

Consumer  
Technology  
Association™



2019 - SUSTAINABILITY  
**REPORT**



# ABOUT CTA

As North America's largest technology trade association, CTA® is the tech sector. Our members are the world's leading innovators – from startups to global brands – helping support more than 18 million American jobs. CTA owns and produces CES® – the largest, most influential tech event on the planet and the proving ground for breakthrough technologies and global innovators. This is where the world's biggest brands do business and meet new partners, and the sharpest innovators hit the stage. CES features every aspect of the tech sector. Learn more at [CTA.tech](https://cta.tech) and [CES.tech](https://ces.tech).



# LETTER FROM GARY SHAPIRO PRESIDENT & CEO

While our environmental and social challenges are complex and constantly changing, I'm proud to present this report to you on behalf of an industry that's proving its leadership and commitment to finding innovative solutions.

The technology sector is one of the fastest-growing in the world – helping accelerate much-needed change and providing meaningful disruption. In just the last two years, we've addressed many complex challenges that have felt pervasive and difficult to decode for years.

While challenges including pollution, rising sea levels and the increasing impacts of climate change are macro in scope and require big, long-term answers, others are more local and require smaller-scale, cost-effective solutions such as recycling, using big data and minimizing food and water waste. On both fronts, tech companies made tremendous strides in 2018 and 2019 – from further reducing their environmental footprints with new goals, science-based targets and products designed with sustainability in mind to investing in research, partnerships and

startups to propel sustainability forward. At CTA, we have a leading role in advancing energy efficiency, recycling and the circular economy, as well as better understanding consumer behavior on topics such as public transportation and smart home devices. Through our landmark Voluntary Agreement for Ongoing Improvements in the Energy Efficiency of Set-Top Boxes, we reduced the national set-top box energy consumption by 39% since 2012, saving more than \$5 billion in electricity costs and 29 million metric tons of CO2 emissions.

We also use CES – the world's largest, most influential technology event – as a platform to showcase the latest breakthrough solutions for human and environmental issues. The CES Eureka Park Climate Change Innovators program, for example, recognizes startups with cutting-edge ideas and innovations that can help lower GHG emissions.

Since our last report, we've seen the launch of smart home devices that help consumers conserve energy in their homes. Renewable energy options around the world have grown,

as technology companies signed multiyear agreements to shift their energy use from fossil fuels to wind farms and solar arrays. And CEOs are calling on each other to propel action on climate change, partner with cities on incorporating big data to address growing urbanization, fund research on issues such as the circular economy, and spur innovation through competitions and grants.

We know our role as innovators, designers, inventors, engineers, chemists and data analysts is critical in ensuring our planet's ability to thrive and support a growing population. And it's one we take seriously. I hope you'll be inspired by the progress you read about in this report and get excited by the many digital and technological frontiers we are conquering every single year – all with the power of data, science and innovation.

Gary Shapiro  
President and CEO



Consumer Technology's Strong and Growing

# ECONOMIC ROLE

Total projected 2019 revenues, including services

**\$401 BILLION**

Wholesale revenues of consumer technology products

**\$301 BILLION**

U.S. tech industry jobs

**18 MILLION+**

## TOP PATENT HOLDERS

In 2018, the top five new U.S. Patent assignees were all technology firms – IBM, Samsung, Canon, Intel and LG – accounting for more than 23,000 patents in a single year.

Source: <https://www.ificlaims.com/rankings-top-50-2018.htm>

## TOP 5 REVENUE CATEGORIES



## PROJECTED 2019 GROWTH

Smart home devices growth  
**17%**

Smart speakers  
**36M+ UNITS**

5G-enabled smartphones shipped  
**2.1M**

Music streaming YOY revenues  
**UP 22%**

Video streaming YOY revenues  
**UP 29%**



Consumer Tech:

# SUSTAINABILITY AT-A-GLANCE

**50%**

material reduction usage  
across all CT products in  
the U.S. since 2000

More than

**4 BILLION POUNDS**

of electronics recycled by electronics  
manufacturers during past decade

**OVER \$1 BILLION**

spent on recycling efforts – more than  
any other consumer-facing industry

**8.9%**

reduction in U.S. GHG emissions  
(as most recently publicly reported  
to a third-party organization)

Lower GHGs: **28.6 MILLION METRIC  
TONS** in GHG reduction and **\$5B** in electricity  
saved through the STB initiative

**21% INCREASE**

in electronic devices in homes

VS.

**25% REDUCTION**

in home energy consumption

# certified responsible  
locations: **8,000+**

Consumers reached via  
TV and radio PSAs  
**266 MILLION**

# schools with **eCycling** lesson plans: **16,000**



# SUSTAINABLE TECHNOLOGY DEVICES, SERVICES AND OPERATIONS

The mighty personal computer was invented over 45 years ago. In less than half a century since, the consumer technology industry has made leaps in not only making technology exponentially more accessible and affordable, but also more energy- and resource-efficient. As technologies continue to become more powerful, smart and efficient, they're also becoming more sustainable – all the way from supply chain and product to their end of life and reusability.

# Today's Devices: Smaller, Lighter and More Recyclable

*For consumer technologies, sustainability today does not have to come at the cost of efficiency, price or performance. With the rise of artificial intelligence, advanced research and development, more collaboration with suppliers and big data analytics, technological devices are the lightest and the most efficient they have ever been. This journey begins at the design phase where designers, engineers and product developers come together to map outcomes and capabilities with materials management, performance, economics and sustainability principles.*

## APPLE



Apple invented a new kind of alloy that would allow its MacBook to use 100% recycled aluminum enclosures. This new alloy could be recycled endlessly without losing the qualities that made it a better choice in the first place. Today, its MacBook Air and Mini have managed to cut each product's carbon footprint by nearly half. Apple was also able to introduce recyclable components to its popular iPhones, with more than 40 components in the iPhone XS, iPhone XS Max and iPhone XR now made from recycled plastic.

## DELL

For years a big part of the gap between intent and action on recycling has been the lack of a dependable and sizable recovery system, whereby consumers can easily recycle their electronics for technology manufacturers to reuse for new devices. Dell, which was the first PC manufacturer to establish a closed loop for recycling gold from e-waste back into new motherboards, announced in 2019 that it had recycled 100 million pounds of closed-loop plastics (those recovered from e-waste) to make new parts for new computers. Today, Dell uses these materials in more than 125 different products, including monitors, desktops and all-in-ones.

Dell accomplished recycling **100 MILLION POUNDS** of closed-loop plastics as of 2019 to make new parts for new computers.



# Today's Devices: Smaller, Lighter and More Recyclable

## CANON

Canon, which opened its Canon Eco Technology Park in 2018 to focus on eliminating waste and maximizing resource efficiency, introduced the Canon Automated Recycling System for Toner Cartridges (CARS-T) in 2019, a process whereby used toner cartridges are crushed and the materials automatically separated for recycling of the main component, high-impact polystyrene (HIPS).



## HP

HP also continued to make strides in shifting its portfolio toward more materials-efficient products, including reducing the weight of its HP 800 G5 notebook and moving to a primarily aluminum chassis. The Notebook maker was also able to introduce post-consumer recycled plastic content in its ProBook series (10%) and the HP Elite (8.5%) for the first time.



## SAMSUNG

Samsung reported having used 220,000 tons of recycled plastics since 2009 and has set new goals: to reach a cumulative total of 500,000 tons of recycled plastics used in products by 2030.

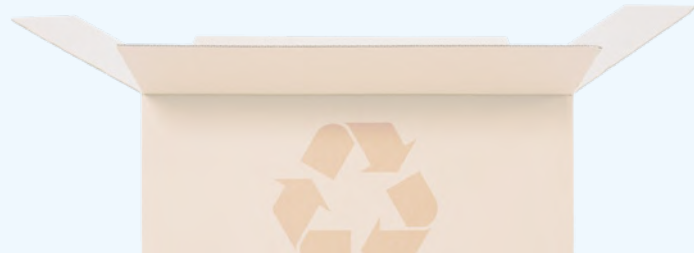
## GOOGLE

Google announced that all of its 2019 Nest products included some amount of recycled material, while the new Nest Mini speaker has a fabric top made entirely from old plastic bottles.





# Sustainable Packaging



*For the technology sector, pursuing a circular economy requires a balanced focus on designing out waste and pollution, keeping products and materials in use, as well as helping natural systems regenerate. Looking at packaging then becomes a useful avenue to seek out environmental improvements given the scale at which packaging materials are used and the corresponding potential for impact. Besides, with over 8 million tons of plastic ending up in our oceans every year, identifying a packaging solution has quickly become a critical priority for most manufacturers.*

## DELL



As manufacturers shift their perspectives on packaging, many have sought out innovative sources and solutions. For Dell, this meant taking on the task of establishing a new supply chain specifically to recover ocean-bound plastics. In partnership with suppliers, Dell collects, processes and mixes plastics with other recycled material to create molded trays used for packaging select products. These trays today are made of 25% ocean-bound plastic and 75% recycled PET and no virgin materials. And they are fully recyclable after use as well.

## ACE COMPUTERS

For small businesses such as Ace Computers, packaging reductions come in smaller doses of innovation. For local customers, Ace has been able to deploy a method they call “rolling thunder,” where computer systems are strapped to rolling aluminum racks, shrink wrapped and shipped in Ace’s own trucks. The computers are easily rolled off on the carts to where they need to be deployed, usually to customer desktops, resulting in zero packaging waste, with the carts returning to Ace for other deliveries.



# Sustainable Packaging



## APPLE

Apple switched to responsibly sourced wood fiber in all of its retail packaging, leading to a 48% reduction in plastic use in packaging over three years. They have also transitioned to 100% fiber retail bags in all retail stores with a knitted paper handle that contains 80% recycled fiber.



## BEST BUY & AMAZON

In the retail sector, Best Buy was able to transition its gift cards to Forest Stewardship Council (FSC) certified paper six years ago and is now working to reduce the packaging of the cards, estimating the transition to result in avoiding the use of at least 60 tons of plastic. And Amazon's frustration-free packaging program, among other sustainable packaging initiatives, helped eliminate more than 244,000 tons of packaging materials, avoiding 500 million shipping boxes and reducing packaging waste by 16%.

## 3M



Finally, 3M found packaging wins in its Command Picture Hanging Strips Value Pack retail package: for e-commerce retailers, the strips are now shipped without the clear plastic clamshell packaging and box, but instead are packed directly into a bubble wrap mailer. And retail stores are no longer required to display the strips on paperboards and peg holes, which used to add to 3M's shipping weight/volume as well as increasing packaging volume for the retailers.



# Using Safer Substances



*Materials make products durable and reusable. For product design, chemistry and engineering must go hand in hand to balance usability with safety and sustainability. And many technology companies continue to use science to inform their design decisions.*

## APPLE

While most technology companies have a supplier code today that mandates exclusion of restricted or known toxic substances, forward-looking companies are adopting even more stringent standards when it comes to certain substances' environmental impact. Apple, for instance, screens all its materials with comprehensive risk assessment tools and collects comprehensive chemical data for over 75% by mass of all its new iPhone, iPad and Mac products. In 2018, Apple graduated 50 supplier facilities from its Chemicals Management Program and reported 100% compliance by suppliers' final assembly sites in adopting safer cleaners and degreasers.

## SAMSUNG

Samsung, which set up a self-monitoring system and built a lab for analyzing environmentally sensitive substances and volatile organic compounds (VOCs) in 2005, continues to make strides with elimination as well. Samsung voluntarily formulated reduction plans for the use of not only restricted substances, but also potentially environmentally sensitive ones such as polyvinyl chloride (PVC), brominated flame retardants (BFRs), beryllium and antimony. A prime example is its QLED television line, which features cadmium-free Quantum Dot technology, something that had been impossible to remove in earlier technologies without sacrificing energy efficiency.

Samsung's QLED TVs won the **Sustainable Materials Management (SMM) Gold Award for Cutting Edge** from the U.S. Environmental Protection Agency in 2017.



# Reducing GHG: Goals and Strategies



*With the Intergovernmental Panel on Climate Change (IPCC) declaring 2030 as the deadline for achieving a radical reduction in greenhouse gas (GHG) emissions to avoid the more significant repercussions of climate change, the task ahead, while momentous, is clear. And for technology companies, the solutions lie in a combination of efforts: from incorporating environmental principles into product design and replacing fossil fuel sources with alternative methods for their energy and electricity use, to purchasing carbon offsets for environmental improvements as well as engaging with consumers to shift behaviors and actions.*

## AT&T

AT&T, which reduced its Scope 1 GHG emissions in 2018 by 24.7% against a 2008 baseline, deployed a new Climate Change Analysis Tool to help anticipate the potential impacts of climate change on its infrastructure and operations 30 years ahead. The company has also established a 10X carbon reduction goal to enable carbon savings 10 times the footprint of its operations by 2025. To meet that goal, it is making its network more efficient, deploying newer technologies and teaming up with other companies to measure the GHG emissions reduction of products across the food, consumer, health care and real estate sectors.

## CISCO

Software solutions provider Cisco has reached 90% of its goal – to avoid one million metric tons cumulative of GHG emissions in its supply chain from 2012 to 2020 – at the end of FY2018, while Intel's direct GHG emissions decreased 32% on a per unit or intensity basis.

Intel has invested over **\$200 MILLION** in energy conservation projects since 2012.

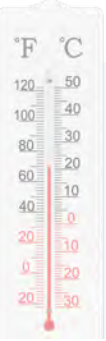


## BEST BUY

On the retail end, having achieved its interim goal of achieving a 51% reduction in its carbon emissions, Best Buy reestablished new 2030 goals in 2019: reduce carbon emissions in operations by 75% over a 2009 baseline on the way to becoming carbon neutral by 2050.

## GOOGLE

As for helping others measure and account for emissions, Google announced a new tool that would allow cities around the world to estimate city-specific GHG emissions from transportation and buildings, rooftop solar energy potential, as well as providing NASA climate forecasts, derived from Google's proprietary data and other data sources.



# Adopting Science-Based Targets

*With climate change rapidly accelerating, industry leaders have started adopting science-based targets to help guide their emissions control efforts in line with the reduction required to keep the global temperature increase below 2°C, as outlined in the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). Created by the World Resources Institute (WRI) in partnership with nonprofits CDP, United Nations Global Compact (UNGC), World Wildlife Fund (WWF) and We Mean Business, the Science Based Targets Initiative helps companies futureproof their growth from environmental impact, guide technological innovations and ensure that carbon reduction efforts are scientifically astute.*

## A company's GHG emissions are categorized into three Scopes by the GHG Protocol Corporate Standard.



- **Scope 1** emissions are direct emissions from owned or controlled sources.
- **Scope 2** emissions are indirect emissions from the generation of purchased energy.
- **Scope 3** emissions are all indirect emissions (not included in Scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.



# Snapshot of CTA Members' GHG Emission Reduction Efforts



CTA MEMBER	SCOPE 1	SCOPE 2	SCOPE 3
<b>ASUS</b> (2008 baseline)	50% by 2025		
<b>Best Buy</b> (2009 baseline)	60% reduction in carbon emissions by 2020; carbon neutral by 2050		20% reduction by customers' product use by 2030
<b>Dell</b> (2010 baseline)	40% by 2020		80% reduction in energy intensity of products by 2020 (2011 baseline)
<b>Facebook</b> (2017 baseline)	75% by 2020		—
<b>HP</b>	25% by 2025 (2015 baseline)		25% reduction by customers' product use by 2020 (2010 baseline) 10% reduction in emissions intensity from first-tier production and product transportation suppliers by 2025 (2015 baseline)
<b>Panasonic</b> (2013 baseline)	30% by 2030; zero by 2050	30% by 2030; zero by 2050	30% by 2030
<b>Sony</b> (2000 baseline)	42% by 2020 with a long-term target of achieving zero emissions by 2050		
<b>T-Mobile</b> (2016 baseline)	95% by 2025		15% per customer by 2025

# Renewable Energy



*According to the International Energy Agency's Renewables 2018 forecast, renewables will grow by over 20% in the next five years. Much of this growth, according to Deloitte's 2019 Renewable Energy Outlook, will be driven by declining costs of wind and solar generation, advances in battery storage technology, grid operators' growing expertise and expanding toolset for integrating intermittent renewable power into the grid, and, most significant, robust demand from most market segments, including corporations' growing appetite for renewables. As of mid-October 2018, corporations had purchased nearly 5 gigawatts (GW) of renewables through a variety of procurement routes.*

## APPLE & INTEL

Technology companies have led the way by investing in renewable energy, be it solar or wind. One hundred percent of Apple's global facilities, for example, including offices, retail stores and data centers, are powered today by renewable energy. Two-thirds of this energy comes from Apple-created projects. With its manufacturing accounting for 74% of Apple's carbon footprint, 44 of its suppliers have committed to power all their Apple production with 100% renewable energy, ensuring that the company is on track to bring 4 GW of new clean energy into the supply chain. As of January 2019, 66% of the company's renewable energy was sourced from self-created projects, with the remainder coming from equity investments and long-term energy contracts. At the end of 2018, 71% of Intel's global power and 100% of the power used in its U.S. and EU operations were green power. Additionally, Intel campuses in 15 countries now have approximately 95 alternative energy installations using 20 different technology applications.

Apple Park, the company's newest corporate headquarters, uses **75%** of its power from on-site fuel cells and rooftop solar PV panels.



## CISCO & FACEBOOK

Software leader Cisco reports sourcing 82% of its global electricity from renewable sources, putting it on track to achieve a goal of 85% by FY2022. Facebook is not far behind with 75% of its energy needs coming from renewables in 2018, as it closes in on achieving its goal of sourcing 100% of energy used for facilities from renewables by 2020.

## AT&T



Telecommunications giant AT&T has become one of the nation's largest purchasers of wind energy by investing in up to 820 megawatts of wind energy projects to power the American grid. With this investment, AT&T is reducing GHG emissions equivalent to taking more than 530,000 cars off the road for a year.

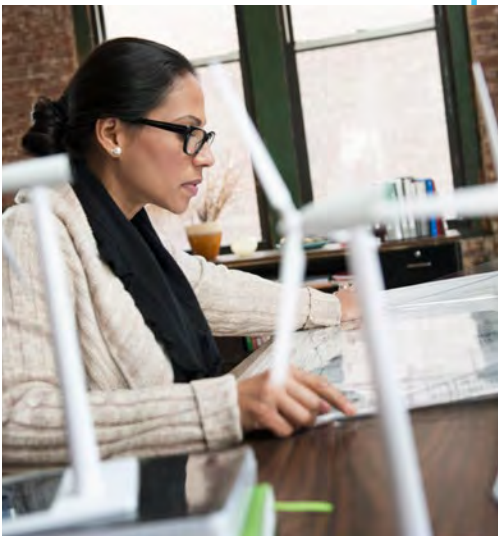
# Renewable Energy

## VERIZON

Verizon committed in 2018 to source or generate renewable energy equivalent to 50% of its total annual electricity consumption by 2025 by continuing to develop renewables at its own operations and by sourcing green energy from external sources. The media and telecommunications company expects to add 24 megawatts of on-site green energy by 2025. In early 2019, Verizon issued its first-ever green bond, a debt instrument aligned with the interests of a growing number of environmentally conscious investors. The bond's \$1 billion proceeds were used to fund important environmental initiatives, including renewable energy installations.



## RE100: CONSUMER TECHNOLOGY LEADERS



RE100 is a global corporate leadership initiative led by The Climate Group in partnership with CDP, created to accelerate change toward zero carbon grids at global scale. The initiative works to increase corporate demand for – and the supply of – renewable energy, by bringing together major companies committed to sourcing 100% renewable electricity globally in the shortest possible timeline – by 2050 at the latest. These CTA member companies have joined RE100 on the journey to 100% renewables:

- 3M
- Adobe
- Apple
- Autodesk
- Dell
- Facebook
- Google
- HP
- Hewlett Packard Enterprise
- Johnson & Johnson
- Logitech
- Lyft
- Microsoft
- Panasonic
- Philips
- Schneider Electric
- Sony
- T-Mobile
- Walmart





# More Energy-Efficient Processing and Storage

*The cloud, a global network of virtual servers, introduced first in 2006, has very quickly led to a thriving and global digital economy, changing the game for companies and consumers alike. Today, the cloud continues to drive efficiencies for businesses by providing virtual storage, enabling remote work for employees, influencing e-commerce innovations and much more. The data centers that host these servers and enable this convenience have improved significantly as well in the last decade or so, becoming increasingly energy efficient, running on renewable energy, purchasing offsets and exponentially expanding their scope to power tens of billions of electronic devices.*

## AMD

AMD, for instance, has mastered the science of maximizing the computing performance delivered per watt of energy consumed. Their cutting-edge chip architecture, design and power management features have resulted in significant energy-efficiency gains, aiding their goal of “25x20” or delivering 25 times more energy efficiency by the year 2020 with processors that combine powerful processor and graphic cores in a single chip. That means that in 2020, if achieved, an AMD-powered laptop will consume one-fifth the power and accomplish a task in one-fifth the time required by an AMD-powered laptop produced in 2014. AMD remains on track to meet this goal, which has received recognition that includes the California Governor’s Environmental and Economic Leadership (GEELA) Award, an Edison Award and an Energy Manager Today Award.



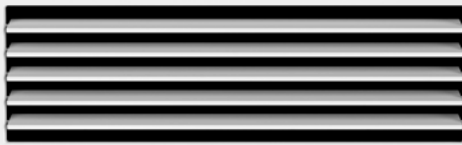


# More Energy-Efficient Processing and Storage

## LENOVO

Laptop maker Lenovo introduced a novel approach called Neptune in 2018 for data center efficiency, which offers a complement of three liquid-based cooling technologies that efficiently extract heat from computer systems. Direct to Node (DTN) Warm Water Cooling utilizes water piped directly into the system unit to cool components, instead of using system fans and chilled air, and allows critical server components to operate at lower temperatures compared to standard air-cooled systems. The Rear Door Heat Exchanger (RDHX) brings water to the rack to reduce heat, making it room neutral. Similar to a car radiator, the RDHX replaces the rear door of the rack and absorbs heat from the exhaust of air-cooled systems. Finally, a Thermal Transfer Module integrates a hermetically sealed liquid-filled heat pipe inside a traditional heat-sink.

## APPLE



Lastly, Apple reports using outside air cooling through a waterside economizer during night and cool-weather hours, which, along with water storage, allows the chillers at its Maiden, North Carolina, data centers to be idle 75% of the time.

## Leveraging the cloud for sustainability innovation



Amazon's Sustainability Data Initiative uses AWS's scalable infrastructure to stage, analyze and distribute data to promote innovation and problem solving for sustainability. The initiative hosts commonly used datasets, available for free, through the AWS Public Datasets and makes this data easily discoverable through a data catalog. The initiative also provides access to AWS Cloud Credits for research to prototype new and existing solutions in the AWS cloud as well as providing technical support to help unblock cloud implementation challenges. For example, AWS is collaborating with Group on Earth Observations (GEO) to provide up to \$1.5 million in cloud credits for projects to improve the understanding of our planet. The new GEO-AWS collaboration will offer GEO member agencies and research organizations in developing countries access to cloud services for hosting, processing and analysis of Earth observation data to inform decisions for sustainable development.

# Voluntary Agreements: Unified Purpose, Collective Benefits

*CTA and the Internet & Television Association (NCTA) have been working closely with internet service providers and manufacturers for several years now to drive improvements in the energy efficiency of pay TV and broadband devices and save consumers money. The landmark Voluntary Agreement for Ongoing Improvements in the Energy Efficiency of Set-Top Boxes (STB), for instance, which was adopted in 2012, has continued to drive year-to-year improvements in the energy efficiency of STBs while encouraging innovation and competition. With signatories representing more than 90% of the U.S. pay TV market and major manufacturers, the agreement has helped transform the consumer technology sector's approach to energy efficiency by spurring innovation and sustainability improvements that benefit the entire sector.*



Reduced national set-top box annual energy consumption by **39%** since 2012, yielding cumulative savings of more than **\$5 BILLION** in electricity costs and avoiding **28.6 MILLION** metric tons of CO2 emissions

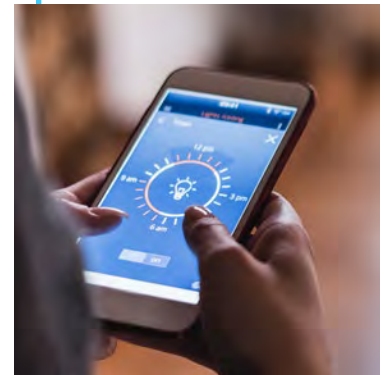


# Voluntary Agreements: Unified Purpose, Collective Benefits

Following the success of the STB agreement, CTA and NCTA signed the Voluntary Agreement for Ongoing Improvements in the Energy Efficiency of Small Network Equipment (SNE) in 2015. The objective: to increase the energy efficiency of equipment used to access residential broadband internet access services while promoting rapid innovation and timely introduction of new features for consumers. Participants included all of the nation's largest consumer internet service providers (Altice, AT&T, CenturyLink, Charter, Comcast, Cox, Frontier and Verizon) as well as major manufacturers (Actiontec, ARRIS, Netgear, Technicolor and Ubee). CableLabs® also played a leading role in researching and developing energy-efficiency strategies and in supporting the ongoing implementation of the voluntary agreements.

In 2019, CTA and NCTA received the Project of the Year award from *Environmental Leader*, a leading daily trade publication covering energy, environmental and sustainability news, for their efforts with the SNE Voluntary Agreement and successfully establishing an effective alternative to traditional regulation that's better suited for fast-moving industries.

An independent audit conducted in 2018 demonstrated a 20% improvement to date driven by SNE as well as improvements in SNE efficiency, even as consumers demand increasingly robust equipment to support higher-speed services, better Wi-Fi strength and more Internet of Things (IoT) devices.



The energy saved in six years is enough to power all homes in the state of Pennsylvania with electricity for one year.

## CTA HELPS EXPAND ENERGY EFFICIENCY AGREEMENT FOR SET-TOP BOXES TO CANADA

By 2018, 97% of all new set-top boxes purchased in Canada by Canadian Energy Efficiency Voluntary Agreement (CEEVA) participants met the agreement's rigorous Tier 2 energy-efficiency levels that became effective that year. By adhering to the CEEVA energy-efficiency commitments, CEEVA participants achieved an average decrease of 13% in energy consumption by STBs. This is a significant achievement in light of the ongoing enhancement of STB functionalities aimed at improving the customer experience in the digital economy. CEEVA is an agreement among Canada's most prominent pay TV service providers and STB manufacturers, entered into and administered in close collaboration with Natural Resources Canada (NRCan), to improve energy efficiency of STBs while supporting innovation and recognizing the critical importance of a high-quality customer experience.





# Energy Star Helps Save Billions in Energy Costs and Emissions

## The cumulative GHG benefits of Energy Star



- Since 1992, Energy Star and its partners have helped save American families and businesses nearly 4 trillion kilowatt-hours of electricity and achieve over 3 billion metric tons of greenhouse gas reductions, equivalent to the annual emissions of over 600 million cars.
- In 2017 alone, Energy Star and its partners helped Americans avoid \$30 billion in energy costs.
- An average of 800,000 Energy Star-certified products were sold every day in 2017, bringing the total to more than 6 billion products sold since 1992.





# A New Generation of Energy- and Resource-Efficient Products

*As consumer awareness about the environmental impact of their technological choices continues to expand, the solutions are ramping up as well. For the consumer technology sector, this collision of urgency, a wider suite of solutions and a growing consumer appetite for sustainable actions has led to ambitious and multipronged efforts to drive energy and resource efficiency across all products.*

## SONY

Given the popularity of video games, Sony knew it could make a big difference focusing on how to make its top bestseller, the PlayStation, the most energy efficient it could be. With more than 300 million units sold globally every year, the current PlayStation®4 (PS4®, CUH-2000 Series) has achieved a wide range of improvements including reduced power consumption, which in turn enabled downsizing and weight reduction, leading to an innovative new design. Additionally, power consumption has been reduced by 34% compared to the initial CUH-1000 Series, and by 28% when compared to the previous CUH-1200 Series. Finally, the weight of the PS4 has been reduced by 16% and size by 30% compared to earlier models, translating into fewer resource inputs, less packaging and reduced energy required for shipping.

By the end of 2018, Nest thermostats had helped customers cumulatively save more than **29 BILLION KWh** of energy.



Energy-efficiency policies and programs depend on having a current, consensus standard test method for measuring power draw. CTA is developing a consensus standard for measuring power consumption for several categories of audio/visual (A/V) products, including amplifiers, smart speakers and soundbars. The “CTA-2084” test method standard will support the revision of the EPA’s Energy Star Audio/Video Specification Version 4.0, and CTA-2084 ultimately will be an ANSI consensus standard. Current participants include industry and energy-efficiency advocates, testing labs and regulatory agencies.



# A New Generation of Energy- and Resource-Efficient Products

## SAMSUNG

Over the last two decades, there has been a dramatic improvement in the energy efficiency of TVs. Even as models have grown in size, capability and features, a recent CTA study found that the average LCD TV in 2015 consumed 76% less energy per screen area than the average TV did in 2003. Samsung's line of energy-efficient TVs continues that trend with the new 75-inch LCD TV, the UE75NU7100, featuring Eco Sensor, which can intelligently adapt its picture according to the intensity of the light in the room. This technology measures the amount of existing light and automatically adjusts the brightness of the image on the TV, saving energy. The model has achieved an EU Energy Efficiency rating of A+, the highest possible.

## INTEL & SHARP

Finally, Intel is working to enable all-day battery life by co-engineering the new Intel Low Power Display Technology (LPDT), featured in a 1-watt panel manufactured by Sharp and Innolux, which can cut LCD power consumption by half. Cutting power consumption by a watt could extend battery life by four to eight hours. According to Intel, the new technology is expected to deliver up to eight hours of additional local video playback – and up to 28 hours of battery life on select laptops.

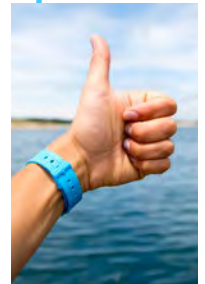


# Water Conservation

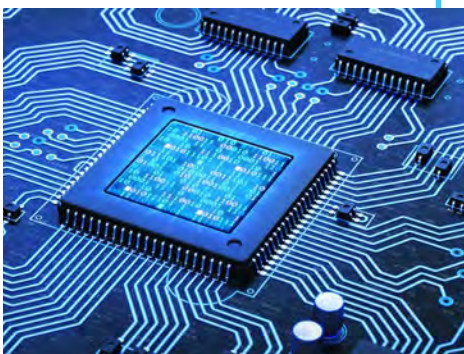
*In the World Economic Forum's 2019 Global Risks report, water slipped down to number nine as a top risk most likely to occur in the near future, but only behind related risks of extreme weather events, natural disasters, man-made environmental disasters, failure of climate change mitigation and biodiversity loss. Any of these higher-rated risks can tip the balance on water availability and quality around the world, particularly for regions already suffering from shortfalls. For the technology industry, water presents a significant and material risk, given its use in nearly every manufacturing process. Not only are companies looking at how to mitigate their water use, they are also working to return water back to communities in a clean state and identifying new ways of reusing it endlessly within the manufacturing process through byproducts.*

## FACEBOOK

At Facebook, all the water used for landscaping at its two new 500,000-square-foot buildings is filtered from kitchen faucets, sinks, showers and toilets. The low-energy system uses physical, microbiological and oxidative treatments to make the water safe for reuse in landscaping, creating a loop and minimizing the need for extracting new clean water. Annually, the system is expected to process over 60,000 cubic meters (or 16 million gallons) of water.



## INTEL



Intel, which manufactures semiconductors requiring significant use of water for its fabrication process, has invested more than \$254 million in water conservation projects at its global facilities since 1998. To date, the efforts have saved about 64 billion gallons of water, enough to sustain 580,000 U.S. homes for one year. In 2017, Intel upped its ambition by announcing that it would aim to restore 100% of its global water use by 2025. In 2018, Intel returned or restored 80% of its global water use and is on track to meet its 2025 goal.



# Water Conservation

## PANASONIC

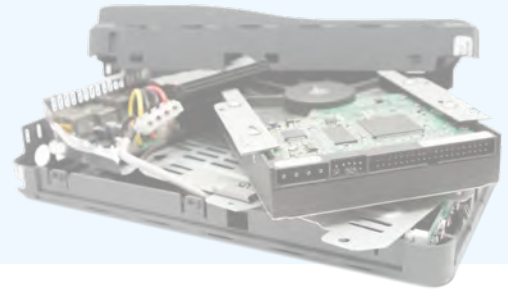
Panasonic, which also has a significant manufacturing footprint, has reduced the total amount of water consumed in production activities by more than half since 2010 and water consumption per basic unit of production by 40%. Similar to Facebook's approach, it collects and reuses wastewater from manufacturing processes and air conditioning systems endlessly in a loop. This reduces water intake as well as the amount of effluents from the production process.

## ZERO MASS WATER

For Zero Mass Water, water conservation is built into its purpose. Using technology, Zero Mass Water created SOURCE, a residential solar power array that uses sunlight to harvest water from air vapor. The harvested vapor is then sterilized, mineralized and stored in a reservoir that connects to home faucets. Since launching in 2015, the company has installed these panels, which can deliver four to ten liters of water every day, in 30 countries on six continents.



# Waste: Diversion Strategies and Goals



*Rethinking waste has helped companies make huge strides in reducing their environmental footprint and creating new efficiencies in the manufacturing processes. From using higher percentages of recycled material to make new products and reduce packaging to repurposing waste into new input, companies across the technology sector have been working hard to identify scalable solutions and shift their processes to more circular operations. Recycling and diversions have also become strong employee initiatives for most companies, given the associated cost savings and potential for behavior change.*

## ADOBE

For example, by the end of 2016, over 98% of Adobe's licensed products were delivered digitally, essentially eliminating its physical supply chain and drastically reducing the amount of waste produced by it. Adobe works with local partners to divert remaining waste from ever reaching landfill through composting, recycling and reuse whenever possible. Adobe employees actively engage in recycling, composting and re-use programs helping the company achieve a 9% global diversion rate. While paper, cardboard, plastic, glass, aluminum cans, printer toner cartridges, kitchen grease and batteries are recycled, food waste, landscaping waste, paper utensils and food containers are composted. IT equipment and office furniture that still has life in it – and anything that can be repaired or repurposed – is sent to partners such as Green Standards for a new life.

## DELL, INTEL & ASUS

Dell also reported good results in 2019, with its manufacturing facilities diverting 98% of their total nonhazardous waste from landfills and exceeding the company's goal of 90% diversion. Chip maker Intel managed to recycle 90% of its global nonhazardous waste in 2018, reaching its goal two years early. In 2019, computer maker ASUS became the First Consumer IT Headquarters Worldwide to Receive UL's Zero Waste Validation for diverting over 80% of its waste.

## BEST BUY

On the retail front, Best Buy continues to make progress against its goal to achieve an 85% diversion rate for all U.S. operations by the end of FY2020. Cardboard comprises 80% of the waste generated in its operations, and Best Buy is executing a three-year roadmap to replace or install new cardboard balers and compactors in most of its stores. In distribution centers, the company has deployed polystyrene densifiers to break apart and melt polystyrene into condensed cubes.

# Secondary Market: Repair and Reuse



*Today's consumer products are built on sophisticated technology and innovation that continues to rapidly evolve. While this has made devices such as smartphones and TVs ubiquitous around the world, the proliferation has led to a thriving secondary market of refurbished and used electronics. In 2018, one in five smartphones sold to Americans were used, with refurbished phones becoming a growing share of the market.*

*Reusing electronics isn't just a cost-effective way to access the latest technology, it is also helping us reduce GHG emissions associated with manufacturing and promote a more circular relationship with our gadgets.*

## APPLE

For example, iPhone pioneer Apple offers a network of more than 5,000 Apple Store locations and authorized service providers for repairs globally. Through Apple Trade In, the iPhone upgrade program and Apple Care, customers in 27 countries can trade in their devices either online or in-store. These products are either repaired, refurbished and resold, or recycled. In FY2018, Apple directed 7,860,000 devices to new users.

In 2018, Apple directed  
**7,860,000 devices**  
to new users.



## CEXCHANGE

Another electronics trade-in and recycling service CExchange is leading the charge with its members such as eBay, US Cellular, Walmart, Sam's Club, Target, Microsoft Stores, Wireless Advocates/Costco and Car Toys, among others. Their objective is to use buyback and returns management programs to collect as many electronic devices as possible for reuse by consumers. Devices that have reached the end of their useful life get responsibly recycled through R2-certified partners.

# eCycling



*With the pace of innovation far outpacing a device's lifespan, the consumer technology industry has been working to shift a linear model of make-use-throw into a more circular one. Enter reuse where devices get second and third lives, followed by, or as it's called for electronics, eCycling. At CTA, we have been working to expand recycling for consumer electronics on multiple fronts for many years, including sponsoring GreenerGadgets.org, a digital resource guide with a zip-code locator for consumers to find nearby places to recycle electronics safely. We also support The Recycling Partnership, focused on improving consumer recycling efforts throughout the U.S.*

**\$** spent on recycling by industry: over **\$1 BILLION**  
 Consumers reached via PSAs: **266 MILLION**  
 # certified responsible locations: **8,000+**  
 # schools with **eCycling** lesson plans: **16,000**



## SAMSUNG

Today, Samsung's waste reclamation program operates in 54 countries. The program collects steel, aluminum, copper and plastics, with recovered plastics to be reused in manufacturing new devices. Since 2009, 3.5 million tons of plastic e-waste has been taken back and recycled globally. Samsung's goal: to collect and recycle 7.5 million tons by 2030.

## APPLE

Apple, which has elevated its trade-in program significantly in recent years, has found success with incentivizing consumers to trade in their devices. As a result, in 2018, Apple refurbished more than 7.8 million devices and recycled 48,000 metric tons of e-waste. And Apple's disassembly robot, "Daisy," can even recover 32kg of rare earth elements for every 100,000 iPhones.

# eCycling



## BEST BUY

Retailer Best Buy also stepped up its takeback efforts in 2019. Geek Squad Agents and In-Home Advisors who make house calls to provide consultations and other tech-support services now offer to take items with them to be recycled. They take cables and cords, Wi-Fi gear, audio equipment and other items that don't contain personal data. Consumers can still continue to recycle electronics like phones, laptops, tablets and more for free at Best Buy stores. Through these efforts, Best Buy has helped customers recycle over 2 billion pounds of electronics and appliances since 2009.

## AT&T & VERIZON

As for telecommunications giant AT&T, since 2007, the company has refurbished or recycled 175 million devices, including STBs, broadband equipment and mobile devices. The company's goal: to reach 200 million devices collected by the end of 2020. And Verizon is focusing its outreach to engage with customers and the community on recycling. In 2018, Verizon held 53 community recycling rallies, collecting more than half a million pounds of recyclable material. Since 2009, these events have collected 3.7 million pounds of e-waste in communities. Through its own internal efforts, the company recycled 89.5 million pounds of end-of-life materials in 2018.

## CISCO

Tech and software maker Cisco's trade-in and recycling programs are designed to bring back the products sold to channel partners and end users. Of products sent to e-scrap recyclers, nearly 100% are recycled, and all commodity fractions go to downstream recyclers to be made into new products. During 2018, Cisco refurbished, resold, reused or recycled 13,946 metric tonnes of products returned, an increase of almost 20% from the previous year.



# eCycling



## TOSHIBA

Toshiba America Business Solutions recycled more than 229 metric tons of e-waste – stemming from used toner products – in 2018. The total marks the highest amount of e-waste the company has recycled in a calendar year. Since partnering with internationally recognized recycler Close the Loop in 2008, Toshiba has prevented more than 1,229 metric tons of e-waste from hitting landfills. Through Toshiba's ecoSmart Toner Recycling program, the company's spent imaging products are transformed into reusable material via a zero-thermal recovery process. These components are often incorporated into future products, thereby contributing to the circular economy.

Dell, which has one of the largest technology recycling programs in the world, reported having collected **2.1 BILLION** pounds of used electronics since **2007** and successfully used **100 MILLION** pounds of recycled-content materials in new products since **2013**.





# SUSTAINABLE SOCIETY ENABLING SUSTAINABLE INFRASTRUCTURE & BEHAVIORS

Most people want to be sustainable, but have a hard time taking the necessary actions. Thankfully, technology can play a unique role in helping shift behaviors, and ultimately, habits. Take, for instance, how the smartphone has revolutionized our daily lives: From mayors using smart data to lay out a plan for their cities' transportation needs to the average consumer learning how to better manage her energy consumption and personal health, technology enables new behaviors – and continues to play a vital role in building a better future for all of us.

# Enabling Smart Cities & Resilient Technologies

*Smart city technologies have successfully helped address issues such as congestion and traffic management, parking optimization, pedestrian safety and homelessness. With a majority of the world's population now residing in cities, the pressure on most cities as they plan the next decade of their development is not just infrastructural, but also one of connectivity, convenience and sustainability. A smart city is more livable, more sustainable, more resilient. And a robust network underlies the effectiveness of it all.*

## AT&T

In the U.S. alone, there are over **115,000 water tanks** across over **146,000 public water systems.**



Take water for example. In the U.S., water utilities are responsible for providing 322 billion gallons of potable water to customers every day. To maintain clean and safe water supplies, they have to take water storage tanks out of service every few years for inspections. AT&T discovered that if water utilities joined drones and remotely operated vehicles (ROVs) with secure AT&T Internet of Things (IoT) connectivity and a video analysis platform, they could keep their tanks in service, reduce inspection time and avoid unnecessary risk of injury. Even if utilities used this method to inspect only 10% of the water tanks in the U.S., they could save about 1 billion gallons of water, reduce greenhouse gas (GHG) emissions by roughly 2,000 metric tons of CO<sub>2</sub>e and lower inspection costs by approximately \$12 million every year.

In 2018, AT&T also began a partnership with the city of Los Angeles to plan its digital future. The partnership includes exploring the deployment of a variety of Smart Cities solutions ranging from digital kiosks to structural monitoring to digital infrastructure.

## VERIZON

Verizon's Intelligent Lighting Platform helps cities save energy by converting LED fixtures into sensor-equipped smart devices that capture and transmit data in real time. With the platform, cities can remotely operate lights, individually or by group, or program them to turn on, off or dim, based on proximity sensor data or pre-set definitions. That means lights are on when and where they're needed, helping to both decrease energy costs and increase safety. And with City Hub, cities can further connect to more IoT solutions on an adaptable and easy-to-use cloud-based platform.



# Enabling Smart Cities & Resilient Technologies

## VOLTA

Volta, which was founded in 2010 to promote electric transportation, has been creating a network of electric vehicle (EV) charging stations across the country – and these stations have become the most heavily used in the industry. Supported by advertising and brand partnerships, the Volta network provides free charging for EV drivers at nearly 800 locations, from Hawaii to New York.



## OXICOOL



A growing number of companies are focusing on adding resiliency to existing technologies by equipping them with new features to keep the world healthy, safe, warm, powered, fed and secure in the face of adversity. Take, for example, Oxicool, which has developed air conditioning technologies that can be applied to an array of applications in both the commercial and military spaces, resulting in significantly lower operating and maintenance costs of air conditioning. The company's TruckCool technology provides stable performance over longer run times for trucks than the competition, and with lower operating costs.

## NANOSCENT

Then there is NanoScent, a patented scent recognition platform that is used by industrial plants to detect and prevent potentially disastrous leaks of toxins into the environment. Currently piloting its platform in healthcare, the utilities and automotive sectors are already starting to use NanoScent's intelligent platform to help prevent environmental disasters.

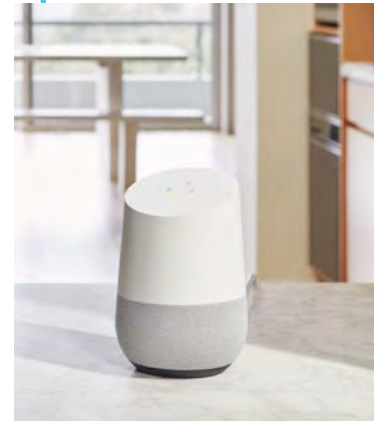
A CES Innovation Award-Winner, **MyBus** is a free app that serves as a transit network assistant. Features include the timetables of the nearest bus stop, a route planner and **real-time** traffic information, as well as e-ticketing via a smartphone and community sharing so travelers can share experiences and updates.

# AI and Its Growing Benefits

*Some call the growing importance of artificial intelligence (AI) the next industrial revolution. And for environmental issues, the critical role AI could play is starting to play out as technology pilots begin to ripple out into real world applications and experiments. In fact, according to a survey by Intel and the research firm Concentrix in 2018, 74% of business decision-makers working in environmental sustainability agreed that AI will help solve long-standing environmental challenges, and over 64% agreed that the Internet of Things (IoT) will help solve these challenges. Already, agricultural practices, sea water erosion, marine life protection and air pollution are benefiting from AI around the world.*

## AMAZON, GOOGLE, APPLE & MICROSOFT

For instance, one-third of U.S. homes today own a smart speaker – a four-fold increase from only three years ago. These devices, which leverage voice assistant platforms – Alexa from Amazon, Google Assistant, Apple’s Siri and Cortana from Microsoft – bring the capabilities of AI to life for tens of millions of Americans daily. Whether planning a trip, checking the weather or managing energy and security in the home – the capabilities and applications of these systems are nearly endless. Whether adjusting the thermostat, controlling the lights while away or monitoring household water usage, the capabilities of these systems are nearly endless. And AI-enabled voice assistant technology is especially useful for the disabled and the elderly, making energy management easier and safer – and life more enjoyable.



## MICROSOFT



Additionally, the AI for Earth initiative puts Microsoft’s cloud and AI tools in the hands of environmentalists working to conserve natural resources and sustainably feed the planet. Through the initiative, the technology giant is developing open-source tools, models, infrastructure, data and APIs to accelerate technology development for environmental sustainability across the categories of climate, agriculture, water and biodiversity.

# AI and Its Growing Benefits

## NVIDIA

Blue River Technology, a startup recently acquired by John Deere, utilizes NVIDIA graphic processing units (GPUs) and computer vision to tackle one of agriculture's toughest challenges – reducing herbicide use and its environmental and economic costs. Blue River Technology's main product, See & Spray, is a smart sprayer system that leverages AI and machine learning to distinguish weeds from beneficial plants in a field. Pulled behind tractors, the sprayer employs 30 mounted cameras to capture photos of plants every 50 milliseconds and process them through its on-board NVIDIA supercomputing modules. The potential: to reduce herbicide use by up to 90%, based on field tests.



## PLUS.AI



On the mobility front, Silicon Valley startup Plus.ai is focused on leveraging AI and self-driving technology to transform the trillion-dollar commercial trucking industry. In 2019 alone, there were about 276 million vehicles operating on roads throughout the U.S. The first advanced autonomous trucking company to obtain California's Autonomous Testing License, Plus.ai collaborates with the largest OEMs to build self-driving trucks that are safer than human-operated vehicles and promote greater ride pooling. The company operates a fleet of autonomous trucks in pilot programs with the top freight shipping companies, with testing underway at dozens of locations as of mid-2019. The potential of ride pooling with Plus.ai could be significant for the environment: even modest levels of ride pooling could result in significant energy savings, in addition to reducing congestion due to increasing vehicle occupancy, especially during peak times.

# Sharing Economy



*The sharing economy continues to gain momentum as providers become more sophisticated and the technology underwriting these services becomes more dependable and intuitive for users. And many are now accounting for their environmental impact through a multitude of solutions, including renewable energy credits, partnerships and setting carbon neutrality goals.*

## LYFT

Take, for example, car sharing app Lyft: as the car riding app continues to add drivers and riders, it has also upped its commitment to reduce and ultimately neutralize its environmental impact. In late 2018, Lyft started a carbon offsets program, and in the first year offset over 1 million metric tons of carbon. Lyft also began a partnership with public transit agencies across the U.S. to achieve 50 percent shared rides by the end of 2020 and launched a bikes and scooters program to promote alternative transit options.

Ridesharing and bike/scooter sharing are most popular when on extended trips, for transporting others and school commutes.



## UBER

With the World Economic Forum projecting the sharing economy to increase twenty-fold between 2016 and 2025 – reaching \$674 billion – the possibilities of how we can use these services to improve our environment and especially foster better consumer behavior are endless. Car riding apps, for instance, are already incentivizing carpooling and trying to crack the code on congestion and emissions. Uber reports that 20 percent of its trips are carpoolers – over 35 million riders in 2017 alone – helping avoid 82,000 metric tons of carbon emissions.



# Sharing Economy

## AIRBNB

Airbnb, with its expansive and global network and affordable options, offers a unique way for people to experience the outdoors. As for its hosts, Airbnb reports that 88% of them now incorporate green practices into hosting, such as using green cleaning products, provided recycling or composting, encouraging guests to use public transportation or provided bicycles, or installing solar panels. A 2018 analysis by Cleantech Group found that when guests stay on Airbnb, significantly less energy and water is used, fewer greenhouse gases are emitted and waste is reduced.

In 2019, CTA conducted a study to understand riders' perceptions and habits from public transportation and ridesharing. We found that today, many are choosing their primary transportation method based on its environmental impact, with 33% of those who use public transportation frequently using rideshares, while 20% of those who regularly use personal bikes, skateboards or scooters using ridesharing often. The study also found that city dwellers and early tech adopters are more likely to use ridesharing or bikes – with over 71% preferring bikes/scooters because it was faster than walking and 61% preferring it as a way to lower their carbon footprint.



# Making the Home Smarter Than Ever



According to the 21st Annual Consumer Technology Ownership and Market Potential Study conducted by CTA, 17% of U.S. households owned smart appliances in 2019. The top contenders: smart light bulbs, thermostats, home security cameras and robotic vacuums. The study also forecasted that smart home devices will see the biggest gains in household adoption in the next year, led by households planning to buy smart door locks, smart doorbells and smart home hubs for the first time.

## ALARM.COM



This proliferation of smart home devices across price points and markets has helped shift consumer behavior dramatically in the last five years by headlining these devices' cost effectiveness, connectivity, easy-to-use technology and energy efficiency. For instance, Alarm.com provides consumers with a whole array of options to better manage their energy use by connecting thermostats and lighting to their security system. Users can manage their lights and temperature settings with automated schedules and create rules to have an added layer of smart automation based on system activity. They can also receive a remote notification if the thermostat setting is adjusted, or if the temperature in the property gets too high or too low.

## EVE

More precisely measuring the quality of indoor air in the home is the aim of the Eve Room. The device not only measures temperature and humidity, but also the level of volatile organic compounds (VOCs). Eve, which works in sync with the Apple HomeKit, can trigger an air purifier, humidifier, fan or any connected device used in the home to keep conditions under control.

## NANO LEAF

Nano Leaf, founded in 2012, has since revolutionized smart lighting with products such as the Nanoleaf One, an award-winning, energy-efficient lightbulb and the Nanoleaf Bloom, which allows consumers to dim the lights using a regular on/off light switch, making energy savings much more accessible. And in 2015, the company made its smart hubs and light products all compatible with Amazon Alexa, Google Assistant and Apple Homekit.

# Making the Home Smarter Than Ever



## CONNECTED GARDEN

Connected Garden's Archibald is a personal digital gardener with a "Super Sensor" that selects plants for precise locations such as a garden, terrace or balcony and guides consumers via a smart device app.

Connected Garden won the 2019 CES Climate Change Innovator Award for its digital gardener Archie!



## Energy Star Smart Home Energy Management System (SHEMS)



Energy Star launched its Smart Home Energy Management System (SHEMS) version 1.0 specification in 2019, which establishes required energy-saving SHEMS features designed to deliver cost savings as well as user convenience.

Features include:

- Reliable occupancy-based control of connected devices;
- User feedback and display of energy use data;
- Instituting a limit to the standby power of required devices; and
- Inclusion of an Energy Star-certified connected thermostat

The specification requires periodic submission of statistical analysis of field data gathered from installations of the certified SHEMS package field data gathered from installations of the certified SHEMS package.

# Emerging Disruptive Technologies



*As artificial intelligence and cloud computing become more sophisticated, there are a multitude of new technologies emerging that promise to disrupt how we address pervasive environmental issues such as clean water availability, pollution and transitioning to renewable energy sources for residential and commercial electricity use.*

## GOSUN

GoSun is an innovative solar cooking company that has developed a breakthrough method of cooking meats, seafood and vegetables fuel-free. GoSun's solar ovens use sunlight to generate cooking temperatures as high as 550 degrees. This disruptive technology is the first solar cooker to be able to compete with conventional outdoor cooking systems. GoSun products also have applications for the developing world where the UN notes that 3 billion people still cook with fuels that are dangerous and harmful to their health.



## HEATWORKS

Heatworks' innovations are designed to change the way we heat water. Instead of traditional heating elements, Heatworks employs Ohmic Array Technology that passes electrical currents through the water itself. Hot water is purer, heated to a precise temperature at a 99% energy-efficiency rate that never decreases. Both its Model 3 water heater and its Tetra Countertop Dishwasher, which requires no plumbing connections and uses a standard electrical outlet, have been selected for CES Best of Innovation Award honors.



## NOXTAK

Noxtak develops solutions based on nano-magnetism, making use of the natural properties of certain types of nano particles that in a specific size are placed on a special type of film, producing a type of material called SPIRO (Spin Polariser Instrument of Radiation Organiser). In fact, the company's product SPIRO DISC L4 is designed to effectively neutralize all types of electro-pollution emitted by electronic devices. The disc can support up to 15 devices, including office equipment, home appliances and electrical panels in homes.





CES:

# SUSTAINABILITY STARTS WITH US

*As one of the largest technology events of the year globally, we are committed to ensuring sustainability principles are integrated in our operations and programming. At CES 2019, we pursued a three-pronged approach to implement sustainability at CES:*

→ We mitigated our environmental impact by recycling on premise, reusing carpeting and diverting over 36,000 square feet of materials from landfill.

→ We showcased more than a hundred breakthrough sustainable products with many winning awards for innovation.

→ We donated thousands of pounds of materials, including furniture, and awarded green grants to fund local organizations' sustainability efforts.

## CES 2019:

**> 1,400**

tons of materials were recycled



**> 1.7M**

square feet of carpet were reused or recycled after the show.



**100%**

of vinyl banners were diverted from landfill, totaling over **24,000 square feet**



**ALL**

booth ID signs and aisle signs used at the show were recycled

**DIVERTING**

**> 12,000**

square feet of material from landfill



# PHILANTHROPIC IMPACT

Through our booth donation program, exhibitors donate raw materials and furniture they don't want to ship home after CES. At CES 2019, exhibitors collectively donated more than 312,000 pounds of materials to Goodwill, Habitat for Humanity, Opportunity Village, Teachers Exchange and HELP of Southern Nevada.

## 2019 GRANT RECIPIENTS:

**\$15,000**



CTA provided **Green Our Planet** with \$15,000 to build additional garden classrooms throughout the Clark County School District

**\$10,000**

CTA granted \$10,000 to **Touro University Nevada** to upgrade its campus lighting to LED

## CES 2019 EUREKA PARK CLIMATE CHANGE INNOVATORS

CTA launched the contest at CES 2018 to highlight technology's ability to combat climate change by cutting worldwide GHG emissions

Honored seven companies and their products at CES 2019 (several are spotlighted throughout this report)





# ABOUT THIS REPORT

The Consumer Technology Association's 2019 Sustainability Report is our sixth report to stakeholders. Produced on a biennial basis, it profiles the sustainability challenges, opportunities and performance of our member companies, the consumer technology industry generally, and CTA and its operations. This report focuses on environmental and social matters and does not attempt to document economic or governance activities of CTA or its member companies. It addresses industry activities during calendar years 2018 and 2019.

By necessity, we do not document the full array of goals, initiatives and performance of all of our more than 2,200 member companies, but instead seek to highlight some of the most important achievements and commitments of these enterprises, and document the ways CTA leverages collaboration, innovation and investment to strengthen environmental and social performance. The content of this year's report is drawn from reports, case studies and data submitted by CTA members; from scientific studies conducted on behalf of CTA by independent research organizations; from academic, NGO and governmental sources, including the United States Environmental Protection Agency; from media accounts; and from the public corporate sustainability and corporate responsibility reports published by CTA members.

Additional information concerning members' operations and performance is available on their corporate websites or can be found within their own sustainability or corporate social responsibility reports. In an effort to conserve natural resources, this report is designed for distribution in interactive form, including mobile-friendly formats, or via a downloadable portable document format (PDF).

We value feedback from stakeholders, which enables us to improve future iterations of this report. For comments, suggestions or questions about this report, please contact: [egrimm@CTA.tech](mailto:egrimm@CTA.tech).

[ces.tech/About-CES/Making-CES-Green.aspx](https://ces.tech/About-CES/Making-CES-Green.aspx)

[cta.tech/Consumer-Resources/Greener-Gadgets.aspx](https://cta.tech/Consumer-Resources/Greener-Gadgets.aspx)