carbon renewable fuels such as ethanol, bringing meaningful benefits to both farmers and ethanol producers. The IRA tax credit starts at \$1.25 per gallon but could reach \$1.75 per gallon, depending on the GHG reduction achieved.

¹⁸ Yuchen Hu, Guidehouse Insights, "[Oil Majors Accelerate Moves into Biofuels](#)," April 2022. `

The law also creates a new technology-neutral Clean Fuel Production Tax Credit, which aims to support the production of low-emissions transportation fuel¹⁹ that is sold in 2025, 2026, and 2027. The legislation extends several existing bioenergy and biofuel tax credits. The \$1 per gallon blends tax credit for biodiesel and renewable diesel is extended through the end of 2024. In addition, the existing \$0.50 per gallon alternative fuels tax credit (which was set to expire after 2024) was extended through 2025; the second-generation biofuel income tax credit (which expired at the end of 2021) was extended through 2024; and the alternative fuel vehicle refueling property credit (which expired at the end of 2021) was extended through 2032. The longer-term tax credits should help biofuels and biogas providers attract investment for projects that can take years to build.

In addition to the various tax credits, the legislation aims to establish a competitive grant program to support alternative aviation fuels and low-emission aviation technologies, which could lead to greater production capacity and increased biofuel blending with existing conventional fuels. In part, the program would provide grants to eligible entities to carry out projects located in the US that produce, transport, blend, or store SAF.

Nearly \$250 million in funding would be available to support SAF projects, many of which are constrained by a lack of infrastructure. SAF currently accounts for approximately 0.01% of aviation fuel use, with most deliveries occurring via truck.

The IRA also should lead to increased blending and faster uptake for other alternative transportation fuels. The legislation appropriates \$500 million to support the much-needed development of biofuel infrastructure, including infrastructure improvements for blending, storing, supplying, or distributing biofuels. The IRA also supports installing, retrofitting, or upgrading fuel dispensers to supply higher blends of biofuels.

Market players should take a close look at how carbon capture and alternative fuels can be integrated into their offerings. They should also investigate whether tax incentives and competitive grants increase cost savings relative to conventional fuels and provide a sufficient business case for pursuing an environmental, social, and governance (ESG) strategy that incorporates these technologies.

The IRA is not a panacea and it's unlikely to drive a parabolic shift in greentech investments in the near term. Vendors and OEMs need to fully understand its provisions and restrictions—especially those related to domestic-sourced materials and employment and wages—if they want to benefit fully from the unprecedented subsidies the law provides.

Conclusions and Recommendations

The IRA is a significant bill that promises to accelerate US green energy and sustainability investments in everything from manufacturing to electricity generation. The law brings new players into clean energy markets and broadens the objectives of clean energy investments by funding efforts aimed not only at mitigating climate change but also at advancing social equity. Transferrable credits and direct pay

¹⁹ Serkan Birgel, Guidehouse Insights, "[Biofuels Can Still Play a Part in Decarbonizing the Transportation Sector](#)," January 2022.

options, moreover, encourage the development of new capital markets and equity financing pools, and should interest investors who may previously have shown little interest in funding climate change-related initiatives.

But the IRA is not a panacea, and the law is unlikely to drive a parabolic shift in greentech investments in the near term. Vendors and OEMs need to fully understand its provisions and restrictions—especially those related to domestic-sourced materials and employment and wages—if they want to benefit fully from the unprecedented subsidies the law provides.

In summary, Guidehouse Insights recommends greentech manufacturers consider the following:

- **Find domestic critical mineral partners for sourcing product inputs.**
- **Evaluate opportunities to participate in critical mineral recycling efforts.**
- **Engage local stakeholders when pursuing domestically sourced materials to help minimize the impact of mining and manufacturing on disadvantaged communities.**
- **Perform cost/benefit analyses to ensure domestic materials are cost-effective after tax credits and other incentives, and factor in social impact risks that may be associated with foreign sourced supply chains.**
- **Consider how interconnection issues may restrict or delay permitting and design qualified projects that speed interconnection approval or bypass the backlogged transmission interconnection queue altogether.**
- **Engage state and local governments early in planning projects for public-private partnerships to ensure they have the information necessary to win competitive grants.**
- **Expect competitive grant awards to take time to be processed before receiving payment.**
- **Take advantage of new capital markets and equity financing opportunities derived from transferrable credits and tax-exempt entities.**
- **Expect CCUS, hydrogen, and biofuels to become more cost competitive under the IRA, take a closer look at how these technologies can be integrated into OEM offerings and ESG strategies.**

Published 4Q 2022

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