



\$1T 2030: THE AMERICAN RENEWABLE INVESTMENT GOAL

Progress Report



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FROM THE PRESIDENT & CEO

One year ago, the American Council on Renewable Energy (ACORE) launched \$1T 2030: The American Renewable Investment Goal to achieve \$1 trillion in U.S. private sector investment in renewable energy and enabling grid technologies between 2018 and 2030. This aggressive goal was founded on a range of insights drawn from an ACORE survey of leading renewable energy investors gauging their confidence in the U.S. renewable sector, and the impacts of supportive policy reforms and market drivers.

With this report, ACORE measures our progress one year into the campaign and assesses momentum on the policy and market pathways to achievement of our \$1 trillion goal. We also present new results from our second annual survey of leading financial institutions undertaken in May 2019.

In a nutshell, we are off to a credible start towards our \$1T 2030 goal. In 2018, the private sector invested approximately \$57 billion in U.S. renewable energy and enabling grid technologies, with the bulk of capital flowing to onshore wind and solar projects. The investment opportunity for enabling grid technologies, particularly energy storage, is growing but will require stronger policy and market signals before these technologies can mirror the scale of direct investment in renewables. Looking forward to 2022, investors convey confidence in continued renewable energy growth and expect to increase their focus on storage, due to declining costs, growing capital markets, robust demand from the corporate and industrial sector, and a rush to take advantage of sunseting tax credits.

However, looking further out to the critical period between 2022 and 2030, the expected rate of growth is less certain. Power market design changes that properly acknowledge the value of renewable, distributed and storage assets will be critical to the next stage of sector maturation. Also, while there is active discussion and debate around long-term federal policy signals beyond existing tax credits, the timeframe and contours for action on measures like carbon pricing, a national renewable energy standard and a technology-neutral tax credit are unclear. Enactment is unlikely before the next Congress begins in 2021.

Meanwhile, the corporate and industrial (C&I) sector and state and local governments are helping to accelerate renewable growth with increasingly aggressive climate and energy programs. To date, five states, ten counties, and 90 cities have enacted carbon-free standards, while 176 major companies have committed to procuring 100% renewable energy.

At ACORE, we are aggressively pursuing every strategic opportunity we can find to promote progress on the policy and market drivers we have identified as part of the pathway to achievement of our \$1T 2030 objective. We look forward to working with our network of business leaders and other allies both in the near-term and throughout this next phase of market maturity.



A handwritten signature in black ink that reads "Gregory S. Wetstone".

Gregory Wetstone
President & CEO
American Council on Renewable Energy



REPORT HIGHLIGHTS

The State of Play in 2019

- In 2018, the U.S. attracted \$56.7 billion of private-sector investment in renewable energy (\$48.5 billion) and enabling grid technologies (\$8.2 billion).
- The U.S. ranked second internationally in attracting private-sector investment to the renewable energy sector, representing 16% of total global investment.
- The investment landscape is being reshaped by a disruption in ownership models, changes in renewable offtaker profiles and new sources of capital.

Near-Term Market Outlook

- Investors' confidence in renewable energy sector growth will remain high over the next three years, with an average confidence level of 77/100.
- Renewable energy will maintain its attractiveness compared with other asset classes in respondents' portfolios. Most 2019 survey respondents also indicated that the U.S. would continue to be an attractive venue for investment compared with other leading countries.
- More than one-third of 2019 survey respondents plan to increase their investments in U.S. renewables by more than 10% in 2019 compared with 2018. No respondents reported that they would decrease their companies' investments by more than 5%.
- Utility-scale solar and energy storage top the list of the most attractive sectors for investment between 2019 and 2022, with onshore wind close behind.
- Investors cited the low cost of renewable energy, expanded state renewable portfolio standards, increased demand from corporate end-users, the potential for carbon pricing, and a rush to benefit from the tax credits before they sunset among their main reasons for optimism over the next three years.

Progress on Policy and Market Pathways

- Supportive policies such as a national renewable energy standard, easier siting and permitting, an energy storage tax credit, carbon pricing and a technology-neutral tax credit are all under discussion as part of the effort to advance the \$1T 2030 objective.
- Energy storage is soon expected to mirror the fast growth of the renewable sector, but both the lack of a robust federal tax incentive and the absence of a common project finance approach that adequately compensates the technology's value has hindered capital flows.
- As the commercial and industrial (C&I) sector has become more bullish on renewable power and contracts adapt to attract a larger pool of buyers, corporate offtakers will continue to be central to market expansion.
- While environmental, social and governance (ESG) investing is galvanizing investors to finance low-carbon technologies, more progress is needed to drive ESG investment into the renewable energy sector, including better data collection and more transparent and standardized scoring methodologies that reflect the true value of renewable energy use and investment.

THE STATE OF PLAY IN 2019: FINANCING THE U.S. ENERGY TRANSITION

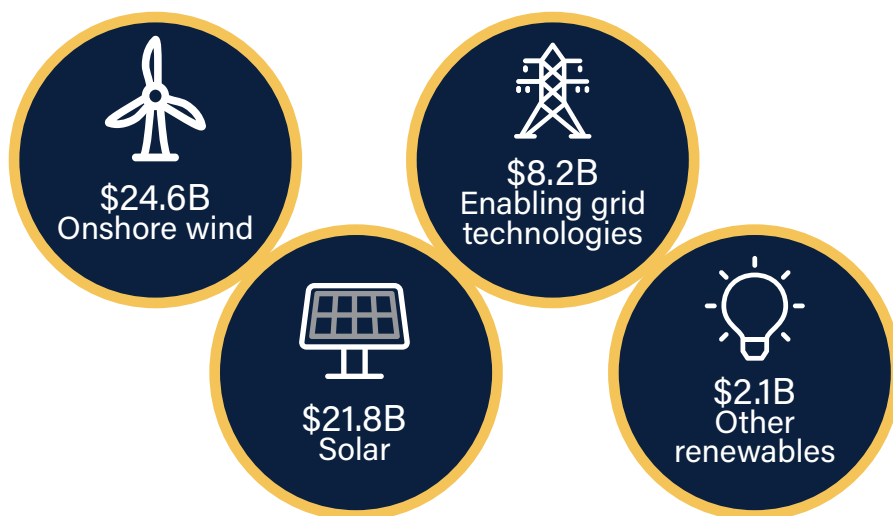
Now the nation's top source of infrastructure investment, renewable energy is a mature sector with increasing access to low-cost, long-term capital. The demand driven by state and local governments and large private actors seeking to reduce greenhouse emissions will continue to fuel robust investment. Meanwhile, enabling grid technologies are on the verge of a boom as investors and businesses determine the best ways to value and finance these emerging markets. A disruption in ownership models, an evolution of buyer profiles and new sources of capital are further reshaping the investment landscape.

2018 Investment

The U.S. attracted **\$56.7 billion** of investment in renewable energy and enabling grid technologies in 2018.

The U.S. ranked second to China internationally in attracting private-sector investment to the renewable energy sector, representing 16% of the total global investment.

There is no evidence that tax equity investment was constrained in 2018, despite tax reform introducing lower corporate tax rates and the base erosion and anti-abuse (BEAT) tax on qualifying multinational corporations that invest in tax equity.



Data Source: Bloomberg New Energy Finance

Energy Storage and Enabling Grid Technologies

Enabling grid technologies support the growth of renewable energy throughout the electric system, enhancing its integration and use. Such technologies include energy storage, smart grid technologies, demand response, fuel cells, smart meters, hardware and software solutions, electric vehicles and associated infrastructure, and energy access improvements.

Energy storage is soon expected to mirror the rapid growth of the renewable sector, but both the lack of a robust federal tax incentive and the absence of a common project finance approach that adequately compensates the technology's value has hindered capital flows.

Nevertheless, falling costs, improving economics and new contract structures are attracting more investors to the energy storage market. The cost of grid batteries has fallen 85% between 2010 and 2018.¹ Developers are retrofitting existing renewable facilities with storage, and utilities are issuing RFPs for new bundled renewables-plus-storage projects.

¹ Energy Storage Association



Evolving Ownership Models and Buyer Profiles

Utilities are expanding their interest in owning renewable energy projects as they seek to decarbonize their power assets, pursue steel-for-fuel strategies, and accommodate increasing corporate demand, while continuing to pursue power purchase agreements (PPAs) for balance.² Such projects are being financed through utility balance-sheet financing and build-transfer agreements with developers, and are driving new projects in states without strong renewable targets.

Corporate contracts accounted for 22% of all PPAs in 2018³ and were triple the number signed in 2017. Smaller companies are also beginning to sign offtake agreements, but often want contracts that are more flexible with shorter durations or that aggregate demand from multiple offtakers.

Meanwhile, certain markets are seeing expanded local control over electricity sources through community choice aggregation (CCA) to meet public demand for clean energy. CCAs represent one of the most significant drivers for renewable energy growth in California, totaling more than 2 gigawatts (GW) of capacity.⁴

Outside of the PPA model, some project developers are opting to sell renewable generation into wholesale markets through arrangements like hedge agreements with financial institutions to reduce risk and guarantee price. Bank hedges represented one-quarter of new wind build in 2018,⁵ but are less common for solar and storage projects.

New Sources of Capital

While the traditional field of investors remains strong, the renewable sector is attracting dozens of new market entrants, with still more expected in the coming years. These new sources of capital include: corporates investing directly in renewable projects through tax equity; global infrastructure funds acquiring pipelines of U.S. renewable assets; global oil and gas companies seeking to improve their environmental footprints; and other institutional investors aiming to improve their ESG scores and take advantage of the expiring tax credits.

² <https://www.nortonrosefulbright.com/en-us/knowledge/publications/d3120941/the-hunt-for-ppas>

³ <https://www.greentechmedia.com/articles/read/corporate-renewables-procurements-quarter-ppa-2018>

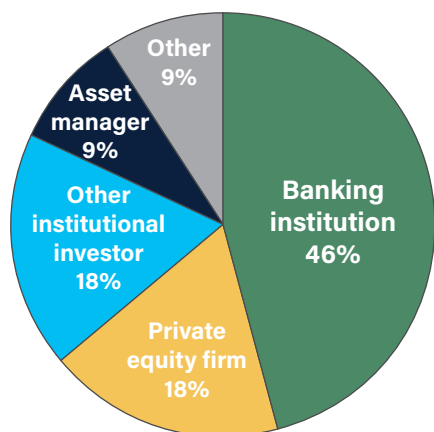
⁴ <https://eq-research.com/blog/ten-things-ca-ccas/>

⁵ <https://webstore.iea.org/download/direct/2738?fileName=WEl2019.pdf>

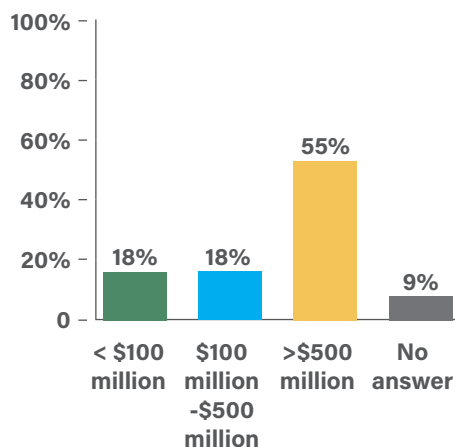
NEAR-TERM MARKET OUTLOOK: INVESTOR CONFIDENCE TO 2022

ACORE conducted a survey in May 2019 that profiles the opinions of investment professionals who represent major institutions that finance and invest in renewable energy. More than half of the institutions represented in this survey invest more than \$500 million each year in the U.S. renewable energy sector. A majority of respondents occupy senior positions at their companies, with nearly three-quarters serving as CEO, Managing Director or a comparable level.

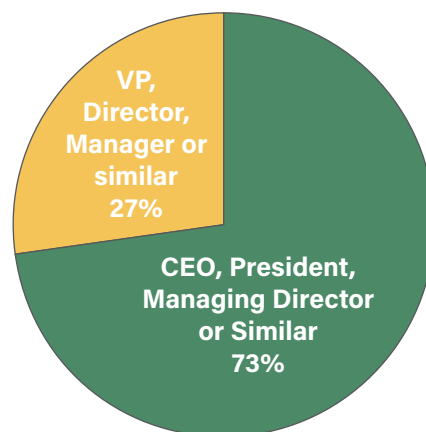
Organization Type



Annual Investment Levels in U.S. Renewables



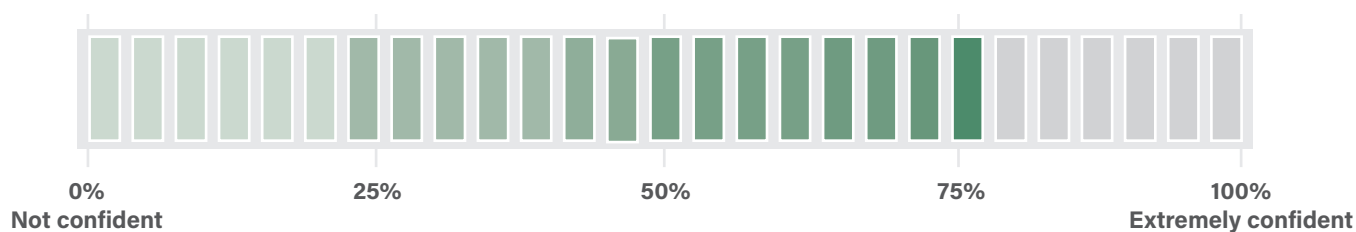
Position of Respondent



Outlook to 2022

Investors' confidence in renewable energy sector growth will remain high over the next three years, with an average confidence level of 77/100.

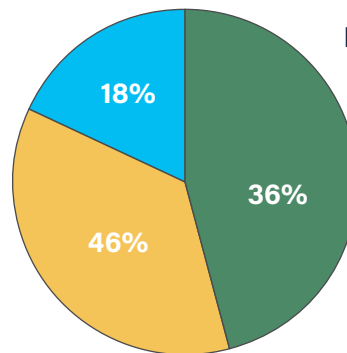
Confidence in U.S. Renewable Energy Sector Growth



Renewable energy will maintain its attractiveness compared with other asset classes in respondents' portfolios. Most respondents also indicated that the U.S. would continue to be an attractive venue for renewable energy investment compared with other leading countries.



More than one-third of respondents plan to increase their investments in U.S. renewables by more than 10% in 2019 compared with 2018. No respondents reported that they would decrease their companies' investments by more than 5%.



Expected Change in U.S. Renewable Energy Investment in 2019 Compared with 2018

- Increase by more than 10%
- Maintain within 5%
- Don't know 5%

Out of nine sectors, investors each chose six as the most attractive for investment between 2019 and 2022:

Ranking of Sectors Most Attractive for Investment



Investors cited the following reasons for their optimism to 2022:

RPS policy
 LCOE
 corporate demand
 technology evolution
 carbon pricing
 economies of scale
 solar safe harbor



PROGRESS ON POLICY AND MARKET PATHWAYS

Policy and market changes over the coming decade are expected to play a key role accelerating demand for renewable energy, but investors are cautious about the potential for mixed policy signals to slow near-term growth. This section reviews progress on the opportunities and impediments highlighted in ACORE's 2018 survey of leading financial institutions, which informed the creation of the \$1T 2030 campaign.

1. Policy Developments

Seventy percent of 2018 survey respondents indicated that new federal policy will be necessary for sustaining annual investment levels. When polled on the most significant hurdle for growth over the next decade, majority of respondents cited the lack of a federal policy driver after the sunsets of the production tax credit (PTC) and investment tax credit (ITC). Supportive policies such as a national renewable energy standard, easier siting and permitting, an energy storage tax credit, carbon pricing, and a technology-neutral tax credit are all under discussion now to further progress towards the \$1T 2030 objective.

a. Expanded Renewable Portfolio Standards (RPS): Populous states including California, Hawaii, Nevada, New Mexico and Washington have boosted existing renewable policies to target 100% carbon-free energy. New York, Illinois, Maine, and others are also expected to pass legislation to increase their RPS programs.

In the past year, we have also seen renewed discussion at the federal level for a national renewable or clean energy standard. While the Green New Deal's call for 100% zero-carbon energy received the lion's share of early attention, legislation achieving 50% renewable energy by 2035 is being crafted by Senator Tom Udall and a measure calling for net-zero emissions by 2050 has been introduced by Senator Tina Smith in the Senate and Representative Ben Ray Lujan in the House.

b. Easier Siting and Permitting: Federal, state and local regulators require strict review processes for siting and permitting renewable power facilities, which typically take multiple years to complete. Expedited and standardized processes consistent with applicable environmental law would allow for greater scale-up of utility-scale projects and would be particularly beneficial for the buildout of offshore wind, where development has thus far been minimal. Measures to facilitate development of renewable energy projects on federal lands would also provide important help.

c. Energy Storage Tax Credit: A federal tax credit for energy storage would have a transformative impact, promoting private sector investment and enabling far greater levels of renewable energy penetration on the grid. Currently, energy storage can only qualify for the federal ITC when integrated with ITC-eligible solar resources under specific conditions. Senator Martin Heinrich (D-NM) and Representative Mike Doyle (D-PA) have now both introduced bipartisan bills, the Energy Storage Tax Incentive and Deployment Act (S. 1142/HR 2096), that would broadly qualify energy storage technologies for the existing investment tax credit. These proposals are being actively considered for inclusion in so-called tax extenders legislation and other viable legislative vehicles this year.



d. Carbon Pricing: Putting a price on carbon has long been seen as an effective market-based mechanism for reducing greenhouse gas emissions. The House of Representatives passed a cap-and-trade program in 2009, and ten states currently put a price on carbon. While enacting federal carbon-pricing legislation is seen as unlikely this Congress, several carbon pricing bills have now been introduced, including the bipartisan Energy Innovation and Carbon Dividend Act of 2019 (HR 763), the Healthy Climate and Family Security Act of 2019 (HR 1960) and the American Opportunity Carbon Fee Act of 2019 (S.1128). ACORE is currently evaluating the impacts of various carbon pricing scenarios on renewable project finance to ensure any future carbon pricing proposal meets the goal of maximizing renewable energy deployment.

e. Technology Neutral Tax Credit: A technology-neutral tax incentive would level the playing field in electricity markets after the current renewable energy tax credits expire. On May 2, 2019, Senate Finance Committee Ranking Member Ron Wyden (D-OR) introduced the Clean Energy for America Act (S. 1288), which would eliminate existing tax incentives for all energy resources and replace them with three tax credits for the production of clean electricity, clean transportation fuels and energy efficiency. All energy resources would be eligible for the credit, provided electricity production facilities are at least 35% cleaner than the average of all electric power plants in the nation's fleet.

2. Continued Hurdles for Growth

Survey respondents identified the most important hurdles for continued U.S. renewables growth to 2030. In addition to the lack of a federal policy driver noted above, they also identified the following challenges to achieving the \$1T 2030 goal.

a. Lack of Necessary Grid Improvements: According to Edison Electric Institute, electric companies invested \$60.3 billion in 2018 to broadly “enhance the energy grid and to further support their grid security efforts.”⁶ However, studies suggest that substantial additional investment will be necessary to modernize the nation's antiquated grid and keep the U.S. competitive with other nations that have installed up-to-date grid technology. Proposals for a federal infrastructure package that could scale up transmission and deliver sorely needed grid improvements have yet to gain momentum.

b. Changes in Market Structures that Incentivize Old and Inflexible Fossil Fuel Units: While Trump Administration efforts to intervene in competitive electricity markets to bail out uneconomic coal and nuclear power plants fleet are not currently active, it is clear that the effort remains on the Administration's radar. Meanwhile, wholesale electricity markets continue to pursue resilience processes, which could result in market structure changes beneficial to non-renewable resources. On the state level, the Ohio House of Representatives passed a bill in May 2019 that would use ratepayer funding to subsidize uneconomic nuclear generation.

c. Tariffs and International Trade Disputes: Tariffs that impact renewable energy components and retaliatory actions by other countries are far from resolved. However, the sector is weathering the impact of solar and steel and aluminum tariffs, while some companies have received exemptions or have not been impacted because of their technology or broader externalities. For example, reduced demand in China as a result of changes to the country's domestic renewable energy policies has lowered prices for solar modules, absorbing some of the impact of the solar tariffs.

⁶ <https://www.eei.org/issuesandpolicy/grid-enhancements/Pages/default.aspx>



3. Market Drivers

Survey respondents identified the following market drivers that have the potential to accelerate U.S. renewable energy growth to 2030.

a. Energy Storage Scale-Up: Energy storage deployment nearly doubled in 2018 compared to 2017, with 350.5 megawatts (MW) installed. Moreover, Wood Mackenzie and the Energy Storage Association predict continued substantial growth in the near term, with annual deployment expected to reach 4.4 GW by 2024, driven by utility procurement, new policy structures and grid service opportunities.⁷ Enactment of an energy storage tax credit could dramatically accelerate investment and deployment.

b. Private Sector Movement on Climate Change: With a growing body of research correlating climate-resilient assets to financial performance, ESG and impact investing is galvanizing investors to finance low-carbon technologies. The U.S. now has more than \$12 trillion of sustainable assets under management, which grew 38% from 2016 through 2017. However, improvements are needed to drive greater investment into the renewable energy sector, including better data collection and more transparent and standardized ESG scoring methodologies that reflect the true value of renewable energy use and investment.⁸

c. Increased Corporate Purchasing: Renewable energy demand from the corporate and industrial sector achieved a new record in 2018, with 8.5 GW of corporate PPAs signed, triple the number of 2017.⁹ As companies become more bullish and contracts adapt to attract a larger pool of buyers, corporates will continue to be central to market expansion over the coming years.

d. Electrification of Things: U.S. electric vehicle sales increased by 81% in 2018, but the electric vehicle (EV) market has significant room to grow.¹⁰ Electric vehicle charging is creating significant electricity demand in new areas that renewable energy, particularly distributed generation, can help accommodate. However, questions remain regarding the buildout of fast-charging networks, including how they should be funded and how to accommodate the pressures EVs add to the electric system.

e. Community Choice Aggregation: As of October 2018, community choice aggregators in California had signed PPAs for 2 GW of new renewable projects, mostly through PPAs of ten years or longer. While the majority of demand driven by CCAs is centered in California, a few other states such as Massachusetts have authorized CCAs and have the opportunity to grow this resource.

⁷ <https://www.utilitydive.com/news/us-energy-storage-market-expected-to-more-than-double-in-2019-report-says/549890/>

⁸ <https://www.greenbiz.com/article/global-sustainable-investing-assets-surged-30-trillion-2018>

⁹ <https://about.bnef.com/blog/corporate-clean-energy-buying-surged-new-record-2018/>

¹⁰ <https://www.greentechmedia.com/articles/read/us-electric-vehicle-sales-increase-by-81-in-2018>

ACORE NEAR-TERM PRIORITIES FOR \$1T 2030 CAMPAIGN

ACORE is strategically deploying its resources toward the \$1T 2030 renewable energy investment goal. To advance the sector's progress on the \$1T 2030 campaign's key policy reforms and market drivers, we are pursuing the following near-term priorities:

**accelerate
energy
storage**



Accelerate energy storage deployment through (a) enactment of a robust federal incentive for energy storage and (b) development of a common project finance approach that properly values the multiple benefits of energy storage technologies.

Modernize power markets to take advantage of the flexibility, competition, reliability and resilience offered by increased renewable generation.

**modernize
power
markets**



**expand C&I
marketplace**



**improve ESG
scoring**

Expand the field of players to include more investors and buyers in the C&I marketplace, while improving ESG scoring practices to more accurately reflect companies' renewable energy use and investment.

About ACORE

The American Council on Renewable Energy is a national non-profit organization that unites finance, policy and technology to accelerate the transition to a renewable energy economy. Founded in 2001, ACORE is the focal point for collaborative advocacy across the renewable energy sector, supported by hundreds of members spanning renewable energy technologies and constituencies. ACORE manages the Partnership for Renewable Energy Finance (PREF), a coalition of senior-level officials with companies that finance, develop, manufacture and use renewable energy.

For more information, please visit 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 will leverage the network of ACORE members and supporters, highlighting a combined set of common sense policy reforms and distinct market drivers that are necessary to reach this ambitious goal. For more information, please visit www.acore.org/1T2030.

Survey Methodology

ACORE conducted an online, anonymous survey in May 2019 with financial institutions that actively finance and invest in renewable energy projects, technologies and companies. The survey defined questions relating to the “renewable energy sector” to refer to energy production using wind, solar, bioenergy, waste energy, hydropower, geothermal or marine hydrokinetic technologies.

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Published by:

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