



2022



# GREEN INNOVATION BOND REPORT

AS OF DECEMBER 31, 2022



NXP Semiconductors N.V. (NASDAQ: NXPI) enables secure connections for a smarter world, advancing solutions that make lives easier, better, and safer. As the world leader in secure connectivity solutions for embedded applications, NXP is driving innovation in the automotive, industrial & IoT, mobile, and communication infrastructure markets.

## INTRODUCTION

On April 29, 2020, NXP issued as one of the first semiconductors companies a green innovation bond. The green innovation bond offering raised \$1 billion of proceeds for eligible green projects. On May 4, 2021, NXP organized a follow-up debt offering of a green innovation bond for \$1 billion. Subsequently, on May 16, 2022, NXP issued a third green innovation bond for \$1 billion. The proceeds of these offerings are allocated to Eligible Green Projects defined in our [Green Innovation Bond Framework](#), following the ICMA Green Bond Principles and Sustainability Bond Guidelines 2018, to ensure the selected and disclosed projects meet widely recognized criteria. Subsequently, Sustainalytics successfully provided a second-party opinion on January 24, 2020.

NXP's 2022 Green Innovation Bond Report describes the use of proceeds, and where feasible, provides insight on the sustainability impact, in respect of the USD 1,000,000,000 3.4% Notes due May 1, 2030 (ISIN US62954HAD08), the USD 1,000,000,000 2.5% Notes due May 11, 2031 (ISIN US62954HAG39) and the USD 1,000,000,000 5.0% Notes due January 15, 2033 (ISIN US62954HBB33).

As of December 31, 2022, 100% of the net proceeds of the USD 1,000,000,000 3.4% Notes due May 1, 2030 were allocated to Eligible Green Projects, with the look back period to the full year 2019. This Green Innovation Bond Report therefor covers spend that occurred in 2019, 2020 and 2021 on selected Eligible Green Projects for this note.

As of December 31, 2022, 100% of the net proceeds of the USD 1,000,000,000 2.5% Notes due May 11, 2031 were allocated to Eligible Green Projects, with the look back period to the full year 2021. This Green Innovation Bond Report therefor covers spend that occurred in 2021 and 2022 on selected Eligible Green Projects for this note.

As of December 31, 2022, 100% of the net proceeds of the USD 1,000,000,000 5% Notes due January 15, 2033 were allocated to Eligible Green Projects, with the look back period to the full year 2022. This Green Innovation Bond Report therefor covers spend that occurred in 2022 on selected Eligible Green Projects for this note.

EY performed a limited assurance engagement on the 2022 Green Innovation Bond Report.

Please note, the impact reporting included in this document largely consists of predictions and is subject to a wide range of known and unknown risks and uncertainties, many of which are beyond NXP's control. The impact reporting included in this release should not be regarded as representations by NXP that the estimated results will be achieved. Actual impact results may vary materially from the guidance we provide today. The majority of the green innovation bond proceeds is intended to be invested in selected research and development (R&D) activities, which have the potential to drive positive environmental outcomes, however it is difficult to quantify the direct impacts of R&D related activities.

NXP has based the impact reporting guidance included in this Green Innovation Bond Report on judgments, estimates and academic studies that management believes are reasonable given its assessment and other information reasonably available as of the date of this report.

## SMARTER, MORE SUSTAINABLE PRODUCTS

NXP believes a company's corporate responsibility is to continuously improve through its actions to make a positive impact on society. As a technology company, we want our stakeholders and employees motivated and excited to work for a responsible company and design products that can change the world. By building on innovation and providing technologies that directly address societal demands, some of our most exciting times as a company lie ahead.

We believe the semiconductor industry, which produce tiny circuits that can perform advanced functions, with relatively low power consumption, is poised to address some of the most compelling challenges we face as a society, including issues related to:

Energy efficiency
National and personal security
Dependence on fossil fuels and minimizing carbon emissions
Caring for the health of a growing and rapidly aging world population
Reducing the power consumption of server farms
Enabling the shift to hybrid and electric vehicles
Making consumer appliances operate more efficiently
Accelerating the deployment of energy-saving lighting technologies

It is our collective responsibility, as an industry, to continue being proactive as we create value for consumers, the environment, and society as a whole. NXP will continue to operate with a focus on corporate responsibility and our duty to be good corporate citizens.

# 01 GREEN INNOVATION BOND ALLOCATION REPORTING

## ALLOCATION GREEN INNOVATION BOND USD 1,000,000,000 3.4% NOTES, DUE MAY 1, 2030

Eligible Projects	Amount in Millions USD		
	2019	2020	2021
Energy efficiency in power adaptors	12	7.5	0.6
Smart mobility	69.7	95.9	57.1
Preventing emissions through automated and connected traffic	140.2	168.7	71.3
Significantly reducing power consumption of 5G networks	40.8	19.6	17.2
Edge processing reducing the need for energy-hungry cloud services	102.3	106.6	57.8
Smart buildings	5.7	11.1	10.6
Green project related to our manufacturing and non-manufacturing facilities	1.5	3.7	-
<b>Total</b>	<b>372.2</b>	<b>413.1</b>	<b>214.7</b>

### As per December 31, 2022

Percentage of net proceeds allocated to Eligible Green Project	100.0%
Percentage of net proceeds allocated to existing Eligible Green Project*	50.4%

\* Existing Eligible Green Projects are Eligible Green projects that incurred expenditure before the date of issuance of the respective Green Innovation Bond during the look back period.

## ALLOCATION GREEN INNOVATION BOND USD 1,000,000,000 2.5% NOTES, DUE MAY 11, 2031

Eligible Projects	Amount in Millions USD	
	2021	2022
Energy efficiency in power adaptors	5.9	8.1
Smart mobility	266.3	144.6
Preventing emissions through automated and connected traffic	123.6	68.7
Significantly reducing power consumption of 5G networks	39.3	25.1
Edge processing reducing the need for energy-hungry cloud services	60.4	66.2
Smart buildings	152.8	39.0
Green project related to our manufacturing and non-manufacturing facilities	-	-
<b>Total</b>	<b>648.3</b>	<b>351.7</b>

### As per December 31, 2021

Percentage of net proceeds allocated to Eligible Green Project	100.0%
Percentage of net proceeds allocated to existing Eligible Green Project*	11.7%

\* Existing Eligible Green Projects are Eligible Green projects that incurred expenditure before the date of issuance of the respective Green Innovation Bond during the look back period.

## ALLOCATION GREEN INNOVATION BOND USD 1,000,000,000 5.0% NOTES, DUE JANUARY 15, 2033

Eligible Projects	Amount in Millions USD
	2021
Energy efficiency in power adaptors	23.2
Smart mobility	413.3
Preventing emissions through automated and connected traffic	196.2
Significantly reducing power consumption of 5G networks	66.8
Edge processing reducing the need for energy-hungry cloud services	189.2
Smart buildings	111.3
Green project related to our manufacturing and non-manufacturing facilities	-
<b>Total</b>	<b>1,000.0</b>

### As per December 31, 2021




Percentage of net proceeds allocated to Eligible Green Project	100.0%
Percentage of net proceeds allocated to existing Eligible Green Project*	31.9%

\* Existing Eligible Green Projects are Eligible Green projects that incurred expenditure before the date of issuance of the respective Green Innovation Bond during the look back period.



# 02 GREEN INNOVATION BOND ALLOCATION BY SDG

(UN SUSTAINABLE DEVELOPMENT GOALS)

## GREEN INNOVATION BOND USD 1,000,000,000 3.4% NOTES, DUE MAY 1, 2030



Allocation by Sustainable Development Goals	Amount in Millions USD		
	2019	2020	2021
 <p><b>7 AFFORDABLE AND CLEAN ENERGY</b></p> <ul style="list-style-type: none"> <li>• Energy efficiency in power adaptors</li> <li>• Significantly reducing power consumption of 5G networks</li> <li>• Edge processing reducing the need for energy-hungry cloud services</li> <li>• Smart buildings</li> </ul>	160.8	144.8	86.3
 <p><b>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</b></p> <ul style="list-style-type: none"> <li>• Green project related to our manufacturing and non-manufacturing facilities</li> </ul>	1.5	3.7	-
 <p><b>11 SUSTAINABLE CITIES AND COMMUNITIES</b></p> <ul style="list-style-type: none"> <li>• Smart mobility</li> <li>• Preventing emissions through automated and connected traffic</li> </ul>	209.9	264.6	128.4
<b>Total</b>	<b>372.2</b>	<b>413.1</b>	<b>214.7</b>

**GREEN INNOVATION BOND**  
**USD 1,000,000,000 2.5%, DUE MAY 11, 2031**

Allocation by Sustainable Development Goals		Amount in Millions USD	
		2021	2022
 <p><b>7 AFFORDABLE AND CLEAN ENERGY</b></p> <ul style="list-style-type: none"> <li>• Energy efficiency in power adaptors</li> <li>• Significantly reducing power consumption of 5G networks</li> <li>• Edge processing reducing the need for energy-hungry cloud services</li> <li>• Smart buildings</li> </ul>	258.5	138.4	
	389.9	213.3	
 <p><b>11 SUSTAINABLE CITIES AND COMMUNITIES</b></p> <ul style="list-style-type: none"> <li>• Smart mobility</li> <li>• Preventing emissions through automated and connected traffic</li> </ul>	648.3	351.7	
	<b>Total</b>	<b>648.3</b>	<b>351.7</b>



**GREEN INNOVATION BOND**  
**USD 1,000,000,000 5.0%, DUE JANUARY 15, 2033**

Allocation by Sustainable Development Goals		Amount in Millions USD
		2022
 <p><b>7 AFFORDABLE AND CLEAN ENERGY</b></p>	<ul style="list-style-type: none"> <li>• Energy efficiency in power adaptors</li> <li>• Significantly reducing power consumption of 5G networks</li> <li>• Edge processing reducing the need for energy-hungry cloud services</li> <li>• Smart buildings</li> </ul>	390.5
 <p><b>11 SUSTAINABLE CITIES AND COMMUNITIES</b></p>	<ul style="list-style-type: none"> <li>• Smart mobility</li> <li>• Preventing emissions through automated and connected traffic</li> </ul>	609.5
<b>Total</b>		<b>1,000.0</b>

## 03 ACCOUNTING METHODOLOGY

The projects selected were based on the definitions, principles and categories defined in the Green Innovation Bond Framework.

Eligible Green Project costs are tracked per project through SAP Project Accounting module (IFRS methodology) and are the sum of the expenditures incurred during the year. The costs related to the project activities comprise all directly attributable expenditure to the project. This includes:

- A** Expenditure on materials and services used or consumed for the project activities;
- B** The salaries, wages and other employment related costs of personnel engaged in the project activities;
- C** All directly attributable costs necessary to support the activities under B) (e.g. R&D equipment, licenses, IT and real estate charges).

Related to manufacturing and real-estate activities, the costs allocated are based on materials and service invoices.

### FOREIGN CURRENCIES

The Company uses the U.S. dollar as its reporting currency. The functional currency of the holding company is the U.S. dollar. For consolidation purposes, the financial statements of the entities within the Company with a functional currency other than the U.S. dollar, are translated into U.S. dollars. Assets and liabilities are translated using the exchange rates on the applicable balance sheet dates. Income and expense items are translated at monthly exchange rates in the periods involved.

# 04 IMPACT REPORTING

The majority of the green innovation bond proceeds is intended to be invested in research and development (R&D) activities. While these advanced R&D activities have the potential to drive positive environmental outcomes, it is difficult to quantify the direct impacts of R&D related activities.

NXP can however present several examples of recent developments and product launches in the eligible project categories listed above. The anticipated contributions to energy saving in end-products are based both on referenced academical studies as well as internal subject matter specialists.

## 1. ENERGY EFFICIENCY IN POWER ADAPTORS

Hundreds of millions of electronic devices used by consumers worldwide use power adapters for converting grid voltage into a lower voltage level, often 5 to 12 V. NXP's latest resonant technology aims to achieve world-class efficiency. These resonant solutions enable our customers to comply with (existing and future) challenging emission reduction and energy-efficiency regulations. NXP's chip TEA1716 was the first to meet the EuP (Energy-using Products) Lot 6 regulation for a resonant power supply.

Resonant technology in PC power supplies enables the energy efficiency to increase from ~84 to ~92% vs conventional technologies. NXP's high efficiency at low loads enables that a complete separate standby converter can be omitted, making the use of resonant technology also cost competitive. In addition, NXP's sustainable chip design saves a considerable amount of raw materials. The chips are free of Antimony Oxides and Halogens<sup>1</sup>, and with every generation of chips, NXP's constant innovations save up to 15% on external components. This means less plastic packaging and gold bond wire is required.

## 2. SMART MOBILITY

Electric vehicles are ramping in volume, but their limited range is still cited as a main obstacle to buying. Extending the range of electric and hybrid cars are key innovation areas of NXP through our battery control and energy management solutions. These solutions enable the efficient use and regeneration of energy, resulting in extended efficiency and hence range, as well as lower emissions in the case of hybrid vehicles. Academic research suggests that improved decision-making and control of hybrid electric vehicles can increase the range of the vehicle by up to 28%<sup>2</sup>. In the Battery Management System (BMS) market, NXP is a key supplier that can offer solutions which are scalable over different voltages, communication protocols and topologies. These chips include processing and analog products that deliver the desired accuracy, reliability and system cost-efficiency required by large car makers to electrify their entire fleet in the future.

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<sup>1</sup> A product is deemed halogen-free if it contains less than 900 ppm of chlorine and bromine compounds combined by weight of homogeneous material. The halogens fluorine, iodine and astatine are not in the scope.

<sup>2</sup> <https://cecas.clemson.edu/~avahidi/wp-content/uploads/2016/10/chen.pdf>

As an example of the impact of the allocation, on October 20, 2020, Volkswagen and NXP jointly announced that Volkswagen has adopted NXP's battery management system (BMS) into its innovative MEB (Modular Electric Propulsion) platform to help increase vehicle range, extend battery longevity, and enhance safety. NXP's BMS provides the flexibility and scalability needed by Volkswagen to meet the diverse range needs of today's electromobility customers, whether they seek a compact car, the groundbreaking ID.3, a plug-in hybrid, or a luxury electric vehicle like the ID.4, Audi e-Tron or Porsche Taycan. VW states that it will deliver up to 75 full-electric vehicle models to market by 2029. Currently, 16 of the leading Top 20 car makers have designed in NXP's battery management solutions.

NXP is now developing motor control solutions for 48V mild hybrid vehicles: cars with a regular combustion engine equipped with a small electric motor/generator. The hybrid power drive adds torque at low speeds when accelerating, assisting the combustion engine, thereby increasing fuel economy by 10%-20% compared to a combustion-only engine<sup>3</sup>. Precision analog design is a core competence of NXP which, along with our scalable portfolio and optimized algorithms can help the carmaker enable smaller batteries and therefore decrease the demand for raw materials. In electric vehicle control, we are also expanding the performance of the control chips. Advanced algorithms and integration of components are applied to optimize overall system power consumption, helping to increase energy efficiency and vehicle range.

The vehicle electrification trend continues to gather momentum. This has increased the need for rapid innovation in microcontrollers to respond to the requirements of electric vehicle architectures. Energy management is an important challenge as consumers continue to be concerned about vehicle range. How an electrified vehicle reacts to driver input, road conditions and trip characteristics can have a significant impact on battery performance, power distribution and ultimately driver experience. Specifically, this means higher levels of mathematically intense computational performance and new features like isolation and virtualization. This supplements the traditional automotive characteristics of reliability, functional safety, and security.

NXP recently completed its design of a new SoC architecture (S32ZSE) to address the expanding processing requirements of electric vehicles. Electric propulsion control strategy is traditionally heavily distributed across the vehicle network, limiting data sharing, and impacting the vehicle's ability to predict and react to trip characteristics and manage energy consumption. The S32ZSE allows the consolidation of electric propulsion and chassis control into one single compute environment, allowing car makers to develop holistic vehicle dynamic control strategies, ultimately enhancing vehicle range, and improving driver experience. New vehicles will feature the S32ZSE MCU in production from 2024.

NXP continues to innovate in the areas of vehicle electrification and low-power processing in consumer and industrial devices. In 2022, NXP added a new series of microcontrollers to its robust electrification portfolio. The new S32K39 series of automotive microcontrollers (MCUs) are optimized for electric vehicle (EV) control applications taking electrification into the future with high-speed and high-resolution control for increased power efficiency. Aimed at extending driving range and providing a smoother EV driving experience, the new MCUs enable NXP's battery management system (BMS) and EV power inverters to provide end-to-end solutions for next-generation EVs<sup>4</sup>.

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<sup>3</sup> <https://www.sciencedirect.com/science/article/pii/S1110016817301539>

<sup>4</sup> <https://www.nxp.com/company/about-nxp/nxp-introduces-high-performance-s32k39-series-mcus-for-modern-electrification-applications:NW-NXP-INTRODUCES-HIGH-PERFORMANCE-S32K39-SERIES>



Additionally, the company announced two new processor families that extend the benefits of NXP's innovative S32 automotive platform with safe, high-performance real-time processing. The S32Z and S32E processor families help enable the automotive industry to accelerate the integration of diverse real-time applications for domain and zonal control, safety processing and vehicle electrification. that are critical to the next generation of safer and more efficient vehicles. The S32E processors are ideal for electric vehicle (xEV) control and smart actuation<sup>5</sup>.

NXP is also pushing at the frontiers of vehicle electrification with a new reference design that harnesses artificial intelligence (AI) and digital twin modelling to improve battery management. NXP has developed a solution to connect its high-voltage battery management system (HVBMS) through its S32G GoldBox vehicle networking reference design to the cloud to leverage an artificial intelligence (AI) powered battery digital twin. By utilizing Electra Vehicles, Inc.'s EVE-Ai™ 360 Adaptive Controls technology , NXP unleashes the power of digital twin models in the cloud to better predict and control the physical BMS in real time, to improve battery performance, battery state of health of up to 12% and enable multiple new applications, such as EV fleet management. NXP showcased a demo of the solution at this year's electronica exposition in Munich<sup>6</sup>.

### **3. PREVENTING EMISSIONS THROUGH AUTOMATED AND CONNECTED TRAFFIC**

Advanced Driver Assistance Systems (ADAS), as enabled by NXP chip architectures, range from simple features like cruise control, up to fully self-driving cars. Autonomous driving can reduce fuel consumption up to 45%<sup>7</sup>. The on-board systems are more capable than humans of smoothing the ride and saving fuel. Speed limits are automatically observed, and car-to-car communication systems help to avoid and even prevent traffic congestion. Smart vehicle automation enables traffic to move at higher speeds due to less congestion, reducing energy consumption and emissions up to about 60%<sup>8</sup>.

In December 2020, NXP launched a complete suite of radar sensor solutions in ADAS that can surround vehicles in a 360-degree safety cocoon. The solution covers all radar segments from NCAP corner to 4D imaging radar. NXP has demonstrated platooning technology for trucks, since past studies show that the net fuel savings of platooning are between 5% and 8% compared to vehicles driving independently and isolated from each other<sup>9</sup>.

In September 2021, NXP participated in a multi brand truck platooning demonstration event in the Barcelona region, in which major European truck manufacturers (OEMs) joined, and for the first time, drove seven trucks together in a fully coordinated platoon. This technology is a significant step forward to fully connected automated driving, and supports improvements in safety, fuel economy and efficient logistics<sup>10</sup>.

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<sup>5</sup> <https://www.nxp.com/company/about-nxp/nxp-extends-s32-automotive-platform-with-s32z-and-s32e-real-time-processor-families-for-new-software-defined-vehicles:NW-NXP-EXTENDS-S32-AUTOMOTIVE-PLATFORM-WITH-S32Z>

<sup>6</sup> <https://www.nxp.com/company/about-nxp/ai-powered-cloud-connected-battery-management-system-for-electric-vehicles:NW-NXP-AI-POWERED-CLOUD-CONNECTED-BATTERY>

<sup>7</sup> <https://www.osti.gov/biblio/1409303>

<sup>8</sup> [https://www.researchgate.net/publication/300566839\\_Vehicle\\_Automation\\_and\\_Its\\_Potential\\_Impacts\\_on\\_Energy\\_and\\_Emissions](https://www.researchgate.net/publication/300566839_Vehicle_Automation_and_Its_Potential_Impacts_on_Energy_and_Emissions)

<sup>9</sup> [https://www.researchgate.net/publication/224190659\\_An\\_experimental\\_study\\_on\\_the\\_fuel\\_reduction\\_potential\\_of\\_heavy\\_duty\\_vehicle\\_platooning](https://www.researchgate.net/publication/224190659_An_experimental_study_on_the_fuel_reduction_potential_of_heavy_duty_vehicle_platooning)

<sup>10</sup> <https://platooningensemble.eu/news/23-september6054b64811568>

## 4. SIGNIFICANTLY REDUCING POWER CONSUMPTION OF 5G NETWORKS

Base-stations for wireless communication transmit huge amounts of data over long distances. The power amplifiers and antennas together, typically consume multiple kilowatts of electric power per station. The upcoming superfast fifth generation mobile internet standard (5G) is expected to further boost energy consumption, as many more base stations will be required in a 5G network.

On September 29, 2020, NXP announced the opening of its 150 mm (6-inch) RF Gallium Nitride (GaN) fab in Chandler, Arizona, one of the most advanced fabs dedicated to 5G RF power amplifiers in the United States. The state-of-the-art fab will serve as a hub, enabling NXP to innovate faster with strong collaboration between the new internal factory and NXP's R&D team based in the same location. In classical mobile network systems, to reach a mobile phone user, energy is radiated from the central base station in an omni-directional way (360°). As a consequence, a lot of energy is wasted. The crucial step here is to create focused signal beams between the base station and the mobile device. This can be done through "beam steering" for which NXP has developed and is currently supplying the driver devices in the high-frequency range (mmWave). Next generations of products are in development today.

On October 12, 2020 NEC announced they selected NXP to supply RF Airfast multi-chip modules to be used in a 5G antenna Radio Unit (RU) for Rakuten Mobile, one of Japan's leading mobile network operators. Two months later, NXP launched its 2nd generation RF multi-chip modules offering increased efficiency of up to 45% at 2.6 GHz, to help reduce the overall electricity consumption of the 5G network<sup>11</sup>.

## 5. EDGE PROCESSING REDUCING THE NEED FOR ENERGY-HUNGRY CLOUD SERVICES

NXP's edge processing portfolio for automotive, industrial and IoT offers industry-leading power efficiency and battery life. Our smallest microcontrollers consume as little as 1 microwatt in deep power down modes. This degree of power efficiency provides years of battery life. New research and development projects are aimed at breaking our power consumption record in Microcontrollers, where our i.MX RT family is already setting new standards for the industry. NXP's advanced application processors enable complex and fast computing "at the edge." This means that processing is performed directly in IoT devices such as cameras, wearable devices, domestic appliances and industrial equipment, rather than requiring data to be sent to/from the cloud for processing.

NXP is increasingly providing customers the ability to perform local data processing through machine learning intelligence, helping to minimize unsecure and power-hungry cloud services. An example of progress in this domain is NXP's launch, in July 2020, of the industry's first MCU-based implementation of a Glow Neural Network compiler for machine learning at the edge. Future research will be focused on the development of more autonomous edge computing chips which adaptively turn on only when needed, helping to reduce energy wastage. NXP sees great opportunities for energy saving, as well as for our business, by further enhancing our investments in Artificial Intelligence R&D for usage in microcontrollers.

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<sup>11</sup> <https://www.nxp.com/company/about-nxp/nxp-extends-its-leadership-in-5g-infrastructure-with-2-generation-rf-multi-chip-modules-that-amp-up-frequency-power-and-efficiency:~:text=NW-5G-INFRASTRUCTURE-GENERATION>

In March 2021, NXP has announced the expansion of its ultra-low power crossover applications processor product line with two new families based on state-of-the-art EdgeLock® secure enclave and innovative Energy Flex architecture<sup>12</sup>. The i.MX 8ULP family and i.MX 8ULP-CS (cloud secured) Microsoft Azure Sphere-certified family target a wide range of industrial and IoT use cases requiring energy efficiency, security, and performance. In the i.MX 8ULP and i.MX 8ULP-CS families, the Energy Flex architecture delivers as much as 75% improved energy efficiency compared to its predecessor by uniquely combining heterogeneous domain processing, design techniques and 28nm FD-SOI process technology.

In addition, medical device manufacturers see technology enabling personal devices to manage the care and wellbeing of patients as the world is continuing to navigate the challenges resulting from the pandemic. Personal devices such as health data collection: heart rate, sleep monitor information and other important data that is beneficial for telemed appointments. By combining geolocation and connectivity solutions like Bluetooth Low Energy® (BLE) or ultrawideband (UWB), these devices can also help manage safe distances in retail shops or the workplace – giving users feedback through haptics or visual indicators on their screens<sup>13</sup>.

In 2022, NXP augmented its energy efficient edge processing portfolio with the addition of its new MCX portfolio of microcontrollers, which is designed to advance innovation in smart homes, smart factories, smart cities and across many emerging industrial and IoT edge applications. Among the portfolio offerings is the MCX L Ultra-Low Power series, designed for power-critical applications. With one of the industry's lowest static and dynamic power consumption, these devices will help extend battery life significantly compared to traditional MCUs<sup>14</sup>.

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<sup>12</sup> <https://www.nxp.com/company/about-nxp/nxp-elevates-security-and-energy-efficiency-at-the-edge-with-i-mx-8ulp-and-the-microsoft-azure-sphere-certified-i-mx-8ulp-cs-applications-processor-families:NW-NXP-ELEVATES-SECURITY-AND-ENERGY-EFFICIENCY>

<sup>13</sup> <https://www.nxp.com/company/blog/four-trends-shaping-the-wearables-industry:BL-TRENDS-WEARABLES>

<sup>14</sup> <https://www.nxp.com/company/about-nxp/nxp-debuts-new-mcx-portfolio-of-microcontrollers-for-the-next-era-of-advanced-industrial-and-iot-edge-computing:NW-NXP-DEBUTS-NEW-MCX-PORTFOLIO-OF-MICROCONTROL>

## 6. SMART BUILDINGS

According to the International Energy Agency, buildings account for nearly one-third of global energy consumption and 55% of global electricity demand; more than in transportation, or in industry. Vast amounts of energy can be saved using smart control systems for air-conditioning, heating, lighting, and other interior provisions. Improving the operational efficiency of buildings by using real-time data may lower total energy consumption between 2017 and 2040 by as much as 10%<sup>15</sup>. Adapting equipment usage to human presence, activity, and preference settings, energy consumption may be decreased significantly, compared to the “always-on” settings often applied today. Also, Artificial Intelligence provides self-learning for these systems, further minimizing energy usage autonomously. NXP develops the systems and components that may help “smarten” buildings and homes. In this context, NXP announced<sup>16</sup> on January 4th 2022, the IW612, the industry’s first secure tri-radio device to support the Wi-Fi 6, Bluetooth 5.2 and 802.15.4 protocols. With the IW612, developers can leverage different wireless connectivity protocols on a single device to create an easy-to-use, secure product for smart home solutions.

In 2022, NXP announced the further expansion of its Trimension™ portfolio with the industry’s first single-chip solution to combine both UWB radar and fine ranging capabilities. Ultra-fine motion detection enabled by UWB radar can help advance safety, as well as convenience, in the smart home<sup>17</sup>.

## 7. GREEN PROJECTS RELATED TO OUR MANUFACTURING AND NON-MANUFACTURING ACTIVITIES

NXP France has engaged to replace its Toulouse site central plant with new building and equipment that became operational in 2021. Compared to the year 2020, energy consumption in 2022 has decreased significantly for the Toulouse site: Electricity -17%, Natural gas -70% and Water -71%.

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<sup>15</sup> <https://www.iea.org/reports/digitalisation-and-energy>

<sup>16</sup> <https://www.nxp.com/company/about-nxp/nxp-advances-iot-connectivity-with-industrys-first-secure-tri-radio-device:NW-NXP-ADVANCES-IOT-CONNECTIVITY-TRI-RADIO-DEVICE>

<sup>17</sup> <https://www.nxp.com/company/about-nxp/nxp-enables-ultra-fine-motion-detection-with-trimension-uwb-radar-portfolio:NW-NXP-ENABLES-ULTRA-FINE-MOTION-DETECTION-WITH>



# LIMITED ASSURANCE REPORT OF THE INDEPENDENT AUDITOR ON NXP SEMICONDUCTORS N.V.'S GREEN INNOVATION BOND REPORT

To: the Executive Officers of NXP Semiconductors N.V.

## OUR CONCLUSION

We have performed a limited assurance engagement on the accompanying Green Innovation Bond Report as of December 31, 2022 (hereafter: the Green Innovation Bond Report) of NXP Semiconductors N.V. (hereafter: the Company or NXP) based in Eindhoven, the Netherlands.

Based on our procedures performed and the evidence obtained, nothing has come to our attention that causes us to believe that the Green Innovation Bond Report is not prepared, in all material respects, in accordance with the reporting criteria as included in the 'Reporting criteria' section of our report.

## BASIS FOR OUR CONCLUSION

We have performed our limited assurance engagement on the Green Innovation Bond Report in accordance with Dutch law, including Dutch Standard 3000A 'Assurance-opdrachten anders dan opdrachten tot controle of beoordeling van historische financiële informatie (attest-opdrachten)' (Assurance engagements other than audits or reviews of historical financial information (attestation engagements)). Our responsibilities under this standard are further described in the 'Our responsibilities for the assurance engagement on the Green Innovation Bond Report' section of our report.

We are independent of NXP Semiconductors N.V. in accordance with the "Verordening inzake de onafhankelijkheid van accountants bij assurance-opdrachten" (ViO, Code of Ethics for Professional Accountants, a regulation with respect to independence). This includes that we do not perform any activities that could result in a conflict of interest with our independent assurance engagement. Furthermore, we have complied with the "Verordening gedrags- en beroepsregels accountants" (VGBA, Dutch code of ethics).

We believe that the assurance evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

## REPORTING CRITERIA

The reporting criteria used for the preparation of the Green Innovation Bond Report are NXP's "Green Innovation Bond Framework" as available on <https://www.nxp.com/docs/en/supporting-information/GREEN-INNOVATION-BOND-FRAMEWORK-FINAL.pdf> and the applied supplemental reporting criteria as disclosed in the section "Accounting Methodology" of the Green Innovation Bond Report.

The absence of an established practice on which to draw, to evaluate and to measure the information included in the Green Innovation Bond Report allows for different, but acceptable, measurement techniques and can affect comparability between entities and over time.

Consequently, the Green Innovation Bond Report needs to be read and understood together with the reporting criteria used.

## **LIMITATIONS TO THE SCOPE OF OUR ASSURANCE ENGAGEMENT**

The “Impact Reporting” section in the Green Innovation Bond Report includes prospective information such as ambitions, strategy, plans, expectations and estimates. Inherent to prospective information, the actual future results are uncertain. We do not provide any assurance on the assumptions and achievability of prospective information in the Green Innovation Bond Report.

The references to external sources or websites are not part of our assurance engagement on the Green Innovation Bond Report. We therefore do not provide assurance on this information.

Our conclusion is not modified in respect to these matters.

## **RESPONSIBILITIES OF THE EXECUTIVE OFFICERS FOR THE GREEN INNOVATION BOND REPORT**

The Executive Officers are responsible for the preparation of the Green Innovation Bond Report in accordance with the reporting criteria as included in the ‘Reporting criteria’ section of our report. The Executive Officers are solely responsible for selecting and applying these reporting criteria, taking into account applicable laws and regulations related to reporting. In this context, the Executive Officers are responsible for the identification of the intended users and the criteria being applicable for their purposes. The choices made by the Executive Officers regarding the scope of the Green Innovation Bond Report and the reporting policy are summarized in the section “Accounting Methodology” of the Green Innovation Bond Report.

Furthermore, the Executive Officers are responsible for such internal control as they determine is necessary to enable the preparation of the Green Innovation Bond Report that is free from material misstatement, whether due to error or fraud.

## **OUR RESPONSIBILITIES FOR THE ASSURANCE ENGAGEMENT ON THE GREEN INNOVATION BOND REPORT**

Our responsibility is to plan and perform our limited assurance engagement in a manner that allows us to obtain sufficient and appropriate assurance evidence for our conclusion.

Procedures performed to obtain a limited level of assurance are aimed to determine the plausibility of information and vary in nature and timing from, and are less in extent, than for a reasonable assurance engagement. The level of assurance obtained in a limited assurance engagement is therefore substantially less than the assurance obtained in a reasonable assurance engagement.

We apply the ‘Nadere voorschriften kwaliteitssystemen’ (NVKS, Regulations for quality management systems) and accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and other relevant legal and regulatory requirements.

The procedures of our limited assurance engagement included among others:

- Performing an analysis of the external environment and obtaining an understanding of the characteristics of the Company, themes and issues relevant for the Green Innovation Bond Report
- Evaluating the appropriateness of the reporting criteria used, their consistent application and related disclosures in the Green Innovation Bond Report. This includes the evaluation of the reasonableness of estimates made by the Executive Officers
- Obtaining through inquiries a general understanding of internal control, reporting processes and information systems relevant for the preparation of the Green Innovation Bond Report, without obtaining evidence about implementation or testing the operating effectiveness of controls
- Identifying areas of the Green Innovation Bond Report with a higher risk of misleading or unbalanced information or material misstatements, whether due to error or fraud. Designing and performing further assurance procedures aimed at determining the plausibility of the Green Innovation Bond Report responsive to this risk analysis. These further assurance procedures consisted amongst others of:
  - Interviewing management and relevant staff responsible for the strategy, policy and results relating to the Green Innovation Bond Report
  - Interviewing relevant staff responsible for providing the information for, carrying out internal control procedures on, and consolidating the data in the Green Innovation Bond Report
  - Obtaining assurance information that the Green Innovation Bond Report reconciles with underlying records of the company
  - Reviewing, on a limited test basis, relevant internal and external documentation
  - Performing an analytical review of the data and trends in the Green Innovation Bond Report
- Reconciling the relevant financial information with the financial administration
- Evaluating the overall presentation and content of the Green Innovation Bond Report
- Considering whether the Green Innovation Bond Report as a whole reflects the purpose of the reporting criteria used

Amsterdam, March 3, 2023

Ernst & Young Accountants LLP

Signed by J. Niewold