

Second-Party Opinion

Verizon Green Bond

Evaluation Summary

Sustainalytics is of the opinion that the Verizon Green Bond Use of Proceeds Document (defined below) is credible and impactful, and aligns with the four core components of the Green Bond Principles 2018. This assessment is based on the following aspects of the Use of Proceeds Document:



USE OF PROCEEDS The eligible categories for the use of proceeds – renewable energy, energy efficiency, green buildings, sustainable water management, and biodiversity and conservation – are aligned with those recognized by the Green Bond Principles. Sustainalytics considers that investments in these eligible categories will lead to positive environmental impacts and advance the UN Sustainable Development Goals 6, 7, 9, 11, & 15.



PROJECT EVALUATION / SELECTION Verizon’s Sustainability team will be responsible for determining if potential investments are in conformance with the eligibility criteria of the Use of Proceeds. This is in line with market practice.



MANAGEMENT OF PROCEEDS Verizon will track allocations using its internal recording system. Pending full allocation, an amount equal to the unallocated net proceeds will be held in cash, cash equivalents, and/or US Treasury securities. Verizon has stated its intention to allocate the majority of the net proceeds within three years of issuance. This is in line with market practice.



REPORTING Verizon intends to report, on an annual basis, on the aggregate amounts allocated to each category which is in line with market practice. With regard to impact reporting, although Sustainalytics acknowledges certain concerns that US corporations may have as a result of disclosure requirements under U.S. securities law, Sustainalytics encourages Verizon to disclose any impacts resulting from Eligible Green Investments where feasible on an annual basis.

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Issuer Location	New York, USA

Report Sections

Introduction	2
Sustainalytics’ Opinion	3
Appendices	9

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Introduction

Verizon Communications Inc. (“Verizon”, the “Issuer” or the “Company”) is a U.S. telecommunications company, providing phone, wireless, cable, internet, and other media services. As one of the largest communications technologies companies in the world, Verizon Wireless serves 118.0 million connections on the United States’ largest wireless network.

Verizon has developed the Verizon Green Bond Use of Proceeds Document (the “Use of Proceeds Document”), attached to this report as Appendix 1, which it may use as the “use of proceeds” in future potential issuances of green bonds. The Use of Proceeds Document defines eligibility criteria in five areas:

1. Renewable Energy
2. Energy Efficiency
3. Green Buildings
4. Sustainable Water Management
5. Biodiversity and Conservation

Verizon engaged Sustainalytics to review the Verizon Green Bond Use of Proceeds Document and provide a second-party opinion on the alignment of the Use of Proceeds Document with the Green Bond Principles 2018 (the “GBP”), as administered by the International Capital Market Association (the “ICMA”),¹ and the Use of Proceeds Document’s environmental credentials.

As part of this engagement, Sustainalytics held conversations with various members of Verizon’s management team to understand the sustainability impact of their business processes and the potential use of proceeds of a green bond in line with the Use of Proceeds Document, as well as management of proceeds and reporting aspects set forth in the Use of Proceeds Document. Sustainalytics also reviewed relevant public documents and non-public information.

This document contains Sustainalytics’ opinion of the Verizon Green Bond Use of Proceeds Document and should be read in conjunction with that document.

¹ ICMA’s Green Bond Principles 2018 <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>

Sustainalytics' Opinion

Section 1: Sustainalytics' Opinion on the Verizon Green Bond Use of Proceeds Document

Summary

Sustainalytics is of the opinion that the Verizon Green Bond Use of Proceeds Document is credible and impactful, and aligns with the four core components of the Green Bond Principles 2018. Sustainalytics highlights the following elements of the Verizon Green Bond Use of Proceeds Document:

- Use of Proceeds:
 - The five use of proceeds categories – renewable energy, energy efficiency, green buildings, sustainable water management, and biodiversity and conservation – are recognized as impactful by the Green Bond Principles.
 - The Use of Proceeds Document specifies that eligible renewable energy technologies include solar energy, wind energy, and fuel cells.
 - Sustainalytics notes that fuel cell systems may be powered by hydrogen derived from natural gas, and as such there could be carbon emissions at the point of hydrogen production. Nevertheless, in applications where fuel cells are generally deployed, such as remote locations or electric vehicles, they represent significant emissions reductions compared to fossil fuels. Furthermore, hydrogen may be created from renewable energy, and fuel cells support a transition to low-carbon energy as this production source is scaled. Sustainalytics views positively this use of proceeds sub category and encourages Verizon to consider the lifecycle impact of fuels sourced.
 - Within the energy efficiency category, Verizon has included projects related to the “deployment of 5G wireless technologies that allow for real-time response to energy demand”. By enabling high-speed network connectivity, Verizon’s solutions have the potential to support significant energy savings by end users across many industrial sectors. Sustainalytics views positively this use of proceeds, and is of the opinion that it will provide net-positive environmental impacts. For further information, refer to Section 3: Impact of Use of Proceeds.
 - Sustainalytics also notes that there are limitations to this use of proceeds, related to (i) the energy demands on the network, and (ii) the wide range of end user technologies that it supports.
 - The Use of Proceeds Document specifies that eligible green buildings are those that have received either Platinum or Gold certification from LEED, or an ENERGY STAR score of 85 or higher. Sustainalytics considers these ratings schemes to be credible and in line with market practice (see Appendix 2 for a summary of the schemes). The criteria also include buildings that are carbon net-zero, or upgrades to buildings that are expected to improve energy efficiency by at least 30%. Sustainalytics is of the opinion that these levels of performance are in line with market best practice.
 - The Use of Proceeds Document defines leasing of eligible green buildings, on a capitalized basis, as eligible use of proceeds. While Verizon does own green buildings, the Use of Proceeds Document also allows for the inclusion of the certification of green buildings for facilities not owned by Verizon. By signing leases Verizon is enabling the construction of these assets. Additionally, Verizon has confirmed to Sustainalytics that leasing of buildings includes the operation and management of the buildings. Sustainalytics considers that by including capitalized leases in its Use of Proceeds Document, Verizon is supporting the overall development of the green buildings markets, which delivers indirect environmental benefits.
 - The Use of Proceeds Document defines power purchase agreements (PPAs) and virtual PPAs for renewable energy as eligible uses of proceeds. While Verizon has been directly involved in the production of over 20 MW of renewable energy for its facilities, by signing PPAs and virtual PPAs Verizon is further enabling the construction of these assets. Additionally, Verizon has confirmed to Sustainalytics that the PPAs and virtual PPAs will be directly tied to specific renewable energy generation projects rather than the purchase of “generic” green energy from a utility. Sustainalytics considers that by including PPAs and virtual PPAs in its Use of Proceeds

Document, Verizon is supporting the overall development of the renewable energy market, which delivers indirect environmental benefits. A virtual PPA is a contractual arrangement between a generator and an energy buyer in which the renewable power is not “physically” delivered to the off-taker. As this structure supports the financing of renewable energy projects, Sustainalytics considers it to be equivalent to a typical or physical PPA.²

- The Use of Proceeds Document allows for inclusion of equipment which results in energy and/or water savings including, but not limited to, legacy network technology replacements and upgrades, HVAC and lighting equipment, and plumbing fixtures and irrigation systems. Although no quantitative thresholds for eligibility are specified, Verizon has stated that it intends to include only projects which provide benefits consistent with its publicly stated goals for energy efficiency and water management, such as a 15% corporate water savings. Sustainalytics encourages Verizon to ensure that only projects which deliver quantifiable environmental benefits be prioritized.
- Project Selection Process:
 - Verizon’s Sustainability team will be responsible for determining if potential investments are in conformance with the eligibility criteria of the Use of Proceeds Document, and the Issuer has committed that an amount equal to the net proceeds from any green bond(s) will be allocated to these eligible green investments.
 - Based on the clear delegation of responsibility, Sustainalytics considers this to be in line with market practice.
- Management of Proceeds:
 - Verizon will allocate an amount equal to the net proceeds of a green bond to finance or refinance eligible green investments, and will track these allocations using its internal recording system. Pending full allocation, an amount equal to the unallocated net proceeds will be held in cash, cash equivalents, and/or US Treasury securities. Verizon has stated its intention to allocate the majority of the proceeds within three years of issuance.
 - Based on the presence of a system to track allocations and the disclosure of intended temporary investments, Sustainalytics considers this to be in line with market practice.
- Reporting:
 - Verizon intends to report, on an annual basis until an amount equal to the net proceeds is fully allocated, on the aggregate amounts allocated to each category. This report will be confirmed by an attestation by an independent registered public accounting firm. Verizon’s allocation reporting commitments are in line with market practice.
 - Verizon has not committed to reporting on impact metrics. Sustainalytics acknowledges certain concerns that US corporations may have as a result of disclosure requirements under U.S. securities laws.³ The SEC rules provide stringent regulatory guidance to issuers regarding their duty to disclose material events occurring after the issuance of a bond and as such, the perceived risk of not meeting those requirements are common concerns for issuers within the U.S. Sustainalytics recognizes the absence of impact reporting commitments within Verizon’s Use of Proceeds Document and encourages Verizon to disclose impacts resulting from Eligible Green Investments, where feasible, along with its allocation reporting commitments. Sustainalytics has provided a list of suggested Key Performance Indicators in Appendix 4.

Alignment with Green Bond Principles 2018

Sustainalytics has determined that the Verizon Green Bond Use of Proceeds Document aligns to the four core components of the Green Bond Principles 2018. For detailed information please refer to Appendix 5: Green Bond/Green Bond Programme External Review Form.

² Generally, the renewable energy generator delivers energy to the grid as “null” power with the off-taking company drawing an equivalent amount of grid power from their local utility. The buyer pays a settlement to the energy producer to make up the difference between the agreed-upon contractual price of the PPA and the wholesale price obtained by the energy producer selling the null power. The associated RECs also accrue to the buyer.

³ <https://www.ft.com/content/baa217c4-157c-11e8-9376-4a6390adbb44>

Section 2: Sustainability Performance of the Issuer

Contribution of the Use of Proceeds Document to Issuer's sustainability strategy and targets

The principles which underlie Verizon's sustainability approach are laid out in the Company's Credo, which states the Company's commitment to integrity, respect, performance excellence, and accountability.⁴ Building on this foundation, Verizon has identified key environmental, social, and governance (ESG) topics which fit into three thematic areas: Transformative, Strategic, and Fundamental; within these areas are concrete action areas such as privacy & data security, climate change, supply chain standards, and community investment.⁵

Verizon tracks and reports on its progress across ten environmental subjects, including energy & emissions, environmentally efficient facilities, waste management, and water. In addition to monitoring outcomes, Verizon has established several concrete targets such as:

- Reducing carbon intensity of the Company's overall operations by 50% by 2025 from a 2016 baseline. This target was set after the previous 2020 target was achieved four years early.⁶
- Installing a total of 44 MW of on-site green energy at Verizon facilities by 2025. As of 2017, 20 MW were installed.⁷
- Obtaining ENERGY STAR certification for all eligible buildings. As of 2017, the Company had obtained 254 ENERGY STAR certifications and 354 LEED certifications, reduced the Power Utilization Effectiveness (PUE) of its data centers to 1.28, and installed over 5,000 new HVAC economizers for a total installed amount of approximately 33,000 with resultant electricity savings of 214 million kWh.⁸
- Reducing water consumption by 15% by 2025, compared to a 2016 baseline. This target was set after the previous 2020 target was achieved four years early, representing 203.2 million gallons saved compared to a 2014 baseline.⁹

Based on the policy statements and quantitative time-bound targets, Sustainalytics views Verizon's sustainability strategy positively, and is of the opinion that the eligible green projects defined by the Use of Proceeds Document will contribute to the Company's overall sustainability approach and that Verizon is well-positioned to issue green bonds.

Well positioned to address common environmental and social risks associated with the projects

Sustainalytics views the eligible green investments contemplated by the Use of Proceeds Document to have overall positive environmental benefits. Nevertheless, all major projects may have associated environmental and social risks. In particular, infrastructure projects such as renewable energy and green buildings may face risks such as air, water, and soil pollution, biodiversity impacts, worker health and safety, and community support, while network solutions such as "smart city" technologies may face risks related to data and privacy as well as supply chain risks.

Verizon has policies and procedures in place which will help mitigate the aforementioned risks, including:

- Identification of key risks in relation to its business activities, including those related to sustainable operations and privacy & data use, and has implemented compliance processes and programs, which are overseen by the Audit Committee of Verizon's Board of Directors.¹⁰
- A Customer Advisory Board, composed of independent business-sector and public interest advocates, that advises the company on matters that may impact stakeholders.¹¹ Verizon has also published a Broadband Commitment which states how Verizon will address important consumer-facing issues such as access and informed choice.¹²
- A Code of Conduct, which is considered part of mandatory training for all employees and states that, in addition to complying with all relevant laws and regulations, Verizon employees must maintain an inclusive, fair and healthy work environment, protect the Company's assets and reputation, and maintain

⁴ <https://www.verizon.com/about/sites/default/files/Verizon-Credo.pdf>

⁵ <https://www.verizon.com/about/sites/default/files/corporate-responsibility-report/2017/index.html#strategy-priorities>

⁶ <https://www.verizon.com/about/sites/default/files/corporate-responsibility-report/2017/index.html#environment-carbon>

⁷ <https://www.verizon.com/about/sites/default/files/corporate-responsibility-report/2017/index.html#environment-renewable>

⁸ <https://www.verizon.com/about/sites/default/files/corporate-responsibility-report/2017/index.html#environment-facilities>

⁹ <https://www.verizon.com/about/sites/default/files/corporate-responsibility-report/2017/index.html#environment-water>

¹⁰ <https://www.verizon.com/about/sites/default/files/corporate-responsibility-report/2017/index.html#governance-risk>

¹¹ <https://www.verizon.com/about/sites/default/files/corporate-responsibility-report/2017/index.html#governance-stakeholder>

¹² https://www.verizon.com/about/sites/default/files/Verizon_Broadband_Commitment.pdf

- integrity and fairness in the marketplace. Channels for inquiries and whistleblowers have been put in place.¹³ Furthermore, a specific zero-tolerance anti-corruption policy is in force.¹⁴
- Several policies which apply to Verizon’s suppliers and supply chain, include a Supplier Code of Conduct,¹⁵ a Conflict Minerals statement,¹⁶ and a Human Rights statement.¹⁷

Based on the policies and procedures in place, Sustainalytics considers Verizon well-positioned to mitigate the environmental and social risks associated with the projects funded by the net proceeds of any green bond(s) issued by it.

Section 3: Impact of Use of Proceeds

All five use of proceeds categories are recognized as impactful by the Green Bond Principles 2018. Sustainalytics has focused below on two where the impact is specifically relevant for Verizon.

The impact of network technologies to deliver global energy efficiency improvements

According to the International Energy Association (IEA), in 2017 world electricity demand rose by 3.1% while innovations in energy efficiency slowed down significantly.¹⁸ According to the IEA Bridge Scenario, increasing energy efficiency, for industry, buildings, and transport is a critical action that must be taken to combat GHG emissions, and could contribute to approximately 48% of global emissions reductions by 2030.¹⁹

Verizon’s existing network solutions currently enable customers in numerous sectors to operate with increased energy efficiency; the Company has worked with the Carbon Trust to quantify the benefits accrued by end users, measured in CO₂e avoided. In 2017, 7.7 million metric tons of CO₂e emissions were avoided across six industrial sectors, with the largest benefits accrued through telecommuting, smart meters and demand response units for power grids, and transportation telematics. These avoided emissions are equivalent to 138% of Verizon’s overall scope 1 & 2 emissions, indicating that their solutions have resulted in more energy savings than is required to deliver the services.²⁰

Verizon’s Use of Proceeds Document contemplates the inclusion of the “deployment of 5G wireless technologies that allow for real-time response to energy demand”. The upgrade to a next-generation 5G network will enable a transition to more network-connected devices, by supporting an ultrafast hyperconnected network that facilitates the rapid flow and analysis of data between connected devices, including personal devices, machinery, buildings, infrastructure and a range of other connectable items, to enable and optimize the delivery of services, including new services. This advancement can lead to energy savings across industries. Examples include, but are not limited to, smart metering, smart lighting, smart parking and other aspects of smart cities such as real-time traffic data for transit systems and first responders, the sharing economy, including bike and electric vehicle sharing, industry automation, and smart logistics. Recent studies have indicated that the carbon emissions abatement that can already be attributed to mobile communications technologies stands at 180 million tons of CO₂e each year in the United States and Europe, 70% of which is attributable to the machine-to-machine communications²¹ that next-generation networks and devices will further enable and enhance. Refer to Appendix 3 for further discussion of the potential applications and GHG abatement mechanisms of various technologies enabled by 5G deployments.

Given the need for energy efficiency across a diversity of industrial sectors and the potential for next-generation technologies such as 5G-connected applications to provide energy efficiency improvements, and considering Verizon’s status among the world leaders in 5G development,²² Sustainalytics views Verizon’s projects in these areas as impactful.

¹³ <https://www.verizon.com/about/sites/default/files/corporate-responsibility-report/2017/index.html#governance-code>

¹⁴ <https://www.verizon.com/about/sites/default/files/corporate-responsibility-report/2017/index.html#governance-anti-corruption>

¹⁵ <https://www.verizon.com/about/sites/default/files/Verizon-Supplier-Code-of-Conduct.pdf>

¹⁶ <https://www.verizon.com/about/sites/default/files/Verizon-Conflict-Mineral-Statement.pdf>

¹⁷ https://www.verizon.com/about/sites/default/files/Verizon_Human_Rights_Statement.pdf

¹⁸ <https://www.iea.org/publications/freepublications/publication/GECO2017.pdf>

¹⁹ <https://www.iea.org/publications/freepublications/publication/MeetingClimateChangeGoalsEnergyEfficiencyInsightsBrief.pdf>

²⁰ <https://www.verizon.com/about/sites/default/files/corporate-responsibility-report/2017/index.html#environment-energy-efficient>

²¹ GeSI Mobile Carbon Impact

²² <https://spectrum.ieee.org/static/the-race-to-5g>

Environmental limitations in deployment of 5G technology

Sustainalytics recognizes that 5G technologies as described in Verizon’s Use of Proceeds Document carries two risks/limitations in terms of impact:

- i. Large telecom networks are energy-intensive to operate, and the deployment of 5G will impose even greater electricity demands. While the overall network emissions from the telecommunications industry may increase as a result of 5G deployment and increased network traffic, the ratio of direct energy savings from mobile technologies to network energy use is currently estimated at 5:1 in Europe and North America.²³ Verizon projects that by 2022 their networks and connected solutions will result in emissions savings at a ratio of more than 2:1 compared to the emissions from their operations.²⁴ Sustainalytics considers that these net-positive ratios are indicative of 5G’s potential environmental benefits.
- ii. As 5G enables end users to deploy a wide range of solutions, the technologies have a broad impact, and can drive energy efficiency gains in a variety of industries. This does not exclude the possibility of application in fossil fuel-based industries. Sustainalytics understands that the issuer cannot control the use and application of its network technologies.

Despite these limitations, Sustainalytics is of the opinion that the deployment of 5G will provide, overall, net positive environmental impacts.

Importance of renewable energy to power telecommunications services

The telecommunications sector is by its very nature energy-intensive; it is estimated that worldwide the sector contributes to approximately 10% of total energy consumption.²⁵ Within traditional telecom service providers, the largest single energy demand is electricity to run network base stations, with telephone exchanges, core networks, and data centers also making up significant loads.²⁶ According to the US Department of Energy, the data centers that form the hubs of modern networks consume 10–50 times more energy per unit of floor space, on average, than commercial office buildings, and collectively make up approximately 2% of the country’s total electricity consumption. In 2014, US data centers consumed 70 billion kWh of electrical energy, and this amount is projected to continue to increase to 73 billion kWh by 2020, even if the ongoing trend toward increasingly efficient equipment continues.²⁷

In this context, using renewable energy to power these networks will provide significant impact in reducing carbon emissions.

Alignment with and contribution to the UN Sustainable Development Goals

The Sustainable Development Goals (SDGs) were set in September 2015 and form an agenda for achieving sustainable development by the year 2030. The green bond(s) advance the following SDG goals and targets:

Use of Proceeds Category	SDG	SDG target
Renewable Energy	7. Affordable and Clean Energy	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix
Energy Efficiency	9. Industry, Innovation and Infrastructure	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
Green Buildings	11. Sustainable Cities and Communities	11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
Sustainable Water Management	6. Clean Water and Sanitation	6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure

²³ GeSI Mobile Carbon Impact

²⁴ <https://www.verizon.com/about/sites/default/files/corporate-responsibility-report/2017/index.html#environment-energy-efficient>

²⁵ <http://www.ajer.org/papers/Vol-7-issue-3/K070396101.pdf>

²⁶ <https://link.springer.com/article/10.1007/s11107-015-0492-4>

²⁷ http://eta-publications.lbl.gov/sites/default/files/lbnl-1005775_v2.pdf

		sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
Biodiversity and Conservation	15. Life on Land	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

Conclusion

Verizon has developed the Verizon Green Bond Use of Proceeds Document, which may in the future serve as the “use of proceeds” in the issuance of a green bond. Eligible green investments include renewable energy, energy efficiency, green buildings, sustainable water management, and biodiversity and conservation, all of which will deliver environmental benefits. Sustainalytics highlights in particular Verizon’s deployment of 5G technologies which will deliver significant energy savings to end users, providing net-positive environmental benefits despite increased loads on Verizon’s own network.

The use of proceeds categories specified in the Use of Proceeds Document are aligned with those of the Green Bond Principles 2018; Verizon has described a process by which proceeds will be tracked, allocated, and managed, and commitments have been made for reporting on the allocation of an amount equal to the net proceeds. Furthermore, Sustainalytics believes that the investments funded by any green bonds will contribute to the advancement of the UN Sustainable Development Goals, in particular 6, 7, 9, 11, and 15.

Based on the above, Sustainalytics is confident that Verizon is well-positioned to issue green bonds should it decide to do so, and that the Verizon Green Bond Use of Proceeds Document is robust, transparent, and in alignment with the Green Bond Principles 2018.

Appendices

Appendix 1: Verizon Green Bond Use of Proceeds Document

We expect to receive approximately \$[.] in net proceeds from the sale of the notes in this offering after payment of the estimated offering expenses for such notes and after the underwriting discount. An amount equal to the net proceeds of the offering of the notes will be used to fund, in whole or in part, Eligible Green Investments. For purposes of this section, "Eligible Green Investments" include new and existing investments made by us during the period from two years prior to the issuance of the notes through the maturity date of the notes, in the following categories:

1. Renewable Energy:
 - a) the development, construction or operation of facilities, equipment or systems that generate or transmit renewable energy, such as:
 - i. solar energy;
 - ii. wind energy; and
 - iii. fuel cell energy; or
 - b) the purchase of renewable energy pursuant to power purchase agreements or virtual power purchase agreements;
2. Energy Efficiency: The design, manufacture or installation of systems, products and technology that are designed to reduce energy consumption or mitigate greenhouse gas emissions in our operations consistent with meeting Verizon's publicly stated goals for energy efficiency, such as:
 - a) deployment of 5G wireless technologies that allow for real-time response to energy demand, including:
 - i. smart city systems;
 - ii. smart building management systems;
 - iii. telecommuting systems; and
 - iv. smart grids;
 - b) legacy network technology replacements or upgrades;
 - c) replacement of old equipment with energy efficient equipment, such as heating, ventilation and cooling ("HVAC") systems, real estate chillers, cooling towers, and lighting; and
 - d) upgrades to Verizon buildings that are designed to improve the buildings' ENERGY STAR²⁸ scores and to have expected energy efficiency increases of at least 30%;
3. Green Buildings:
 - a) investments in new building projects and in existing building retrofits that upgrade the buildings' facilities and equipment so that either:
 - i. the building was able to receive during the two-year period prior to the issuance of the notes, or will be able to receive during the three-year period after the issuance of the notes, a third-party verified green building certification, such as:
 1. LEED²⁹ Platinum or LEED Gold; or
 2. an ENERGY STAR rating of 85 or higher; or
 - ii. the building is carbon net-zero; or
 - b) leasing, on a capitalized basis, new or existing buildings that have received one of the above third-party verified green building certifications;
4. Sustainable Water Management: Investments in corporate facilities, products or the supply chain designed to improve water efficiency, water conservation or water quality consistent with meeting Verizon's publicly stated goals for water management, such as:

²⁸ ENERGY STAR is a voluntary U.S. Environmental Protection Agency program that seeks to deliver environmental benefits and financial value through superior energy efficiency. To be eligible for ENERGY STAR certification, a building must earn an ENERGY STAR score of 75 or higher, indicating that it performs better than at least 75 percent of similar buildings nationwide.

²⁹ Leadership in Energy and Environmental Design ("LEED") is a voluntary, third party building certification process developed by the U.S. Green Building Council ("USGBC"), a non-profit organization. The USGBC developed the LEED certification process to (i) evaluate the environmental performance from a whole-building perspective over a building's life cycle, (ii) provide a definitive standard for what constitutes a "green building," (iii) enhance environmental awareness among architects and building contractors, and (iv) encourage the design and construction of energy-efficient, water-conserving buildings that use sustainable or green resources and materials.

- a) the installation or upgrade of:
 - i. water efficient fixtures that create water savings;
 - ii. water efficient irrigation systems; or
 - iii. systems designed to increase use of recycled water; and
 - b) upgrades to cooling towers and other HVAC equipment; and
5. Biodiversity and Conservation: Reforestation and ecological restoration of land to preserve biodiversity and native ecosystems.

Process for Investment Evaluation and Selection

Verizon's Sustainability team will be responsible for determining whether potential investments fit within one or more categories of Eligible Green Investments set forth above.

Management of Proceeds for the Notes

An amount equal to the net proceeds from the sale of the notes will be allocated to the financing of existing and future Eligible Green Investments. Such allocation will be reflected in Verizon's internal records. Pending the full allocation of the net proceeds to finance Eligible Green Investments, an amount equal to the unallocated balance will be temporarily invested or otherwise maintained in cash, cash equivalents and/or U.S. treasury securities. Verizon intends to allocate a majority of the net proceeds of the notes to finance Eligible Green Investments within three years from the date of issuance of the notes.

Payment of principal of and interest on the notes will be made from Verizon's general funds and will not be linked to the performance of any Eligible Green Investments.

Reporting

Within one year from the date of issuance of the notes, and annually thereafter until we have reported that an amount equal to the net proceeds of the notes has been allocated to Eligible Green Investments, we will publish, and keep readily available, on a designated website, a report setting forth information with respect to the allocation of such amount. The report will include an assertion by Verizon's Sustainability team as to the aggregate amount allocated to specific categories of Eligible Green Investments and will describe such Eligible Green Investments. The report will be accompanied by an attestation from an independent registered public accounting firm with respect to such firm's examination of the Verizon Sustainability team's assertion conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants.

The information and materials found on our website, including without limitation the aforementioned report, are not part of or incorporated by reference into this prospectus supplement or the accompanying prospectus or any other report or filing filed with the SEC.

We anticipate that our green bond program will be in alignment with the Green Bond Principles, dated June 2018, published by the International Capital Market Association (the "Green Bond Principles"), and we expect to reflect the relevant requirements of the Green Bond Principles in the management of our green bond program, as appropriate. We have worked with an outside consultant with recognized expertise in environmental, social and governance research and analysis to (i) assess our categories of Eligible Green Investments and our processes for alignment with the Green Bond Principles and (ii) obtain and make publicly available a second party opinion from such consultant in respect of compliance with such criteria.

Appendix 2: Comparison of Green Building Certification Schemes

	LEED	ENERGY STAR
Background	Leadership in Energy and Environmental Design (LEED) is a US Certification System for residential and commercial buildings used worldwide. LEED was developed by the non-profit U.S. Green Building Council (USGBC) and covers the design, construction, maintenance and operation of buildings.	ENERGY STAR is a U.S Environmental Protection Agency voluntary program that provides independently certified energy efficiency ratings for products, homes, buildings, and industrial plants. Certification is given on an annual basis, so a building must maintain its high performance to be certified year to year.
Certification levels	<ul style="list-style-type: none"> • Certified • Silver • Gold • Platinum 	<ul style="list-style-type: none"> • 1-100 score, 75 is minimum for certification
Areas of assessment	<ul style="list-style-type: none"> • Energy and atmosphere • Sustainable Sites • Location and Transportation • Materials and resources • Water efficiency • Indoor environmental quality • Innovation in Design • Regional Priority 	<ul style="list-style-type: none"> • Energy use
Requirements	<p>Minimum requirements independent of level of certification; point-based scoring system weighted by category to determine certification level.</p> <p>The rating system is adjusted to apply to specific sectors, such as: New Construction, Major Renovation, Core and Shell Development, Schools-/Retail-/Healthcare New Construction and Major Renovations, and Existing Buildings: Operation and Maintenance.</p>	1-100 score based on energy use, as calculated through the Portfolio Manager tool. Raw score is adjusted based on location, operating conditions, and other factors. The numerical score indicates performance better than at least that percentage of similar buildings nationwide.
Qualitative Considerations	Widely accepted within the industry, both in North America and internationally, and considered a guarantee of strong performance.	Accounts only for energy use, not other measures of environmental performance. Is a key component of other green building certification systems.
Performance display		

Appendix 3: Selected 5G-Supported Technologies

5G is the next generation of wide area network (WAN) technology, building upon and replacing contemporary 4G/LTE networks. Compared to current networks, 5G is expected to provide higher data throughput speed, reduced latency, advanced management and operations support systems, high-motion ability, and universal applications support.³⁰ It is anticipated that 5G, which is currently in pre-commercial testing and is expected to be widely deployed within the next several years, will provide the speeds and bandwidth to support vast new networks of connected devices, the Internet of Things (IoT).³¹ Some observers have argued that to realize all the potential benefits of large-scale IoT deployments, 5G networks are necessary.³² In this context, 5G can be seen as supporting further gains from existing network deployments which are already providing environmental benefits, as well as enabling next-generation technologies which are currently unfeasible.

Technology/ Sector	Benefits of existing network technologies	Examples of additional benefits provided by 5G	GHG Abatement Mechanism for 5G
Transportation/ Smart Cities	Telematics, optimized routing, GPS location services, dispatching, smart parking meters	Self-driving cars, car-to-vehicle-to-everything (C-V2X) communications, ³³ first responder support, improved transit priority.	Fewer and more efficient vehicle miles driven, improved public transit performance, improved public safety
Power Grids	Smart meters	Additional network grid and end user sensors to provide real-time information and two-way communication. ³⁴	More efficient energy use, better integration of renewable electricity
Health Care	Remote patient monitoring, electronic health records	High-speed and low latency networks enable robotics-assisted remote surgery and transmission of real-time high-resolution imaging for consultations and examinations. ³⁵	Less travel by both patients and doctors resulting in fuel savings, improved surgery techniques result in energy savings from shorter procedures
Manufacturing	Automation, computerization	Low latency micro-sensors and factory-scale networks can improve monitoring, control, and data collection for complex industrial processes. ³⁶	More efficient industrial processes result in emissions savings, better quality control results in better environmental performance of end products

³⁰ <https://www.networkworld.com/article/3203489/lan-wan/what-is-5g-wireless-networking-benefits-standards-availability-versus-lte.html>

³¹ <https://spectrum.ieee.org/tech-talk/computing/networks/5g-taking-stock>

³² <https://www.networkworld.com/article/3268668/internet-of-things/5g-to-become-the-catalyst-for-innovation-in-iot.html>

³³ C-V2X allows vehicles to communicate with one another as well as with other parts of the road environment such as traffic lights, toll booths, pedestrians, etc. <https://www.technologyreview.com/s/611883/how-5g-connectivity-and-new-technology-could-pave-the-way-for-self-driving-cars/>

³⁴ These technologies can help grid reliability by adapting instantaneously to spikes or outages, as well as enabling end user energy savings. One study projected 12% household savings from a 5G enabled smart grid. <https://www.engerati.com/transmission-and-distribution/article/communications-networks-technologies/5g-%E2%80%93-driver-next>

³⁵ <https://www.iotevolutionhealth.com/topics/iotevolutionhealth/articles/436795-how-5g-could-help-transform-health-care.htm>

³⁶ A case study of the application of 5G technology to manufactured bladed disks (BLISKs), a key component of jet engines, suggested savings of 360 million metric tons of CO₂e globally was possible, along with creating higher-quality engines which would reduce emissions by a further 2%. <https://www.ericsson.com/en/trends-and-insights/consumerlab/consumer-insights/reports/5g-business-value-to-industry-blisk>

Appendix 4: Suggested Key Performance Indicators

Use of Proceeds Category	Suggested KPIs (unit)
Renewable Energy	Renewable energy generated or purchased (MWh) Renewable energy capacity installed (MW) Greenhouse gas emissions avoided (tCO ₂ e)
Energy Efficiency	Energy saved (kWh, %) Greenhouse gas emissions avoided (tCO ₂ e) Energy savings enabled (MWh, %, ratio)
Green Buildings	Green building certifications (#, description)
Sustainable Water Management	Water saved (gallons, %)
Biodiversity and Conservation	Trees planted (#) Carbon sequestered (tCO ₂ e)

Appendix 5: Green Bond / Green Bond Programme - External Review Form

Section 1. Basic Information

Issuer name:	Verizon Communications Inc.
Green Bond ISIN or Issuer Green Bond Framework Name, if applicable: <i>[specify as appropriate]</i>	Verizon Green Bond Use of Proceeds Document
Review provider's name:	Sustainalytics
Completion date of this form:	February 4, 2018
Publication date of review publication: <i>[where appropriate, specify if it is an update and add reference to earlier relevant review]</i>	

Section 2. Review overview

SCOPE OF REVIEW

The following may be used or adapted, where appropriate, to summarise the scope of the review.

The review assessed the following elements and confirmed their alignment with the GBPs:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Use of Proceeds | <input checked="" type="checkbox"/> Process for Project Evaluation and Selection |
| <input checked="" type="checkbox"/> Management of Proceeds | <input checked="" type="checkbox"/> Reporting |

ROLE(S) OF REVIEW PROVIDER

- | | |
|---|--|
| <input checked="" type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other <i>(please specify)</i> : | |

Note: In case of multiple reviews / different providers, please provide separate forms for each review.

EXECUTIVE SUMMARY OF REVIEW and/or LINK TO FULL REVIEW *(if applicable)*

Please refer to Evaluation Summary above.

Section 3. Detailed review

Reviewers are encouraged to provide the information below to the extent possible and use the comment section to explain the scope of their review.

1. USE OF PROCEEDS

Overall comment on section *(if applicable)*:

The eligible categories for the use of proceeds – renewable energy, energy efficiency, green buildings, sustainable water management, and biodiversity and conservation – are aligned with those recognized by the Green Bond Principles. Sustainalytics considers that investments in these eligible categories will lead to positive environmental impacts and advance the UN Sustainable Development Goals 6, 7, 9, 11, & 15

Use of proceeds categories as per GBP:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Renewable energy | <input checked="" type="checkbox"/> Energy efficiency |
| <input type="checkbox"/> Pollution prevention and control | <input checked="" type="checkbox"/> Environmentally sustainable management of living natural resources and land use |
| <input type="checkbox"/> Terrestrial and aquatic biodiversity conservation | <input type="checkbox"/> Clean transportation |
| <input checked="" type="checkbox"/> Sustainable water and wastewater management | <input type="checkbox"/> Climate change adaptation |
| <input type="checkbox"/> Eco-efficient and/or circular economy adapted products, production technologies and processes | <input checked="" type="checkbox"/> Green buildings |
| <input type="checkbox"/> Unknown at issuance but currently expected to conform with GBP categories, or other eligible areas not yet stated in GBPs | <input type="checkbox"/> Other <i>(please specify)</i> : |

If applicable please specify the environmental taxonomy, if other than GBPs:

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section (if applicable):

Verizon's Sustainability team will be responsible for determining if potential investments are in conformance with the eligibility criteria of the Use of Proceeds Document. This is in line with market practice.

Evaluation and selection

- | | |
|--|--|
| <input checked="" type="checkbox"/> Credentials on the issuer's environmental sustainability objectives | <input checked="" type="checkbox"/> Documented process to determine that projects fit within defined categories |
| <input checked="" type="checkbox"/> Defined and transparent criteria for projects eligible for Green Bond proceeds | <input type="checkbox"/> Documented process to identify and manage potential ESG risks associated with the project |
| <input type="checkbox"/> Summary criteria for project evaluation and selection publicly available | <input type="checkbox"/> Other (<i>please specify</i>): |

Information on Responsibilities and Accountability

- | | |
|--|--|
| <input checked="" type="checkbox"/> Evaluation / Selection criteria subject to external advice or verification | <input type="checkbox"/> In-house assessment |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

3. MANAGEMENT OF PROCEEDS

Overall comment on section (*if applicable*):

Verizon will track allocations using its internal recording system. Pending full allocation, an amount equal to the unallocated net proceeds will be held in cash, cash equivalents, and/or US Treasury securities. Verizon has stated its intention to allocate the majority of the net proceeds within three years of issuance. This is in line with market practice.

Tracking of proceeds:

- | |
|---|
| <input checked="" type="checkbox"/> Green Bond proceeds segregated or tracked by the issuer in an appropriate manner |
| <input checked="" type="checkbox"/> Disclosure of intended types of temporary investment instruments for unallocated proceeds |
| <input type="checkbox"/> Other (<i>please specify</i>): |

Additional disclosure:

- | | |
|--|---|
| <input type="checkbox"/> Allocations to future investments only | <input checked="" type="checkbox"/> Allocations to both existing and future investments |
| <input type="checkbox"/> Allocation to individual disbursements | <input type="checkbox"/> Allocation to a portfolio of disbursements |
| <input type="checkbox"/> Disclosure of portfolio balance of unallocated proceeds | <input type="checkbox"/> Other (<i>please specify</i>): |

4. REPORTING

Overall comment on section (if applicable):

Verizon intends to report, on an annual basis, on the aggregate amounts allocated to each category which is in line with market practice. Although Sustainalytics acknowledges certain concerns that US corporations may have as a result of disclosure requirements under U.S. securities laws, Sustainalytics encourages Verizon to disclose impact resulting from Eligible Green Investments where feasible on an annual basis.

Use of proceeds reporting:

- | | |
|--|--|
| <input type="checkbox"/> Project-by-project | <input checked="" type="checkbox"/> On a project portfolio basis |
| <input type="checkbox"/> Linkage to individual bond(s) | <input type="checkbox"/> Other (<i>please specify</i>): |

Information reported:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Allocated amounts | <input type="checkbox"/> Green Bond financed share of total investment |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Frequency:

- | | |
|--|--------------------------------------|
| <input checked="" type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
| <input type="checkbox"/> Other (please specify): | |

Impact reporting:

- | | |
|--|---|
| <input type="checkbox"/> Project-by-project | <input type="checkbox"/> On a project portfolio basis |
| <input type="checkbox"/> Linkage to individual bond(s) | <input type="checkbox"/> Other (please specify): |

Frequency:

- | | |
|--|--------------------------------------|
| <input type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
| <input type="checkbox"/> Other (please specify): | |

Information reported (expected or ex-post):

- | | |
|--|---|
| <input type="checkbox"/> GHG Emissions / Savings | <input type="checkbox"/> Energy Savings |
| <input type="checkbox"/> Decrease in water use | <input type="checkbox"/> Other ESG indicators (please specify): |

Means of Disclosure

- | | |
|--|--|
| <input type="checkbox"/> Information published in financial report | <input type="checkbox"/> Information published in sustainability report |
| <input type="checkbox"/> Information published in ad hoc documents | <input checked="" type="checkbox"/> Other (please specify): Green bond report published on company website |

- Reporting reviewed (if yes, please specify which parts of the reporting are subject to external review):

Where appropriate, please specify name and date of publication in the useful links section.

USEFUL LINKS (e.g. to review provider methodology or credentials, to issuer's documentation, etc.)

SPECIFY OTHER EXTERNAL REVIEWS AVAILABLE, IF APPROPRIATE

Type(s) of Review provided:

- | | |
|--|--|
| <input type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification / Audit | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Review provider(s):

Date of publication:

ABOUT ROLE(S) OF INDEPENDENT REVIEW PROVIDERS AS DEFINED BY THE GBP

- i. Second Party Opinion: An institution with environmental expertise, that is independent from the issuer may issue a Second Party Opinion. The institution should be independent from the issuer's adviser for its Green Bond framework, or appropriate procedures, such as information barriers, will have been implemented within the institution to ensure the independence of the Second Party Opinion. It normally entails an assessment of the alignment with the Green Bond Principles. In particular, it can include an assessment of the issuer's overarching objectives, strategy, policy and/or processes relating to environmental sustainability, and an evaluation of the environmental features of the type of projects intended for the Use of Proceeds.
- ii. Verification: An issuer can obtain independent verification against a designated set of criteria, typically pertaining to business processes and/or environmental criteria. Verification may focus on alignment with internal or external standards or claims made by the issuer. Also, evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria. Assurance or attestation regarding an issuer's internal tracking method for use of proceeds, allocation of funds from Green Bond proceeds, statement of environmental impact or alignment of reporting with the GBP, may also be termed verification.
- iii. Certification: An issuer can have its Green Bond or associated Green Bond framework or Use of Proceeds certified against a recognised external green standard or label. A standard or label defines specific criteria, and alignment with such criteria is normally tested by qualified, accredited third parties, which may verify consistency with the certification criteria.
- iv. Green Bond Scoring/Rating: An issuer can have its Green Bond, associated Green Bond framework or a key feature such as Use of Proceeds evaluated or assessed by qualified third parties, such as specialised research providers or rating agencies, according to an established scoring/rating methodology. The output may include a focus on environmental performance data, the process relative to the GBP, or another benchmark, such as a 2-degree climate change scenario. Such scoring/rating is distinct from credit ratings, which may nonetheless reflect material environmental risks.

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