



MILKEN  
INSTITUTE

FINANCIAL INNOVATIONS LAB<sup>®</sup>

# Growing the US Green Bond Market: Lab 2



## ABOUT THE MILKEN INSTITUTE

The Milken Institute is a nonprofit, nonpartisan think tank. We catalyze practical, scalable solutions to global challenges by connecting human, financial, and educational resources to those who need them.

We leverage the expertise and insight gained through research and the convening of top experts, innovators, and influencers from different backgrounds and competing viewpoints to construct programs and policy initiatives. Our goal is to help people build meaningful lives in which they can experience health and well-being, pursue effective education and gainful employment, and access the resources required to create ever-expanding opportunities for themselves and their broader communities.

## FINANCIAL INNOVATIONS LABS®

Financial Innovations Labs® bring together researchers, policymakers, and business, financial, and professional practitioners to create market-based solutions to business and public policy challenges. Using real and simulated case studies, participants consider and design alternative capital structures and then apply appropriate financial technologies to them.

## ACKNOWLEDGMENTS

Maessa Brennan prepared this report.

We are grateful to those who participated in the Financial Innovations Lab for their contributions to the ideas and recommendations summarized in this report. We would especially like to thank Fundamental, Morgan Stanley, and Ramirez & Co. for their partnership on the project. We would like to thank the California State Treasurer's Office and Environmental Finance for their collaborative efforts. We want to thank our Milken Institute colleagues Caitlin MacLean, Kevin Klowden, Matt Horton, and Théo Feldman for their work on the project. Finally, we would like to thank Editor John Rosenthal for his work on the report.

©2020 Milken Institute

This work is made available under the terms of the Creative Commons AttributionNonCommercialNoDerivs 3.0 Unported License, available at [creativecommons.org/licenses/by-nc-nd/3.0/](https://creativecommons.org/licenses/by-nc-nd/3.0/).

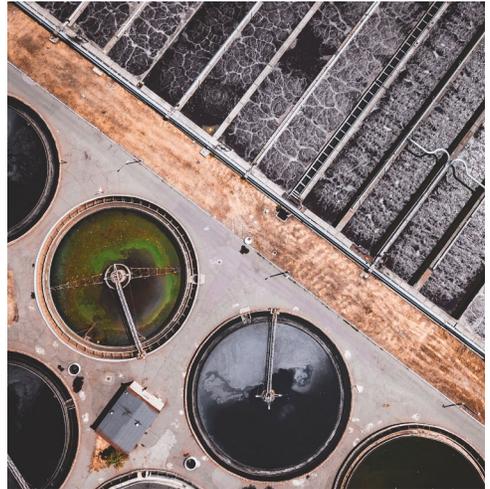


# CONTENTS

---

3	<b>INTRODUCTION</b>
4	<b>ISSUES &amp; PERSPECTIVES</b>
4	State of the Green Bond Market
5	Updates Since the February 2018 Financial Innovations Lab®
6	<b>INNOVATIVE SOLUTIONS</b>
6	Find Ways of Integrating “Green” into Capital Planning from the Outset
9	Establish Standardized Disclosure Documents
10	Create Policy and Funding Incentives for Issuers
11	Design Pricing Incentives for Issuers
14	<b>CONCLUSION</b>
15	<b>ENDNOTES</b>
16	<b>PARTICIPANT LIST</b>
19	<b>ABOUT THE AUTHOR</b>

---





## INTRODUCTION

As climate-impacted events, such as wildfires, become ever more prevalent and devastating throughout California, investors and issuers alike are increasingly looking for new tools to protect the state's infrastructure from environmental disasters. At the same time, municipal officials across the Golden State are seeking sustainable ways of accommodating California's growing urban populations. Whether it is rebuilding San Francisco's Embarcadero seawall or extending the reach of Los Angeles' public transportation system, California has a vital interest in enhancing infrastructure in environmentally friendly ways.

And it's not alone. Across the world, interest in environmental, social, and governance (ESG) investing continues to grow. According to The Forum for Sustainable and Responsible Investment, \$12.0 trillion, or more than 25 percent of professionally managed assets in the US, was invested in sustainable strategies in 2018. That's a 38 percent increase since 2016.<sup>1</sup> Almost unheard of 20 years ago, ESG investing inhabits all types of financial instruments. One such instrument, green bonds, is becoming more popular. A green bond is a traditional fixed income security whose bond proceeds must be earmarked for environmentally friendly projects. While green bonds are currently a relatively small percentage of both the overall bond and ESG markets, preparing the market for future growth is central to its success.

In October 2019, the Milken Institute organized a Financial Innovations Lab® to discuss ways of accelerating the growth of the US green bond market. The event was a follow-up conversation to an earlier Green Bond Symposium held in February 2018. The Lab brought together government leaders, investors, bond issuers, data providers, and environmental experts to debate solutions and build on the recommendations issued during the initial gathering. The following report provides an update to "Growing the U.S. Green Bond Market" Volume 1 (by then-Treasurer John Chiang) and Volume 2 (by the Milken Institute) and reflects on advances made since February 2018.

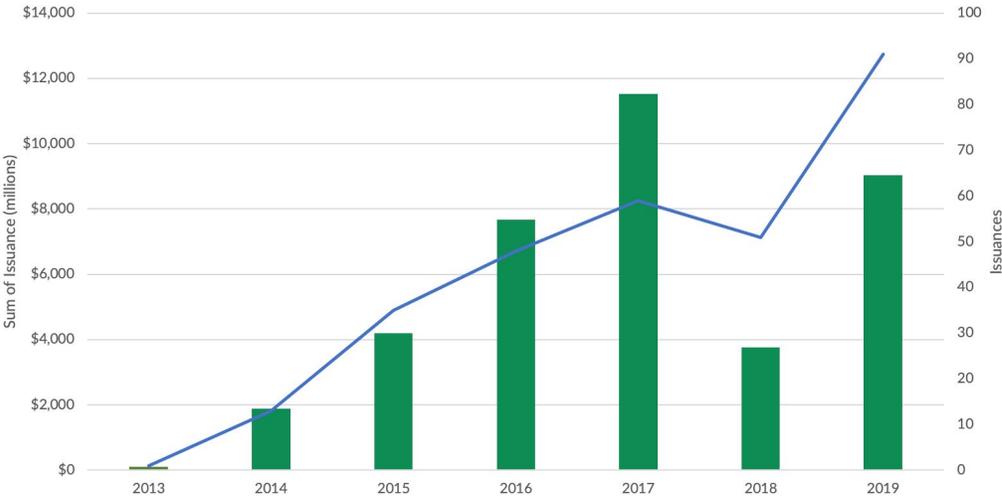


## ISSUES & PERSPECTIVES

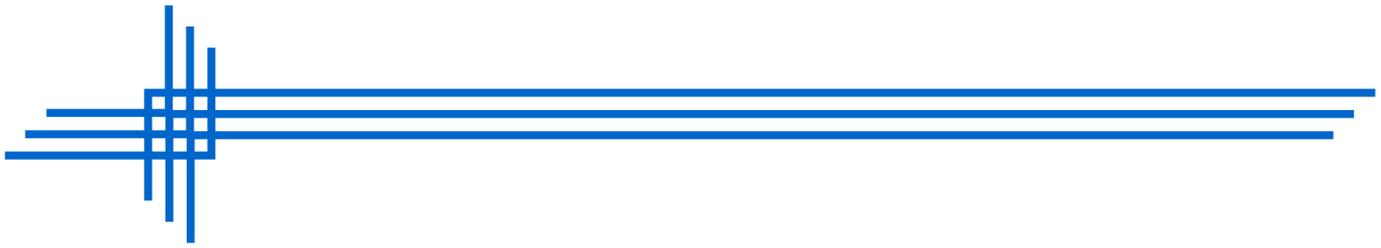
### STATE OF THE GREEN BOND MARKET

Green bonds, just like traditional bonds, can be issued by the public sector, private organizations, or multilateral entities. Since the World Bank issued the first green bond in 2007, there have been \$521 billion in issuances globally. Overall, \$257.7 billion in green bonds were issued in 2019; this is up noticeably from \$170.6 billion in 2018, returning to the strong increases seen several years ago. The US accounted for about one-fifth of global issuance in 2019.<sup>2</sup> The number and value of green bonds issued by municipalities plummeted in 2018 (see Figure 1) but recovered to higher levels in 2019. The Tax Cuts and Jobs Act of 2017 played a large role in the decline because it eliminated tax exemptions for advanced refunding. An advanced refunding is a refinancing transaction in which new debt securities are sold to redeem older debt. The new debt must be sold more than 90 days prior to the call date of the older securities, which is an important distinction to differentiate from a “current” refunding. Municipalities in low-interest-rate environments typically have used advanced refunding to refinance existing debt at lower rates. But removing the tax exemption lowered the attractiveness of this tool. This legislative change impacted not only the green bond market but the overall municipal bond market in 2018, which had relied heavily on advanced refunding.<sup>3</sup> The green bond market recovered in 2019 and appears to be returning to the upward trend.

**Figure 1: US Municipal Green Bond Issuance, 2013-2019**



Source: Climate Bonds Initiative (2020)



The US municipal green bond market hit a high of nearly \$12 billion in 2017, powered mainly by a handful of outsized issuances. Many issuers pushed up 2018 issuances to 2017 in anticipation of market adjustments due to new tax rules. The New York Metropolitan Transportation Authority, which accounts for almost 20 percent of the US green bond market, issued \$3.7 billion in green bonds in 2017, twice as much as in 2016. But in 2018, the agency issued just \$207 million in green bonds.<sup>4</sup> That difference accounted for almost all of the decline in the municipal green bond market.<sup>5</sup> If you were to average out 2017 and 2018 issuances, in 2019, the market continued on an upward trend.

Changes in the tax code are not the only drag on expansion. Many of the underlying structural problems discussed at the 2018 Lab continue to impede growth. The market sees inconsistencies in green bond definitions, metrics for measuring each bond's environmental impact, and norms for issuers on what data to share with investors. External reviews continue to be the most widely agreed-upon method to certify a bond as green, but discrepancies persist even within this sphere. That being said, certification to a climate-aligned green bond standard nearly doubled in 2019 and accounted for about 17 percent of total green bond issuance.<sup>6</sup> There are currently four main types of external reviewers—non-financial rating agencies, big-four traditional audit firms, credit rating agencies, and global certification bodies<sup>7</sup>—each with its own metrics for making decisions. Market function and pricing are still developing, and smaller, or less frequent, issuers still need familiarization with this evolving sector of the market.

#### **UPDATES SINCE THE FEBRUARY 2018 FINANCIAL INNOVATIONS LAB®**

These obstacles notwithstanding, there has been progress over the past two years, particularly in California. One of the key recommendations that came out of the February 2018 symposium was to establish a Responsible Issuer Program, which would give municipalities guidance on how to issue a green bond and standardize definitions and performance metrics. In June 2019, California State Treasurer Fiona Ma took the first step down this road by convening the California Green Bond Market Development Committee, in partnership with the University of California Berkeley's Goldman School of Public Policy. Chaired by Treasurer Ma, the committee consists of over two dozen academics, engineers, investors, public policy experts, attorneys, finance experts, and climate scientists from across the state. The group will meet regularly to serve as a sounding board and develop "the strategy and tactics necessary to lead California to a functioning green bond market that will be a model for other states and countries."<sup>8</sup>



## INNOVATIVE SOLUTIONS

Participants in the October 2019 Financial Innovations Lab identified several strategies for expanding the green bond market. They include incorporating environmental concerns into the capital planning process from the very beginning and creating pricing incentives for issuers and investors alike.

### FIND WAYS OF INTEGRATING “GREEN” INTO CAPITAL PLANNING FROM THE OUTSET

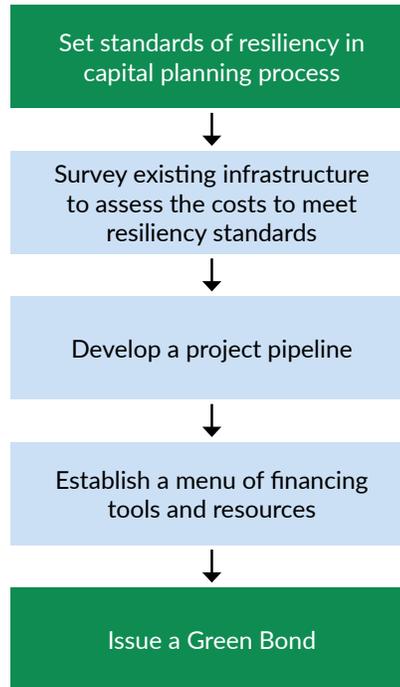
Environmental and climate considerations cannot be an afterthought to the capital planning process. On the contrary, sustainability needs to be integrated into the foundation of capital planning in order to understand the resources that currently exist and those that need to be sourced. This process requires a fundamental change in the way capital providers interact with local governments. Infrastructure projects need to be analyzed in a way that prioritizes the climate impacts on the project, climate impacts from the project, and environmental outcomes throughout the life cycle of the asset.

It is also likely that agreed-upon terminology would help governmental issuers. The terms mitigation, adaptation, resilience, and sustainability remain open to interpretation by government officials—sometimes leading to confusion about when, and how, to apply ESG principles to capital planning and how to separate individual projects to reflect those characteristics.

Lab participants recommended that the state create a “climate stress test,” which municipalities involved in the Responsible Issuer program would be encouraged and helped to integrate into their capital planning processes. The results of each municipality’s stress test could then be the basis for what a sustainable disclosure document would look like. It could also provide some comfort for investors, as rating agencies and others are looking at the ability of municipalities to withstand climate-caused disruptions financially. Creating a framework at the state level will enable even under-resourced municipalities to participate. Figure 2 below outlines the stages of this process, from capital planning through the issuance of a green bond.



**Figure 2: Responsible Issuer Capital Planning Process**



*Source: Milken Institute (2020)*

To this end, municipalities should develop a Green Capital Investment Plan. This plan would include a purpose of project statement that will highlight and standardize key metrics for any publicly financed project. The first part of such a plan should discuss whether a municipality has an existing sustainability plan. Having or currently developing a sustainability plan will be the basis for joining the Responsible Issuer program. From there, the plan should evaluate all projects according to the following three metrics, which should be available at the time of budgeting and conceptual design and can be universally and scientifically calculated, and scientifically understood, regardless of the type of project.

- The quantity of greenhouse gas/carbon dioxide emissions (or relevant equivalent) for the operation of the asset. Carbon emissions are not the perfect metric for every project. In water-related measures, for example, it makes more sense to calculate reductions in water consumption or pollution levels. But measuring some form of emissions makes it possible to compare projects as varied as public transportation systems and wind farms. Simply put, how much does the project reduce greenhouse gas emissions?



- The anticipated cost of climate hazards, including lost economic activity. The cost of not investing in sustainability is not limited to the potential physical damage caused by climate change events. Business continuity costs like lost economic activity, displacement, and reduced productivity during and after a disruption in service should be included in the budgeting of all projects.
- The anticipated price of mitigating climate hazards over the life cycle of the asset. This metric would calculate how much it would cost to protect assets from the effects of climate change. Building infrastructure to protect against rising seas, for example, might not have much impact today but could be invaluable 50 years from now. Calculating the costs over the lifetime of this project will help reflect the true value of the investment.

Each of these measures would be calculated across projects then aggregated for an entire bond issuance. To standardize the information across issuers, it is essential to focus on measures that scale.

Municipalities would also have the option to include two additional data sets:

- Resources conserved or recovered by the investment, and
- The level of embedded carbon in the making and delivery of the materials for the project.

These metrics will be optional because the methodologies behind these calculations have not yet been determined. Until a standard is reached, these measurements could be noted in disclosure documents.

**Next Steps:**

- Survey existing resources at the municipal level to understand where there are resource gaps in resiliency planning.
- Establish and define metrics to be included in a Green Capital Investment Plan.
- Develop a priority list of individual components of the Green Capital Investment Plan to specifically focus on the most urgent or beneficial projects within it.
- Create a "climate stress test" that can compare municipalities to understand where the greatest needs are across the state.



## ESTABLISH STANDARDIZED DISCLOSURE DOCUMENTS

It's not enough to gather information in a standardized format. These metrics must also be reported consistently, in both form and frequency. To accomplish this, Lab participants recommended that the state develop an Impact Cover Sheet, which could allow investors to compare projects from municipalities across California. Given the diverse experience and representation of the Green Bond Market Development Committee, the group is ideally positioned to develop an outline for what information and language should be incorporated into an Impact Cover Sheet. The climate and its potential impact on future investments are continually evolving, so sustainability information must be updated regularly: at least every five years. This will help issuers and investors alike understand the ongoing environmental impact their capital is playing.

Each green bond issuance should also include sustainability information within the debt policy statement. A debt policy statement articulates the purposes of a project and explains how the municipality intends to manage its debt obligations.<sup>9</sup> While green bonds are required to earmark proceeds for environmentally friendly projects, there is no requirement to explain how the use of proceeds will impact the community's resiliency. This added resiliency commentary should articulate the environmental significance and goals of the project, as well as explain the benefits to the public.

### Next Steps:

- Propose language to be included in an Impact Cover Sheet. This should be done on the state level, with a recommendation for the Green Bond Market Development Committee to take the lead, to ensure standardization across California municipalities.
- Enforce a five-year update on all sustainability information provided at bond issuance.
- Include sustainability information into all green bond debt policies.



## CREATE POLICY AND FUNDING INCENTIVES FOR ISSUERS

As mentioned earlier, many issuers do not have the in-house expertise or resources to perform the additional reporting or certification requirements necessary to issue a green bond. The state of California can play a critical supporting role by supplying either economic or human capital. Lab participants referenced California's Small Business Assistance Fund (SBAF), run by the California Pollution Control Financing Authority, as a model to replicate for smaller municipal issuers in the green bond market. SBAF helps small businesses issue tax-exempt bonds by covering certain upfront costs like transaction fees, bond counsel, and underwriting costs, to name a few.<sup>10</sup> A similar fund for smaller municipalities involved in the Responsible Issuer program could cover third-party certification fees or reduce the costs associated with the additional reporting requirements. Eliminating or reducing the costs related to issuing green bonds could motivate smaller municipalities to issue them.

Fees assessed by the California Debt and Investment Advisory Commission (CDIAC), usually 2.5 basis points (0.025 percent), or up to \$5,000,<sup>11</sup> are another obstacle for smaller municipalities seeking to issue green bonds. Some Lab participants suggested reducing CDIAC fees either upfront or through a rebate if the bond meets specific sustainability standards.

In the most recent state budget announcement, California has committed \$25 million, through the cap-and-trade program, to climate change research, technical assistance, and capacity building. The announcement of funding for improved capacity building recognizes the need to expand local expertise and could benefit issuers who want to go green.<sup>12</sup> While financial incentives to bridge the resource gap of smaller municipalities are critical, it can be equally impactful to make additional human resources available. California has an incredibly strong public university system, which includes some of the most acclaimed environmental science departments in the world. University law schools have a long-standing tradition of providing pro bono opportunities for students to serve under-represented communities. Advanced students in environmental science or urban planning could replicate this model, lending their expertise to assist in the reporting and certification requirements for local issuers. This kind of collaboration would be mutually beneficial to both the academic and municipal communities.



Another suggestion that was recommended at the Lab in 2018 and echoed again in October 2019 is to develop an award program for a “Best in Class” green bond. Similar awards already exist for traditional bond issuers and underwriters. Well-known programs run by Thomson Reuters, Bloomberg, and Bond Buyer present awards to standout issuers and underwriters who outperform the overall market. Environmental Finance, in particular, annually celebrates leading ESG bond deals. California, through the Green Bond Market Development Committee, should develop an “Emerald Award” platform to highlight municipalities that are exceeding expectations for green issuances. This “Emerald Award” would be issued annually and signal to the rest of the market how green capital planning can have a strong positive effect on sustainability.

#### **Next Steps:**

- Pool reserves or develop funding assistance for smaller issuers to help defray the costs associated with green bond issuance.
- Explore the possibility of reducing state-imposed fees for issuing bonds (for example, CDIAC fees).
- Launch a pro bono environmental analysis partnership between California’s public university system and smaller municipalities that lack in-house resources to issue green bonds.
- Pilot a “Best in Class” award program for exemplary green bond issuers in California.

### **DESIGN PRICING INCENTIVES FOR ISSUERS**

California’s residents and political leaders alike consistently lead the way on issues relating to the environment. A prime example is the January announcement of the 2020-2021 state budget, which has a significant allocation to protect against climate change. The recent budget has committed \$12.5 billion to climate issues over the next five years and plans to allocate capital through a variety of mechanisms. In continuation of budgets past, cap-and-trade expenditures will remain a critical component to lowering carbon levels. Newly announced funding includes, among other innovative funding programs, a proposed climate resilience bond.<sup>13</sup>



**Figure 3: California 2020-21 Climate Budget**  
(Dollars in Millions)

Funding Mechanism	2020-21 Total	5-Year Total
Climate Resilience Bond	-	\$4,750
Cap and Trade Expenditure Plan	\$965	\$4,825
Climate Catalyst Fund	\$250	\$1,000
General Fund One-Time Investments	\$169	\$169
General Fund Ongoing Expenditures	\$35	\$315
Existing Bond and Special Fund Expenditures	\$308	\$1,424
<b>TOTAL</b>	<b>\$1,727</b>	<b>\$12,483</b>

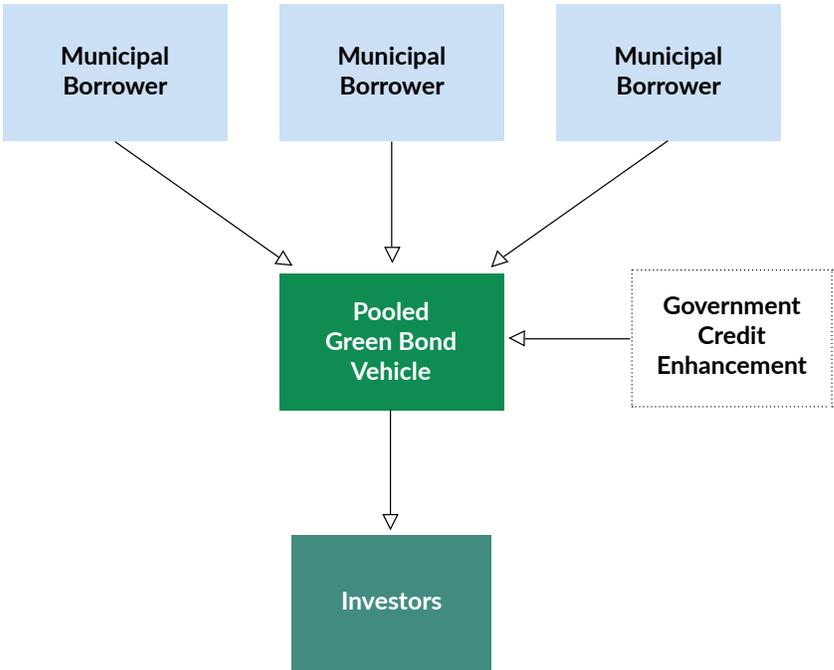
*Source: Office of Governor Gavin Newsom (2020)*

The resilience bond announcement is timely. Lab participants discussed how California could act at a state level and provide the support that targets climate-friendly infrastructure broadly. Governor Gavin Newsom has proposed a \$4.75 billion Climate Resilience general obligation (GO) bond. While not explicitly labeled green as it was announced, the bond proposal lays out a set of investment targets working toward reducing immediate risks such as wildfires, flooding, and drought, as well as longer-term risks like sea-level rise and extreme heat. The proposal for the Climate Resilience bond is to take a regional approach, organized around risk and not individual agencies. It will assess risk at a state level and drive financial assistance to local agencies that can deliver change. The proposal is an acknowledgment that climate considerations must be a key driver of investment decisions. It is an opportunity to lay the groundwork for subsequent bond issuance that may be directly tied to the Responsible Issuer program. As discussions continue and the details of the bond are fleshed out in advance of the vote to approve in November 2020, the bond could, for example, include reporting that proves a climate risk reduction for the broader region. This would be an influential signal to the overall green bond market. The metrics outlined as part of the capital planning process (above) are a widely applicable suggestion for a first step. Consistent resilience reporting for a bond of this size would be impactful and serve as a critical example of the expectation for subsequent issuances.



Lab participants also suggested that the state develop a pooled fund, which would aggregate smaller issuers that meet specific predefined criteria, such as the capital planning metrics listed above, and help bring them to market at a lower cost through a credit enhancement. Debt backed by the state of California would lower the repayment risk for issuers, and the pooled structure would diversify the risk for investors. The credit enhancement could also be in the form of a reserve fund, where capital is collected on a schedule, and reserves are allocated towards requirements to ensure green bond issuance. Another avenue of attracting a broader investment base is to develop incentives that appeal to the tax-exempt market. Because they don't pay taxes, tax-exempt investors like public pension funds and nonprofit organizations derive no additional benefit from investing in tax-exempt bonds. They typically prefer the higher yields available on taxable bonds. To attract these investors, participants in both the 2018 and 2019 Labs stressed the importance of developing a taxable green bond market. One way to do that would be with a state-sponsored interest rate subsidy on tax-exempt green bonds, which would enable municipal issuers to compete with the higher yields of taxable bonds. The government subsidy would pay the spread between the issuer interest rate and borrower coupon.

**Figure 4: Reserve Fund Credit Enhancement**



Source: Milken Institute (2020)



#### Next Steps:

- Explore the likelihood of voter approval for issuing a state-level general obligation green bond for public resiliency improvement projects.
- Define the upfront criteria for issuers eligible to join a pooled green bond fund.
- Review state-level options for possible incentives like credit enhancements or reserve funds.
- Consider offering an interest rate subsidy for tax-exempt municipal green bonds to make them more attractive to a broader investor base.

## CONCLUSION

Since the first Financial Innovations Lab on this topic in 2018, California has made steady progress toward becoming a leader in sustainable debt. But with environmental concerns mounting daily, there remains room for further improvement. Treasurer Ma's convening of the California Green Bond Market Development Committee was a positive first step in the full integration of a Responsible Issuer program into the California municipal green bond market. Participants at the follow-up Lab in October 2019 developed actionable recommendations on standardization, pricing, and market function aimed to further detail and incentivize issuers to participate in the Responsible Issuer program. Clearly defined metrics will enable municipalities to integrate sustainability into their capital planning process from the very beginning, allowing them to track the impact of their proceeds long past the issuance date. Pricing incentives will grow the green bond market by attracting new issuers and investors alike. By acting on these recommendations, California can be justifiably optimistic about the impact it can have on the green bond market and the environment as a whole.



## ENDNOTES

1. "US SIF Foundation Releases 2018 Biennial Report on US Sustainable, Responsible and Impact Investing Trends," The Forum for Sustainable and Responsible Investment, October 31, 2018, [https://www.ussif.org/blog\\_home.asp?Display=118](https://www.ussif.org/blog_home.asp?Display=118).
2. "2019 Green Bond Market Summary—2019 at a Glance" (Climate Bonds Initiative, February 2020), [https://www.climatebonds.net/files/reports/2019\\_annual\\_highlights-final.pdf](https://www.climatebonds.net/files/reports/2019_annual_highlights-final.pdf).
3. "Municipal Securities Provisions of HR 1, the 'Tax Cuts and Jobs Act'" (Municipal Securities Rule Making Board, January 2018), [http://www.msrb.org/Market-Topics/~/\\_media/20AB21E90C3E4103885B4E8670B1F1E8.ashx](http://www.msrb.org/Market-Topics/~/_media/20AB21E90C3E4103885B4E8670B1F1E8.ashx).
4. Erin Boeke Burke and Andrew Bredeson, "2019 US Municipal Green Bond & Resiliency Outlook: Will the Self-Labeled Market Rebound?" (S&P Global Ratings, March 14, 2019), [https://www.spglobal.com/\\_media/documents/2019-us-municipal-green-bonds-and-resiliency-outlook-march-14-2019.pdf](https://www.spglobal.com/_media/documents/2019-us-municipal-green-bonds-and-resiliency-outlook-march-14-2019.pdf).
5. Ibid.
6. "2019 at a Glance," Climate Bonds Initiative.
7. "Report on EU Green Bond Standard" (EU Green Bond Standard Working Group, June 2019), [https://ec.europa.eu/info/sites/info/files/business\\_economy\\_euro\\_banking\\_and\\_finance/documents/190618-sustainable-finance-teg-report-green-bond-standard\\_en.pdf](https://ec.europa.eu/info/sites/info/files/business_economy_euro_banking_and_finance/documents/190618-sustainable-finance-teg-report-green-bond-standard_en.pdf).
8. "Treasurer Fiona Ma, Climate Scientists, Engineers, and Other Experts Seek to Establish California as World's Green Bond Leader," Office of the State Treasurer Press Release, June 4, 2019, <https://www.treasurer.ca.gov/news/releases/2019/20190604/59.asp>.
9. "Debt Management Policy," Products and Services, Government Finance Officers Association, accessed January 7, 2020, <https://www.gfoa.org/debt-management-policy>.
10. "Small Business Assistance Fund (SBAF) Policy," California Pollution Control Financing Authority, accessed January 7, 2020, <https://www.treasurer.ca.gov/cpcfa/sbaf.pdf>.
11. "Reporting Forms, Regulations & Guidance, and Fees," California Debt and Investment Advisory Commission, California State Treasurer, accessed January 7, 2020, <https://www.treasurer.ca.gov/cdiac/reporting.asp>.
12. "Governor's Budget Summary 2020-21," Office of Governor Gavin Newsom, January 10, 2020, <http://www.ebudget.ca.gov/2020-21/pdf/BudgetSummary/FullBudgetSummary.pdf>.
13. "Governor Newsom Proposes 2020-21 State Budget," Office of Governor Gavin Newsom Press Release, January 10, 2020, <https://www.gov.ca.gov/2020/01/10/governor-newsom-proposes-2020-21-state-budget/>.



## PARTICIPANT LIST

First Name	Last Name	Company	Title
Raul	Amezcuca	Stifel	Managing Director
Maressa	Brennan	Milken Institute	Associate Director, Innovative Finance
Luke	Brewer	City and County of San Francisco	Debt Specialist
Sandra	Brinkert	Bank of America Merrill Lynch	Senior Vice President
Mike	Brown	San Francisco Public Utilities Commission	Environmental Finance Manager
Deana	Carrillo	CAEATFA	Executive Director
Cindy	Chiang	Climate Action Reserve	Business Development Manager
Peter	Cripps	Environmental Finance	Editor
Jason	Davis	Milken Institute	Senior Associate, Innovative Finance
Cathy	DiSalvo	CalSTRS	Associate Portfolio Manager
Ann-Charlotte	Eliasson	Nasdaq	Head of Fixed Income Listings & Sustainable Debt
Peter	Ellsworth	Ceres	Senior Director, Investor Program
Théo	Feldman	Milken Institute	Advisor
Rodney	Ferguson	Winrock International	President & CEO
Robert	Feyer	Orrick	Senior Counsel
Jette	Findsen	American Carbon Registry, Winrock International	Senior Program Officer, Climate Investments
Christopher	Flensburg	SEB	Head of Climate and Sustainable Finance
Brad	Friedman	Ramirez & Co	Senior Vice President



Tony	Gibson	Field Gibson Media	CEO
Ann Marie	Griffith	APG Asset Management US	Managing Director
Jonathan	Hackett	BMO Financial Group	Managing Director and Head, Sustainable Finance
Matt	Horton	Milken Institute	Associate Director, Center for Regional Economics
Sean	Kane	McKinsey & Company	Partner
Nuin-Tara	Key	Governor's Office of Planning and Research	Deputy Director, Climate Resilience
Sandra	Kim	UBS	Managing Director
Kevin	Klowden	Milken Institute	Executive Director, Center for Regional Economics
Justine	Leigh-Bell	Climate Bonds Initiative	Deputy CEO
Eric	Letsinger	Quantified Ventures	CEO
Cris B.	Liban	LACMTA	Executive Officer, Environment/Sustainability
Stephen	Liberatore	Nuveen	Managing Director/Lead Portfolio Manager, Responsible Investment Fixed Income
Caitlin	MacLean	Milken Institute	Senior Director, Innovative Finance
James	McIntyre	New York State Homes and Community Renewal	Director of Capital Markets
Scott	Monroe	Fitch Ratings	Director, Global Infrastructure & Project Finance
Chris	Mukai	Citigroup	Managing Director
Gwen	Nero	UC San Diego Scripps Oceanography	Director, Corporate Relations & Innovation
Michael	Paparian		Consultant
Jenny	Poree	S&P Global	Senior Director



Alfredo	Quintero	Ramirez & Co	Managing Director
Timothy	Romer	Fundamental	CEO
Tim	Schaefer	California State Treasurer's Office	Deputy Treasurer
Zachary	Solomon	Morgan Stanley	Executive Director
Renee	Webster-Hawkins	California Pollution Control Financing Authority	Executive Director
Jan	Whittington	University of Washington	Professor
David	Wooley	UC Berkeley Goldman School	Staff, Green Bond Market Development Committee





## ABOUT THE AUTHOR

MARESSA BRENNAN is an associate director of innovative finance at the Milken Institute. In her role, Brennan works on applied research projects that address an environmental or social issue that is experiencing a funding gap or market failure. Leveraging the intellectual network of the broader Institute, her team designs recommendations through published reports to drive capital to the issue area. Before joining the Milken Institute, Brennan was an investor relations associate at Mark Asset Management, a boutique hedge fund in New York, and spent three years at Russell Investments on the hedge fund research team as an associate research analyst. While at Russell, Brennan maintained relationships with funded managers, as well as conducted ongoing manager research across hedge fund strategies. Brennan graduated from The George Washington University with a BA in international affairs.

