

Green Bonds in the Golden State:

A Practical Path for Issuers

Webinar Three: Making Green Pencil Out

October 2, 2019

Moderator: Tim Schaefer

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S&P Global Ratings



GOLDMAN SCHOOL
OF
PUBLIC POLICY
UNIVERSITY OF CALIFORNIA BERKELEY

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Presentation Links

Provided for additional research, links accessible in PDF version of the slides



Previous Webinar Resources

Available on CDIAC's website:

<https://www.treasurer.ca.gov/cdiac/webinars/2019/greenbonds/description.asp>

PowerPoint Slides

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Series Resources

Our Vision

We would like attendees to take away an understanding of the Green Bond marketplace. Panelists will not only discuss the market perception of Green Bonds and the characteristics that are most preferred by investors, but also examine questions such as:

- Why are municipal Green Bonds not priced at a premium (i.e., lower yields)?
- Why is there a lack of supply of municipal Green Bonds?
- Why issue municipal Green Bonds?
- How do municipal Green Bonds trade in the secondary market?
- What would you suggest potential issuers focus on to satisfy the demands of Green Bond investors?
- How does a well-developed mitigation, adaptation, resilience strategy affect the way investors and the rating agencies look at an issuer's Green Bond program?





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Welcome.

Tim Schaefer

*Deputy Treasurer for Public Finance
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Part 1: Overview of the Green Bond Marketplace

Presenter



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STIFEL

Bond Pricing Overview

A bond is a promise to repay borrowed money (principal) at a future certain date (maturity) with semi-annual interest payments through maturity.

MMD Scale

The Municipal Market Data (MMD) scale represents the yield curve of the highest-rated (AAA) municipal bonds as published by Thomson Reuters.

+ Credit Spread

Determined By:
Rating Level
Security Type
Market Factors

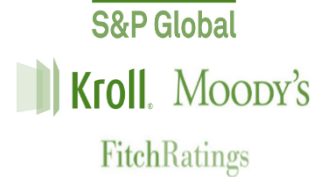
Actual Yield

Example

Maturity	MMD Scale	Credit Spread	Actual Yield
1	1.06%	0.10%	1.16%
5	1.09%	0.15%	1.24%
10	1.29%	0.20%	1.49%
20	1.74%	0.30%	2.04%
30	1.93%	0.35%	2.28%

Market Factors Affecting Credit Spread

Rating



Supply & Demand



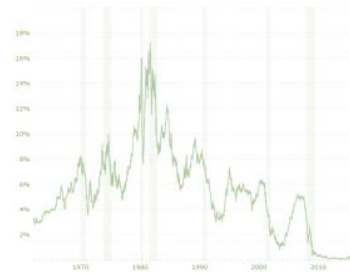
Economic Data



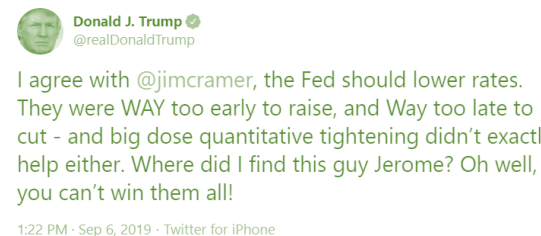
The FED



Treasury Yields



Current Events



**Credit
Spread
(Pricing)**

Green Bonds?



Investors



Professional Retail /
Separately Managed Accounts (SMAs)



Issuers





Market Size

Since 2016, 54 Green Bond transactions have come to market in California totaling over \$8.7 Billion in par amount.

Transactions have ranged in par amount from \$9 Million to \$635 Million.

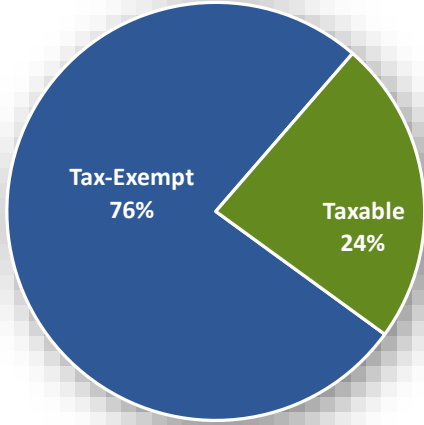
Average par amount of \$167 Million.

Source: Bloomberg as of September 10, 2019.

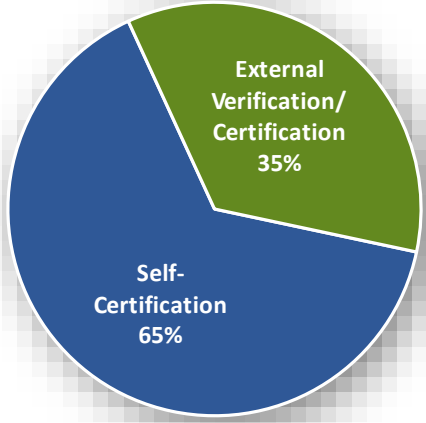
CA Green Bonds

2016 to 2019YTD

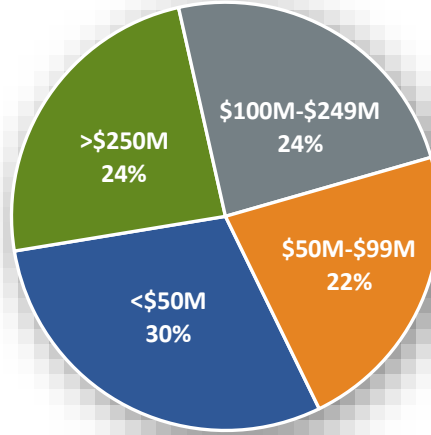
Tax Status



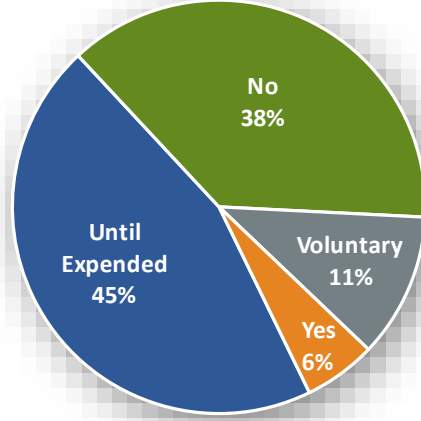
Certification



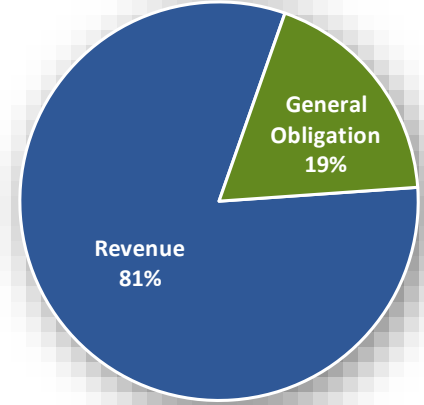
Par Amount



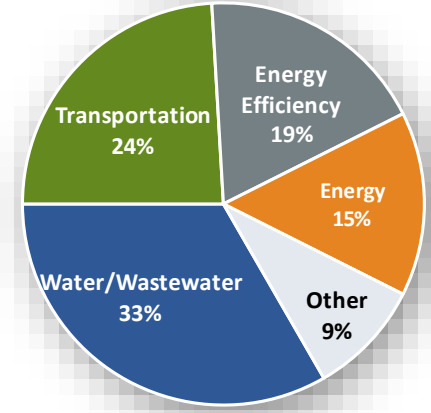
Annual Reporting



Credit Type



Use of Proceeds



**HIS GREEN BONDS HAVE
ENABLED HIM TO FLY AROUND
THE WORLD TO HARNESS
SOME SOLAR ENERGY**



Part 2: S&P Global Ratings' Green Evaluation

Presenter



Jennifer Poree

*Analytical Manager &
Head of Municipal Cooperative Utilities*

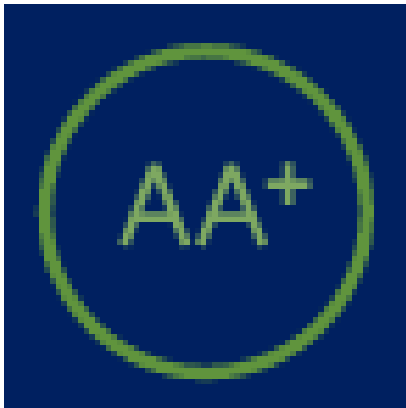
S&P Global Ratings

Jenny.Poree@spglobal.com

S&P Global
Ratings

A Multi-faceted Approach

S&P views green related factors in the municipal market in a number of ways.



**Credit
Ratings**



**ESG*
Evaluations**

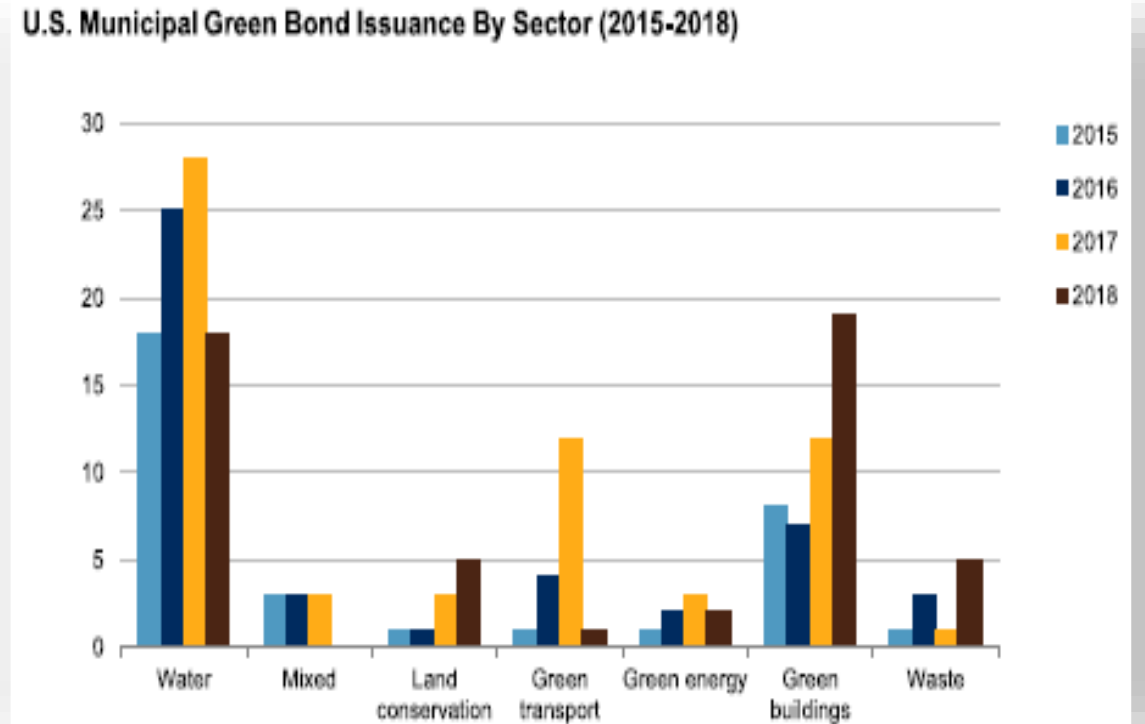
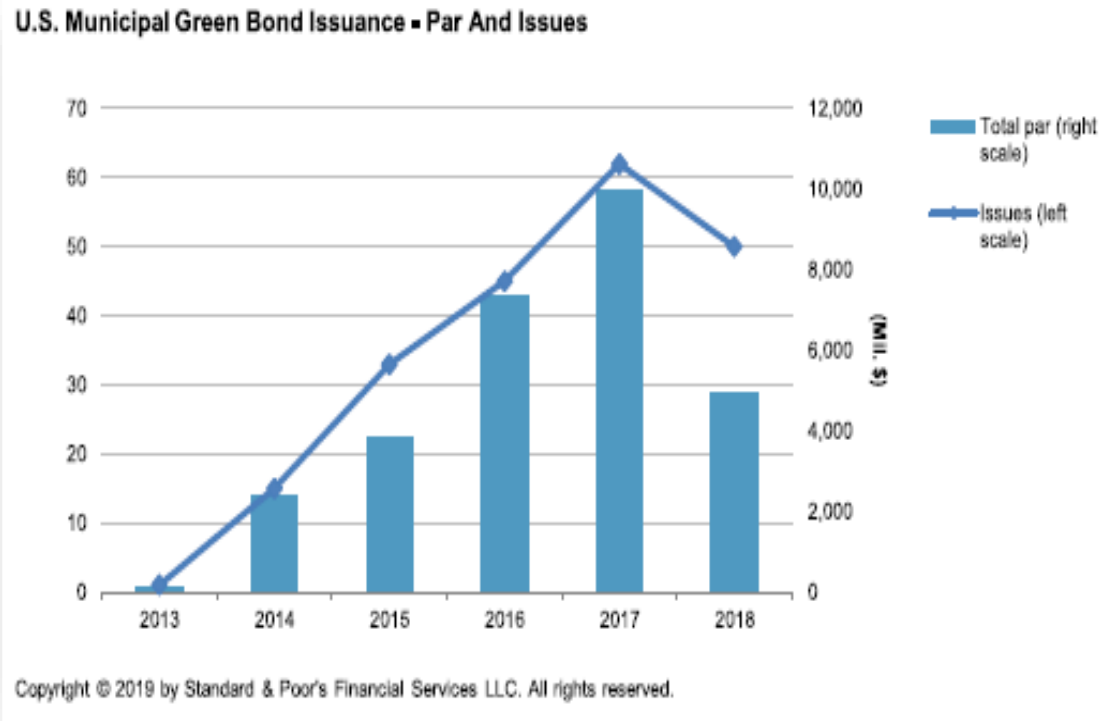


**Green
Evaluations**

*Environmental, social and governance (ESG) criteria are a set of standards for a company's operations that socially conscious investors use to screen potential investments. Definition and additional information available on [Investopedia](https://www.investopedia.com/terms/e/esg-standards/).

Green Bond Outlook

Labels aside, S&P believes much of the muni market finances environmentally-beneficial projects.



Data courtesy of:

S&P Global
Ratings

Many Green Bond principles are also captured in ESG, which S&P views as a credit factor.

Green bond and ESG factors are embedded in how we assess the creditworthiness of municipal borrowers in all sectors.

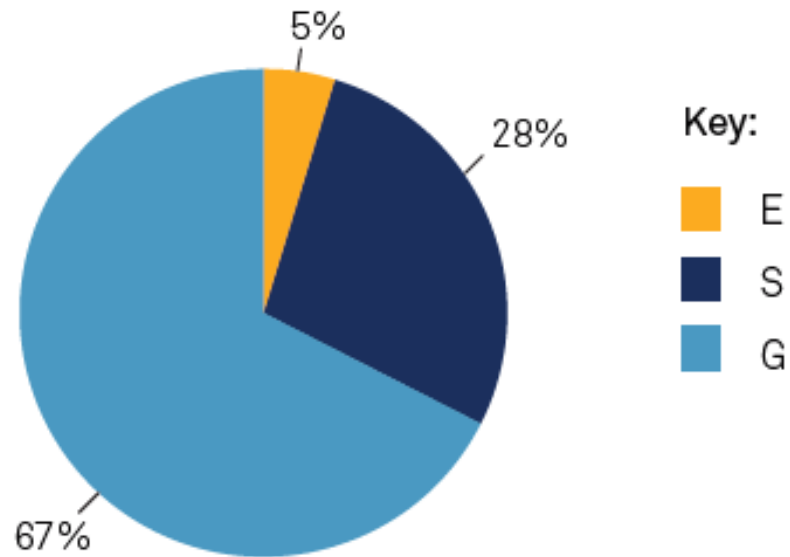
Challenges remain with respect to data and disclosure. However, we anticipate that over time, disclosure from borrowers will converge and increase transparency on Green and ESG factors.



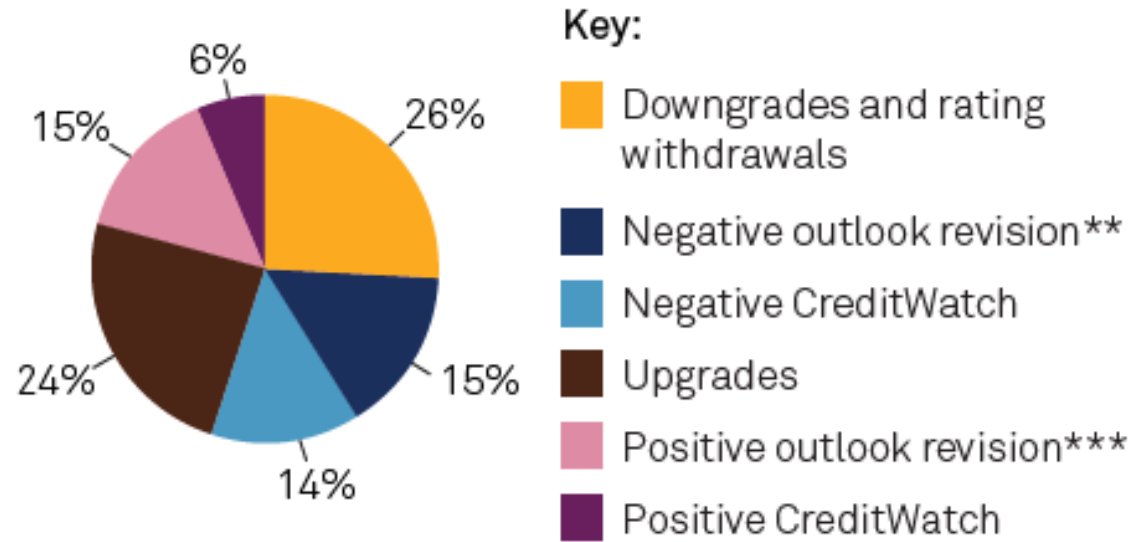
ESG Lookback Study

35% of USPF rating actions in 2017-2018 were associated with at least one ESG driver.

Distribution of ESG Factors



All Ratings Actions: Negative (55%) Versus Positive (45%)

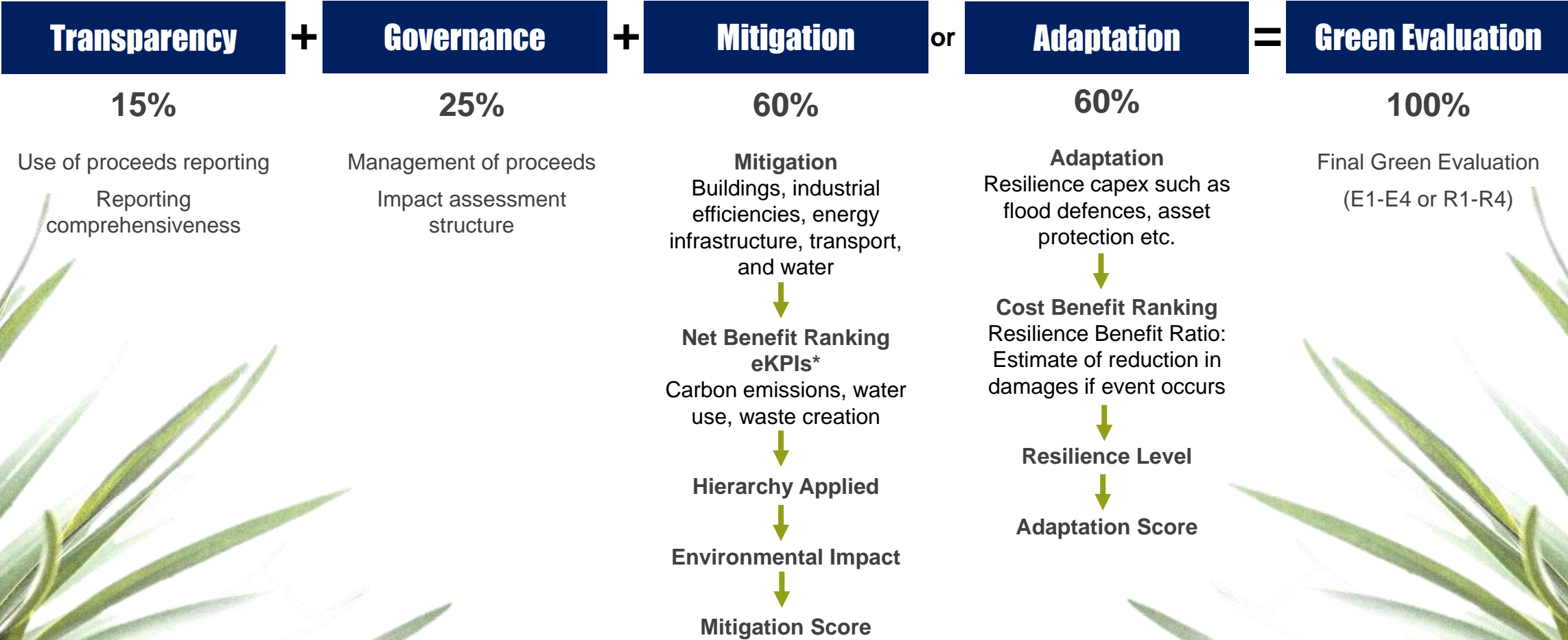


Data courtesy of:

S&P Global
Ratings

Green Evaluation Analytical Approach

S&P Uses a weighted aggregate of three factors:



* eKPI – Environmental Key Performance Indicator

S&P's Full List of Technology Types In Scope

Renewable Energy

Solar PV
Solar thermal
Hydro small (<30mw)
Hydro large (>30mw)
Onshore wind
Offshore wind
Wave & tidal
Landfill gas
Geothermal
Biomass

Transport

Rail (electric and diesel)
High speed rail
Underground urban rail
Overground urban rail
Hybrid vehicles
Electric vehicles
Hydrogen fuel cell vehicles
Electric buses
Diesel buses

Energy Efficiency

Heating and cooling
Electronics
Residential appliances
Office equipment
Commercial food services equipment
Industrial efficiencies:
Aluminium, Cement,
Chemicals, Iron & Steel, Pulp &
Paper

Water

Conservation measures in:
Residential Buildings,
Commercial Buildings,
Industrial Equipment
Smart metering in residential buildings
Reducing water losses in the water distribution network
Water desalination to supply potable municipal water
Recycling wastewater to supply potable municipal water
Recycling wastewater to supply non-potable water for agricultural uses
Recycling wastewater to supply non-potable water for other industries
Wastewater treatment to with no energy recovery
Wastewater treatment with energy recovery

Buildings

New Build: Commercial, Residential
Refurbishment: HVAC, LED Lighting, Wall Insulation, Roof Insulation, Door & Window Insulation

Fossil Fuels

New clean coal (sub critical, super critical, ultra-supercritical and advanced ultra-supercritical)
Coal to gas
Power plant improvements

Nuclear

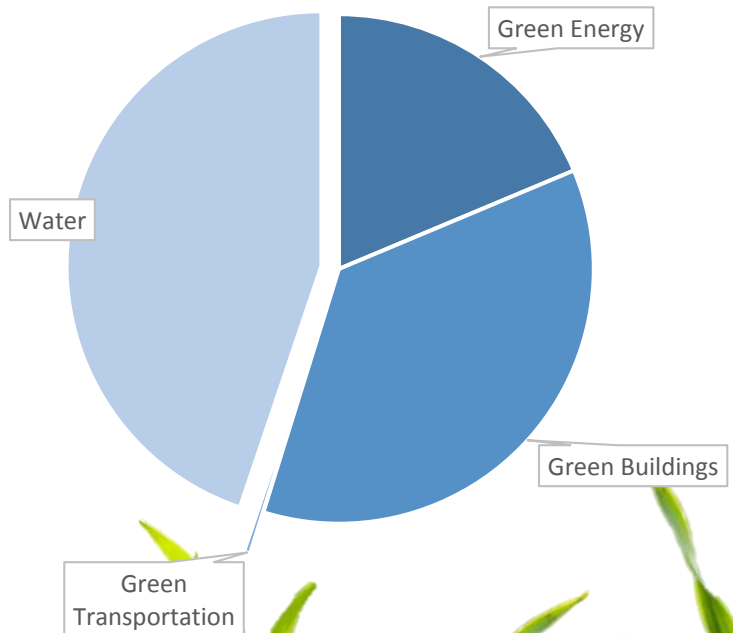
Nuclear (refurb or new)

Green Evaluations

Public Green Evaluations By S&P Global

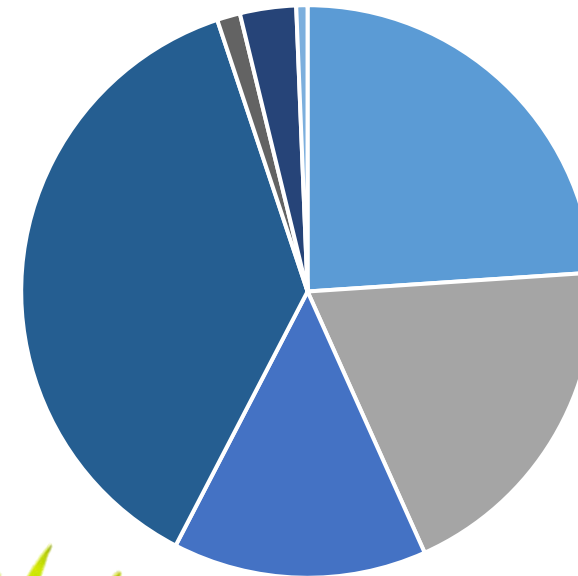
Split by Purpose

Based on Project Cost
(USD millions equivalent)



Split By Country

(USD millions equivalent)



- Mexico
- U.S.A.
- Europe
- U.K.
- China
- Hong Kong
- Latin America

Data courtesy of:

S&P Global
Ratings

S&P Resources

www.spratings.com/greenevaluation

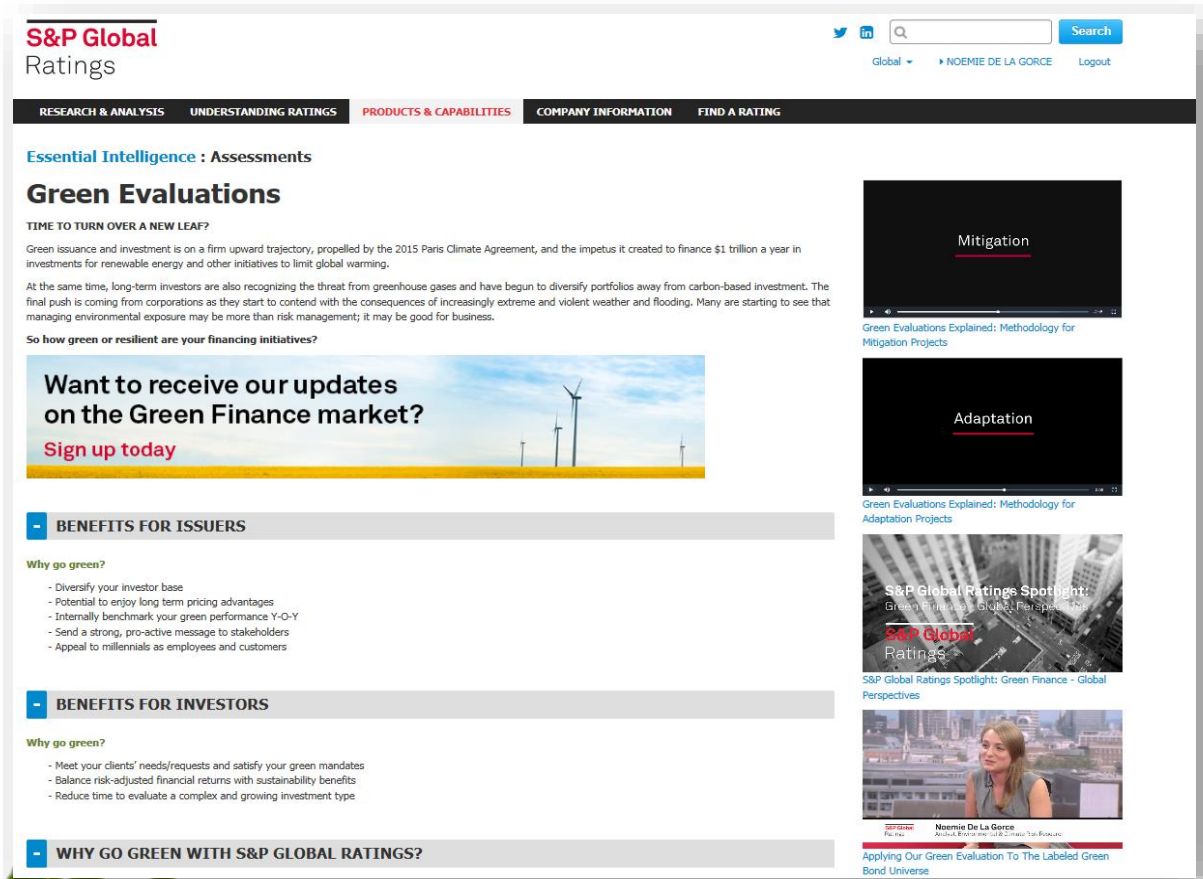
*Untapped Potential:
How the Green Economy is Broadening*
November 5, 2019

The Credit Impact of Water Risk
October 30, 2018

Frequently Asked Questions:
Green Evaluations and Transaction Alignment
with the Green Bond Principles 2018
July 24, 2018

*2018 U.S. Municipal Green Bond & Resiliency
Outlook: Comparing the Self-Labeled Market
with U.S. And Global Peers*
February 28, 2018

Green Evaluation Analytical Approach
April 26, 2017



The screenshot displays the S&P Global Ratings website interface. At the top, the logo 'S&P Global Ratings' is visible alongside social media icons and a search bar. A navigation menu includes 'RESEARCH & ANALYSIS', 'UNDERSTANDING RATINGS', 'PRODUCTS & CAPABILITIES', 'COMPANY INFORMATION', and 'FIND A RATING'. The main content area is titled 'Essential Intelligence : Assessments' and features a prominent 'Green Evaluations' section. This section includes a sub-header 'TIME TO TURN OVER A NEW LEAF?' and introductory text about green issuance and investment trends. A call-to-action banner asks 'Want to receive our updates on the Green Finance market?' with a 'Sign up today' button. Below this, there are three expandable sections: 'BENEFITS FOR ISSUERS', 'BENEFITS FOR INVESTORS', and 'WHY GO GREEN WITH S&P GLOBAL RATINGS?'. Each section lists key points. On the right side, there are three video thumbnails: 'Mitigation', 'Adaptation', and 'S&P Global Ratings Spotlight: Green Finance - Global Perspectives'. The bottom right video thumbnail features Noemie De La Gorce, Analyst Director, and is titled 'Applying Our Green Evaluation To The Labeled Green Bond Universe'.

Part 3: Discussion of Market Status

Presenters

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S&P Global
Ratings



Why are municipal Green Bonds not priced at a premium (i.e., lower yields)?

- Green Bonds offer same security (and rating) and repayment risk as non-Green Bonds
- Green Bond investors have a duty to secure a fair yield
- We need more dedicated Municipal Green Bond Funds!
- Some Green Bonds are deemed “Green Washed” (i.e. not truly Green Bonds)

Why is there a lack of supply of municipal Green Bonds?

- Issuers have limited resources and are hesitant to expend time and public funds unless a clear pricing advantage is shown
- Concerns about expanded project disclosure
- Suppressed new money issuance volume; refunding issues can be green too!

Why issue municipal Green Bonds?

- Green Bond issuers demonstrate initiative and are viewed as proactive, more attuned to investors' needs
- Broader investor interest, arguably, results in a better pricing
 - Green Bonds do attract additional new investors that would otherwise not participate
 - The size of orders can increase among traditional investors with a Green Bond label
- “Free” positive P.R.
- Improved employee/community morale



Stifel
@Stifel

Whether it's ESG or SRI, "investing for good" is becoming more popular, and Millennials and women are a big reason why.



86% of millennials

84% of women

say they are interested in socially responsible investing.

Source: Thomson Reuters ESG Research, "Millennials Say... 2018"

STIFEL

7:56 AM · Jul 10, 2018 · Twitter Web Client

How do municipal Green Bonds trade in the secondary market?

- Very limited trading
- Investors hold on to scarce Green Bonds



Moderated Discussion

- What would you suggest potential issuers focus on to satisfy the demands of Green Bond investors?
- How does a well-developed mitigation, adaptation, resilience strategy affect the way investors and the rating agencies look at an issuer's Green Bond program?

Audience Q&A

It is better to debate a question without settling it than to settling a question without debating it.

Joseph Joubert



Green Bond Market Development Committee Update

David Wooley
*Executive Director of the Center for
Environmental Public Policy*

GOLDMAN SCHOOL
OF
PUBLIC POLICY
UNIVERSITY OF CALIFORNIA BERKELEY



Environmental
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Series Resources

Available Online: <https://www.treasurer.ca.gov/cdiac/webinars/2019/greenbonds/description.asp>

Series Resources

International Capital Market Association (ICMI)

An organization who administers the guidance and governance of the Green Bond Principles (GBP), which are the leading framework globally for the issuance of green, social, and sustainability bonds. Their [available resources](#) are extensive, most applicable to this webinar series include:

- [Green Bond Principles \(GBP\) 2018](#)
Globally leading voluntary process guidelines that recommend transparency and disclosure and promote integrity in the development of the Green Bond market by clarifying the approach for the issuance of a Green Bond.
 - [Guidance Handbook](#), June 2019
A list of FAQs that are, in part, intended to assist green bond market participants with the interpretation of the GBP for the practical application for transactions.
- [Handbook – Harmonized Framework](#), June 2019
Outline of core principles and recommendations for impact reporting in order to provide issuers with reference and guidance for the development of their own reporting and provide core indicators and reporting templates for Energy Efficiency and Renewable Energy Projects.

California State Treasurer

- [Green Bonds, Volume 1: Barriers and Challenges](#)
2017 report outlining the findings of a green bond market participant's discussion to identify key issues affecting market development and consider ways to speed its progress.
- [Green Bonds, Volume 2: Actionable Strategies and Solutions](#)
2018 report, produced in collaboration with the Milken Institute and Environmental Finance, containing concrete and actionable recommendations that could make a thriving green bond market in California and the United States.

Climate Bonds Initiative (CBI)

An international, investor-focused not-for-profit that is the only organization working solely on mobilizing the \$100 trillion bond market for climate change solutions. They produce [market updates](#) as well as many other [reports and resources](#) on the green market. Resources most applicable to this webinar series include:

- [Green Bonds State of the Market 2018](#)
Annual report with a focus on global developments of the international labeled green bond market.
- [Green Bond Market Summary Q1 2019](#)
Quarterly summary of the international labeled green bond market.
- [Growing Green Bond Markets: The Development of Taxonomies to Identify Green Assets](#), March 2019
CBI identified the need to develop consistent approaches for issuers and investors to identify eligible green and sustainable assets. This briefing explores the role of the taxonomies and green definitions in steering capital towards investments in climate-aligned assets.
- [Can US Municipals Scale Up Green Bond Issuance?](#)
A report of a scoping exercise which identified potential US Muni green bond issuers by considering the upcoming bond maturities of climate-aligned municipal entities in key sectors of the Climate Bonds Taxonomy.
- [Green Bond Pricing in the Primary Market: July-December 2018](#)
7th paper in a series monitoring how green bonds perform in the primary markets.
- [Post Issuance Reporting in the Green Bond Market](#), March 2019
CBI's second study on post-issuance reporting in the green bond market, with the aim to understand the level of adoption reporting on the use of proceeds and environmental impact metrics.

Global Green Bond Partnership

An organization that brings together pioneering organizations and institutions working on green bonds to collaborate on efforts will enable and scale green bond issuance by public and private partners in both developed and emerging markets worldwide.

- [Green Bonds Roadmap](#)
A resource for government representatives and others interested in better understanding green bonds. It provides users a basic outline of green bonds and their role in mobilizing capital for climate change action. It is intended to help government officials quickly get oriented to the world of green bonds and provides curated tools and information from organizations around the world that play an active role in the green bonds market.

Governor's Office of Planning and Research / Integrated Climate Adaptation and Resiliency Program (ICARP)

Created the [Adaptation Clearing House](#), which serves as a centralized source of information and resources to assist decision-makers at the state, tribal, regional, and local levels when planning for and implementing climate adaptation and resiliency efforts across California. They have [Tools, Datasets, and Research](#) to support California planners and decision makers. Research most applicable to this webinar series include:

- [Climate Adaptation Finance and Investment in California](#), October 2018
This guide intends to provide a survey of issues, considerations and sources of funding that can help guide strategies and tactics for investing in adaptation and resilience in California.
- [Planning and Investing for a Resilient California](#)
This document provides high level guidance on what future conditions to plan for and how State agencies should approach planning differently in light of a changing climate.

Miscellaneous

- [Green California](#)
Example of impact reporting. Website contains data on the impact of state-owned green buildings and vehicles, including energy usage, water usage, and greenhouse gas emissions.
- [Paying it Forward: The Path Toward Climate-Safe Infrastructure in California](#), September 2018
AB 2800 (Quirk, 2016) mandated that a panel of scientists, registered engineers and architects be convened to help the state of California understand how it can best incorporate forward-looking climate information into the state's infrastructure development and implementation. The panel, titled Climate-Safe Infrastructure Working Group (CSIWG), produced this report to examine how climate change impacts can be included in infrastructure planning, design, and implementation processes. Resources most applicable to this webinar series is [Chapter 8, Funding Infrastructure: Trends, Needs, Challenges and Tools](#).
- [Green Bonds: A Short Term Trend or a New Way to Finance Public Infrastructure](#)
A two-page article that provides an overview of Green Bonds, why Green Bonds should be considered by issuers, the Green Bond Pledge, and the incremental cost of issuing Green Bonds.
- [About Green Bonds](#), MSRB, 2018
Overview of Green Bonds issued by municipal entities and discussion of considerations for investors who may be considering investing in Green Bonds.
- [Financing the Response to Climate Change: The Pricing and Ownership of U.S. Green Bonds](#), October 2018
Authors: Malcolm Baker, Daniel Bergstresser, George Serafeim, Jeffrey Wurgler
Study on the pricing and ownership pattern of Green Bonds. As predicted, they found that green municipal bonds are issued at a premium to otherwise similar ordinary bonds. They also confirm that green bonds, particularly small or essentially risk-free ones, are more closely held than ordinary bonds. These pricing and ownership effects are strongest for bonds that are externally certified as green.



**Webinar
Evaluation**

Upcoming CDIAC Education Programs

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