SUSTAINABILITY
in Network Infrastructure

LEVITON

Developing Urgency:
Empowering Smart Building Technology for a Sustainable Future

Network solutions will play a significant role in developing sustainable, future-proof buildings and cities. Currently, integrating smart technology sits at the confluence of two growing trends: the continual migration of populations into city centers, and the crisis of climate change motivating sustainable infrastructure choices. Implementing smart technology is a key part of the solution, a vital investment for sustainable practices in our developing world.

The climate crisis represents a threat to the future health of our planet. According to a 2021 report by the Climate Action Tracker group, the world is headed for 2.4 °C warming by the end of the century, a trend which will continue to fuel more intense storms, heat waves, and droughts, driving instability at the foundations of human societies around the globe. Now is a critical time for sustainable practices to be implemented throughout our economic systems to reduce the impact of human activities on the planet.

As a result of this burgeoning crisis, governments are stepping in to curb their emissions with emissions targets. The UK, US, and EU have set the goal of net zero by 2050, while also setting the intermediate target of reducing net greenhouse gas emissions by at least 50% below 2005 levels in 2030. These targets will shape economic choices in the years to come, especially in the face of the global trend of city migration.

City development is projected to grow dramatically over the next few decades as populations flow into cities. Over 68% of humankind is expected to live in cities by 2050, more than 2.5 billion more live in cities today[1]. Cities will be forced to grow and, if they rely on traditional building solutions, will contribute excessive emissions.

"Currently, buildings contribute 39% of annual global CO2 emissions"

Most of these emissions come from operational carbon, or emissions produced by the building's operation and energy consumption. The remaining emissions are embodied carbon, or emissions created from the manufacture, transportation, and construction of building materials. Continual migration into cities will drive demand for buildings, however meeting this demand will be constrained by the need to build and operate these buildings sustainably.

Smart buildings offer the potential to grow cities while meeting sustainability goals. The global smart city industry is expected to double from 2020 to 2025, a growth from $410 billion (€416.7 billion) to $821 billion (€834.4 billion)[2]. The smart building market is expected to grow from 80.6B (€82B) to $328.6B (€334B) in 2029[3]. Smart buildings require a networking backbone to allow all of the building's Internet of Things (IoT) sensors, appliances, and systems to work in concert to efficiently monitor usage, waste, and consumption. Leviton has developed innovations in network architecture, like the ULAN™, to reduce operational emissions in smart buildings, which is key to making a positive impact towards a more sustainable future.

LEVITON®

Defining Sustainability:
Understanding Emissions Terminology

When evaluating network infrastructure products and partners, IT and facility managers are increasingly prioritizing sustainability in their selection process, emphasizing the need for network infrastructure manufacturers to have a clear understanding of their own green practices and sustainability initiatives.

With the rise of sustainability initiatives, there are many different terms which are used to describe different emissions management strategies. Carbon footprint reduction, carbon neutral, net zero, and ISO or PAS certifications, are all terms which are used more and more, and these terms can be a challenge to discern from one another.

What is a carbon footprint? A carbon footprint is the amount of CO_2 or Carbon Dioxide Equivalent (CO_2e), and other greenhouse gasses, released into the atmosphere from the activities of an individual, community, organization, or production. Reducing a carbon footprint must start with a clear accounting of all produced emissions throughout the different stages of the product life cycle, from raw materials to final transportation. From there, an organization can address emissions reduction with reduction strategies.

What does carbon neutral mean? Carbon neutral refers to a balance that organizations strike between produced emissions and offsets for those emissions. To achieve carbon neutral status, all the CO2 and greenhouse gasses that are released into the atmosphere by an organization must first be accurately measured, then the emissions are offset through projects that avoid, remove, or absorb carbon.

What is net zero? Net zero is the balance between the continually emitted carbon emissions being equally removed or absorbed from the atmosphere to achieve a net value of zero. Net zero is achieved by both reducing emissions and implementing methods of removing and absorbing carbon from the atmosphere.

Beyond these strategies, there are also certifications and adherence to environmental standards. These certifications in sustainability standards are a means to provide assurance that an organization is committed to maintaining sustainable practices. These may include certification in ISO 14001 Environmental Management, which are a set of standards to help reduce waste and protect

natural resources. ISO 50001 Energy Management Systems is also a standard which assures the organization's focus on monitoring and measuring continual improvements in environmental performance and energy efficiencies. For Leviton Network Solutions, its European manufacturing facility maintains carbon neutral certification through the British Standards Institution (PAS 2060) or the Carbon Neutral Protocol. This certification **confirms that companies are taking the extra step to address climate change through carbon footprint reduction**, while balancing any remaining carbon emissions through supporting other carbon reduction projects.

Ultimately, there are many sustainability strategies that approach different aspects of the climate crisis. Now more than ever, it is important for organizations to find and integrate a sustainability strategy which allows their business to improve efficiencies, reduce emissions, and protect our natural resources for generations to come.

Net-Zero
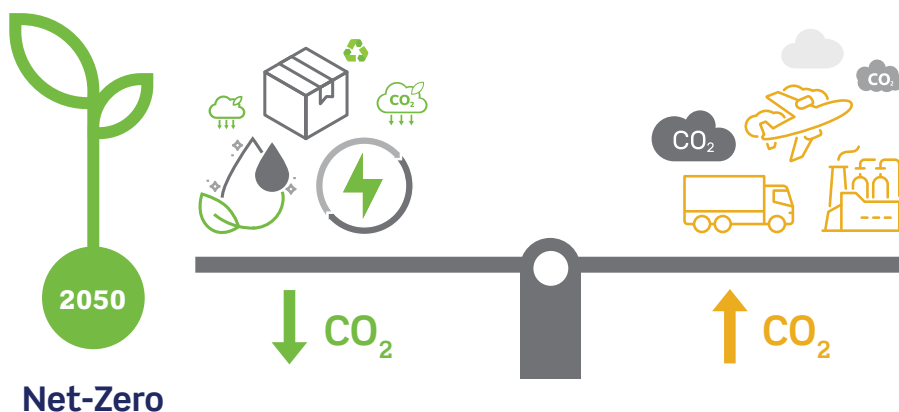
Carbon Dioxide equivalent is used to measure and compare the emissions of various greenhouse gases. A multiplier is used to relate all emissions to the equivalent amount of CO, based on their Global Warming Potential so it can be expressed as a single number.

LEVITON®

Greener Than the Sum of Its Parts: Embedding Sustainability into the Product Life Cycle

Integrating sustainability into the product life cycle is vital to meeting meaningful sustainability goals. By making sustainable choices in every stage of the product life cycle, producers can effectively and holistically address emissions associated with their economic activity.

The two primary categories of emissions for manufacturers are: emissions from manufacturing operations such as: ventilation, lighting, and other infrastructural energy consumption; Embodied Carbon, which includes emissions related to the products themselves such as, raw materials, packaging, transportation, installation, and disposal. By approaching the entirety of the product life cycle through the lens of sustainability, organizations can reduce both types of emissions simultaneously.

In the first stage of the product life cycle, the product design phase, designers and engineers have the power to build sustainability into their products. By prioritizing quality, recyclability, sustainable transport, and efficient manufacture, products can effectively prescribe sustainable practices before they are even created. For example, Leviton creates factory made pre-terminated assemblies, which minimize packaging and reduce job site waste.

Next, selecting sustainable raw materials starts with responsible sourcing and handling. Manufacturers should source as locally as possible to reduce transport, and source recycled materials wherever possible. Adherence to material standards such as Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Restriction of Hazardous Substances Directive (RoHS), and Red List Free, eradicate the use of harmful substances. Also, manufacturers should work to integrate sustainability into research and development efforts, using computer modeling, analysis, and prototyping prior to physical modeling, greatly reducing the amount of material waste. **At Leviton, our prototypes are verified through several layers of quality control before they can continue to each next step, ensuring that incorrect iterations are revised prior to committing large amounts of raw materials.**

During production, cabling manufacturers should maximize energy efficiency, and recycle whatever waste materials can be recycled, such as aluminum strips, cardboard, copper, and wooden spools. They should minimize direct emissions and water usage as much as possible. For example, Leviton uses LED lights and automated sensors instead of fluorescent lights. Additional energy reduction efforts include smart air compressor systems, improved heating management systems, smart building technologies, and ongoing equipment energy monitoring.

Once the product is made, packaging is another opportunity to embed sustainable practices.

LEVITON®

Minimize printed material by using electronic media for informational and promotional materials. Utilize recycled materials for packaging, bulk packs for smaller products, in addition to minimizing all single-use plastics. Another sustainable strategy is to put more product into packaging materials. Leviton found that by creating 1000-meter reels, jobsite cable waste was reduced by 10-15%.
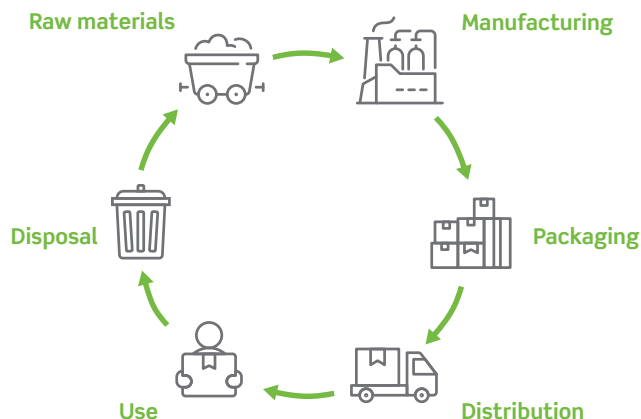
Transportation and shipping should also be taken into consideration. Transportation is a stage of the product life cycle that should be dually approached. For one, reduce transportation miles. Distant third-party manufacturers produce air and freight emissions simply by moving their products through the product life cycle. Local manufacture of networking products cuts transportation emissions at the source. After reducing the miles needed to travel, optimize packaging for freight and transportation, allow pallet sharing, and combine shipments. Cabling manufacturers who increase packing density reduce the number of pallets, and in-turn reduce the number of trucks needed for transportation. Combined shipments reduce the number of roadway and air freight shipments that leave the factory. When Leviton Network Solutions Europe revised its packing method for optical cable, it halved the number of containers required and reduced shipping-related emissions by 50%.

"Sustainability efforts should include more than just manufacturing practices and innovative products."

When selecting a cabling system provider, it's important to consider manufacturers that take a holistic approach to reducing their carbon footprint. A holistic approach means going beyond simply using more sustainable materials, rather, sustainability should be considered throughout the product lifecycle, in design, manufacture, delivery, use, and disposal.

Leviton's Environmentally Conscious Design

Less Material Required for New Patch Cord Plug and Boot
Using 72% less plastic in our new patch cord boot also makes our cords lighter to reduce shipping energy and cost.

Sustainably Smart Packaging
Multiple product packaging options that are entirely recyclable and use no single-use plastics.

Sustainable Product Design
The copper, insulation, or filler materials in our category cables incorporate recycled materials to reduce the overall carbon footprint.

Bulk Packaging for Jacks
Select colors are available in 12-pack GREENPACK™, a compact, reusable, and recyclable packaging, which reduces jobsite waste.

LEVITON®

Structuring a Sustainable Future: How Network Infrastructure is Sustainable from the Factory Floor to Final Installation

Typically, when we think of sustainable choices in infrastructure, we think of small slices of an industry's value chain utilizing sustainable practices, such as construction projects using recyclable building materials like salvaged steel or concrete, or HVAC and utilities system installations installing more efficient appliances. Networking products are unique in that they can be sustainable throughout every stage of their value chain, from manufacture to network solution design, installation, and future planning.

From the outset, network infrastructure manufacturers can integrate sustainability practices into each stage of the product life cycle. Products can be designed and/or packaged to reduce job site waste, some can be made in efficient factories with local and responsibly sourced raw materials, before being consolidated into recycled packaging and transported through consolidated means to the job site.

Upon install, sustainably designed products reduce job site waste. Pre-terminated fiber and copper trunk cables create very little

product packaging at the job site. Also, since these are factory terminated, waste is easily contained and recycled, and there is no termination scrap material created at the jobsite.

"Smarter network solution design utilizes less materials and enables higher efficiency for the network itself."

Leviton offers smaller cabling solutions and higher-density systems that reduce the amount of used materials and conserve space. Array cables with 12- or 24-fiber MPO / MTP™ connectors reduce the amount of cable jacketing materials by employing fewer cables, fewer breakout pigtails, and less bundling material. A smaller diameter cable or patch cord is particularly helpful in data centers, as it improves airflow in racks and cabinets, allowing for superior cooling and less overall energy consumption. Smaller cables

may also avoid the need for additional cable trays and associated mounting materials, reducing the total amount of product needed to complete the deployment.

Another example is seen in smart buildings. Efficiently designed network solutions allow networks in smart buildings to be poised to accept the growing number of IoT devices, essentially enabling growth in sustainable applications like smart lighting systems, efficient HVAC systems, and more. By designing networks to enable sustainability, the network itself continually functions to limit operational emissions in buildings.

Lastly, network infrastructure can be planned with future upgrades in mind. Planning for future upgrades lengthens the longevity of all installed infrastructure. The right solutions and designs can significantly extend the lifecycle of a structured cabling system, creating a more environmentally responsible network that doesn't need to be fully replaced as network needs change.

LEVITON®

Excelling in the New Normal:
How Cabling Manufacturers Must Adapt to Succeed in the Sustainable Future

Given communication methods change quickly, connectivity manufacturers have always required constant innovation to meet the needs of a changing network landscape. However, this adaptive industry faces a new challenge, not only to produce new, high-quality technologies but to also meet sustainability benchmarks. Now it is crucial for companies to choose networking manufacturers who maintain both assured quality and sustainability metrics.

Network infrastructure manufacturers must provide a sustainable process, but assured quality in a manufacturer is essential for a company to get the highest return on infrastructure investment. In selecting a high-quality manufacturer, companies should look for some of these core qualities.

Find a manufacturer that offers technical experts either remotely or onsite at no additional charge to help with topology and infrastructure layout, along with elevations, pathways, and specifications. A manufacturer which meets quality standards such as ISO 9001 certification. This certification includes third-party auditing of manufacturer sites, functions, products, services, and processes.

"It is key to find dedicated make-to-order facilities that can take on large orders while providing a fast turnaround."

In some manufacturing environments, orders that are too large or too small may be pushed to the bottom of the production pile. Make-to-order facilities prevent this problem. A high-quality manufacturer should produce both cabling and assemblies to ensure optimum installed performance. Also, the manufacturer should keep a global supply of pre-terminated cabling options that meet cable flame rating requirements to support regional requirements.

Sources:
[1] United Nations: Seven Ways Cities Can Take Climate Action 2021
[2] Market Data Forecast: 2021
[3] Fortune Business Insights

Companies and organizations should identify and utilize cabling manufacturers who are prepared to meet assured quality criteria in addition to the sustainability metrics that will make our world a better place. Leviton Network Solutions meets these standards as a single-source global manufacturer of copper and fiber cabling systems with sustainability built into its production processes.

To supply the increasing development of data centers around the world, Leviton opened new Make-to-Order (MTO) cells within our manufacturing facilities in Glenrothes, Scotland, and St. Petersburg, Florida. By producing and designing custom configurable pre-terminated fiber and copper cables and cassettes in the United States and the United Kingdom, Leviton has distinguished itself from many other cabling manufacturers. These make-to-order manufacturing facilities limit the distance products need to be transported, allowing Leviton to reduce emissions throughout the product life cycle for customers in North America, UK, Europe, the Middle East, and Africa.

Additionally, **Leviton Network Solutions is committed to protecting the environment through the design, manufacture, delivery of sustainable network infrastructure for data centers, businesses, schools, hospitals, government facilities, and commercial mixed-use markets around the world.** All Leviton products are engineered to exacting standards while considering environmental impact through every step of our ISO 9001 Certified product development process, from initial material sourcing to final packaging and logistics. Leviton's primary cable and connectivity factories are certified for environmental and energy management systems. Through these sustainable design and manufacture practices, Leviton Network Solutions produces products that contribute to greater energy savings, less waste, and carbon footprint reduction.

LEVITON®

Today's networks must be fast and reliable, with the flexibility to handle ever-increasing data demands. Leviton can help expand your network possibilities and prepare you for the future. Our end-to-end cabling systems feature robust construction that reduces downtime, and performance that exceeds standards. We offer quick-ship make-to-order solutions from our US and UK factories. We even invent new products for customers when the product they need is not available. All of this adds up to the **highest return** on **infrastructure investment**.

USA — NETWORK SOLUTIONS HEADQUARTERS

2222 - 222nd Street S.E., Bothell, WA, 98021, USA
+1 (800) 722 2082 | infoUSA@leviton.com | Leviton.com/NS

Customer Service
+1 (800) 722 2082
insidesales@leviton.com

International Customer Service
+1 (425) 486 2222
intl@leviton.com

Leviton Cable
(formerly Berk-Tek)
+1 (800) 237 5835
infoUSA@leviton.com

Technical Support
+1 (800) 722 2082
+1 (425) 486 2222
appeng@leviton.com

APAC

+85 (2) 3620 2602 | infoAPAC@leviton.com | Leviton.com/NS

Customer Service
+1 (631) 812 6228
infoASEAN@leviton.com

China
+85 (2) 2774 9876
infoChina@leviton.com

South Korea
+82 (2) 3273 9963
infoKorea@leviton.com

CANADA

+1 (800) 461 2002 | infoCanada@leviton.com | Leviton.com/NS

Customer Service
+1 (514) 954 1840
pcservice@leviton.com

Network Solutions products are **available worldwide** in **over 100 countries**. Visit us online at leviton.com/ns to learn more.

EUROPE

Viewfield Industrial Estate, Glenrothes, KY6 2RS, UK
+44 (0) 1592 772124 | infoEurope@leviton.com | Leviton.com/NS/EMEA

Customer Service
+44 (0) 1592 772124
customerserviceEU@leviton.com

Technical Support
+44 (0) 1592 778494
appeng.EU@leviton.com

Benelux
+44 (0) 1592 772124
infoBenelux@leviton.com

Nordics
+46 (70) 9675033
infoNordics@leviton.com

Central & Eastern Europe (CEE)
+44 (0) 1592 772124
infoCEE@leviton.com

Portugal
+351 (21) 421 4133
infoPortugal@leviton.com

DACH
+49 (0) 173 272 0128
infoDACH@leviton.com

Spain
+34 (91) 490 59 19
infoSpain@leviton.com

France
+33 (0) 1709 87826
infoFrance@leviton.com

UK & Ireland
+44 (0) 1592 772124
infoUK@leviton.com

Italy
+39 (02) 3534896 (Milan)
+39 (06) 68584613 (Rome)
infoitaly@leviton.com

LATAM

infoLATAM@leviton.com | Leviton.com/NS

Customer Service
+52 (55) 2333 5963
infoLATAM@leviton.com

Caribbean
+1 (954) 593 1896
infoCaribbean@leviton.com

Mexico
+52 (55) 2128 6286
lsamarketing@leviton.com

Colombia
+57 (1) 743 6045
infoColombia@leviton.com

MIDDLE EAST & AFRICA

Bay Square, Building 3, Office 205, Business Bay, Dubai, UAE
+971 (4) 247 9800 | infoMEA@leviton.com | Leviton.com/NS

Customer Service
+971 (4) 247 9800
lmeinfo@leviton.com

8826a K23