

WISCONSIN GREEN BANK PROPOSAL & FAQ

August 2024

The logo features two overlapping circles, one light blue and one orange, with a white plus sign in the center. The text 'WATER + ENERGY' is in bold black, and 'FORWARD' is in a thin, black, sans-serif font below it.
WATER + ENERGY
FORWARD

S-Lab



MARQUETTE
UNIVERSITY

College of Business Administration

Contents

Executive Summary2

The Problem2

Proposed Solution4

Frequently Asked Questions6

 What is a Green Bank?6

 How is a Green Bank different from a Green Investment Fund?6

 What are State-Chartered Green Banks?6

 Why Wisconsin for a Green Bank?.....6

 What is the urgency in creating a Green Bank in Wisconsin?7

 How would a carbon credit system and Green Bank work?8

 How would the Green Bank operate?.....9

 How would the Green Bank initially be formed and funded?.....9

 Who would own the Green Bank and how would it be regulated?.....9

 What investments would the Green Bank make and how would it be sustained financially?9

 What is the implementation plan and how would the Green Bank scale? 10

 Why not establish the Green Bank as a private entity and fund it with private money?... 11

 Are there any lessons learned from the experiences of other state Green Banks? 11

Appendix – Carbon Finance & Credits 12

Sustainable Finance Advisory Council..... 15

Executive Summary

Small- and medium-sized enterprises (SMEs) form the backbone of our nation's economy, but they are feeling squeezed by customer expectations and regulatory demands to reduce greenhouse gas emissions and water risks. Many of them lack the resources, particularly financial ones, to invest in the transition to a sustainable, resilient economy.

At the same time, large companies, particularly those involved with technology and artificial intelligence, are struggling to meet new reporting requirements and reach net-zero goals. This situation has accelerated the push for carbon offsets and carbon credits.

We propose the establishment of a Wisconsin Green Bank to help solve these issues and enhance environmentally sustainable economic activity in the state and nationwide. This Green Bank proposal would not only incentivize emission reduction projects, but also empower companies that traditionally lack the necessary resources to reduce their environmental impact and pursue net-zero goals. The Green Bank would be self-sustaining through loans and carbon credit trading, creating a win-win for businesses and the environment.

The Problem

Small- and medium-sized businesses comprise 44% of U.S. economic activity and create over 66% of net new jobs. But as businesses of all sizes face increased pressure to mitigate and adapt to a changing climate, these SMEs are especially in danger of being left behind.

Customer expectations and regulatory demands are squeezing SMEs to reduce greenhouse gas emissions and water risks, often requiring advanced processes and know-how. But many SMEs lack the people, knowledge, appropriately scaled technologies and especially the financial resources to invest in the transition to an environmentally sustainable, resilient economy. As one cheesemaker has stated, "We just want to make cheese."

The proposed [Water + Energy Forward Engine](#) is being developed in Wisconsin to help businesses like that cheesemaker as well as other SMEs and utilities. Drawing on Wisconsin's leading water and energy technology sectors, research universities and manufacturing workforce, the Engine will develop critical water, energy and waste technology solutions tailored for small to medium-sized manufacturers and utilities. By

promoting practices that reduce environmental impact and operational costs of SMEs, the Engine will support both economic and environmental sustainability across various industries. This focus not only benefits SMEs but also contributes to broader societal and environmental goals.

The financial cost required to accomplish this vision is immense. What is needed is an innovative, effective and widely accepted sustainable financing program.

Addressing Regulations & Net-Zero Goals

Meanwhile, regulators across the globe, including the Securities and Exchange Commission (SEC), the European Union (EU) and the State of California, have called for sweeping and mandatory climate disclosures of material risks to a company's business operations.

In addition to requiring more resources and new technologies, all companies, large to small, will be faced with a continuing push to decarbonize, especially as more data comes available. While SEC rules are limited to public companies, European and California rules cover both public and private companies. It is estimated that over 50,000 companies doing business in Europe will be impacted, including all U.S. companies with European subsidiaries, as well as over 10,000 companies doing business in California.¹

Large global corporations recognize that they cannot decarbonize their operations without the participation and success of their supply chain. In fact, Amazon recently stated, "We will prioritize our business toward those who provide their plans and results on their path to net-zero carbon emissions."² A significant proportion of global suppliers are SMEs that lack the financial resources to realize their own efficiencies, which in turn ripples throughout the entire global supply chain.

Implications for Big Tech & AI Infrastructure

Most Big Tech companies have net-zero – or in the case of Microsoft, negative-zero – targets. However, the artificial intelligence (AI) boom has complicated efforts by these companies to stay on track. According to a recent [Wall Street Journal article](#):

The AI boom is substantially responsible for the lack of progress. Large language models like ChatGPT are powered by energy-intensive data centers, and AI is projected to increase electricity demands from data centers by 50% by 2027,

¹ [ClarityAI](#) and [E&E News](#)

² [Amazon 2023 Sustainability Report](#)

according to researcher Alex de Vries. Data center construction and grid infrastructure upgrades push up energy consumption, too.

Google emissions increased by 13.5% from 2022 to 2023, according to its annual sustainability report released in July. They are up by nearly half since 2019. A recent disclosure from Microsoft reported its total emissions were up by 29% between 2020 and 2023.

[Recent research](#) by Pickering Energy Partners found that the Big 3 tech companies (Microsoft, Amazon and Google) already consume enough electricity through existing data centers to power 30 million homes. A 50% increase has major implications on energy use, its related carbon footprint and the voracious impact on water demand.

Carbon Credits

This situation has accelerated the push for carbon offsets and carbon credits, with Big Tech firms already among the biggest buyers of carbon removal credits. Microsoft (MSFT), the leading buyer globally, has purchased more than 7.6 million carbon credits, since 2020 according to online tracker [CDR.fyi](#).³

According to management consultancy Oliver Wyman, the global carbon credit market was worth an estimated \$2.7 billion in 2023 and is forecast to grow at an exponential rate to \$100 billion per year by end the of the decade.⁴

Propelling this growth is the percentage of companies with net-zero commitments. This includes approximately 50% of the top global 2000 companies, representing two-thirds of total revenue. In the U.S. alone, 8,400 companies of all sizes have established science-based targets (SBT).⁵

Proposed Solution

The Water + Energy Forward Engine is proposing the establishment of a Green Bank in the State of Wisconsin. This Green Bank would offer a sustainable and profitable system to significantly reduce greenhouse gas emissions as well as promote water quality, conservation and other environmentally beneficial practices over the long term. Our proposed system leverages the municipal bond market to provide low-interest financing to companies and organizations, especially SMEs, many of which are in lower-income or rural communities. It enables them to earn tradeable carbon credits by reducing carbon

³ [YahooFinance](#)

⁴ [Reuters](#)

⁵ [Net Zero Tracker](#) and ARVA

emissions. Other firms can then buy these credits to offset their emissions, meet ambitious sustainability goals and provide financing through tax-advantaged municipal green bonds issued by the Bank. Independent audits will validate and ensure the legitimacy of these credits, and the newly established Green Bank will act as a trusted intermediary, assessing project quality, sourcing the best options, and managing loan and carbon credit portfolios.

This Green Bank proposal would not only incentivize emission reduction projects, but also empower companies that traditionally lack the necessary resources to reduce their environmental impact and pursue net-zero goals. The Green Bank would be self-sustaining through loans and carbon credit trading, creating a win-win for businesses and the environment.

Finally, the Green Bank will support the Water + Energy Forward Engine and SMEs by allowing them to purchase new technologies supporting water, energy and waste efficiencies using low-interest loans backed by the Green Bank.

Frequently Asked Questions

What is a Green Bank?

Green Banks are mission-driven institutions that use innovative financing to accelerate the transition to clean energy and fight climate change. Green banks use a variety of financial tools, such as loans and bonds, to make clean energy projects more affordable and appealing to investors. They work by providing loans and using the revenue from loan payments to make even more investments. They are typically public or quasi-public, meaning they are most often established by governments or government-affiliated programs, though they can also be founded as independent non-profit entities.

By focusing on underserved market sectors, green banks can complement existing clean energy programs by targeting market gaps. They can address existing barriers that otherwise prevent the expansion of clean energy, particularly within underserved communities. Many green banks have tailored their programs to improve access to clean energy projects for low- and moderate-income communities.

How is a Green Bank different from a Green Investment Fund?

A **Green Investment Fund** (GIF) is a financing vehicle designed to mobilize capital for projects and companies that focus on mitigating climate change, preserving the environment and promoting sustainable development. Put simply, a Green Investment Fund – whether public, private or a public-private partnership – only makes investments, while a Green Bank makes loans like a traditional bank.

What are State-Chartered Green Banks?

Several U.S. states, including New York, Connecticut, Maryland, Colorado, Nevada and Hawaii, have established green banks to facilitate and fund carbon reduction projects. These entities raise and direct capital by issuing green bonds, fund GHG emission reduction projects and mint carbon credits. Green banks can be public or quasi-public, funded with public and/or private money, and formed by an executive order of the governor or through an act of the legislature.⁶

Why Wisconsin for a Green Bank?

Because of the unique structure of Wisconsin's Public Finance Authority, the state can create a "super Green Bank" that provides Green Banking at scale across the United States and could issue municipal bonds for conduit-finance to fund green initiatives in all 50

⁶ <https://www.nga.org/publications/green-banks-an-overview-for-governors/>

states. These bonds could qualify as green bonds under the Green Bond Principles.⁷ Because of their tax-exempt status, they would provide lower borrowing rates, passing that benefit on to project developers, e.g. SMEs. Green bonds can be issued for the purpose of financing GHG reduction and other environmental projects. This feature creates the potential for the widest scale and scope of any state Green Bank to generate the greatest impact.

In addition, the Wisconsin community offers a high potential cross-section of Green Bank partners across academia, utility, tech, manufacturing and agribusiness.

The recent commitment by Microsoft to locate its U.S. AI data center in southeastern Wisconsin is one such example of potential partners. Microsoft coincidentally is the largest investor in carbon credits in the world and chose Wisconsin above all other states.

Additionally, the time is right given the rapidly growing market for carbon credits. The confluence of regulation, investor pressure and damaging effects from climate-related events have left companies scrambling for immediate high integrity-carbon offsets. Green Banking provides the mechanism to bridge the interests of low- and moderate-income communities (LMIs) and SMEs with larger emitters.

Wisconsin can capitalize on this opportunity and remain at the forefront of one of the most pressing public policy challenges of this generation.

What is the urgency in creating a Green Bank in Wisconsin?

Helping high-emitting industries such as information technology, manufacturing and agribusiness transition to decarbonization is key to keeping Wisconsin business and its economy competitive and thriving. The unique access through a potential expansion of the PFA to the municipal bond market and rapidly growing carbon credit market represents a tremendous opportunity to sustainably fund the Bank at scale.

Multiple issues are coming to a head for Wisconsin-based companies. Demands to report and decarbonize are coming from regulators, investors, consumers and business customers. Companies less able to respond to these pressures not only face increased costs but the risk of losing business to operators better equipped to address these challenges. A Green Bank can provide a strategic advantage to businesses to respond cost-effectively and efficiently and help level the playing field.

Further, there would be no restrictions for entities – either inside or outside of the state – to work with the Wisconsin Green Bank. Out-of-state firms would be able to conduct

⁷ <https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-bond-principles-gbp/>

business with the Wisconsin Green Bank and in-state businesses can still work with other banks/businesses for green-related projects. The Wisconsin Green Bank would openly compete on a national playing field for green projects.

How would a carbon credit system and Green Bank work?

Once issued, carbon credits can be bought and sold. A newly established State-Chartered Green Bank could act as a specialist "retailer" by (1) assessing project quality, (2) sourcing the best projects, (3) creating and managing portfolios and credits for buyers seeking to offset their emissions and support a low-carbon future. Larger corporations, ranging from technology firms to retailers, can then use carbon credits to compensate for unavoidable emissions and achieve their climate goals, especially those with ambitious targets exceeding their internal reduction capabilities.

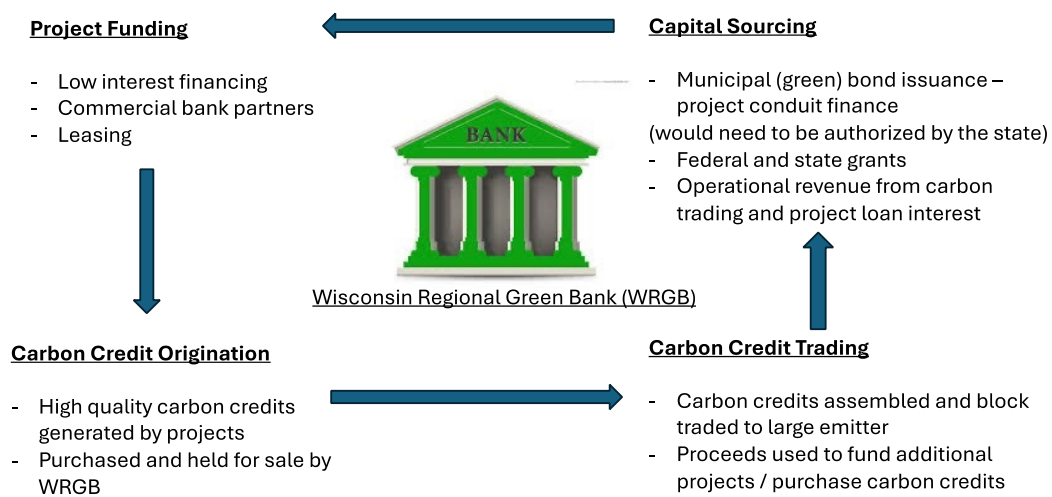
Case in point, this cycle would provide a formidable solution for emitters facing challenges in meeting their net-zero commitments like Microsoft, which recently announced a \$3.3 billion investment into an AI data center in Wisconsin.

In addition to enabling this carbon credit system, the Green Bank could also support other initiatives, such as research and development into new technologies to improve water quality and quantity challenges and/or energy efficiencies.

The Wisconsin Green Bank would be self-financing through lending programs, carbon credit origination and trading (see Figure 1).

Figure 1: Wisconsin Green Bank Sustainable Finance Model for GHG Reduction

SFAC - Proposed Regional Sustainable Finance Model



How would the Green Bank operate?

The Green Bank would identify environmental projects and provide low-cost financing for projects such as new technologies to make an SME or a wastewater utility more sustainable. It may focus in areas such as methane well capping, municipal sewage district biochar production and anaerobic manure digestion. In addition to providing project financing, it would provide carbon credit origination, monitoring, custody and trading services. One of the primary focus areas would be reaching and expanding the set of solutions available to LMIs and SMEs. Reflective of one of Wisconsin's key food and beverage industries, [this case study](#) provides an example of a successful decarbonization project for an Italian cheesemaker that achieved a 30% reduction in its greenhouse gas emissions through the application of technology, energy optimization and process adjustments.

How would the Green Bank initially be formed and funded?

The Wisconsin Green Bank would be enacted by the state legislature. See [Structure and Options for Green Bank Legislation from the Coalition for Green Capital](#).

The Green Bank as a public-private entity could be initially funded by federal grants available through EPA's Greenhouse Gas Reduction Fund and the Department of Energy as authorized under the 2021 Inflation Reduction Act and/or through an initial state appropriation.

This would be one-time grant funding for equity capital. Future financing would come through municipal bond issuance and cash flow generated from operations.

Who would own the Green Bank and how would it be regulated?

The bank would be an agency of the State of Wisconsin. It would have a governing board and be similar in structure to the State of Wisconsin Investment Board. It would report and be audited in compliance with the Governmental Accounting Standards Board (GASB). Carbon Credit reporting would be in line with [emerging standards from the Financial Accounting Standards Board \(FASB\)](#).

What investments would the Green Bank make and how would it be sustained financially?

As outlined in Figure 1, the Green Bank would manage a loan portfolio of projects. These projects would generate revenue from carbon credits that pay interest on the loans over time. The bank would also generate revenue from carbon credit services including origination, monitoring, custody, market making and trading.

The chart below provides an illustration of project economics using the example of a biochar production facility connected to a municipal water and sewage district.

Project loan ⁸	Annual Interest (@3.50%) ⁹	Annual Waste	Annual Sequestered Carbon (@50%)	Bio char and carbon credit value (@\$250 per ton) ¹⁰	Spread on Trade (@10%) ¹¹	Related Service Revenue ¹²	Total Annual Project Revenue To Green Bank
\$21.6 mm.	\$756K	25,550 tons	12,775 tons	\$3.2 mm	\$128K	\$100K	\$984K

Annual return to project operator: \$2.21 mm or 10.2%¹³

Annual return to Green Bank: \$984K or 4.6%

What is the implementation plan and how would the Green Bank scale?

We envision four phases of implementation for the Green Bank to allow time for project development while balancing the need for the bank to be self-funding and financially sustainable through its own operations.

Phase I – Initial Development

In this first phase, the Bank will go through initial funding, set-up and staffing. This will follow receipt of federal and state grant funding and legislative authorization. During this period the governing board will be established and the initial management team formed.

Phase II – Project Finance

In the next phase, initial projects will be funded and begin operation. These projects are important for establishing a track record for the Bank. From there, the Bank will develop a pipeline of projects and begin initial municipal bond issuances to ensure projects are

⁸ <https://drawdown.org/solutions/biochar-production#:~:text=We%20estimated%20the%20net%20first,data%20points%20from%20three%20sources.>

⁹ Based on current municipal bond rates for a 10-year bond at 2.8%. A loan financing charge of 70 basis points is embedded in the interest cost calculation.

¹⁰ <https://pacificbiochar.com/wp-content/uploads/BiocharCarbonCreditAnalysis-BFReports20221.pdf>

¹¹ In market-making a spread on trade is the difference in the bid -ask price captured by the financial intermediary as a profit on the trade for matching both buyer and seller.

¹² Charges for carbon credit origination, monitoring and custody services.

¹³ \$3.2 mm (total project revenue) - \$756K (annual interest on loan) - \$100K (Service Fees) - \$128K (trading costs) = \$2.21 mm. 2.21 mm/\$21.6 mm (loan or total capital investment) = 10.2%

funded at key points and junctures. This phase will be marked by the operationalization of ongoing funding and project work.

Phase III – Market Making Activities

As projects begin to generate carbon credits, the Bank will enter the next phase of making a market for carbon credits. This will involve tracking and reporting from the onset of project operations along with carbon credit origination, custody and trading. It will also entail the expansion of a stable base of carbon credit buyers. Here the technology platform for carbon credit management will be a key part of the success of the Bank and the continuing evolution and development of the carbon market as it becomes a more standardized securities market similar to how the cryptocurrency market has developed over the past decade.

Phase IV – Ongoing Activities and Expansion

In this final phase, the Bank will have emerged as a significant player on both the national and global stage for green project finance and carbon credit markets. At this point the Bank will be managing a significantly large portfolio of projects that will be contributing to substantial reductions or avoidance of carbon emissions and driving technology innovation.

Why not establish the Green Bank as a private entity and fund it with private money?

Going through a public agency gives the Bank the option of accessing the municipal bond market, improving the bank's capacity to offer below-market interest financing and serve the target market of LMIs and SMEs.

Are there any lessons learned from the experiences of other state Green Banks?

The Center for Climate and Energy Solutions (C2ES) in its 2021 report [“Catalyzing Investment with a National Climate Bank: Lessons from Subnational Green Banks”](#) concluded:

“There are many lessons to be learned by examining existing subnational green banks in the United States, including their organizational structures, capitalizations and funding, operational scopes, types of financing products and services, and success metrics. As new state and local banks emerge, they can learn from these experiences and should craft models that best align with local circumstances and opportunities to use public funds to leverage much greater amounts of private and

other capital for the net-zero transition. Subnational green banks have focused their efforts primarily on the vital need to expand deployment of established clean energy and energy efficiency technologies, but they are starting – and should continue – to expand their efforts to reach LMI (Low and Moderate Income) communities, boost resilience to climate impacts, broaden the scope of their infrastructure and technology lending, and support communities reliant on emitting industries during the transition.”

We believe the proposed Wisconsin Green Bank incorporates these lessons learned to ensure a high degree of success and set a new standard for state Green Banks nationally.

Appendix – Carbon Finance & Credits

What is Carbon Finance?

Carbon finance plays a key role for the implementation of action plans (Nationally Determined Contributions or NDCs) required to meet Paris Agreement targets. The Agreement specifically enables the use of such market mechanisms through Article 6. Globally, interest in carbon markets is growing, with 83% of NDCs expressing the intent to leverage international market mechanisms to reduce greenhouse gas emissions (GHGs).¹⁴ In addition, with surging investment in generative artificial intelligence, which requires rapid escalation of next-generation, power-intensive data centers, pressure is growing on the information technology and utility sectors to find ways to mitigate the carbon footprint of mounting energy demands. In the United States alone, it is estimated that electricity demand over the next decade will double because of the continued emergence of hyperscale data centers.

Why the Voluntary Carbon Offset Market?

There exist three market mechanisms to reduce GHGs: 1) carbon taxation; 2) mandatory offset systems (i.e., emissions permitting and trading, a.k.a. “cap and trade”); and 3) carbon credit markets (i.e., voluntary offset systems).

Carbon Taxation: Carbon taxation, despite receiving wide support from economists¹⁵, has not found political traction at the federal level to be a viable policy option. This lack of momentum resembles the legislative standstill on entitlement programs such as Medicare and Social Security. Legislators are hesitant to propose cutting benefits or raising taxes,

¹⁴ [UNDP](#)

¹⁵ [Economists' Statement on Carbon Dividends | Climate Leadership Council \(clccouncil.org\)](#)

even when such endeavors would have the positive effect of reducing GHGs with taxes being offset by taxation reductions in other areas such as the payroll tax.

Mandatory Offset Systems: Cap and trade systems have experienced mixed success around the world and have found limited adoption at the state level in the United States. Specifically, only California, Washington and the eleven eastern states in the Regional Greenhouse Gas Initiative (RGGI) have adopted these systems.¹⁶

Carbon credit markets: Carbon credit markets, on the other hand, show significant promise especially given two convergent trends: 1) mandatory disclosure of carbon emissions (the SEC Climate Disclosure Rule, California Climate Disclosure rules and the European Union's Corporate Sustainability Reporting Directive); and 2) technological advancements in carbon tracking and measurement and blockchain technology.

How does the carbon credit market work?

Carbon Credits: Each carbon credit is a tradable certificate representing one ton of carbon dioxide (CO₂), or another greenhouse gas equivalent (CO₂e) kept out of the atmosphere. Projects that avoid or remove greenhouse gases generate them. Thus, investments in helping SMEs to improve water and energy efficiencies can produce carbon credits. Independent audits verify the actual emission reductions achieved by these projects, ensuring their legitimacy.

A Secure Record-Keeping System: Carbon projects must be registered with internationally recognized standards. To ensure public confidence, standard organizations issue carbon credits upon independent verification that the project successfully reduced or removed the required emissions. The credits are issued into a registry, which is a giant database holding all the details about each credit, such as its source, methodology and issuance date. Blockchain technology, "an advanced database mechanism that allows transparent information sharing within a business network,"¹⁷ can further enhance the authenticity and integrity of this system, using up to 99% less energy than cryptocurrencies because it relies on "proof of task" rather than the energy-intensive "proof of work" method.¹⁸ The project owner receives the issued credits and is responsible for "Carbon Asset Development" – designing, auditing, and delivering the credits. Partnerships are common, involving local communities, traditional banks or corporate investors.

¹⁶ The RGGI cap and trade is limited to the power sector. <https://www.c2es.org/content/state-climate-policy/>

¹⁷ [AWS – What is Blockchain Technology?](#)

¹⁸ Digital Triangle

What is the Water + Energy Forward Engine?

Funded by a Development Award from the National Science Foundation (NSF), The Water Council and its partners are laying the groundwork for the [Water + Energy Forward Engine](#) that will facilitate the solutions needed to enable manufacturers and utilities to adopt water, energy and digitization technology solutions aimed at decarbonization and reducing climate-related risks. Because of the significant hurdles that SMEs face, the Engine has placed a priority on the development of appropriately scaled and priced technologies that will benefit SMEs.

The Engine's purpose is to discover, nurture and quickly scale those solutions for wider use by industry, government and other stakeholders within Wisconsin and export those solutions to other locations in the United States and world.

The Engine is currently submitting a proposal to NSF for up to \$160 million over a ten-year period to implement the Engine on a grand scale.

What is the relationship between the Wisconsin Green Bank and the Water + Energy Forward Engine?

The Wisconsin Green Bank and Water + Energy Forward Engine would be separate entities but would complement each other's mission and objectives. The Green Bank would generate funding from carbon credits and support the development and deployment of water and energy technologies that benefit LMIs and SMEs. The Engine would develop new technologies that are accessible AND affordable for LMIs and SMEs as well as advance additional investments in workforce and venture capital targeting the water and energy technology industry.

Sustainable Finance Advisory Council

Dean Amhaus, President and CEO, The Water Council

Matteo Arena, Ph.D., Professor of Finance, Marquette University

Steve Bucaro, Principal, NP +SB Strategic Consulting

John Clancy, Head of Energy Strategies Practices Group, Godfrey & Kahn

Amy Jensen, Vice President and CFO, The Water Council

Christopher K. Merker, Ph.D., CFA, Executive-in-Residence, Co-Director, Marquette S-Lab, and Director, Private Asset Management, Baird

Dan Romito, Co-Director, Marquette S-Lab, and Head of ESG Consulting, Pickering Energy Partners

Paul Poblocki, Global Director of Strategic Marketing, Sustainable Infrastructure, Johnson Controls

Ben Speed, Global Head of Private Credit, JC Capital, Johnson Controls

Amy Young, Senior Vice President, Public Finance, Baird