The municipal bond market offers investors an opportunity to participate in the revitalization of U.S. infrastructure and to support the nation’s growing climate change initiatives.

Responsible investing is a relatively new area in the municipal bond space, and we believe the concept is well-suited for a market that finances entities and projects intended to serve the public good. A key component of responsible investing is incorporating environmental, social, and governance (ESG) factors into the investment process through credit analysis and portfolio construction (see table 1). Responsible investment vehicles also seek to align investments with investor values through programs and projects that contribute to local communities in a positive way. This practice allows socially conscious investors to provide financing to a variety of local government and nonprofit organizations to fund programs and projects such as the following:

- renewable energy projects
- building infrastructure for clean drinking water and sustainable waste projects
- public education facilities to provide better learning environments in underserved communities
- not-for-profit hospitals and other healthcare facilities
- affordable housing
- land conservation

### MUNICIPAL BONDS: ADDRESSING CLIMATE CHANGE

The Paris Climate Agreement, signed by 195 countries and ratified by 146 countries, is considered to be the landmark climate agreement enacted to help mitigate the effects of climate change. The key goals of this agreement are to hold increases in the global average temperature to well below two degrees Celsius above preindustrial levels, to reach global peaking of greenhouse gas emissions as soon as possible, and to minimize loss and damage associated with climate change. Although the United States has decided to pull out of the Paris Climate Agreement, numerous mayors, governors, university presidents, and businesses have pledged to still meet greenhouse gas emissions targets under the original plan. This coordinated effort is being led by former New York City Mayor Michael Bloomberg, and he believes that the cooperation among cities, states, and businesses could achieve or even surpass the original pledge by the United States to reduce greenhouse gas emissions by approximately 26 percent below its 2005 levels by 2025.1 With these goals in mind, local governments will play a key role in the process of reducing emissions. For example, Jackie Biskupski, the mayor of Salt Lake City, confirmed that her administration already has brokered agreements with local utility providers to power the city with 100-percent clean energy by 2032. She asserts that climate change is having a significant impact on water availability and water quality and wants to make sure the city is taking the necessary steps to address these issues.2 As U.S. states and municipalities take the lead with these initiatives, legislation and tighter regulations will increase requirements for investment in renewable energy and environmentally friendly projects. As funding needs grow, this will provide more investment opportunities for municipal bond investors seeking an ESG focus.

### GREEN MUNICIPAL BONDS

Green municipal bonds are one such investment opportunity that allows investors to support climate-aligned projects in such sectors as transportation, water and waste infrastructure, pollution control, and renewable energy

### INCORPORATING ESG FACTORS INTO OUR INVESTMENT APPROACH

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Social</th>
<th>Governance</th>
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<tbody>
<tr>
<td>Planning for sustainability of projects can enhance long-term viability of infrastructure and utility systems</td>
<td>Opportunity to invest in local community initiatives such as education, health care, and transportation</td>
<td>Well-managed municipal issuers adhere to sound financial controls, feasible capital plans, and monitor long-term liabilities</td>
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App. n. g. L. of a Green Bond.”

by clarifying the approach for issuance development of the Green Bond market closure and promote integrity in the regulations that mandate transparency and disclosure. The Green Bond Principles are overseen by an advisory board. To meet the requirements and use the certification for marketing purposes, an issuer must appoint a third-party verifier and provide a verification statement that the issuance meets the Climate Bonds Standard. The Climate Bonds Standard is seen to be more robust than the Green Bond Principles, although issuers can receive both certifications.

STATE GREEN BOND ISSUANCE

As the effort to reduce greenhouse emissions under the Paris Climate Agreement in the United States moves forward, state and local governments will play a major role in imposing stricter renewable portfolio standards to meet these lower carbon-emissions goals. Renewable portfolio standards are regulations that mandate an increase in production of energy from renewable energy sources such as wind and solar power. These can be implemented at the state level, and states can apply these requirements to all of their utilities or only investor-owned utilities. Twenty-nine states, three territories, and Washington, DC, have adopted and increased renewable energy portfolio standards since the Paris Climate Agreement was enacted (see figure 1). Hawaii has the most aggressive renewable portfolio standard, with a goal of 100-percent renewable energy by 2045. Other states with aggressive renewable energy plans include California and New York; both states have a goal of 50-percent renewable energy by 2030. The State of California and its agencies issued more than $1.38 billion in green bonds in 2016, which was $1 billion more than it issued in 2015.6 These bonds were issued for various green purposes, including renewable energy, energy efficiency, clean transportation, and clean water. The San Francisco Public Utilities Commission issued $500 million in bonds for a clean water project and was the first issuer to issue

Two main certifications have been developed for the green bond market: Green Bond Principles and Climate Bonds Standard. The Green Bond Principles, which have been updated as of June 2017, are “voluntary guidelines that recommend transparency and disclosure and promote integrity in the development of the Green Bond market by clarifying the approach for issuance of a Green Bond.” The guidelines were written for use by issuers, investors, and underwriters of green bonds to help facilitate more disclosure around transactions in the green bond market. The Green Bond Principles are overseen by the International Capital Markets Association with input from a group of various stakeholders in the green bond market.

According to the Climate Bonds Initiative, the Climate Bonds Standard is “a screening tool for investors and governments, which allows them to easily prioritize climate and green bonds with confidence that the funds are being used to deliver climate change solutions.”

Transparency of the underlying use of proceeds is a key component in determining the eligibility of a bond issuance for Climate Bonds Certification, so that investors can easily determine the environmental benefits of a bond issue. Requirements are sector-specific and are overseen by an advisory board. To meet the requirements and use the certification for marketing purposes, an issuer must appoint a third-party verifier and provide a verification statement that the issuance meets the Climate Bonds Standard. The Climate Bonds Standard is seen to be more robust than the Green Bond Principles, although issuers can receive both certifications.

STATE RENEWABLE PORTFOLIO STANDARDS AND GOALS

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Bonds under the new Climate Bonds Standard for Water. Other green projects issued by California agencies included $410 million by the California Infrastructure Bank for clean water purposes, $170 million by the Los Angeles County Sanitation District for reclaimed water and sewer system improvement, and $100 million by the San Diego Unified School District for green-certified school buildings. New York state and local government agencies have issued about $7.5 billion of green bonds since the genesis of the municipal green bond market in 2013. Major issuers that have issued green bonds in New York State include the Metropolitan Transportation Authority, which has come to market with multiple issuances of bonds to fund clean transportation projects aimed at lowering carbon emissions; and the New York Housing Finance Agency, which has issued green bonds to fund affordable housing developments in Kings, Westchester, Monroe, and Orange counties.

THEMES OF ESG INVESTING IN MUNICIPAL BOND MARKET
PUBLIC POWER
Municipal issuers in the public power sector market are moving increasingly toward renewable energy sources, including wind, solar, and hydroelectric power. Some issuers, such as Energy Northwest in Washington State, have been using clean energy sources for decades; others are increasing the percentage of renewable energy in their generation mix as states increase their renewable portfolio standards. Energy Northwest issued wind project bonds long before creation of the green bond market and continues to issue bonds for wind power generation as unlabeled green bonds. These bonds do not carry a green label, but they are used for an environmentally beneficial purpose. Energy Northwest’s Nine Canyon wind project is one of the largest public power wind projects in the United States, with 63 self-starting wind turbines that provide renewable energy to 10 public utility districts in Washington State.

WATER AND SEWER
Water and sewer bonds are issued by state and local governments to provide communities with capital to build infrastructure for clean drinking water and pollution prevention through wastewater projects. The replacement of older water and sewer systems with new and more sustainable models is crucial to ensuring the improvement in the quality and safety of drinking water for citizens and also provides environmental benefits by using longer-lasting materials. The city of Asheville, North Carolina, issued green bonds to replace asbestos water pipes throughout its water system with new 100-percent recycled ductile iron pipes designed to last more than 100 years. By replacing the old water system made from asbestos with a safer and more sustainable material, the city is able to provide cleaner and safer drinking water for its residents and improve the long-term viability of the system.

Municipal investors have the opportunity to invest in public education in underserved communities with the goal of closing the achievement gap between higher-income and lower-income student populations.

EDUCATION
The education sector, including primary, secondary, and higher education, allows investors to contribute capital to provide funding for new schools and the improvement of learning environments throughout the United States. Local school districts regularly issue bonds in the municipal market to fund school and facility improvements and purchase new equipment and technology for students and educators. Municipal investors have the opportunity to invest in public education in underserved communities with the goal of closing the achievement gap between higher-income and lower-income student populations. By investing in school districts in low-income communities, municipal investors have the opportunity to provide meaningful social impact. In addition, public education issuers, such as the University of Texas, have issued green labeled bonds to provide additional environmental impact. The University of Texas issued bonds in 2016 to fund LEED-certified building projects on its medical school campus in order to increase resource and energy efficiency for its facilities. LEED-certified buildings are required to use less water and energy and to reduce greenhouse gas emissions.

HEALTH CARE
Health care is a sector in the municipal market recognized as providing an enormous benefit to the general population by contributing to the improvement of overall public health. Not-for-profit hospitals are required to provide charity care and community benefits in order to maintain their tax-exempt status. Some of the factors to consider when looking at healthcare issuers from a social impact perspective include percentage of Medicaid exposure, amount of charity care provided, the essentiality of the provider and whether it is a sole community provider, hospital patient quality, and magnet hospital status. Hospitals that provide much-needed health care in underserved and low-income areas can be considered to have meaningful impact on a community and can be targeted for ESG-focused municipal investors. Some healthcare issuers, such as Kaiser Permanente in California, have issued bonds that are labeled as green bonds. Kaiser Permanente has a Community Benefit Program to support the charitable portion of its mission. The goal of this program is to improve healthcare access for underserved populations including Medicaid patients, improving the quality of care as a safety net provider, creating a safe and healthy...
environment, and supporting research about evidence-based care. In addition to these community benefits, the green bond proceeds will be used for specific green projects, including medical facility projects that have received or are expected to receive LEED certification. Kaiser Permanente has committed to long-term sustainability goals and is working to become “carbon net positive” by purchasing clean energy carbon offsets, reducing its waste production, and conserving its water use.10

AFFORDABLE HOUSING
Another meaningful social impact theme that can be addressed in the municipal market is funding for affordable housing projects that benefit low-income residents. New York State’s Housing Finance Agency has issued more than $100 million in green bonds with the purpose of building “cleaner, greener, affordable housing.”11 The state hopes to provide hundreds of affordable housing units to low-income New Yorkers in a greener, more sustainable way. This project is the first affordable housing bond issuance to be certified under the Climate Bonds Standard in the United States, and it therefore meets the strict standards set by the Climate Bonds Initiative to recognize climate change solutions.

INVESTING IN THE REVITALIZATION OF U.S. INFRASTRUCTURE
According to the American Society of Civil Engineers, the United States faces a massive funding gap between infrastructure needs and the investments being allocated to fund those needs. A recent report published by the group estimates that over the next 10 years a total of $3.3 trillion is necessary to maintain or build infrastructure, but only $1.9 trillion of that is expected to be funded—leaving a gap of $1.4 trillion. This large and growing gap is expected to drastically reduce the efficiency of the economy, causing a drag on gross domestic product, personal income, and employment. This funding gap impacts such vital infrastructure as surface transportation, water, wastewater, electricity, airports, waterways, and ports.

State and local governments will play an essential role in the efforts to address this challenge. As a result, the municipal bond market offers ESG investors the opportunity to participate in the revitalization of U.S. infrastructure in a cleaner, more sustainable way.

DETERMINING WHICH BONDS QUALIFY FOR ESG PORTFOLIOS
Responsible investing is more than simply avoiding investments that are deemed to have a negative impact. It’s also about investing to achieve both a positive impact on society and favorable investment results. Embracing ESG factors is good business practice, and we have developed the following four pillars of responsible investing to address this approach:

Investment performance. The first pillar of responsible investing is investment performance through strategies that balance investors’ risk and return objectives and provide investments that align with investors’ values and aspirations without sacrificing performance.

ESG research. The second pillar is ESG research that integrates proprietary research with traditional financial analysis.

Engagement. The third pillar is engagement that involves engaging directly with issuing municipal entities and taking an active role in advocating for more sustainable practices.

Impact. The fourth pillar is impact and the belief that the impact of responsible investments should be material and measurable.

Credit research is central to this investment approach. We rely on the deep and extensive knowledge of our credit team to provide analysis about the fundamental credit strength of any issuer in the construction of our investment portfolios. Our research analysts examine the issuing documents for any municipal issuer to determine how bond proceeds will be utilized and analyze the societal impact of potential projects or programs being financed. ESG standards incorporate the long-term sustainability of a project and the possibility of lower costs, lower waste, and more efficiency over time, which will contribute to underlying credit strength. Research suggests that implementation of sustainable practices can create efficiencies to improve investor value and mitigate risk over time. For example, initiatives to increase sustainability of water and sewer systems, conserve natural resources, or improve energy efficiency over time could increase savings for state and local governments in the long run.

We analyze for both underlying credit strength and sustainability factors in the effort to deliver superior long-term performance for investors. In addition to assigning an internal credit rating on bonds held in the portfolios, analysts also will assign an ESG rating based on the following criteria:

- ESG Rating 5 = Exceptional Environmental and/or Social Community Impact
- ESG Rating 4 = Meaningful Environmental and/or Social Community Impact
- ESG Rating 3 = Standard Municipal Issuer/Bond—For the Public Benefit in General
- ESG Rating 2 = Some Negative Environmental or Social Impact
- ESG Rating 1 = Material Negative Environmental or Social Impact

CONCLUSION
As state and local governments in the United States continue to address climate change initiatives, there will be increasing opportunity within the U.S. municipal bond market for investors that are interested in purchasing bonds according to ESG principles. Investments in programs and projects such as...
renewable energy, clean water and sustainable waste, education and health care in underserved areas, affordable housing projects, and land conservation will allow ESG investors an opportunity to invest with meaningful social and environmental impact. Through careful credit analysis and portfolio construction, municipal bond investors can integrate an ESG focus and align their investments and values without sacrificing credit quality or performance.

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ENDNOTES
2. See endnote 1.
7. See endnote 5.

Municipal securities are subject to the risk that legislative changes and local and business developments may adversely affect the yield or value of the strategy’s investments in such securities. Municipal securities are subject to credit risk, which is the risk that the issuer could default on interest or principal payments. Municipal securities are subject to interest-rate risk. Rising interest rates could reduce the value of the bonds in the portfolio, thus adversely affecting the value of the overall investment. Changes in economic conditions or other circumstances may reduce the capacity of the party obligated to make principal and interest payments on such instruments and may lead to defaults. Such nonpayments and defaults may reduce income distributions. The value of a debt obligation also may decline because of concerns about the issuer’s ability to make principal and interest payments. In addition, the credit ratings of income securities may be lowered if the financial condition of the party obligated to make payments with respect to such instruments changes.

About Calvert Research and Management
Calvert Research and Management is a leader in Responsible Investing. The company traces its roots to Calvert Investments, which was founded in 1976 and was the first to launch a socially responsible mutual fund that avoided investment in companies that did business in apartheid-era South Africa. Today, the Calvert Funds are one of the largest and most diversified families of responsibly invested mutual funds, encompassing actively and passively managed strategies, U.S. and international equity strategies, fixed-income strategies, and asset allocation funds. Calvert Research and Management is a wholly owned subsidiary of Eaton Vance. For more information, visit calvert.com.

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