ClearBridge Investments

# ESG Investment Program

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## Key Takeaways

- Recent developments in the energy and power sector suggest 2020 might be a watershed year for renewable energy and efforts to reduce carbon emissions.
- Favorable economics and innovation are driving solar adoption for both utilities and residential users.
- Developing the energy grid of the future will require an ecosystem of renewable energy innovators and adopters, and several ClearBridge holdings are playing a role.

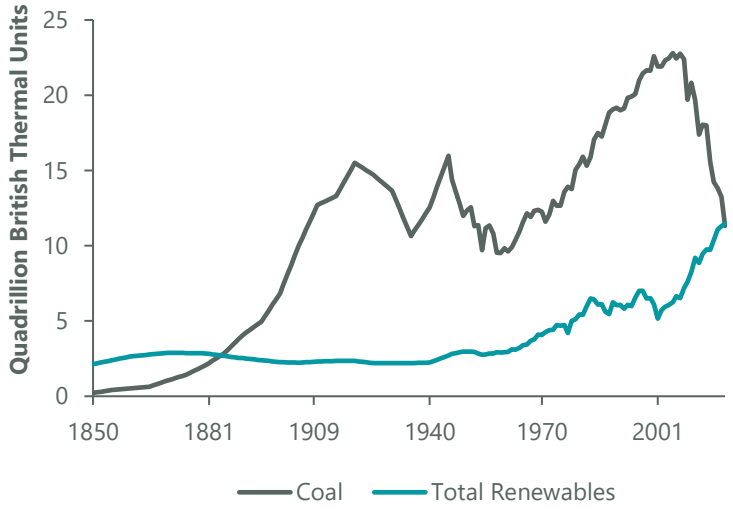
## Market Overview and Outlook: An Ecosystem of Renewable Energy Is Thriving

Recent developments in the energy and power sector suggest 2020 might be a watershed year for renewable energy and efforts to reduce carbon emissions. Forecasts for global oil demand have declined; BP has stated oil demand has peaked and announced its transition to green energy; Shell may be cutting 40% of its oil and gas production; Exxon Mobil, once the largest U.S. oil and gas producer, has exited the Dow Jones Industrial Average; the cost of wind and solar have fallen to levels nearly on par with fossil fuel energy sources; and investors have fled the traditional energy sector while boosting stocks tied to renewable energy.

Governments around the world also continue to raise their ambitions for carbon reduction. For example, the EU is now looking at 55% reductions by 2030 (versus 40% previously), and China set a new goal to achieve net-zero carbon emissions by 2060. Renewable energy consumption recently surpassed coal for the first time since the 19th century (Exhibit 1).

It is too early to tell if this pace of change will continue, but we expect to see a steady tide of renewable energy sourcing from several quarters. As an active owner of companies across the renewable energy ecosystem, ClearBridge is finding economic opportunity in an array of innovators and adopters that are enabling this surge and helping the world transition to a less carbon-intensive future, maybe sooner than we think.

Exhibit 1: U.S. Renewable Energy Consumption Surpasses Coal



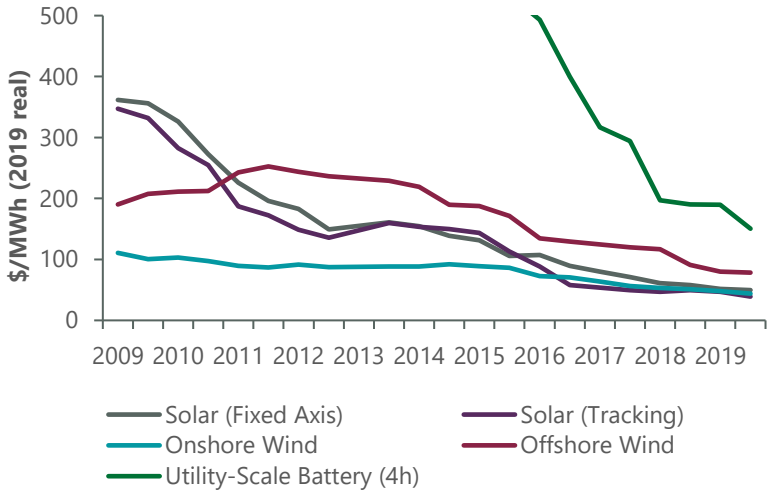

As of May 28, 2020. Source: U.S. Energy Information Administration. Renewables prior to 1890 from wood and biomass; hydroelectric added in 1890, geothermal in 1960, biofuels in 1981, wind in 1983 and solar in 1984.

## Corporate Demand for Renewables Only Getting Stronger

Many companies held across ClearBridge portfolios have set aggressive targets for lowering emissions through use of renewable energy. Earlier this year, Amazon.com announced it is on track to run on 100% renewable energy by 2025, five years ahead of schedule, while Microsoft announced it expects to be carbon negative and beginning to remove the carbon it has emitted since its founding, by 2030. Alphabet recently announced it will soon power its data centers and offices carbon free by using renewable sources at all times. The ambition of these measures is made possible by falling costs of renewable energy (Exhibit 2).

Demand for renewable energy has continued to grow even through the pandemic, according to ClearBridge holding Brookfield Renewable, which generates power from hydroelectric, wind and solar primarily in the U.S., Canada and Brazil. Brookfield Renewable's globally diversified, multi-technology renewables business, including a large hydro fleet, is well-positioned to help companies achieve decarbonization goals and makes Brookfield an attractive partner as more business and governments seek to lower their emissions.

Exhibit 2: Falling Costs of Renewable Energy Enable More Ambitious Initiatives




As of May 20, 2020. Source: Bloomberg New Energy Finance.

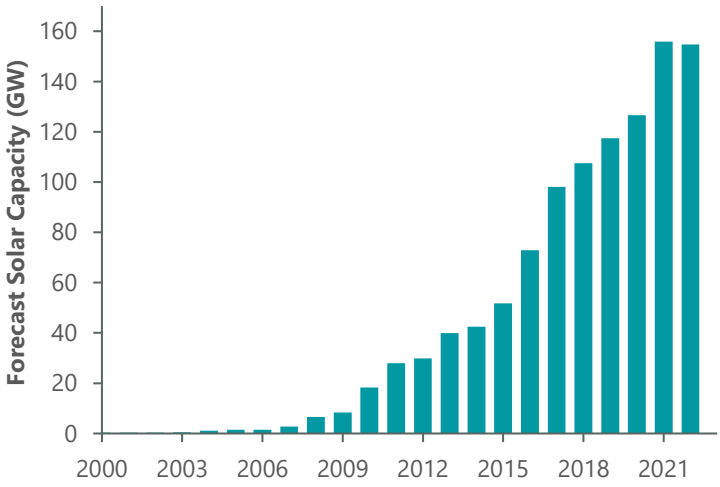
Commitments by large companies to increase renewable energy sourcing are felt through their supply chains, providing a competitive advantage to environmental forerunners and encouraging others to catch up. Data center provider and ClearBridge holding Equinix, for example, is a leader in renewable energy sourcing, with renewable energy percentages at 93% in the Americas already (100% in the U.S.), 99% in Europe, the Middle East and Africa and 75% in Asia Pacific. In a recent engagement with Equinix, we discussed how while the cost increase of sourcing from renewables is negligible, its industry-leading renewable footprint is a competitive advantage. In fact, several large customers that have announced their own targets around renewables and lowering carbon emissions were in some cases prioritizing Equinix data centers over competitors as it allowed them to get closer to their goals. Accordingly, we believe Equinix's goal of reaching 100% of energy sourced by renewables will be a positive for business.

### Favorable Economics and Innovation Driving Solar Adoption

Brookfield Renewable has also been adding utility-scale solar in its energy mix. The company recently noted that "as a result of technology advances and reductions in construction costs, solar can stand on its own without subsidies and more importantly, is now amongst the lowest cost sources of conventional power globally." This is partially due to the availability of less expensive solar panels from Chinese manufacturers.

Solar costs have dropped in the past five years from $4 per watt to install to less than $1 per watt, according to Brookfield Renewable, which believes solar could account for most of the company's production capacity in 10 years' time (it is less than 20% today). This is consistent with estimates of global solar capacity growth (Exhibit 3).

Exhibit 3: Global Solar Capacity Is Growing Rapid




As of Aug. 2020. Source: ClearBridge Investments, Bloomberg New Energy Finance.

On the residential side, innovation by ClearBridge holdings SolarEdge Technologies and Enphase Energy, along with cheaper panels, is enabling more adoption by homeowners. SolarEdge makes solar inverters and optimizers for residential and commercial solar photovoltaic (PV) systems. SolarEdge's system combines power optimizers on the back of each solar panel on the roof (known as "module-level power electronics," or MLPE) with a string inverter on the side of the building (which converts the direct current power produced by the solar modules to usable alternating current).

Enphase was the first company to commercialize microinverters for residential and small commercial solar PV systems. A microinverter, a type of MLPE, is a small inverter placed directly on the back of each solar module, as opposed to the traditional system of one string inverter on the side of the building.

MLPEs improve the efficient energy capture of a solar PV system by performing maximum power point tracking at the module level, rather than at the array level (all modules combined). They also allow greater flexibility in how modules are installed, in terms of angle, type and number, so houses with multiple roofs at different angles can use more surface area and capture more energy from it.

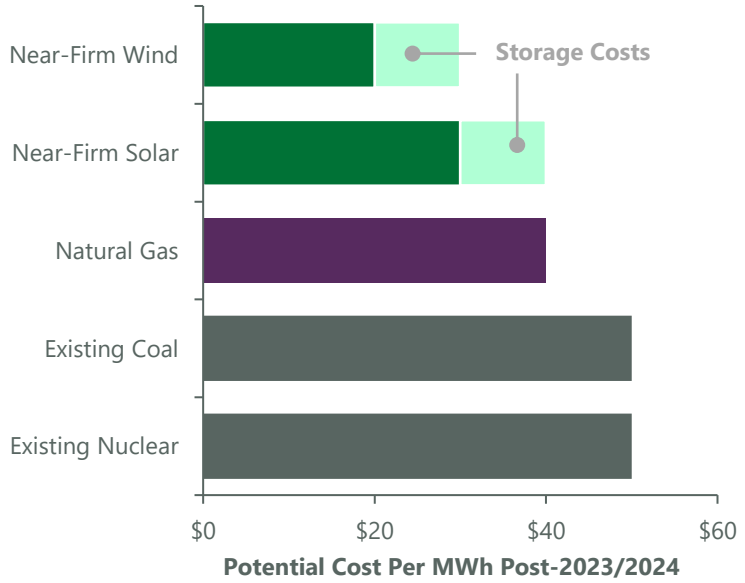
### Storage Next Big Question for Renewables

While good for the planet, renewable power has two main shortcomings: an inability to "match" power consumption peaks and variability of renewable power production driven by weather dependency. California rolling blackouts in August amid record-high summer temperatures, low winds and lower imports of power from neighboring states underscore these drawbacks of renewables and highlight the importance of storage/battery capacity for a reliable power grid.

Renewable energy paired with storage is an increasingly attractive option, and one which utility companies have begun to offer. While most battery technologies today offer only a few hours of power storage, the "near-firm" renewable power resources (solar or wind plus battery that can provide power that is nearly firm, or nearly around the clock) could help alleviate some of the impacts from grid outages, especially urgent in regions currently facing generation shortages. Solar and storage is now cheap enough that it is replacing inefficient peaking units — power plants that run only when there is a high demand for electricity, in order to balance the grid.

Storage remains a focus for several ClearBridge utility holdings, such as NextEra Energy, whose unregulated NextEra Energy Resources segment has the largest battery storage capacity in the world. NextEra Energy believes near-firm renewables will be competitive with all the traditional generation technologies as of 2023–2024 (Exhibit 4). The company's project pipeline has 2.2GW in battery storage under development and battery storage investments in 2021 are expected to exceed $1 billion. It expects the continued innovation by the automotive industry, improvements in converters and enclosures, and lower balance of system costs to drive down the cost of energy storage by ~16% CAGR between 2020 and 2023.

Exhibit 4: Even with Addition of Storage, Renewables Are Cost Competitive




As of Sept. 2020. Source: NextEra Energy. Represents projected cost per MWh for new build wind, solar, and natural gas; excludes production tax credit for wind and assumes 10% investment tax credit for solar; projected per MWh operating cost including fuel for existing nuclear and coal; based on NextEra Energy internal estimates.

Fossil fuel generating capacity is being replaced with renewables with state regulators' blessing. While utilities benefit from higher spending with incremental earnings, utility customers benefit in the long run from the deflationary impact of such generation

asset replacement. Compared to more traditional power generating plants, renewable sources of electricity have no fuel to pay for and enjoy much lower operations and maintenance costs. The main limiting factor to the utilities' spending programs has been and will continue to be the companies' focus on keeping inflation of customer bills low (at or below CPI).

Storage is also an increasing focus of SolarEdge and Enphase on the residential and smaller commercial side. Enphase's home energy storage product, Encharge, offers a substantial opportunity to dramatically increase revenue per installation, and early interest is a positive sign.

Yet overall renewables remain intermittent, and while storage improves availability of renewable assets, the combination cannot beat high 90% availability of baseload gas or nuclear plants, at least in the near term. The grid of the future should have a much higher presence of renewables, although a full elimination of the traditional sources of power will likely require some major breakthroughs in storage technology.

## Many Businesses Can Thrive in Transition to Renewable Energy

As efforts to combat climate change become more urgent, it is encouraging to see the increasing scale of commitments by corporations as well as state and city governments. Developing the energy grid of the future, which will have to support more cars, trucks and buses transitioning to electric motors, will require an ecosystem of renewable energy innovators and adopters. ClearBridge will continue to seek out and engage with leading companies that can thrive as we progress toward a net-zero future.