Corporate Citizenship and Sustainability — Operational Excellence

Our Employees

Every day at Juniper, we are helping our customers build high performing networks through our products and solutions. We embed sustainability into our approach to design, helping to reduce product life cycle impacts, including the energy footprint of Juniper products.

We apply this same sustainability mindset to our own operations in order to identify opportunities that help us reduce our energy usage, greenhouse gas (GHG) emissions, waste to landfill, and water usage. Our aim is to make our facilities less resource-intensive, more cost-efficient, and ultimately more sustainable for the long term.

To ensure that we are advancing our sustainability performance, we use data management systems that allow us to accurately and efficiently collect data in key impact areas. And we participate in the CDP annual reporting process, making our energy usage, GHG emissions, and water usage data publicly available.

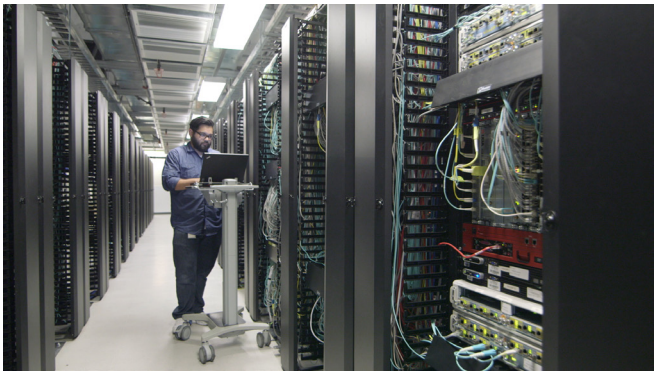
Energy

We recognize that our biggest opportunity to reduce our operational energy footprint is to focus not only on Juniper's facilities, but specifically on the labs, which account for approximately 80%-90% of the company's global energy usage. Of that, Juniper's Sunnyvale, California, and Bangalore, India, facilities are the two largest consumers.

Snapshot of Juniper Networks facilities around the globe—92 offices in 43 countries

Several years ago, we transformed Juniper's headquarters in Sunnyvale, and moved a large portion of the administrative and lab operations into Juniper-owned LEED-certified Platinum and Gold buildings. In 2014 and 2015, we closed two leased properties at this same location and relocated those labs (300,000 square feet of space) to a more energy-efficient data center in Washington State (Geo-DC).

Following on the success of the Sunnyvale campus effort, in Bangalore, Juniper opened a new nine-story office building for the India Excellence Centre (IEC) in 2016. Among the building features and strategy to support an R&D environment, large labs were consolidated onto a single floor with a much more efficient mechanical and electrical infrastructure to reduce energy usage and impact on land.



Overall, we have been working to implement a granular energy monitoring platform and a remote-control system for our labs and facilities. Our intent is to establish detailed benchmarks for energy use, set site and lab specific targets for curbing consumption, and identify opportunities for increasing efficiency. Additionally, the quantitative data facilitates communication with the end-user groups of Juniper's largest lab communities. As part of Juniper's energy demand strategy, the intent is to build an energy awareness culture and drive behavioral change towards the resources used within the lab environments.

An array of energy efficiency measures has been launched at various Juniper campuses, from outside air economization and LED lighting, to motion sensor controlled lighting and peak demand management. And in 2015, Juniper adopted the U.S.

Environmental Protection Agency's ENERGY STAR Guidelines for Energy Management as a blueprint to design a strategic energy management program. We have one employee dedicated solely to tracking and decreasing our energy use even as we continue to grow.

We also initiated an automated power management tool and installed metering.

- **Automated Power Management Tool:** Juniper has implemented an automated power management solution through a Lab Resource Manager (LRM). The tool is used in select engineering and customer service labs in Beijing, Bangalore, Westford, and Sunnyvale to identify inactive equipment in the labs and shut them down to prevent continuous energy use. Given how energy-intensive our labs are, implementing an automated power management solution has been an important and strategic step.

  In 2015, this power management feature saved Juniper about $1.6 million in utility spend and reduced Juniper's global electricity consumption 12%.

- **Metering:** We have made consistent progress in installing metering systems to help us understand the energy use of various spaces in buildings. Most of the lab spaces in the Netherlands and the new campus in India have sub-metering infrastructure. It is now standard for all new labs.

Buildings Designed for Energy Efficiency

When we set out to design and build Juniper's new 635,000 sq. ft. corporate campus in Sunnyvale, California, it was an opportunity to create an environment that embodied The Juniper Way. The corporate campus houses an Executive Briefing Center, Proof of Concept labs, R&D engineering labs, R&D workplace, a cafeteria, and general office space. The resulting two buildings on the campus, one LEED-certified Platinum and the other LEED-certified Gold, are a striking combination of environmentally preferred materials and energy-efficient systems.

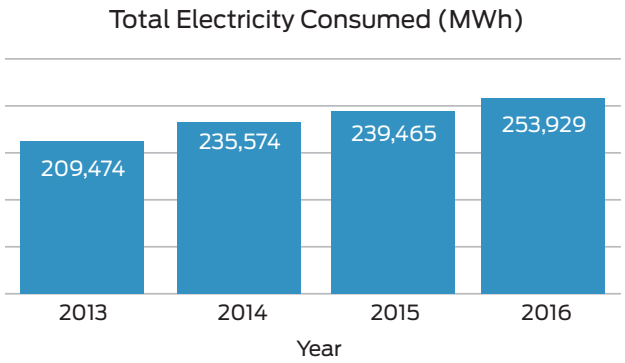
To fully appreciate the design of these buildings, they must be seen for the deep integration of Juniper's own enterprise networking technology. Not only does this networking technology monitor and keep all the buildings' systems running as efficiently as possible, but it also provides a platform for other critical energy optimization, conservation, and life safety systems.

Juniper's Sunnyvale LEED-certified Gold building

The consolidation that took place recently at Juniper's Bangalore IEC campus provided another opportunity to implement new energy efficiency and sustainability features. These features were tested and proven at Juniper's Sunnyvale campus, including technologies that reduce the Bangalore campus' reliance on an unstable energy infrastructure.

In global operations, Juniper has invested in equipment and policies to reduce energy demand, including lighting and cooling. In the labs, air conditioning has been modified to prevent local adjustments of temperature set-points, now all managed centrally: the increased set-point temperature of cold aisles has reduced the cooling load; hot aisle containment has been implemented; blanking plates deployed; and air-side economizers in Sunnyvale, Westford, and Amsterdam reduce cooling demand with supplemental external cold air.

Juniper's Overall Energy Footprint



The reported total electricity consumption represents energy use from facilities with R&D labs, server labs, and customer support labs. Based on a global review of energy consumption across Juniper facilities and the use of assumptions and extrapolations to estimate total energy use for locations with unknown information (primarily due to lack of granular data associated with Juniper-leased spaces), it was identified that locations with labs have significantly higher energy use. The aggregate energy consumption of locations with labs represents 80%-90% of total global energy use. Therefore, Juniper leased and owned spaces without labs are not included in these numbers.

Alternative Power Sources

Juniper has implemented several strategic initiatives to reduce the company's overall environmental impact due to energy consumption, including the use of renewable and low carbon energy sources.

Hydropower

In May 2015, Juniper's board of directors approved a proposal to build a 1500-rack data center-style lab in a secure, low-cost location to consolidate labs from Sunnyvale and other U.S. locales. The Geo-DC facility, opened in the second quarter of 2016, houses IT and engineering infrastructure, Global Lab Operations operated-labs, the Customer Support Services Ultra Lab, and other go-to-market rack labs.

Quincy, Washington, the location of the new facility, was chosen for several reasons. Power outages are rare, with a 99.99% annual average reliability. The area is relatively free of natural disasters such as floods, earthquakes, tornados, landslides, and hurricanes. Most importantly, electricity is approximately half the national average cost, and 78% is generated by hydropower. The Geo-DC was awarded the U.S. Environmental Protection Agency's 2017 Energy Star certification with a score of 100 points, the highest possible score.

Phase I of the Geo-DC project was executed successfully in 2016 and met the original objectives to mitigate the risk of energy rate increases, support a productive R&D environment, and improve the GHG emissions profile of Juniper's operational energy sources. Based on collected energy, GHG emissions, and utility costs data, a substantial strategic decision was made in 2016 to proceed with Phases II and III of additional electric load shift from Juniper's Sunnyvale headquarter to the Geo-DC.

Solar and Fuel Cells

When it comes to alternative energy, Juniper's Sunnyvale campus leads the way with a variety of renewable and low carbon energy options. To reduce demand on the grid, we have invested in onsite photovoltaic and fuel cell systems that allowed the Sunnyvale campus to generate 613 MWh of energy in 2016 and 588 MWh of energy in 2015, which represented about 8% and 7% of Sunnyvale's total electricity consumption respectively. In addition, a small 30 kW co-generation system heats water for showers and the cafeteria.

In Bangalore, Juniper executed a power purchase agreement with two suppliers of solar power, Atria Brindhavan Power Pvt. Ltd and Clean Max Enviro Energy Solutions Pvt. Ltd. Under this program, 45% of Bangalore's total energy consumption will be procured from solar sources. Using renewable energy instead of conventional power will greatly reduce greenhouse gas emissions. Both agreements will last 10 years.

Greenhouse Gas Emissions

Juniper has worked with CDP for more than a decade and been reporting to CDP since 2004. CDP advises businesses on how to improve sustainability practices through the collection of self-reported data on climate change, water, and forest risk, and it has helped Juniper identify opportunities to better measure and manage the company's GHG footprint and improve energy efficiency. For comprehensive reports on Juniper's climate change and GHG management program, please refer to the CDP disclosures.

We have two opportunities to cut carbon emissions: through our own facilities and operations, and through the design of the products we sell that can help our clients reduce their emissions.

CDP A List

Juniper is proud to have been recognized in 2014 and 2015 on CDP's A List. The annual CDP Climate Performance Leadership Index identifies companies around the world that are doing the most to combat climate change. The index is produced at the request of 767 investors who represent more than one-third of the world's invested capital and are interested in the economic return on reducing emissions.

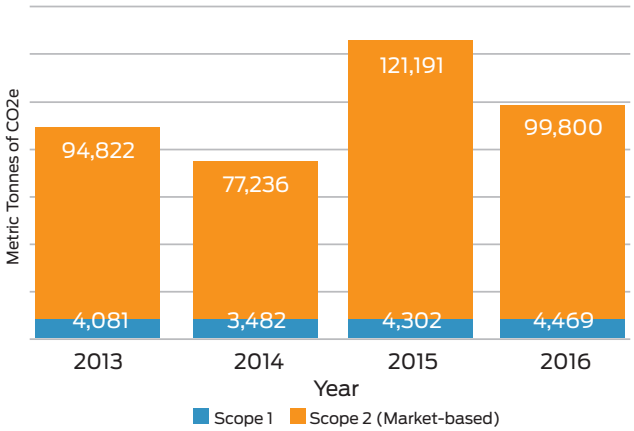
Scope 1 and Scope 2 GHG Emissions

In 2013, Juniper collected GHG emissions data from all sites with a headcount over 100, which represented close to 94% of our estimated impact. Beginning in 2014, Juniper updated the boundary for Scope 1 and 2 GHG emissions to account for Juniper spaces with lab operations. This decision was made after a global review of energy consumption across Juniper facilities showed that aggregate energy consumption of locations with labs had the largest energy footprint and accounts for 80%-90% of the total energy consumption.

We also recognized that the vast majority of Juniper's emissions are from purchased electricity to power our operations: Scope 2 emissions. The investments we have made—and continue to make—in energy efficiency measures are mostly aimed at reducing our Scope 2 emissions. For instance, the Automated Power Management Tool we implemented in our labs is estimated to save 7500 metric tonnes of CO2e annually. The data center consolidation project, which included reducing global rack count and, therefore, decreasing power usage, is estimated to reduce 2500 metric tonnes of CO2e. These initiatives helped decrease emissions in 2014, 2015, and 2016.

At the end of 2016, we established a 5% absolute reduction target for Scope 1 and Scope 2 (market-based) GHG emissions by 2020, based on our 2011 baseline (92,864 metric tonnes of CO2e). We are looking to establish a science-based Scope 1 and 2 emissions target within the next two years. Additionally, for the first time we established a Scope 3 emissions target focused on employee commute, a 20% reduction target by 2025, based on our 2015 baseline (22,247 metric tonnes of CO2e).

Juniper's 2013-2016 GHG Emissions Profile



Note: Calculations performed using the World Resources Institute GHG Protocol

Direct (Scope 1) emissions from operations that are owned or controlled by the organization.

Energy Indirect (Scope 2) emissions result from the generation of purchased or acquired electricity, heating, cooling, and steam consumed within the organization.

The reported GHG emissions inventory scope includes only facilities with R&D labs, server labs, and customer support labs.

	Units of Measure	2013	2014	2015	2016
Scope 3	Metric Tonnes CO2e	97,205*	161,237	188,011	531,264

Note: Calculations performed using the World Resources Institute GHG Protocol. Other Indirect (Scope 3) emissions are all indirect emissions (not included in Scope 2) that occur outside of the organization, including both upstream and downstream emissions.

*Calculations did not include purchased goods and services.

Scope 3 GHG Emissions

The biggest impact to our overall carbon footprint comes from Scope 3 emissions—activities outside of our direct operations such as business travel, employee commuting, distribution of our products, and the emissions resulting from our suppliers' operations.

As reported in the Supply Chain section, Juniper has established clear expectations for suppliers to measure and disclose their GHG emissions, preferably through CDP. In recent years, an increasing number of our suppliers have begun disclosing, making it possible for Juniper to include their emissions in our Scope 3 disclosures, specifically associated with purchased goods and services. We collect energy and emissions data from our direct material suppliers, including contract manufacturing partners, original design manufacturing partners, and component suppliers through the CDP Supply Chain disclosure process. For calendar year 2016, 102 responding suppliers allocated 310,250 metric tonnes of CO2e to Juniper, compared to 93 responding suppliers allocating 51,751 metric tonnes of CO2e for calendar year 2015. We are hopeful that through better measurement and disclosure, our suppliers will identify opportunities to reduce their emissions, share collaborative opportunities, and, ultimately, manage the overall emissions footprint across the entire value chain.

Employee Commuting

Juniper surveys employees each year on their commuting methods and, through the Juniper Networks Employee Transportation Program, encourages them to use alternative methods of transit to work. Our goal is to reduce the number of single passenger auto trips and to utilize mass transit, bicycling, and car sharing on a grander scale.

To achieve our goal and to reduce Scope 3 emissions from employee commuting, Juniper provides assistance, resources, and monetary incentives for employees who elect to participate in the Juniper Networks Employee Transportation Program, including direct subsidies for using public transit and monetary awards for cycling into work. These incentives vary by geography.

Juniper also provides non-monetary incentives, including preferred parking spaces for carpools, vanpools, and electric vehicles; secured bicycle storage lockers; emergency bicycle repair support; and onsite electric vehicle charging stations.

Through these efforts, we have been successful at getting many employees to adopt more environmentally preferred modes of transport. In 2016, we reduced Scope 3 emissions from employee commute by 3% compared to 2015.

Water

Juniper's comprehensive Environmental, Health, Safety, and Security Policy outlines goals for resource use and conservation. Our operational goal is to use water as efficiently as possible and to use reclaimed water where possible. Additionally, Juniper has adopted the Responsible Business Alliance (RBA) Code of Conduct, which outlines standards for water use, discharge, and conservation.

Our LEED-certified buildings in Sunnyvale are equipped with low-flow fixtures. Our investments in water-efficient fixtures in restrooms save 30% of the water used in comparison to typical office buildings. Water used for our toilets, urinals, and landscaping is all from reclaimed water, which is former wastewater. It comes from a separate local renewable supply that does not deplete the area's limited potable water supply.

We have partnered with Waterfluence, a local landscape efficiency consultant, to measure water usage for buildings in our Sunnyvale headquarters. Waterfluence reports give us information about our water consumption, helping our landscaping vendor keep the site as water-efficient as possible. Our landscaping was specifically designed for maximum water efficiency. Approximately 55% of the plants on campus are drought-tolerant species. Drip irrigation systems feed almost all areas except the turf, which is supplied by the more efficient rotor-style irrigation wherever possible.

Juniper's water efficiency and conservation practices were critical to achieving LEED Platinum and Gold certifications for our Sunnyvale campus. These practices also contribute to our eligibility for the Bay Area Green Business certification. Independent third-party certifications, like LEED, ISO 14001, and Bay Area Green Business, affirm our commitment to conservation

and corporate citizenship to interested stakeholders, including customers, employees, investors, and regulators.

We gather data annually from our major facilities (of more than 100 employees) in China, India, Singapore, Japan, the Netherlands, and the U.S., where the primary potable water uses are for canteen and breakroom operations and cooling systems. What is clear from the data is that despite our enduring commitment to reduce water through various conservation measures, our usage continues to increase, with a large increase in 2016. In 2016, the spike in the data is due to a higher transparency in information for the facilities within the reporting scope, specifically leased, shared spaces.

For comprehensive reports on Juniper's water management program, please refer to the CDP disclosures.

	2013	2014	2015	2016
Water Use (in megaliters)	116.25	164	179	790

About Juniper Networks

Juniper Networks challenges the status quo with products, solutions and services that transform the economics of networking. Our team co-innovates with customers and partners to deliver automated, scalable and secure networks with agility, performance and value. Additional information can be found at Juniper Networks or connect with Juniper on Twitter and Facebook.

Corporate and Sales Headquarters
Juniper Networks, Inc.
1133 Innovation Way
Sunnyvale, CA 94089 USA
Phone: 888.JUNIPER (888.586.4737)
or +1.408.745.2000
Fax: +1.408.745.2100
www.juniper.net

APAC and EMEA Headquarters
Juniper Networks International B.V.
Boeing Avenue 240
1119 PZ Schiphol-Rijk
Amsterdam, The Netherlands
Phone: +31.0.207.125.700
Fax: +31.0.207.125.701

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