ASSOCIATION OF
METROPOLITAN WATER AGENCIES

The Green Bond Market

An Overview for AMWA Utilities

October 2016

Contents

1. Introduction

This overview of the Green Bond Market is written to inform AMWA water utility managers about the birth and evolution of this financial instrument, to discuss how AMWA member utilities view the market, and to describe how some members have participated in it to date. Included in this synopsis is an overview of how the green bond market originated, the definition of green bonds, a discussion of the development of principles and standards governing green bond issuances, and five brief examples describing experiences of AMWA members that issued green bonds between 2014 and 2016. Additional references for further reading are also provided.

2. Background – Defining Green Bonds in a Growing Nascent Market

The first labeled Green Bond was issued in 2007 by the World Bank. Between 2007 and 2012, most green bonds were issued by development banks to finance climate-friendly projects. The World Bank in its *What are Green Bonds*[1] report notes that early issuers developed their own green bond definition and process to suit their business profile and that the market has, thus far, allowed for several different approaches for verification of the green label to be accepted in the marketplace. These have included issuer disclosures, second opinions, third party verifications, technical experts and investment advisers.

A green bond can be used to finance projects that are environmentally beneficial, such as climate adaptation, pollution prevention or water quality projects. But increasingly, green bonds are touted by the United Nations and various other financial and non-governmental organizations as a financial solution that will help the world attain the goals outlined in the 2015 Paris Climate Agreement reached at the United Nations Framework Convention on Climate Change Conference of the Parties (COP-21). Some organizations, such as the World Bank and the Climate Bonds Initiative (CBI) use the terms "green bonds" and "climate bonds" interchangeably, which can lead to confusion, since not all green bonds are necessarily climate bonds. Defining what is green is still evolving in the marketplace.

Since 2007, the market has grown steadily. In 2013, the first corporate issued green bonds hit the market, pushing the global market size in green bonds that year to $11 billion. Cities and other municipalities entered the green bond market for the first time in 2014; that year about $36.6 billion in bonds were issued. In 2015, more than $46 billion in bonds were issued. The market is expected to grow significantly in the coming years, as countries that made commitments in support of the Paris Climate Agreement will need to increase investment in large-scale, climate-friendly projects. Many development banks and NGOs have touted green bonds as a mechanism to fund the transition to a low-carbon, sustainable economy. Green bonds may provide access to new capital and new investors for cities and municipalities around the world that might not otherwise have this access. Some see the entry of U.S. cities, utilities and municipalities into the green bond market as a way to bring increased legitimacy to the market, while also meeting increasing investor demand for environmentally beneficial investments.

Investors in green bonds include: advisors and asset managers with sustainability or low-carbon growth mandates; investors, such as bond funds, trust funds and pension plans; and those that self-identify as sustainably responsible or socially responsible investors that have environmental, social and governance (ESG) criteria as part of their investment analysis.

[1] World Bank. 2015. What are Green Bonds? http://treasury.worldbank.org/cmd/htm/What-are-Green-Bonds-Home.html

Insurance companies such as Zurich and Swiss-Re are increasingly investing in Green Bonds.[2]

Some financial analysts believe that in order for the green bonds market to continue to expand and remain credible, standardized guidance and criteria are needed.[3] In 2016, water utility green bond issuers could self-certify a bond as green, or obtain a third party certification. Although there is not yet formal, standardized criteria required for issuing green bonds, the Green Bond Principles (GBP) are a suitable starting place for guidance. The Principles outline good practice for issuing a green bond.

Overview of Available Guidance on Green Bonds for Water Utilities

(After KPMG)

	Green Bond Principles (GBP)	Climate Bonds Standard	Moody's Green Bond Assessment
Developer	International Capital Market Association (a group of financial institutions)	Climate Bonds Initiative	Moody's
Description	Principles that identify the types of projects that can be considered green, and then best practices for issuing a green bond. A good starting place for understanding how to issue a green bond.	A standard against which issuers can be certified for projects that aim to address climate adaptation or mitigation (a subset of what the GBP would categorize as green). There is the general standard and then the criteria for different sectors. The water criteria are expected by Oct. 2016.	A scorecard evaluation of five key factors for evaluation of an issuer's green bond offering. The assessment is to determine the effectiveness of the issuer's process for managing, reporting and allocating bond proceeds to the specified project(s) financed by the green bond.
Third party verification required?	No, but recommended	Yes	Yes, by Moody's

[2] Zurich champions responsible investing, doubling its commitment to green bonds up to USD 2 billion https://www.zurich.com/en/media/news-releases/2014/2014-0714-01

[3] KPMG. 2015. Sustainable Insight. Gearing up for green bonds. https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/sustainable-insight/Documents/gearing-up-for-green-bonds-v2.pdf and Climate Bonds Initiative (CBI), Standard and Climate Bonds Certification https://www.climatebonds.net/standards/about.

3. The Green Bond Principles

The first initiative to promote transparency and disclosure in the green bond market was the Green Bond Principles[4] (GBP). The GBP is a set of voluntary guidelines with recommendations for process and disclosure for issuing green bonds. The International Capital Market Association released the first edition of the GBP in 2014, and formed a governance structure to clarify how decisions would be made to update the GBP. The GBP was updated in 2015 and 2016 to reflect ongoing consultation and feedback from the GBP Secretariat Executive committee and also the larger green bond stakeholder community.

In addition to providing credibility to issuers, the GBP also helps investors by identifying information that would be necessary for evaluating the environmental impact of green bond investments. There are four components to the GBP:

- Use of proceeds
- Process for project evaluation and selection
- Management of proceeds
- Reporting.

In 2015 the update included a definition of green bonds, i.e., "any type of bond instrument where the proceeds will be exclusively applied to finance or re-finance in part or in full new and/or existing eligible green projects and which are aligned with the four core components of the GBP." The GBP recognizes several green project categories. Those project categories likely to be of greatest interest to water utilities are:

- Renewable energy;
- Energy efficiency;
- Pollution prevention and control;
- Terrestrial and aquatic biodiversity conservation (including the protection of coastal, marine and watershed environments);
- Sustainable water management (including sustainable infrastructure for clean and/or drinking water, sustainable urban drainage systems and river training and other forms of flooding mitigation); and
- Climate change adaptation (including information support systems, such as climate observation and early warning systems).

The 2016 GBP update provides two templates to guide issuers through the GBP and outside review process. The Information Template address the four core components of the GBP, the External Review Form guides a prospective third party reviewer in completing a review. The templates are meant to support a standardization or alignment of the GBP among issuances. In

[4] The Green Bond Principles. http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/green-bond-principles/

summary, the GBP outlines high-level principles that issuers can use to define the process for issuing a green bond, but they do not specify criteria for the four core components.

Some organizations and investment advisors provide additional opinions and guidance for the process for issuing green bonds. For example, *A Statement of Investor Expectations for the Green Bond Market*[5], addresses areas of the GBP where the Ceres' Investor Network on Climate Risk thinks green bond issuers would profit from additional structure and definition.

The statement, signed by nearly 30 investor groups, says that non climate-focused projects should significantly contribute to conservation or sustainable management of natural resources, reduce waste or pollution or otherwise contribute to sustainable living or enhance environmental quality. The statement specifically calls out large-scale hydropower and seawater desalination as undesirable because they may cause harm to the environment even as they benefit the environment in other ways. The statement also provides additional guidance on four key issues described in the GBP: eligibility, initial disclosures and use of proceeds, reporting and independent assurance. The statement urges issuers to seek outside audits and assurances for the use of proceeds and impacts and recommends additional disclosures if internal expertise/self-certification is used.

4. External Verification vs. Self-Certification

Financial firm KPMG recommends that issuers define what makes their bond green by consulting with the available guidance in the marketplace and considering investor expectations[6]. Although external review (also known as a second opinion) is not identified as a core component of the GBP, the document recommends that issuers obtain outside input to verify alignment with the GBP. The GBP identifies four types of reviews that could be provided to the market. An external review may be partial, covering only certain aspects of the components, or full, assessing alignment with all four components of the GBP. The GBP recommends public disclosure of external reviews and suggests use of the templates provided in the 2016 update as a guide. In this disclosure, reviewers should disclose expertise and credentials and the scope of the review.

The four types of reviews described in the GBP are:

1. Consultant review, or a second opinion: Conducted by a practitioner or institution with expertise in any of the aspects of an issuance of the green bond, including environmental sustainability and necessary disclosures.
2. Verification: Similar to an audit, verification is an independent assessment by qualified parties and may reference external criteria.
3. Certification: This is performed against an identified standard, which defines assessment criteria. A qualified third party certified to assess the standard performs the appraisal.

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[5] Ceres Investor Network. A statement of investor expectations for the Green Bond Market. https://www.ceres.org/files/investor-files/statement-of-investor-expectations-for-green-bonds

[6] KPMG International. 2015. Sustainable Insight. Gearing up for green bonds. Key considerations for bond issuers. https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/sustainable-insight/Documents/gearing-up-for-green-bonds-v2.pdf

4. Green Bond Rating: The GBP defines this as a rating specific to the bond itself. It is given by ratings agencies or specialized researchers and is distinct from an issuer's Environmental-Social-Governance rating.

External review, verification or certification of a green bond would likely require the review to be performed by individuals or organizations with expertise in financial disclosures and reporting as well as expertise in sustainability-related projects. In 2016, it is not clear that an issuer would gain any (financial) benefit for having outside verification of the bond, given the added costs. However, as the market continues to grow, external verification or certification to a third party standard or methodology may become necessary.

AMWA member East Bay Municipal Utility District self-certified its 2015 green bond offering based on guidelines adopted by its Board of Directors. Massachusetts Water Resources Authority self-labeled its green bonds (which were for refunding completed projects) as the projects were water and sewer projects that fit the GBP green categories.

In 2014, the Climate Bonds Initiative (CBI) began keeping a running list of labeled green bonds[7] on its website. The list includes basic reference data for green bonds and whether a second opinion was obtained. Links to second opinion reports are included if available. In 2014, 42 percent of green bond issuers did not obtain a second opinion.

The S&P Green Bond Index was launched in 2014 to track the Green Bond market. Its methodology[8] states that projects must be flagged as green by CBI to be eligible. Disclosure of the use of proceeds may be made via second opinion reports as well as the company's website, legal disclosures, public filings and company sustainability reports.

Additional guidance and recommendations are available for potential green bond issuers from consulting and investor services firms, ratings agencies and investor-focused non-profit organizations. CBI and Moody's Green Bonds Assessment have developed specific criteria for green bonds. These approaches are summarized in the following sections.

5. The Climate Bonds Standard

CBI, an investor-focused non-profit organization was established to "mobilize the $100 trillion bond market for climate change solutions."[9] CBI seeks to do this via a systematic approach, including developing the Climate Bonds Standard and Certification scheme, educating government leaders in order to mobilize investment in the low-carbon economy using green bonds and partnering with city leaders to identify opportunities for green investment.

[7] CBI. Labelled green bonds data: https://www.climatebonds.net/cbi/pub/data/bonds
[8] S&P Green Bond Index methodology, factsheet, etc.: http://us.spindices.com/indices/fixed-income/sp-green-bond-index
[9] http://www.climatebonds.net/

The importance of the standard and certification scheme, according to CBI, is to address credibility concerns about green bond issuances by providing assurance that the investment will make an impact toward climate change mitigation and adaptation. CBI's Climate Bonds Standard v. 2.0[10] reads, "A robust and credible standard eases decision making and focuses attention on credible climate change solution opportunities. The easier it is to use, the faster the market will grow." This is measured by sector-specific criteria for the qualifying project(s) financed by the bond. CBI recommends certification of the issuance based on the standard, which is performed by an approved verifier. The Climate Bonds Standard (v.2.0) includes a certification process, pre- and post-issuance requirements and a suite of sector-specific [project] eligibility and guidance documents. In addition to the pre- and post-issuance requirements, the Climate Bonds Standard (v.2.0) has three parts:

A. General requirements for use of proceeds, tracking and reporting for all climate bonds;
B. Eligible projects and assets including a climate bonds taxonomy and sector-specific technical criteria; and
C. Requirements for different bond types.

Part A includes general requirements for all climate bonds for cases where issuers want post-issuance assurance that the bond meets a minimum set of requirements. These requirements include a process for determining continued eligibility of nominated projects and assets, use of proceeds, non-contamination of proceeds, confidentiality and reporting.

Part B is a sector-specific process for determining the eligibility of projects under the Climate Bonds Standard. CBI released the water sector-specific criteria for comment in November 2015. AMWA provided extensive comments on the draft, raising significant concerns about the how the criteria would be applied and implemented to identify eligible projects. AMWA has had several follow-up conversations with CBI staff to reiterate the association's concerns about the clarity and implementability of the sector-specific component to the standard. CBI plans to release the "Water Criteria of the Climate Bonds Standard, Phase I: Engineered Water Infrastructure" in October 2016. CBI plans to review the water criteria one year after launch. CBI is also developing "Phase 2" of the water criteria for "nature based and hybrid water infrastructure", i.e., green infrastructure and other natural approaches to build climate resilience.

In May 2016 the San Francisco Public Utilities' Commission (SFPUC) issued bonds that were certified to the Climate Bonds Standard[11] and the draft water sector-specific standards. Its third-party verifier, Sustainalytics, needed additional assistance from CBI staff familiar with the standard in order to conduct the verification. As a result, CBI has acknowledged that independent verifiers will likely need additional guidance in order to evaluate and verify a project as eligible for the climate bond certification. [12] CBI plans to release a supplementary guidance note to issuers and verifiers when it releases the "Water Criteria of the Climate Bonds Standard, Phase I: Engineered Water Infrastructure" in October 2016.

[10] CBI Climate Bond Standard v. 2.0. http://www.climatebonds.net/standards/standards-V2.0
[11] https://www.climatebonds.net/standards/certification/SFPUC
[12] Personal communication. Erica Brown with Justine Leigh-Bell, April 14, 2016 and August 18, 2016.

6. Moody's Green Bond Assessment

On March 30, 2016, Moody's Investors Service published its Green Bonds Assessment (GBA) methodology[13]. Moody's defines green bonds as fixed-income securities – both taxable and tax-exempt – that raise capital for use in projects or activities with environmental benefits. The GBA is aligned with the GBP and reflects a "forward-looking" opinion of the likelihood that bond proceeds will be invested to support the issuer's designated environmentally beneficial projects.

The methodology explains the five key factors Moody's uses to evaluate an issuer's green bond offering. The GBA is not a credit rating of the bond issue, but rather an assessment of the effectiveness of the issuer's process for managing, reporting and allocating bond proceeds to the specified environmentally sustainable projects financed by the green bond. The scorecard approach used in the GBA is, however, similar to the way Moody's scores credit ratings. Five factors that comprise the scorecard: organization, use of proceeds, disclosure on the use of proceeds, management of proceeds, and ongoing reporting and disclosure on environmental projects financed or refinanced with such securities. Moody's scores each factor on a scale of 1-5. Final GBAs are expressed using a five-point relative scale, ranging from GB1 (Excellent) to GB5 (Poor).

In August 2016, the Upper Mohawk Valley Regional Finance Authority (the borrowing wing of the Mohawk Valley Water Authority) received a GB1 assessment from Moody's[14] for its $8.7M bond offering to fund or refinance sustainable water management projects.

7. AMWA Member Utilities' Perspectives on the Green Bond Market: *Pros and Cons*

In April 2016, AMWA conducted a survey of members about the green bond market to identify interests, issues and concerns members have about the market. The survey also asked whether utilities had issued a green bond or were thinking about it. Thirty-eight responses were received.

Based on the survey, the top concerns of utilities, or the reasons against issuing green bonds (cons) are:

- Higher cost, such as up front costs for third party verification and/or ongoing costs for additional tracking, monitoring and reporting requirements;
- Additional disclosure or other requirements and burden, including administrative work, management time, additional assurance and rating agency assessment;
- Interest rate (i.e., likely no interest advantage when compared to "regular" municipal bonds); and

[13] Moody's Green Bonds Assessment. 2016. http://www.amwa.net/sites/default/files/GBA Methodology-final-30march2016.pdf

[14] See press release at: http://www.greateruticachamber.org/news-events/member-news/news-story/moodys-assigns-green-bond-assessment-of-gb1-to-the-upper-mohawk-valley-regional-water-finance-authority-ny-water-system-revenue-bonds-series-2016/

- Lack of clarity in the definition of a green bond and/or lack of standards.

Other concerns raised were: the fit of financing need to the definition of green bond, future regulation and/or federal government involvement, potential limitations on utility autonomy, restrictions on the use of funds and low familiarity with green bonds (either to the utility or the financial advisor).

The top benefits, or the pros of issuing a green bond, as perceived by survey respondents, were:

- The prospect of attracting new investors and a broader range of investors, such as those who might perceive a lower risk for investment in a green project because the risk is tied to the issuer and the performance of the project[15];
- Portfolio diversity;
- Improved public relations and public perception for the project financed and for the utility;
- A measurable, public demonstration of utility commitment to sustainability and environmental and/or climate projects;
- The potential for lower interest rates, lower pricing or lower costs[16]; and
- Tax incentives or other subsidies.

At the time of the survey, three utilities responded that they had issued green bonds (EBMUD, DC Water and MWRA), and eight members (including DC Water and EBMUD) indicated they were considering issuing green bonds in the future. EBMUD and MWRA self-assessed their green bond offerings, and EBMUD developed an internal guidance for the utility to follow when issuing green bonds. DC Water had its offering verified by a second party opinion. In May 2016, San Francisco Public Utilities Board issued a green bond certified to the Climate Bonds Initiative water climate bond standard. And in August 2016, Mohawk Valley Water Authority issued the first green bond assessment given by Moody's in the U.S. Their experiences are summarized in Appendix A. EBMUD's green bond guidance is provided as Appendix B.

[15] KMPG, p. 1

[16] Note: at the time of this survey, none of the AMWA members who had issued a green bond received lower interest rates or cost or tax incentives or subsidies. However, the potential of these benefits being available in the future is what members saw as an incentive.

8. Conclusion

Green Bonds are emerging as a financing instrument that specifically ties bond proceeds from the bond sales to sustainable, often climate-friendly projects. The marketplace currently allows for different types of certification and processes to define a green bond, although the Green Bond Principles are generally accepted as a starting place. As time goes on, standard practice and required certification processes may be required.

Third party certification or verification generally requires additional reporting burdens for the issuers, which could add risk to the bond issuer in the event the issuers do not follow through on the reporting and disclosures promised in the bond covenants. This additional risk does not come with a corresponding additional rate-of-return for green bonds.

For those AMWA member utilities that have issued green bonds, the driver has been to raise awareness of the utility's environmental programs and get good press rather than for financial benefits. In some cases, issuing the green bond may have grown the utility's investor base.

The marketplace will continue to evolve. The information provided in this paper can help AMWA members assess whether green bonds may be a good fit for their financing needs. The guidance currently available on green bonds, which is summarized in this paper, provides the information a utility would need to consider green bonds. A checklist summarizing these best practices is provided in Appendix C.

9. References for Additional Reading

- AMWA. 2016. *Results of the Green Bond Survey*. http://www.amwa.net/sites/default/files/AMWA-GreenBondsSurvey-23may2016.pdf

- CERES Investor Network on Climate Risk. 2015. A Statement of Investor Expectations for the Green Bond Market. https://www.ceres.org/files/investor-files/statement-of-investor-expectations-for-green-bonds/at_download/file

- Climate Bonds Initiative, commissioned by HSBC. 2016. Bonds and Climate Change the State of the Market in 2016. https://www.climatebonds.net/files/files/reports/cbi-hsbc-state-of-the-market-2016.pdf

- International Capital Market Association (ICMA). 2016. Green Bond Principles. http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/green-bond-principles/

- KPMG. 2015. Gearing up for Green Bonds. https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/sustainable-insight/Documents/gearing-up-for-green-bonds-v2.pdf

- Mastracchio et al. Expected 2017. Water Research Foundation #4617 "New and Emerging Capital Providers for Infrastructure Funding"

http://www.waterrf.org/Pages/Projects.aspx?PID=4617

- OECD and Bloomberg Philanthropies. 2015. Green Bonds. Mobilizing the debt capital markets for a low-carbon transition. http://www.oecd.org/environment/cc/Green%20bonds%20PP%20%5bf3%5d%20%5blr%5d.pdf

- RBC Capital Markets. 2014. Green Bonds Fifty Shades of Green. http://www.rbc.com/community-sustainability/_assets-custom/pdf/Green-Bonds-Fifty-Shades-of-Green.pdf

- UNFCCC. 2015. Green Bonds a Low-Carbon Economy Driver after COP 21. http://newsroom.unfccc.int/climate-action/green-bonds-a-low-carbon-economy-driver-after-cop21/

- World Bank. 2015. Understanding Green Bonds. http://treasury.worldbank.org/cmd/htm/Chapter-2-Understanding-Green-Bonds.html

Appendix A

AMWA Members' Interest in Green Bonds: Summaries of Utility of Experience in Issuing Green Bonds

DC Water
Third-party certification approach

DC Water sees the top benefits for its issuance as responding to investor demand, portfolio diversification, lower cost of capital, and press coverage/increased brand value. The initial offering was expanded from $300 million to $350 million and was oversubscribed, resulting in DC Water's ability to lower the interest rate by 0.15%, thus saving ratepayer money.

DC Water has issued two green bond Public Utility Senior Lien Revenue Bonds, Series 2014A ($350 million) and Series 2015A ($100 million) bonds, to finance a portion of the DC Clean Rivers Project. These historic issuances marked the first certified green bonds in the United States to be supported by an independent sustainability opinion. DC Water retained Vigeo for the second party opinion of the Green Bond certification in accordance with the Environmental, Social and Governance (ESG) assessment methodology, which is based upon criteria aligned with public international standards in compliance with the ISO 26000 guidelines. The green bond certification process included the establishment of certain ESG performance indicators and the commitment to undertake annual reporting on those indicators in a stand-alone report.

The Green Bond Report is intended to fulfill DC Water's commitment to its investors and other stakeholders to report on:

(1) Use of proceeds of the green bond for the DC Clean Rivers Project;
(2) Environmental and social outcomes achieved by the project for water quality, climate resilience and quality of life; and
(3) Responsible management of the project regarding human rights, human resources, environment, business behavior and community involvement.

In order to ensure its commitment to DC Water's investors and stakeholders, DC Water engaged KPMG to perform an attestation on Series 2014A Green Bond for the 2015 fiscal year in accordance with the American Institute of Certified Public Accountants. Based on KPMG's review, DC Water was in compliance with the corresponding criteria set forth in Official Statement for Series 2014A.

East Bay Municipal Utility District (EBMUD)
Self-certification approach

In April of 2015 EBMUD presented to its Board of Directors an internally developed guidance (Appendix B) to direct the District's entry into the Green Bond Market. EBMUD's rationale for entering the market is to stimulate its growth and foster its development. EBMUD's

sustainability policy and Green Bond Guidance supports the goals of the Green Bond Principles. The guidance is used to point staff toward selecting projects to be funded by green bonds.

EBMUD issued $74,335,000 of tax-exempt green bonds in June 2015 for projects identified as meeting the criteria identified in the District's Green Bond Guidance. There are ten criteria, including maintaining water quality, improving biodiversity and ecosystem quality, protecting against flooding, improving climate resilience and reducing greenhouse gas emissions, among others.

EBMUD self-certified its green bond offering. The bonds reimbursed the District for prior project expenditures for projects that included, among others: distribution system renewals, reservoir rehabilitation and maintenance, recycled water programs seismic upgrades to dams, pumping plant rehabilitation pressure zone improvements and wildlife projects to support compliance with the Endangered Species Act.

EBMUD is committed to identifying the projects funded by green bonds in its annual Sustainability Report to the utility's Board of Directors.

The continuing disclosure requirements are the same as for EBMUD's non-green bonds, in part because the proceeds were spent on projects that were already performed and are typical to EBMUD, rather than for projects where the environmental benefit had not yet been realized. EBMUD has a history of providing more information than is typically required in its Continuing Disclosure Agreements, a positive factor for its investors.

The bonds were purchased by a bank, which was the underwriter that sold them to investors. EBMUD has no knowledge of who the investors were. EBMUD was advised that while some investors might prefer Green Bonds they would not accept a lower interest rate in exchange for a Green bond.

Massachusetts Water Resources Authority (MWRA)
Self-certification approach

MWRA made the decision to issue its 2016 Series C refunding bonds as green bonds because the projects funded through this transaction assisted MWRA with meeting the requirements of the Clean Water Act and the Safe Drinking Water Act. Proceeds of this transaction were utilized to refund bonds, which had funded a variety of wastewater and drinking water projects. The wastewater projects included construction of the Deer Island Wastewater Treatment Plant and combined sewerage overflow treatment facilities and storage tunnels. These projects were important components to the cleanup of Boston Harbor. Drinking water projects included the construction of the John J. Carroll Water Treatment Plant, MetroWest Water Supply Tunnel and coverage storage facilities to eliminate the use of open reservoirs. Information on the other types of projects funded through these bonds can be found in Appendix F of the 2016 Series B and C Official Statement.

MWRA's plan of finance called for the issuance of new money and refunding bonds as part of this transaction. The decision was made to issue the refunding series as green bonds since

projects funded by the proceeds could be identified and future reporting would not be required. Both the green bonds and the bonds not labeled as green were sold to the market at the same time.

As part of 2016 Series B and C transaction MWRA issued $681.6 million of green bonds. MWRA did receive some additional interest from a fund that purchases green bonds during the marketing period. Unfortunately the investor was not interested in purchasing the bonds due to the low yields. MWRA did not observe any difference in yields between the green and non-green bonds.

MWRA was cautious when developing its green bond program not to create new continuing disclosure requirements. Issuers should focus on their disclosure requirements when they are developing a program.

San Francisco Public Utilities Commission
Third party certification using the Climate Bonds Initiative standard

The San Francisco Public Utilities Commission (SFPUC) issued green bonds in 2015 for its Power Enterprise and in 2016 for its Wastewater Enterprise. Green bonds align well with the Commission's mission, which includes environmental stewardship, as well as the City of San Francisco's Climate Goals, which include greenhouse gas emissions reductions of 25 percent below 1990 levels by 2017 and 40 percent below 1990 levels by 2025.

In May 2015, the SFPUC issued its first Power Enterprise revenue bonds, 2015 Series AB, with the $32M Series A issued with the green bond designation. The Commission self-certified the bond, in consultation with the Climate Bonds Initiative, as the funded projects were limited to hydroelectric generation facilities. The bonds were sold tax-exempt and on a negotiated basis; the sale attracted a new investor to the SFPUC with a dedicated ESG portfolio.

In May 2016, the SFPUC issued its second green bond series with the $241M 2016 Series A Wastewater bonds. The Commission relied on Sustainalytics for verification[17] and issued the bonds under the Climate Bonds Initiative's new Climate Water Bond Standard. While it took some time and internal coordination, the certification effort was fairly straightforward. The 2016 Series A green bonds were sold together with the $68M 2016 Series B Wastewater bonds, which did not included a green bonds designation. As an attempt to evaluate whether a pricing benefit exists with the green bonds designation, both bond series were sold at the same time, on a tax-exempt basis and with overlapping maturities. Both series were ultimately purchased by one underwriter at the same price. The feedback the SFPUC received is that while investors like the green label, there is not yet a pricing advantage. It is noteworthy, however, that all of the other underwriter bids slightly favored the green series.

[17] Sustainalytics verification letter available at https://www.climatebonds.net/files/files/Verification%20Letter_SFPUC%20(1).pdf

The SFPUC will report annually on its website the spending of the bond proceeds used for the green bonds. The SFPUC is optimistic that future green bond issuances may one day achieve lower interest rates as well as attract new investors in SFPUC bonds.

Mohawk Valley Water Authority (Utica, NY)
First Moody's Green Bond Assessment in the continental U.S.

The Mohawk Valley Water Authority (MVWA) is a state Public Authority created in 1996 to assume ownership and management of a regional drinking water supply system serving an average of 20 million gallons per day (MGD) to a population of approximately 130,000 people through roughly 39,000 service connections.

In 2016, the borrowing arm of the MVWA, the Upper Mohawk Valley Regional Water Finance Authority, closed on its 2016 Series Bonds to finance the first phase of a new raw water transmission line that will span three miles from the water source, Hinckley Reservoir, to the Authority's water treatment plant. Phase One of the project will cost approximately $4.1 million to construct a new pipe bridge that will carry a 48" diameter pipe across a gorge that runs alongside the treatment plant. The remainder of the project will consist of replacing a 24" diameter pipe that was constructed in 1905 with a new 54" diameter transmission line. The 2016 bonds will also be used to refinance $4.125 million of earlier bond issues.

The MVWA typically seeks bond ratings from both Moody's Investors Service and Standard & Poor's. Both agencies reaffirmed their credit ratings of A1 and A+ respectively. Just prior to contacting Moody's regarding the financial rating, the MVWA learned through its financial advisor that Moody's was attempting to enter the domestic market for "green bond assessments." Moody's had previously issued three such assessments in Europe, but none in the United States.

MVWA obtained the 2016 Green Bond Principles and determined internally that the Phase One pipeline project might qualify for a green bond designation. This determination was based on the vast improvement expected in water transmission reliability by replacing a 110-year-old undersized line with a new, larger pipe. In short, water system resiliency would be increased dramatically. In addition, the larger diameter pipe would decrease head loss, allowing the MVWA system to meet all of its hydraulic needs during times when Hinckley Reservoir could become abnormally low in the event of a severe drought. Thus, the project would provide greatly improved water source sustainability and drought resistance.

The assessment process with Moody's took place in the form of a written application and five conference calls over a period of two weeks. Discussions included topics such as the initial disclosure on the use of the bond proceeds, continuing disclosure regarding 'green' benefits from the project constructed and the identification of key metrics that would be tracked and reported to measure improvements in green benefits. The four metrics to be reported on a continuing basis under MVWA's Continuing Disclosure Agreement include: hydraulic capacity improvements; total purified water conveyed annually; trihalomethane (THM) levels at peak season (improvements are expected from the implementation of carbon filtering medium paid for by the earlier bonds that were refinanced); and total kilowatt production from MVWA's inline power turbines, which should increase as pipe head loss is decreased. As a result of these discussions,

Moody's assigned its first green bond assessment in the U.S. by giving the MVWA its highest rating of Green Bond 1 (GB1).

Continuing disclosure will be reported and updated annually in the MVWA's Comprehensive Annual Financial Report (CAFR) and on the company website in a section to be created and designated for this purpose.

The bond underwriter reported that the bond sale did in fact attract the attention of one green bond investment pool that purchased a portion of the bonds. However, it was not clear if the GB1 rating was their determining factor.

Appendix B

EAST BAY MUNICIPAL UTILITY DISTRICT GREEN BOND GUIDANCE

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: April 23, 2015

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager

FROM: Eric L. Sandler, Director of Finance

SUBJECT: Green Bond Guidance

RECOMMENDED ACTION

Recommend Board approval of proposed Guidance for Issuing Green Bonds.

SUMMARY

There is an emerging market for debt used to fund sustainable infrastructure. This debt is referred to as "Green Bonds." There is no legal distinction between Green Bonds and traditional municipal bonds. The distinction is issuer-driven, reflecting the choice of projects being financed with the bonds. The District believes this is a valuable market and would like to be an early participant in order to stimulate its growth.

As yet no formal criteria or definitions exist for eligible projects. The District can foster development of the market by providing guidance in selection of projects appropriate for Green Bond financing (see attachment 1). The proposed Guidance builds upon voluntary Green Bond Principles (see attachment 2) developed by market participants. The Guidance specifies criteria for selection of District projects to be funded from proceeds of Green Bonds. The Guidance also suggests reporting on these projects.

This item will be reviewed with the Finance/Administration Committee on April 28, 2015.

BACKGROUND

According to the California Debt and Investment Advisory Commission (CDIAC) "Green Bonds are generally understood to be bonds that specifically finance climate change resilient projects or other environmentally beneficial projects." The bonds are expected to be purchased by investors interested in promoting "green" projects. Initially developed and issued by World Bank group members in 2008, the market has grown to incorporate U.S. local governments, including the State of California which issued its first Green Bond in September 2014. By issuing Green Bonds the District would be supporting this emerging market.

Green Bonds are no different than the bonds that the District routinely issues except in selection of the projects they finance. At this time there are no formal criteria for or definition of "green" projects. Voluntary Green Bond Principles have been developed by a consortium of banks with input from other stakeholders. The Principles define green projects as "activities that will promote progress on environmentally sustainable activities as defined by the issuer … and in line with the issuer's project process for evaluation and selection." These Principles list broad categories of eligible projects. The Principles suggest that issuers describe the decision process associated with selection of projects for Green Bond funding. The Principles also suggest that issuers report on the projects funded by Green Bonds.

DISCUSSION

The District has long supported the goals promoted by the Green Bond Principles, as evident from the Sustainability policy initially adopted in 1994 and most recently revised in November 2013. The proposed Guidance for Issuing Green Bonds was developed to comply with the letter and the spirit of both the District's policy and the Green Bond Principles. The Principles recommend that issuers outline the process used to determine the eligibility of projects for Green Bond funding. The Guidance is intended to both help staff select appropriate projects for Green Bond funding and comply with the Principles' recommendation.

The Guidance identifies several of the broad project categories listed in the Green Bond Principles that could apply to District projects:

- Sustainable water management (including clean and/or drinking water)
- Sustainable waste management
- Renewable energy and energy efficiency
- Sustainable land use and biodiversity conservation
- Clean transportation

The Guidance is designed to refine the criteria to ensure projects selected by staff for Green Bond funding meet specific sustainability goals. Accordingly, it suggests projects meet some or all of the ten criteria listed below. The projects should fully meet these criteria, and be free of issues pertaining to sustainability which have not yet been resolved (e.g., not optimizing the use of recycled materials).

1. Maintain water quality
2. Improve water use efficiency, including conservation through reduced water loss
3. Improve biodiversity and ecosystem quality
4. Protect against flooding
5. Reduce pollution
6. Improve resilience (adaptation) to climate change

7. Reduce the combustion of fossil fuels
8. Reduce greenhouse gas emissions
9. Implement "reduce, reuse, recycle" practices in preference to raw materials
10. Adhere to sustainable purchasing guidelines

The Principles recommend that issuers should report on the use of Green Bond proceeds, detailing wherever possible the specific project and the dollars invested in the project. Accordingly, the Guidance suggests that the District identify projects funded through Green Bonds in the annual sustainability report to the Board.

FISCAL IMPACT

Bond financing is already incorporated into the District's FY14-15 and proposed FY16-17 budgets. Neither the issuance of Green Bonds nor the proposed Guidance for Issuing Green Bonds have any additional fiscal impact.

ALTERNATIVE

Do not adopt the Guidance for Issuing Green Bonds. This alternative is not recommended if the District would like to participate in the Green Bond market, as adoption of the Guidance demonstrates the District's interest in complying with the Green Bond Principles.

ARC:ELS:db

Attachments

I:\Sec\2015 Board Related Items\Committees 2015\042815 Finance Ctte\FIN - Ctte Item Green Bond Guidance 042815.doc

EAST BAY MUNICIPAL UTLITY DISTRICT

Guidance for Issuing Green Bonds

In November 2013, the District adopted a revised Policy 7.05 on Sustainability, which is defined as "using resources (economic, environmental, and human) in a responsible manner to meet the needs of today without compromising the ability of future generations to meet the needs of tomorrow. This triple bottom line approach seeks to minimize waste; conserve water, energy, and natural resources; promote long-term economic viability; and promote the safety and well-being of the District's employees, communities, and customers."

Green bonds have attracted a rapidly growing interest on the part of investors who wish to meet their own goals for sustainability. As a financing tool green bonds are relatively new, and broadly accepted standards have yet to gain hold. The District's commitment to the triple bottom line (in this instance, long-term economic viability) can be underscored by promoting the development of this market through the responsible use of green bonds to finance its own qualifying capital projects. This guidance offers criteria that EBMUD can use to evaluate projects for green bond funding that demonstrate a meaningful, quantifiable commitment to sustainability.

Existing publications on green bonds generally identify a list of project types that qualify as sustainable. These include:

- Sustainable water management (including clean and/or drinking water)
- Sustainable waste management
- Renewable energy and energy efficiency
- Sustainable land use and biodiversity conservation
- Clean transportation

At first glance, many or most of the District's projects could be included in this list. It is critical, however, to demonstrate that projects proposed for green bond funding actually contribute to progress toward sustainability. A failure in this regard would dilute the value of the sustainability claim and undermine the confidence of investors.

Pursuant to these guidelines, projects eligible for green bond funding should meet some or all of the following criteria:

1. Maintain water quality
2. Improve water use efficiency, including conservation through reduced water loss
3. Improve biodiversity and ecosystem quality
4. Protect against flooding

5. Reduce pollution
6. Improve resilience (adaptation) to climate change
7. Reduce the combustion of fossil fuels
8. Reduce greenhouse gas emissions
9. Implement "reduce, reuse, recycle" practices in preference to raw materials
10. Adhere to sustainable purchasing guidelines

In selecting projects for green bond financing, District staff should focus on the projects that best meet the criteria, and exclude those that appear marginal or that have unresolved sustainability issues (e.g., trench spoils disposal sites).

To promote transparency with investors and demonstrate its commitment to responsible use of green bond financing, the District should commit to identifying projects that have been funded with proceeds of green bonds in the annual sustainability report to the Board of Directors.

ICMA
International Capital Market Association

Green Bond Principles, 2015

Voluntary Process Guidelines for Issuing Green Bonds

March 27, 2015

INTRODUCTION

Green Bonds raise funds for new and existing eligible projects with environmental benefits. The Green Bond Principles (GBP) are voluntary process guidelines intended for broad use by the market that recommend transparency and disclosure, and promote integrity in the development of the Green Bond market. They are intended to provide the informational basis for the market to increase capital allocation to environmentally beneficial purposes without any single authority or gate keeper.

The scope of the GBP has been refreshed in this second edition. Working with the support of the International Capital Market Association (ICMA) as Secretary to the GBP, the GBP Executive Committee which brings together a representative group of issuers, investors and intermediaries in the Green Bond market, has sought to reflect the evolution of the Green Bond market and to identify best practice. This work benefited from extensive coordination and dialogue with market participants, including a consultation process with GBP members and observers during the summer of 2014.

Green Bond issuance grew substantially during 2014, confirming the validity of the approach and raising expectations as to the benefits of its further expansion. Initially driven largely by Multilateral Development Banks (MDBs), issuance has extended to new issuer categories such as other public institutions, utilities, corporates, and financial institutions.

This process benefits from the growing involvement of a wider universe of investors that have different levels of capacity to evaluate environmental projects. To date these investors have especially focused on those Green Bonds that have allowed them to gain transparent access to a diversity of underlying environmental projects while providing them with the simplicity of credit exposure to a clearly identified issuer with an established risk profile.

The second edition of the GBP represents an incremental evolution from the previous standard and aims to provide further clarity on what can be expected from issuers. Amongst others, a comprehensive high level definition of Green Bonds has been included and the recognized broad categories of eligible projects have been updated. A particular effort has also been made to define and clarify assurance. The GBP continue to reflect the diversity of opinion on the definition of Green Projects. Other modifications have been made throughout to improve readability and confirm intent.

GREEN BOND DEFINITION

Green Bonds are any type of bond instruments where the proceeds will be exclusively applied to finance or re-finance in part or in full new and/or existing eligible Green Projects and which follows the 4 Green Bond Principles. Green Projects are defined as projects and activities that will promote progress on environmentally sustainable activities as defined by the issuer (see Green Bond Principle 1.) and in line with the issuer's project process for evaluation and selection (see Green Bond Principle 2.). The management of Green Bond proceeds should be traceable within the issuing organization (see Green Bond Principle 3.) and issuers should report at least annually on use of proceeds (see Green Bond Principle 4.).

Different types of Green Bonds exist in the market. These are described in Appendix I.

GREEN BOND PRINCIPLES

The Green Bond Principles (GBP) are voluntary process 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 GBP are intended for broad use by the market: they provide issuers guidance on the key components involved in launching a credible Green Bond; they aid investors by promoting availability of information necessary to evaluate the environmental impact of their Green Bond investments; and they assist underwriters by moving the market towards standard disclosures which will facilitate transactions.

The GBP recommend a concrete process and disclosure for issuers which investors, banks, investment banks, underwriters, placement agents and others may use to understand the characteristics of any given Green Bond. The GBP emphasize the necessary transparency accuracy and integrity of environmentally sustainable information that will be disclosed and reported by issuers to stakeholders and that may be increasingly used for strategic decision making by investors.

The GBP have four components:

1. Use of Proceeds
2. Process for Project Evaluation and Selection
3. Management of Proceeds
4. Reporting

For market information purposes at the time of issuance, the GBP encourage the use of a summary reflecting the main characteristics of a Green Bond or a Green Bond programme, and articulating the four components above.

1. **Use of Proceeds**

The cornerstone of a Green Bond is the utilization of the proceeds of the bond which should be appropriately described in the legal documentation for the security. All designated Green Project categories should provide clear environmentally sustainable benefits, which, where feasible, will be quantified or assessed by the issuer.

There are several categories and sets of criteria defining eligible Green Projects already in existence in the market that can be used as a guide. Issuers and other stakeholders can refer to examples through links listed in the GBP webpages at www.icmagroup.org/greenbonds.

The GBP explicitly recognize several broad categories of potential eligible Green Projects aiming to address key areas of concern such as climate change, natural resources depletion, biodiversity conservation and/or pollution. These broad categories are including, but not limited to:

- Renewable energy
- Energy efficiency (including efficient buildings)
- Sustainable waste management
- Sustainable land use (including sustainable forestry and agriculture)
- Biodiversity conservation
- Clean transportation
- Sustainable water management (including clean and/or drinking water)
- Climate change adaptation.

In the event that a proportion of the proceeds may be used for refinancing, it is recommended that issuers provide an estimate of the share of financing vs. re-financing, and where appropriate, also clarify which investments or project portfolios may be refinanced.

2. **Process for Project Evaluation and Selection**

The issuer of a Green Bond should outline the decision-making process it follows to determine the eligibility of projects using Green Bond proceeds. This includes, without limitation:

- a process to determine how the projects fit within the eligible Green Projects categories identified in the Green Bond Principles;
- the criteria making the projects eligible for using the Green Bond proceeds; and
- the environmental sustainability objectives.

The GBP encourage a high level of transparency; to this end, this process for project evaluation and selection can be supplemented by a review by a second party (see Assurance section).

In addition to information disclosed by an issuer on its Green Bond process, criteria and assurances, Green Bond investors may also take into consideration the quality of the issuer's overall framework and performance regarding environmental sustainability.

3. Management of Proceeds

The net proceeds of Green Bonds should be credited to a sub-account, moved to a sub-portfolio or otherwise tracked by the issuer in an appropriate manner and attested to by a formal internal process that will be linked to the issuer's lending and investment operations for Green Projects. So long as the Green Bonds are outstanding, the balance of the tracked proceeds should be periodically reduced by amounts matching eligible green investments or loan disbursements made during that period. Pending such investments or disbursements to eligible Green Projects, the issuer should make known to investors the intended types of temporary investment instruments for the balance of unallocated proceeds.

The GBP encourage a high level of transparency that can be supplemented by the use of an auditor, or other third party, to verify the internal tracking method and the allocation of funds from the Green Bond proceeds (see Assurance section).

4. Reporting

In addition to reporting on the use of proceeds and the temporary investment of unallocated proceeds, issuers should provide at least annually a list of projects to which Green Bond proceeds have been allocated including - when possible with regards to confidentiality and/or competitive considerations - a brief description of the projects and the amounts disbursed, as well as the expected environmentally sustainable impact.

The GBP recommend the use of qualitative performance indicators and, where feasible, quantitative performance measures of the expected environmental sustainability impact of the specific investments (e.g. reductions in greenhouse gas emissions, number of people provided with access to clean power, reduction in number of cars required, etc.). Where confidentiality agreements or competition issues limit the amount of detail that can be made available, information can be presented in generic terms.

The GBP acknowledge that there are currently no established standards for impact reporting on Green Projects, and welcome and encourage initiatives, including those by leading Green Bond issuers, to help establish a model for impact reporting that others can adopt and/or adapt to their needs. Until more harmonization is achieved, transparency is of particular value, including disclosure of methodologies and key underlying assumptions.

ASSURANCE

It is recommended that issuers use external assurance to confirm their alignment with the key features of Green Bonds as defined above. There are a variety of ways for issuers to obtain outside input to the formulation of their Green Bond process and there are several levels and types of independent assurance that can be provided to the market. Such guidance and assurance might include:

(i) Second party reviews and consultation: for example, an issuer can seek advice from consultants and/or institutions ("second party") with recognized expertise in environmental sustainability to review or to help in the establishment of its process for project evaluation and selection including project categories eligible for Green Bond financing. The reviews and reports of the second party are private, and may be made publicly available only at the discretion of the issuer.

(ii) Audits: Issuers are encouraged to have independently verified or audited certain aspects of their Green Bond process, such as the internal tracking method and the allocation of funds from proceeds. The verification can be provided by qualified third parties, or by internal and/or external auditors. These independent reports and audits may be put in the public domain at the discretion of the issuer.

(iii) Third-party certifications: Second-party standards intended for use by qualified third parties to certify Green Bonds are in use or in development. The GBP are supportive of the development of and use of such standards for the certification of Green Bonds as they are defined above.

DISCLAIMER

The Green Bond Principles are voluntary process guidelines that neither constitute an offer to purchase or sell securities nor constitute specific advice of whatever form (tax, legal, environmental, accounting or regulatory) in respect of Green Bonds or any other securities. The Green Bond Principles do not create any rights in, or liability to, any person, public or private. Issuers adopt and implement the Green Bond Principles voluntarily and independently, without reliance on or recourse to the Green Bond Principles, and are solely responsible for the decision to issue Green Bonds. Underwriters of Green Bonds are not responsible if issuers do not comply with their commitments to Green Bonds and the use of the resulting net proceeds. If there is a conflict between any applicable laws, statutes and regulations and the guidelines set forth in the Green Bond Principles, the relevant local laws, statutes and regulations shall prevail.

APPENDIX I

There are currently four types of Green Bonds (additional types may emerge as the market develops and these will be incorporated in annual GBP updates):

- **Green Use of Proceeds Bond:** a standard recourse-to-the-issuer debt obligation for which the proceeds shall be credited to a sub-account, moved to a sub-portfolio or otherwise tracked by the issuer and attested to by a formal internal process that will be linked to the issuer's lending and investment operations for eligible projects. Pending such investment or disbursement, it is recommended that the issuer make known to investors the intended types of eligible investments for the balance of unallocated proceeds.

- **Green Use of Proceeds Revenue Bond:** a non-recourse-to-the-issuer debt obligation in which the credit exposure in the bond is to the pledged cash flows of the revenue streams, fees, taxes etc., and the use of proceeds of the bond goes to related or unrelated Green Project(s). The proceeds shall be credited to a sub-account, moved to a sub-portfolio or otherwise tracked by the issuer and attested to by a formal internal process that will be linked to the issuer's lending and investment operations for eligible projects. Pending such investment or disbursement, it is recommended that the issuer make known to investors the intended types of eligible investments for the balance of unallocated proceeds.

- **Green Project Bond:** a project bond for a single or multiple Green Project(s) for which the investor has direct exposure to the risk of the project(s) with or without potential recourse to the issuer.

- **Green Securitized Bond:** a bond collateralized by one or more specific projects, including but not limited to covered bonds, ABS, and other structures. The first source of repayment is generally the cash flows of the assets. This type of bond covers, for example, asset-backed securitizations of rooftop solar PV and/or energy efficiency assets.

Appendix C

GREEN BOND CHECKLIST

Following is a simple checklist identifying the steps a water utility can take move toward issuing a green bond.

- ✓ **Review available best management practices and standards including the Green Bond Principles (GBP), Moody's Green Bond Assessment and Climate Bonds Initiative Water Criteria to:**
    - Assess criteria for designating a water project as "green"
    - Determine if project(s) to be financed warrant(s) green bond designation
    - Understand the guidelines outlined, including disclosure
- ✓ **Understand the four steps to the issuance process (according to the GBP)**
    - Use of proceeds
    - Project evaluation and selection
    - Management of proceeds
    - Reporting (utility's project staff and financial staff should consult together about this)
- ✓ **Review standardized criteria available: (Moody's Green Bond Assessment, Climate Bonds Standard)**
- ✓ **Consider pros and cons of self-certification vs. third party verification under a standard/assessment or the GBP**
- ✓ **Consider risk tradeoffs for additional disclosure requirements and reporting burden in light of potential benefits of green bond issuance**