ESG–FOCUSED INVESTING IN U.S. ELECTRIC UTILITIES

EAGLE | Asset Management

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Executive Summary

- **Investments in electric utilities benefit from an evaluation of material environmental, social, and governance (ESG) factors.** ESG risks impacting the short-term price and long-term value of fixed-income securities can have additional relevance for the creditworthiness of issuers.
- **The urgency to address climate change is boosting demand for low-carbon transitions.** Federal commitments to decarbonization — along with commitments from U.S. states and corporations — offer substantial support for renewable energy.
- **Renewable energy sources have strong tailwinds to performance.** Coal retirement accelerates upward price pressure on natural gas has reduced its attractiveness as a viable "bridge" fuel, and nuclear power remains challenged by waste management issues.
- **Resiliency is essential for long-term renewable integration.** Hardening key power grid infrastructure is important to improve climate risk resiliency. Grid modernization can also address risks by creating renewable integration opportunities.
- **Eagle's ESG-focused portfolios identify utility bond issuers that exhibit positive ESG attributes.** In our view, the electric utility sector should not be avoided by long-term ESG investors.

We believe that Eagle's proprietary ESG scoring framework, norm-based screening, and investor engagement efforts are effective tools for monitoring the ESG performance of portfolio holdings. We invest in electric utilities to become part of the ongoing decarbonization process.

ESG offers risk mitigation value

Despite the growing importance of ESG considerations, there is a lack of consensus among regulators, rating agencies, and nonprofit organizations regarding a uniformed ESG investing approach. However, investment professionals can augment a company's financial information with additional ESG risk factor information — especially when considering fixed-income investment products — to improve their investment decisions.

ESG analysis tends to focus on long-term investment outcomes that share similar time horizons with fixed-income investment decisions. The risk mitigation benefits of ESG data can also accommodate the risk appetites of bond investors, which means that the incorporation of ESG data into fixed-income credit analysis can become a natural extension of the credit research framework.

We believe that low-carbon transition, generation fuel mix, and resiliency are material ESG factors in the financial performance of utility issuers, and we believe that the fusion of conventional credit analysis and ESG-focused analysis should ultimately bring positive risk-adjusted returns to investors.

This paper identifies the ESG risks that we deem important and elaborates on our own assessment framework for Eagle's ESG-focused investment strategies.

What matters in utility ESG investment

ESG risks are becoming increasingly relevant to the creditworthiness of utilities. We leverage the Sustainability Accounting Standards Board (SASB) framework, which has quickly gained traction as a useful tool for investors, to identify the most financially material ESG topics in the utility

space. The voluntary SASB disclosure framework facilitates communication between companies and investors, and it identifies factors that are material for Electric Utilities & Power Generators.

Building on the SASB analysis, we have identified three material ESG factors that can impact the financial performance of corporate utility bond issuers.

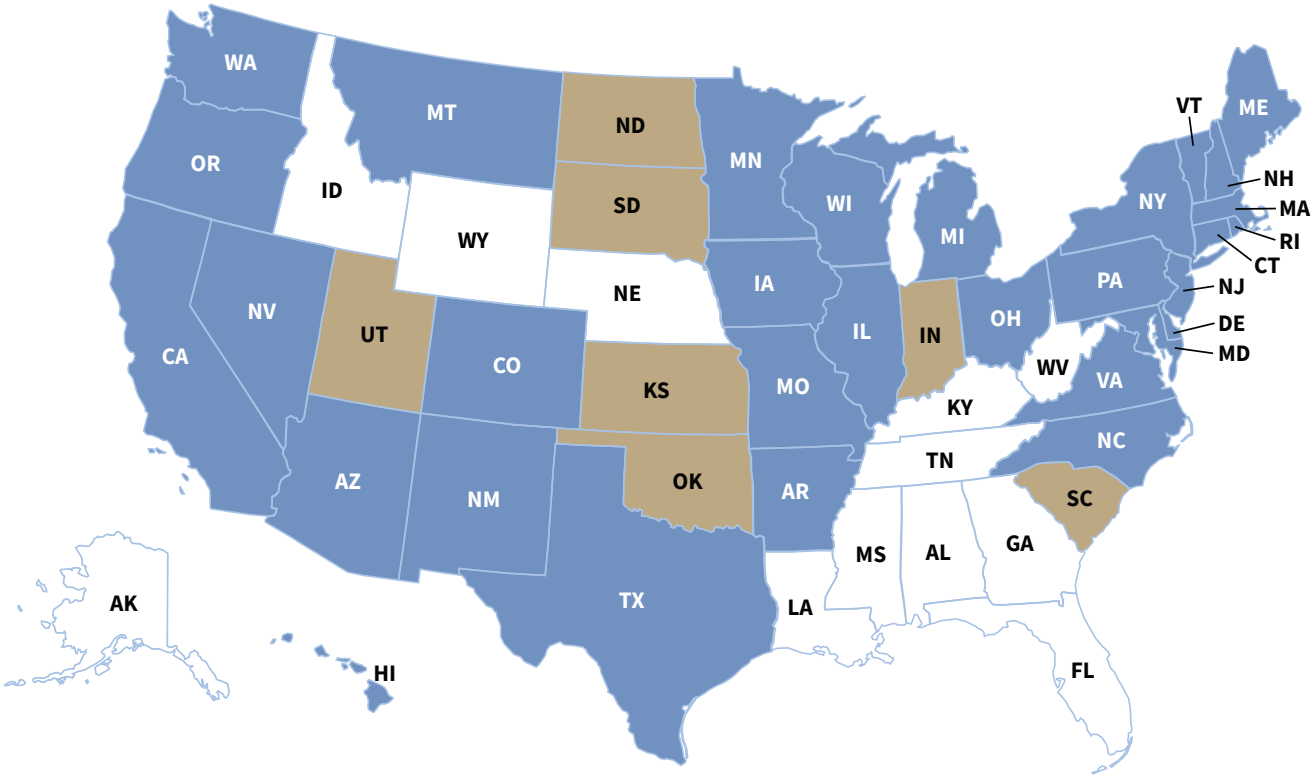
1. Transition to a low-carbon economy

The scientific community has acknowledged that the 1.5 degree goals of the 2015 Paris Agreement will soon be "beyond reach"[1] unless emission levels fall deeply and rapidly. This sense of urgency has compelled the United States to commit to a 50% to 52% emissions reduction target based on its 2005 emissions levels,[2] to be achieved by 2030.

Despite political challenges, federal policies have effectively spurred progress in energy transition. In 2021, the Biden Administration set a goal to generate 100% carbon-free electricity by 2035,[3] which involves phase-outs of coal and natural gas generation plants. The Build Back Better agenda and the passage of the Inflation Reduction Act (IRA) are also considered to be landmark initiatives toward a low-carbon transformation.

Each state is increasing its renewable portfolio in line with federal decarbonization plans, and their renewables targets are becoming more ambitious. Some states are directly requiring a certain percentage[4] of their electric power to come from renewable sources. Other states have implemented renewable portfolio standards[5] that require regulated utilities to obtain a minimum percentage of their electricity from renewable sources.

Most states have renewable portfolio standards and goals



eia Data Source: Database of State Incentives for Renewable Energy and Efficiency® as of September 2020

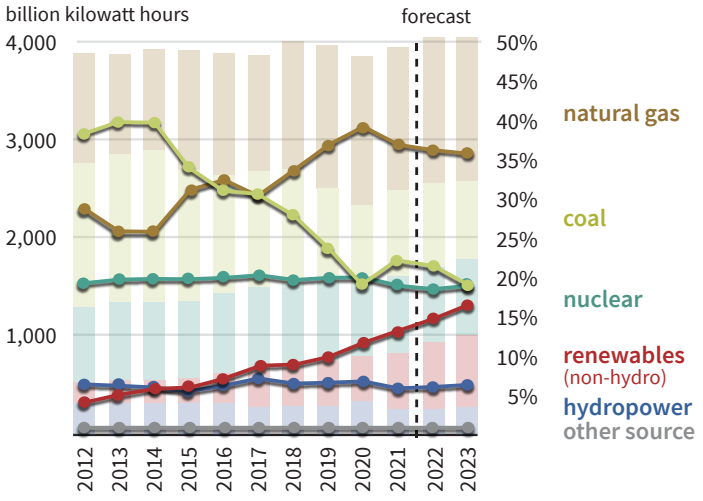
Although regional differences exist in each state's decarbonization effort — due to differences in regional power dynamics — these policies and standards drive demand for renewable electricity in ways that play a critical role in determining each electric utility's energy transition pathway.

Most public companies have set emission reduction goals, and many of them have set bolder, science-based targets as part of a larger corporate trend of actively transitioning to cleaner energy. Increased procurement of renewable energy from local utilities would be one of the most effective approaches to achieve these emission reduction targets. In 2021, the United States saw the largest volume of corporate Power Purchase Agreements (PPAs) ever,[6] which highlights how corporate customers are increasing their demands for low-carbon electricity.

2. Generation fuel mix

Electric utilities have expanded their capacity to generate renewable electricity (using wind, solar and hydropower), to double the share of renewable energy generation since 2011, raising from 10% to 20%.[7] This share is projected to reach 24% in 2023; more wind and solar projects are coming online and many coal-fueled power plants are retiring.[8]

U.S. electricity generation by source, all sectors



Source: U.S. Energy Information Administration, Short Term Energy Outlook as of August 2022

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However, the growth of renewable generation remains insufficient to meet the growth in demand. The increase in generation and transmission capacity from solar and wind sources is unable to keep pace with the retirement of fossil fuel sources. The International Energy Agency reported that renewable energy could only serve half of the global projected demand growth in 2020 and 2021,[9] and this persistent supply–demand imbalance has shaped the fuel mix of electric utilities.

Coal

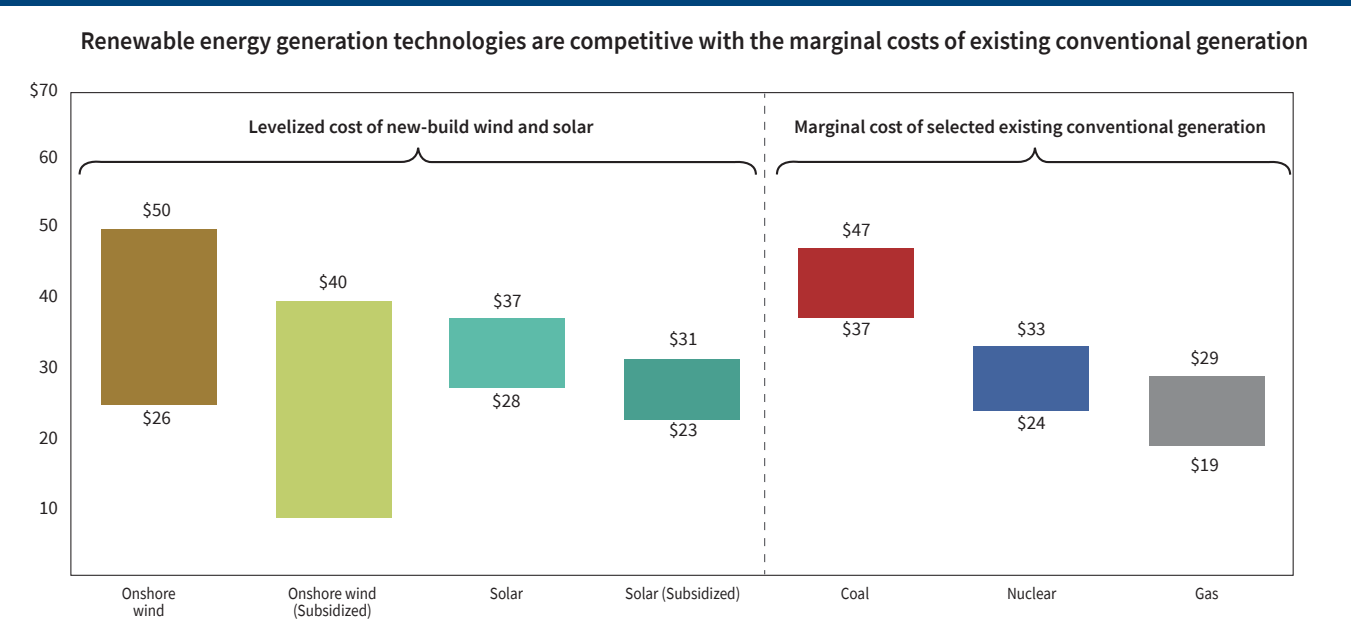
On a levelized cost of energy (LCOE) basis, existing costs of electricity generated by coal-powered utilities can be materially higher than the costs of subsidized onshore wind and solar utilities. A 2021 Lazard report found that the $42 per megawatt hour (MWh) LCOE for existing coal-generation was more costly than the $27/MWh cost of onshore wind and the $25/MWh cost of utility-scale solar.[10] The cost disadvantage for existing coal-generation technologies even remained after excluding subsidies.

The cost disadvantages of coal plants become even more meaningful after incorporating internal carbon prices into the LCOE analysis. [An internal carbon price is generally set by a company as the estimated unit cost of reducing or removing their greenhouse gas (GHG) emissions.] On a marginal cost basis, Lazard's conservative carbon price assumptions for conventional coal-generation plants present higher LCOE numbers than renewable fuels.

Despite geographic constraints, coal's meaningful cost disadvantages should theoretically continue to drive the retirement of coal-fired electric utilities. Some costs can be indirectly passed to ratepayers, but drastic rate increases could raise states' concerns about price affordability.

On top of this margin headwind, we generally observe a lag before higher rates are passed on to ratepayers. Short-term

Levelized cost of energy comparison - renewable energy versus marginal cost of selected existing conventional generation



Source: Lazard estimates, as of October 2021

cost pressures could delay the recovery of coal investments and temporarily hurt a utility company's cash flow. Although global electric utilities have delayed their coal-retirement plans[11] — in part due to Russia's indefinite cuts to the European Union (EU) natural gas supply[12] — we expect long-term cost pressures to persist for coal, and for coal retirements to accelerate.

Natural gas

Many utilities are using natural gas to replace declining coal capacity, and in theory, natural gas can serve as a "bridge" fuel that involves lower costs and lower greenhouse gas (emissions during transitions to renewable energy sources. Horizontal drilling, combined with fracking technology, has driven unprecedented growth in natural gas production within the United States. Over the past decade, the growing global liquefied natural gas market brought additional flexibility to gas transportation while the capacity for production increased.

Macroeconomic changes have reduced the effectiveness of natural gas as a transition fuel. In 2022, natural gas was one of several commodities affected by Russia's invasion of Ukraine, and sanctions from Russia added regional supply pressures on natural gas. The price of natural gas spiked regionally and globally because of the commodity's growing links with markets around the world. Rising prices and associated uncertainty have put pressure on the cost competitiveness of natural gas in the United States.

Many utilities are also reassessing the carbon reduction potential of natural gas. Although it generates lower emissions than coal and oil, natural gas electricity production is not emission-free; it still releases carbon dioxide and water from burning methane.

Fugitive methane leakage can contribute to the formation of ground-level ozone and further accelerate global warming. The water that is created as a natural gas byproduct can pose secondary environmental threats[13] to overall water

Fuel	Million metric tons	Share of total
Coal	908	59%
Natural gas	615	40%
Petroleum	17	1%
Other [A]	11	1%

[A] Includes carbon dioxide emissions from the combustion of waste materials made from fossil fuels and by some types of geothermal power plants.

US electric power sector carbon dioxide emissions.

Source: ***Monthly Energy Review***, April 2023

systems. Unintended environmental damage can limit the upside of natural gas and pose potential regulatory risks for utilities relying on this fuel source.

Renewable energy: wind, solar, and hydropower

Renewable additions have demonstrated society's preference for cleaner and more affordable fuel sources. Renewables — with the majority of generation capacity coming from wind, solar, and hydropower — accounted for 20%[14] of generation capacity in 2020 and 2021; this number is expected to rise to 24% by 2024.[15]

Federal and state-level financial incentives are playing a critical role in the energy transition process, and new renewable builds are expected to increase in number.[16, 17]The Biden administration is providing infrastructure-oriented support through the Inflation Reduction Act (IRA), which includes an estimated $386 billion of energy and climate spending that will take the form of tax credits for the development of wind, solar, clean hydrogen, and carbon capture.[18]

By 2030, these legislative measures could reduce net greenhouse gas (GHG) emissions in the United States by 32% to 42% of their 2005 levels. The IRA is projected to cut an additional 1 billion metric tons of annual emissions,[19] putting the United States back on track to meet its Paris agreement commitment.

Energy reliability has been an enduring challenge in the renewable sector, and the IRA is set to enhance energy storage systems (e.g., standalone batteries and solar-battery hybrids) through investment tax credits (ITCs) for standalone storage technology.[20] The ITCs will reduce the relative costs of renewables, and we believe its impact on the utility sector will be unprecedented.

The IRA also intends to address workforce challenges throughout the transition to renewable energy, creating more than 9 million jobs over the next 10 years through more than 100 programs. It will create additional 10% tax credits to assist facilities and projects located in vulnerable fossil fuel communities.[21] We expect the IRA to be a strong policy tailwind supporting the renewable transition of utility companies by addressing financial, operational, and social challenges.

The availability of an adequate renewable network is the biggest constraint on electric utilities deploying their long-term electric transition strategies. Renewables have experienced commodity cost inflation and supply chain bottlenecks over the short term, and prices of critical minerals widely used for wind turbines, batteries, and solar technology remain elevated. The absence of a massive transmission network for renewable energy generation facilities is the most significant barrier to deployment over the long term.

The ways in which electric utilities address these feasibility challenges will become key determinants of their long-term credit quality.

Nuclear power

Nuclear power is viewed as another scalable, renewable source of energy for low-carbon economies.[22] Neither nuclear fission nor nuclear fusion produces any carbon dioxide, and what little emissions are produced only occur indirectly during a plant's construction.[23] In an environment where fossil fuels are becoming increasingly expensive,

nuclear power has been reconsidered as a potential carbon-advantaged solution to match energy supply with demand.

EU taxonomy allows the investor community to consider specific nuclear fuels as environmentally friendly for energy transition purposes. Earlier in 2022, the U.S. Department of Energy (DOE) announced a nuclear production tax credit program[24] as part of the infrastructure bill supporting President Biden's clean energy goals. In Michigan, plans have been developed to reopen its Palisades nuclear plant.[25] The DOE has also become more supportive of fusion development, and it plans to open the first U.S. nuclear fusion plant by the 2040s.[26] The scheduled shutdown of nuclear plants has become unlikely at this inflection point; nuclear energy will continue to be a key contributor to U.S. power generation over the next few years.[27]

Even with strong federal and state policy support, the long-term management of nuclear waste has remained an unsolved problem. Most of the radioactive spent nuclear fuel is currently stored in specially designed pools at each reactor site.[28] This waste, which will have to be isolated for thousands of years before it completely loses its radioactivity, continues to accumulate each year. This approach is not sustainable, due to its risks to the environment and public health. The selection of waste disposal sites can also raise environmental injustice concerns,[29] especially for lower-income communities.

Many of the nuclear plants operating within the United States are large-scale conventional reactors that required a significant up-front investment. Risks can arise from managing nuclear plants that have different reactor designs, and their safety requirements may differ. As an alternative, standardized Small Modular Reactors (SMRs) are designed to be manufactured in factories and assembled on-site. These new reactor designs, with their enhanced safety systems, can significantly reduce the risk of nuclear accidents.[30] However, even when the probability of an accident is low, the damage from nuclear waste can involve huge radiotoxicity and environmental harm.

Other renewables

Biomass, geothermal, and hydrogen sources —accounting for less than 2% of electricity generation[31] — are additional/also low-carbon fuels that have the potential to be widely deployed by electric utilities. In 2022, the green hydrogen market was given the largest production tax credit to date,[32] which should help scale up production. While waiting for these renewable technologies to mature, we are continuously evaluating the economic and technological challenges of energy supply options and reconsidering their associated investment risks.

3. Resiliency

Aging infrastructure poses long-term operational challenges for utilities. Most U.S. power grids were built in the 1950s and 1960s, and they had a 50-year life expectancy. Climate change and growing numbers of extreme weather events are increasing the frequency of outages caused by wildfires, hurricanes, and storms. The number of these disruptions — imposing financial difficulties[33] on customers — has grown over the past two decades.

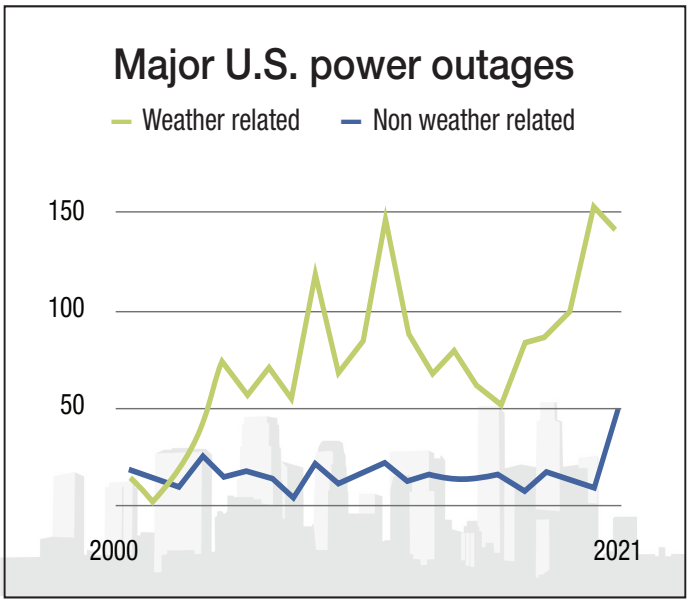
Grid-hardening initiatives are essential for managing climate risks, and they set the foundation for grid modernization. Such projects can involve removing trees near power grids, installing covered conductors, relocating power lines, burying power lines, and replacing wooden transmission poles with steel. Underground power lines enjoy increased protection from ice, severe windstorms, and falling trees, but they are more costly and time-consuming to install.

Additional stages of grid modernization focus on smart grid technologies, such as advanced metering infrastructure (AMI), that can share data with customers to improve their management of energy consumption and utility costs. AMI can also lower capital expenditures for energy utilities by enabling faster outage restoration through peak demand management systems.

Smart grid investment can accommodate a more diverse portfolio of energy generation than existing infrastructure. Most aging infrastructure was designed to supply power in one direction – from large, centralized power plants to their customers. Modernized grids allow electric utilities to integrate renewable energy supplies from smaller local sources, which improves resiliency and the management of transition risks.

Although grid modernization can improve resiliency, the complexity of advanced systems introduces a new challenge with cybersecurity risks. Companies that increase their dependence on an influx of wireless technology and communications devices must be able to meet mandatory regulatory requirements for cybersecurity. We believe that cybersecurity risk preparedness can demonstrate a company's sophistication and governance capacity; investors should assess whether companies are able to deploy voluntary cybersecurity training standards or guidelines.

Task Force on Climate-related Financial Disclosures (TCFD) reports are voluntarily published by individual companies, and they are a useful resource for investors seeking accessible and comparable risk management strategies for climate risks, transition risks, and cybersecurity risks among electric utility issuers.



Source: Climate Central, as of 2022

Eagle's view

Although the utility sector keeps the world running with accessible and reliable sources of power, from an ESG perspective, it is also one of the largest carbon-emitting industries. In 2021, the U.S. electric sector produced as much as 1,551 million metric tons of carbon dioxide, which accounted for 32% of the total energy-related emissions in the United States.[34] The substantial water usage of the utility sector has also drawn criticism for not being truly "green."

As the investor community pursues a greener economy, how can we justify our ESG investment thesis in utility offerings?

We continue to think that the key to ESG investing does not involve the exclusion of controversial industries: Instead, we invest in them to become part of incremental changes. We believe that traditional utility companies can ultimately make beneficial changes in the world's energy transition by leveraging their scale, infrastructure, technology, and human talents. We have confidence that this group can deliver the rapid emission reductions needed while playing a unique role in decarbonization.

However, the definition of ESG investing standards is still very much a work in progress. Current ESG data reported by corporate issuers can be insufficient or inconsistent. The lack of transparency for ESG ratings agencies' evaluation frameworks also provides few insights into a company's ESG score or rating.

Eagle Fixed Income evaluates the ESG performance of electric utility companies from the perspectives of low carbon transition, generation fuel mix, and resiliency. Our proprietary ESG scoring model informs our selection of utilities that have a historical record of outperforming their peers on material ESG aspects. In addition, we believe that companies with

Source	Company A	Company B	Company C	Company D	Company E	Company F	Company G
Rankings	11.01	8.28	6.87	8.17	4.34	6.62	6.12
Environmental	22.06	17.03	18.29	0.00	13.44	19.18	0.00
Social	7.76	8.39	11.76	10.60	11.98	6.32	0.00
Governance	6.28	8.27	4.81	9.53	7.31	6.46	9.91
Score	47.11	41.97	41.73	28.30	37.07	38.58	16.03

Source: Eagle Fixed Income's proprietary ESG scoring framework

strategic plans to tackle these challenges are demonstrating strong ESG governance capacity; they have the potential to deliver positive performance.

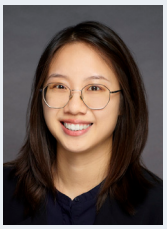
One of Eagle's utility holdings (Company A) serves customers in the East Coast region. The company has benefited from increased state focus on renewables, and it plans to build the largest 2.64 gigawatt (GW) offshore wind plant in the United States. As a rate-based regulated utility, Company A is allowed to recover any renewable rate-based spending via the state's ratepayers. Elevated customer demand and stronger regulatory support have created noticeable tailwinds for the company's long-term growth. While supporting Company A's renewable transition efforts, we have also capitalized excess returns from investing in their corporate bonds.

Another Eagle utility holding (Company B) operates a regulated utility business and an unregulated renewable business. Company B claims to be the largest owner of renewable energy utilities in the world, with 18GW of wind and solar plants in operation. In 2017 to 2020, the unregulated business devoted nearly $25 billion to 16.5GW of renewable energy projects. Company B also has first-mover advantages in the battery and renewable-plus-storage markets. We believe that Company B will be one of the largest beneficiaries of additional tax credits under the IRA. In our opinion, the additional cost-effectiveness in renewable generation will continue contributing to investment returns for Eagle's fixed-income investment strategies.

Eagle invests in electric utility issuers that exhibit positive attributes related to low-carbon transition, generation fuel mix, and resiliency. After making an investment, Eagle reviews the holding's material ESG aspects, on an annual basis, to ensure that corporate issuers maintain their strong advantages. Additional electric utility ESG performance-monitoring measures include tracking the issuer's ESG targets, reviewing the issuer's norm-based controversial risks, and proactively engaging with corporate bond issuers on ESG strategies.

We believe that this approach will make a difference both now and in the future.

About the author



Ellen Li

Ellen Li is a Research Analyst with Eagle Asset Management. Prior to joining Eagle in 2021, Li was a market analyst intern with the Climate Bonds Initiative. She also worked on multiple sustainable business strategies for consulting projects for various corporate clients.

Li earned a Bachelor of Science in agricultural and natural resource economics from University of Maryland and a Master of Environmental Management from Duke University.

Eagle ESG Focused Fixed Income Portfolio Manager

Sheila King, CFA

Sheila King, CFA, co-manages Eagle's Tax-Advantaged Fixed Income strategies and Eagle ESG Focused Fixed Income suite of products. She joined Eagle in 1987 and has 36 years of investment experience. During her time at Eagle, King has served as a Credit Analyst and Portfolio Co-Manager.

King was named to InvestmentNews' 2022 list of Women to Watch. She also served on the Board of Directors for CASA (Community Action Stops Abuse) for 10 years. She is an avid athlete, having completed Half Ironman and Ironman races and hiked to an elevation above 14,000 feet. She earned a Bachelor of Science in business administration from the University of North Carolina and is a CFA charterholder.

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Eagle Asset Management is built on the cornerstones of intelligence, experience, and conviction, driven by research and active portfolio managers. Our long-tenured investment teams manage a diverse suite of fundamental equity and fixed income strategies designed to meet the long-term goals of institutional and individual investors. Our teams have the autonomy to pursue investment decisions guided by their individual philosophies and strategies.

About Raymond James Investment Management

Raymond James Investment Management is a global asset management company that combines the exceptional insight and agility of individual investment teams with the strength and stability of a full-service firm. Together with our partner affiliates – Chartwell Investment Partners, ClariVest Asset Management, Cougar Global Investments, Eagle Asset Management, Reams Asset Management (a division of Scout Investments), and Scout Investments – we offer a range of investment strategies and asset classes, each with a focus on risk-adjusted returns and alpha generation. Raymond James Investment Management believes providing a lineup of seasoned, committed portfolio managers, spanning a wide range of disciplines and investing vehicles, is the best way to help investors seek their long-term financial goals.

Risk Information

Investing involves risk, including risk of loss. Diversification does not ensure a profit or guarantee against loss.

ESG/Sustainable investing may incorporate criteria beyond traditional financial information into the investment selection process. This could result in investment performance deviating from other investment strategies or broad market benchmarks. Please review any offering or other informational material available for any investment or investment strategy that incorporates sustainable investing criteria, and consult your financial professional prior to investing

Many investors consider bonds to be "risk free" investment vehicles. Historically, bonds have indeed provided less volatility and less risk of loss of capital than has equity investing. However, there are many factors that may affect the risk and return profile of a fixed-income portfolio. The two most prominent factors are interest-rate movements and the creditworthiness of the bond issuer. Bonds issued by the U.S. government have significantly less risk of default than those issued by corporations and municipalities. However, the overall return on government bonds tends to be less than these other types of fixed-income securities. Investors should pay careful attention to the types of fixed-income securities that comprise their portfolio and remember that, as with all investments, there is the risk of the loss of capital.

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Disclosures

Index or benchmark performance presented in this document does not reflect the deduction of advisory fees, transaction charges, and other expenses, which would reduce performance. Indexes are unmanaged. It is not possible to invest directly in an index. Any investor who attempts to mimic the performance of an index would incur fees and expenses which would reduce return.

The investment strategy will include only holdings deemed consistent with the applicable Environmental Social Governance (ESG) guidelines. As a result, the universe of investments available to the strategy will be more limited than strategies not applying such guidelines, which may cause it to perform differently than similar funds that do not have such a policy.

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Definitions

ESG refers to Environmental, Social, and Governance factors used in measuring the sustainability and societal impact of an investment in a company or business.

Decarbonization is reduction or elimination of carbon dioxide emissions from the process of energy production.

The term renewable energy generally refers to electrical energy generated by wind, solar, and hydroelectric sources.

Hardening and other electrical grid modernization efforts involve the installation of equipment that is more resistant to severe weather and to reduce wildfire risk.

A low-carbon transition is a transition to economic activities supported by energy sources that produce low levels of greenhouse gas (GHG) emissions.

Greenhouse gases (GHG) and GHG emissions are gases, including carbon dioxide, that trap heat in the Earth's atmosphere.

Carbon dioxide is a colorless and non-flammable gas that is emitted during many industrial activities, including the generation of electrical energy.

Generation fuel mix describes the mix of sources that electric utilities use to generate electricity, which can include coal, wind, solar power, and natural gas.

The Sustainability Accounting Standards Board (SASB) is a non-profit organization that develops standards for providing industry-based disclosures about sustainability-related risks and opportunities that could reasonably be expected to affect an entity's cash flows, access to finance, or cost of capital over the short, medium, or long term.

The Build Back Better agenda was a legislative framework proposed by U.S. president Joe Biden to encourage public investment in social, infrastructural, and environmental programs.

The Inflation Reduction Act (IRA) is federal legislation passed in August 2022. It aims to help curb inflation by directing spending toward reducing carbon emissions and lowering health care costs, while also aiming to improve taxpayer compliance through increased funding for the Internal Revenue Service.

Power Purchase Agreements (PPAs) are arrangements in which third-party developers install, own, and operate energy systems on customers' properties. These agreements are most commonly used for renewable energy systems, and customers purchase the electric output of these systems for a predetermined period.

Levelized cost of energy measures compare the marginal costs of conventional electicty generation methods (coal, nuclear, natural gas) with the subsidized and non-subsidized costs of wind- and solar-powered electricty generation methods.

A megawatt hour (MWh) is used to measure electric output, and 1 MWh is equal to 1,000 kilowatts of electricity generated per hour. A kilowatt is the base unit used in the routine measurement of electrical energy.

The 2015 Paris Agreement is a legally binding international treaty on climate change adopted by 196 parties. It entered into force on 4 November 2016.

Biomass is renewable organic material that can be used to generate electricity. Biomass comes from plants and animals, and some common examples include wood and agricultural waste materials. Biomass is burned directly or converted to liquid and gaseous fuels through various processes.

A gigawatt (GW) is a measure of power equivalent to 1 million kilowatts.