



MARKET EXPECTATIONS FOR CLIMATE CHANGE DISCLOSURE

CDIAC BOND BUYER PRE-CONFERENCE
SESSION 1 | OCTOBER 26, 2020

SPEAKER INTRODUCTIONS



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CLIMATE-RELATED RISKS



An aerial photograph of a residential neighborhood that has been severely destroyed, likely by a natural disaster such as a hurricane or earthquake. The houses are reduced to rubble, with debris scattered across the yards and streets. The image is used as a background for the text on the left side of the slide.

CLIMATE RISK = PHYSICAL RISK = MATERIAL RISK

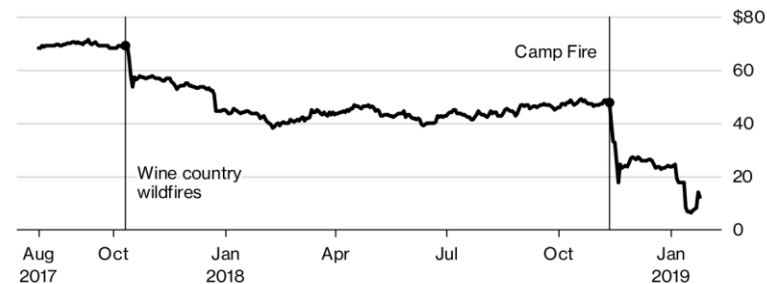
Recognizing that climate change poses an immediate risk to physical infrastructure but also a financial risk to long-term investment stability

PG&E BANKRUPTCY

Fires Burn PG&E

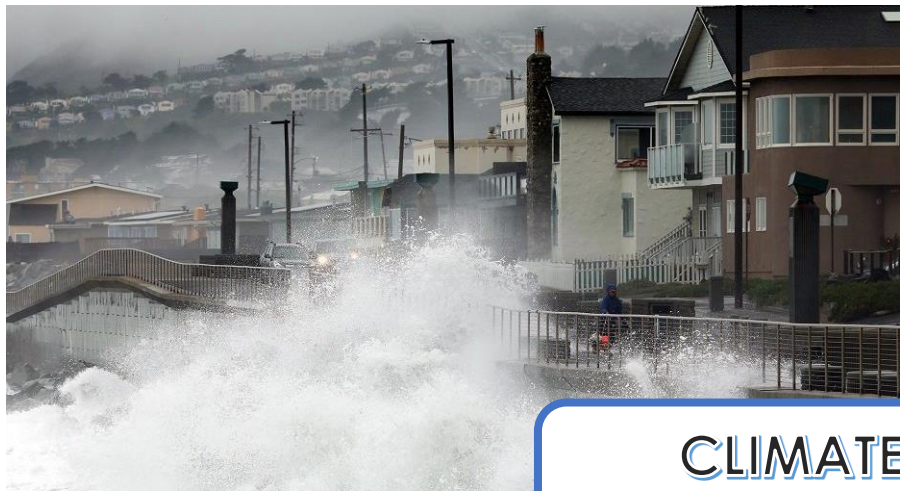
Two years of deadly fires pushed company to bankruptcy

Share price



Source: Bloomberg

Bloomberg



CLIMATE-RELATED INFRASTRUCTURE IMPACTS



State-Owned Property At Risk

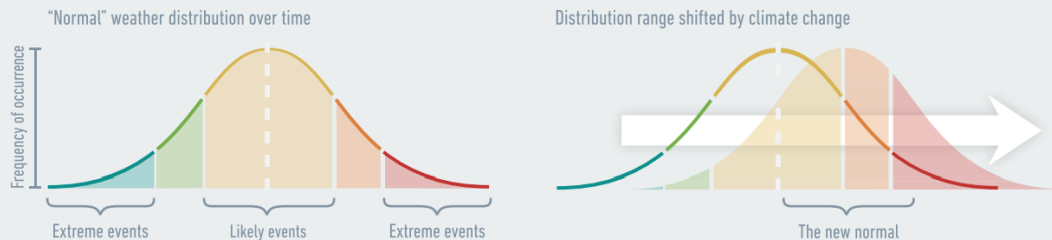
- Schools
- Freeways, highways, roads
- Prisons
- Government buildings
- Caltrans fleet



Defining Risk

- Accelerated sea level rise
- Changes in water availability
- Declines in agriculture productivity
- Increases in electricity demand & cost
- Heat-related mortality
- Decreases in labor productivity

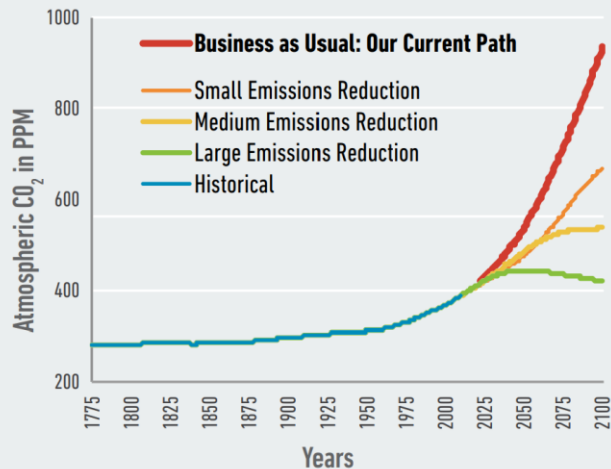
Figure 1: How Extreme Weather Events Become the New Normal



Human society is structured around “normal” weather, with some days hotter than average and some colder. At the distant “tails” are extreme events such as catastrophic weather. Climate change shifts the entire distribution curve to the right: old extremes become the new normal, new extremes emerge, and the process continues until we take action.

Source: Risky Business Project

Figure 8: Global Emissions Scenarios



Our research examines the risks of the U.S. continuing on its current path, or “business as usual.” Alternate pathways that include investments in policy and other efforts to mitigate climate change through lowering carbon emissions could significantly reduce these risks.

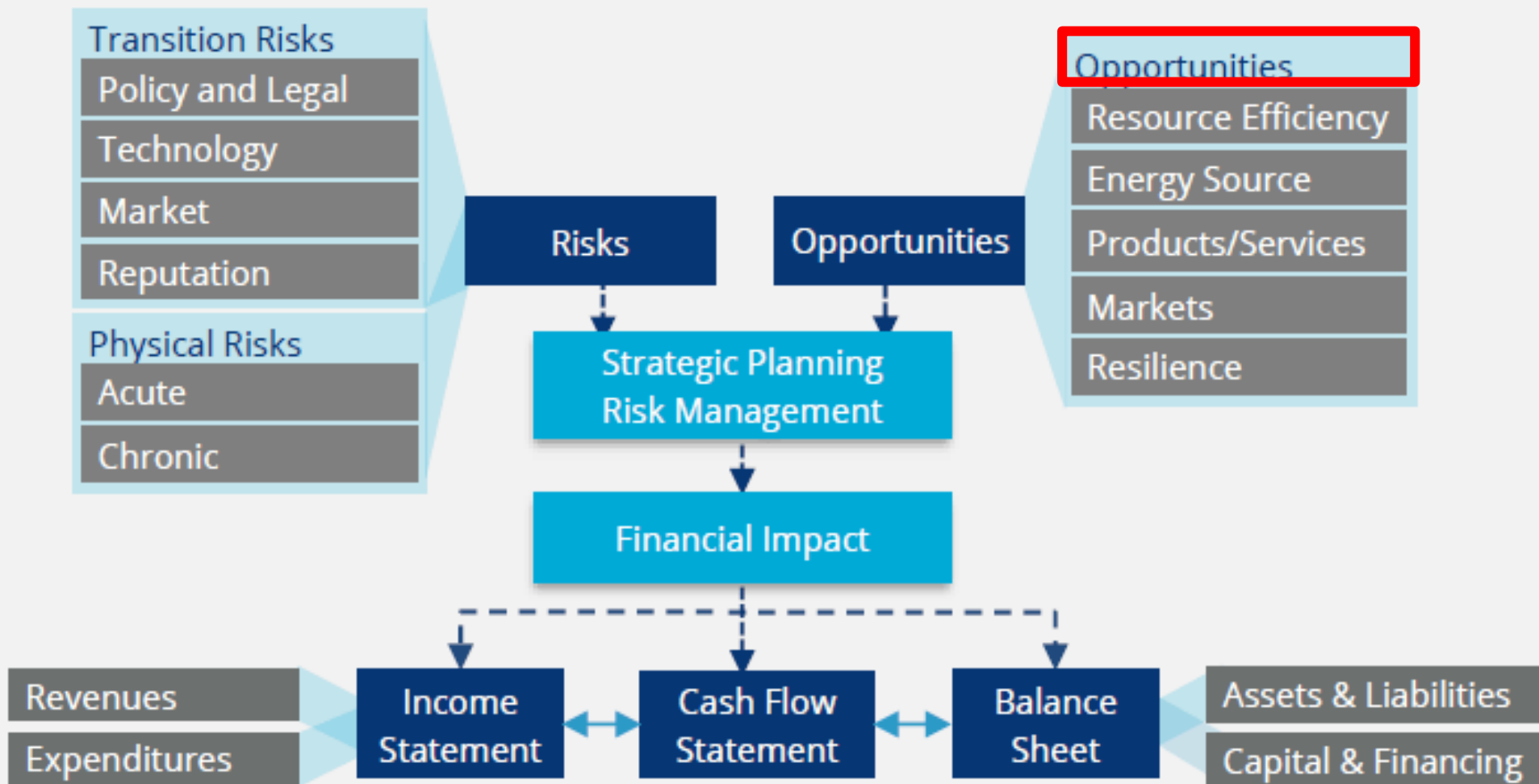
Original data source, adapted: Meinshausen and others 2011¹⁴²

**“Climate
Risk is
Investment
Risk...”**



Every
government,
company,
and
shareholder
must confront
climate
change.”

-Larry Fink,
*Chairman and CEO
of BlackRock*, in his
2020 letter to CEOs



Core Elements of Recommended Climate-Related Financial Disclosures



Governance

The organization's governance around climate-related risks and opportunities

Strategy

The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning

Risk Management

The processes used by the organization to identify, assess, and manage climate-related risks

Metrics and Targets

The metrics and targets used to assess and manage relevant climate-related risks and opportunities

WORLD ECONOMIC FORUM

A GLOBAL
PERSPECTIVE

Moody's
INVESTORS SERVICE



427

Four Twenty Seven
AN AFFILIATE OF MOODY'S



European
Investment
Bank

BLACKROCK

 Microsoft

Executive Order N-19-19

Mitigating the impacts of
climate change while
building a sustainable,
inclusive economy





GOALS

FOR CLIMATE RISK & SUSTAINABLE INVESTMENT

- Improve Industry Disclosure and Reporting Practices
- Engage in Climate-Conscious Investments



A photograph of two workers in orange safety vests installing solar panels on a wooden roof. The scene is set against a clear blue sky. The solar panels are dark blue with white grid lines. In the background, there are orange buckets and other construction materials on the roof.

California Climate Investment Framework

Managing the financial risks of climate change while
investing in new, sustainable technologies

State's 3 Largest Pension Funds - \$700B

Integrating climate risk
strategies into a statewide
approach for future
investment & long-term
security



Current Efforts by Pension Entities			
	CalPERS	CalSTRS	UC
Listed as Leaders in Responsible Asset Allocation in 2019	✓	✓	✓
Signatory of U.N. Principles for Responsible Investment	✓	✓	✓
Published or signed onto statements on environmental sustainability in an investment context	✓	✓	✓
Included language related to climate change in official investment policy	✓	✓	✓
Produces regular climate-related risk reports	✓	✓	✓
Support TCFD disclosure standards	✓	✓	✓
Support SASB disclosure standards	✓	✓	
Discloses carbon footprint of investment portfolio	✓	✓	✓
Investor for Climate Action 100+	✓	✓	✓
Steering Committee member of Climate Action 100+	✓		
Members of Ceres Investor Network	✓	✓	✓
Use stakeholder status to engage with companies and encourage exploring climate risk	✓	✓	✓
Invests in sustainable portfolios	✓	✓	✓



California Climate Risk Disclosure Work Group

A public-private
partnership to
develop common
climate risk
disclosure
standards

A background image showing construction workers in orange safety gear and hard hats working on a large-scale construction project. They are standing on a dense grid of steel reinforcement bars (rebar) laid out on a flat surface, likely preparing for a concrete pour. In the background, a tall construction crane is visible against a clear sky. The overall scene is industrial and focused on infrastructure development.

CA Joins Coalition for Climate Resilient Investment

“

California is putting our money where our values are. With this new framework, we're leveraging our state's investment power to reduce financial risk while capturing the enormous opportunity and innovation offered by the transition to a clean economy.”

Governor Gavin Newsom



Climate Catalyst Revolving Loan Fund



Driving private investment in climate smart technology

- Nurturing climate industries
- Connecting projects to capital
- Promoting job growth
- Streamlining government



THANK YOU!

Kate.Gordon@opr.ca.gov

<https://opr.ca.gov/>



Bond Buyer - CDIAC

ESG Data and Disclosure

October 26, 2020



Better Data Can Highlight Climate Exposure



Agenda

1. Explain the Value of Environmental Data for Physical Risk
2. What is the Underlying Data
3. Highlights
4. Focus on Acute Risk Analysis

Explore Potential Environmental Exposure

- Challenges remain with respect to data and disclosure; better data could provide an enhanced foundation for understanding physical climate risks.
- The market continues to seek greater transparency and standardization with respect to green and ESG related risks and opportunities.
- ESG risks have always been a part of our analysis but we have increased our focus – just as the ESG risks have increased their frequency.
- Our Criteria do incorporate environmental risks as they impact credit as outlined in publications including ESG ‘Through the lens’ and ‘How local government criteria weather climate’ commentaries. Physical climate risks are incorporated into our ratings when we view them as certain and material.

Climate Hazards

- **Chronic risks** - manifesting through long-term shifts in climate patterns, such as higher temperatures that may cause heatwaves, sea level rise and/or droughts.
- **Acute risks** - event-driven, including increased severity and frequency of extreme weather events, such as hurricanes and/or floods.

Climate Hazard	Indicator	Definition
Water Stress	Water Stress Index	Projected future ratio of water withdrawals to total renewable water supply in a given area.
Flood	Flood Risk Index	Index representing the risk of flooding at a given location in a given year.
Heatwave	Heat Wave Days	The occurrence of periods of extreme heat relative to local climatic conditions, measured based on the Excess Heat Factor (three-day average temperature).
Cold wave	Cold Wave Days	The occurrence of extreme cold relative to local climatic conditions, measured based on the Excess Cold Factor (three-day average temperature).
Hurricane	Hurricane Index	Composite index representing the historical incidence and severity/strength of hurricane, typhoon or cyclone activity at a given location, weighted in favour of recent events.
Wildfire	Burnt Area	Risk of wildfire occurrence by location based on the area of burnt vegetation (fuel aridity).
Sea Level Rise	Inundation Depth	The extent and depth of coastal inundation due to sea level rise at a given location in a given year.

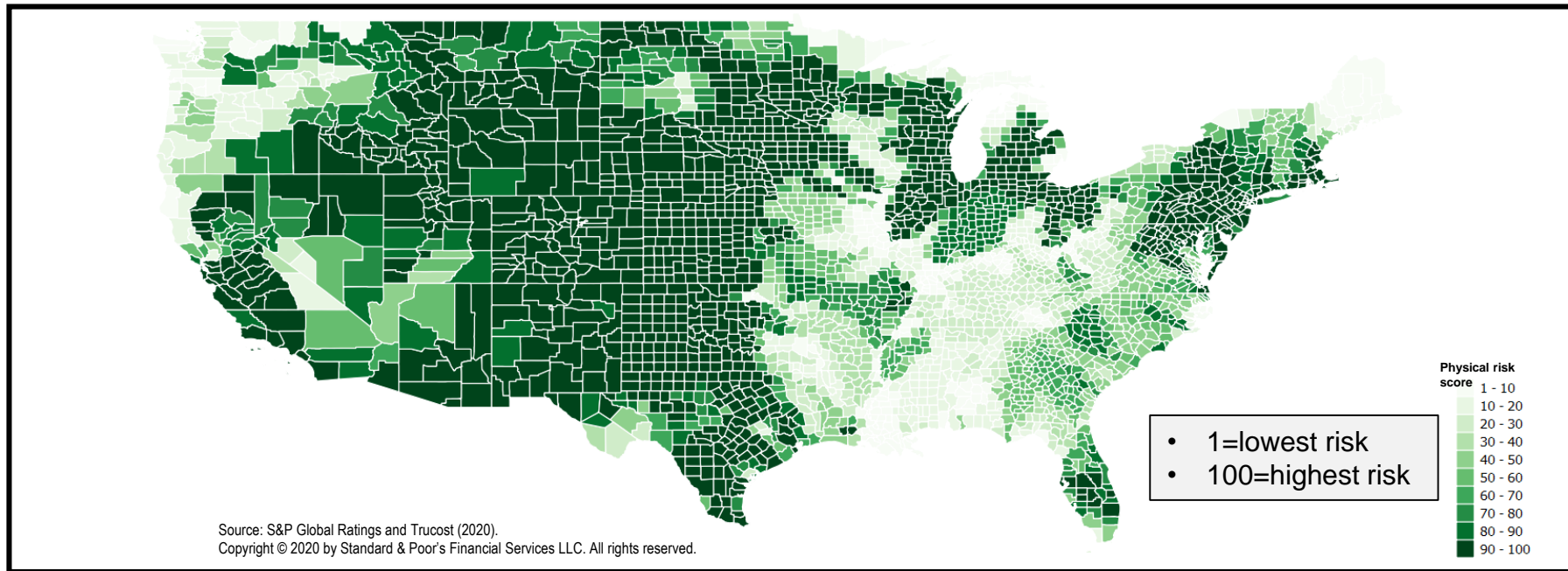
Source: Trucost (2020). Current as at September 2020.

What Do The Physical Risk Scores Mean?

- **DO:** Climate hazards are mapped and normalized scores are assigned from 1 (lowest risk) to 100 (highest risk) representing exposure of any given location to different climate hazards, relative to global conditions. Our analysis calculated the average for each county.
- **DO:** Provide relative physical risk scores for each climate hazard as well as a composite score for multiple hazards and for various RCPs or scenarios.
- **DO:** Provide individual metric conversions for some risks. For example:
 - Heat wave risk is calculated as the number of heat wave days per year where a 1-point change in the physical risk score is equivalent to an increase/decrease of 1.3 heat wave days, and
 - Cold wave risk is calculated as the number of cold wave days per year where a 1-point change in the physical risk score is equivalent to an increase/decrease of 0.2 cold wave days.
- **DO NOT:** The scores do not take into account adaptation efforts that entities have implemented or may implement in the future.
- **DO:** Provide a basis for conversation and understanding about the range of possible exposures that USPF entities face in the upcoming decades using multiple scenarios
- **DO:** Highlight potential increase in exposure over time which facilitates dialogue and learning about how entities consider different climate hazards and what measures they have in place, or not, to reduce risks.

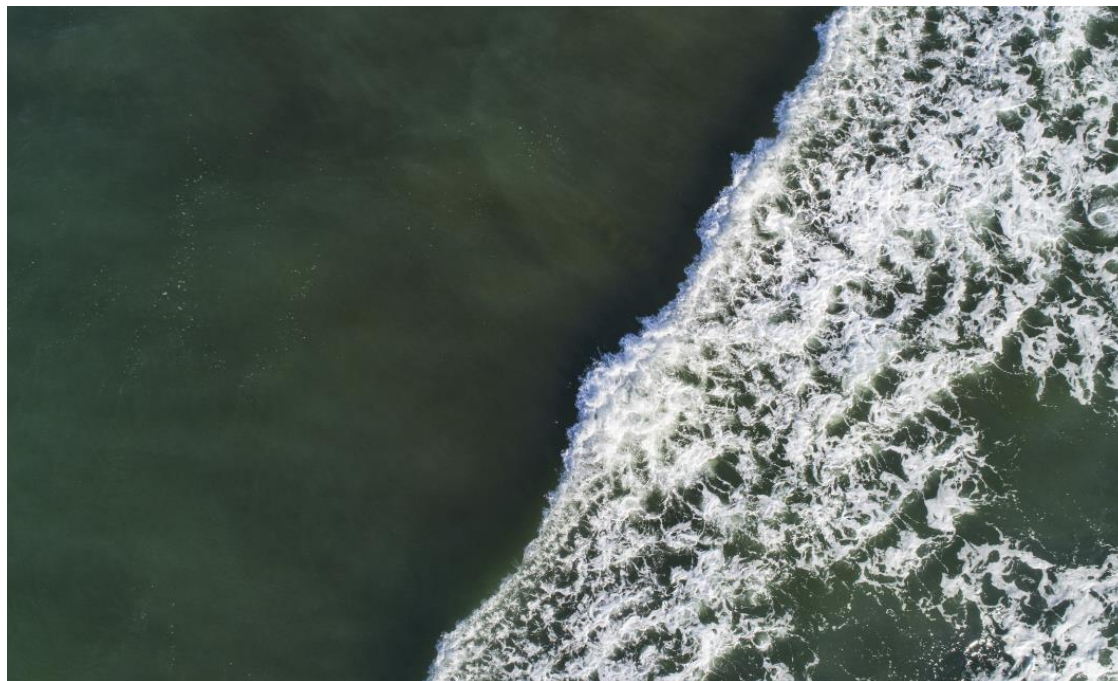
Water Stress Scores Across The U.S. Under RCP8.5 In 2050

- A greater water stress score means that water demand is likely to outstrip the renewable supply and so water resources could deplete over time.
- 38% of US counties score 100 (the maximum risk score on our scale), whilst half of counties have high risk with scores of 70 or above in 2050 under RCP4.5 and RCP8.5.



Value Add to Analytics- Water Stress Example


- Can provide planning insights for **Local Governments** (*over 30 years*) as they build out their urban plans, growth and school district planning. **Not just a utilities issue.**
- **Constraints on water** can **constrain growth**, thus school enrollment and economic development.
- While counties in California have been coping with water stress for decades, counties in Texas, which are among the fastest-growing nationally, show the greatest **change** in water stress over the next 30 years posing a challenge for economic development and municipal infrastructure planning if these scenarios come to pass and are not address through either environmental or financial planning.




The Role of E data in Analysis

- Creditworthiness can weaken when environmental risks are material and not, in our view, mitigated by other credit factors such as capital and financial planning and coordination with other government entities.
- Enhanced analytics can provide greater transparency for market participants to identify and analyze potential longer-term risks and facilitate a dialogue with entities that are potentially exposed across USPF in the following ways:

Local Government Example

	Institutional framework	10	➔	<ul style="list-style-type: none">• Ongoing analysis of the adequacy of the entities' planning and response to growing environmental threats, including adaptation and mitigation plans, affecting financial and operating management across a variety of municipal asset classes;• The potential long-term economic and demographic consequences, including the impact on tax bases;• The adequacy of reserves or financial capital to respond to potentially increasingly volatile environmental conditions; and• The potential impact on balance sheets as a means for financing adaptation and mitigation projects.
	Economy	30		
	Management	20		
	Liquidity	10		
	Budgetary performance	10		
		%		
		Budgetary flexibility	10	
			%	
		Debt & contingent liabilities	10	
			%	



Considerations

Service balance:

Service provision and investment in adaptation projects

Issuer opportunity:

Increased transparency allows issuers to demonstrate the benefits of existing or planned adaptation actions.



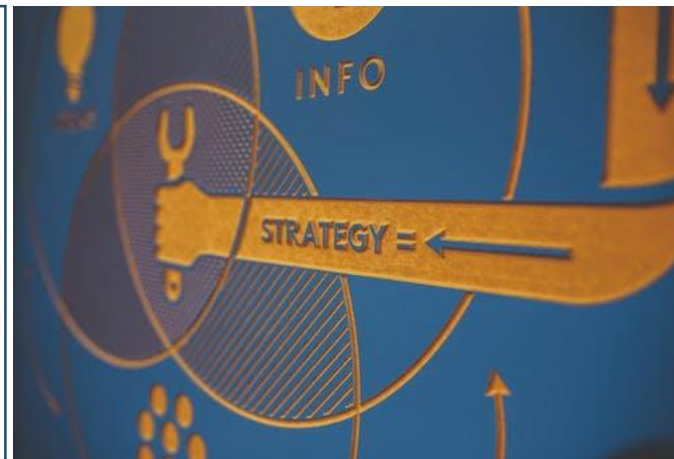
Diverse issuers in USPF will likely lead to a consideration of a variety of data sources, including enhanced analytics related to physical risks

Acute Risk: How We Address Emergency Evolving Credit Quality

We look at credits individually to assess the damage and potential rating impact.

Factors that help support credit quality during a disaster:

- **Liquidity and/or reserves**
- **Availability of federal and state emergency assistance**
- **FEMA & Insurance**
- **Advance planning** *Issuers that have contingency plans for major environmental (or other) risks are better able to respond in a crisis, in terms of liquidity as well as deployment of resources.*



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Evaluating Climate Risk in Muni Bonds

CDIAC Preconference Session 1:

Market Expectation for Climate Change Disclosure

October 2020

Sarah Wilson

Senior Director, Responsible Investing, Nuveen

Responsible Investing in Munis at Nuveen

ESG Integration



~ 28,000 municipal issuers receive a **proprietary data-driven ESG score**, which is accessible by all Nuveen muni analysts and PMs

Engagement



Nuveen is an active member of industry working groups seeking to fill ESG disclosure gaps among municipal issuers and drive best practices

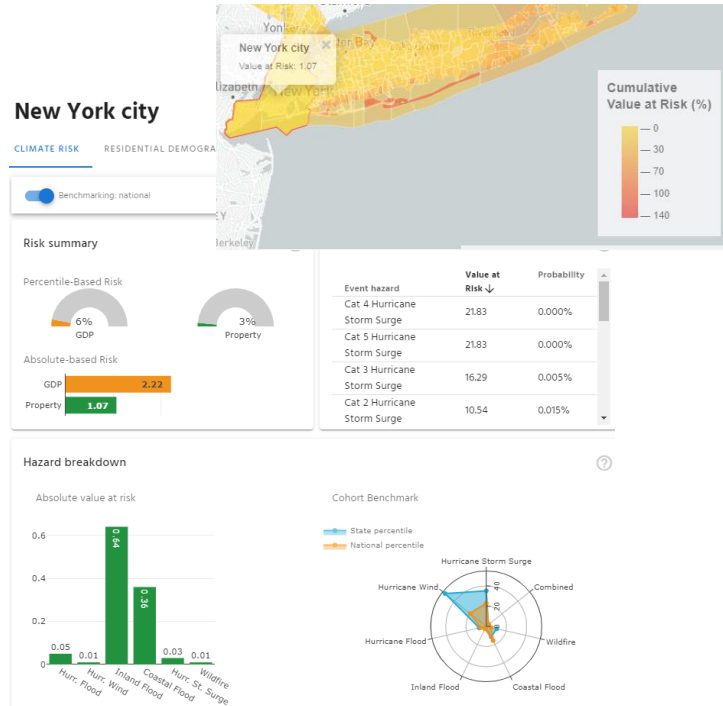
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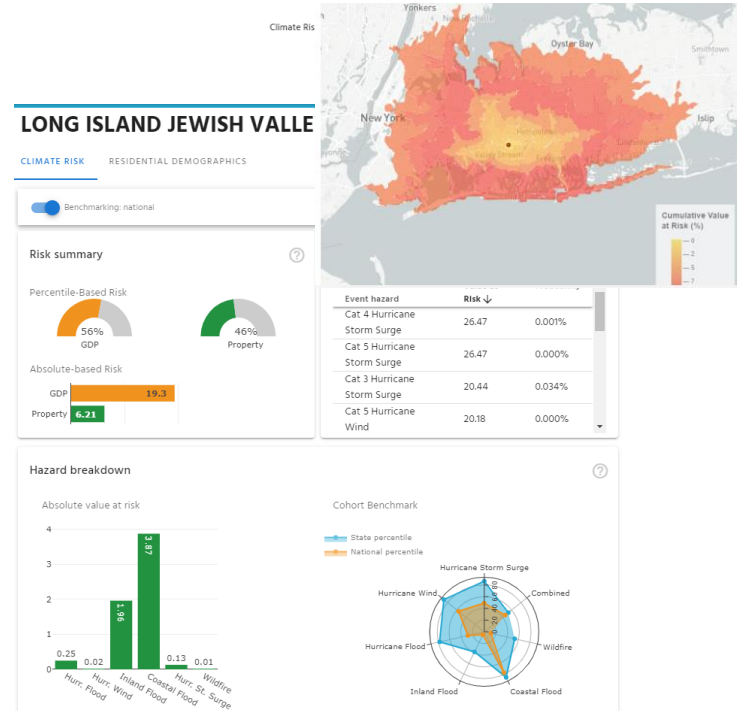
Nuveen's ESG Muni separate account strategy includes securities that have positive outcomes aligned with the SDGs

Climate Value at Risk Muni Data: RisQ

Geographic boundaries (city)



Point location (hospital)



Climate Disclosure Suggestions for Issuers

Physical and Transition Risk

Address exposure to both physical risk (from increasingly severe climate hazards) and transition risk (from the shift to a low carbon economy).

Mitigation and Adaptation Strategies

Describe any climate mitigation and adaptation strategies in place, including costs if known and any key dependencies such as the availability of property & casualty insurance or FEMA disaster relief funding

Material Costs from Past Climate Events

Disclose material costs associated with any past hazards or natural disasters projected to become more frequent in a changing climate (e.g. inland and coastal flooding, wildfires, hurricanes, droughts)



Consider CDP disclosure to reach more investors by using a standard platform

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Morgan Stanley



Climate Change Disclosure

CDIAC Conference

October 26, 2020

Morgan Stanley

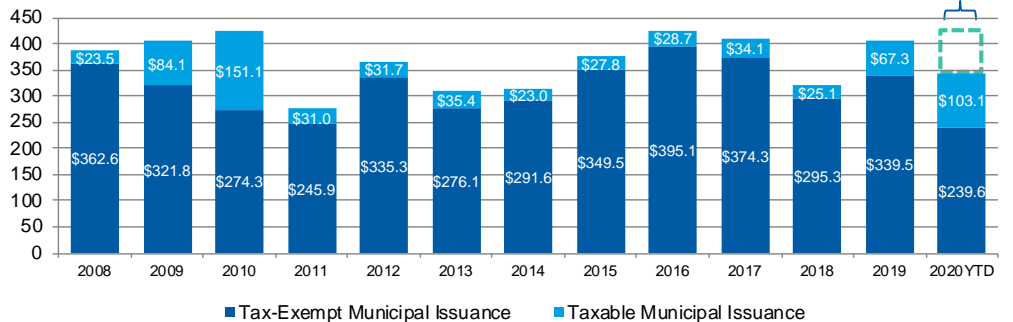
Municipal Market Issuance

The number of transactions using fewer ratings has increased over time

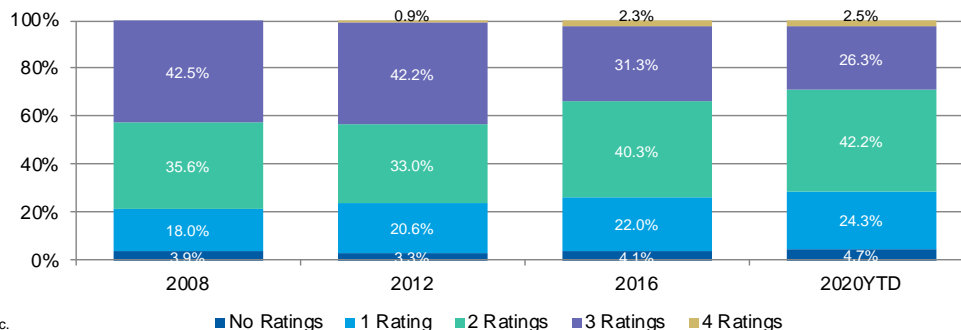
- Municipal issuance has ranged from \$277 billion to \$425 billion annually
- On an annualized basis, volume in 2020 would be \$439 billion, exceeding the prior peak of \$425 billion during 2010, when BABs issuance peaked

Annual Municipal Issuance

(\$ in Billions)



% of Newly-Issued Par, by Number of Ratings



Source: SDC Platinum, Municipal Market Analytics, Inc.



Principles Guiding Disclosure from the Perspective of an Underwriter

Climate change disclosure can be enhanced using these same principles

- **Underwriter serves as intermediary between investors and issuer**

- Beyond strict legal obligations concerning anti-fraud and requirements to disclose material information, underwriter may suggest incorporating information that investors seek to make their investment decisions
- Based on experience and questions fielded from investors in prior, similar transactions

- **Institutional investors are focused on long-term credit quality for long-term bonds**

- Issuer may get questions on long-term planning, capital improvement program, and disaster response
- Reserve policies and abilities to withstand negative shocks could also be a focus area
- Opportunity for issuer to control the narrative and answer investor questions

- **Climate change disclosure will vary based on type of borrower, bond security, asset being financed**

- Are bonds secured by assets being financed? If so, is asset at risk due to sea level rise, extreme heat, flooding or wildfire?
- How might revenues of issuer be impacted? (e.g. What is reliance on property tax and how significant could impacts be to property tax?)
- Could repair or replacement of assets cause significant expenditures in the future?
- What are potential impacts on operational expenses of issuer?

- **Leverage other parts of organization and other public documents**

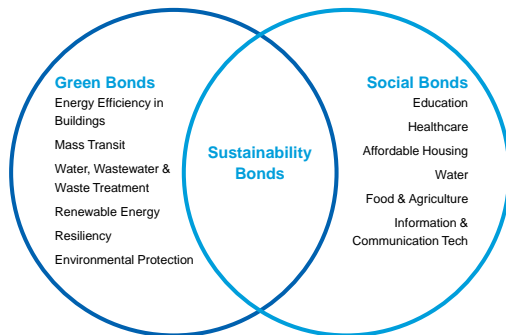
- Many issuers may have other departments or plans that more specifically focus on these areas or portions of these areas, encompassing public works, sustainability, and disaster response
- Regional JPAs and partners may also be leveraged for plans and resources

Morgan Stanley

Continued and Growing Investor Interest in Tax-Exempt Green / Sustainability / Social Bonds Presents an Opportunity

Implications of Green or Sustainability Bond Designation on Climate Change Disclosure



Green, Social and Sustainability Bond Overlap



United Nations Sustainability Development Goals (“SDGs”)



Examples of Mapping of Selected GBP and SBP Project Categories to the SDGs:

SDG	GBP Category	SBP Category	Example Indicator
	<ul style="list-style-type: none"> Sustainable Water Sustainable Wastewater 	<ul style="list-style-type: none"> Affordable basic infrastructure (e.g. clean drinking water, sewers, sanitation, transport, energy) 	<ul style="list-style-type: none"> Sustainable infrastructure for clean and/or drinking water Wastewater treatment Sustainable urban drainage systems and river training Flooding mitigation
	<ul style="list-style-type: none"> Clean Transport Renewable Energy Terrestrial and Aquatic Biodiversity Conservation Pollution Prevention and Control Green Buildings 	<ul style="list-style-type: none"> Affordable Housing Affordable Basic Infrastructure Socioeconomic Advancement and Empowerment 	<ul style="list-style-type: none"> Inadequate housing Convenient access to public transport



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APPENDIX

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PANEL DISCUSSION



THE STATE OF CLIMATE CHANGE DISCLOSURE: ISSUER APPROACHES AND PRACTICES

CDIAC BOND BUYER PRE-CONFERENCE
SESSION 2 | ORIGINALLY AIRED: OCTOBER 26, 2020

SPEAKER INTRODUCTIONS



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Sustainable Infrastructure Manager,
CDP North America



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City of San Diego



MICHAEL BROWN

Environmental Finance
Manager,
San Francisco PUC



CLIMATE CHANGE & DISCLOSURE THE LEGAL FOUNDATION

RUDY SALO | PARTNER | NIXON PEABODY, LLP



What will I discuss today?

- The applicable Federal securities laws that apply to issuer's disclosure documents
- The Securities Exchange Commission's position on Climate Change disclosure
- Where the Municipal Market is regarding Climate Change Disclosure



- ***The only Federal securities laws to which the muni issuers are subject are the Federal antifraud laws.***
 - ☐ Unlike corporate issuers, the SEC cannot tell Issuers what to put in disclosure or require them to obtain SEC approval.
- ***The Federal antifraud laws require that:***
 - ☐ Issuers use reasonable care to ensure.....
 - ☐ That all of the information Issuers prepare in connection with bond offerings.....
 - ✓ Is “materially” accurate....and
 - ✓ Does not omit a “material” fact that makes that information misleading.



What Federal Securities Apply?

The Two Applicable Federal Securities Law Provisions

- ***Rule 10b-5***
 - The responsibility must be “scienter” which requires a finding of knowledge or recklessness.
 - Individual bondholders may bring a Rule 10b-5 claim if they have suffered damages
- ***Section 17(a)(2)***
 - The responsibility can be merely negligence.
 - Only the SEC can bring an action for a Section 17(a)(2) violation
 - Must be a finding that the statement was made to obtain money or property.



How does securities fraud differ from other kinds of fraud?

- ***Not just misstatements but also omissions***

- Evaluates the totality of the statements and considers not just whether it is accurate but also if it is misleading.

- **What is material?**

- Any fact a reasonable investor would consider to be important in making an investment decision.
- Objective standard.
- Forward-looking trends can be material—not just historical information.
- Can look very different in retrospect than at the time!



What's the SEC's Position on Climate Change?

- **2010** SEC published interpretative guidance to assist public companies in preparing disclosure related to Climate Change.
- The interpretive release was intended for companies to consider climate change and its consequences
- Effects of climate change on severity of weather, sea levels, arability of farmland, and water availability and quality have the potential to affect a registrant's operation and results
- Registrants whose businesses may be vulnerable to severe weather or climate related events should consider disclosing material risks of, or consequences from, such events in their publicly filed disclosure documents



What is the State of Climate Change Disclosure in the Muni Market?

- **2018**: lack of climate change disclosure highlighted by ExxonMobil litigation against California issuers in their own disclosures as a counterattack for suit they filed against ExxonMobil for future damages from sea-level rise and coastal flooding due to greenhouse gas emissions from fossil fuels
 - Prompted public agencies to review and disclose their climate change risk in their offering documents
- **2019**: Increase in Climate Change Disclosure
- **2020**: No Standard/Boilerplate: Recent CDIAC Report on Climate Change disclosure found disclosure varies widely from ZERO to very robust



Sample Climate Change Risk Factor

- Numerous scientific studies on global climate change show that, among other effects on the global ecosystem, sea levels will rise, extreme temperatures will become more common, and extreme weather events, including, but not limited to, wildfires, will become more frequent as a result of increasing global temperatures attributable to atmospheric pollution. For example, the Fourth National Climate Assessment, published by the U.S. Global Change Research Program, in November 2018 (NCA4) finds that more frequent and intense extreme weather and climate-related events, as well as changes in average climate conditions, are expected to continue to damage infrastructure, ecosystems and social systems over the next 25 to 100 years. Sea level rise may particularly impact coastal areas throughout the District. The District cannot predict what impact climate change will have on Sales Tax Revenues or the Project's system in the future



Impacts of Climate Change on Issuers

- **The number of natural disasters costing at least \$1 billion has increased since 1980**
- As climate change impacts become more frequent and intense, state and local governments are facing mounting infrastructure-related mitigation, adaption, and resiliency planning costs
- **September 2020**: Charles Schwab article noted no issuer rated by Moody's has defaulted on its bonds due to a natural disaster.
 - Haven't seen yields rise across the board following past natural disasters.
 - Issuers with smaller tax or revenue bases are more at risk compared to issuers with broad revenue bases, like states.



CLIMATE CHANGE DISCLOSURE AMONG CALIFORNIA ENTERPRISE ISSUERS

KELLY JOY | SENIOR RESEARCH SPECIALIST | CDIAC



— CDIAC RESEARCH STUDY —

To what extent are initial disclosure practices among enterprise revenue issuers accounting for risks of climate change?

Do practices vary based on factors such as issuance size, debt purpose, geography, etc.?



— RESEARCH QUESTION BREAKDOWN —

To what extent are initial disclosure practices among enterprise revenue issuers accounting for **risks of climate change**? The study accounted for potential **physical** and **transition** risks of climate change.



PHYSICAL: Risks due to environmental effects attributed to climate change such as sea-level rise, flooding, wildfires, severe drought, extreme weather, etc.



TRANSITION: Potential costs and other risks due to increased climate-policy regulation, changes in technology, and associated liabilities.

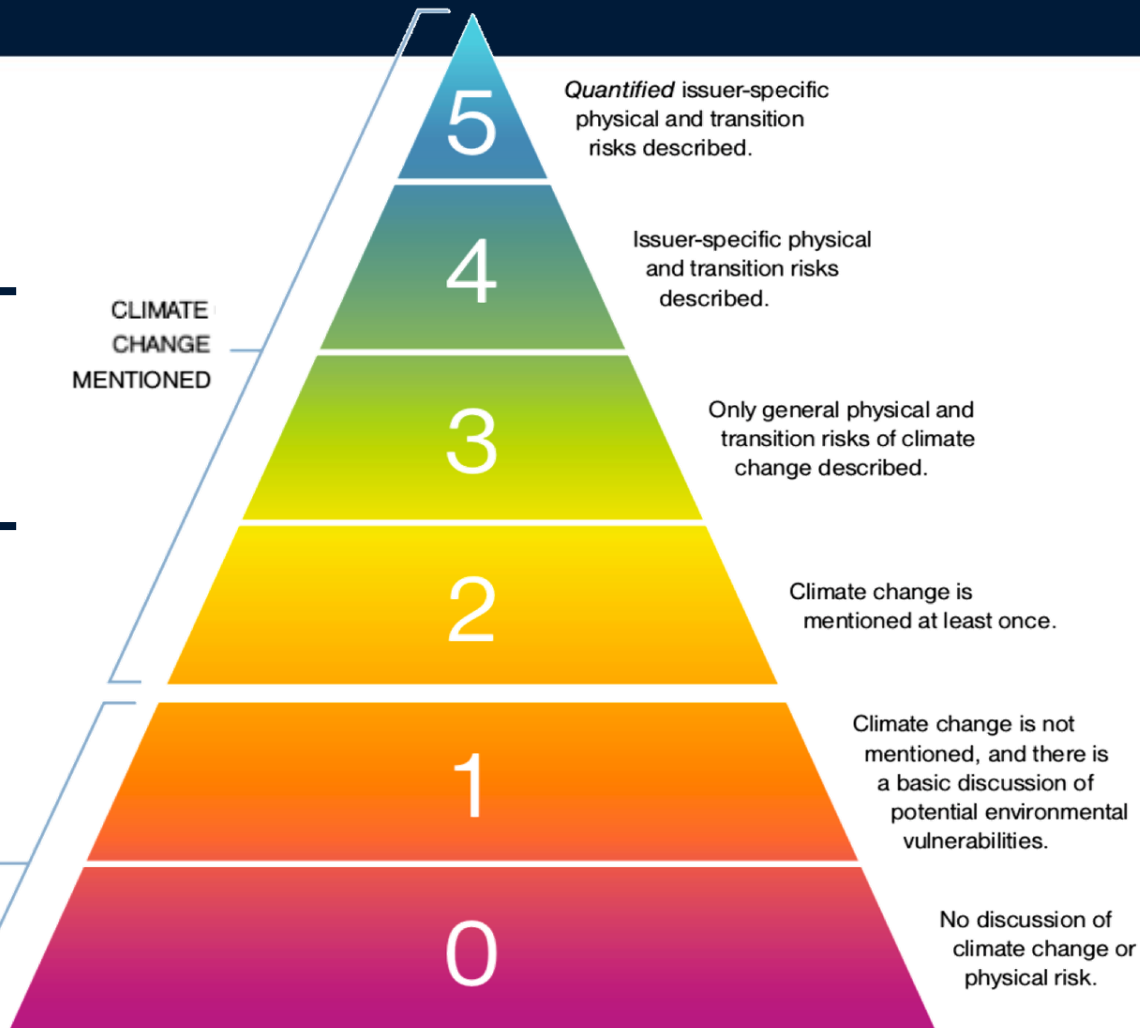
SCORES

IN THE CDIAC RUBRIC

97% discussed vulnerabilities
linked with climate change.

CLIMATE CHANGE
NOT MENTIONED

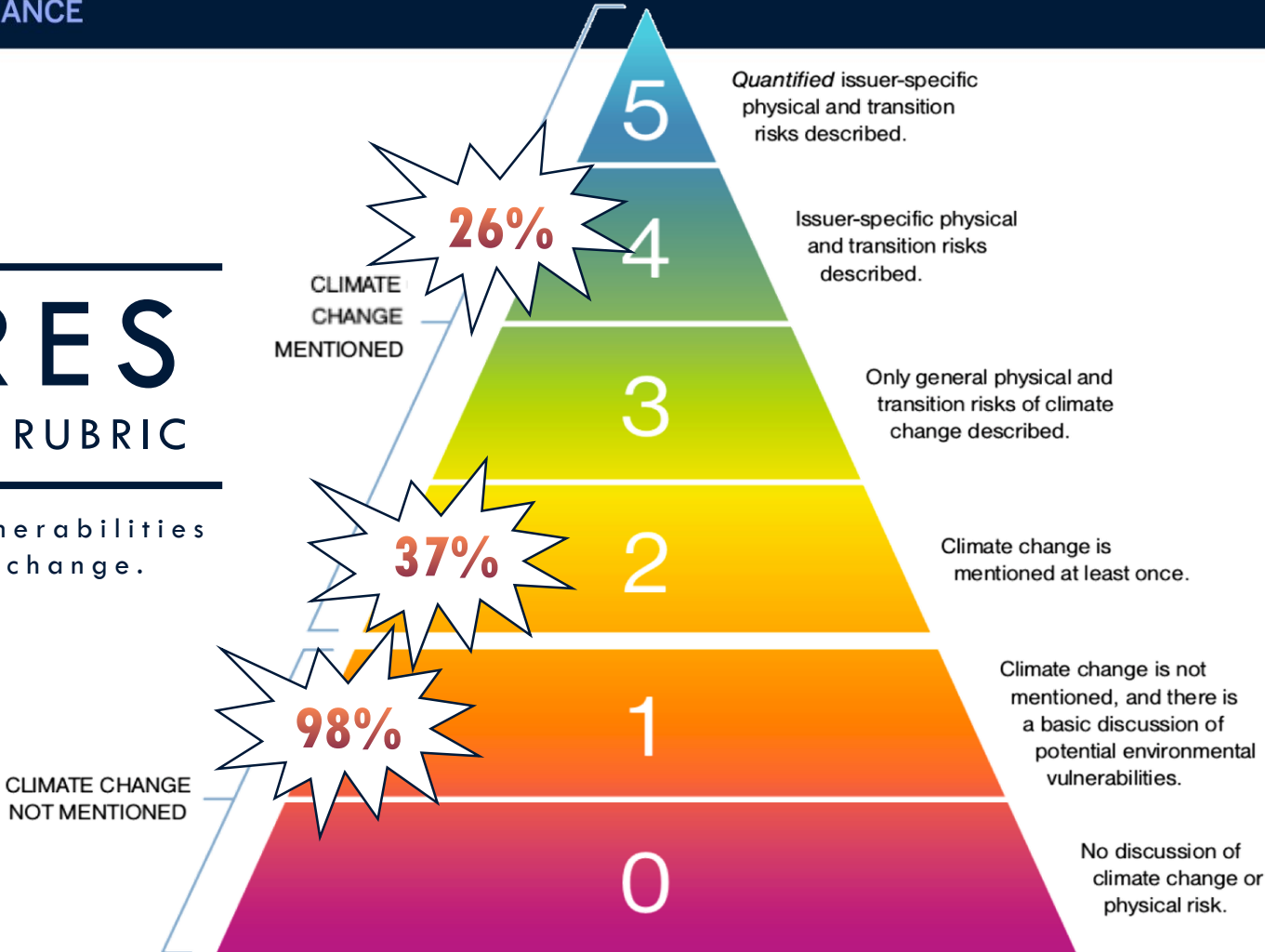
CLIMATE
CHANGE
MENTIONED





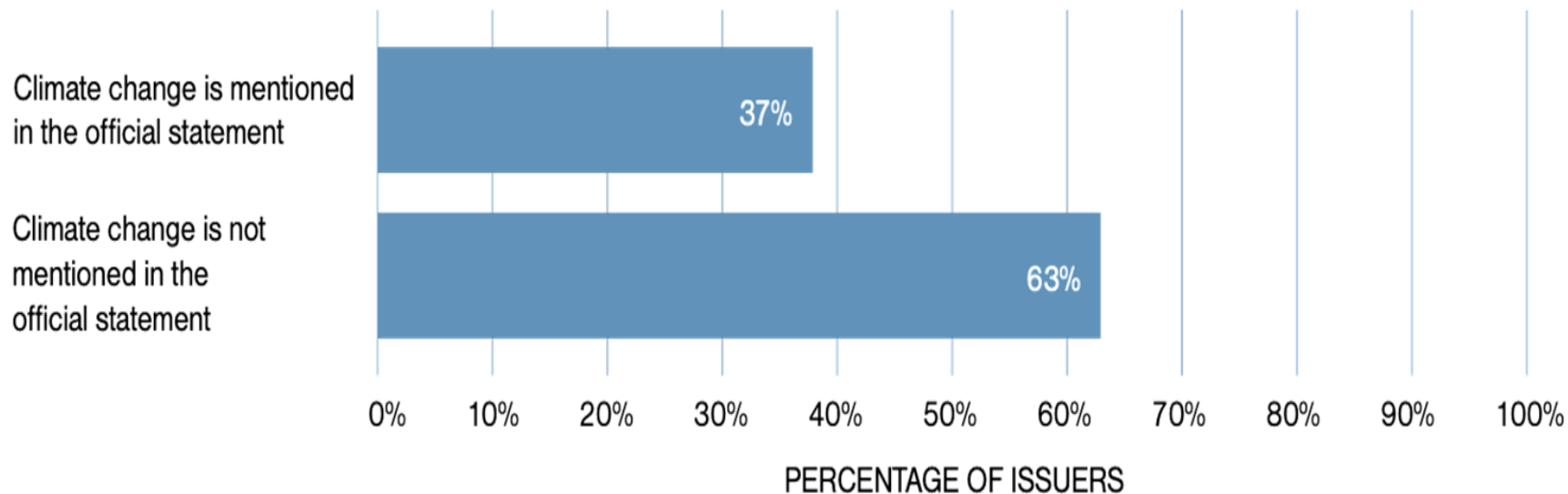
SCORES IN THE CDIAC RUBRIC

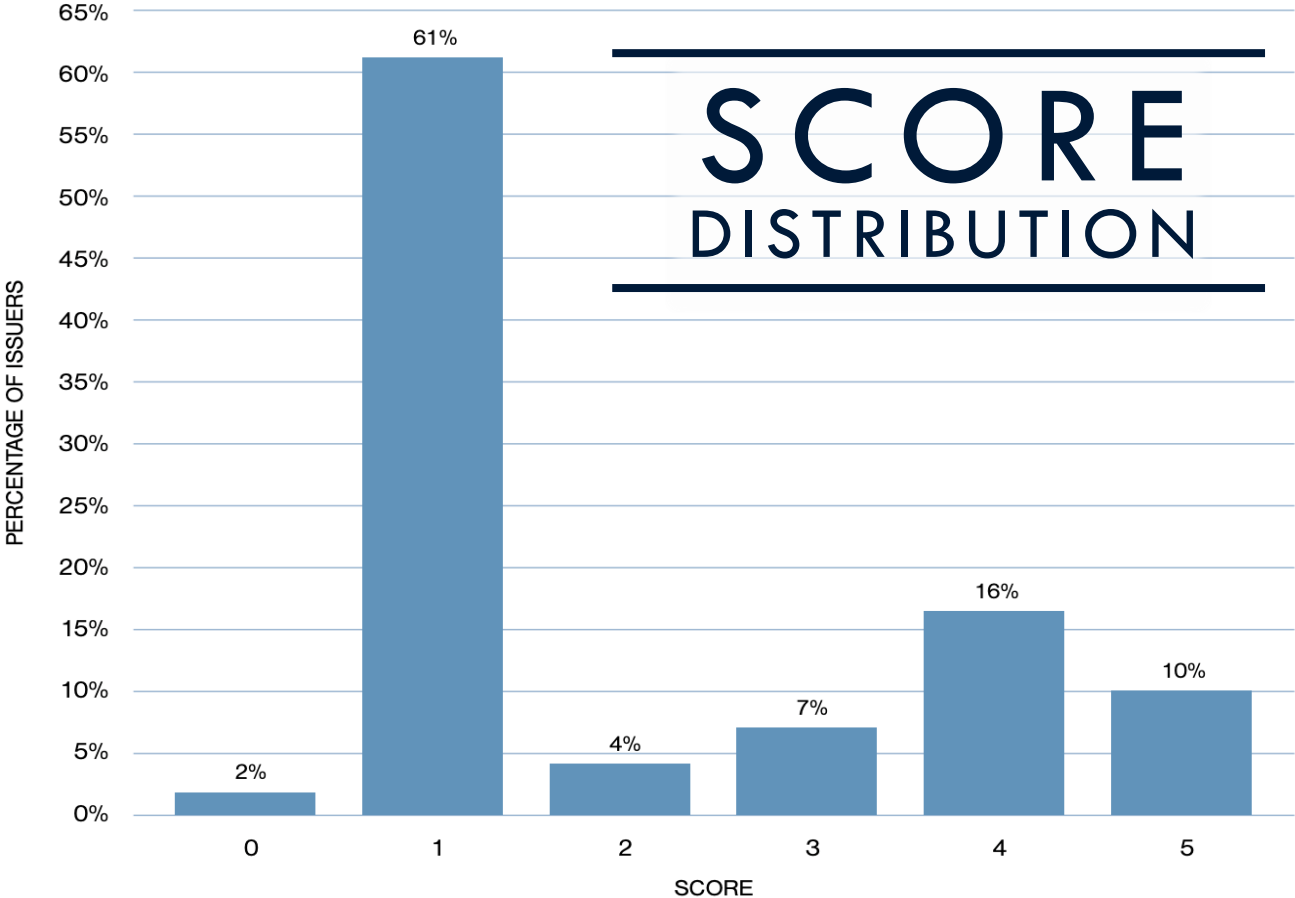
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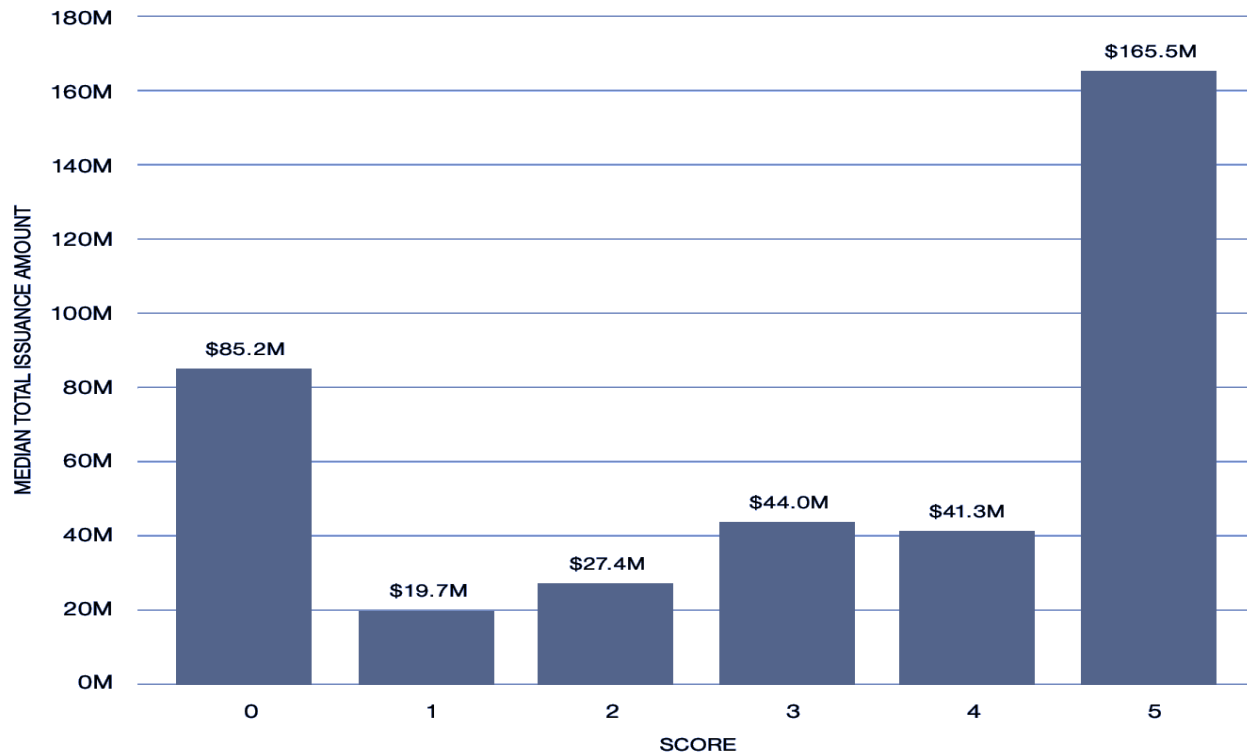
— CLIMATE CHANGE MENTIONED IN OS —





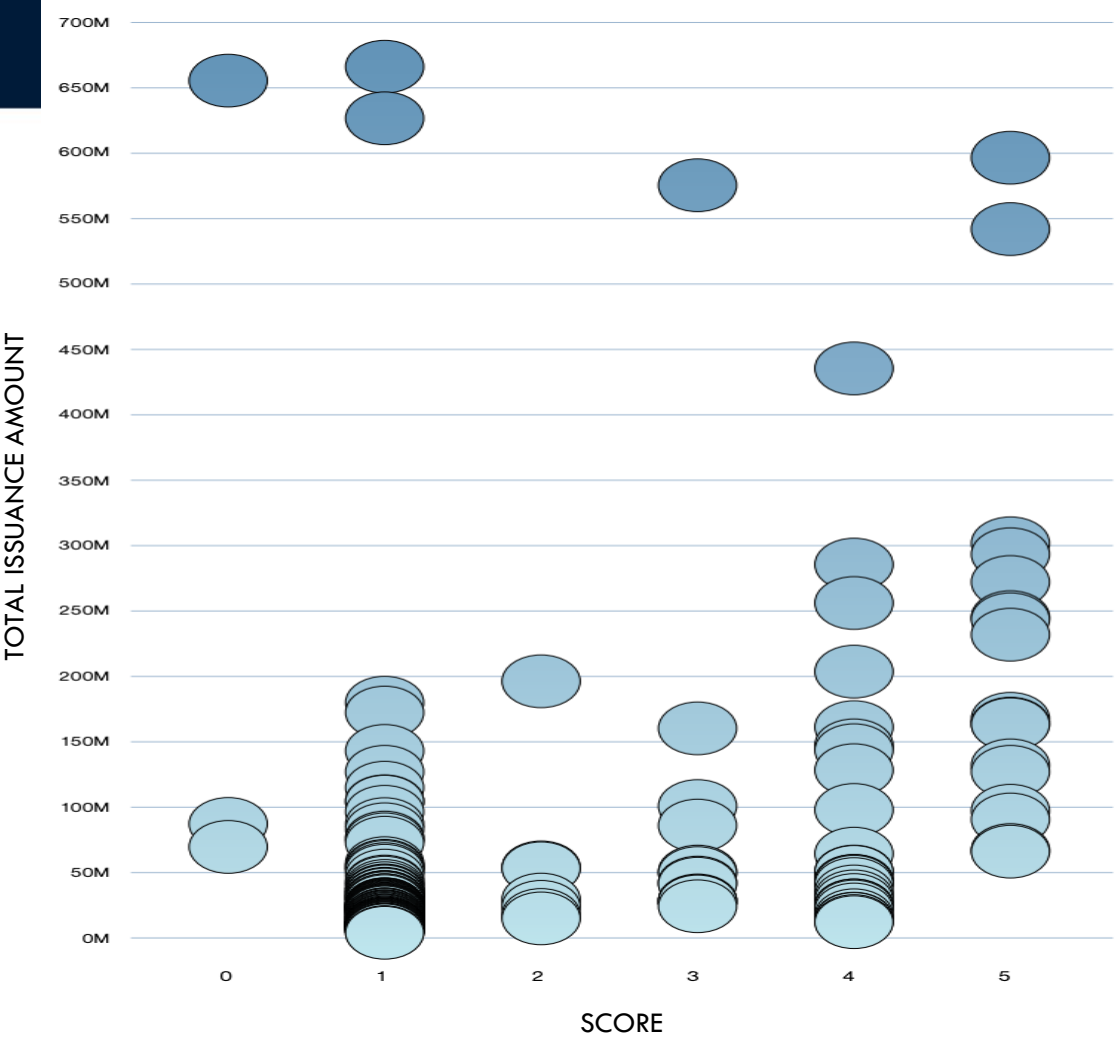


MEDIAN ISSUANCE BY SCORE



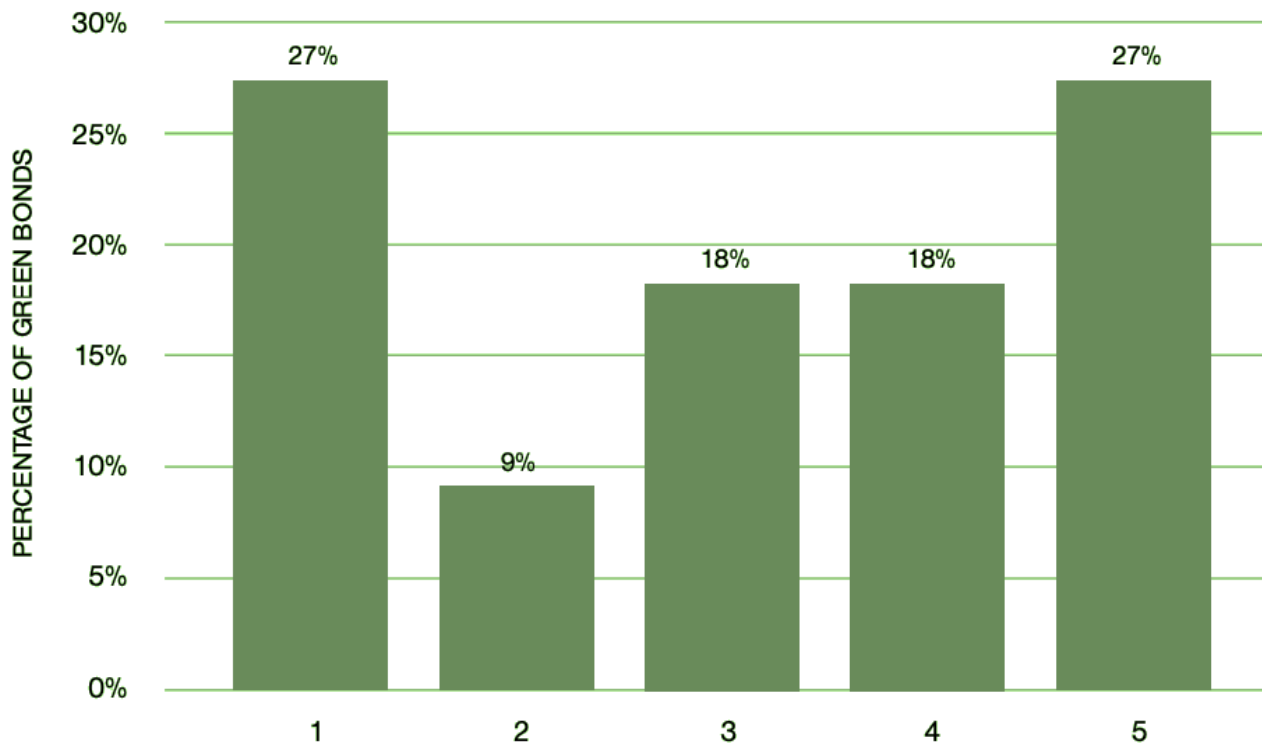


SCORES BY ISSUANCE SIZE: ALL SCORES





SCORES FOR GREEN BONDS





SCORES FOR GREEN BONDS
OVER TIME

SCORE	FY 2017	FY 2018	FY 2019
1	2	1	
2			1
3			2
4	1		1
5			3



SCORES BY DEBT PURPOSE

PURPOSE TYPE	0	1	2	3	4	5
Airport		2	1	2	2	2
Bridges and Highways					1	
College, University Facility	1	1				
Health Care Facilities		4				
Hospital		1				
Multifamily Housing		1				
Multiple Capital Improvements, Public Works		4			2	
Parking		1				
Ports, Marinas		1			1	1
Power Generation/Transmission		1		3	9	3
Public Building		1				
Public Transit		1		1		
Solid Waste Recovery Facilities		1		1	1	
Street Construction and Improvements			1			
Wastewater Collection, Treatment	1	36	1	1	2	4
Water Supply, Storage, Distribution	1	49	4	4	10	7



AVERAGE SCORES BY COUNTY





TAKEAWAYS

DISCONNECT IN RISK VERSUS DISCLOSURE OF CLIMATE CHANGE

Most issuers discussed physical risks and vulnerabilities linked with climate change (Score 1). Yet, less than four in ten mentioned climate change in the OS.

ABILITY VS. ADOPTION

The distribution of scores implies an *adoption-based* issue in disclosing climate risks. Issuers who have adopted climate change into their disclosures tend to follow industry best practices.

CORRELATION WITH ISSUANCE AMOUNT

More developed disclosure practices are correlated with larger issuance amounts.

GEOGRAPHICAL VARIATIONS LIKELY NOT BASED ON RISK

Climate-related disclosure practices vary across California geographically, but variations do not appear to be based in actual geographic risk.

GREEN BONDS CORRELATION

Green bonds generally (though not always) had more developed disclosure of climate risks.

DISCLOSURE BY SECTOR

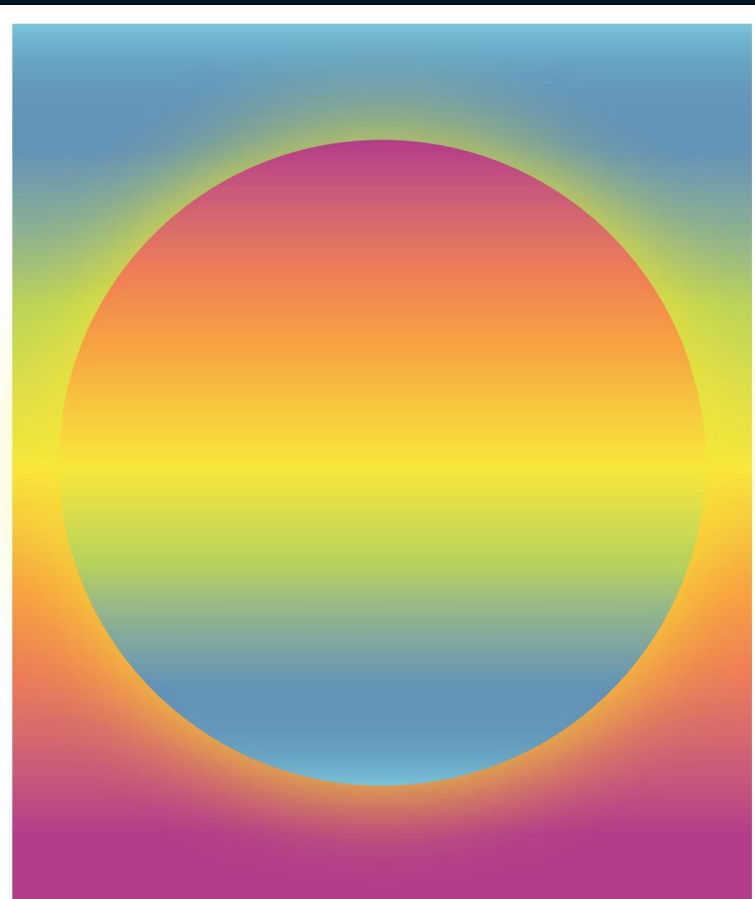
Power utilities and airports generally had the strongest disclosure practices for climate risk.



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— CDIAC —



CLIMATE CHANGE DISCLOSURE AMONG CALIFORNIA ENTERPRISE ISSUERS
CALIFORNIA DEBT AND INVESTMENT ADVISORY COMMISSION | CDIAC NO.20.08



CALIFORNIA ISSUER PERSPECTIVES

MODERATOR: RICHARD FREUND | SUSTAINABLE INFRASTRUCTURE MANAGER | CDP
LAKSHMI KOMMI | DIRECTOR OF DEBT MANAGEMENT | CITY OF SAN DIEGO
MICHAEL BROWN | ENVIRONMENTAL FINANCE MANAGER | SAN FRANCISCO PUC

ABOUT CDP



CDP is a global environmental impact non-profit working to secure a thriving economy that works for people and planet.



Information is the fundamental basis for action. We help investors, companies, states and cities to measure, understand and address their environmental impact.

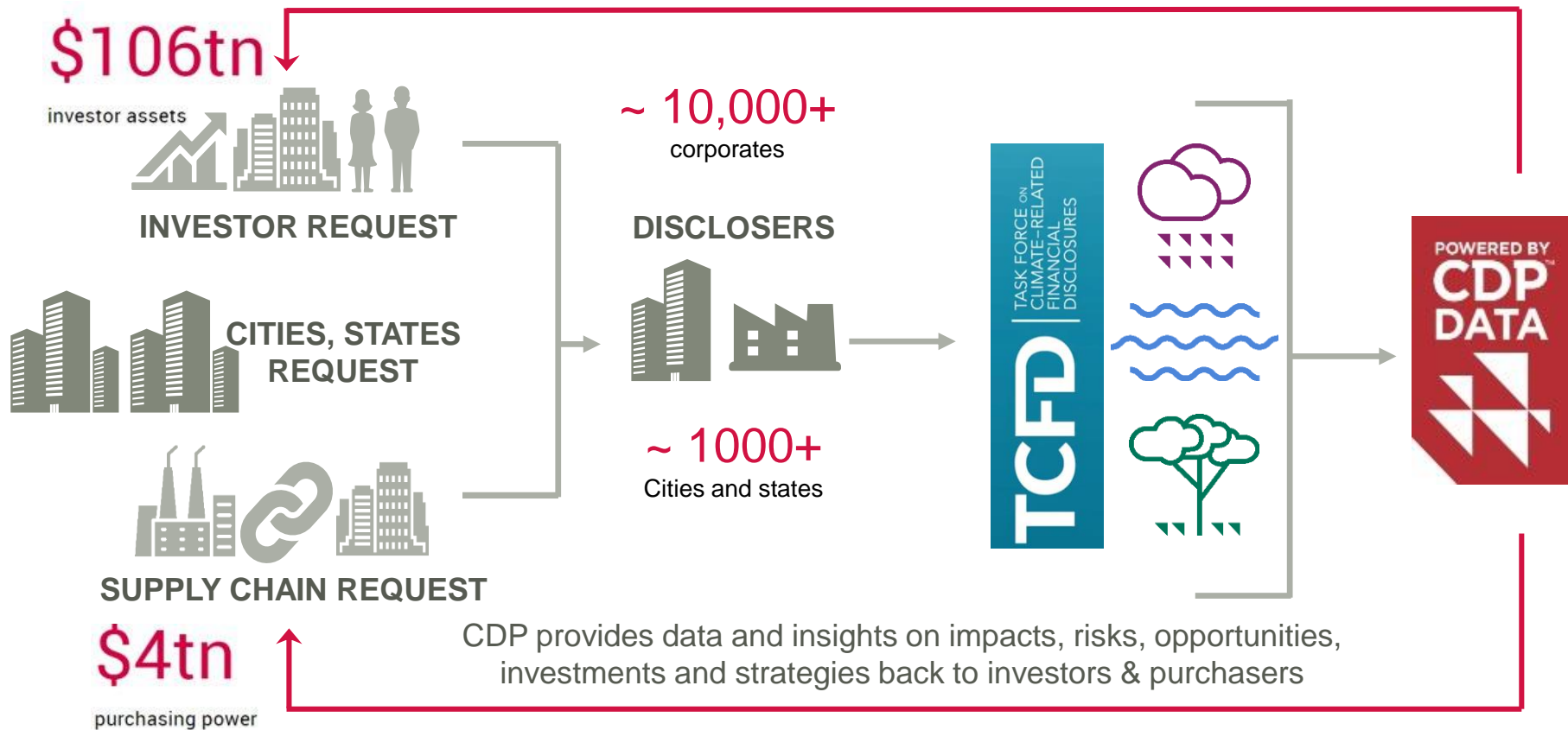


The world's economy looks to CDP as the gold standard of environmental reporting with the most comprehensive dataset on corporate, state and city action.



We aim to make environmental reporting mainstream and provide detailed insights to drive action for a climate safe, water secure, deforestation free world.

HOW CDP WORKS: The Disclosure Request



OUR GLOBAL STAKEHOLDERS



560 investors with US\$106 trillion in assets



150+ supply chain members with over US\$4 trillion in purchasing power



10,000+ companies responded through CDP



860+ cities disclosed environmental information



125+ states measured their environmental impacts

CDP PRESENCE IN THE UNITED STATES



120+ investors with US\$ 34.1 trillion in assets



60+ supply chain members with over US\$1.8 trillion in purchasing power



2100+ companies responded through CDP



182 cities disclosed environmental information



7 states measured their environmental impacts



Session 2: Market Expectation for Climate Change Disclosure

City of San Diego
Lakshmi Kommi
Director of Debt Management





City of San Diego

- 8th largest city in the U.S.
- The region is a combination of mild climate, low rainfall, beautiful shorelines, mountains, and deserts in close proximity
- The City is taking a leadership position in the pursuit against climate change





Recent San Diego Bond Offerings:

Convention Center Lease Revenue Refunding Bonds Series 2020A

- Climate action information disclosed under budget related matters

Lease Revenue Refunding Bonds Series 2020A

- Climate action information disclosed under budget related matters

Senior Water Revenue Bonds Series 2020A and Refunding Series 2020B

- Climate action information disclosed under risk factors



Climate Change Disclosures:

- Assess recent studies for relevant information
- Discuss capital needs, system vulnerability, financial impacts
- Mitigation strategies, response plans
- Information concerning relative risk of repayment on bonds
- Risk Factors





Trends in Climate Change Disclosures

2012 Water Utility Bond Offering

- Water resource planning, sea levels rise, drought

Expanded disclosures from 2016-2018 for Water Utility and General Fund Offerings

- Independent reports on sea level rise, vulnerability assessments
- Climate Action Plan adopted in 2015
- Budget priority

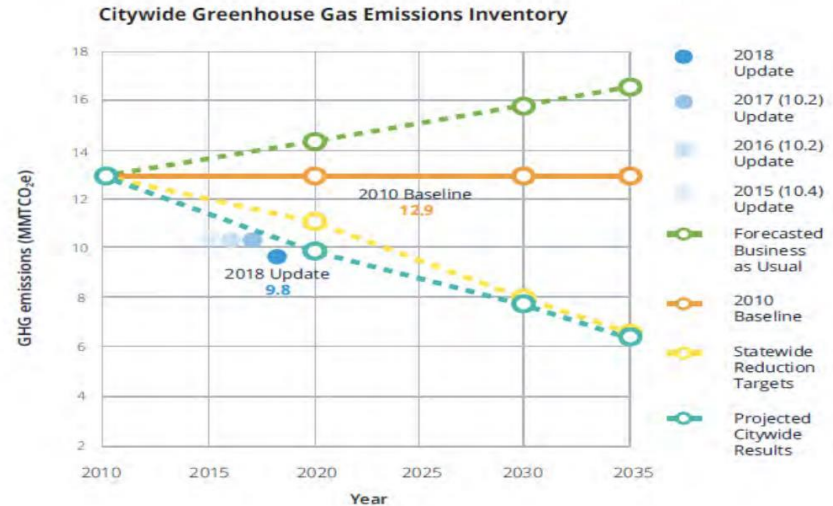
Recent Disclosures

- Expanded disclosures and reference any updates to the Climate Action Plan as well as new assessments



Climate Action Plan – Recent Milestones

- City adopted the Climate Action Plan in 2015
 - City is on track with actions as of 2019
 - 15% reduction in residential energy use since 2010
 - 24% reduction in greenhouse gas emissions since 2010
- San Diego Community Power JPA created in 2020 to create/purchase power





City's Green Programs

- **City Fleet Programs**

- As of 2018, 29% of City waste trucks are Compressed Natural Gas (CNG)
- As of 2018, 87 Zero Emission Vehicles (ZEV) and 68 hybrids are in municipal fleet

- **Qualified Energy Conservation Bonds**

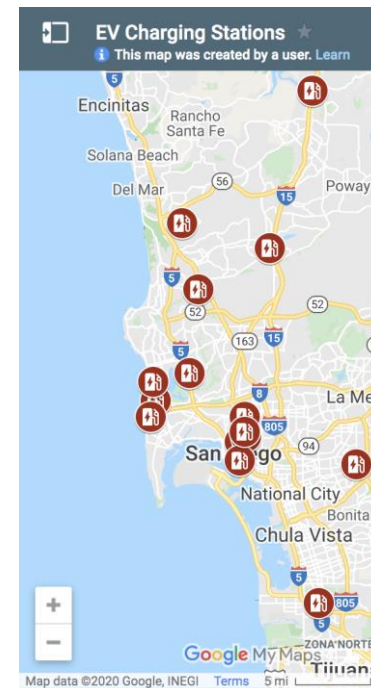
- \$13.1 million installation of broad spectrum street lighting in 2010

- **Electric Vehicle (EV) Charging Stations**

- City installed 57 EV charging stations with 68 ports at 15 locations
- City awarded \$500,000 grant from the California Energy Commission in 2014 to install 25 stations with 36 ports

- **Urban Forestry**

- 1,798 trees planted in by City Departments in 2018
- 13% tree canopy cover Citywide as of 2018





City's Green Programs

- **Many pedestrian and bicycle infrastructure improvements**

- City constructed 8,800 linear feet of new sidewalks, and improved 54,000 linear feet of sidewalks in 2018
- 294 miles of bike lanes added/improved between 2013-2018
- New roundabouts added and traffic signal retiming to reduce emissions and improve traffic flow
- City eliminated parking requirements for new multifamily developments within a half-mile of a public transit stop

- **Energy Programs**

- The City is increasing installation of solar photovoltaics across City facilities
- Solar sitting survey was completed to identify additional locations for solar photovoltaics installation

- **Pure Water Program**

- Pure Water Program Phase 1 – North City is anticipated to produce 30 million gallons per day (MGD) of purified water for San Diego in 2025
- Construction for the major components begins in March 2021



Sustainable City Departments

Sustainability Department

- The City's first Sustainability Officer
- Responsible for the coordination and implementation of the City's Climate Action Plan
- Lead and establish formation of Community Power

Planning Department

- Quantifies the “what-if’s” to create strategies that combat climate change
- Responsible for creating and updating land use planning policies and programs that will help shape the future of the City

Environmental Services Department

- Pursues waste management strategies that emphasize waste reduction and recycling, composting, and environmentally sound landfill management
- Zero Waste Plan adopted in 2015 with the goal to reach zero waste by 2050

Climate Change Disclosure San Francisco Public Utilities Commission

October 22, 2020
Michael Brown, Environmental Finance Manager



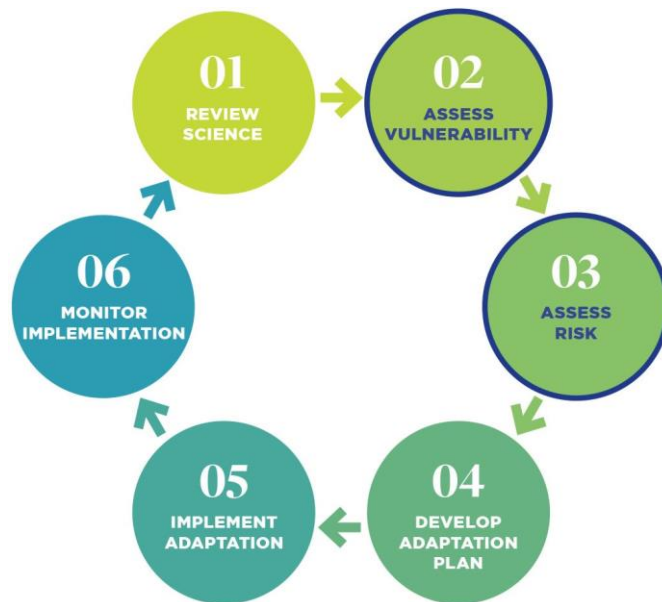
City and County of San Francisco

- San Francisco is on a peninsula and encompass over 93 square miles, 49 square miles of land and the balance tidelands and bay. The City has a population of approx. 900,000
- The San Francisco Public Utilities Commission (SFPUC) is a department of the City and County of San Francisco and is responsible for the operation, maintenance and development of three separate utilities:
 - **Water Enterprise.** Provides drinking water to approx. 2.7M people in the Bay Area
 - **Wastewater Enterprise.** Provides wastewater and stormwater collection, treatment and disposal services within the City's geographic boundaries
 - **Power Enterprise.** Provides electric power to meet the municipal requirements of the City, as well as irrigation districts located in the central valley of California, and to certain commercial customers



Climate Change Science

- Sea levels will continue to rise in the future
- Coastal areas are at risk of substantial flood damage over time
- Four reports drive planning/disclosure:
 - Sea Level Rise Vulnerability and Assessment Consequences (2020)
 - Fourth Climate Change Assessment (2018, State of California)
 - Rising Seas in California: An Update on the Rise in Sea Level Science (2018)
 - Sea Level Rise Action Plan (2016)



Sea Level Rise Action Plan Framework

Source: *Sea Level Rise Vulnerability and Assessment Consequences Report*

Water Enterprise: Potential Climate Change Impacts

- Reduction in average snowpack due to a rise in the snowline and a shallower snowpack in the low- and medium-elevation zones, such as in the Tuolumne River basin, and a shift in snowmelt runoff to earlier in the year
- Changes in the timing, intensity and annual variability of precipitation, and an increased amount of precipitation falling as rain instead of as snow
- Long-term changes in watershed vegetation and increased incidence of wildfires that could degrade water quality
- Sea-level rise, which could cause inundation of Water Enterprise assets and/or an increase in saltwater intrusion into groundwater basins
- Increased water temperatures with accompanying adverse effects on some fisheries and water quality
- Changes in water demand

Wastewater Enterprise: Potential Climate Change Impacts

Flooding

- Climate change models show varied results in terms of projected rainfall patterns, making proactive, long-term planning difficult.
- Significant changes in rainfall (intensity, duration or frequency) could substantially alter the wastewater system's stormwater and wastewater collection and storage function.

Infiltration and sea level rise

- Projected rises in sea level and could result in a backflow (or inflow) of San Francisco Bay water into the wastewater system and increased infiltration due to higher groundwater in coastal areas.
- The enterprise has already begun to experience occasional inflows and infiltration from the San Francisco Bay into its wastewater system during certain high tides.

Power Enterprise: Potential Climate Change Impacts

- Low- and medium-elevation zones, such as in the Tuolumne River basin, will see a shift in snowmelt runoff to earlier in the year, that could alter power generation
- Changes in the timing, intensity, and variability of precipitation, increased amount of precipitation falling as rain, which could alter power generation
- Changes in water demand

Disclosure Process

Who is involved

- Staff - Finance
- Staff - content experts

When to report

- Primary Offerings
- Ongoing Market Disclosure (Annual and Voluntary Disclosure)

What is included

- Authoritative sources
- Evolving science
- Ensuring that we know what we are supposed to know
- City Attorney/Disclosure counsel consultation (for Primary Offering)



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PANEL DISCUSSION