



2020 Annual Report

Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Small Network Equipment

Prepared on behalf of the
Steering Committee by:
D+R International
1100 Wayne Avenue, Suite 700
Silver Spring, Maryland 20910

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EXECUTIVE SUMMARY

In 2015, the largest U.S. residential broadband Internet service providers and manufacturers of small network equipment (SNE), such as modems and routers used by consumers to access such services, led by NCTA — The Internet & Television Association, the Consumer Technology Association (CTA), and CableLabs, signed the Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Small Network Equipment. This agreement is modeled after the successful Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Set-Top Boxes. The primary objective of the agreement is to increase the energy efficiency of SNE while promoting rapid innovation and timely introduction of new and improved features. The service provider signatories served over 93 million residential U.S. Internet subscribers at the end of 2020, accounting for nearly 88% of the market.

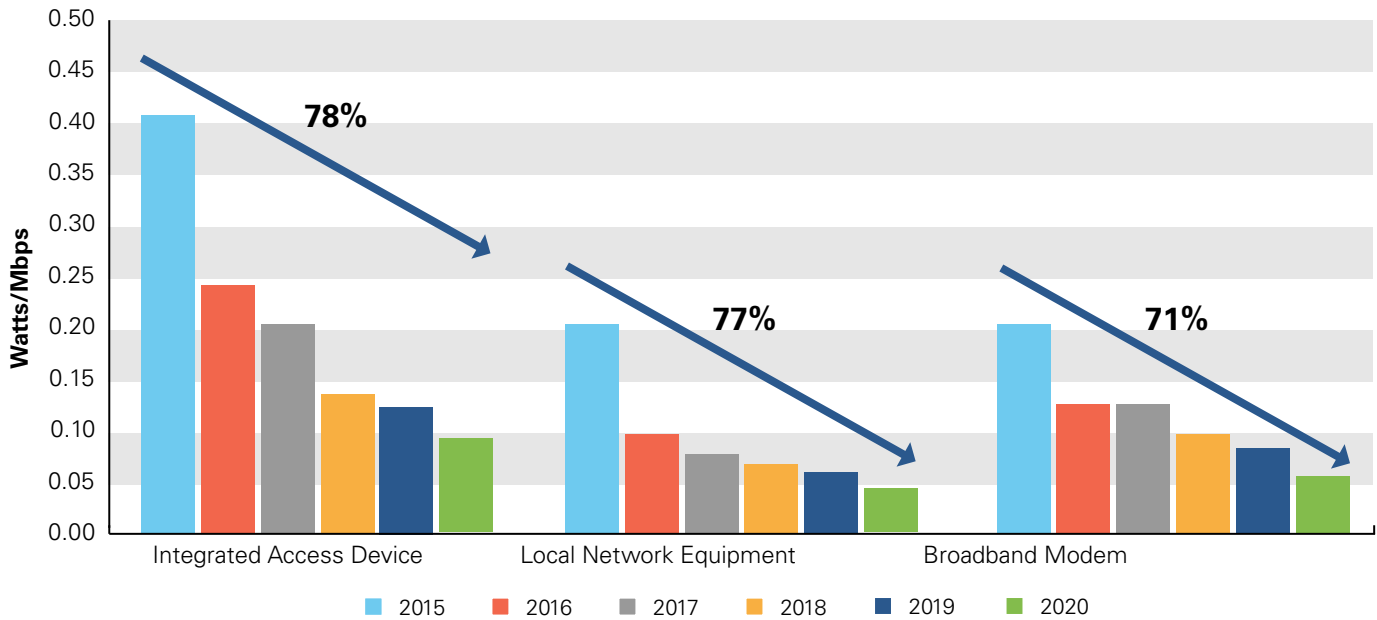
One of the requirements of the Voluntary Agreement is the publication of an annual report that summarizes developments for the previous calendar year. This sixth annual report has been prepared by the Independent Administrator and Auditor, D+R International, Ltd. (D+R).

Under the Voluntary Agreement, signatories commit that at least 90% of all SNE purchased by each service provider or sold by each manufacturer at retail each year, beginning in 2016, will meet the energy-efficiency levels established under the Voluntary Agreement. In 2018, the parties reduced those energy-efficiency levels by an average 11% that would apply to their commitments beginning in 2020. This report is the first to evaluate the parties' satisfaction of their commitments under the more rigorous "Tier 2" efficiency levels. Overall, 99.2% of SNE purchased or sold by the signatories in 2020 met these Tier 2 levels, and all of the signatories met the 90% commitment individually. These findings are supported by D+R's review of data from the signatories, including a successful audit of one randomly selected signatory's records.

On average, the SNE models purchased in 2020 use less energy compared to 2019, even with increased broadband speeds and functionality. This report finds that the signatories are delivering SNE functionalities more efficiently. SNE has evolved to stay ahead of consumer demand for faster broadband services, reduced latency, improved Wi-Fi signal strength, and increased capacity for more devices at higher speeds within the home. Average consumer broadband speeds have nearly quintupled since the start of the Voluntary Agreement in 2015, and support for these speeds requires more energy for processing, memory and other functions. Moreover, new SNE is designed to be capable of supporting the even greater demands anticipated in the future over the expected lifespan of devices. The massive surge in Internet usage resulting from the COVID-19 pandemic validated the industry's long-standing strategy to deploy customer equipment capable of transmitting and processing far more capacity than their customers' current service levels. The Voluntary Agreement has enabled this forward-looking approach by allowing additional energy usage to account for new features such as support for new DOCSIS and Wi-Fi technologies that support higher-capacity services.

The average weighted power of each category of new SNE relative to broadband speed delivered has decreased by up to 78% and has declined every year under the Voluntary Agreement, as shown in Figure 1.

Figure 1: Average Energy Usage by Equipment Type, Weighted by Broadband Speed



These figures were calculated by dividing the average idle power of each equipment type as verified by D+R in this report by the average fixed broadband speed for July 2020 reported by Ookla. In the Speedtest® Global Index for United States, Ookla reported that the average fixed broadband speed was 152.60 Mbps in July 2020. This report is available at <https://www.speedtest.net/global-index/united-states?fixed#market-analysis>.

To maintain the trend of delivering increasingly robust broadband services while still meeting the commitments of the Voluntary Agreement, the signatories will need to continue to prioritize and invest in energy-efficiency improvements. Consumers and other stakeholders will be able to monitor the parties' progress at www.energy-efficiency.us, which includes links to energy-efficiency information for SNE purchased or sold at retail since January 1, 2015, as well as all previously published annual reports.

OVERVIEW OF THE VOLUNTARY AGREEMENT

Guided by the objective of improved energy efficiency, the signatories crafted the Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Small Network Equipment in 2015 to reduce energy consumption and environmental impact, save their customers money, increase the reliability of their networks, and preserve flexibility conducive to rapid innovation and timely introduction of new features. The Voluntary Agreement provides a framework for the broadband Internet industry to deliver market-based energy-efficiency gains that keep pace with technological innovation, and is modeled on the successful Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Set-Top Boxes that was signed in 2012.

The Internet service provider signatories provided broadband Internet services to approximately 93 million U.S. residential customers, or almost 88% of U.S. broadband households in 2020.¹ The coverage of the Voluntary Agreement has increased since its inception, partly as a result of the addition of Frontier Communications as a signatory in 2017, the 2019 addition of the Suddenlink cable systems owned by Altice, and the addition of multiple signatories for the 2020 reporting year (Linksys, ASUS, and Plume).

The Voluntary Agreement classifies SNE into three categories:

- **Broadband Modems:** Simple network devices that enable high-speed data service with a Wide Area Network (WAN) interface to a service provider wired or optical network, and typically a single Local Area Network (LAN) interface for the customer premise network. The Broadband Modem category does not include devices with integrated router or IEEE 802.11 (Wi-Fi) wireless access point functionality.
- **Integrated Access Devices (IAD):** Broadband network devices include a WAN interface to a service provider wired or optical network, and one or more of the following functions on the LAN interface: multiport routing, Wi-Fi wireless access point functionality, and/or Voice over Internet Protocol (VoIP).
- **Local Network Equipment (LNE):** Devices that do not have a direct interface to a service provider wired or optical network. This category consists principally of routers, but includes wireless access points, switches, and network extenders that bridge or extend a LAN beyond its physical limitations.²

Voluntary Agreement Objectives

The objectives of the Voluntary Agreement are to continue improvements in the energy efficiency of SNE and to foster device and service functionality, while encouraging innovation and competition. The Voluntary Agreement aims to achieve these goals through flexible approaches that allow the delivery of high quality, innovative services to consumers.

Voluntary Agreement Signatories and Steering Committee

The signatories and participants in the Voluntary Agreement are listed below.

Service Provider Signatories

- Altice USA, Inc.
- AT&T Services, Inc.
- CenturyTel Broadband Services, LLC d/b/a Lumen
- Charter Communications, Inc. d/b/a Spectrum
- Comcast Cable Communications, LLC
- Cox Communications, Inc.
- Frontier Communications Corp.
- Verizon Communications, Inc.

Vendor Signatories

- Actiontec Electronics, Inc.
- ASUSTeK Computer Inc. d/b/a ASUS (new for 2020)

1 - Based on data provided by the signatories, NCTA, and the Consumer Technology Association.

2 - For the full definitions of these categories, see Appendix A of this report or Annex 1 of the Voluntary Agreement.

- Linksys USA, Inc. (new for 2020)
- CommScope Inc. of North Carolina (formerly ARRIS)
- Plume (new for 2020)
- Technicolor Connected Home USA LLC
- Ubee Interactive, Inc.

Other Organizations

- Consumer Technology Association (CTA)
- NCTA - The Internet & Television Association (NCTA)
- Cable Television Laboratories (CableLabs)

The Voluntary Agreement obligates the Steering Committee to designate an Independent Administrator and publish an annual report. The Steering Committee designated D+R as the Independent Administrator and Auditor in 2015, and D+R has continued in this role for 2020. This report is the sixth annual report.

The Voluntary Agreement requires that the Steering Committee meet at least once each year. The Steering Committee convened three times in 2020, and working groups were active throughout the year. Additional responsibilities of the Steering Committee include the following:

- Managing the Voluntary Agreement
- Hiring the Independent Administrator
- Reviewing proposals for energy allowances based on new features, which the Steering Committee can approve, reject, or add to the Voluntary Agreement as appropriate
- Evaluating the effectiveness of the Voluntary Agreement in achieving its purposes
- Adopting new or revised efficiency measures, courses of action, and amendments to the Voluntary Agreement as technologies and services change

Signatory Commitments

The primary commitment is to procure and sell energy-efficient SNE. Specifically, beginning January 1, 2016, the commercial signatories committed that 90% of new SNE purchased by service providers or sold at retail by vendors each year will meet the energy-efficiency levels established in the Voluntary Agreement. These efficiency commitments became even more rigorous in 2020 under a new Tier 2 of the Voluntary Agreement that reduced the energy level allowances by an average of 11%. The signatories also committed to provide subscribers and prospective customers with reasonable access to energy-efficiency information for SNE, furnish the Independent Administrator with annual data and test results, and participate in third-party lab testing and audits to verify the information in their annual data reports.

Independent Administrator and Auditor Role

The Independent Administrator is a third party appointed by the Steering Committee. Under the Voluntary Agreement, the Independent Administrator must aggregate and compile confidential procurement and sales data submitted by the signatories. If the Voluntary Agreement procurement or sales commitments are not met, the Independent Administrator is responsible for working with the signatory to develop a remedial plan under procedures set out in the Voluntary Agreement.

The Independent Administrator is charged with conducting an audit of one randomly-selected service provider's procurement figures or one vendor's sales figures each year. The successful results of the 2020 audit are presented in Appendix C.

New Feature Process for Small Network Equipment

The New Feature Process is intended to encourage innovation and competition by service provider and vendor signatories and to encourage energy efficiency by design. This process provides a path for signatories to innovate and add new features, including features with no assigned allowances and features in the early stages of design, without being treated as being in violation of Voluntary Agreement energy allowances or commitments. If a service provider signatory deploys, or a vendor signatory sells, SNE that includes a new feature with no allowance, and the presence of the feature causes the device to exceed the prescribed allowances, the signatory may set and report an appropriate initial allowance for the power consumption of that feature when it reports the device under the Voluntary Agreement. When such information is reported, the Steering Committee will propose appropriate allowances and effective dates. New allowances established by the Steering Committee for new features are publicly reported.

Remediation and Alternative Energy-Efficiency Strategies

A signatory that fails to meet its procurement or sales commitment must either seek advance credits for alternative energy-efficiency measures or must undertake a remedial plan that secures energy savings that offset the incremental energy associated with devices purchased or sold in excess of the commitment. All signatories met all applicable commitments in 2020.

REPORT ON 2020 PROCUREMENT AND SALES COMMITMENTS

Under the Voluntary Agreement, 90% of SNE purchased or sold at retail each year by commercial signatories after December 31, 2015, must meet specified energy-efficiency levels. The Independent Administrator collected data from the service provider and retail vendor signatories to measure satisfaction of these commitments in 2020. Overall, 99.2% of reported units satisfied the new Tier 2 energy-efficiency levels of the Voluntary Agreement in 2020. All of the reporting signatories met the 90% threshold, and most signatories had 100% of their new purchases meet the energy-efficiency levels of the Agreement. The satisfaction of the procurement commitment spanned every category of SNE, with at least 99% of each category meeting the levels of the Voluntary Agreement, as shown in Table 1. These results demonstrate that the signatories met their procurement and sales commitments under the Voluntary Agreement in 2020.

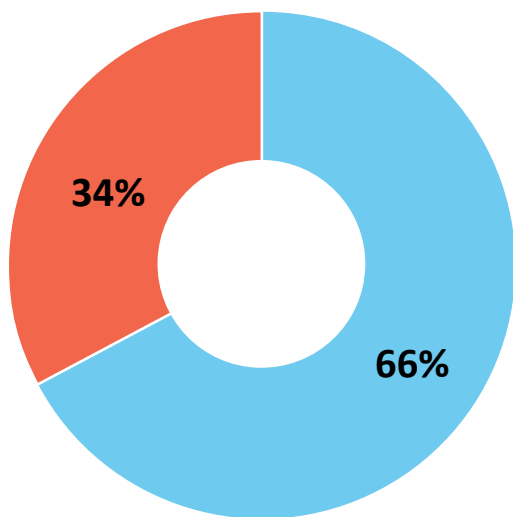
Table 1: Total Number of Reported Units and Number of Units Meeting Energy-Efficiency Levels, by Equipment Type

Category	Reported Units	Number Meeting Tier 2 Levels	Percent Meeting Tier 2 Levels
IAD and Modem	20,904,462	20,779,822	99.4%
Local Network Equipment	10,863,731	10,747,462	98.9%
Total	31,768,193	31,527,284	99.2%

Broadband Modems were reported by only one signatory in 2020 in relatively small quantities, so they are combined with IADs to preserve confidentiality. All broadband modem models met Tier 2 levels.

IADs and Modems represent 66% of reported products, followed by LNE. Figure 2 shows the category breakdown, by percentage, of the units purchased or sold.

Figure 2: Small Network Equipment, by Equipment Type



■ Local Network Equipment ■ IAD and Modem

Energy Efficiency of Small Network Equipment

Details of SNE purchased or sold by the signatories in 2020 are provided in Appendix A. The energy efficiency of each model is assessed based upon its particular suite of functions and capabilities, which vary widely. The overall trend in the average weighted power of each of the three categories of SNE defined by the Voluntary Agreement is shown in Table 2 below:

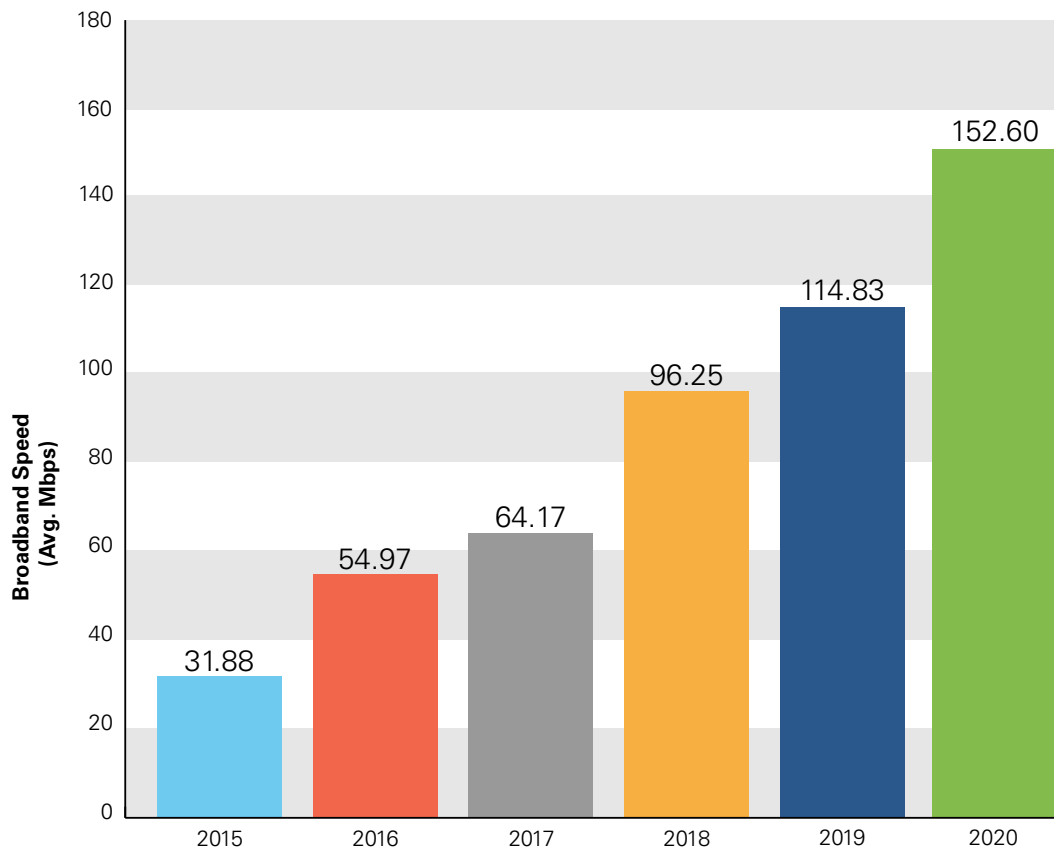
Table 2: Average Weighted Idle Mode Power Consumption for Small Network Equipment Categories 2015-2020

SNE Category	Average Weighted Power (in Watts)					
	2015	2016	2017	2018	2019	2020
Broadband Modem	6.67	7.11	8.12	9.36	9.65	9.43
Integrated Access Device	13.30	13.53	13.65	13.73	14.49	13.87
Local Network Equipment	6.44	5.62	5.28	6.79	7.64	7.21
Total Weighted Average	11.36	11.79	11.26	11.55	12.59	11.49

The increases in nominal power of the SNE categories since 2015 can be attributed to the power requirements of supporting much faster broadband speeds and stronger Wi-Fi. The signatories have made improvements to deliver these new functionalities more efficiently over time, and the average power measurement of new devices in 2020 in the first year of the Tier 2 levels is nearly 8% less than 2019, as shown in Table 2.

Consumers are bringing an increasing number and variety of connected devices into their homes and streaming an increasing amount of video content to mobile devices. In the home, this streamed content is typically delivered through the customer’s modem and router. To support these devices and content, the average broadband connection speed for U.S. residential households has nearly quintupled in just five years, as shown in Figure 3.

Figure 3: Annual Growth of Broadband Speeds³



To meet consumers’ increased demands for higher-speed broadband services and increased Wi-Fi capacity in the home, the design and features of SNE have changed since the Voluntary Agreement was adopted, with new WAN technologies such as DOCSIS 3.1, and higher-powered radios with more antennas and MIMO spatial streams, which can require more power.

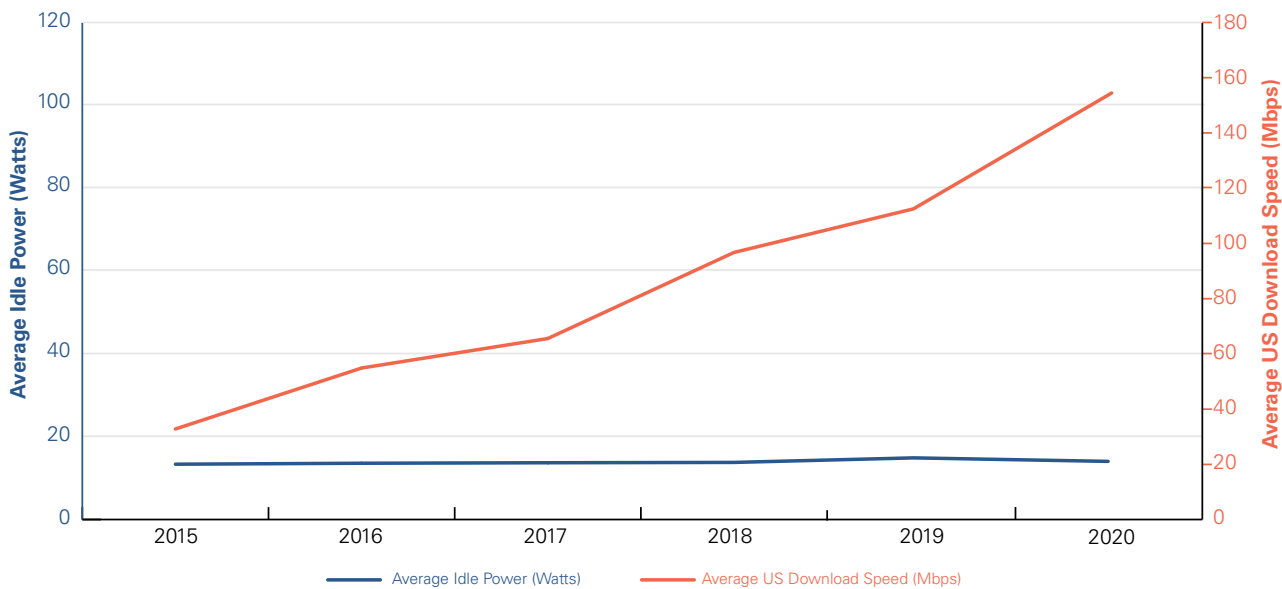
3 - Ookla, *Speedtest® Market Reports 2016, 2017, 2018* (August 3, 2016; September 7, 2017; December 12, 2018), <https://www.speedtest.net/insights>. MCKETTA, ISLA. *In-Depth Analysis of Changes in World Internet Performance Using the Speedtest Global Index 2019* (September 4, 2019), <https://www.speedtest.net/insights/blog/global-index-2019-internet-report/>. Ookla, *Speedtest® United States’s Mobile and Fixed Broadband Internet Speeds* (April 2021), <https://www.speedtest.net/global-index/united-states?fixed#market-analysis>.

Moreover, for years, the signatories have strived to provide equipment that will be capable of supporting the speeds and services that customers are expected to want over the next several years, not just current demand. Service providers wish to give customers the opportunity to upgrade their Internet service without having to wait for a service provider technician to visit and replace their equipment. In addition, it would be environmentally and economically wasteful to procure new SNE today that would be quickly rendered obsolete by changes in consumer demand. As a result, SNE is designed and manufactured to support more demanding speeds and capabilities prior to their widespread adoption by consumers.

The practice of embedding future expandable capability into deployed Internet equipment paid large dividends for American society during the COVID-19 pandemic. Service provider networks and the SNE on which they rely were able to support the massive, immediate surge in Internet usage as millions of Americans worked, attended school, engaged in telehealth, and sought to remain connected and entertained from home. Service providers were generally able to increase speeds and lift data caps for consumers without having to enter homes to upgrade their SNE.

SNE energy usage is accordingly evaluated relative to its capabilities. Average energy relative to broadband speed decreased from 2019 to 2020 as it has each year under the Voluntary Agreement, as shown in Figure 1 of this report. Figure 4 below illustrates the contrast between the relative stability of the weighted average idle power consumption of reported SNE and the rapid increase in average download speeds during the six years of the Voluntary Agreement. The signatories' ability to support these higher-speed services without a significant overall increase in power consumption demonstrates that their SNE devices are delivering services more efficiently and are thereby accomplishing the core objectives of the Voluntary Agreement.

Figure 4: Average Idle Power of Small Network Equipment Devices vs. Download Speed 2015-2020



The Voluntary Agreement is expected to continue to drive purchase and retail decisions, increasing the efficiency of equipment in the market and in consumers' homes. To continue to meet these levels in 2021 and beyond, the signatories will need to offer devices with greater functionality than those offered today, while still meeting the commitments of the Voluntary Agreement.

The data supports the finding that the Voluntary Agreement is continuing to be successful in improving the energy efficiency of SNE.

Lab Verification Testing

Per the Voluntary Agreement, the Independent Administrator is tasked with randomly selecting one model from each commercial signatory for lab verification testing. Lab verification testing is conducted in third-party laboratories approved by the Steering Committee or under a supervised vendor or service provider testing program with an accredited independent observer approved by the Steering Committee. Test results are compared to the reported value as well as the maximum idle power consumption under the applicable allowances for that device.

The lab verification testing is typically conducted in the spring following the reporting period. Unfortunately, COVID-19 travel and resource restrictions impacted the ability for this testing to be conducted. As a result, lab verification testing was suspended for the both the 2019 and 2020 reporting periods. It is expected that verification testing will resume in time for results to be included in the next annual report.

Consumer Access to Energy-Efficiency Information

All signatories committed to provide subscribers and prospective customers with reasonable access to energy-efficiency information for SNE purchased or sold at retail since January 1, 2015. This information makes it easy for consumers to learn about energy-efficient SNE and typical energy consumption. Links to the information are shown in Appendix B and posted at www.energy-efficiency.us.

CONCLUSION

The Voluntary Agreement continues to be successful in improving the energy efficiency of SNE used by American consumers with broadband Internet access service. 99.2% of reported units satisfied the more stringent Tier 2 energy-efficiency levels of the Agreement despite increased consumer demands for robust capabilities that consume power. All of the service provider and retail vendor signatories met the 90% threshold, and most of the signatories had 100% of their new sales and purchases meet the energy-efficiency levels. The average weighted power of each category of new SNE relative to broadband speed delivered has decreased by up to 78% and has declined every year under the Voluntary Agreement. As the signatories continue to employ even greater functionality in their devices while still meeting the energy-efficiency levels of the Agreement, the Voluntary Agreement can be expected to continue to promote both product innovation and energy efficiency.

APPENDIX A: SMALL NETWORK EQUIPMENT PURCHASED OR SOLD BY VOLUNTARY AGREEMENT SIGNATORIES IN 2020

Appendix A lists SNE reported by the signatories as purchased or sold in 2020. Please note that the same model could have variances in reported power for several reasons, including differences in reported versus measured power, enabling of different product features, and/or different software deployed in the device by different signatories. Modal power figures in this Appendix are rounded up to the next one-hundredth digit (e.g., 5.126 watts would be rounded up to 5.13 watts).

Vendor reports include only the models that were sold via retail channels. Models sold to Service Providers are reported by the Service Providers.

The Voluntary Agreement establishes the following categories of SNE subject to the Agreement:

- **Broadband Modem.** A simple network device that enables high-speed data service with a Wide Area Network (WAN) interface to a service provider wired or optical network, and typically a single Local Area Network (LAN) interface for the customer premise network. The Broadband Modem category does not include devices with integrated router or IEEE 802.11 (Wi-Fi) wireless access point functionality.
- **Integrated Access Device (IAD).** A network device that enables high-speed data service with a WAN interface to a service provider wired or optical network and one or more of the following functions on the LAN interface: multiport routing, IEEE 802.11 (Wi-Fi) wireless access point functionality, and/or VoIP.
- **Local Network Equipment (LNE).** The following local network devices that do not have a direct interface to a Service Provider wired or optical network:
 - **Wireless Access Point:** A device that typically includes one or more Ethernet interfaces, and that provides IEEE 802.11 (Wi-Fi) wireless network connectivity to multiple clients as its primary function.
 - **Router:** A network device that forwards packets from one network interface to another based on network layer information (typically IP destination address). Devices fitting this definition may provide both wired and wireless network connectivity.
 - **Switch:** A network device that filters and forwards frames based on the Ethernet destination MAC address of each frame as its primary function.
 - **Network Extender:** A device that bridges or extends a local area network beyond its physical limitations using one or more transmission media such as twisted pair, coax, Wi-Fi, or powerline.

Table 3: Small Network Equipment Purchased/Sold by Voluntary Agreement Signatories in 2020

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets Tier 2 VA Levels
Altice	ARRIS	TM1602AP2	IAD D3.0	D3 above 4x4(5), GigE LAN, FXS(2)	9.00	Yes
Altice	ARRIS	TM1602G	IAD D3.0	D3 above 4x4(5), GigE LAN, FXS(2), BATTERY	10.50	Yes
Altice	Sagemcom	F@st 5260CV	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), USB 2, PCIe(2)	7.00	Yes
Altice	Ubee	UBC1322	IAD D3.1	GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(3), FXS(2)	11.00	Yes
Altice	Ubee	UBC1326	IAD D3.1	GigE LAN(2), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), FXS, USB 3	12.00	Yes
ASUS	ASUS	Blue Cave	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 3, Bluetooth, PCIe(2), AP 5K-10K DMIPS	12.90	No
ASUS	ASUS	CT8	Advanced LNE	GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 3, Bluetooth, PCIe, AP 5K-10K DMIPS	8.73	Yes
ASUS	ASUS	GT-AC2900	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 2, USB 3, PCIe(2), AP 5K-10K DMIPS	10.34	Yes
ASUS	ASUS	GT-AC5300	Advanced LNE	GigE LAN(9), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(6), 802.11n 256 QAM, USB 3(2), PCIe(3), AP 5K-10K DMIPS	14.31	Yes
ASUS	ASUS	GT-AX11000	Advanced LNE	GigE LAN(6), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(6), 802.11n 256 QAM, USB 3(2), PCIe(3), AP 5K-10K DMIPS	13.21	Yes
ASUS	ASUS	GT-AXE11000	Advanced LNE	GigE LAN(6), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(6), 802.11n 256 QAM, USB 3(2), PCIe(3), AP 5K-10K DMIPS	13.60	Yes
ASUS	ASUS	RP-AC1900	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, PCIe(2), AP 5K-10K DMIPS	9.04	Yes
ASUS	ASUS	RP-AC51	Advanced LNE	Fast E LAN, Wi-Fi (n) HP, Wi-Fi (ac) HP	2.51	Yes
ASUS	ASUS	RP-AC55	Advanced LNE	GigE LAN, Wi-Fi (n) HP, Wi-Fi (ac) HP, Bluetooth	2.90	Yes
ASUS	ASUS	RP-N12	Advanced LNE	Fast E LAN, Wi-Fi (n) LP	1.60	Yes
ASUS	ASUS	RT-AC1200	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP, Wi-Fi (ac) LP, USB 2	3.50	Yes
ASUS	ASUS	RT-AC1200 V2	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP, Wi-Fi (ac) LP	2.32	Yes
ASUS	ASUS	RT-AC1200GE	Advanced LNE	GigE LAN(5), Wi-Fi (n) LP, Wi-Fi (ac) HP, USB 2	4.86	Yes
ASUS	ASUS	RT-AC1900P	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3, PCIe(2), AP 5K-10K DMIPS	11.90	No
ASUS	ASUS	RT-AC3100	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 2, USB 3, PCIe(2), AP 5K-10K DMIPS	14.10	No
ASUS	ASUS	RT-AC3200	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 2, USB 3, PCIe(3), AP 5K-10K DMIPS	12.94	Yes
ASUS	ASUS	RT-AC5300	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(6), 802.11n 256 QAM, USB 2, USB 3, PCIe(4), AP 5K-10K DMIPS	16.53	No
ASUS	ASUS	RT-AC66U B1	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 2, USB 3, PCIe(2), AP 5K-10K DMIPS	9.49	Yes
ASUS	ASUS	RT-AC67P	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3	4.96	Yes
ASUS	ASUS	RT-AC68U	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 2, USB 3, PCIe(2), AP 5K-10K DMIPS	10.19	Yes

Table 3: Small Network Equipment Purchased/Sold by Voluntary Agreement Signatories in 2020 (cont.)

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets Tier 2 VA Levels
ASUS	ASUS	RT-AC68U V3	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 2, USB 3, PCIe(2), AP 5K-10K DMIPS	8.74	Yes
ASUS	ASUS	RT-AC86U	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 2, USB 3, PCIe(2), AP 5K-10K DMIPS	10.72	Yes
ASUS	ASUS	RT-AC88U	Advanced LNE	GigE LAN(9), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 2, USB 3, PCIe(2), AP 5K-10K DMIPS	15.80	No
ASUS	ASUS	RT-ACRH12	Advanced LNE	GigE LAN(5), Wi-Fi (n) LP, Wi-Fi (ac) HP, USB 2	4.86	Yes
ASUS	ASUS	RT-ACRH13	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, USB 3	4.50	Yes
ASUS	ASUS	RT-ACRH17	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3, PCIe, AP 5K-10K DMIPS	5.95	Yes
ASUS	ASUS	RT-AX3000	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3, PCIe, AP 5K-10K DMIPS	6.10	Yes
ASUS	ASUS	RT-AX55	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, AP 5K-10K DMIPS	5.00	Yes
ASUS	ASUS	RT-AX56U	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, USB 2, USB 3, AP 5K-10K DMIPS	5.40	Yes
ASUS	ASUS	RT-AX58U	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3, PCIe, AP 5K-10K DMIPS	6.10	Yes
ASUS	ASUS	RT-AX68U	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 2, USB 3, PCIe(2), AP 5K-10K DMIPS	8.50	Yes
ASUS	ASUS	RT-AX82U	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP(2), Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3, PCIe, AP 5K-10K DMIPS	6.50	Yes
ASUS	ASUS	RT-AX86U	Advanced LNE	GigE LAN(6), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 3(2), PCIe(2), AP 5K-10K DMIPS	8.75	Yes
ASUS	ASUS	RT-AX88U	Advanced LNE	GigE LAN(9), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 3(2), PCIe(2), AP 5K-10K DMIPS	11.40	Yes
ASUS	ASUS	RT-AX89X	Advanced LNE	SFP Backup WAN Present, GigE LAN(10), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(6), 802.11n 256 QAM, USB 3(2), AP 5K-10K DMIPS	12.00	Yes
ASUS	ASUS	RT-AX92U	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3, PCIe(3), AP 5K-10K DMIPS	10.80	Yes
ASUS	ASUS	RT-N12 D1	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP	2.49	Yes
ASUS	ASUS	RT-N19	Advanced LNE	Fast E LAN(3), Wi-Fi (n) LP	2.48	Yes
ASUS	ASUS	RT-N300 B1	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP	1.85	Yes
ASUS	ASUS	XD4	Advanced LNE	GigE LAN(2), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, AP 5K-10K DMIPS	5.40	Yes
ASUS	ASUS	XT8	Advanced LNE	GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3, Bluetooth, PCIe, AP 5K-10K DMIPS	9.08	Yes
ASUS	ASUS	CM-32	IAD D3.0	D3 above 4x4(7), GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 2(2), PCIe(2)	13.50	Yes

Table 3: Small Network Equipment Purchased/Sold by Voluntary Agreement Signatories in 2020 (cont.)

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets Tier 2 VA Levels
ASUS	ASUS	CMAX6000	IAD D3.1	D3 above 4x4(7), GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, PCIe(2)	12.67	Yes
AT&T	Airties	4921	Advanced LNE	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP, PCIe(2)	7.70	Yes
AT&T	ARRIS	BGW210-700	IAD VDSL2	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN(4), Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(2), Wi-Fi (n) HP, Wi-Fi above 2x2 HP, 802.11n 256 QAM, FXS(2), USB 2(2), PCIe, AP 5K-10K DMIPS	14.50	Yes
AT&T	Humax	BGW320-500	IAD SFP GPON	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP(2), Wi-Fi above 2x2 LP(6), 802.11n 256 QAM, FXS(2), USB 2, PCIe(3), AP 5K-10K DMIPS	13.60	Yes
AT&T	Humax	BGW320-500	IAD SFP GPON	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP(2), Wi-Fi above 2x2 LP(6), 802.11n 256 QAM, FXS(2), USB 2, PCIe(3), AP 5K-10K DMIPS	13.60	Yes
AT&T	Nokia	BGW320-505	IAD SFP GPON	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP(2), Wi-Fi above 2x2 LP(6), 802.11n 256 QAM, FXS(2), USB 2, PCIe(3), AP 5K-10K DMIPS	12.60	Yes
AT&T	Nokia	BGW320-505	IAD SFP GPON	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP(2), Wi-Fi above 2x2 LP(6), 802.11n 256 QAM, FXS(2), USB 2, PCIe(3), AP 5K-10K DMIPS	12.60	Yes
CenturyLink/Lumen	Actiontec	C3000A	IAD VDSL2	VDSL2 Simul WAN, GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(3), USB 2, PCIe(2)	13.00	Yes
CenturyLink/Lumen	Greenwave	C4000X	IAD GigE	SFP Backup WAN Not Present, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 2, PCIe(3)	15.40	Yes
CenturyLink/Lumen	Greenwave	C4000L	IAD VDSL2 (30a)	VDSL2 Backup WAN, GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, USB 2, PCIe(3)	11.04	Yes
CenturyLink/Lumen	Technicolor	C1100T	IAD VDSL2	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, USB 2	6.44	Yes
CenturyLink/Lumen	Zyxel	C1100Z	IAD VDSL2	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, USB 2	7.47	No
CenturyLink/Lumen	Zyxel	C3000Z	IAD VDSL2 (30a)	GigE Backup WAN, GigE LAN(4), Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(2), Wi-Fi (n) HP, Wi-Fi above 2x2 HP, USB 2	10.40	Yes
Charter	ARRIS	RAC2V1A	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 3, PCIe(2), AP 5K-10K DMIPS	8.50	Yes
Charter	Askey	RT4230W-D187	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 3, PCIe(2), AP 5K-10K DMIPS	8.50	Yes
Charter	Hitron	E31N2V1	IAD D3.1	GigE LAN, FXS(2)	10.50	Yes
Charter	Hitron	EN2251	IAD D3.1	GigE LAN, FXS(2)	9.50	Yes
Charter	Sagemcom	F@ST5280	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 3, PCIe(2), AP 5K-10K DMIPS	8.50	Yes
Charter	Sercomm	SAX1V1R Wi-Fi6	Advanced LNE	GigE LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, AP 5K-10K DMIPS	10.00	Yes
Charter	Technicolor	DPC3216C	IAD D3.0	D3 above 4x4(3), GigE LAN, FXS(2), BATTERY	8.00	Yes
Charter	Technicolor	E31T2V1	IAD D3.1	GigE LAN, FXS(2)	9.00	Yes
Charter	Technicolor	ET2251	IAD D3.1	GigE LAN, FXS(2)	10.50	Yes
Charter	Ubee	E31U2V1	IAD D3.1	GigE LAN, FXS(2)	10.50	Yes
Charter	Ubee	EU2251	IAD D3.1	GigE LAN, FXS(2)	9.50	Yes

Table 3: Small Network Equipment Purchased/Sold by Voluntary Agreement Signatories in 2020 (cont.)

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets Tier 2 VA Levels
Comcast	ARRIS	TG3482G P2	IAD D3.1	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(6), 802.11n 256 QAM, MoCA, FXS(2), Bluetooth, ZigBee, PCIe(2), AP 5K-10K DMIPS	25.50	Yes
Comcast	CommScope	TG4482A	IAD D3.1	GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, MoCA, FXS(2), Bluetooth, ZigBee, PCIe(3), AP 5K-10K DMIPS	25.40	Yes
Comcast	Sagemcom	B1A	Basic LNE	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP(2), Wi-Fi above 2x2 LP(2), 802.11n 256 QAM, Bluetooth, PCIe	6.50	Yes
Comcast	Technicolor	CGM4140COM	IAD D3.1	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(6), 802.11n 256 QAM, MoCA, FXS(2), Bluetooth, ZigBee, Z-wave, PCIe(2), AP 5K-10K DMIPS	24.00	Yes
Comcast	Technicolor	CGM4331COM	IAD D3.1	GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, MoCA, FXS(2), Bluetooth, ZigBee, PCIe(3), AP 5K-10K DMIPS	17.50	Yes
CommScope	ARRIS	W21	Advanced LNE	GigE LAN(2), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(2), PCIe	7.50	Yes
CommScope	ARRIS	W30	Advanced LNE	GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(2), PCIe(3)	10.80	Yes
CommScope	ARRIS	W31	Advanced LNE	GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(6), PCIe(3)	11.00	Yes
CommScope	ARRIS	SB6183	Basic D3.0	D3 above 4x4(3), GigE LAN	8.45	Yes
CommScope	ARRIS	SB6190	Basic D3.0	D3 above 4x4(7), GigE LAN	8.60	Yes
CommScope	ARRIS	S33	Basic D3.1	GigE LAN(2)	8.30	Yes
CommScope	ARRIS	SB8200	Basic D3.1	GigE LAN(2)	10.80	Yes
CommScope	ARRIS	SBG10	IAD D3.0	D3 above 4x4(3), GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP	10.60	Yes
CommScope	ARRIS	SBG6900-AC	IAD D3.0	D3 above 4x4(3), GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(2), USB 2(2)	14.10	Yes
CommScope	ARRIS	SBG6950AC2	IAD D3.0	D3 above 4x4(3), GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(2), USB 2	11.10	Yes
CommScope	ARRIS	SBG7400AC2	IAD D3.0	D3 above 4x4(5), GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(3), USB 2	13.20	Yes
CommScope	ARRIS	SBG7600AC2	IAD D3.0	D3 above 4x4(7), GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(3), USB 2, PCIe(2), AP 5K-10K DMIPS	14.20	Yes
CommScope	ARRIS	SBV2402	IAD D3.0	D3 above 4x4(5), GigE LAN, FXS(2)	7.80	Yes
CommScope	ARRIS	SBV3202	IAD D3.0	D3 above 4x4(7), GigE LAN, FXS(2)	9.20	Yes
CommScope	ARRIS	SVG2482AC	IAD D3.0	D3 above 4x4(5), GigE LAN(4), Wi-Fi (n) LP, Wi-Fi above 2x2 LP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP, MoCA, FXS(2), USB 2(2)	14.30	Yes
CommScope	ARRIS	TG862G	IAD D3.0	D3 above 4x4, GigE LAN(4), Wi-Fi (n) LP, FXS(2), USB 2, BATTERY	8.40	Yes
CommScope	ARRIS	TM1602AP2	IAD D3.0	D3 above 4x4(3), GigE LAN, FXS(2)	8.00	Yes
CommScope	ARRIS	TM822G	IAD D3.0	D3 above 4x4, GigE LAN, FXS(2)	5.70	Yes
CommScope	ARRIS	SBG8300	IAD D3.1	GigE LAN(4), Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(2), Wi-Fi (n) HP, Wi-Fi above 2x2 HP, AP 5K-10K DMIPS	18.20	Yes
CommScope	ARRIS	T25	IAD D3.1	GigE LAN(2), FXS(2)	9.40	Yes
Cox	Sagemcom	B1A	Basic LNE	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP(2), Wi-Fi above 2x2 LP(2), 802.11n 256 QAM, Bluetooth, PCIe	6.50	Yes

Table 3: Small Network Equipment Purchased/Sold by Voluntary Agreement Signatories in 2020 (cont.)

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets Tier 2 VA Levels
Cox	Technicolor	CGM4141	IAD D3.1	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(6), 802.11n 256 QAM, MoCA, FXS(2), Bluetooth, ZigBee, Z-wave, PCIe(2), AP 5K-10K DMIPS	24.00	Yes
Frontier	CommScope	AM525	Advanced LNE	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(2), MoCA	9.00	Yes
Frontier	CommScope	NVG468 MQ	IAD GigE	GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(3), MoCA, FXS(2), USB 3, PCIe, AP 5K-10K DMIPS	12.70	Yes
Frontier	CommScope	NVG443 B	IAD VDSL2	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP, USB 3, PCIe(2), AP 5K-10K DMIPS	12.60	Yes
Frontier	CommScope	NVG448 B	IAD VDSL2	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP, FXS(2), USB 3, PCIe(2), AP 5K-10K DMIPS	12.60	Yes
Frontier	CommScope	NVG448 BQ	IAD VDSL2	GigE Backup WAN, VDSL2 Simul WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(3), FXS(2), USB 3, PCIe, AP 5K-10K DMIPS	13.85	Yes
Frontier	Frontier	FCA251	Basic LNE	GigE LAN, MoCA	1.88	Yes
Linksys	Belkin	RT1800	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, USB 3, Bluetooth	5.19	Yes
Linksys	Belkin	RT3200	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi above 2x2 LP(2), Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	6.37	Yes
Linksys	Linksys	A0101	Advanced LNE	GigE Backup WAN, GigE LAN, Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, Bluetooth, AP 5K-10K DMIPS	4.77	Yes
Linksys	Linksys	E1000	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP	3.47	Yes
Linksys	Linksys	E1200 V2	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP	3.47	Yes
Linksys	Linksys	E1500	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP	3.47	Yes
Linksys	Linksys	E2500 V4	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP, Wi-Fi (ac) LP	2.90	Yes
Linksys	Linksys	E5350	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP, Wi-Fi (ac) LP	2.90	Yes
Linksys	Linksys	E5400	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP, Wi-Fi (ac) LP	2.90	Yes
Linksys	Linksys	E5600	Advanced LNE	Fast E LAN(5), Wi-Fi (n) HP, Wi-Fi (ac) HP	4.62	Yes
Linksys	Linksys	E7350	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, USB 3, Bluetooth	5.19	Yes
Linksys	Linksys	E8450	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi above 2x2 LP(2), Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	6.37	Yes
Linksys	Linksys	E900	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP	3.47	Yes
Linksys	Linksys	EA2750	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP, USB 2	8.00	No
Linksys	Linksys	EA3500	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP, USB 2	9.00	No
Linksys	Linksys	EA4500	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), USB 2	9.00	No
Linksys	Linksys	EA5800	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP, Wi-Fi (ac) HP, USB 2	2.95	Yes
Linksys	Linksys	EA6100	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP, Wi-Fi (ac) HP, USB 2	2.95	Yes
Linksys	Linksys	EA6200	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, USB 3, AP 5K-10K DMIPS	5.47	Yes
Linksys	Linksys	EA6300	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, USB 3	5.47	Yes

Table 3: Small Network Equipment Purchased/Sold by Voluntary Agreement Signatories in 2020 (cont.)

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets Tier 2 VA Levels
Linksys	Linksys	EA6350 V3	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, USB 3, AP 5K-10K DMIPS	5.47	Yes
Linksys	Linksys	EA6400	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), USB 3, AP 5K-10K DMIPS	6.47	Yes
Linksys	Linksys	EA6500	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), USB 2(2), AP 5K-10K DMIPS	6.47	Yes
Linksys	Linksys	EA6700	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3, AP 5K-10K DMIPS	6.47	Yes
Linksys	Linksys	EA6900	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3, AP 5K-10K DMIPS	6.47	Yes
Linksys	Linksys	EA7200	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3	5.48	Yes
Linksys	Linksys	EA7250	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3	5.48	Yes
Linksys	Linksys	EA7300 V2	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3	5.48	Yes
Linksys	Linksys	EA7400	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi above 2x2 LP(2), Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3	6.29	Yes
Linksys	Linksys	EA7430	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi above 2x2 LP(2), Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3	6.29	Yes
Linksys	Linksys	EA7450	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi above 2x2 LP(2), Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3	6.29	Yes
Linksys	Linksys	EA7500 V2	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi above 2x2 LP(2), Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3	6.29	Yes
Linksys	Linksys	EA8100	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi above 2x2 LP(2), Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3	6.29	Yes
Linksys	Linksys	EA8250	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	6.19	Yes
Linksys	Linksys	EA8300	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	6.19	Yes
Linksys	Linksys	EA8500	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 3, AP 5K-10K DMIPS	11.00	No
Linksys	Linksys	EA9200	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 2, USB 3, AP 5K-10K DMIPS	12.92	No
Linksys	Linksys	EA9300	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(3), 802.11n 256 QAM, USB 2, USB 3, AP 5K-10K DMIPS	12.92	No
Linksys	Linksys	EA9500 V2	Advanced LNE	GigE Backup WAN, GigE LAN(8), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(6), 802.11n 256 QAM, USB 2, USB 3, Bluetooth, AP 5K-10K DMIPS	14.71	Yes

Table 3: Small Network Equipment Purchased/Sold by Voluntary Agreement Signatories in 2020 (cont.)

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets Tier 2 VA Levels
Linksys	Linksys	LAPAC1200	Advanced LNE	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP, 802.11n 256 QAM	3.83	Yes
Linksys	Linksys	LAPAC1200C	Advanced LNE	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP, 802.11n 256 QAM	3.83	Yes
Linksys	Linksys	LAPAC1750	Advanced LNE	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(2)	4.35	Yes
Linksys	Linksys	LAPAC1750C	Advanced LNE	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(2)	4.35	Yes
Linksys	Linksys	LAPAC2600	Advanced LNE	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(4)	6.37	Yes
Linksys	Linksys	LAPAC2600C	Advanced LNE	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(4)	6.37	Yes
Linksys	Linksys	LAPN300	Advanced LNE	Fast E LAN, Wi-Fi (n) LP	1.79	Yes
Linksys	Linksys	LAPN600	Advanced LNE	Fast E LAN, Wi-Fi (n) LP, Wi-Fi (ac) LP	2.47	Yes
Linksys	Linksys	LGS308	Advanced LNE	GigE LAN(8)	4.14	Yes
Linksys	Linksys	LGS308MP	Advanced LNE	GigE LAN(8)	6.36	No
Linksys	Linksys	LGS308P	Advanced LNE	GigE LAN(8)	6.17	No
Linksys	Linksys	LGS318	Advanced LNE	GigE LAN(18)	6.07	Yes
Linksys	Linksys	LGS318P	Advanced LNE	SFP Backup WAN Present(2), GigE LAN(16)	11.08	No
Linksys	Linksys	LGS326	Advanced LNE	GigE LAN(18)	7.08	Yes
Linksys	Linksys	LGS326MP	Advanced LNE	SFP Backup WAN Present(2), GigE LAN(24)	15.83	No
Linksys	Linksys	LGS326P	Advanced LNE	SFP Backup WAN Present(2), GigE LAN(24)	17.72	No
Linksys	Linksys	LGS528	Advanced LNE	SFP Backup WAN Present(2), GigE LAN(26)	7.85	Yes
Linksys	Linksys	LGS528P	Advanced LNE	SFP Backup WAN Present(2), GigE LAN(26)	18.73	No
Linksys	Linksys	LRT214	Advanced LNE	GigE Backup WAN, GigE LAN(4)	7.39	No
Linksys	Linksys	LRT224	Advanced LNE	GigE Backup WAN(2), GigE LAN(4)	7.21	No
Linksys	Linksys	MR6350	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	5.51	Yes
Linksys	Linksys	MR7310	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	7.24	Yes
Linksys	Linksys	MR7320	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	7.24	Yes
Linksys	Linksys	MR7340	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	7.24	Yes
Linksys	Linksys	MR8300	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	6.19	Yes
Linksys	Linksys	MR9000	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	7.92	Yes
Linksys	Linksys	MR9600 V2	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 2, USB 3, Bluetooth, AP 5K-10K DMIPS	14.49	No
Linksys	Linksys	MR9610	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(4), 802.11n 256 QAM, USB 3(2), Bluetooth, AP 5K-10K DMIPS	14.49	No
Linksys	Linksys	MX4200	Advanced LNE	GigE Backup WAN, GigE LAN(3), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	10.33	Yes

Table 3: Small Network Equipment Purchased/Sold by Voluntary Agreement Signatories in 2020 (cont.)

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets Tier 2 VA Levels
Linksys	Linksys	MX5300	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(6), 802.11n 256 QAM, USB 3, Bluetooth, ZigBee, AP 5K-10K DMIPS	12.39	Yes
Linksys	Linksys	RE1000	Advanced LNE	Fast E LAN, Wi-Fi (n) HP	5.00	No
Linksys	Linksys	RE3000W	Advanced LNE	Fast E LAN, Wi-Fi (n) LP	5.00	No
Linksys	Linksys	RE4000W	Advanced LNE	Fast E LAN, Wi-Fi (n) LP, Wi-Fi (ac) LP	7.00	No
Linksys	Linksys	RE4100W	Advanced LNE	Fast E LAN, Wi-Fi (n) LP, Wi-Fi (ac) LP	7.00	No
Linksys	Linksys	RE6250	Advanced LNE	Wi-Fi (n) LP, Wi-Fi (ac) LP	2.79	Yes
Linksys	Linksys	RE6300	Advanced LNE	GigE LAN, Wi-Fi (n) LP, Wi-Fi (ac) LP	3.55	Yes
Linksys	Linksys	RE6350	Advanced LNE	Wi-Fi (n) LP, Wi-Fi (ac) LP	2.79	Yes
Linksys	Linksys	RE6400	Advanced LNE	GigE LAN, Wi-Fi (n) LP, Wi-Fi (ac) LP	3.55	Yes
Linksys	Linksys	RE6500	Advanced LNE	GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (n) HP	5.55	Yes
Linksys	Linksys	RE6700	Advanced LNE	GigE LAN, Wi-Fi (n) LP, Wi-Fi (ac) LP	3.68	Yes
Linksys	Linksys	RE6800	Advanced LNE	GigE LAN, Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(2)	4.28	Yes
Linksys	Linksys	RE7000 V2	Advanced LNE	GigE LAN, Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(2)	4.28	Yes
Linksys	Linksys	RE7350	Advanced LNE	GigE Backup WAN, GigE LAN, Wi-Fi (n) LP, Wi-Fi (ac) LP, AP 5K-10K DMIPS	4.36	Yes
Linksys	Linksys	RE9000	Advanced LNE	GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(2), 802.11n 256 QAM	6.14	Yes
Linksys	Linksys	VLP0101	Advanced LNE	GigE Backup WAN, GigE LAN, Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, Bluetooth, AP 5K-10K DMIPS	4.77	Yes
Linksys	Linksys	VLP0101P	Advanced LNE	Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, Bluetooth, AP 5K-10K DMIPS	3.53	Yes
Linksys	Linksys	VLP0101P	Advanced LNE	Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, Bluetooth, AP 5K-10K DMIPS	3.53	Yes
Linksys	Linksys	WHW0101	Advanced LNE	GigE Backup WAN, GigE LAN, Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, Bluetooth, AP 5K-10K DMIPS	4.77	Yes
Linksys	Linksys	WHW0101P	Advanced LNE	Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, Bluetooth, AP 5K-10K DMIPS	3.53	Yes
Linksys	Linksys	WHW0301	Advanced LNE	GigE Backup WAN, GigE LAN, Wi-Fi (n) HP, Wi-Fi (ac) HP(2), 802.11n 256 QAM, Bluetooth, AP 5K-10K DMIPS	5.14	Yes
Linksys	Linksys	WRT110	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP	6.00	No
Linksys	Linksys	WRT160N	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP	6.00	No
Linksys	Linksys	WRT1900AC	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3, SATA, AP 5K-10K DMIPS	3.47	Yes
Linksys	Linksys	WRT1900ACS	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3, SATA, AP 5K-10K DMIPS	3.47	Yes
Linksys	Linksys	WRT3200ACM	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3, SATA, AP 5K-10K DMIPS	3.47	Yes
Linksys	Linksys	WRT32X	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3, SATA, AP 5K-10K DMIPS	3.47	Yes
Linksys	Linksys	WRT32XB	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), 802.11n 256 QAM, USB 2, USB 3, SATA, AP 5K-10K DMIPS	3.47	Yes

Table 3: Small Network Equipment Purchased/Sold by Voluntary Agreement Signatories in 2020 (cont.)

Signatory	Brand	Model Number	Base Type	Claimed Allowances	Reported Idle Power (W)	Meets Tier 2 VA Levels
Linksys	Linksys	LGS105V2	Basic LNE	GigE LAN(5)	1.36	Yes
Linksys	Linksys	LGS108PV2	Basic LNE	GigE LAN(8)	1.55	Yes
Linksys	Linksys	LGS108V2	Basic LNE	GigE LAN(8)	0.60	Yes
Linksys	Linksys	LGS116PV2	Basic LNE	GigE LAN(16)	5.14	No
Linksys	Linksys	LGS116V2	Basic LNE	GigE LAN(16)	2.95	Yes
Linksys	Linksys	LGS124PV2	Basic LNE	GigE LAN(24)	8.74	No
Linksys	Linksys	LGS124V2	Basic LNE	GigE LAN(24)	11.08	No
Linksys	Linksys	SE1500	Basic LNE	Fast E LAN(5)	0.46	Yes
Linksys	Linksys	SE2500	Basic LNE	GigE LAN(5)	0.60	Yes
Linksys	Linksys	SE2800	Basic LNE	GigE LAN(8)	0.60	Yes
Linksys	Linksys	SE3005V2	Basic LNE	GigE LAN(5)	0.46	Yes
Linksys	Linksys	SE3008V2	Basic LNE	GigE LAN(8)	0.60	Yes
Linksys	Linksys	SE3016	Basic LNE	GigE LAN(16)	2.99	Yes
Linksys	Linksys	SE3024	Basic LNE	GigE LAN(24)	5.28	Yes
Linksys	Linksys	SE4008	Basic LNE	GigE LAN(8)	0.60	Yes
Linksys	Linksys	A0301	Advanced LNE	GigE Backup WAN, GigE LAN, Wi-Fi (n) HP, Wi-Fi (ac) HP(2), 802.11n 256 QAM, Bluetooth, ZigBee, AP 5K-10K DMIPS	5.14	Yes
Linksys	Linksys	E800	Advanced LNE	Fast E LAN(5), Wi-Fi (n) LP	3.47	Yes
Linksys	Linksys	EA2700	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) LP, Wi-Fi (ac) LP	8.00	No
Linksys	Linksys	EA9400	Advanced LNE	GigE Backup WAN, GigE LAN(8), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(6), 802.11n 256 QAM, USB 2, USB 3, Bluetooth, AP 5K-10K DMIPS	14.71	Yes
Linksys	Linksys	MR7350	Advanced LNE	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, 802.11n 256 QAM, USB 3, Bluetooth, AP 5K-10K DMIPS	7.24	Yes
Plume	Plume	PP203X	Basic LNE	GigE LAN(2), Wi-Fi (n) LP, Wi-Fi (ac) LP(2), Wi-Fi above 2x2 LP(2), 802.11n 256 QAM, Bluetooth, PCIe	6.50	Yes
Plume	Plume	PP302Z	Basic LNE	GigE LAN, Wi-Fi (n) LP, Wi-Fi (ac) LP, Wi-Fi above 2x2 LP(2), 802.11n 256 QAM, Bluetooth, PCIe	4.00	Yes
Verizon	Actiontec	ECB5240	Advanced LNE	GigE LAN(4), MoCA	4.91	Yes
Verizon	Actiontec	WCB6200Q	Advanced LNE	GigE LAN(2), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), MoCA	9.21	Yes
Verizon	Actiontec	GT784WNV	IAD ADSL2+	Fast E LAN(4), Wi-Fi (n) LP, USB 2	6.09	No
Verizon	Arcadyan	Fios Extender	Advanced LNE	GigE LAN(2), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(6), 802.11n 256 QAM, MoCA, PCIe(3), AP 5K-10K DMIPS	10.12	Yes
Verizon	Arcadyan	Fios Router	IAD MoCA	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP(2), Wi-Fi above 2x2 HP(6), 802.11n 256 QAM, MoCA, USB 3, Bluetooth, PCIe(3), AP 5K-10K DMIPS	11.78	Yes
Verizon	D-Link	DGS-1005G	Basic LNE	GigE LAN(5)	1.56	Yes
Verizon	D-Link	DSL-2750B	IAD ADSL2+	Fast E LAN(4), Wi-Fi (n) LP, USB 2	5.05	Yes
Verizon	Verizon	FiOS-G1100	IAD MoCA	GigE Backup WAN, GigE LAN(4), Wi-Fi (n) HP, Wi-Fi (ac) HP, Wi-Fi above 2x2 HP(2), MoCA, USB 2(2), Z-wave	10.43	Yes

Table 4 describes feature allowances established by the Voluntary Agreement.

Table 4: Voluntary Agreement Allowance Descriptions

Description	Descriptor	Allowance
Base Allowance: IAD Devices (by WAN interface) (watts)		
ADSL2plus	IAD ADSL2+	3.7
VDSL2 (8, 12a, 17a, but not 30a)	IAD VDSL2	4.5
VDSL2 (all above profiles including 30a)	IAD VDSL2 (30a)	6.0
DOCSIS 3.0 basic configuration (4x4)	IAD D3.0	6.0
DOCSIS 3.1 No FDX	IAD D3.1	15.1
MoCA 1.1/2.0	IAD MoCA	5.7
Gigabit Ethernet	IAD GigE	4.0
SFP with GPON	IAD SFP GPON	5.0
Base Allowance: Broadband Modems (by WAN Interface) (watts)		
DOCSIS 3.0 basic configuration (4x4)	Basic D3.0	4.5
DOCSIS 3.1 No FDX	Basic D3.1	13.6
Base Allowance: LNE (watts)		
LNE other than Advanced LNE	Basic LNE	1.5
Advanced LNE	Advanced LNE	3.5
Adders for Additional Backup WAN Interface		
Gigabit Ethernet WAN	GigE Backup WAN	0.4
SFP Not Present	SFP Backup WAN Not Present	0.7
SFP Present (1000BaseLX/SX or GPON)	SFP Backup WAN Present	2.0
VDSL2 (8, 12a, 17a, but not 30a)	VDSL2 Backup WAN	0.7
Adders for Simultaneous Additional WAN Interface		
VDSL2 (8, 12a, 17a, but not 30a)	VDSL2 Simul WAN	3.2
DOCSIS 3.0 additional power allowance for each additional 4 downstream channels	D3 above 4x4	1.3
Adders for LAN interfaces and Additional Functionality		
1 Fast Ethernet port	Fast E LAN	0.2
1 Gigabit Ethernet port	GigE LAN	0.2
Wi-Fi IEEE 802.11n radio at 2.4 GHz or at 5.0 GHz with a conducted output power less than 200 mW per chain (up to 2x2, i.e. 400 mW)	Wi-Fi (n) LP	1.0
Wi-Fi, IEEE 802.11ac radio at 5 GHz with a conducted output power less than 200 mW per chain (up to 2x2, i.e. 400 mW)	Wi-Fi (ac) LP	1.8
Additional allowance per RF chain above a 2x2 MIMO configuration (e.g., for 3x3 and 4x4) with a conducted output power less than 200 mW per chain	Wi-Fi above 2x2 LP	0.3
Wi-Fi IEEE 802.11n radio at 2.4 GHz or at 5.0 GHz with a conducted output power greater than or equal to 200 mW per chain (up to 2x2, i.e. 400 mW)	Wi-Fi (n) HP	1.1
Wi-Fi, IEEE 802.11ac radio at 5 GHz with a conducted output power greater than or equal to 200 mW per chain (up to 2x2, i.e. 400 mW)	Wi-Fi (ac) HP	2.2
Additional allowance per RF chain above a 2x2 MIMO configuration (e.g., for 3x3 and 4x4) with a conducted output power greater than 200 mW per chain	Wi-Fi above 2x2 HP	0.3
Wi-Fi IEEE 802.11n at 2.4GHz supporting 256-QAM	802.11n 256 QAM	0.5
MoCA 1.1/2.0 Single Channel	MoCA	2.2
FXS	FXS	0.3
USB 2.0 - no load connected	USB 2	0.1
USB 3.0 - no load connected	USB 3	0.2
SATA - no load connected	SATA	0.3
Built-in back-up battery	BATTERY	0.4

Table 4: Voluntary Agreement Allowance Descriptions (cont.)

Description	Descriptor	Allowance
Bluetooth	Bluetooth	0.5
ZigBee	ZigBee	0.2
Z-wave	Z-wave	0.2
PCIe Interface (Connected)	PCIe	0.2
Application Processor 5K-10K DMIPS	AP 5K-10K DMIPS	1.0

APPENDIX B: CONSUMER-FACING SMALL NETWORK EQUIPMENT ENERGY-EFFICIENCY INFORMATION

SNE energy information for consumers is available at www.energy-efficiency.us, and for each service provider and retail vendor at the links below.

Table 5: Consumer-Facing Small Network Equipment Energy-Efficiency Information

Signatory	Consumer Information Location	Additional Information
Service Providers		
Altice	https://energy.cablelabs.com/cablevision-sne/	
AT&T	https://www.att.com/idpassets/images/support/pdf/AT-Small-Network-Equipment-Energy-Information-2020.pdf	
CenturyLink	https://www.centurylink.com/home/help/internet/modems-and-routers/modem-energy-efficiency.html	
Charter	https://energy.cablelabs.com/charter-sne/	
Comcast	https://energy.cablelabs.com/comcast-sne/	
Cox	https://www.cox.com/residential/support/conserving-energy-with-your-digital-receiver.html	
Frontier	https://frontier.com/~media/HelpCenter/Documents/tv/fiber-optic-tv/small-network-equipment-efficiency.ashx	
Verizon	https://www.verizon.com/support/residential/tv/equipment/stb-dvr	Scroll down to “Learn about Verizon’s Small Network Equipment (SNE) Energy Information” and click the plus sign next to it.
Vendors		
Actiontec	https://actiontecsupport.zendesk.com/hc/en-us/articles/115000617706-Actiontec-Broadband-Equipment-Energy-Information	
ASUS	https://www.asus.com/us/site/SNE-Info/Asus-SNE-Energy-Information-2020.pdf	
CommScope	https://www.commscope.com/globalassets/digizuite/330860-commscope-sne-public-report.pdf	
Linksys	https://www.linksys.com/us/support-article?articleNum=318168	
Plume	https://www.plume.com/homepass/legal?tabId=sneenergyinformation	
Technicolor	No Retail Products	
Ubee Interactive	No Retail Products	

APPENDIX C: 2020 AUDIT REPORT

The Voluntary Agreement requires the service provider and retail vendor signatories to submit annual procurement and sales figures to an independent administrator, who collects and analyzes the amounts, then publishes the findings in an annual report. The administrator aggregates the submissions from the individual signatories for publication in the annual report to protect this highly confidential information. To verify the accuracy of the reported data, the Voluntary Agreement requires an audit of one randomly-selected commercial signatory each year. In accordance with the confidentiality requirements of the Voluntary Agreement, the name of the audited party is not published.

D+R conducted an audit of the 2020 report data provided in 2021, which was used to develop the 2020 Annual Report. Then, they randomly selected the party by creating an Excel spreadsheet and using the “random” function. Lastly, they reviewed raw data, including invoice records and specification sheets, from the selected party to verify the quantities provided in the original submission.

D+R, as the Independent Administrator, has determined that the data submitted by the signatory for the audit is consistent with the annual report submitted by that party.



phone: 301.588.9387 web: www.drintl.com
1110 Wayne Ave. . Suite 700 . Silver Spring . MD . 20910