

The background of the entire page is a photograph of two large white wind turbines in a lush green field. The sky is filled with soft, colorful clouds in shades of orange, pink, and blue, suggesting a sunset or sunrise. The turbines are positioned on the left and right sides of the frame, with a dirt path leading towards them. The overall mood is serene and hopeful, representing renewable energy.

Expectations for Renewable Energy Finance in 2022-2025

**PROGRESS AND CHALLENGES
ON THE PATH TO DECARBONIZATION**



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Executive Summary

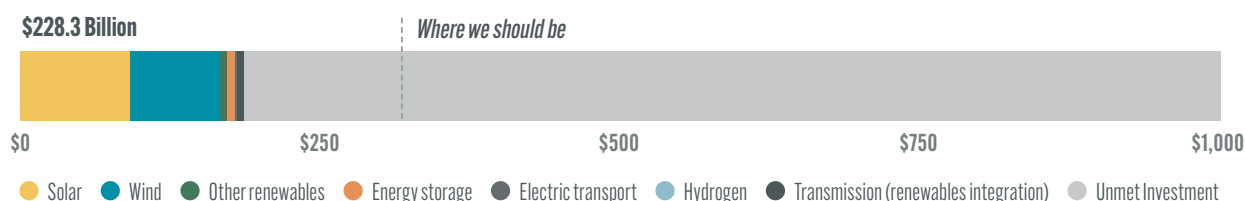
This report assesses progress on ACORE's \$1T 2030 campaign and the Biden administration's power sector decarbonization targets. ACORE launched its \$1T 2030 campaign in 2018 to achieve \$1 trillion in private sector investment in U.S. renewable energy and enabling grid technologies by 2030, while advocating for policy reforms and market drivers to help meet this objective.

To assess the industry's near- and mid-term trajectory in meeting these goals, this report conveys the results of new surveys of professionals who represent companies that actively finance or develop projects in the renewable energy sector. The surveys assess respondents' experiences in the market over the past year and their expectations for sector investment and development over the next three years. Surveys were conducted before and after the U.S. Department of Commerce's announced tariff inquiry on solar cells and modules imported from Southeast Asia, which has had a significantly negative impact on the U.S. solar sector.

The U.S. has attracted \$228.3 billion in investment for renewable energy, grid-enabling technologies and transmission for renewable integration since the \$1T 2030 campaign launch in 2018. Achieving the 2030 objective will require an average of \$96 billion in annual investment through 2029, a 65 percent increase over the 2021 investment level.



Cumulative Progress on \$1T 2030 Campaign (2018-2021) (in billions)



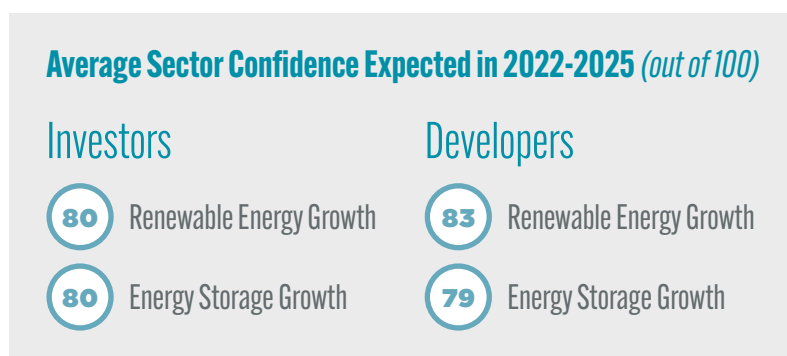
While aggressive, the \$1T 2030 objective puts the U.S. in reach of the administration’s carbon pollution-free power sector by 2035. According to an analysis by BloombergNEF, an estimated \$1.1 trillion of investment in U.S. wind and solar projects is needed to achieve President Joe Biden’s power sector decarbonization goal by 2035.

Investment in the U.S. renewable energy and grid-enabling technology sectors in 2021 remained steady at \$58.5 billion. Renewable energy sector investment fell six percent as the solar investment tax credit (ITC) continued to phase down and the wind production tax credit (PTC) expired. Notably, energy storage projects attracted \$4 billion, a 60 percent increase from 2020, and the offshore wind sector attracted \$4.1 billion, nearly a fourteenfold increase over its previous record.

Despite growing momentum for the energy transition, several headwinds have emerged that could impede the rate of growth and sidetrack progress on climate targets. Regulatory and legislative uncertainty presents a significant roadblock, along with continuing supply chain challenges, the impacts of the Russian war on Ukraine on global energy markets, inflation, increases in power purchase agreement (PPA) prices, and lengthened interconnection wait times.

ACORE launched its annual investor and developer surveys before the announcement of the tariff inquiry by the U.S. Department of Commerce on solar cells and modules imported from Southeast Asia. This report conveys findings from these surveys to demonstrate the strong trajectory the sector was on and how it could recover if the Commerce Department concludes the inquiry promptly with a final negative determination. These findings are supplemented by a follow-up survey and phone interviews focused on the Commerce probe, in which investors and developers report that the inquiry is significantly impacting their near-term business decisions and outlook for the solar sector.

Prior to the Commerce inquiry, surveyed investors and developers reported, on average, confidence in the renewable energy and energy storage sectors over the next three years. However, average confidence levels slipped from last year for both renewable energy and energy storage, from two to six points across sectors. In our follow-up survey about the Commerce inquiry, a high proportion of respondents — 86 percent of investors and 81 percent of developers — indicate the inquiry has either moderately or significantly decreased their outlook on the growth of the solar sector over the next three years.

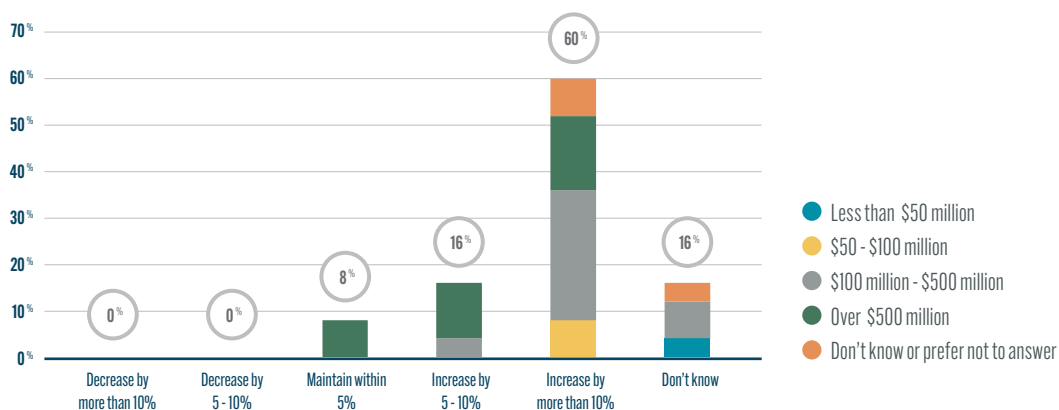


Reflects survey responses prior to the Commerce inquiry.

Prior to the Commerce inquiry, more than three-quarters of surveyed investors reported plans to increase their renewable energy investment by five percent or more in 2022 than their investment level in 2021. Notably, companies that invest \$100 million or more annually comprised 79 percent of the respondents planning to increase their renewable energy

investments in 2022. However, according to the follow-up survey, investor companies representing \$100 million or more of annual renewable energy investment report that the Commerce inquiry could put, on average, 71 percent of their planned U.S. solar investments “at risk.”

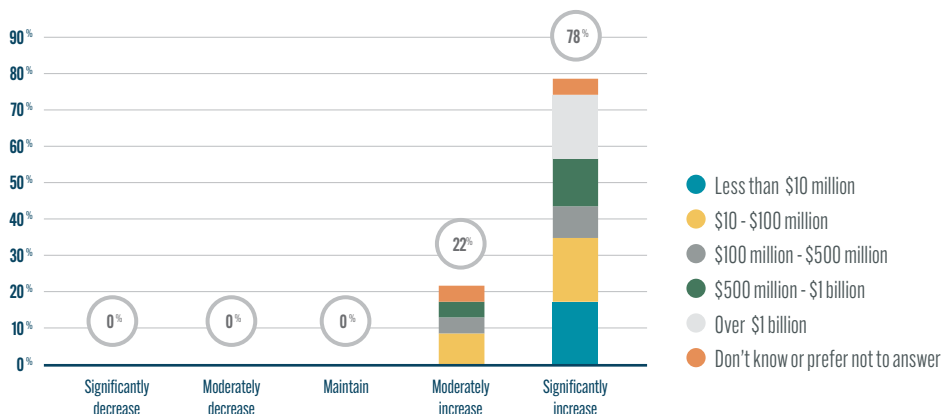
How Investors Plan to Change Their Renewable Energy Investment in 2022 Compared to 2021, by Annual U.S. Sector Investment



Reflects survey responses prior to the Commerce inquiry.

Similarly, developers planned to increase their activity in 2022 compared to 2021, before the announcement of the Commerce inquiry. More than one-third of the companies that intended to “Significantly increase” their development activity in 2022 have total revenues of \$500 million or more. However, developer respondents that developed 100 MW to 1 GW of solar installations over the past three years report, on average, that 86 percent of their planned solar installations are now “at risk” due to the Commerce inquiry.

How Developers Plan to Change Their Renewable Energy Development in 2022 Compared to 2021, by Total Revenue of U.S. Renewable Energy Business



Reflects survey responses prior to the Commerce inquiry.

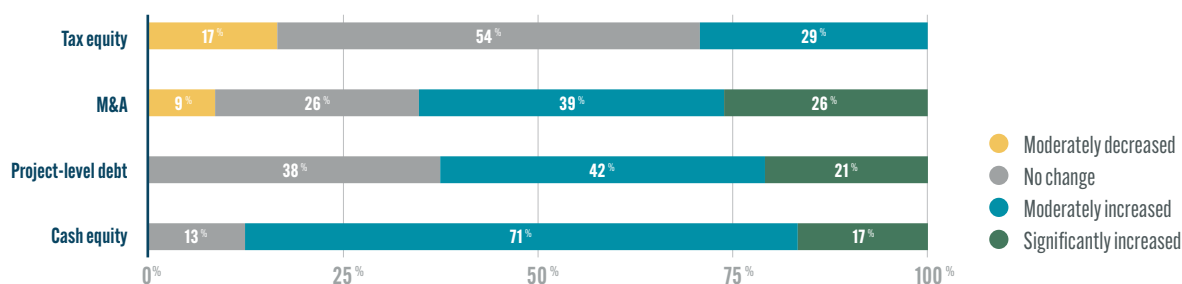
The following survey results reflect perspectives before the Commerce inquiry.

More developers than investors have reduced their risk appetites in 2022 compared to 2021. While 92 percent of investors report no change or increased risk appetites, nearly a third of developers say that their risk appetite has moderately decreased compared to last year. Among companies that operate U.S. renewable energy businesses with revenues of \$500 million or greater, half report a decreased risk appetite. Half of the companies that invest \$100 million or more annually in the renewable energy sector report an increase in risk appetite.

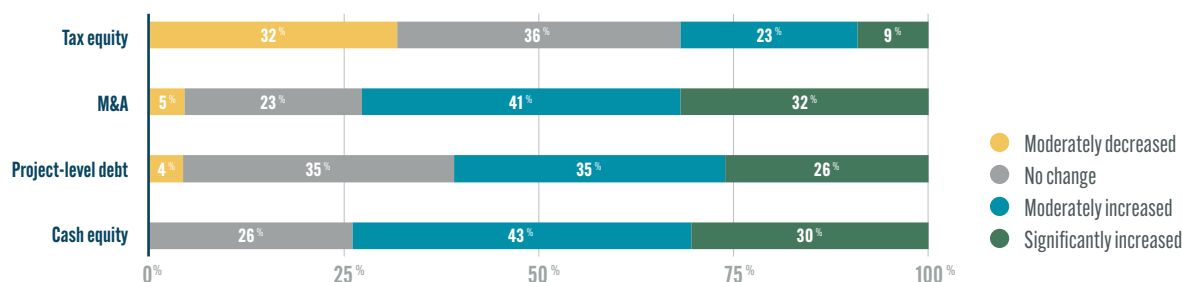
While more developers report experiencing a decrease in the availability of tax equity this year than investors have observed, respondents from both groups report some recovery in the tax equity market. Cash equity was the most popular project financing type where respondents noted an increase.

Seventeen percent of investors still report a decrease in tax equity this year, which is a notable decrease from last year's survey response of 47 percent.

Change in the Availability of Project Finance in 2022 Compared to 2021 for Investors

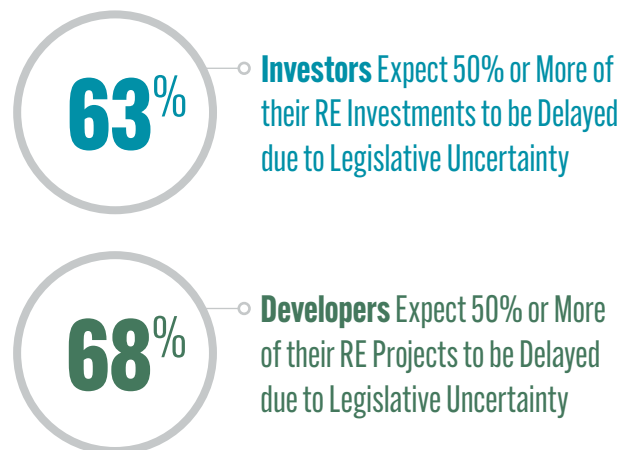


Change in the Availability of Project Finance in 2022 Compared to 2021 for Developers



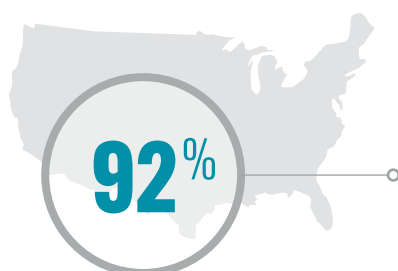
Developers report a diversity of experiences attracting offtakers for their projects. About a quarter of developers say that securing PPAs with offtakers has become either moderately or significantly more difficult over the past year. Thirty-nine percent report that securing PPAs has become moderately or significantly easier.

Investors and developers cite supply chain issues as either causing delays, cancellations, or reduced investment projections or development. More than half of surveyed developers report plans to delay projects that were scheduled for completion in 2022 by a year or more because of supply chain issues unlinked to the Commerce inquiry. Forty percent of surveyed investors report delaying investment plans scheduled for 2022 by at least a year.



Due to the stalled passage of the renewable energy tax credit package, legislative uncertainty is causing investors and developers to delay a significant portion of their investment and project pipelines. Nearly two-thirds of investors expect 50 percent or more of their U.S. renewable energy sector investments to be delayed, and more than two-thirds of developers expect 50 percent or more of their pipelines' U.S. renewable energy sector projects to be postponed because of legislative uncertainty.

Investors consider the U.S. an attractive venue for investment compared to other leading countries like China over the next three years. More than half of investors report their preference for the U.S. will not change, while 36 percent report they expect their preference for the U.S. to moderately or significantly increase over the next three years.

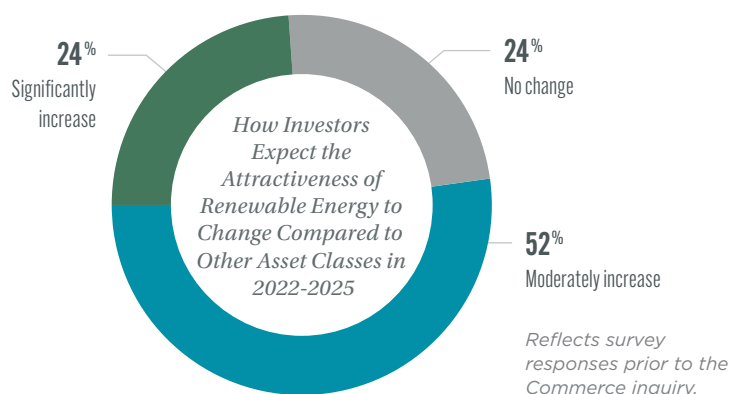


Percentage of Investors That Perceive the U.S. as Attractive for Investment Compared to Other Leading Countries in 2022-2025

Reflects survey responses prior to the Commerce inquiry.

Investors expect the attractiveness of renewable energy to be maintained or increase compared to other asset classes in their portfolios in 2022-2025.

More than three-quarters of investors expect the attractiveness of renewable energy to moderately or significantly increase, and no investors expect the attractiveness of renewable energy to decrease.



Utility-scale solar and energy storage rank as the most popular preferences for investment among surveyed investors over the next three years, switching places from 2021. However, respondents indicate the attractiveness of utility-scale solar has dropped post-Commerce inquiry.

Weighted Ranking of Sectors Most Attractive for Investment in 2022-2025



PJM ranks as the most attractive U.S. region for renewable energy investment and development over the next three years.

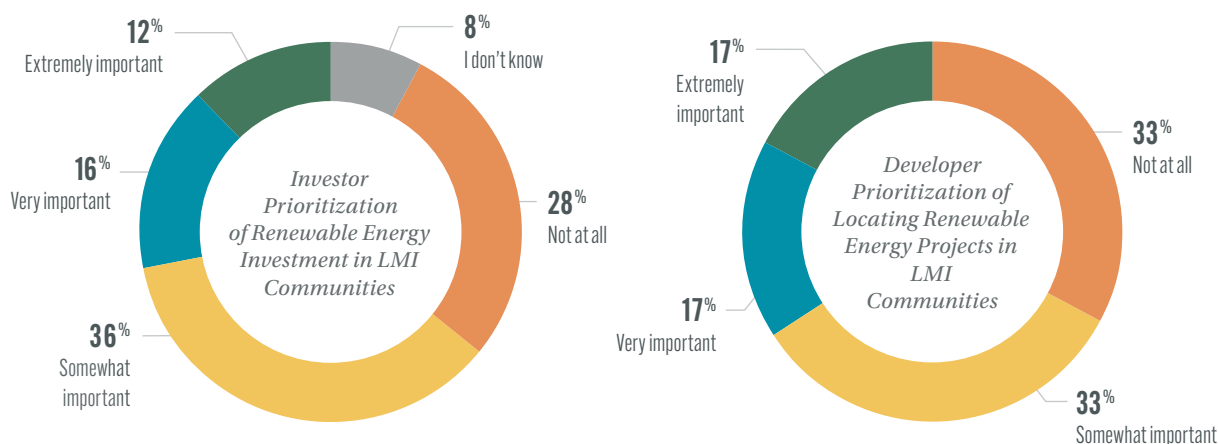
Weighted Ranking of U.S. Regional Power Markets Most Attractive for Renewable Investment or Deployment in 2022-2025

	Investors	Developers
1	PJM	PJM
2	MISO	ERCOT
3	CAISO	MISO
4	ERCOT	CAISO
5	NYISO	NYISO
6	ISO-NE	ISO-NE
7	Non-RTO Southeast	SPP
8	Non-RTO West	Non-RTO Southeast
9	SPP	Non-RTO West



About two-thirds of investors and developers consider renewable energy projects in low- and moderate-income (LMI) communities in their decision-making. Of the investors who consider investing in LMI regions important, 50 percent have moderately increased their prioritization of renewable energy investment in these communities in 2022 compared to 2021. Of the developers who consider locating renewable energy projects in LMI regions important, 47 percent have moderately or significantly increased their prioritization of development in LMI communities in the past year.

Supplier diversity selection criteria are common among surveyed renewable energy developer companies. Eighty-eight percent of developers report considering the inclusion of minority or women-owned businesses (MWBs) to some extent when selecting suppliers for their business.



Disclaimer: The results of ACORE's surveys reflect the perceptions of 49 company respondents and should not be used to extrapolate the opinions of all companies in the sector.

ACORE is strategically deploying its resources to promote key policy reforms and market drivers to support the achievement of the \$1 trillion by 2030 objective, leveraging current opportunities and overcoming obstacles. Specifically, we are pursuing the following priorities in 2022:

- **Tax Policy:** ACORE works to protect and extend existing incentives for renewable energy and provide a long-term level playing field in support of carbon-free electricity generation, including an ITC for standalone energy storage and regionally significant transmission, and a tax credit for advanced clean energy manufacturing. ACORE supports the clean tax platform in the Build Back Better Act.
- **Trade Policy:** ACORE works to strengthen renewable energy supply chains through trade and regulatory policy.
- **Transmission, Grid Technology and Wholesale Power Market Advocacy:** ACORE advocates for cost-effective investment in transmission infrastructure through our Macro Grid Initiative, and electricity marketplace reforms to promote greater access to and delivery of renewable resources. ACORE also promotes energy storage and other grid-enabling technologies through policy advocacy, market reforms and financing solutions.
- **Just Transition:** ACORE leverages our public and private networks to build opportunities for smaller renewable energy companies owned and operated by women, Black, Indigenous, and people of color leaders while also advocating for national policies and industry best practices to promote social and economic justice as a part of the nation's transition to renewable energy.
- **Capital Formation:** ACORE works with policymakers and industry leaders on regulatory issues to accounting rule changes that enable renewable energy investment and increase the pool of investors in the sector.
- **Environmental, Social and Governance (ESG) Investing:** ACORE works with its members to increase standardization, transparency and use of material indicators in ESG and climate disclosures and scoring methodologies.
- **Climate Policy:** ACORE focuses on identifying and promoting the most viable suite of climate policies and analyzes their impact on renewable energy growth and investment.

Progress on ACORE's \$1T 2030 Campaign and the Nation's Power Sector Decarbonization Targets

ACORE launched its \$1T 2030 campaign in 2018 to achieve \$1 trillion in private sector investment in U.S. renewable energy and enabling grid technologies by 2030, while advocating for policy reforms and market drivers to help meet this goal. One trillion dollars of investment over these 12 years would represent more than two times the historic investment in the U.S. renewable sector before the campaign¹ and put us on the trajectory toward the Biden administration's target to decarbonize the power grid by 2035.

Investment in 2021

Renewable Energy: While investment in onshore wind and solar PV decreased from 2020, the surge in offshore wind financings helped to maintain strong annual renewable sector investment.

The U.S. renewable energy sector attracted **\$51.4 billion** in asset finance investment in 2021,² a six percent decrease from the previous year, as the solar investment tax credit (ITC) continued to phase down and the wind production tax credit (PTC) expired. After a record year in 2020, investment in solar photovoltaic (PV) projects decreased by 18 percent. Investment in onshore wind projects also dropped 18 percent,³ although the offshore wind sector notably attracted \$4.1 billion, nearly a fourteenfold increase over its previous record.

¹ Non-hydro U.S. private-sector renewable energy investment 2004-2017 was \$460 billion. Source: BloombergNEF

² BloombergNEF. *Investment and Valuation database*. Accessed May 11, 2022 at: <https://www.bnef.com/interactive-datasets/2d5d59acd9000005?data-hub=3>

³ BloombergNEF's estimates of annual U.S. investment figures for solar and onshore wind in 2020 changed since the publication of our 2021 *Expectations for Renewable Energy Finance* report

Enabling Grid Technologies: Energy storage investment in the U.S. reached record levels in 2021, while investment in hydrogen and electric transportation infrastructure remained below \$1 billion.

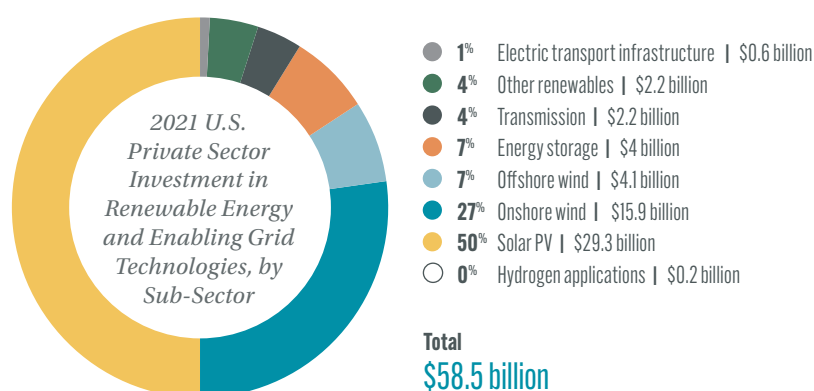
Energy storage projects attracted a record **\$4 billion** in 2021, a 60 percent increase from 2020, as investors' comfort levels with battery storage and hybrid projects increases.⁴ Investment in electric transportation infrastructure fell slightly to **\$600 million**, and investment in hydrogen applications attracted **\$200 million**.

Transmission: Transmission infrastructure enabling renewable deployment increased in 2021.

The transmission capital costs associated with interconnecting new renewable energy reached **\$2.2 billion** in 2021,⁵ an almost 16 percent increase from last year. According to the U.S. Department of Energy (DOE), transmission systems would need to expand by 60 percent by 2030 to meet clean energy demands.⁶

The U.S. continues to rank second place to China in renewable energy investment.

China experienced a 49 percent increase in renewable energy investment in 2021 from 2020, reaching \$156.2 billion, which is now almost three times that of the U.S. China's investment in energy storage, hydrogen and electric transportation infrastructure also exceeded that of the U.S. at \$5.2 billion.



4 BloombergNEF. *Investment and Valuation* database. Accessed May 11, 2022 at: <https://www.bnef.com/interactive-datasets/2d5d59acd9000005?data-hub=3>. This value was modified by BloombergNEF since the publication of last year's report, which cites \$1.2 billion invested in U.S. energy storage in 2020.

5 To estimate the annual cost of interconnecting renewables, we calculate a capacity-weighted average cost of interconnection between MISO and PJM for both wind and solar. We then multiply those values by 2019, 2020, and 2021 wind and solar capacity additions. We begin by taking constructed wind and solar interconnection costs (\$/kW) for MISO (2018) and PJM (2019) as reported by the Lawrence Berkeley National Lab (LBNL), and calculate a weighted average for both wind and solar. The cost of interconnecting wind totals \$51.05/kW, and the cost of interconnecting solar totals \$63.84/kW. We then multiply the capacity-weighted average costs of interconnecting wind and solar by wind and solar capacity additions in 2019, 2020, and 2021, as reported by the BNEF Sustainable Energy in America 2022 Factbook. Lawrence Berkeley National Laboratory. Improving estimates of transmission capital costs for utility-scale wind and solar projects to inform renewable energy policy. October 2019. https://eta-publications.lbl.gov/sites/default/files/td_costs_formatted_final.pdf, pages 10 & 12. BloombergNEF and the Business Council for Sustainable Energy Sustainable Energy in America 2022 Factbook. March 2022. <https://bcse.org/factbook/>

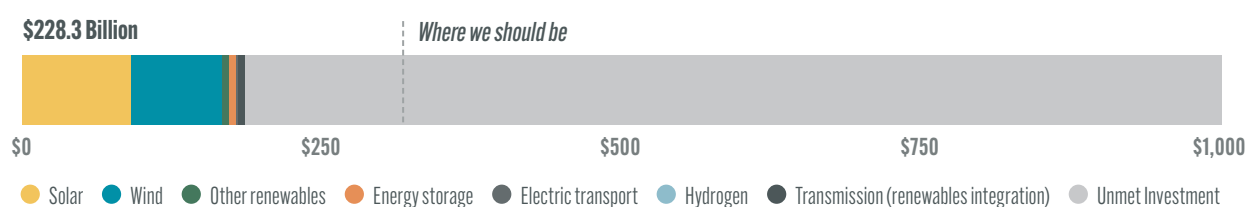
6 U.S. Department of Energy. "Queued Up... But in Need of Transmission." Accessed May 6, 2022 at: <https://www.energy.gov/policy/queued-need-transmission>

Where We Stand

Progress on the \$1T 2030 Objective

The U.S. has now attracted **\$228.3 billion** in renewable energy, grid-enabling technology and transmission for renewable integration investment since the launch of the \$1T 2030 campaign in 2018, reaching 23 percent of the \$1 trillion campaign objective. To achieve the 2030 goal, the average annual investment in renewable energy, grid-enabling technologies and transmission for renewable integration would need to increase to \$96 billion through 2029, a 65 percent increase over 2021 investment levels.

Cumulative Progress on \$1T 2030 Campaign (2018-2021) (in billions)



Progress on the Carbon-Pollution Free Power Sector Objective by 2035

In a 2021 analysis of the investment needed to achieve President Biden’s goal of a carbon pollution-free grid by 2035, BloombergNEF estimates \$48 billion would need to be invested in wind and solar annually in 2021-2024 and step up to \$90 billion annually in 2025-2035, totaling \$1.1 trillion.⁷ This investment would equate to annual wind and solar installations of 34 gigawatts (GW) from 2021-2024 and about 70 GW from 2025-2035, totaling 1,100 GW. The report also assumes the development of 330 GW of “clean firm” technologies — such as hydrogen, long-duration energy storage and geothermal energy — to support added wind and solar generation.

U.S. solar and wind investment reached \$49.3 billion in 2021. To stay on track with reaching \$1.1 trillion by 2035, investment would need to pick up to around \$50.2 billion annually in 2022-2024, or increase by two percent above 2021 investment levels, before increasing to \$90 billion starting in 2025.

In a more recent report, BloombergNEF estimates that to meet the administration’s interim goal of 80 percent carbon-free generation by 2030, the U.S. would need to add between 67 and 98 GW of wind and solar per year in 2022-2030.⁸ The U.S. added 37.2 GW of wind and solar capacity in 2021.⁹

7 BloombergNEF. *Decarbonizing U.S. Power Part 2: Greening Bulk Generation*. March 3, 2021. Accessed May 6, 2022 at: <https://www.bnef.com/insights/25649/view>, p.2-3

8 BloombergNEF. *Can Tax Credits Meet Biden’s Climate Ambitions?* February 2, 2022. Accessed May 6, 2022 at: <https://www.bnef.com/insights/28043/view>, p.1

9 The Business Council for Sustainable Energy. *Sustainable Energy in America 2022 Factbook*. Accessed May 6, 2022 at: <https://bcse.org/factbook/#>, p.21

Other interim goals include an administration goal to reach 30 GW of offshore wind deployment by 2030.¹⁰ A 2021 analysis by BloombergNEF estimates that \$27 billion in tax equity financing is needed for the projected 26 GW of offshore wind energy projects to come online by 2030,¹¹ though this falls short of the administration's goal. The Department of Energy also released a study reporting that the U.S. could reach a generation mix of 40 percent solar energy by 2035.¹²

New Drivers for Growth

The federal government announced climate and energy actions supporting renewables.

Infrastructure Investment and Jobs Act

On November 15, 2021, President Biden signed into law the Infrastructure Investment and Jobs Act (IIJA), which designates \$92 billion to deploy low- and no-carbon technologies over multiple years. While the IIJA provides a small amount of funding for renewable research and demonstration programs, the primary funding for renewable energy expansion comes from the authorization of \$16 billion for important programs to expand and improve the transmission grid, including the new Transmission Facilitation Program. Additional funding includes \$17 billion for low- or no-emission vehicles and ferries, \$12 billion for carbon capture, \$7 billion for the battery supply chain, and \$9 billion for clean hydrogen.¹³ Also included in this total is an additional \$10 billion in borrowing authority for the Bonneville Power Administration to upgrade the Columbia River hydropower system. IIJA also contains an important provision clarifying the ability of the Federal Energy Regulatory Commission (FERC) to permit needed transmission lines.¹⁴ According to a study by Princeton University, the provisions of the IIJA could facilitate \$177 billion investment in wind and solar by 2030.¹⁵

Executive Order "Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability"

President Biden signed an executive order on December 8, 2021, committing the U.S. federal government to achieve net-zero carbon emissions by 2050.¹⁶ The Order contains ambitious interim goals, such as reducing federal facilities and operations emissions by 65 percent by 2030 and sourcing 100 percent carbon pollution-free electricity — with 50 percent of that electricity being provided on a 24/7 basis — in the same timeframe.

10 U.S. Department of Energy. "Energy Secretary Granholm Announces Ambitious New 30GW Offshore Wind Deployment Target by 2030." March 29, 2021. Accessed May 6, 2022 at: <https://www.energy.gov/articles/energy-secretary-granholm-announces-ambitious-new-30gw-offshore-wind-deployment-target>

11 BloombergNEF. *U.S. Clean Energy Boom Strains Tax Equity Supply*. August 12, 2021. Accessed May 6, 2022 at: <https://www.bnef.com/insights/27041,p.1>

12 U.S. Department of Energy. *Solar Futures Study*. September 2021. Accessed May 6, 2022 at: <https://www.energy.gov/sites/default/files/2021-09/Solar%20Futures%20Study.pdf>

13 BloombergNEF. *A Gusher of Money for U.S. Clean Energy*. March 1, 2022. Accessed May 6, 2022 at: <https://www.bnef.com/insights/28421/view,p.1>

14 Reed, Liza and Fricklas, Shanna. "New infrastructure law inches transmission siting closer to natural gas, but there's much to still work out at FERC." December 14, 2021. Niskanen Center. Accessed May 6, 2022 at: <https://www.niskanencenter.org/new-infrastructure-law-inches-transmission-siting-closer-to-natural-gas-but-theres-much-to-still-work-out-at-ferc/>

15 Princeton University. *Summary Report: The Climate Impact of Congressional Infrastructure and Budget Bills*. February 28, 2022. Accessed May 6, 2022 at: https://repeatproject.org/docs/REPEAT_Summary_Report_022822.pdf, p.9

16 The White House. "FACT SHEET: President Biden Signs Executive Order Catalyzing America's Clean Energy Economy Through Federal Sustainability". December 8, 2021. Accessed May 6, 2022 at: <https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/08/fact-sheet-president-biden-signs-executive-order-catalyzing-americas-clean-energy-economy-through-federal-sustainability/>



Executive Order “Climate-Related Financial Risk”

On May 20, 2021, the President signed an executive order outlining steps for the federal government to mitigate climate-related financial risks and prioritize federal investments in support of these policies.¹⁷

SEC’s Proposed Ruling to Enhance and Standardize Climate-Related Disclosures for Investors

On March 21, 2022, the U.S. Securities and Exchange Commission (SEC) proposed a rule that would require registrants to disclose climate-related risks¹⁸ in their registration statements and periodic reports, including climate-related financial metrics, climate targets and greenhouse gas emissions. Standardizing climate disclosure information could bring more capital to companies deploying, using or investing in renewable energy as a climate solution.

The Justice40 Initiative

On July 20, 2021, the Biden administration detailed the Justice40 Initiative, pledging that at least 40 percent of the overall benefits from federal investments in climate and clean energy will go to disadvantaged communities.¹⁹ The pilot programs include the Department of Homeland Security Flood Mitigation Assistance Program, the Environmental Protection Agency Drinking Water State Revolving Fund, the Department of Housing and Urban Development Lead Hazard Reduction and Healthy Homes Grants, and the Department of Agriculture Rural Energy for America Program.

¹⁷ Federal Register. “Climate-Related Financial Risk”. May 20, 2021. Accessed May 6, 2022 at: <https://www.federalregister.gov/documents/2021/05/25/2021-11168/climate-related-financial-risk>

¹⁸ U.S. Securities and Exchange Commission. “SEC Proposes Rules to Enhance and Standardize Climate-Related Disclosures for Investors”. March 21, 2022. Accessed May 6, 2022 at: <https://www.sec.gov/news/press-release/2022-46>

¹⁹ The White House. “The Path to Achieving Justice40”. July 20, 2021. Accessed May 6, 2022 at: <https://www.whitehouse.gov/omb/briefing-room/2021/07/20/the-path-to-achieving-justice40/>

Offshore Wind Project Approvals

Since the federal administration announced its goal of reaching 30 GW of offshore wind development by 2030,²⁰ the Bureau of Ocean Energy Management (BOEM) started the permitting process for eight projects in 2021.²¹ In May, the U.S. had its first major offshore wind financing deal for the 806 megawatt (MW) Vineyard Offshore Wind Farm, and in November approved the 132 MW South Fork Wind Farm.²² In October 2021, the Department of the Interior announced plans to hold up to seven offshore wind lease auctions around the country by 2025,²³ two of which have already been completed²⁴ in 2022. The New York Bight auction shattered records in U.S. offshore lease bids, attracting winning bids from six companies totaling \$4.37 billion.²⁵

FERC Notice of Proposed Rulemaking on Transmission Reform

FERC took an important step in a rulemaking process to reform transmission planning, cost allocation and generator interconnection that was initiated in July 2021.²⁶ On April 21, 2022, FERC issued a Notice of Proposed Rulemaking (NOPR) to reform transmission planning and cost allocation requirements.²⁷ The Commission is anticipated to take action on a rulemaking around generator interconnection later in the year.

Ongoing MOPR Reform

The PJM Interconnection has significantly reformed the problematic minimum offer price rule (MOPR) in a manner that will greatly minimize its use and ease the pathway for renewable energy development. The New York Independent System Operator (NYISO) has proposed similar reforms and is waiting for a decision from FERC. Unfortunately, ISO New England (ISO-NE) has delayed its plans to remove this rule by two more years.

More U.S. states implemented or increased clean energy standards.

State clean energy goals have expanded over the past year. Nebraska effectively committed to 100 percent clean energy in December 2021, and Delaware, Oregon, North Carolina and Illinois increased their targets.²⁸ Thirty-one states, the District of Columbia and Puerto Rico currently have a renewable portfolio standard or clean energy standard, of which 21 states, D.C. and P.R., have a 100 percent target.²⁹

20 U.S. Department of Energy. "Energy Secretary Granholm Announces Ambitious New 30GW Offshore Wind Deployment Target by 2030". March 29, 2021. Accessed May 6, 2022 at: <https://www.energy.gov/articles/energy-secretary-granholm-announces-ambitious-new-30gw-offshore-wind-deployment-target>

21 BloombergNEF. *2H 2021 Offshore Wind Market Outlook*. December 15, 2021. Accessed May 6, 2022 at: <https://www.bnef.com/insights/27995/view>, p.5

22 U.S. Department of the Interior. "Share Interior Department Approves Second Major Offshore Wind Project in U.S. Federal Waters". November 24, 2021. Accessed May 6, 2022 at: <https://www.doi.gov/pressreleases/interior-department-approves-second-major-offshore-wind-project-us-federal-waters>

23 U.S. Department of the Interior. "Secretary Haaland Outlines Ambitious Offshore Wind Leasing Strategy". October 13, 2021. Accessed May 6, 2022 at: <https://www.doi.gov/pressreleases/secretary-haaland-outlines-ambitious-offshore-wind-leasing-strategy>

24 French, Marie J. "Offshore wind auction shatters records". February 25, 2022. POLITICO. Accessed May 6, 2022 at: <https://subscriber.politicopro.com/article/2022/02/offshore-wind-auction-shatters-records-00011945?source=email>

25 Bureau of Ocean Management. "New York Bight". Accessed May 6, 2022 at: <https://www.boem.gov/renewable-energy/state-activities/new-york-bight>

26 Federal Energy Regulatory Commission. "FERC Begins Reform Process to Build the Transmission System of the Future". July 15, 2021. Accessed May 6, 2022 at: <https://ferc.gov/news-events/news/ferc-begins-reform-process-build-transmission-system-future>

27 Federal Energy Regulatory Commission. "FERC Issues Transmission NOPR Addressing Planning, Cost Allocation". April 21, 2022. Accessed May 6, 2022 at: <https://www.ferc.gov/news-events/news/ferc-issues-transmission-nopr-addressing-planning-cost-allocation>

28 Bowers, Richard. "Five states updated or adopted new clean energy standards in 2021". February 1, 2022. *U.S. Energy Information Administration*. Accessed May 6, 2022 at: <https://www.eia.gov/todayinenergy/detail.php?id=51118>

29 Clean Energy States Alliance. "100% Clean Energy Collaborative - Table of 100% Clean Energy States". Accessed May 6, 2022 at: <https://www.cesa.org/projects/100-clean-energy-collaborative/guide/table-of-100-clean-energy-states/>

Driven by sustainability commitments, corporate demand hit a record high in 2021.

In 2021, corporate procurement of renewable energy power purchase agreements (PPAs) reached 17 GW, an approximate 3.5 GW increase from the previous year.³⁰ ERCOT was the largest market for corporate PPAs in the U.S., with 4.6 GW of deals announced.³¹

This increase was driven by an expansion in sustainability commitments among corporations and financial institutions. Climate commitments among corporates and financial institutions spiked in the lead-up to the COP26 meeting in Glasgow in November. RE100 membership increased by 67 companies in 2021, equivalent to the number of companies that joined in 2020.³² Seventy-five percent of Fortune 100 companies now have some form of renewable energy or sustainability target.³³

There was also an increase in clean energy activity and sustainability commitments by financial institutions in 2021:

- **Bank of America** announced a goal to reach \$1 trillion by 2030 of investment in low-carbon technologies, including renewable energy, as part of their Environmental Business Initiative.³⁴
- **Citi** announced that it more than doubled its sustainable finance activity in 2021 to achieve a \$1 trillion investment in sustainable finance by 2030.³⁵
- **JPMorgan Chase** announced it aims to finance and facilitate more than \$2.5 trillion over 10 years for climate action and sustainable development.³⁶
- **Morgan Stanley** committed to mobilizing \$1 trillion by 2030 for sustainable solutions, including renewable energy.³⁷
- **U.S. Bank** set an environmental finance goal of \$50 billion by 2030 and will begin offering debt financing to renewable energy projects.³⁸
- **Wells Fargo** committed to deploying \$500 billion in sustainable financing, including renewables, by 2030.³⁹

30 BloombergNEF. Power Purchase Agreements (PPAs) database. Accessed April 21, 2022 at: <https://www.bnef.com/interactive-datasets/2d5d59acd9000022>

31 BloombergNEF. *1H 2022 Corporate Energy Market Outlook*. January 31, 2022. Accessed May 6, 2022 at: <https://www.bnef.com/insights/28223/view>, p.12

32 Ibid, p.1

33 Fortune 100 sustainability reports.

34 Bank of America. "Bank of America Increases Environmental Business Initiative Target to \$1 Trillion by 2030". April 8, 2021. Accessed May 6, 2022 at: <https://newsroom.bankofamerica.com/content/newsroom/press-releases/2021/04/bank-of-america-increases-environmental-business-initiative-target>.html

35 Segal, Mark. "Citi More Than Doubles Sustainable Finance Activity in 2021, on Track for \$1 Trillion 2030 Goal". April 25, 2021. ESG Today. Accessed May 6, 2022 at: <https://www.esgtoday.com/citi-more-than-doubles-sustainable-finance-activity-in-2021-on-track-for-1-trillion-2030-goal/>

36 JP Morgan. "JPMorgan Chase Targets More Than \$2.5 Trillion over 10 Years to Advance Climate Action and Sustainable Development". Accessed May 6, 2022 at: <https://www.jpmorganchase.com/news-stories/jpmc-to-advance-climate-action-and-sustainable-dev-goals>

37 Morgan Stanley. "Morgan Stanley Commits \$1 Trillion for Sustainable Solutions". Accessed May 6, 2022 at: <https://www.morganstanley.com/ideas/low-carbon-finance-1-trillion-dollar-pledge>

38 U.S. Bank. "U.S. Bank sets goal to achieve net-zero greenhouse gas emissions by 2050". Accessed May 6, 2022 at: <https://www.usbank.com/about-us-bank/company-blog/article-library/us-bank-sets-goal-to-achieve-net-zero-greenhouse-gas-emissions-by-2050.html>

39 Wells Fargo. "Advancing Environmental Sustainability". Accessed May 6, 2022 at: <https://www.wellsfargo.com/about/corporate-responsibility/environment/>

Increased demand for renewable energy is driving innovation in other areas of financial accounting, as well.

The Financial Accounting Standards Board (FASB) Emerging Issues Task Force has a project to expand an accounting methodology currently applied to low-income housing tax credits (LIHTC) to renewable energy tax credits,⁴⁰ which could improve consistency in how the tax credit investments are valued for renewable energy projects. This development could potentially improve tax equity supply for renewable energy in the future.

Meanwhile, renewable energy levelized costs reached an all-time low.

Despite rising construction costs for wind and solar development, the levelized costs of energy for solar and wind – the cost to operate a project over its lifetime – reached the lowest levels yet in 2021. Solar PV achieved a cost reduction of 90 percent and wind a cost reduction of 72 percent since 2009.⁴¹

Recent Headwinds

Regulatory and legislative uncertainty presents a significant roadblock.

Stalled passage of climate legislation is causing missed opportunities.

The clean energy tax package included in the House-passed Build Back Better Act (BBBA)⁴² could significantly advance the sector if enacted. However, protracted Senate negotiations delaying the passage of the tax package through budget reconciliation present uncertainty that affects planning for both investors and developers.

According to an analysis by BloombergNEF, the tax credit expansions would drive an additional \$115 billion in investment in solar, wind, and storage and increase their 2022-2030 capacity additions by 15 percent, 40 percent, and 11 percent, respectively. The analysis did not model the impact of refundability, which would further increase renewable energy build by significantly expanding the number of companies and types of projects that can take advantage of the incentives. In particular, it would make residential solar projects more accessible to low-income households.⁴³

This year is the last year for new projects to qualify for the 26 percent solar tax credit, which steps down to 22 percent in 2023 and zeroes out for residential projects in 2024. The deadline for new projects to qualify for the wind production tax credit expired on December 31, 2021.

40 Lugo, Denise. "Roll Out Affordable Housing Accounting Rule Conditionally to All Tax Credit Investments, Task Force Says". March 28, 2022. *Thomson Reuters*. Accessed May 6, 2022 at: <https://tax.thomsonreuters.com/news/roll-out-affordable-housing-accounting-rule-conditionally-to-all-tax-credit-investments-task-force-says/>

41 Lazard. *Levelized Cost Of Energy, Levelized Cost Of Storage, and Levelized Cost Of Hydrogen*. October 28, 2021. Accessed May 6, 2022 at: <https://www.lazard.com/perspective/levelized-cost-of-energy-levelized-cost-of-storage-and-levelized-cost-of-hydrogen/>

42 The renewable energy provisions would extend current tax credits for solar and wind, enact new tax credits in the form of a standalone storage ITC and a solar PTC, and provide refundability for developers who lack the tax liability required to claim tax credits. Other supportive tax credits include a tax credit for projects that meet domestic content criteria and tax credits for projects located in historically fossil fuel-dominated communities.

43 BloombergNEF. *Can Tax Credits Meet Biden's Climate Ambitions?* February 2, 2022. Accessed May 6, 2022 at: <https://www.bnef.com/insights/28043/view, p.1>

The Department of Commerce's inquiry into Southeast Asian solar cells and modules poses a significant regulatory barrier to the solar industry.

On March 28, 2022, the Department of Commerce launched an inquiry into imports of crystalline silicon photovoltaic cells, whether or not assembled into modules, which are completed in Cambodia, Malaysia, Thailand or Vietnam using parts and components from China, are circumventing the antidumping duty and countervailing duty (AD/CVD) orders on solar cells and modules from China.⁴⁴ Should Commerce determine circumvention occurred, tariffs on the imports could exceed 250 percent and could apply retroactively to the date the inquiry was launched. The inquiry has had a severely negative impact on the U.S. solar sector. The Solar Energy Industries Association (SEIA) reports that over 80 percent of renewable energy companies already have had or expect delays or cancellations of solar product shipments and expects that these new tariffs would decrease solar deployment by 34 GW over the next four years, including a 48 percent decline in 2022 alone.⁴⁵ Similarly, the American Clean Power Association expects 24 GW of solar projects to be delayed or canceled over the next two years.⁴⁶

Another potential impediment to solar development occurred earlier this year in President Biden's decision to extend the Trump-era Section 201 tariffs on solar cells for another four years.⁴⁷ The extension excludes bifacial solar panels and doubles the quota of cells not subject to the tariff from 2.5 GW to 5 GW.

The Russian war on Ukraine adds to supply chain concerns while increasing demand for both fossil and renewable energy sources.

On February 24, 2022, Russian President Vladimir Putin invaded Ukraine,⁴⁸ escalating years of border tensions with the country since annexing Crimea in 2014. This conflict has exacerbated supply chain delays for the renewable energy sector, which is still dealing with the continuing effects of COVID-related delays due to factory shutdowns and workforce shortages.

The strain on natural gas supply from the war, divestment from Russia, and the earlier energy crisis in the E.U. has increased demand for all energy sources, including renewable energy and fossil fuels, with broad-ranging consequences for global energy markets.⁴⁹ While countries are advancing clean energy development in response, the resurgence in fossil fuels presents a significant setback for progress on nations' climate targets. New fossil fuel assets may also become stranded in the long term as demand for renewables continues to drive the energy transition.

44 Federal Register. "Crystalline Silicon Photovoltaic Cells, Whether or Not Assembled Into Modules, From the People's Republic of China: Initiation of Circumvention Inquiry on the Antidumping Duty and Countervailing Duty Orders". April 1, 2022. Accessed May 6, 2022 at: <https://www.federalregister.gov/documents/2022/04/01/2022-06827/crystalline-silicon-photovoltaic-cells-whether-or-not-assembled-into-modules-from-the-peoples>

45 Solar Energy Industries Association. *Impact of the Auxin Solar Tariff Petition*. April 26, 2022. Accessed May 6, 2022 at: https://www.seia.org/sites/default/files/2022-04/FINAL%20Auxin%20Impact%20Analysis%202022-04-26_0.pdf.

46 American Clean Power Association. *New Data Confirms Department of Commerce Inquiry Severely Disrupts U.S. Utility-Scale Solar Market*. April 19, 2022. Accessed May 6, 2022 at: <https://cleanpower.org/blog/new-data-confirms-department-of-commerce-inquiry-severely-disrupts-u-s-utility-scale-solar-market/>

47 The White House. "A Proclamation to Continue Facilitating Positive Adjustment to Competition From Imports of Certain Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled Into Other Products)". Accessed May 6, 2022 at: <https://www.whitehouse.gov/briefing-room/presidential-actions/2022/02/04/a-proclamation-to-continue-facilitating-positive-adjustment-to-competition-from-imports-of-certain-crystalline-silicon-photovoltaic-cells-whether-or-not-partially-or-fully-assembled-into-other-product/>

48 Isachenkov, Vladimir, Litvinova, Dasha, Karmanau, Yuras and Heintz, Jim. "Russia attacks Ukraine as defiant Putin warns US, NATO". February 24, 2022. Accessed May 6, 2022 at: <https://apnews.com/article/russia-ukraine-europe-russia-moscow-kyiv-626a8c5ec22217bacb24ece60fac4fe1>

49 Will Wade and Stephen Stapczynski. *Russia's War Is Turbocharging the World's Addiction to Coal*. Accessed May 6, 2022 at: <https://www.bnef.com/news/1036659>

Rising commodity costs are increasing the capital costs for renewable projects.

The increase in input costs for solar and wind technologies due to COVID-induced supply chain-related delays and inflation are pushing up capital costs for renewable energy projects. In the wind sector, global steel prices and shipping costs have skyrocketed, affecting the cost of wind turbines,⁵⁰ and raising the capital expenditure for onshore wind projects by 11-14 percent compared to pre-pandemic levels for projects securing financing in 2021 and 2022.⁵¹ Higher polysilicon and metals prices and freight costs have affected the price of solar modules, rackings, cabling and transformers, raising the capital expenditure for utility-scale PV by about 10 percent compared to 2020.⁵²

Interconnection wait times for renewable energy projects are longer and completion rates lower.

According to a study by Lawrence Berkeley National Laboratory, completion percentages for proposed generation projects in transmission interconnection queues have been declining, particularly for wind and solar. The time required for a project to be operational from the initial connection request has increased for projects built in 2011-2021 by 1.6 years from the previous decade.⁵³ The proposed renewable power generation and energy storage capacity held in queues across the U.S. now totals over 1,300 GW.⁵⁴

Wind and solar PPA prices are rising.

Over the past two quarters, supply chain- and interconnection-related issues have been consistently driving up prices for renewable PPAs across all ISOs. While increasing corporate demand for renewables is partially driving the upward push in PPA prices, the increases are largely due to the aforementioned headwinds. According to LevelTen's solar and wind PPA index, PPA prices rose 9.7 percent in Q1 2022 from Q4 2021,⁵⁵ having previously risen 5.9 percent in Q4 2021 from Q3 2021.⁵⁶

While the U.S. renewable sector is facing historic uncertainty, the drivers propelling sector momentum have long remained resilient to headwinds. The following section presents the results of an ACORE survey analyzing how renewable energy investors and developers are reacting to these developments in 2022 and their expectations for sector growth through 2025.

50 BloombergNEF. *2H 2021 Global Wind Market Outlook*. December 17, 2021. Accessed May 6, 2022 at: <https://www.bnef.com/insights/28011/view>, p.3-4

51 BloombergNEF. *1H 2022 U.S. Clean Energy Market Outlook*. Accessed May 6, 2022 at: <https://www.bnef.com/insights/28805/view?e=BNEF%20Series:sailthru>, p.7

52 BloombergNEF. *2H 2021 LCOE Update*. Accessed May 6, 2022 at: <https://www.bnef.com/insights/27935>, p. 3-4

53 Berkeley Lab. "Record amounts of zero-carbon electricity generation and storage now seeking grid interconnection". April 13, 2022. Accessed May 6, 2022 at: <https://emp.lbl.gov/news/record-amounts-zero-carbon-electricity>

54 Ibid.

55 LevelTen Energy. *Q1 2022 PPA Price Index Executive Summary: NORTH AMERICA*. Accessed May 6, 2022 at: <https://www.leveltenenergy.com/post/leveltens-q1-2022-ppa-price-index-now-available-for-purchase>, p.6

56 LevelTen Energy. *Q4 2021 PPA Price Index Executive Summary: NORTH AMERICA*. Accessed May 6, 2022 at: <https://www.leveltenenergy.com/ppa>, p. 7



2022 Survey Results

ACORE surveyed the opinions of senior professionals who represent companies active in the U.S. renewable energy sector, including debt, equity and tax equity investors, financial advisors and project developers, in March 2022. The surveys assess respondents' experiences in the market over the past year and their expectations for sector investment and development over the next three years.

This year is the fifth year ACORE has surveyed investors and the third year ACORE has collected responses from developers. The responses outlined in this section reflect the perspectives of representatives from 49 companies. A complete profile of survey respondents appears in the Appendix.

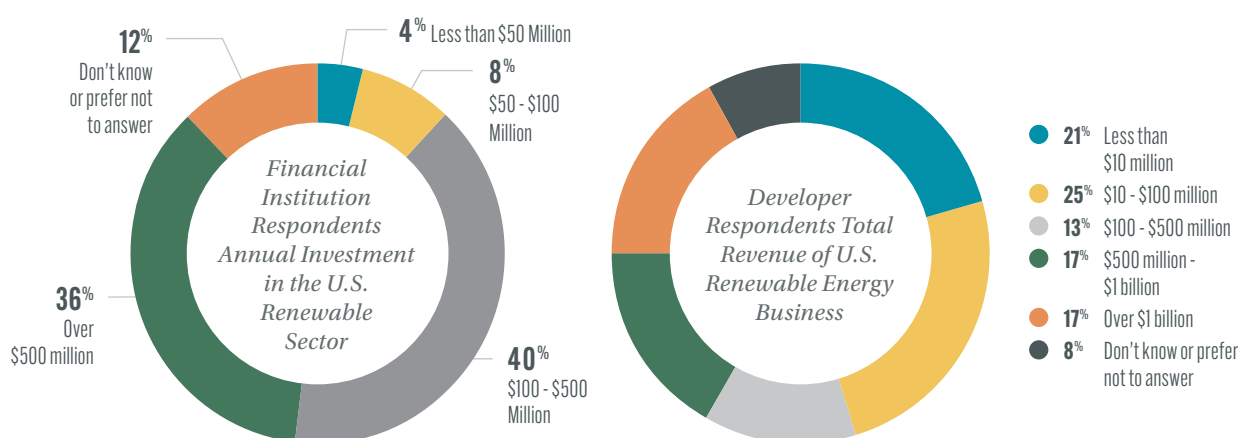
- Three-quarters of investor respondents invest \$100 million or more annually in the U.S. renewable energy sector.
- One-third of developer respondents operate U.S. renewable energy businesses with total revenues of \$500 million or more.
- The majority of respondents occupy a senior role at their companies as a CEO, President, Managing Director, Partner or similar title.

ACORE launched the investor and developer surveys prior to the announcement of the Department of Commerce inquiry on solar cells and modules imported from Cambodia, Malaysia, Thailand and Vietnam. Therefore, the results reflect investor and developer perceptions before the consideration of retroactive

tariffs on solar imports. ACORE surveyed perspectives on the impact of the inquiry through phone interviews and a follow-up online survey, the results of which are also presented in this section.

In the first round of survey results, investors and developers expressed a positive outlook on the growth of the U.S. renewable energy sector despite facing new headwinds in supply chain delays, lengthy interconnection wait times and legislative uncertainty. All investors and developers reported plans to maintain or increase their activity in the sector this year and indicated a recovery in many forms of financing over the past year.

However, since the announcement of potential tariffs, investors and developers anticipate significant near-term contractions in their solar portfolios and reduced optimism, which could be reversed if the Commerce Department concludes the inquiry promptly with a final negative determination.



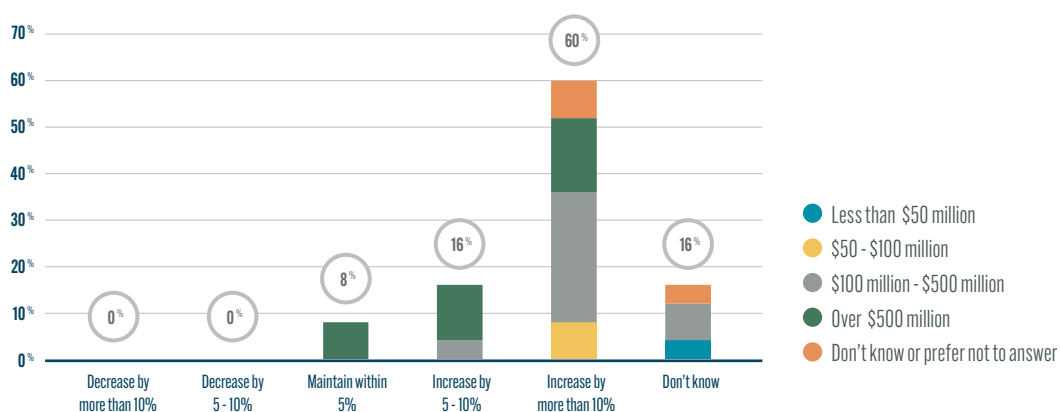
Near-Term Outlook

Unless otherwise indicated, the survey results in this section convey perspectives pre-Commerce Department tariff inquiry.

Before the Commerce Department inquiry, surveyed investors and developers reported plans to increase or maintain their U.S. renewable energy sector activity in 2022. No companies planned to decrease their activity.

More than three-quarters of investors (76%) planned to increase their renewable energy investment by five percent or more in 2022 compared to their investment level in 2021. No investors reported plans to decrease their investments, although 16 percent remained uncertain. Companies that invest \$100 million or more annually comprised 79 percent of the respondents planning to increase their renewable energy investments in 2022.

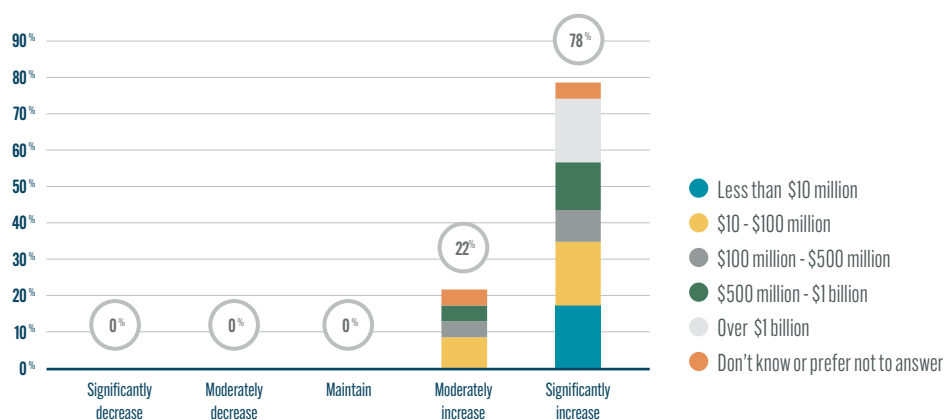
How Investors Plan to Change Their Renewable Energy Investment in 2022 Compared to 2021, by Annual U.S. Sector Investment



Reflects survey responses prior to the Commerce inquiry.

Developers reported plans to increase their development activity in 2022 compared to 2021, with more than three-quarters (78%) planning to “Significantly increase” and 22 percent planning to “Moderately increase” their activity. More than one-third of the companies (39%) that intended to “Significantly increase” their development activity in 2022 have total revenues of \$500 million or more.

How Developers Plan to Change Their Renewable Energy Development in 2022 Compared to 2021, by Total Revenue of U.S. Renewable Energy Business



Reflects survey responses prior to the Commerce inquiry.

However, due to the Commerce inquiry, investors and developers are now experiencing strains on their plans in the solar sector and anticipate project delays and/or cancellations.

Since the launch of the survey, the Department of Commerce launched an inquiry into solar cells and modules imported from Southeast Asia. In a follow-up survey and phone interviews, investors and developers reported that the inquiry will significantly impact their near-term business decisions and outlook on the solar sector. Respondents anticipate delays and notable reductions in near-term solar investments and project development.

According to the follow-up survey, investor companies representing \$100 million or more of annual renewable energy investment report that 71 percent of their U.S. solar investments, on average, are “at risk” due to the Commerce inquiry. Developer respondents that developed 100 MW to 1 GW of solar installations over the past three years report, on average, that 86 percent of their planned solar installations are “at risk” due to the Commerce inquiry.⁵⁷

One investor expects most of their deals for 2022 to be deferred by a year and suggests the possibility of some projects getting canceled entirely due to the potential tariffs.

Developers report that the inquiry will delay project closing dates and significantly complicate purchases of solar panels. Commerce’s action has caused investors and developers to hesitate to enter solar project deals due to heightened uncertainty around project costs.

An investor specializing in commercial solar investments revised their near-term outlook on the sector after the launch of the Commerce inquiry due to the increased uncertainty around solar assets and is planning to reprioritize their portfolio to focus on electric vehicle (EV) charging assets.

The following survey results also reflect company plans and perspectives prior to the Commerce inquiry.

57 The online follow-up survey on the Commerce inquiry was sent to ACORE member investors and developers on April 6, 2022. The survey received 7 investor respondents and 16 developer respondents.

“It’s going to impact the number of deals that we would be able to invest in. Most, if not all, of the deals that we were pursuing in 2022 could be affected by this tariff issue and be deferred by a year. Some of those projects could get shelved entirely if it’s not remedied in a sponsor-friendly way.” – INVESTOR

“The recent AD/CVD coming out of the Department of Commerce has been very concerning and will probably delay our potential closings of projects.” – DEVELOPER

“The case has made it impossible at any price to purchase bifacial panels to support near-term commercial operation date targets.” – DEVELOPER

“Because there is a look-back period for the [Commerce inquiry], we may have to pay a tariff on top of the price we’re paying now. For certain projects, we have to think two or three times before we make a decision compared to before.” – INVESTOR

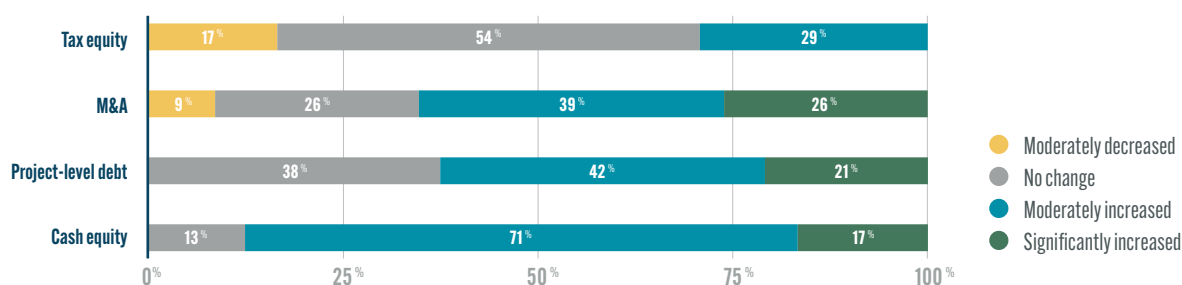
“Panel suppliers have been reluctant to commit to orders of panels [for] our projects because of uncertainty. If Commerce takes until March 2023 to make a decision, we will have to slow down our development because we aren’t certain about entering economic agreements without knowing the capital costs for projects. It could be a two-year delay.” – DEVELOPER

“We focus on commercial and industrial (C&I) versus large utility projects where investors typically have a lower required rate of return... but that was before [the Commerce inquiry began]. There are too many uncertainties for solar assets this year. We feel lucky we are looking at EV charging assets because we can diversify the portfolio.” – INVESTOR

While more developers report experiencing a decrease in the availability of tax equity this year than investors have observed, respondents from both groups report some recovery in the tax equity market. Cash equity was the most popular project financing type where respondents noted an increase.

ACORE asked investors to report on their observations of the market's availability of different forms of project financing and developers on their businesses' experience attracting those project financing types in 2022 compared to 2021. The two financing categories investors report observing a decrease in the market this year compared to last year are tax equity (17%) and mergers and acquisitions (M&A) (9%). However, 83 percent of investors report either "No change" or "Moderately increased" availability of tax equity, while more than half (65%) report "Moderately increased" or "Significantly increased" M&A.

Change in the Availability of Project Finance in 2022 Compared to 2021 for Investors



The percentage of investors reporting a decrease in tax equity this year has notably decreased from last year's survey response of 47 percent.⁵⁸ In phone interviews, some investors commented that the tax equity market has been steady since at least the last half of 2021.

Of the surveyed tax equity investors, 55 percent report that tax equity availability has "Moderately increased" this year compared to last year, while 35 percent report "No change," and nine percent report that tax equity has "Moderately decreased."

One investor reports a current oversupply of tax equity due to high participation in tax equity investment in 2021, but supply chain-related project delays are preventing enough project deals to absorb the increased availability.

Meanwhile, 32 percent of developers report that, in their experience, tax equity availability "Moderately decreased" this year compared to last year. However, an equal percentage of developers say that tax equity availability has either "Moderately increased" or "Significantly increased." Of the developers who report that tax equity has "Moderately decreased," ten percent have a revenue range of \$10-\$100 million, ten percent have a revenue of \$100-\$500 million, and ten percent are over \$1 billion.

"A year ago, there was a shortage in tax equity investment, and returns to tax equity investors were at an all-time high. At some point in the summer, that flipped and created an oversupply of tax equity. Now, because of supply chain [issues], there are not enough projects to satisfy the demand for 2022 tax appetite in the tax equity investment world."

- INVESTOR

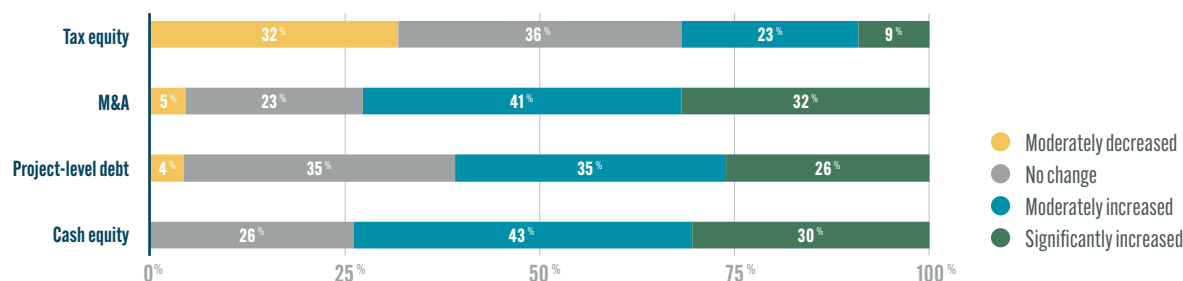
⁵⁸ <https://acore.org/wp-content/uploads/2021/06/Expectations-for-Renewable-Energy-Finance-in-2021-2024-ACORE.pdf>

More than half of developers noted “Significantly increased” or “Moderately increased” availabilities of M&A, project debt and cash equity, although a minority reported “Moderately decreased” M&A or project debt.

One developer notes that while tax equity has been increasing, the recent rise in oil prices may present a short-term interruption in the flow of investment that was being redirected towards renewables from the fossil fuel industry.

“In the last six months, tax equity has begun to free up because we’ve had a bit of a post-COVID balance. That’s great, but now we have oil at over a hundred dollars a barrel, and the investors that were [experiencing] marginal investments in that space and taking lower returns in renewables are pouring money back into fossil fuels. [But] I think the long-term trajectory is still good.” – DEVELOPER

Change in the Availability of Project Finance in 2022 Compared to 2021 for Developers



Additionally, some investors and developers commented that the impacts of Winter Storm Uri in February 2021 continue to affect their willingness to enter hedge structures.

“With Winter Storm Uri and the impact it had on our Texas wind farms, we’re no longer considering fixed-line hedges at all.” – INVESTOR

“As a result of the Texas crisis in February 2021, we’re no longer looking at offtake structures for hedges. We’re more limited in scope for offtake contracts.”

– DEVELOPER

Both investors and developers emphasize direct pay as a solution to an impending tax equity bottleneck.

Investors and developers are concerned about tax equity bottlenecks due to the uncertain future of the federal renewable energy tax credits and increased demand for tax equity, which could be alleviated by direct pay.

“We’ve had a bottleneck in tax equity for the last 15 years, which is why we need direct pay. Tax equity has been painful to access [due to] the legal complexities of structuring two pieces of debt into one structure. The indemnity clauses are heavy for a sponsor to carry.” – INVESTOR

“Direct pay would create more liquidity in the tax market by facilitating transactions for smaller projects like distributed generation, small solar projects and emerging technologies. [It would] free up tax equity availability for large-scale projects, reducing the high costs associated with closing PTC and ITC transactions.” – DEVELOPER

Direct pay could also increase the pool of energy project owners and geographic areas that can access renewable energy.

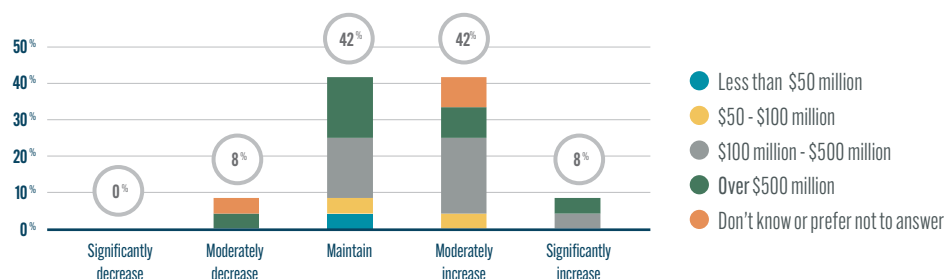
“[Direct pay] opens up [the PTC and ITC] in other areas of the country and to alternative owners who may not have been able to own projects in the past.”

– DEVELOPER

More developers than investors have reduced their risk appetites in 2022 compared to 2021.

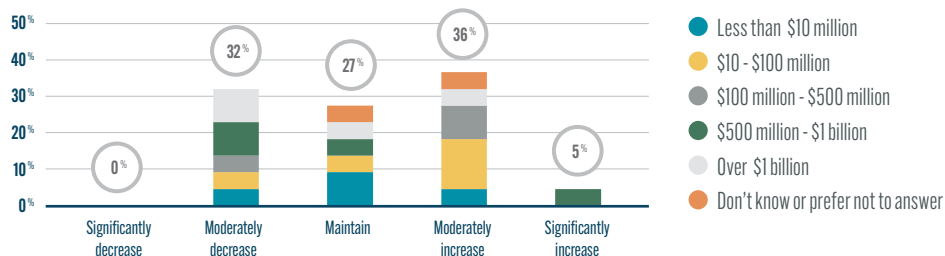
Half of the surveyed investors (50%) report their risk appetite “Moderately increased” or “Significantly increased” this year compared to last year, while 42 percent report “No change” in their risk appetite. Eight percent of investors report a “Moderately decreased” risk appetite compared to 2021. Notably, half of the companies that invest \$100 million or more annually in the renewable energy sector (50%) report an increase in risk appetite, while only six percent report a decrease.

Change in Investor Risk Appetites in 2022 Compared to 2021, by Annual Investment

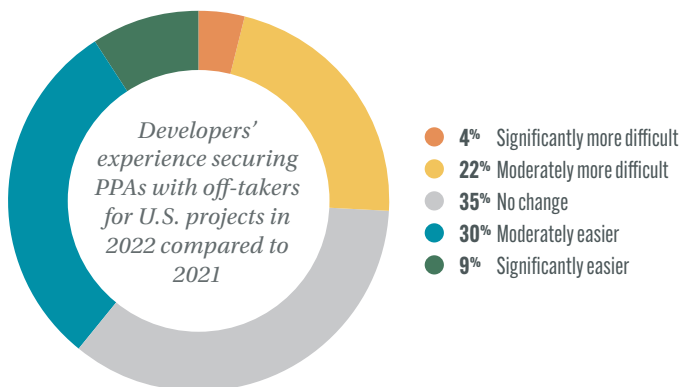


Almost a third of surveyed developers (32%) report that their risk appetite has “Moderately decreased” compared to last year. Forty-one percent of developers report a “Moderate” or “Significant” increase, and 27 percent report “No change” in risk appetite. Among companies that operate U.S. renewable energy businesses with revenues of \$500 million or greater, twice as many report a decrease in risk appetite as those who report an increase — 50 percent of those companies indicate their risk appetite has “Moderately decreased” compared to last year, while 25 percent report their risk appetite has “Moderately increased” or “Significantly increased.”

Change in Developer Risk Appetites in 2022 Compared to 2021, by Total Revenue



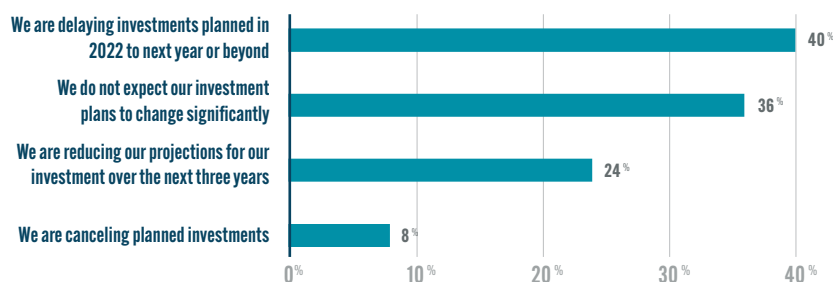
Developers report a diversity of experiences in their ability to attract offtakers for their projects. About a quarter of developers (26%) report that securing PPAs with offtakers has become “Moderately” or “Significantly” more difficult over the past year. Meanwhile, 35 percent report “No change” in securing PPAs, and 39 percent report that securing PPAs has become “Moderately easier” or “Significantly easier.” Companies of different sizes report similar levels of difficulty in securing PPAs.



Many investors and developers indicate that supply chain issues are causing delays, cancellations, or reduced investment or development projections.

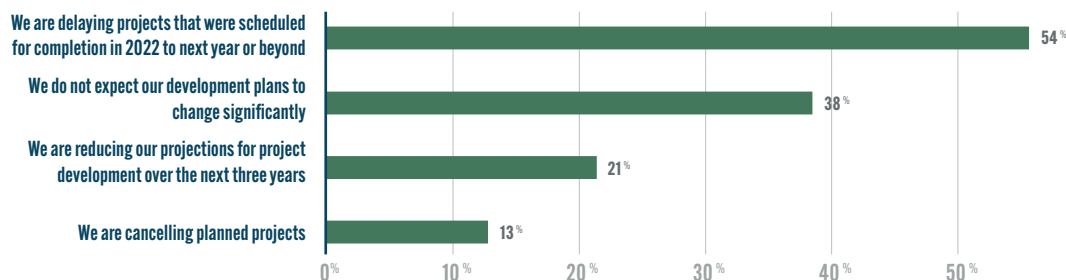
Forty percent of surveyed investors report delaying investment plans scheduled for 2022 by at least a year, 24 percent are reducing their investment projections over the next three years, and eight percent are cancelling planned investments because of supply chain issues. However, thirty-six percent of investors do not expect their investment plans to change significantly.

Effect of supply chain issues on investment plans



Meanwhile, more than half of surveyed developers (54%) report delaying projects scheduled for completion in 2022 by a year or more, 21 percent are reducing project development projections over the next three years, and 13 percent are cancelling planned projects because of supply chain issues. Thirty-eight percent of developers do not expect development plans to significantly change due to supply chain issues.

Effect of supply chain issues on development plans



Some supply chain-related delays were caused due to modules getting blocked by U.S. Customs over the summer.

The Russian war on Ukraine has further exacerbated the delays. A developer notes that the war has further delayed copper shipments as Russia supplies most of the global market share for copper.

Some investors report altering their selection of renewable energy projects and sponsors due to supply chain issues over the past year. One investor reports becoming more selective about choosing project sponsors that can better withstand supply chain issues and ease the tax-planning process for the investor.

Another investor has shifted towards investing in small-scale projects with more manageable construction schedules that can absorb unplanned cost increases.

Delays due to interconnection congestion are a growing pain point for developers.

Respondents cite long interconnection queues and higher interconnection costs as also increasing delays in bringing renewable energy projects online over the past year.

"We had projects where modules got hung up in customs... and had issues with things getting delayed due to availability of products like transformers, converters, bolts and fasteners holding up projects."

- INVESTOR

"Commodity supply chain constraints in steel and copper are now exacerbated by the war in Ukraine because Russia supplies 70 percent of the global market with copper." - DEVELOPER

"[The supply chain issues have] caused us to reconsider which sponsors we make investments with. The stronger sponsors will be able to deliver in a timely fashion. With supply chain issues, other less well-heeled sponsors could have more delays... which causes tax planning issues for us." - INVESTOR

"The supply chain disruptions have caused us to focus more on smaller projects than we did in the past because it's easier to manage the construction timetable. Everyone wants to see more buffer in the construction schedule and additional capacity for potential cost overruns." - INVESTOR

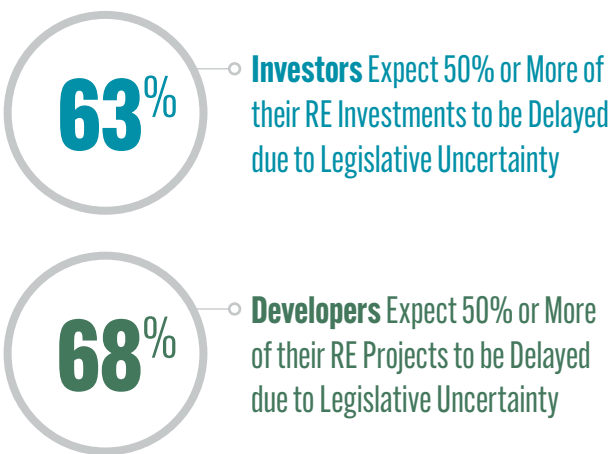
"Over the past twelve months, the interconnection queues have been a big challenge." - DEVELOPER

"We're seeing longer grid queues and more expensive grid interconnection across markets." - DEVELOPER



Due to the stalled passage of the renewable energy tax credit package, legislative uncertainty is causing investors and developers to delay a significant portion of their investment and project pipelines.

About two-thirds of investors (63%) expect 50 percent or more of their U.S. renewable energy sector investments to be delayed due to legislative uncertainty. More than two-thirds of developers (68%) expect 50 percent or more of their pipelines' U.S. renewable energy sector projects to be delayed due to legislative uncertainty.



"We had strategies and investments contingent on that bill getting passed. They are [now] on hold or being reevaluated or restructured."

- INVESTOR

Some developers state that the paused action on BBBA prevented more deals from being made in 2021. In particular, one developer notes the manufacturing credits would have enabled solar manufacturers to expand to the U.S. market if they were passed. The lack of certainty around tax credits is delaying developers' ability to financially model projects for 2025 or later, particularly for wind projects, since the wind tax credit expired.



"Build Back Better would've helped us close a bit more last year. If it goes through, it will probably increase what we're doing by 20 percent to 50 percent."

- DEVELOPER

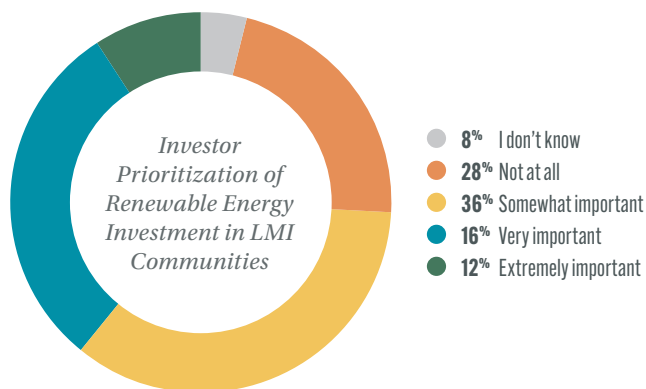
"[The stalled passage of BBBA] has been delaying our ability to financially model projects that we are looking to deliver in 2025 and beyond."

- DEVELOPER

"A number of solar manufacturers that we work with were planning to expand into the U.S. market but were contingent on Build Back Better passing the manufacturing credits. For wind, the credits have expired, so new wind projects have a very uncertain future right now."

- DEVELOPER

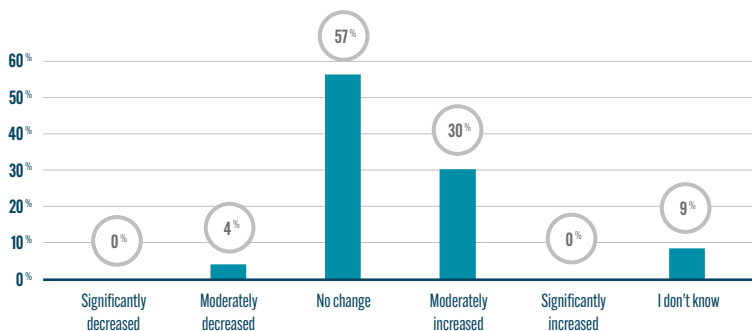
Roughly two-thirds of investors and developers consider renewable projects in LMI communities in their decision-making.



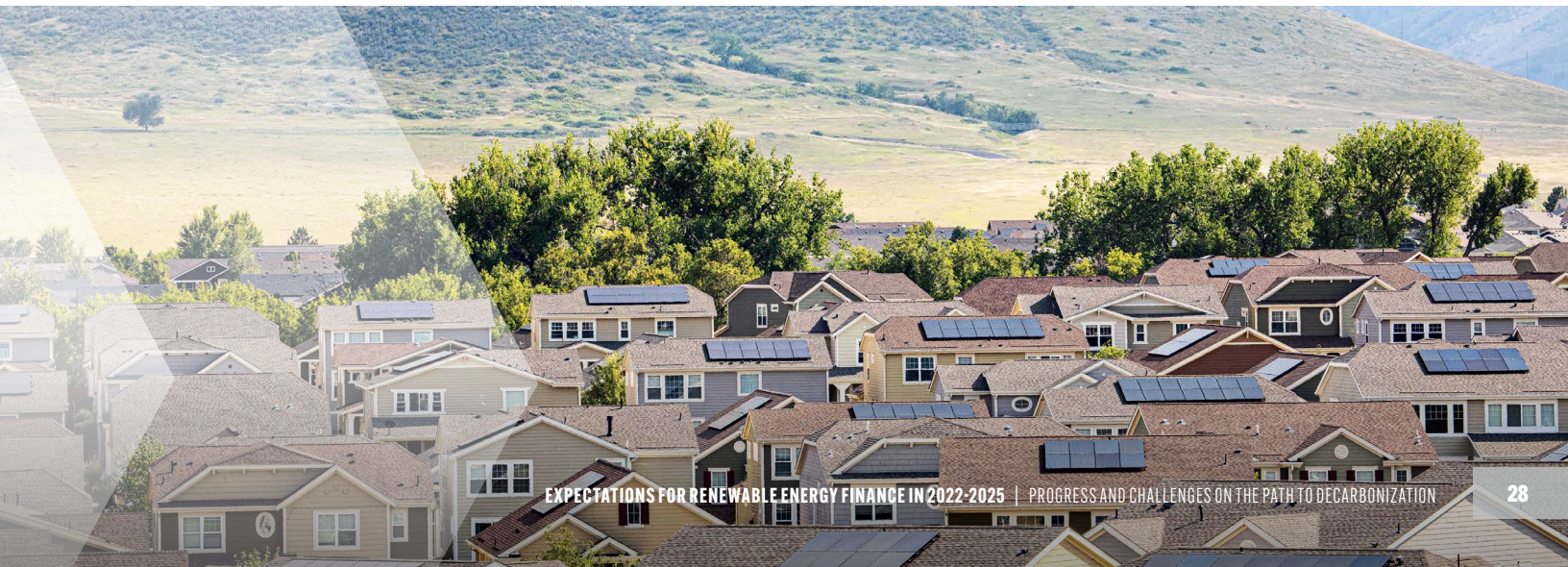
Most investors (64%) consider investing in low-to-moderate income (LMI) communities to some extent in their decision-making, although the most significant portion reports that LMI investing is “Somewhat important” (36%). Twenty-eight percent of investors report they do “Not at all” incorporate LMI investments in their decision-making.

About a third of investors (30%) report their prioritization of renewable energy investment in LMI communities has “Moderately increased” this year compared to last year. The majority of investors (57%) maintain the same prioritization as last year. Only one investor reports their prioritization of investment in LMI communities “Moderately decreased” since last year.

Change in prioritization of renewable investment in LMI communities over last year



Of the investors who consider investing in LMI regions “Somewhat” to “Extremely” important, 50 percent have “Moderately increased” their prioritization of renewable energy investment in LMI communities compared to 2021.



Federal incentives are driving investors to invest in renewable projects in LMI communities. Investors are driven to invest in LMI-located projects to take advantage of incentives like low-interest U.S. Department of Agriculture (USDA) loans, the Community Reinvestment Act credit, and the flexible underwriting requirements for projects in opportunity zones. LMI subscription requirements for community solar projects also provide a channel for capital in LMI regions.

About two-thirds of developers consider locating renewable energy projects in LMI communities to some extent in their development plans. Thirty-three percent of developers consider locating projects in LMI communities as “Somewhat important,” while 17 percent consider development in LMI communities as “Very important” and 17 percent “Extremely important.”

Developers mention taking advantage of state-level clean energy programs for LMI communities.

About a third of developers (34%) report their prioritization of developing renewable energy projects in LMI communities has “Moderately increased” or “Significant increased” over the past year, while 67 percent report “No change” in their prioritization. No developers report a decrease in their prioritization of renewable energy development in LMI communities.

Of the developers who consider locating renewable energy projects in LMI regions “Somewhat” to “Extremely” important, 47 percent have “Moderately increased” and “Significantly increased” their prioritization of development in LMI communities compared to 2021.

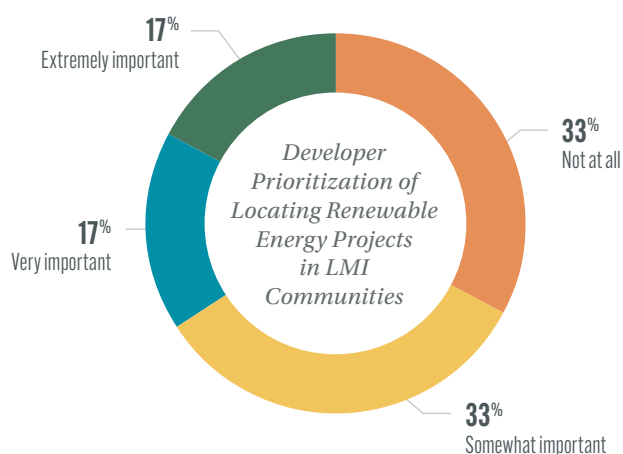
“It is one of our specialties for the solar projects. We utilize the USDA low-interest rate loans, which requires investment in projects in areas with a less than 20,000 population, so we like to invest in projects in low-population regions.” – INVESTOR

“We have a relatively large, low-income housing tax credit portfolio. We have been successful in getting the Community Reinvestment Act credit for some of our tax equity investments in renewables.” – INVESTOR

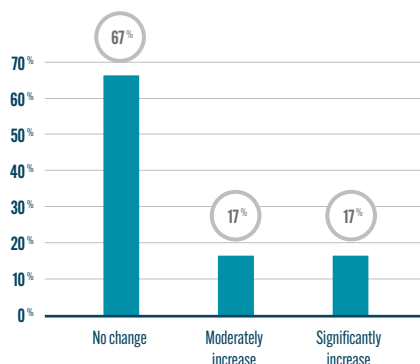
“About half of the tax equity we deployed has been in community solar, and many of those programs have a low and moderate-income subscription requirement. We do a handful of opportunity zone investments in low-income census tracts. We’re flexible on our underwriting requirements there and can relax on FICO scores.”

– INVESTOR

“Credit goes to the states pushing [development in LMI communities]. We are going aggressively after the LMI segment in Massachusetts as they have a nice program. Maryland is another one.” – DEVELOPER



Change in prioritization of renewable development in LMI communities over last year



Supplier diversity selection criteria are common among surveyed renewable energy developer companies.

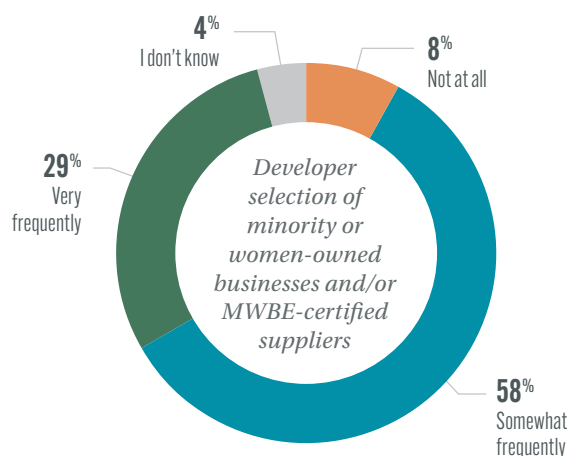
The majority of developers (88%) consider the inclusion of minority or women-owned businesses (MWBE) to some extent when selecting suppliers for their business. Eight percent report not considering MWBEs at all during their supplier selection process.

Developers ensure supplier diversity through internal initiatives to select MWBE contractors and benchmark a company's diversity, equity and inclusion (DEI) performance metrics against industry standards. One developer works to recruit MWBE contractors local to the project sites to construct renewable energy projects. Another company asks about ownership demographics as part of their contractor prequalification process and utilizes an employee-led DEI committee to monitor the company's progress against industry-wide and economy-wide trends.

"We have an initiative to promote diversity and inclusion. We leverage the construction division to promote hiring minority and women individuals by targeting local businesses as much as possible in the areas we construct projects." – DEVELOPER

"We have an extensive prequalification process for every contractor we work with where we ask questions about whether their business is minority- or women-owned. We have an employee-led DEI committee that tracks the overall trends in the industry and benchmarks our corporate profile against economy-wide and industry-wide standards." – DEVELOPER

► Farmer Brittany Staie of Sprout City Farms, and farm manager at Jack's Solar Garden, picks tomatoes which have been growing at Jack's Solar Garden in Longmont, Colo. Jack's is a 1.2-MW, five-acre community solar farm and is the largest agrivoltaic research project in the U.S. The solar project was designed and built by Namasté Solar. (Photo by Werner Slocum / NREL)



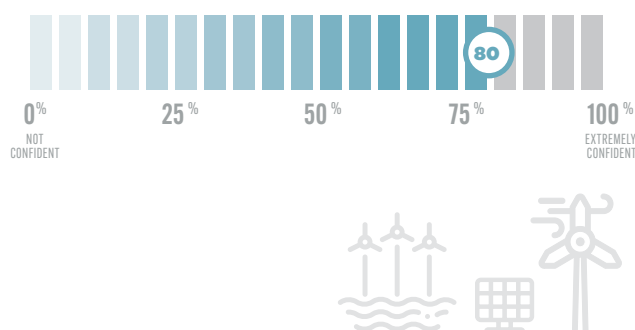
Mid-Term Outlook

Investors and developers report confidence in U.S. renewable energy and energy storage sector growth over 2022-2025, though ratings have slipped since last year's survey.

While still confident on average, since ACORE's 2021 survey, investor confidence ratings in renewable energy have decreased by five points and developer ratings decreased by four points. Investor confidence ratings in energy storage decreased by two points and developer ratings decreased by six points.

Investors across annual investment levels, and developers across revenue levels, rank as either "Confident" or "Extremely confident" in U.S. renewable energy sector growth over the next three years. Investors, on average, report a score of 80/100, or "Confident." Developers, on average, report a score of 83/100.

Investor Confidence in Renewable Energy Growth in 2022-2025

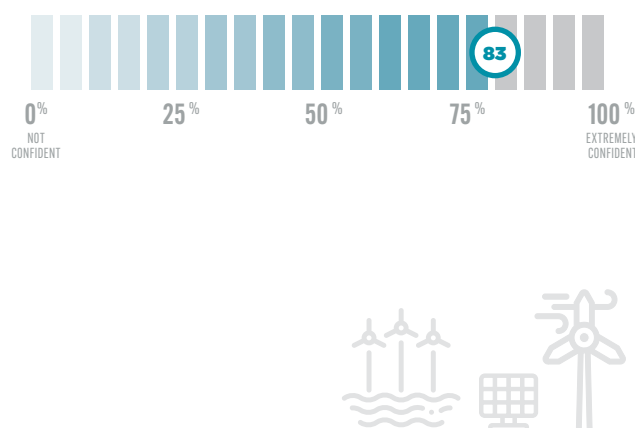


Renewable Energy Sector Confidence by Investment Level

Annual Investment in U.S. Renewable Energy	Confidence in U.S. Renewable Energy (out of 100)
<\$100 million	87 Extremely confident
\$100 million - \$500 million	86 Extremely confident
>\$500 million	76 Confident

Reflects survey responses prior to the Commerce inquiry

Developer Confidence in Renewable Energy Growth in 2022-2025



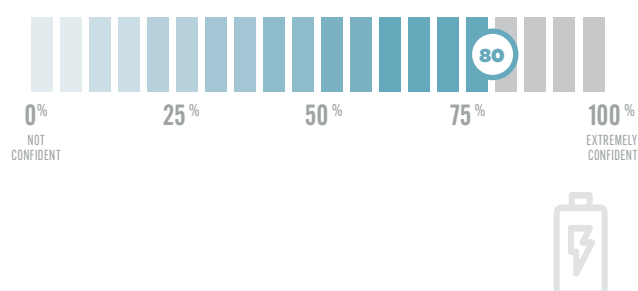
Renewable Energy Sector Confidence by Developer Revenue

Total Revenue of U.S. Renewable Business	Confidence in U.S. Renewable Energy (out of 100)
Less than \$10 million	86 Extremely confident
\$10-\$100 million	90 Extremely confident
\$100-\$500 million	80 Confident
\$500 million - \$1 billion	65 Confident
Over \$1 billion	74 Confident

Reflects survey responses prior to the Commerce inquiry

Investors across annual investment levels, and developers across revenue levels, rank as either “Confident” or “Extremely confident” in U.S. energy storage growth over the next three years. All investors, on average, rank “Confident,” rating their confidence in energy storage growth 80 out of 100. Developers, on average, report a score of 79/100.

Investor Confidence in Energy Storage Growth in 2022-2025

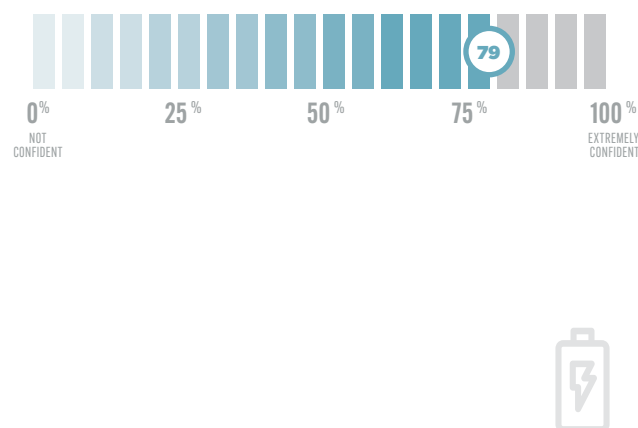


Energy Storage Sector Confidence by Investment Level

Annual Investment in U.S. Renewable Energy	Confidence in U.S. Energy Storage (out of 100)
<\$100 million	73 Confident
\$100 million - \$500 million	85 Extremely confident
>\$500 million	78 Confident

Reflects survey responses prior to the Commerce inquiry

Developer Confidence in Energy Storage Growth in 2022-2025



Energy Storage Sector Confidence by Developer Revenue

Total Revenue of U.S. Renewable Business	Confidence in U.S. Energy Storage (out of 100)
Less than \$10 million	88 Extremely confident
\$10-\$100 million	84 Extremely confident
\$100-\$500 million	75 Confident
\$500 million - \$1 billion	73 Confident
Over \$1 billion	73 Confident

Reflects survey responses prior to the Commerce inquiry

The above findings were collected before the Department of Commerce initiated its circumvention inquiry. Following that development, ACORE surveyed member investors and developers on the Commerce inquiry via a brief follow-up survey on their outlook on the growth of the solar sector. A high proportion of ACORE members — 86 percent of investors and 81 percent of developers — responding to the survey indicate the inquiry “Moderately decreased” or “Significantly decreased” their outlook on the growth of the solar sector over the next three years.

However, a couple of the investors who commented on the Commerce inquiry during the phone interviews indicate that they are maintaining a positive long-term outlook for solar despite the setback. A tax equity investor who was traditionally focused on wind and had recently entered the utility-scale solar sector in 2021 explains that the Commerce inquiry will not reverse their decision to invest in the solar market.

“We expanded our target investment to include utility-scale solar. We [have] additional tax capacity, and the only product that fits that magnitude of tax capacity is the solar ITC. [The Commerce inquiry] doesn’t impact our decision to get into solar.” - INVESTOR

Investors rank utility-scale solar, energy storage and commercial solar as the most attractive sectors for U.S. investment over 2022-2025. However, respondents indicate the attractiveness of utility-scale solar has dropped post-Commerce inquiry.

The top three sectors satisfy investor preferences for proven technologies, high returns and a promising outlook on sector growth.

“[Energy storage] is a growing market with fewer participants on the financing side — there are better returns.” - INVESTOR

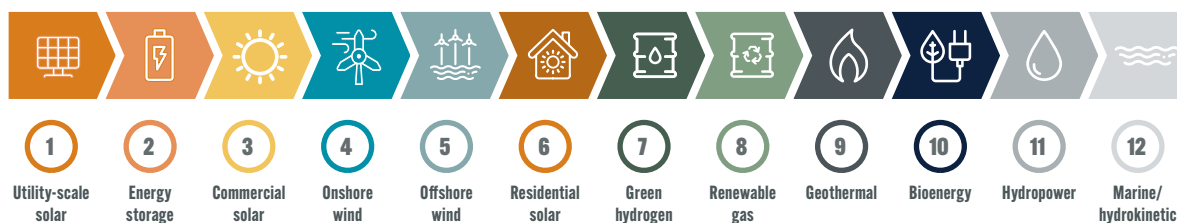
“It is easier to manage the deal flow for commercial solar projects and the returns are higher.” - INVESTOR

While investors indicate a positive outlook for the growth of the hydrogen sector, some are still hesitant to invest in the sector before the technology becomes more commercialized.

“Hydrogen is going to be a growing component of the market, but until we see something that is commercial and of scale, we’re not going to be terribly active there.” - INVESTOR

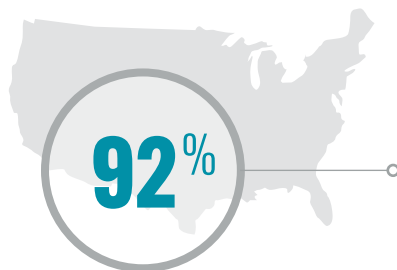
“We’ve been looking at [hydrogen] fuel cells, especially in the context of microgrids — I see opportunities for those having a great impact at the community level.” - INVESTOR

Weighted Ranking of Sectors Most Attractive for Investment in 2022-2025



The U.S. renewable energy market will continue to be attractive to investors compared to other leading countries in 2022-2025.

The majority of investors (56%) report “No change” in their preference for the U.S. as a venue for investment over the next three years, while 36 percent report they expect their preference for the U.S. to “Moderately increase” or “Significantly increase” over the next three years. Eight percent of investors report they expect their preference for the U.S. as a venue for renewable energy investment to “Moderately decrease” over the next three years.



Percentage of Investors That Perceive the U.S. as Attractive for Investment Compared to Other Leading Countries in 2022-2025

Reflects survey responses prior to the Commerce inquiry.

PJM was ranked as the most attractive power market for renewable energy in 2022-2025 by both investors and developers.

Developers note the high liquidity, electricity prices and demand for electricity combined with low basis risk in the PJM market as contributing to its appeal.

“PJM is an excellent market that is highly liquid. We don’t see much exposure to co-variants and basis for wind and solar. Pricing has been strong, too.” – DEVELOPER

“High demand and high electricity prices in...PJM led to development in the regions.”

– DEVELOPER

Investors respond to economic incentives, low risk, more saturated markets and supporting infrastructure when selecting which power markets to engage in. One investor highlights regions with high electricity prices, such as PJM and ISO-NE, and state rebates, such as New Jersey and New York, as most beneficial to investors.

“The two things that we like across different states are higher electricity prices and stronger rebates.” – INVESTOR

“Busbar PPAs and markets with lower basis risk are more attractive to us. Regions with good transmission are simpler for us to invest in.” – INVESTOR

“A state is either an active solar market with a lot of developers and IPPs or it is early-stage. If early-stage, there are business risks, program risks and maybe legislative risks.”

– INVESTOR

Company-level relationships and existing strategies are also influential in determining which power markets investors are most active. One investor describes being most active in regions where their company is headquartered.

“Personal and professional relationships led to deals working with companies that have a local presence. That is probably the biggest driver.”

– INVESTOR

Grid congestion and lack of standard policies across power markets are pain points for investors. Investors cite the NYISO and ISO-NE regions as areas with high congestion and would like to see increased standardization across markets in rebate and rate structures.

“We have concerns with NYISO and ISO-NE due to congestion.” - INVESTOR

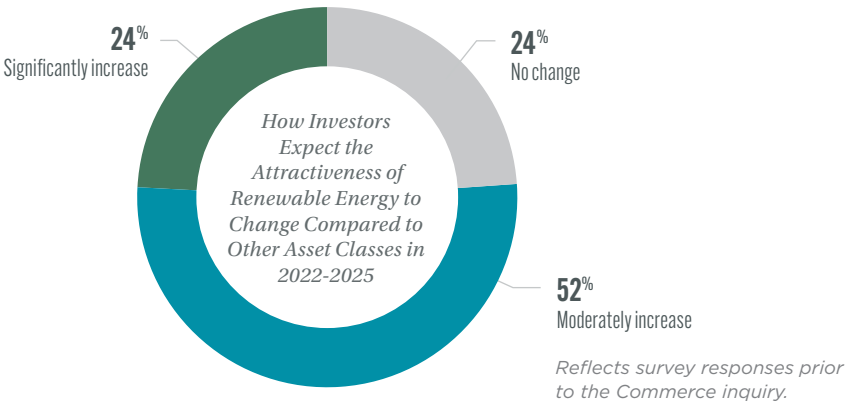
“We don’t like that every state has a different policy for the rebate payment, how the uptake rate works, where to study the rule, [the need] to call different parties to learn about the program. I wish there was a standard policy.” - INVESTOR

Weighted Ranking of U.S. Regional Power Markets Most Attractive for Renewable Investment or Deployment in 2022-2025

	Investors	Developers
1	PJM	PJM
2	MISO	ERCOT
3	CAISO	MISO
4	ERCOT	CAISO
5	NYISO	NYISO
6	ISO-NE	ISO-NE
7	Non-RTO Southeast	SPP
8	Non-RTO West	Non-RTO Southeast
9	SPP	Non-RTO West

More than three-quarters of investors expect the attractiveness of renewable energy to increase compared to other asset classes in their portfolios in 2022-2025.

More than three-quarters of investors (76%) expect the attractiveness of renewable energy to “Moderately increase” or “Significantly increase” compared to other asset classes in their portfolios in 2022-2025. No investors expect the attractiveness of renewable energy to decrease.



ACORE's \$1T 2030 Campaign Priorities

ACORE is strategically deploying its resources to promote policy reforms and market drivers that support accelerated sector growth to achieve our \$1T 2030 objective and the Biden administration's decarbonization targets. Specifically, we are pursuing the following priorities in 2022:

- **Tax Policy:** ACORE works to protect and extend existing incentives for renewable energy and provide a long-term level playing field in support of carbon-free electricity generation, including an ITC for standalone energy storage and regionally significant transmission, and a tax credit for advanced clean energy manufacturing. ACORE supports the clean tax platform in the Build Back Better Act.
- **Trade Policy:** ACORE works to strengthen renewable energy supply chains through trade and regulatory policy.
- **Transmission, Grid Technology and Wholesale Power Market Advocacy:** ACORE advocates for cost-effective investment in transmission infrastructure through our Macro Grid Initiative, and electricity marketplace reforms to promote greater access to and delivery of renewable resources. ACORE also promotes energy storage and other grid-enabling technologies through policy advocacy, market reforms and financing solutions.
- **Just Transition:** ACORE leverages our public and private networks to build opportunities for smaller renewable energy companies owned and operated by women, Black, Indigenous, and people of color leaders while also advocating for national policies and industry best practices to promote social and economic justice as a part of the nation's transition to renewable energy.
- **Capital Formation:** ACORE works with policymakers and industry leaders on regulatory issues to accounting rule changes that enable renewable energy investment and increase the pool of investors in the sector.
- **ESG Investing:** ACORE works with its members to increase standardization, transparency and use of material indicators in ESG and climate disclosures and scoring methodologies.
- **Climate Policy:** ACORE focuses on identifying and promoting the most viable suite of climate policies and analyzes their impact on renewable energy growth and investment.

Appendix

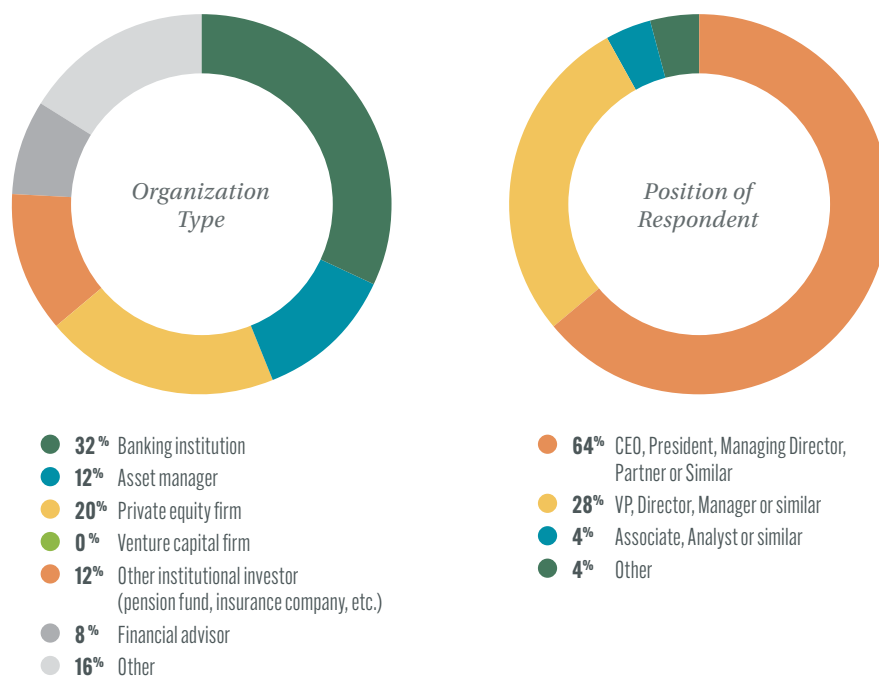
Survey Methodology

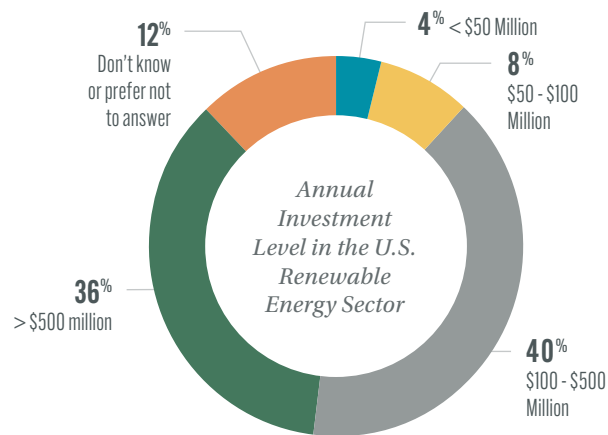
ACORE conducted two online, anonymous surveys in March 2022 targeting select professionals from companies active in the U.S. renewable energy sector that: (1) finance, invest in or financially advise renewable projects, technologies or companies, and (2) actively develop renewable energy projects that third parties finance. Surveyed professionals represent both ACORE member and non-member companies. The findings of this report were compiled via online surveys, phone interviews and secondary online research. ACORE reached out to more than 100 financial institutions and more than 100 development companies, surveying 25 investors and 24 developers.

Phone interview quotes have been lightly edited for clarity.

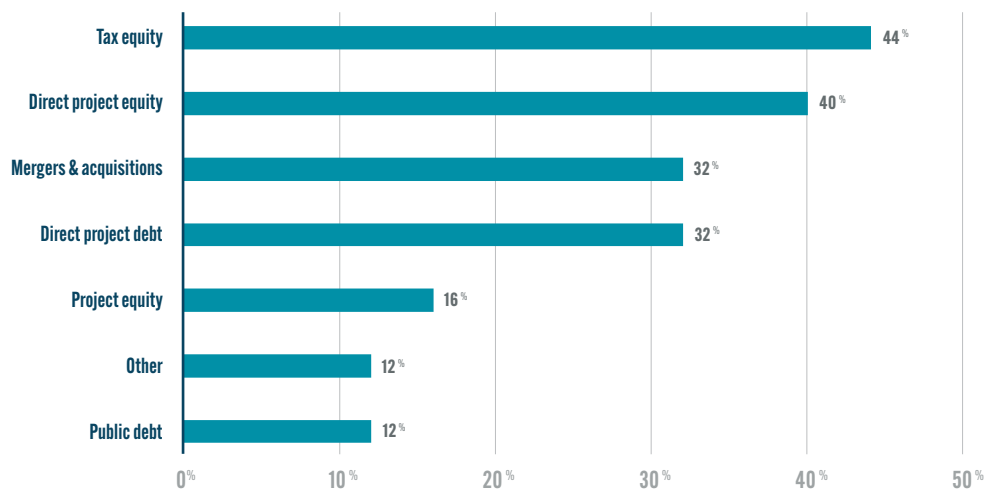
Profile of Respondents

Investor Survey



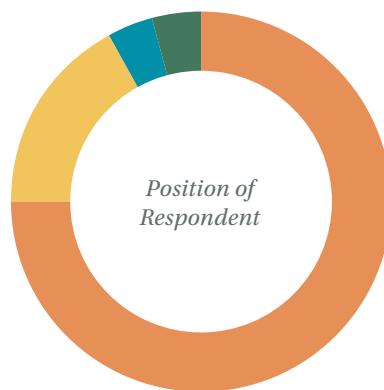
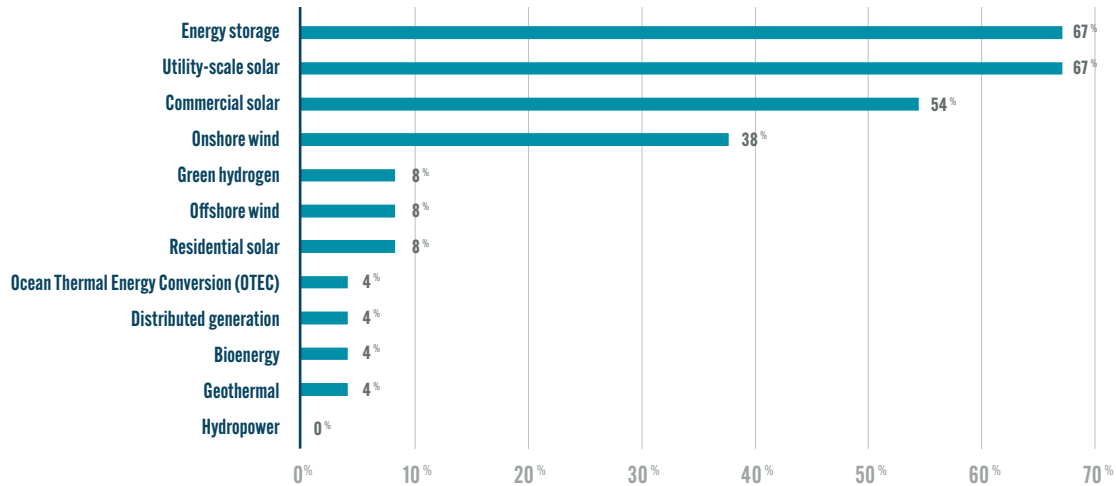


Financing Vehicles Used for Renewable Energy

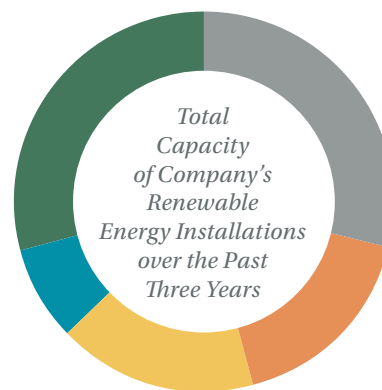


Developer Survey

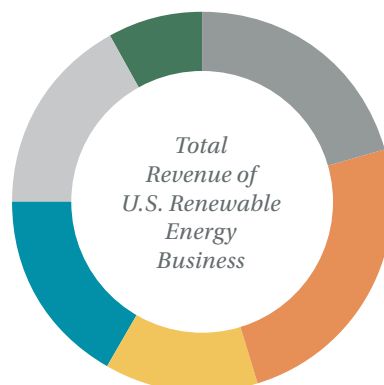
Renewable Energy Technologies Developed by Companies Over the Past Three Years



- 75% CEO, President, Managing Director, Partner or Similar
- 17% VP, Director, Manager or similar
- 4% Associate, Analyst or similar
- 4% Other



- 29% Less than 50 MW
- 17% 50 MW - 100 MW
- 17% 100 MW - 500 MW
- 8% 500 MW - 1 GW
- 29% Over 1 GW



- 21% Less than \$10 million
- 25% \$10 - \$100 million
- 13% \$100 - \$500 million
- 17% \$500 million - \$1 billion
- 17% Over \$1 billion
- 8% Don't know or prefer to answer

Acknowledgements and About ACORE

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About ACORE

The American Council on Renewable Energy is a national nonprofit organization that unites finance, policy and technology to accelerate the transition to a renewable energy economy.

For more information, please visit www.acore.org.

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\$1T 2030: The American Renewable Investment Goal

On June 19, 2018, ACORE and a coalition of its financial institution members announced the launch of a new campaign that aims to reach \$1 trillion in U.S. private sector investment in renewable energy and enabling grid technologies by 2030.

Through \$1T 2030: The American Renewable Investment Goal, leading energy financiers have come together in a coordinated effort to accelerate the investment and deployment of renewable power. The campaign leverages the network of ACORE members and supporters, highlighting a combined set of commonsense policy reforms and distinct market drivers that are necessary to reach this ambitious goal.

For more information, please visit
www.acore.org/1T2030.