

Schedule 11

Docket EMP-119 SUB 0



**ACORE**

AMERICAN COUNCIL ON  
RENEWABLE ENERGY

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Aug 30 2021

# EXPECTATIONS FOR RENEWABLE ENERGY FINANCE IN 2021-2024:

## Growing Confidence in the Aftermath of the Pandemic

June 2021



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## EXECUTIVE SUMMARY

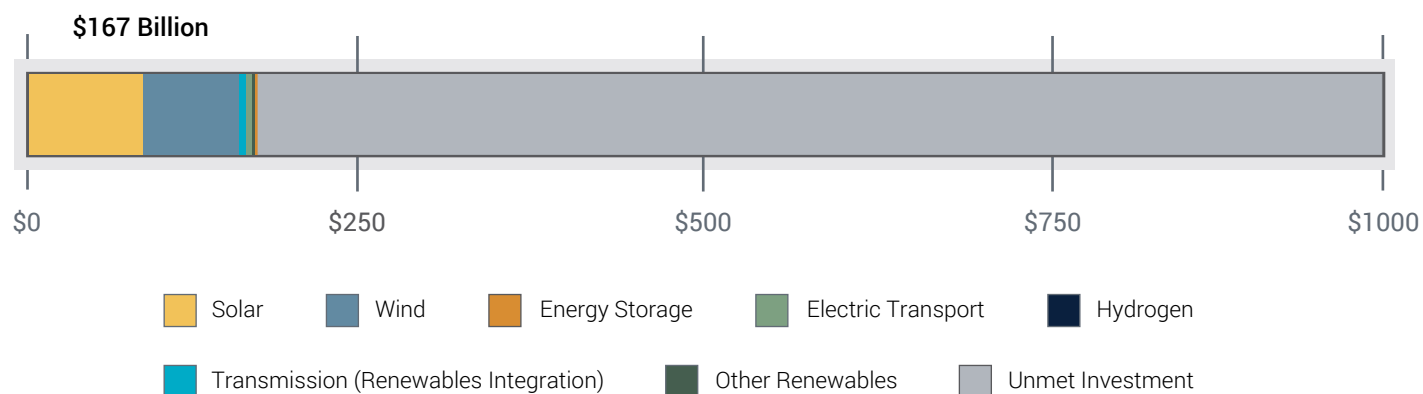
ACORE launched its \$1T 2030 campaign in 2018 to achieve \$1 trillion in private sector investment in U.S. renewable energy and enabling grid technologies by 2030, while advocating for policy reforms and market drivers to help meet this goal.

This report assesses progress on the campaign and presents the results of two 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.



The U.S. has now attracted \$167 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 \$92.6 billion in annual investment through 2029, an annual increase of 59 percent over the 2020 investment level.

Cumulative Progress on \$1T 2030 Campaign (2018-2020) (in billions)



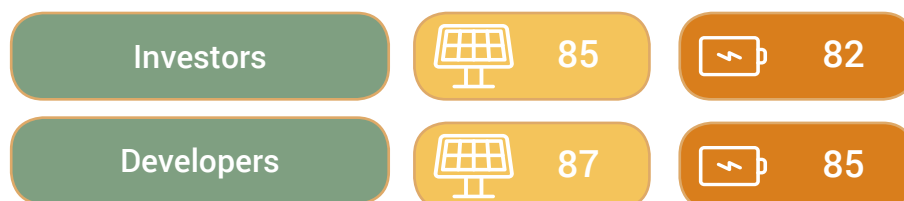
Source: BloombergNEF

**Asset finance investment in the U.S. renewable energy and grid-enabling technology sectors decreased overall in 2020 to \$58.3 billion, even as the solar and energy storage sectors had record years.** Renewable sector investment decreased 12 percent, primarily due to lower financings in the onshore wind sector. A central reason for the decrease is that credits for new wind energy development were scheduled to phase out at the end of 2020. While Congress extended the wind production tax credit in December of 2020, investors had little opportunity to take advantage of this change. Wind investment, therefore, peaked in 2019 as developers rushed to take advantage of the about-to-expire tax credits. Meanwhile, solar investment increased 36 percent from 2019, and investment in energy storage passed \$1 billion in annual investment for the first time.

**While aggressive, the \$1T 2030 objective puts the U.S. in reach of a carbon-free electricity system.** President Joe Biden’s goal to achieve carbon-free electricity by 2035 is a massive undertaking, but achieving ACORE’s \$1 trillion target would put this ambitious goal within reach. As demand for sustainable investment and market opportunities expand, clean energy initiatives from the banking sector and major corporate players will create further momentum toward the \$1T 2030 objective.

**Surveyed investors and developers report, on average, even higher confidence levels in the renewable energy and energy storage sectors than in ACORE’s past surveys, which have always reflected strong optimism.** For the renewable energy sector, investor confidence increased by an average of eight points and developer confidence increased by nine points.

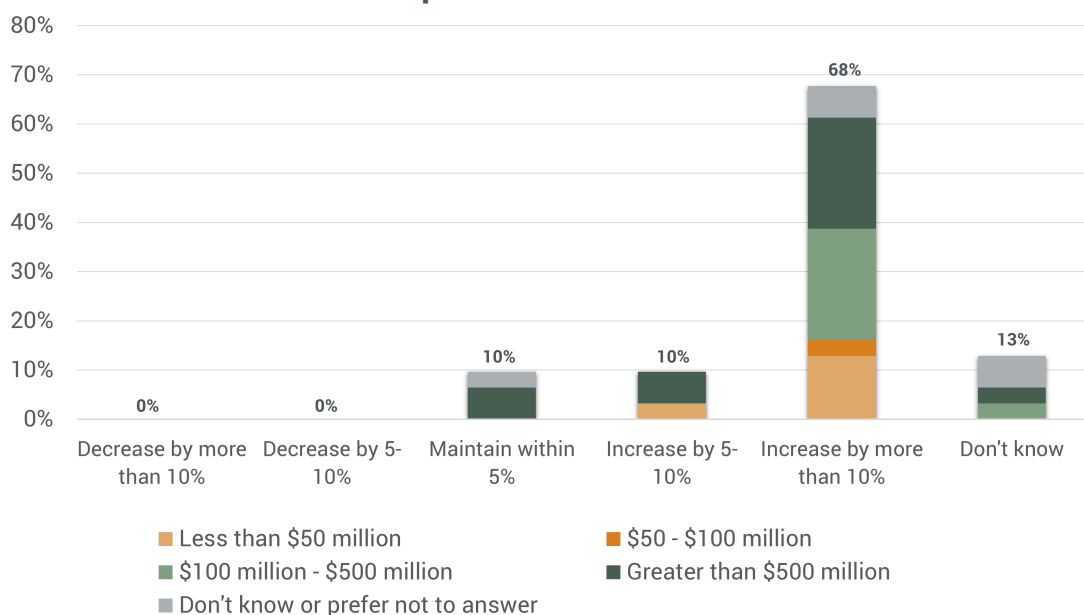
Average Sector Confidence Expected in 2021-2024 (out of 100)





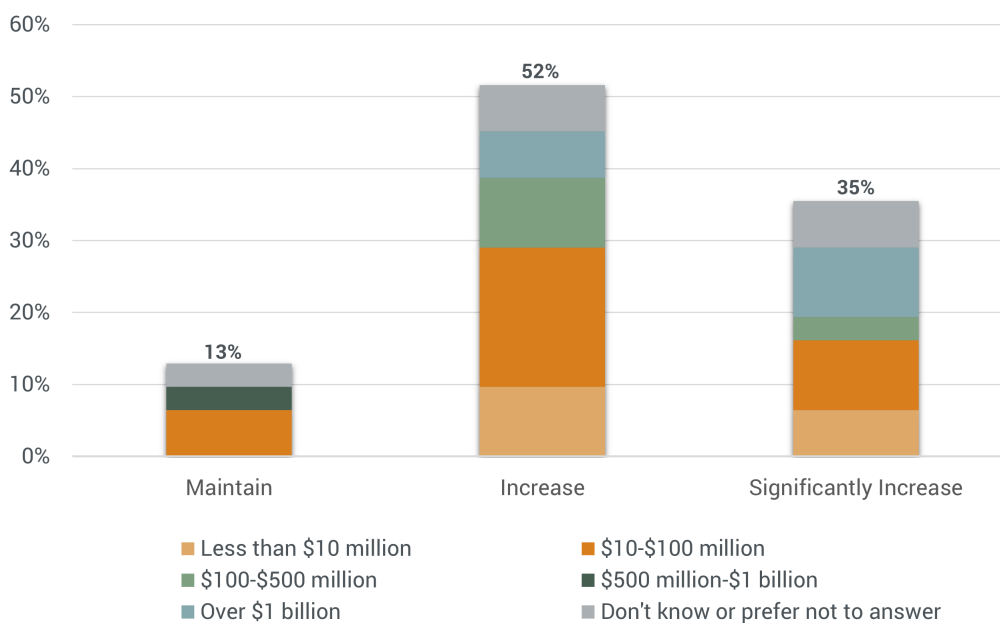
**More than two-thirds of surveyed investors (68%) report plans to increase their investments by more than 10 percent this year compared to 2020.** Notably, 70 percent of companies that invest greater than \$100 million annually plan to increase investment by more than 10 percent compared to last year.

### How Investors Plan to Change Their Renewable Energy Investment in 2021 Compared to 2020



**Similarly, developers plan to maintain or increase their activity in 2021 compared to 2020.** All the companies that operate renewable energy businesses with revenues greater than \$1 billion plan to increase their activity. Eighty-seven percent of developers indicate that the December 2020 federal tax credit and safe harbor extensions affected their decision-making in 2021.

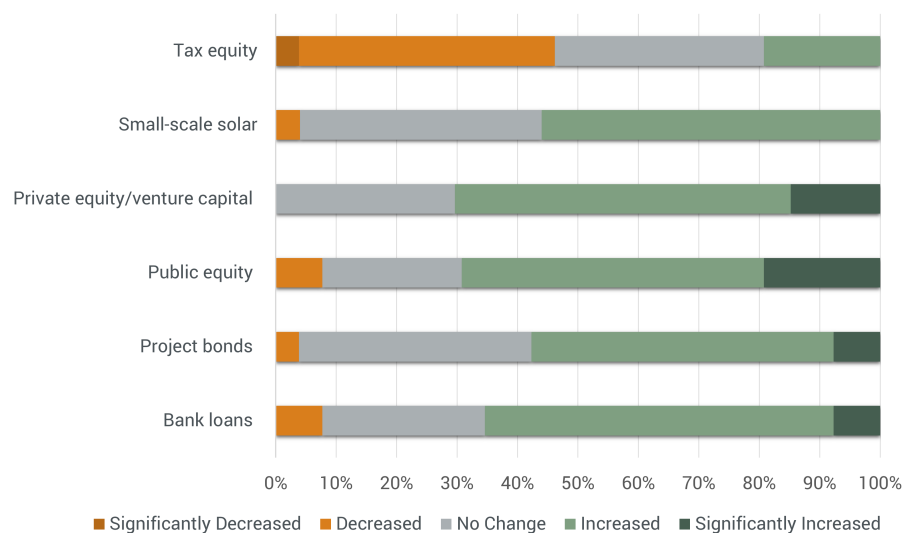
### How Developers Plan to Change Their Renewable Energy Development in 2021 Compared to 2020



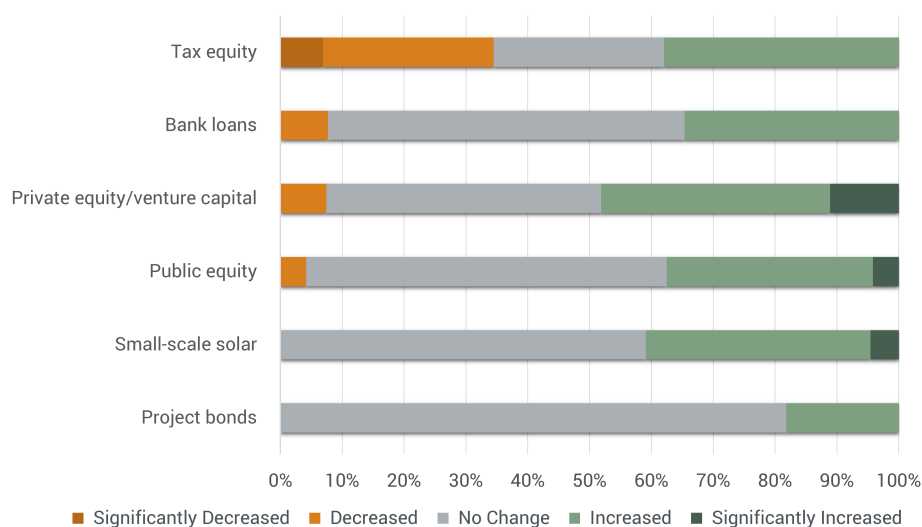
Nearly all surveyed investors (90%) and developers (93%) report either maintained or increased risk appetites in 2021 compared to 2020. However, some respondents cite reduced access to specific financing sources and consequences from the February 2021 Texas power outages as impediments to business.

Investors and developers continue to report shortages in tax equity in 2021, as also observed in ACORE’s 2020 surveys. Forty-six percent of investors and 35 percent of developers indicate that tax equity availability has either “Decreased” or “Significantly Decreased” within the past year. By contrast, 50 percent or more of investors report an “Increase” in the availability of each of the other surveyed financing sources.

### Change in the Availability of Financing Sources in 2021 Compared to 2020: Investors



### Change in the Availability of Financing Sources in 2021 Compared to 2020: Developers



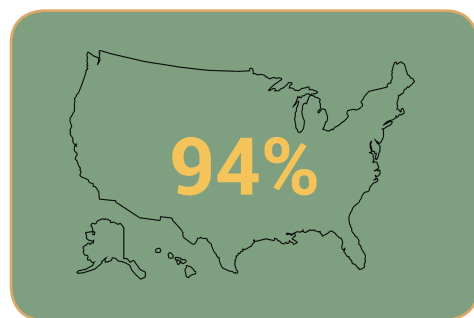
Interest in hedged merchant renewable or storage agreements has remained unchanged or increased for most survey respondents in 2021; however, **23 percent of investors and 30 percent of developers report a decrease or significant decrease in interest in hedge agreements**, citing repercussions from the Texas power outages.





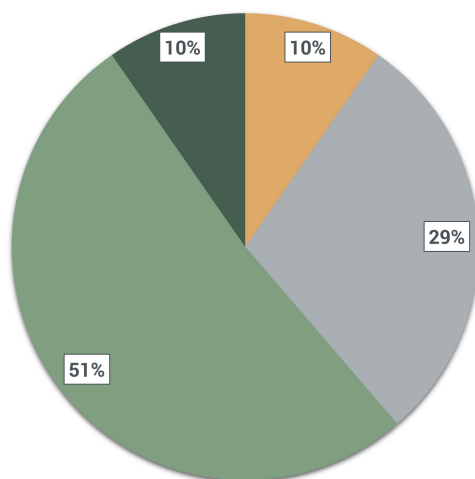
Investors consider the U.S. to be an attractive venue for investment compared to leading countries like China over the next three years. Forty-eight percent of investors expect "No Change" in the attractiveness of the U.S., and 46 percent anticipate the country's attractiveness will increase over the period.

### Percentage of Investors That Perceive the U.S. as Attractive for Investment Compared to Other Leading Countries in 2021-2024



Investors expect the attractiveness of renewable energy to be maintained or increase compared to other asset classes in their portfolios in 2021-2024.

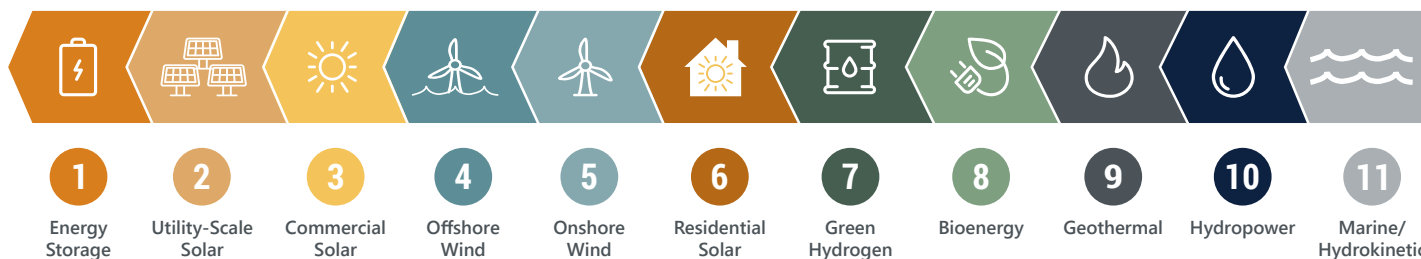
### How Investors Expect the Attractiveness of Renewable Energy to Change Compared to Other Asset Classes in 2021-2024



■ Significantly Decrease ■ Decrease ■ No change ■ Increase ■ Significantly Increase

Energy storage and utility-scale solar rank as the most popular preferences for investment among surveyed investors over the next three years.

### Ranking of Sectors Most Attractive for Investment in 2021-2024



PJM, CAISO and NYISO rank as the most attractive U.S. regions for renewable energy investment and development over the next three years.

Looking forward, most investors and developers select long-term extensions of the wind and solar tax credits and a new standalone energy storage tax credit as effective federal policy options for growing the sector. Both investors and developers also emphasize the importance of market reforms and financial incentives to facilitate the expansion of high-voltage transmission lines, which can enable more renewable energy deployment.

### Ranking of U.S. Regional Power Markets Most Attractive for Renewable Investment or Deployment in 2021-2024

Investors	Developers
PJM	PJM
CAISO	CAISO
NYISO	NYISO
ISO-NE	Non-RTO West
MISO	MISO
ERCOT	ERCOT
Non-RTO West	ISO-NE
SPP	SPP
Non-RTO Southeast	Non-RTO Southeast

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. Specifically, we are pursuing the following priorities in 2021:

- **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 a free-standing investment tax credit for energy storage technologies and regionally significant transmission.
- **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, including a federal high-penetration renewable energy standard or clean energy standard and carbon pricing.
- **Grid Advocacy:** ACORE advocates for cost-effective investment in transmission infrastructure to create a Macro Grid, and a less balkanized and fairer electricity marketplace to promote greater access to and delivery of renewable resources.
- **Energy Storage:** Energy storage and other grid-enabling technologies have the potential to transform the power system and fundamentally change the way we think about energy. ACORE promotes their growth through policy advocacy, market reforms and financing solutions.
- **Environmental, Social and Governance (ESG) Scoring:** ACORE works with its members to increase standardization, transparency and use of material indicators in ESG disclosure and scoring methodologies through specific recommendations and regular outreach to the ESG community.

**Disclaimer:** The results of ACORE’s survey reflect the perceptions of 62 company respondents and should not be used to extrapolate the opinions of all companies in the sector.







# PROGRESS ON ACORE'S \$1T 2030 CAMPAIGN



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 the 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 campaign<sup>1</sup> and help get us on a trajectory toward President Biden's achievement of a carbon-free grid by 2035.

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



## Investment in 2020

### Renewable sector investment declined overall due to lower wind sector financings, but solar investment surged.

The U.S. renewable energy sector attracted **\$54.4 billion** in asset finance investment in 2020,<sup>2</sup> a **12 percent decrease from 2019**, according to BloombergNEF. Wind investment was only half of the record year the sector achieved in 2019, which was spurred by a rush to qualify for the federal production tax credit that was phasing down.<sup>3</sup> Credits for beginning new wind energy development were scheduled to phase out at the end of 2020. While Congress extended the wind production tax credit in December of 2020, investors had little opportunity to take advantage of this change. Meanwhile, the solar sector experienced its best year ever in 2020 with \$36.2 billion invested, a 36 percent year-over-year increase.

### Energy storage achieved a record \$1.2 billion in investment in 2020, but the \$2 billion invested in the overall grid-enabling technology sector continues to fall below its potential.

The development of grid-enabling technologies – energy storage, electric transport infrastructure and hydrogen applications – will be essential for expanding the demand for and integration of renewable energy. However, these sectors attracted just \$2 billion in asset finance in 2020. Investment in energy storage, specifically, achieved a record annual investment of \$1.2 billion.<sup>4</sup> Electric vehicle infrastructure drew \$0.8 billion, and hydrogen applications did not attract a significant amount of investment.<sup>5</sup>

### Expanded transmission capacity is needed to facilitate the expansion and integration of renewable energy.

The nation will need to build out its transmission capacity to connect high renewable resource centers with high electric demand centers. Through an expanded, nationally connected transmission grid, or Macro Grid, we can enhance grid resiliency and dramatically reduce carbon emissions. We estimate that the transmission capital costs associated with interconnecting new renewable energy in 2020 totaled \$1.9 billion, up from \$1.2 billion in 2019.<sup>6</sup> Wood Mackenzie and the American Clean Power Association anticipate that \$89 billion of investment will be needed in prioritized transmission lines between 2020 and 2030 to reach 50 percent renewables on the U.S. electric grid.<sup>7</sup>

2 BloombergNEF. Investment and Valuation Database. Accessed May 3, 2021 at: <https://www.bnef.com/interactive-datasets/2d5d59acd9000005?data-hub=3>

3 BloombergNEF. "Energy Transition Investment Trends: Tracking global investment in the low-carbon energy transition. 2021. Accessed May 3, 2021 at <https://www.bnef.com/insights/25307/view>, p.8

4 BloombergNEF. Investment and Valuation Database. Accessed May 3, 2021 at: <https://www.bnef.com/interactive-datasets/2d5d59acd9000005?data-hub=3>

5 ACORE has modified this report's enabling grid subsector categories to reflect market developments, a change in source data and better represent the grid technologies that will enable renewable growth. Our revised categories track asset finance in energy storage, electric transport infrastructure (public and private charging) and hydrogen infrastructure (electrolyzers and hydrogen fueling stations), and no longer represent corporate finance.

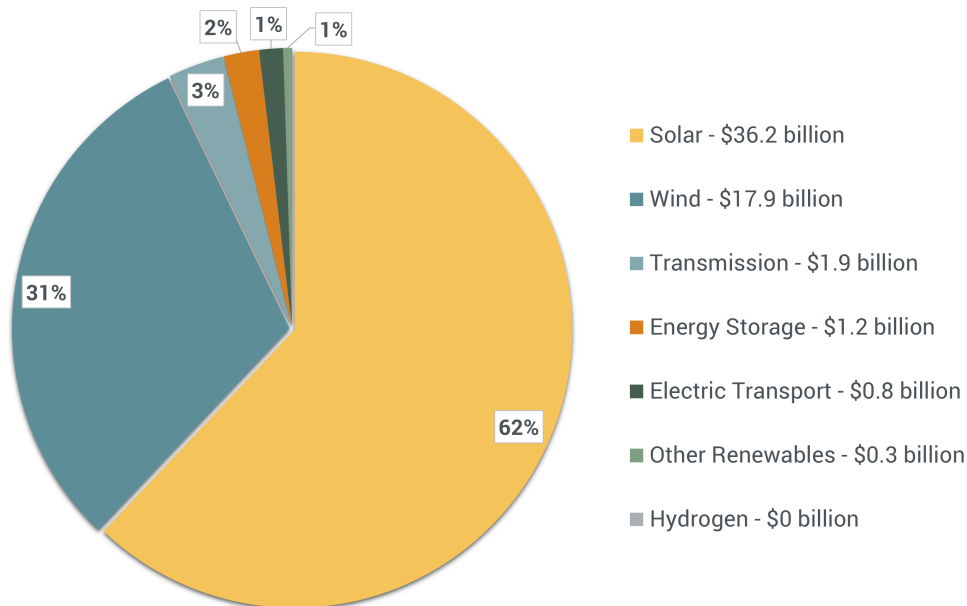
6 To estimate the annual cost of interconnecting renewables, we calculate a capacity-weighted average cost of interconnection between MISO and PJM for both wind and solar. We then multiply those values by 2018, 2019, and 2020 wind and solar capacity additions. We begin by taking constructed wind and 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 2018, 2019, and 2020, as reported by the BNEF Sustainable Energy in America 2021 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](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 2021 Factbook. February 2021. <https://bcse.org/factbook/>, page 22.

7 American Clean Power Association & Wood Mackenzie. "Renewable energy and infrastructure policy scenario analysis". December 2020. Accessed May 3, 2021 at: <https://cleanpower.org/wp-content/uploads/2021/02/american-clean-power-renewable-energy-and-infrastructure-policy-analysis.pdf>





**Figure 1: 2020 U.S. Private Sector Investment in Renewable Energy and Enabling Grid Technologies, by Sub-Sector**



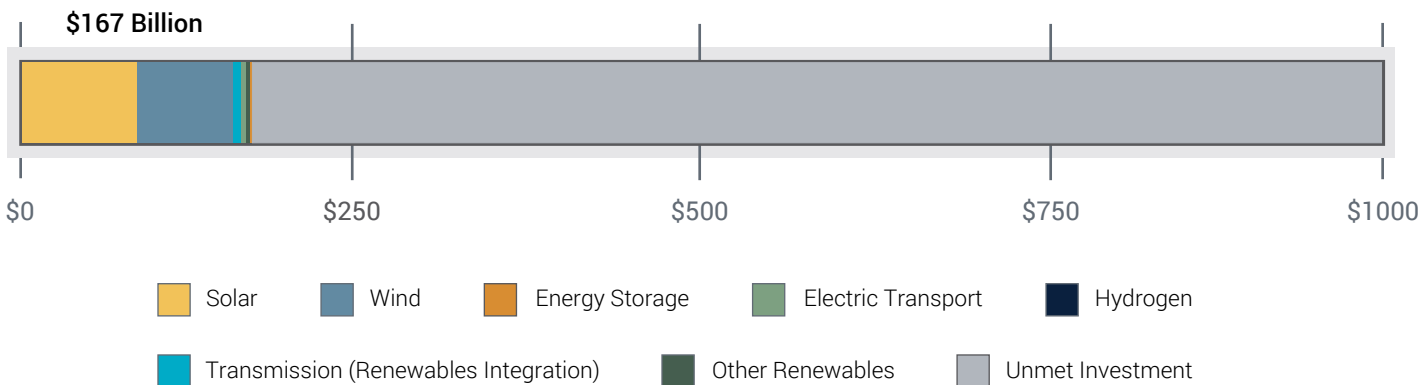
**The U.S. retains its second-place ranking in global renewable energy investment.**

Internationally, the U.S. continues to rank second in renewable energy investment, behind China. China reached \$101.5 billion<sup>8</sup> in 2020, which is **1.7 times the investment in the U.S.** China’s investment in grid-enabling technologies is \$3.7 billion.

**Where We Stand**

**The U.S. has now attracted \$167 billion in renewable energy and grid-enabling technology sector investment since the \$1T 2030 campaign launch in 2018**, reaching 16.7 percent of the \$1 trillion campaign goal. Achieving the 2030 goal will require an average annual investment of \$92.6 billion through 2029, an annual increase of 59 percent above the 2020 investment level.

**Figure 2: Cumulative Progress on \$1T 2030 Campaign (2018-2020) (in billions)**



Source: BloombergNEF

8

BloombergNEF. Investment and Valuation Database. Accessed May 3, 2021 at: <https://www.bnef.com/interactive-datasets/2d5d59acd9000005?data-hub=3>



## While aggressive, the \$1T 2030 objective puts the U.S. in reach of a carbon-free electricity system.

President Joe Biden's goal to achieve carbon-free electricity by 2035 is a massive undertaking, but achieving ACORE's \$1 trillion by 2030 target will put this ambitious goal within reach.

According to BloombergNEF, wind and solar are already on track to replace coal and could replace three-quarters of existing gas generation by growing to 1,100 gigawatts (GW) by 2030, up from 215 GW as of year-end 2020. The remaining one-quarter of gas generation could be replaced by 330 GW of capacity from hydrogen, carbon capture and storage, geothermal or other "clean firm" technologies.<sup>9</sup> Just boosting wind and solar capacity to 1,100 GW by 2035 would require a capital investment of \$1.1 trillion.<sup>10</sup>

According to a study published by the University of California Berkeley in June 2020, by reaching 90 percent renewable energy by 2035, the power sector could "inject \$1.7 trillion in clean energy investments into the U.S. economy."<sup>11</sup>

## New Drivers for Growth

### Expanded federal support for renewable energy has begun to bear fruit, and more will come.

The Biden administration is taking a whole-of-government approach to address the climate crisis and support the transition to a renewable energy economy.

#### *GHG Emissions Reductions*

Having reentered the Paris Climate Agreement on April 22, 2021, the administration set an aggressive target to reduce economy-wide net greenhouse gas (GHG) pollution by 50-52 percent from 2005 levels by 2030.<sup>12</sup>

#### *Offshore Wind*

On March 29, 2021, the administration announced a target of adding 30 GW of offshore wind to the grid by 2030. Along with tax credit extensions and new loan guarantees, the still nascent offshore wind sector now has unprecedented policy support.<sup>13</sup>

#### *American Jobs Plan*

President Biden also unveiled the American Jobs Plan on March 31, 2021, a more than \$2 trillion climate and infrastructure effort to support the President's goal of 100 percent carbon-free electricity by 2035.<sup>14</sup> This ambitious initiative places our sector at the center of efforts to revive the American economy as it seeks to catalyze an accelerated transition to clean energy and address the climate crisis. The critical next step will be for Congress to translate key elements of the American Jobs Plan into legislation, which is expected to move forward later this year.

9 BloombergNEF. Decarbonizing U.S. Power Part 1: A Roadmap to 2035. March 2, 2021. <https://www.bnef.com/insights/25641/view>

10 Between 2021 and 2024, BNEF expects \$48 billion in annual investment in wind and solar capacity. The figure would need to increase to \$90 billion per year from 2025 to 2035. BloombergNEF. Decarbonizing U.S. Power Part 2: Greening Bulk Generation. March 3, 2021. <https://www.bnef.com/insights/25649/view>

11 University of California Berkeley. 2035: The Report. June 2020. <https://www.2035report.com/wp-content/uploads/2020/06/2035-Report.pdf>

12 The White House. "FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies." April 22, 2021. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>

13 The White House. "FACT SHEET: Biden Administration Jumpstarts Offshore Wind Energy Projects to Create Jobs." March 29, 2021. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/29/fact-sheet-biden-administration-jumpstarts-offshore-wind-energy-projects-to-create-jobs/>

14 The White House. "FACT SHEET: The American Jobs Plan." March 31, 2021. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/31/factsheet-the-american-jobs-plan/>





### *Other Notable Administrative Plans and Actions*

- The Federal Energy Regulatory Commission (FERC) promises to roll back anti-renewable market rules and propose improvements to transmission planning to carry more clean energy to market.
- The Department of Energy pledges to start awarding \$40 billion in loans and loan guarantees already authorized by Congress but not spent by the previous administration through its revived Loan Programs Office.
- The Department of the Interior plans to examine processes for the siting and permitting of renewable energy and transmission projects, including expanding and easing offshore wind leasing and transmission line siting along existing highway corridors.
- The Federal Reserve, Financial Stability Oversight Council and the Securities and Exchange Commission have begun processes to consider broader regulation and oversight of corporate climate disclosure and climate-related risks to the economy, which could help speed the transition away from fossil fuels.

## **Commitments from banking institutions and other corporates are accelerating the trend toward renewables.**

### *Banking Institutions*

The banking sector is expanding its focus on clean energy and climate as market opportunities expand, and as the federal government and customers exert pressure on banks to make more sustainable investments. Recently, four of the largest banks announced investment goals in support of President Biden's climate targets at a Leaders Summit on Climate at the White House. They include:

- JPMorgan Chase: Goal to finance **\$2.5 trillion** in climate change and sustainable investment activity by 2030;
- Citigroup: Goal of **\$1 trillion** to finance these same important objectives;
- Bank of America: Goal to achieve **zero GHG emissions** from its "financing activities, operations and supply chain" by 2050;
- HSBC: Goal to achieve **zero GHG emissions**.<sup>15</sup>

On April 21, 2021, 43 banks with \$28.5 trillion in assets committed to aligning their lending and investing portfolios with net-zero emissions by 2050 as part of the UN's Net-Zero Banking Alliance.<sup>16</sup> Climate activists emphasize that banks will need to phase out lending to the oil and gas sectors for the financial sector to address climate change adequately.

### *The Corporate Landscape*

Corporations in other sectors also continue to strengthen their renewable energy commitments. As of 2021, 69 percent of Fortune 100 companies have either a GHG emissions reduction target or a renewable energy procurement target.<sup>17</sup> On April 13, 2021, 411 businesses and investors, representing \$4 trillion in annual revenue and \$1 trillion in assets, signed an open letter to President Biden supporting the goal of halving GHG emissions by 2030 and achieving net-zero emissions by 2050.<sup>18</sup>

<sup>15</sup> Bullard, Nathaniel. Bloomberg Green Daily E-Newsletter. Sent April 22, 2021.

<sup>16</sup> UNEP. "Net-Zero Banking Alliance." Accessed May 13, 2021 at: <https://www.unepfi.org/net-zero-banking/>

<sup>17</sup> Fortune 100 sustainability reports

<sup>18</sup> Ceres Press Release. "411 Businesses And Investors Support U.S. Federal Climate Target In Open Letter To President Biden." April 13, 2021, updated April 22, 2021. Accessed May 13, 2021 at: <https://www.ceres.org/news-center/press-releases/411-businesses-and-investors-support-us-federal-climate-target-open>



Corporations signed contracts to purchase 13.5 GW from U.S. renewable energy projects in 2020, representing 56 percent of the global market for corporate power purchase agreements (PPAs). Beyond offtake agreements, some corporations have also begun financing renewable energy projects as tax equity providers.

## Recent Headwinds

Despite growing momentum for the energy transition, several headwinds have emerged that could impede the speed of growth.

### The February 2021 Texas power outages have challenged certain financing structures and created new policy uncertainty in the Texas market.

Frigid temperatures and precipitation in early February drove unprecedented demand while causing disruptions to electricity supply, leaving many without power. Electricity spot prices skyrocketed, leading to substantial company profits and losses, particularly those in hedge arrangements. Many companies are adjusting their risk management and deployment strategies in light of these and other legislative developments, as detailed in the survey results section of this report.

### Developers continue to face difficulty securing tax equity financing.

The COVID-19 pandemic led to constraints in tax equity availability for wind and solar project finance as some investors' tax liability and interest in using tax credits declined. While the largest tax equity investors increased their tax equity investment in 2020,<sup>19</sup> many developers are experiencing greater hurdles securing tax equity than they did before the pandemic. Investors and developers highlighted these constraints in ACORE's 2020 surveys and do so again in our 2021 surveys, as detailed in the next section.

The renewable energy sector is advocating that Congress provide a direct pay option that would allow developers to access incentives directly as an additional option to traditional tax equity.

The following section presents the results of an ACORE survey analyzing how renewable energy investors and developers are reacting to these opportunities and challenges in 2021 and their expectations for sector growth through 2024.

19 Martin, Keith. "Disappearing tax equity" (webinar). August 19, 2020. Accessed May 13, 2021 at: <https://www.projectfinance.law/publications/2020/august/disappearing-tax-equity/>





## ***2021 SURVEY RESULTS***

ACORE surveyed the opinions of senior professionals who represent companies active in the U.S. renewable energy sector in April 2021, including debt, equity and tax equity investors, financial advisors, and project developers. The surveys assess respondents' experiences in the market over the past year and their expectations for sector finance and development over the next three years.

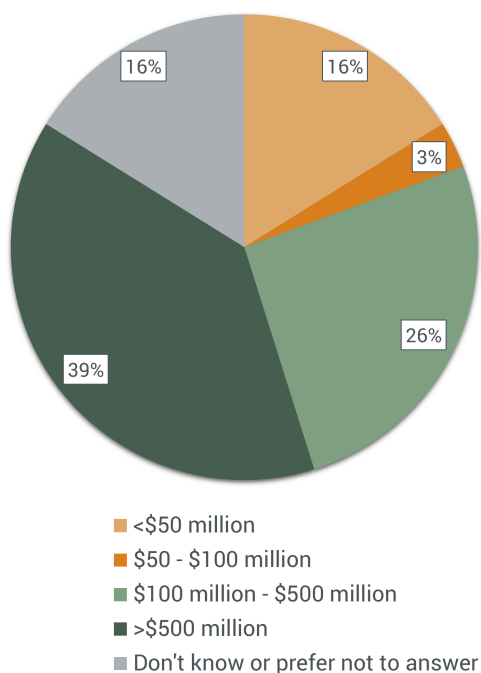


This year is the fourth year ACORE has surveyed investors for the \$1T 2030 campaign, and the second year ACORE has collected responses from developers. The responses outlined in this section reflect the perspectives of representatives from 62 companies. A complete profile of survey respondents appears in the Appendix.

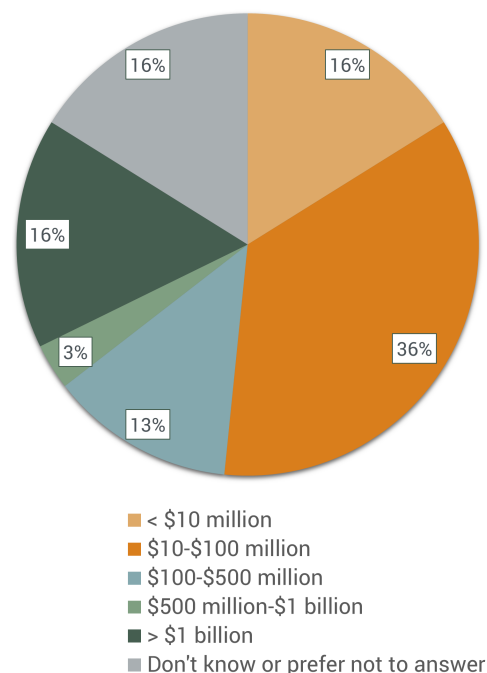
- Two-thirds of the financial institutions represented in the Investor Survey invest more than \$100 million each year in the U.S. renewable energy sector.
- About one-third of the developers represented in the Developer Survey operate U.S. renewable energy businesses with total revenues greater than \$100 million.
- A majority of respondents occupy senior positions at their companies, with nearly two-thirds serving as CEO, Managing Director or a comparable level.

Survey results illustrate an extremely confident outlook for the U.S. renewable energy and energy storage sectors over the next three years. Nearly all companies plan to increase their development or investment activity; however, some companies cite lingering challenges in tax equity availability and decreased appetites for hedge agreements after the Texas power crisis in February 2021. Respondents also outline federal policy options – such as long-term extensions of the renewable energy tax credits, and standalone tax credits for energy storage and regionally significant transmission – that could be valuable tools in scaling up mid-term growth.

**Figure 3: Financial Institution Respondents Annual Investment in the U.S. Renewable Sector**



**Figure 4: Developer Respondents Total Revenue of U.S. Renewable Energy Business**

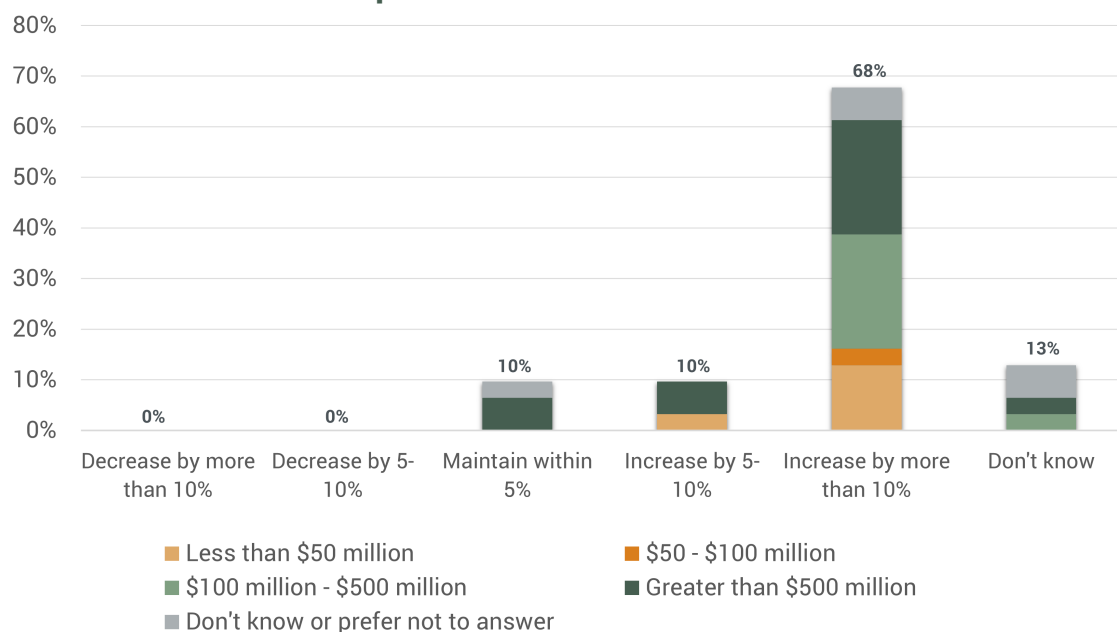


## Near-Term Outlook: Company Plans, Availability of Financing Sources and Risk Appetites in 2021

Surveyed investors and developers largely plan to increase their activity in the U.S. renewable energy sector in 2021, and no companies expect to decrease activity.

More than two-thirds of surveyed investors (68%) report plans to increase their investments by more than 10 percent this year compared to 2020. No investors report plans to decrease their investments, although 13 percent remain uncertain. Notably, 70 percent of companies that invest greater than \$100 million annually plan to increase investment by more than 10 percent compared to last year.

**Figure 5: How Investors Plan to Change Their Renewable Energy Investment in 2021 Compared to 2020**



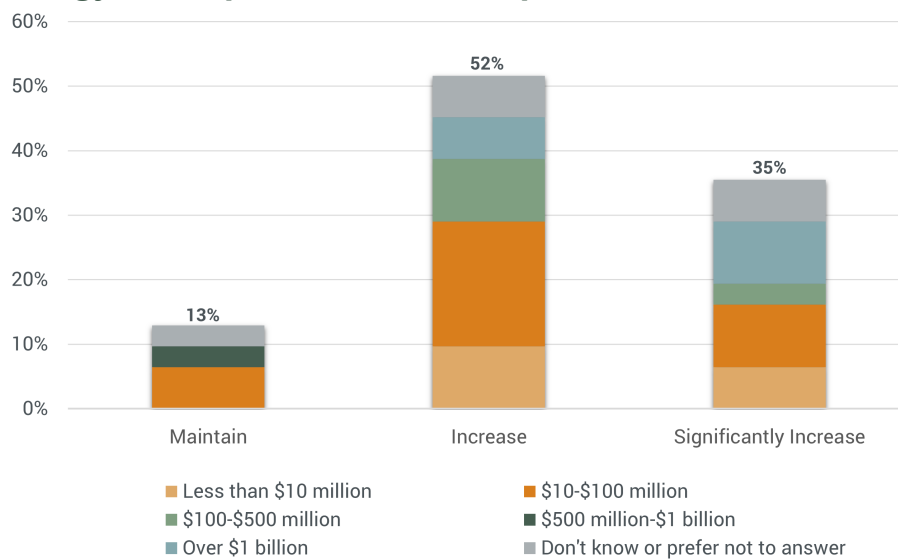
Meanwhile, more than half of surveyed developers (52%) plan to “Increase” and 35 percent plan to “Significantly Increase” their renewable energy development this year compared to last year, while 13 percent plan to “Maintain” their current levels of development. All the companies that operate renewable energy businesses with revenues greater than \$1 billion plan to increase their activity. No respondents plan to decrease their development activity.

The extensions of the renewable energy tax credits and safe-harbor deadlines in December 2020 notably affected development plans in 2021. Forty-five percent of developers report the extensions “Extremely Affected” their development plans, while 42 percent say the extensions “Moderately Affected” their strategies.

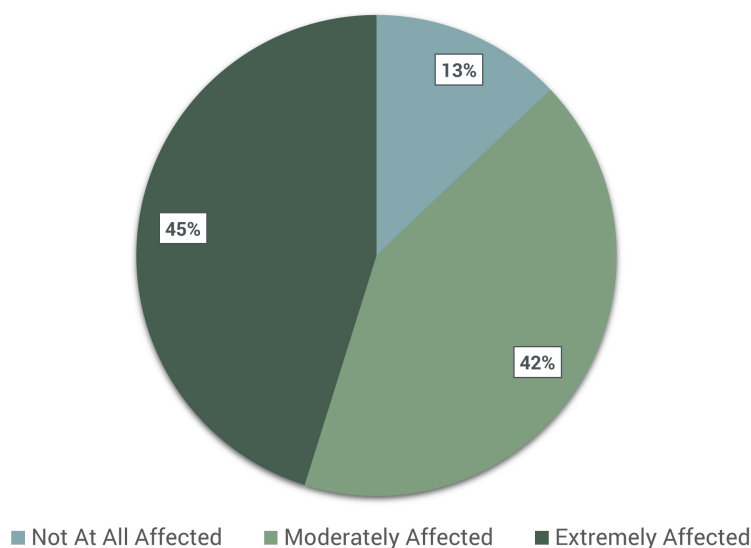
*“The tax credit extensions certainly helped us on our pipeline.”*  
 – Renewable Energy Developer



**Figure 6: How Developers Plan to Change Their Renewable Energy Development in 2021 Compared to 2020**



**Figure 7: How the Dec. 2021 Tax Credit and Safe Harbor Extensions Affected Renewable Energy Developer Plans in 2021**



On the other hand, some developers are experiencing regulatory and market barriers. One developer reports that the solar panel tariffs and delayed decision-making from FERC on the PJM Interconnection minimum offer price rule (MOPR) proceeding have hindered the company's near-term development plans.

*“One of the biggest impacts to the industry’s ability to grow is the tariffs – tariffs account for about 10 percent of [our] topline. On the regulatory side, FERC’s unresolved decision-making in PJM has dampened our efforts on development in that market. We have a lot of stranded projects while we wait for a decision.”*  
 – Renewable Energy Developer





One investor describes the current market for renewable energy as “predictable” and “competitive” despite the events in the past year, such as the Texas power outages and the COVID-19 pandemic.

*“[Renewable energy investment] has been fairly predictable and competitive at the moment. I don’t think there’s anything that unusual going on in the market. It seems to be fairly robust.”*  
 – Renewable Energy Investor

**Tax equity remains the hardest-hit financing source for both investors and developers.**

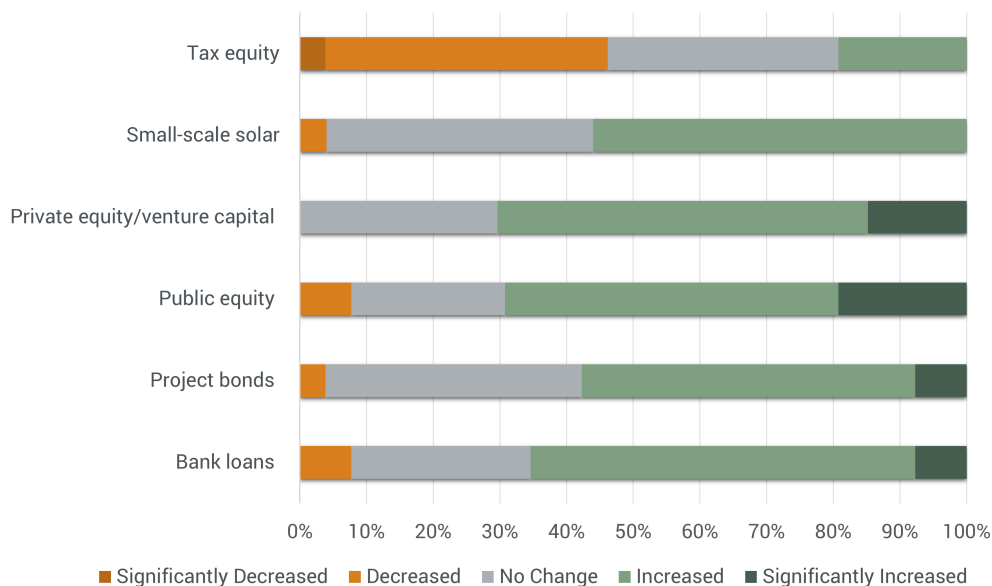
The observed tax equity constraints reported in ACORE’s 2020 surveys remain.<sup>20</sup> More investors and developers observe a decrease in the availability of tax equity than any other surveyed financing source this year.

Forty-six percent of investors report that tax equity availability has either “Decreased” or “Significantly Decreased” within the past year. Just 19 percent report an “Increase.” However, of the tax equity providers surveyed, fewer report a “Decrease” (33%) in the availability of tax equity, and a higher number (22%) report an “Increase.”

*“Tax equity is always the piece of the capital stack that’s hardest to put in place and to pin down. The events in Texas have brought up questions for both tax equity providers and debt providers in that market.”*  
 – Renewable Energy Investor

By contrast, 50 percent or more of investors report an “Increase” in the availability of each of the other financing sources, and only a minority report a “Decrease.”

**Figure 8: Change in the Availability of Financing Sources in 2021 Compared to 2020: Investors**



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<https://acore.org/wp-content/uploads/2020/07/Expectations-for-Renewable-Energy-Finance-in-2020-2023.pdf>

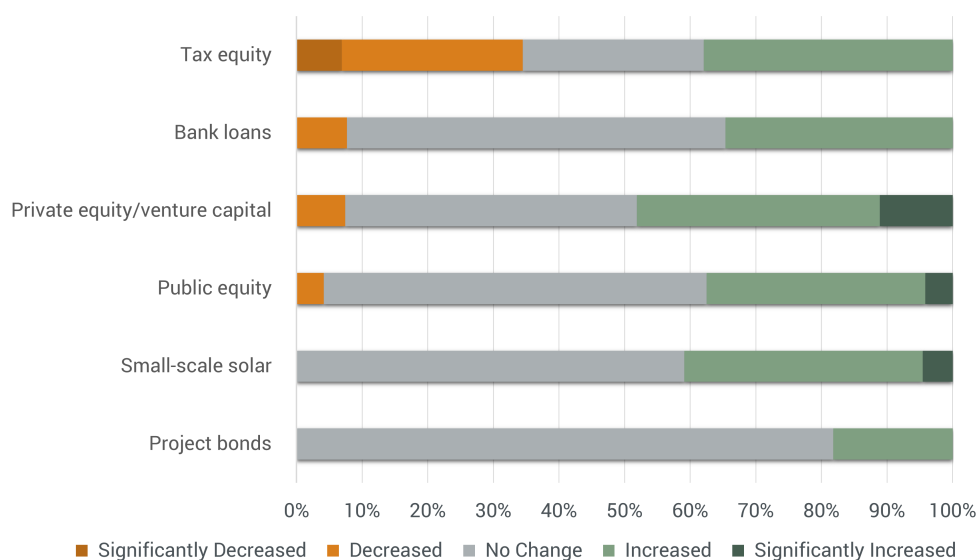


Meanwhile, 35 percent of developers report the availability of tax equity has “Decreased” or “Significantly Decreased.” This amount is higher than the proportion of developers who report decreases in the other surveyed financing sources, each of which does not exceed 10 percent. Twenty-eight percent of developers also report “No Change,” and 38 percent report an “Increase” in tax equity availability.

One renewable energy developer reports that tax equity constraints caused a reduction in deals they made in the past year.

*“Our company was able to close a few transactions, but I know that there are many other deals that didn’t get done in that same time period. There’s not enough tax equity capacity in the space.”*  
 – Renewable Energy Developer

**Figure 9: Change in the Availability of Financing Sources in 2021 Compared to 2020: Developers**



*“While the broader industry continues to grow, COVID has significantly impacted the availability of tax equity. Finding investors with tax equity capacity is a significant challenge.”*  
 – Renewable Energy Developer



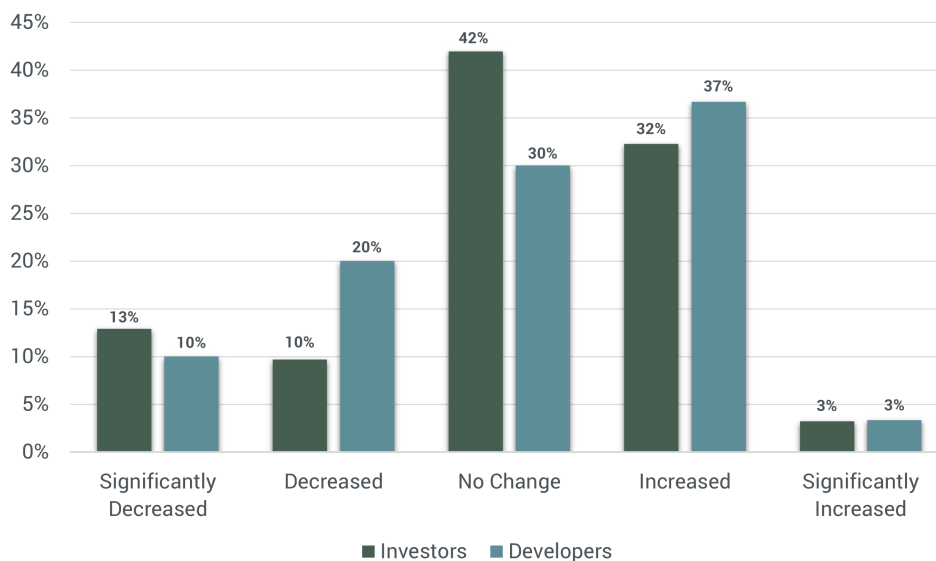
Another developer emphasizes the importance of direct payment options in place of federal tax credits to support developers in need of tax equity, highlighting that tax equity availability is central to their business decisions.

*“Direct pay, direct pay, direct pay. I can’t tell you how much it impacts our business every day from decisions about how we’re going to bring the assets online, what markets we’re going to go to, what projects that we’re looking for to get PPAs.”*  
 – Renewable Energy Developer

**Interest in hedged renewable energy or energy storage agreements is varied among investors and developers compared to last year.**

Largely, interest in hedged agreements has either remained unchanged or increased in 2021; however, 23 percent of investors and 30 percent of developers report “Decreased” or “Significantly Decreased” interest.

**Figure 10: Change in Interest in Hedge Agreements in 2021 Compared to 2020**



Investors and developers who report a decrease in their appetite for hedges cite the February 2021 Texas power outages.

*“Shape risk and basis risk are creating significant challenges coupled with low hedging prices.”*  
 – Renewable Energy Investor

*“Texas outages are the reason to get out of Texas and rethink hedges.”*  
 – Renewable Energy Developer

*“We have always steered clear of hedges where possible. Texas outages have confirmed this bias.”*  
 – Renewable Energy Investor



Other investors and developers are seeking different structures but will continue to seek opportunities in the Texas market.

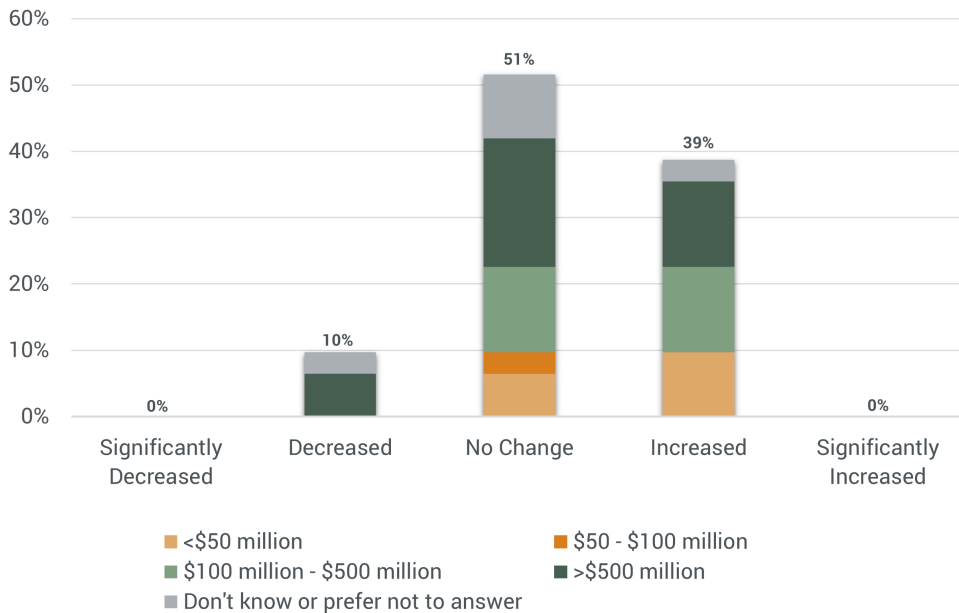
*"[We are] looking to different structures (e.g., as-generated or merchant in place of fixed share) and looking to cash equity investors for risk mitigation."*  
 – Renewable Energy Investor

*"From a risk perspective, finance communities are definitely taking a look at how deals get structured... It will be a challenge into the future to get projects done in Texas, even though from an economic perspective it makes a lot of sense for assets to be built there because solar is cheaper than gas and many other forms of generation."*  
 – Renewable Energy Developer

**Most investors' and developers' risk appetites have increased or remained consistent compared to last year.**

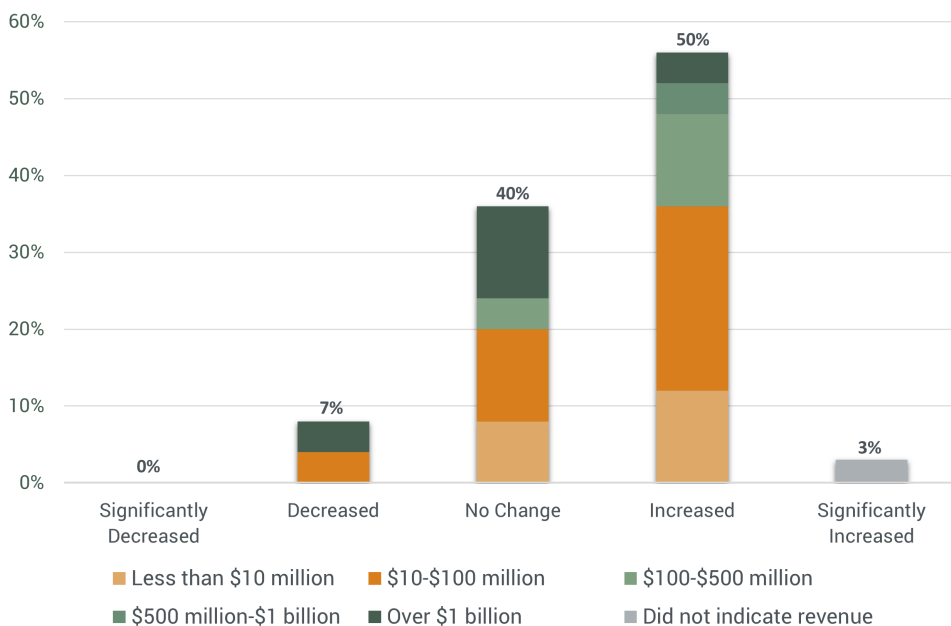
Despite the challenges noted above, more than half of developers (53%) and 39 percent of investors report "Increased" risk appetites compared to 2020. But 10 percent of investors and seven percent of developers report their risk appetites have "Decreased."

**Figure 11: Change in Investor Risk Appetites in 2021 Compared to 2020**





**Figure 12: Change in Developer Risk Appetites in 2021 Compared to 2020**



Investor and developer risk appetites do not vary significantly across company sizes. Generally, a higher percentage of investor respondents (58%) indicating “No Change” or “Increased” risk appetites fall among the higher investment ranges (\$100 million or greater).

Among developers, the higher percentage of respondents (60%) indicating “No Change” or “Increased” risk appetites fall among the lower revenue ranges (\$500 million and below). The seven percent of developer respondents who indicate “Decreased” risk appetites belong to the \$10-\$100 million revenue range (~3.5%) and the over \$1 billion range (~3.5%).

According to one renewable energy developer, the willingness to take increased risk comes from the availability of more information surrounding renewable energy technologies.

*“It’s a function of more data points... seeing some of our competitors and some people that we’ve worked with have success in...moving to batteries and moving towards different RTOs that weren’t originally the hot spots.”*  
 – Renewable Energy Developer

*“We have to think creatively with more competition in the market and more opportunity.”*  
 – Renewable Energy Developer





# ***MID-TERM OUTLOOK: SECTOR CONFIDENCE, MARKET PERCEPTIONS, AND POLICY PRIORITIES IN 2021-2024***

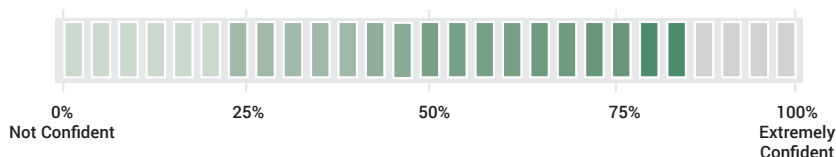


**Confidence in both U.S. renewable energy and energy storage over the next three years is at an all-time high among investors and developers.**

Mid-term confidence in the renewable energy and energy storage sectors increased since ACORE's 2020 surveys among investors and developers.

In the renewable energy sector, investors on average report a score of 85/100, or "Extremely Confident," increasing eight points from 2020. Developers report 87/100, an increase of nine points.

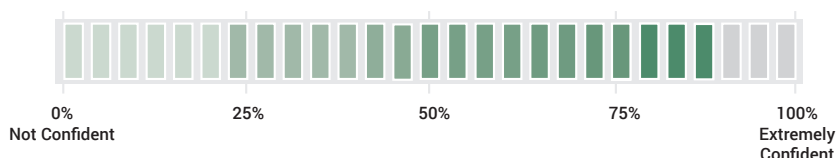
**Figure 13: Investor Confidence in Renewable Energy Growth in 2021-2024**



**Figure 14: Renewable Energy Confidence by Investment Level**

Annual Investment in U.S. Renewable Energy	Confidence in U.S. Renewable Energy
<\$100 million	Extremely Confident (90/100)
\$100 million - \$500 million	Extremely Confident (88/100)
>\$500 million	Extremely Confident (88/100)

**Figure 15: Developer Confidence in Renewable Energy Growth in 2021-2024**

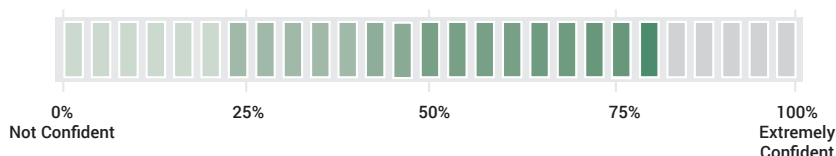


**Figure 16: Renewable Energy Confidence by Developer Revenue**

Total Revenue of U.S. Renewable Business	Confidence in U.S. Renewable Energy
<\$100 million	Extremely Confident (85/100)
\$100 million - \$500 million	Extremely Confident (91/100)
\$500 million - \$1 billion	Confident (75/100)
>\$1 billion	Extremely Confident (91/100)

In the energy storage sector, investors and developers score their confidence levels an average of 82/100 (an increase of eight points) and 85/100 (an increase of six points), respectively.

**Figure 17: Investor Confidence in Energy Storage Growth in 2021-2024**

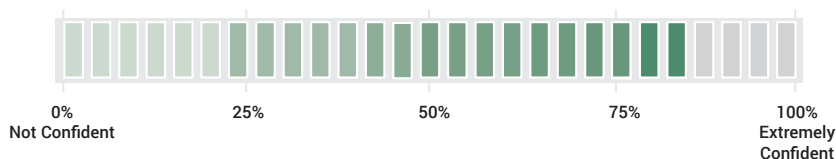


**Figure 18: Energy Storage Confidence by Investment Level**

Annual Investment in U.S. Renewable Energy	Confidence in U.S. Energy Storage
<\$100 million	Confident (75/100)
\$100 million - \$500 million	Extremely Confident (87/100)
>\$500 million	Extremely Confident (86/100)



**Figure 19: Developer Confidence in Energy Storage Growth in 2021-2024**



**Figure 20: Energy Storage Confidence by Developer Revenue**

Total Revenue of U.S. Renewable Business	Confidence in U.S. Energy Storage
<\$100 million	Extremely Confident (82/100)
\$100 million - \$500 million	Extremely Confident (93/100)
\$500 million - \$1 billion	Somewhat Confident (60/100)
>\$1 billion	Extremely Confident (88/100)

One developer describes their outlook on storage as “very bullish” and is planning hybrid solar-plus-storage projects almost exclusively.

*“Our executive team...wants storage to be synonymous with our development pipeline. Pretty much everything we scope out these days is going to be solar plus storage.”*  
 – Renewable Energy Developer

An investor reports that lenders and sponsors are becoming more confident in investing in energy storage and predicts financing structures will improve.

*“In terms of project finance, lenders and sponsors are getting more comfortable with [energy storage]. It is still in its early stage, but in five years, those issues will be solved.”*  
 – Renewable Energy Investor

Among investors, energy storage sector confidence varied slightly more among investment levels than renewable energy sector confidence. The confidence levels of investors that invest less than \$100 million annually average somewhat lower than larger investors at 75/100 confidence.

Among developers, energy storage sector confidence is lowest for developers that operate renewable energy businesses with total revenues of \$500 million to \$1 billion, at 60/100 or “Somewhat Confident.”





Hydrogen, specifically green hydrogen produced from renewable energy sources, is an emerging sector attracting the attention of both investors and developers. However, concerns remain about its scalability, costs and technical feasibility.

*"I think green hydrogen is super interesting. We continue to have conversations on how our projects support the power needs of electrolysis plants. The viability of green hydrogen seems to be growing every day."*  
– Renewable Energy Developer

*"We are still evaluating the technical feasibility of hydrogen and are keeping it in the back of our mind. However, hydrogen is extremely water-intensive and we are far from the technology being scalable."*  
– Renewable Energy Investor

*"We [will look into hydrogen] but, from a cost perspective, it's a little too far off for right now. The electrolyzer costs are a little too high."*  
– Renewable Energy Developer

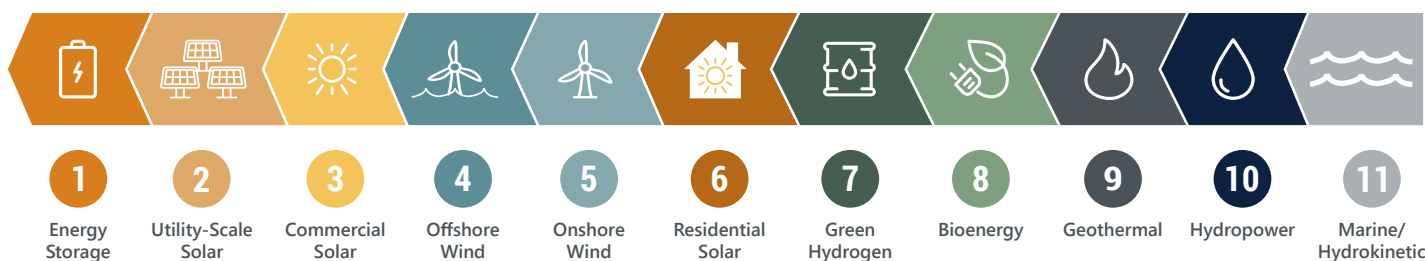
### Investors rank energy storage and utility-scale solar as the most attractive sectors over 2021-2024.

Investors anticipate energy storage, utility-scale solar, commercial solar and offshore wind will be the most attractive sectors for investment over the next three years. These sectors received the highest weighted scores from investors when asked to rank the top three sectors they anticipate will be most attractive for investment from 2021-2024.

Generally, investors favor proven technologies, such as wind, solar and energy storage, although, notably, green hydrogen ranks higher than bioenergy or hydropower.

*"Solar and wind are technologically mature. Storage is getting there. I feel much more comfortable investing in those technologies than carbon sequestration or hydrogen. We're not going to be investing a lot of dollars at risk in the earlier projects."*  
– Renewable Energy Investor

**Figure 21: Ranking of Sectors Most Attractive for Investment in 2021-2024**



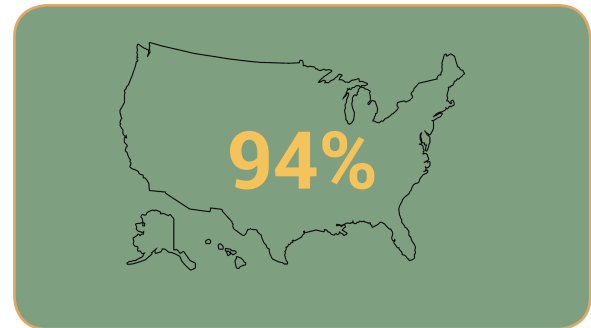
**The U.S. will continue to be attractive to investors compared to other leading countries in 2021-2024.**

The majority of investors anticipate the U.S. will either maintain its attractiveness or become more attractive for investment over the next three years than other leading countries. Forty-eight percent of investors expect “No Change” in the attractiveness of the U.S., and 46 percent anticipate the country’s attractiveness will “Increase” and “Significantly Increase” over the period.

**PJM, CAISO and NYISO are the most attractive power markets to both investors and developers.**

Investors and developers are aligned in expecting that the PJM, CAISO and NYISO markets will be most attractive for investment and development, respectively, over the next three years. These regions received the highest weighted scores among investors and developers when asked to rank the top three regions they expect to be most attractive. The non-RTO Southeast scores the lowest among both groups.

**Figure 22: Percentage of Investors That Perceive the U.S. as Attractive for Investment Compared to Other Leading Countries in 2021-2024**



**Figure 23: Ranking of U.S. Regional Power Markets Most Attractive for Renewable Investment or Deployment in 2021-2024**

Investors	Developers
PJM	PJM
CAISO	CAISO
NYISO	NYISO
ISO-NE	Non-RTO West
MISO	MISO
ERCOT	ERCOT
Non-RTO West	ISO-NE
SPP	SPP
Non-RTO Southeast	Non-RTO Southeast

*“CAISO has always been robust...general procurement tends to happen [there].”*  
 – Renewable Energy Investor

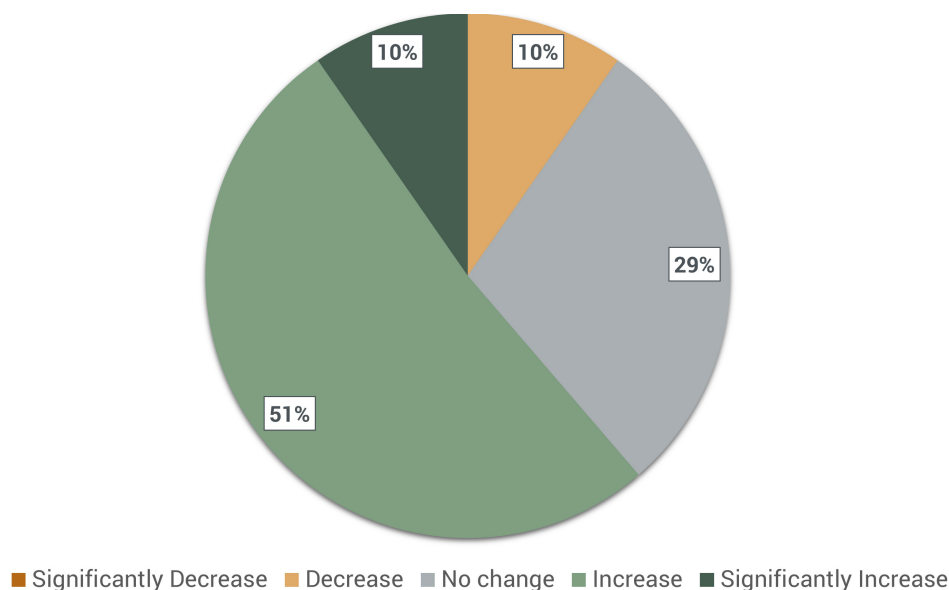
*“PJM is the largest energy market we serve and consumes the majority of our efforts.”*  
 – Renewable Energy Developer



**Most investors expect the attractiveness of renewable energy as an asset class to increase compared to other asset classes in 2021-2024.**

Compared to other asset classes in their portfolios, 61 percent of investors expect the attractiveness of renewable energy to either “Increase” or “Significantly Increase” over the next three years. Twenty-nine percent expect “No Change,” and 10 percent expect a “Decrease” in the attractiveness of renewable energy, although none expect a “Significant Decrease.”

**Figure 24: How Investors Expect the Attractiveness of Renewable Energy to Change Compared to Other Asset Classes in 2021-2024**



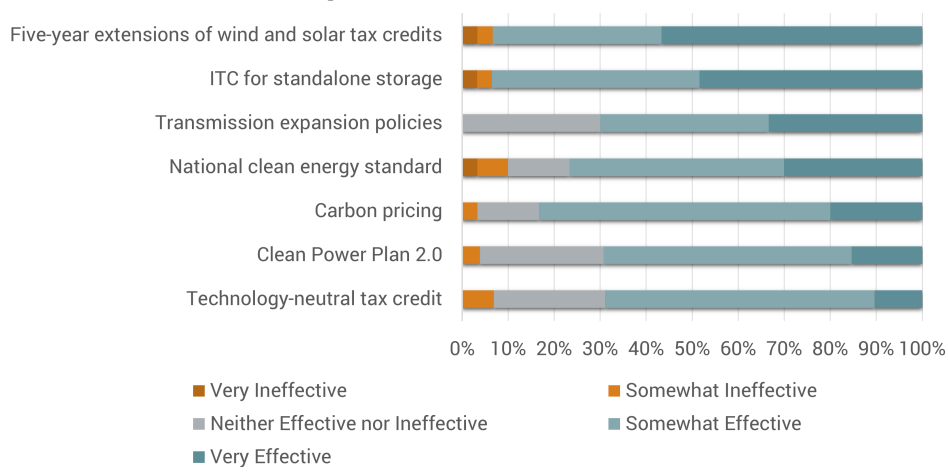
**Looking forward, a clear majority of investors and developers identify long-term extensions of the wind and solar tax credits and new standalone tax credits for energy storage and regionally significant transmission as effective federal policies for growing the sector.**

Ninety-three percent of both investors and developers select long-term extensions of the existing renewable energy tax credits and a new tax credit for energy storage as “Somewhat Effective” or “Very Effective” for promoting sector growth in the next three years.

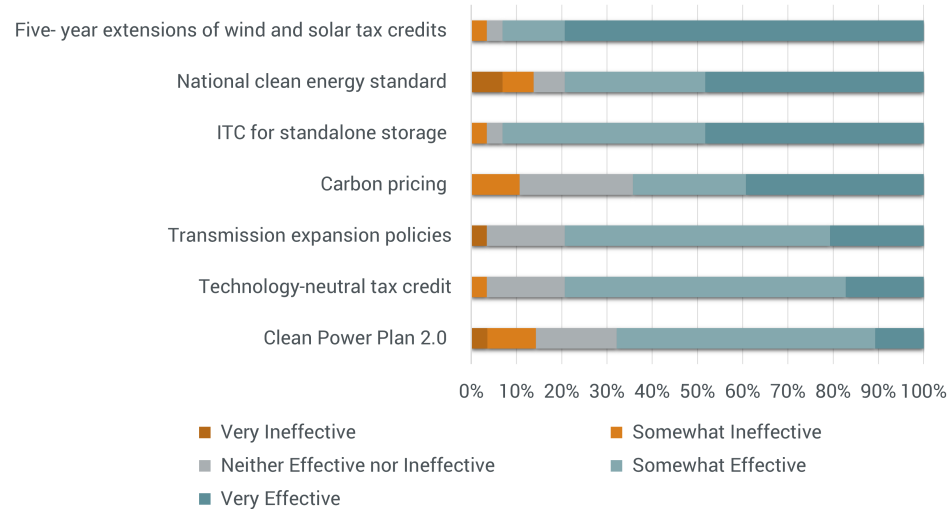
Both groups positively regard the other policy options on average, although they drew slightly less consensus than the renewable energy and energy storage tax credits. Notably, a national clean energy standard interests 79 percent of developers and 77 percent of investors.



**Figure 25: Investor Perceptions of Potential Policies on Renewable Sector Impact 2021-2024**



**Figure 26: Developer Perceptions of Biden Administration’s Policies on Renewable Sector Impact 2021-2024**



Both investors and developers also emphasize the importance of market reforms and financial incentives to facilitate the expansion of transmission lines, which can enable more renewable energy deployment.

*“Federal grants to build out transmission systems to increase the capacity for these intermittent resources would go a long way. Existing projects would not [need to] fight over the little capacity that is there.”*  
 – Renewable Energy Developer

*“An investment tax credit for storage and an investment tax credit for transmission would be very helpful. An executive order for a carbon tax, that would definitely spur additional rollout of renewable energy.”*  
 – Renewable Energy Investor







## ACORE's \$1T 2030 Campaign Priorities

ACORE is strategically deploying its resources to promote key policy reforms and market drivers to support achievement of the \$1 trillion by 2030 objective. Specifically, we are pursuing the following priorities in 2021.

- **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 a free-standing investment tax credit for energy storage technologies and regionally significant transmission.
- **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, including a federal high-penetration renewable energy standard or clean energy standard and carbon pricing.
- **Grid Advocacy:** ACORE advocates for cost-effective investment in transmission infrastructure to create a Macro Grid, and a less balkanized and fairer electricity marketplace to promote greater access to and delivery of renewable resources.
- **Energy Storage:** Energy storage and other grid-enabling technologies have the potential to transform the power system and fundamentally change the way we think about energy. ACORE promotes their growth through policy advocacy, market reforms and financing solutions.
- **Environmental, Social and Governance (ESG) Scoring:** ACORE works with its members to increase standardization, transparency and use of material indicators in ESG disclosure and scoring methodologies through specific recommendations and regular outreach to the ESG community.

# Appendix

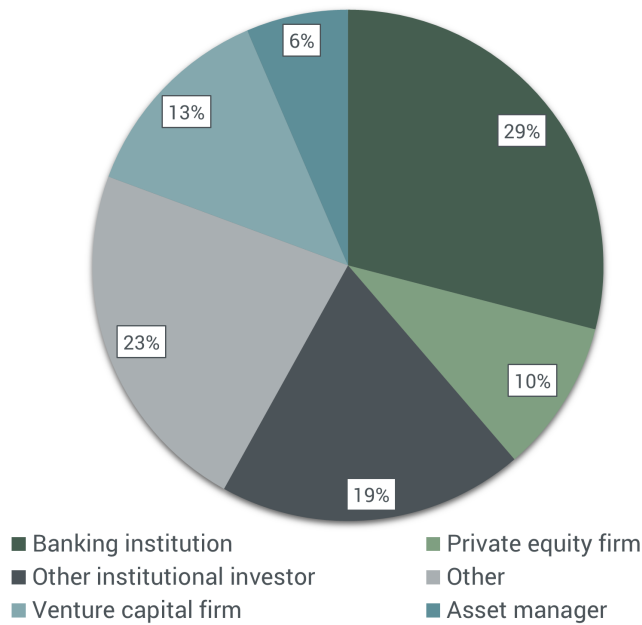
## Survey Methodology

ACORE conducted two online, anonymous surveys in April 2021 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 31 investors and 31 developers.

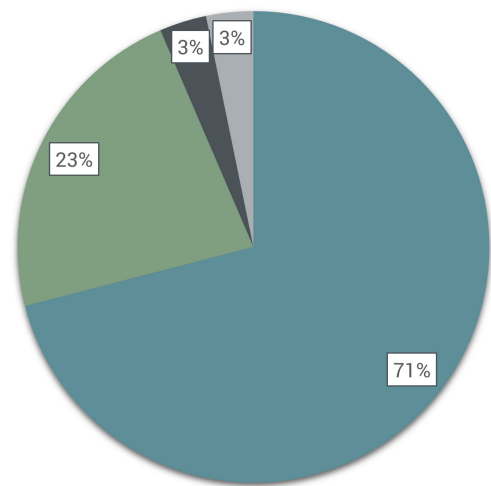
## Profile of Respondents

### Investor Survey

Organization Type

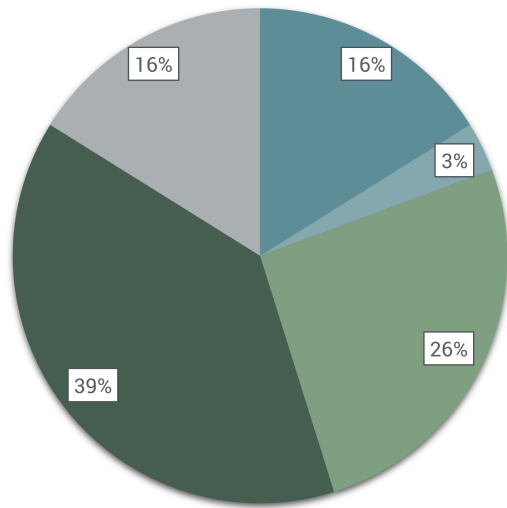


### Position of Respondent



- CEO, President, Managing Director
- VP, Director, Manager or similar
- Associate, Analyst or similar
- Other

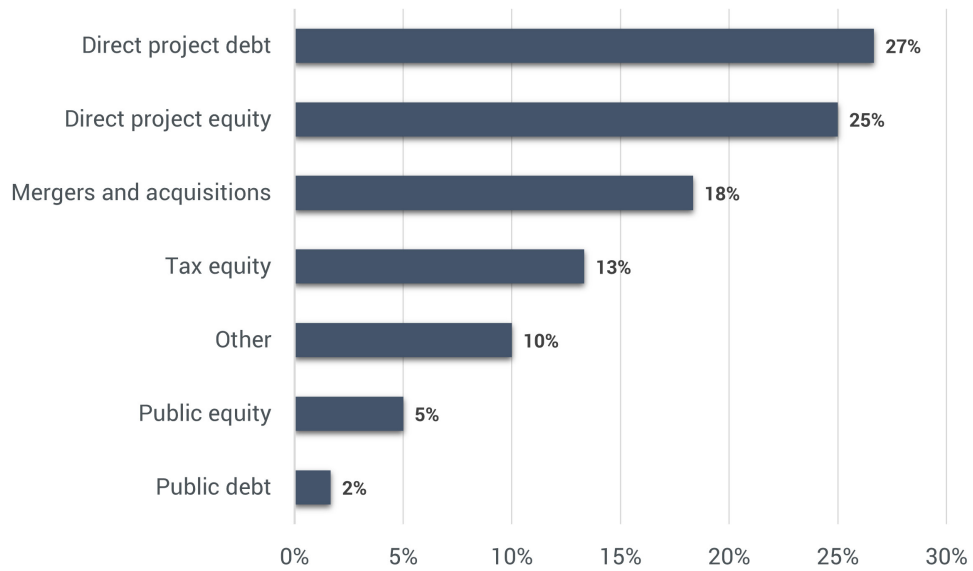
### Annual Investment Level in the U.S. Renewable Energy Sector



- <\$50 million
- \$50 - \$100 million
- \$100 million - \$500 million
- >\$500 million
- Don't know or prefer not to answer

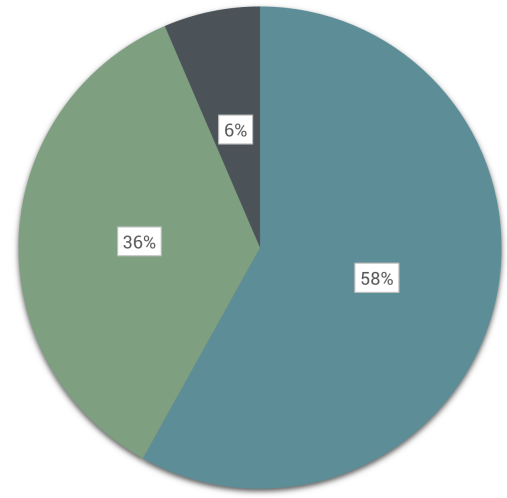


### Financing Vehicles Used for Renewable Energy



### Developer Survey

#### Position of Respondent

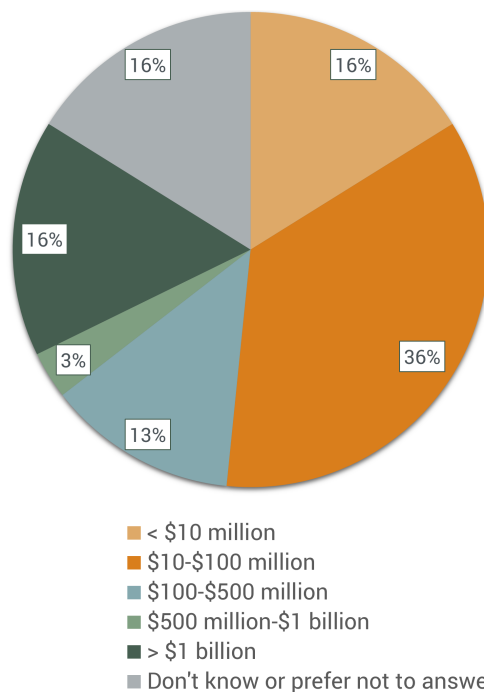


- CEO, President, Managing Director, Partner or similar
- VP, Director, Manager or similar
- Associate, Analyst or similar
- Other

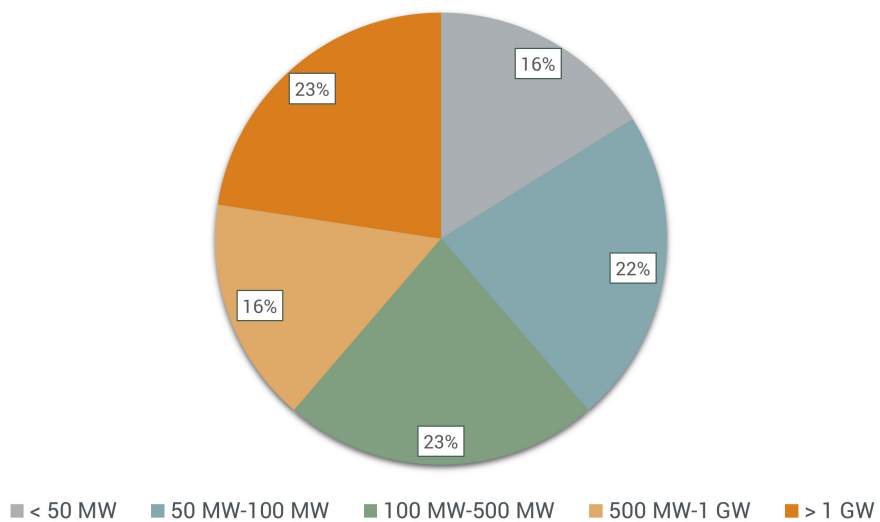




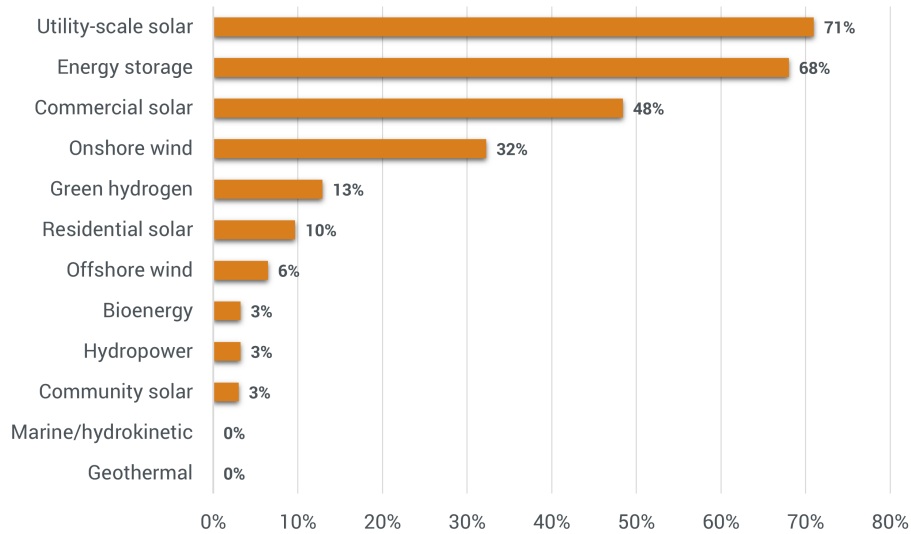
### Total Revenue of U.S. Renewable Energy Business



### Total Capacity of Company's Renewable Energy Installations over the Past Three Years



### Renewable Energy Technologies Developed by Each Company Over the Past Three Years



## Authors

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Lesley Hunter, Vice President of Programs

## 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](http://www.acore.org).

## \$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 now 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](http://www.acore.org/1T2030).

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