Canadian Energy-Efficiency Voluntary Agreement for Small Network Equipment (CEEVA SNE)

Amended Effective January 1, 2022

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1 Introduction

This non-regulatory, Canadian Energy Efficiency Voluntary Agreement for Small Network Equipment ("CEEVA SNE" or "Agreement") is adopted as of January 1, 2020 as a second energy-efficiency program within the existing Canadian Energy Efficiency Voluntary Agreement for Set-Top Boxes ("CEEVA STB"). The purpose of CEEVA SNE is to improve the energy efficiency of Small Network Equipment used for residential Internet service in Canada.

CEEVA SNE aims to achieve the deployment of efficient SNE without restricting the rapid pace of technological innovation characteristic of Internet services, or adversely impacting the usability of the equipment used by consumers to access such services.

CEEVA SNE aligns with the technical standards and test methods of a similar SNE voluntary agreement adopted in the United States (USVA). Standardization provides Canadian consumers and service providers that purchase equipment with a broader and more competitive range of equipment options manufactured for a larger continental North American market. At the same time, the Signatories have in other respects departed from the USVA as appropriate for Canada.

CEEVA involves the legitimate cooperation amongst competitors to advance the national public interest in energy conservation. However, the Parties are mindful of the restrictions of the Canadian Competition Act designed to prevent certain anti-competitive activities. All participants are responsible for ensuring compliance with the CEEVA Competition Law Advisory Statement set forth in Annex F of CEEVA STB, the antitrust and competition policies of their own organizations, and all applicable law.

2 General Definitions

This section defines the general definitions used in CEEVA SNE.

1) "Data Aggregator" means the party designated by the Steering Committee that is tasked with, and is responsible for, the collection, processing, and anonymized aggregation of reporting information supplied by Signatories, and determining a Signatory's compliance with the Agreement.
2) "End User" means a subscriber to Internet access services provided by a Service Provider who uses SNE provided by the Service Provider as part of the subscription.
3) "Members" mean the Members of the Steering Committee, which consist of Signatories and Non-signatory Members.
4) "Manufacturer" means a Signatory that designs, develops and/or manufactures SNE or components thereof for deployment in Canada by a wireline broadband Internet service provider.
5) "Non-signatory Member(s)" means those companies or organizations that are Members of the Steering Committee but are not Service Providers or Manufacturers.
6) "Receive" means to take delivery of any new (not refurbished) SNE for commercial deployment in Canada.
7) "Reporting Period" means the period for which the required information is to be submitted by a Signatory (which is generally January 1st to December 31st).

8) "Reporting Template" means the format for the annual reports provided by each Service Provider to the Data Aggregator, as approved by the Steering Committee and posted on the CEEVA website.

9) "Service Provider" means a Signatory that provides Internet access (and possibly other) services to Canadian residential End User subscribers with whom it has an ongoing contractual relationship through a managed distribution network provided by that entity.

10) "Signatory" and "Signatories" mean those Manufacturers and Service Providers that become Signatories to CEEVA SNE.

11) "Small Network Equipment" ("SNE") means the following types of devices Received and placed into service by a Service Provider for the first time on or after the Effective Date for use by a consumer for residential access to broadband Internet access services in Canada as the primary intended function. SNE excludes enterprise equipment, Service Provider network equipment, and Set-Top Boxes and Multi-Service Gateway Set-Top Boxes with video as one of the primary functions (services) (as defined by CEEVA STB).

    a) "Broadband Modem." A simple network device that enables high-speed data service with a WAN (Wide Area Network) interface to a service provider wired or optical network, and typically a single LAN (Local Area Network) 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.

    b) "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.

    c) "Local Network Equipment" ("LNE"). The following local network devices that do not have a direct interface to a Service Provider wired or optical network:

        i) 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.

        ii) 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.

        iii) Switch: A network device that filters and forwards frames based on the Ethernet destination MAC address of each frame as its primary function.

        iv) 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.

12) "Steering Committee" means the coordinating and governing body of the CEEVA program.

13) "Effective Date" means January 1, 2020, except that as applied to a Signatory that signs the Agreement after that date, it shall mean the date established when that party signs the Agreement.

14) "USVA" means the industry-led Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Small Network Equipment, as amended effective January 2022.

A glossary of acronyms is provided in Annex A.

3 Equipment Covered

This Agreement covers all new SNE Received by Canadian Service Providers after January 1, 2020. Service Providers may defer reporting of confidential new models that have not been deployed commercially, provided that the Service Provider must separately notify the Data Aggregator of the number of such excluded SNE devices. If the excluded model is commercially deployed in a future Reporting Period, all of the previously excluded SNE must be reported as Received during that Reporting Period.

For purposes of the foregoing commitments, "new" SNE does not include any SNE that was Received for the first time before the Commitment Effective Date, or that is returned and refurbished, repaired, and/or upgraded, and then redeployed after such date.

4 Commitments

From the Commitment Effective Date (January 1, 2021), Signatories agree that ninety percent (90%) of all new SNE that a Service Provider Receives in each calendar year shall meet the efficiency levels established in Annex B.

Signatories will support:

- reasonable steps to inform consumers about the general energy consumption characteristics of SNE, as described in Section 6; and
- reasonable steps to monitor the effectiveness of this Agreement through the procedures described in Section 9.

Manufacturer Signatories will use reasonable efforts to design SNE that improves functionality and enables SNE to be controlled and operated in an energy efficient manner without compromising the user experience.

A Party that becomes a Signatory after the Effective Date of the Agreement may elect to begin its commitments and reporting either as of the January 1 preceding its signature, the period beginning with its signature, or a different effective date for the new Signatory approved by the Steering Committee.

5 Test Method

5.1 Testing for Compliance Determination

The applicable test methodologies and procedures for measuring whether SNE meets the applicable efficiency levels are fully described in Annex B, SNE Program Requirements and Test Method and

Annex C, New Feature Process. SNE must be tested in its default as-installed configuration in a test facility that is pre-approved by the Steering Committee.

After a Signatory has obtained testing (in accordance with CEEVA SNE) and reported a particular model, that model may be exempt from testing in subsequent years if all three of the following conditions are met:

1) the initial test result of the model is at least 5% below the maximum allowed idle power for the currently applicable Tier,
2) current instances of the model do not have any significant hardware or software modifications, and
3) the model is not claiming any new allowances from the original reporting year.

5.2 Testing for Disclosure of Energy Consumption Information to Consumers

Testing for disclosures pursuant to Section 6.2 shall be performed according to the following:

- Only the test method set out in the SNE Program Requirements and Test Method shall be used.
- If a new test method or allowance is subsequently developed and approved by the Steering Committee for a new feature, then it shall be used.

5.3 Quality Assurance

For all forms of testing described above (compliance and reporting), the following quality assurance requirements apply. Test results must be certified by any certification body that:

1) is ISO-17065-accredited and/or is recognized by the Standards Council of Canada for SNE testing and qualification of Supervised Manufacturer's Test Laboratories (SMTLs), or is ISO-17025-accredited to test per the method defined by CEEVA SNE,
2) has Steering Committee approval, and
3) adheres to a quality assurance scheme that meets the following requirements:
   a) Tests shall be conducted in the certification body's lab or the Service Provider's lab by certification body staff, or by SMTL staff in a SMTL lab. A Manufacturer or Service Provider may act as a SMTL.
   b) Tests must be conducted on a live network with SNE in default (as-installed) configuration.
   c) The scheme will not include a challenge test program or certification labeling.

6 Reporting

CEEVA SNE Signatories communicate with the public in two ways: a) by publishing an annual report, and b) by making feature and energy consumption information about each of the new SNE models they offer to their subscribers readily available to consumers.

6.1 Annual Report

6.1.1 Service Provider Reports to the Data Aggregator

Each Service Provider shall send to the Data Aggregator a confidential annual report by April 1 after each Reporting Period containing the data requested in the Reporting Template for the prior Reporting Period during which it was a Signatory. Service Providers are encouraged to report information to the Data Aggregator that can help to describe trends in SNE energy efficiency.

A Reporting Period covers a single calendar year. When a Signatory is making its first report, it may provide data either for the entire prior Reporting Period (effectively backdating its commitment to the January 1 preceding its signature) or provide a report covering only the period beginning with its signature or a different effective date for the new Signatory approved by the Steering Committee.

6.1.2 Data Aggregator's Report to the Steering Committee

The Data Aggregator shall aggregate all annual reports of models/units/annual energy use and report average idle power in each of the categories specified in the Reporting Template. The Data Aggregator shall also provide a list of all reported SNE Models Received during the Reporting Period, including identification of the manufacturer, model number, features, and idle power.

The Steering Committee will ensure that the contract with the Data Aggregator protects the confidentiality of information supplied by the Signatories, and aggregation must be sufficient so that no individual company's results can be deduced or reasonably approximated. The Data Aggregator's report to the Steering Committee shall not include confidential or commercially sensitive information, such as shipping or volume reports or features that have not been publicly announced.

6.1.3 Public Annual Report

By August 15 of each year after a Reporting Period, the Steering Committee shall publish a public annual report based on the information in the Data Aggregator's report that will:

- Identify participating companies during the Reporting Period.
- Report efficiency gains under the Agreement compared to data reported for the 2020 Reporting Period.
- Identify the aggregate percentage of SNE units that meet the efficiency levels established in Annex B.
- Include an Appendix of SNE models that Service Providers have Received during the Reporting Period including their model numbers and features, and idle power. The information shall not include confidential or commercially sensitive information, such as shipping or volume reports or features that have not been publicly announced.
- Include the results of the procurement audit conducted pursuant to Section 7, without disclosing the identity of the audited party.

The Steering Committee may elect to include this information in a consolidated annual report covering both SNE and set-top boxes.

6.2 Disclosure of Model Information to Consumers

Within six months of the date of its execution of the Voluntary Agreement, each Service Provider shall provide its subscribers and potential customers with reasonable access to the idle power measurement and feature set description sufficient to calculate the applicable allowances under CEEVA SNE for each model of SNE it Receives on or after the later of January 1, 2020 or the date of its execution of the Voluntary Agreement. This information must be made updated by April 1 of each subsequent year.

Models shall be distinguished if energy use varies by configuration. This information need not be updated for software and/or configuration changes unless changes significantly affect energy use. This information shall be made publicly available for each model made available to the Service Provider's subscribers. This Section does not require Service Providers to disclose confidential or commercially sensitive information, such as features that have not been publicly announced.

7 Annual Procurement Audit

The Data Aggregator or other third party selected by the Steering Committee will conduct an audit of SNE procurement figures for one Service Provider selected at random each year. The same Service Provider shall not be randomly selected two years in a row. The identity of the Service Provider selected for audit will be made known to the Steering Committee. The result of the audit will be included in the annual report, but the identity of the Service Provider selected will not be disclosed to the public.

8 Steering Committee

A Steering Committee is established as the coordinating and governing body of this Agreement. The operating procedures set forth herein are intended to:

- ensure a made in Canada agreement, standards and Steering Committee;
- create a simplified, transparent and accountable process;
- support a consensus approach to decision making, with the need for "votes" to be used in very limited circumstances; and
- support competition and innovation and avoid unduly disrupting the Canadian market or Canadian consumers.

Steering Committee Members consist of Signatories, which are the participating Service Providers and Manufacturers, and Non-signatory Members, which are the government, non-governmental, utility, and trade association organizations that participate in Member meetings. Membership requires a commitment to fully support Steering Committee duties. The Steering Committee selects and instructs the Data Aggregator that annually submits aggregated data to the Steering Committee. The Steering Committee appoints and can remove Members if necessary. If a Member is removed, it can still attend public meetings.

To promote efficiency, the CEEVA SNE Steering Committee meetings may be conducted jointly with the CEEVA STB Steering Committee. If possible, both Committees will be chaired by the same person who

represents a Signatory of both Agreements, and committee meetings may have a single consolidated agenda and minutes. Any contested votes specific to one agreement shall only be cast by persons eligible to vote with respect to that agreement.

A quorum of three-fourths of all Signatories is required to conduct a formal meeting of the Steering Committee.

Any member of the public may make an advance request to the Chair to attend a Steering Committee meeting. Any meeting open to the public may also include a Member meeting limited to Members and/or a Signatory meeting limited to Signatories. The committee shall work on a consensus model, resorting to a vote taken by voting Members only when full discussion has occurred and arguments and objections have been fully explored and recorded in minutes. If consensus is not clear, then Signatories decide by vote (to be determined by a simple majority) in which case each Service Provider casts a single vote and for which Signatory Manufacturers and the Consumer Technology Association (CTA) cast two votes total. This Agreement does not define how CTA and Manufacturers would cast their two votes. If warranted to resolve a procedural disagreement, the Chair may rely on Robert's Rules of Order to the extent consistent with the terms of CEEVA SNE.

The Steering Committee's duties include:

- administering the new feature process;
- developing annual reports;
- maintaining a website to make information about CEEVA SNE available to the public, including annual reports and service provider model information (or links thereto) as required by Section 6.2;
- reviewing and amending the Agreement on annual basis; and
- managing Membership to include removal of Signatories if substantial efforts to achieve corrective action are not successful.

The Chair must prepare the draft agenda of the Steering Committee meeting. The Chair must include in the draft agenda all points proposed by the Members of the Steering Committee and, where relevant, all points that may be received from observers. Invitations to the Steering Committee meeting must be sent to all Members of the Steering Committee. An announcement of the Steering Committee meeting, including the provisional agenda, must be posted on the CEEVA website not later than twenty days in advance of the meeting. Requests for participation in the Steering Committee are evaluated by the Chair taking into consideration the pertinence of the request.

Documents to be presented and discussed at the Steering Committee meeting must be sent to all members of the Steering Committee by email no later than seven working days in advance of the meeting. All members of and observers to the Steering Committee must have a right to be heard at the Steering Committee meetings and to request the Chair to register their views in the minutes.

The Chair shall prepare minutes from each Steering Committee meeting, circulate them to all Steering Committee Members, and post them on the CEEVA website within thirty days of the meeting. The Chair must allow at least two weeks after circulation of minutes for members and observers to the Steering Committee to submit comments before further distribution and final publication on the website.

The Signatories must bear all expenses related to the operation of the Steering Committee.

The Steering Committee may decide to convene a working group to carry out specific tasks. In this case, the Chair will decide on the composition of the group, its specific tasks and the time frame of its operation. The working group may consist of Members, observers to the Steering Committee, and/or external experts, and must be required to report to the Steering Committee on the results of its work within a deadline specified by the Chair or the Steering Committee. Any Signatory has a right to participate on any working group. The requirements of this Section 8 are not applicable to meetings or communications at which no official Steering Committee votes may be taken, such as a working group meeting, or to Steering Committee votes taken by email.

9 Review and Amendment of the Agreement

At least once each reporting year the Steering Committee will meet to review the Agreement in order to:

- evaluate the effectiveness of the Agreement in achieving its purposes as identified in Section 1 above;
- approve an annual report consistent with Section 6;
- review any changes to the USVA and consider whether to implement similar changes in CEEVA SNE;
- evaluate current and future developments that may influence energy consumption with a view to agreeing upon a course of action and/or revising the Agreement; and
- consider whether to set future targets to increase energy efficiencies in accordance with the usual product development cycles.

Amendments to CEEVA SNE can be adopted by a unanimous vote of the CEEVA SNE Signatories at a Steering Committee meeting and/or through voting via email.

10 Remediation

Failure to meet CEEVA SNE commitments could take several forms:

- Failure to meet the 90% procurement commitment, determined through self-reporting or the result of an audit. While the Signatories agree to make reasonable efforts to meet these commitments, it is recognized that unforeseen factors may affect these efforts, such as the strains on the supply chain that resulted from the COVID-19 pandemic.
- Failure to provide required information for the annual report as described in Section 6 in a timely manner.
- Failure to make available easily accessible public information about new SNE models in accordance with Section 6 in a timely manner.
- Failure to participate in review and amendment of the Agreement as described in Section 9.

A Signatory that is aware it is or will be non-compliant should advise the Data Aggregator and NRCan of the deficiency as soon as possible.

If the Data Aggregator finds substantial non-compliance in a Service Provider report, it shall notify NRCan and the Service Provider by May 15. Once notified of non-compliance or anticipated non-compliance directly by a Service Provider or indirectly by the Data Aggregator, the following steps shall be taken:

1. NRCan may request that the Data Aggregator provide, to NRCan's satisfaction, all necessary information, including all written communication between the Service Provider and the Data Aggregator, to enable a complete understanding of the non-compliance problem.
2. NRCan will meet with the non-compliant Service Provider to discuss the non-compliance problem and to develop a corrective action plan, which should include measurable success metrics to include checkpoints, completion dates, and expectations for status reporting.
3. NRCan will follow up with the Service Provider by reviewing status reports and meeting with the Service Provider at key checkpoints and providing written feedback to the Service Provider.

If the corrective action plan results in no Service Provider commitments missed at the end of the Reporting Period, then the matter shall be closed between NRCan and the Service Provider without Steering Committee engagement. For example, NRCan works with a Service Provider that, mid-year, is concerned that it will not meet its CEEVA SNE commitments, to develop a software patch that brings its affected devices into compliance by the end of the Reporting Period. However, if the Service Provider does not meet its commitment for that Reporting Period, then NRCan would work with the non-compliant Service Provider to develop a corrective action plan that remediates the energy impact of the non-compliance. If the Service Provider and NRCan are unable to agree on a corrective action plan, either party may refer the matter to the Steering Committee for resolution. The initial objective of the Steering Committee when it becomes aware of a non-compliant Signatory is to be supportive and assistive of that entity moving into compliance.

In working with the Service Provider to develop a corrective action plan, NRCan should consider the balance of the Service Provider's commitment to save energy for its Canadian subscribers. For example, if 89% of a Service Provider's new SNE meet SNE CEEVA allowance levels by a large margin, and the non-compliant models narrowly miss, then NRCan might take this into consideration when developing corrective active recommendations for the Steering Committee. However, it should be noted that SNE CEEVA allowance levels are not intended to represent fleet average efficiency levels. The intent is that 90% of Service Provider boxes comply by a large enough margin that even the units at the lower-efficiency end of the normal distribution curve comply.

Finally, if the non-compliant Service Provider fails to execute a corrective action plan, then NRCan shall refer the matter to the Steering Committee, which shall develop next steps up to and including consideration of removal of the non-compliant signatory from the CEEVA SNE. NRCan's role is consultative and does not involve enforcement activities. Involuntary termination of Signatory status by the Steering Committee constitutes the sole and complete remedy available to the Steering Committee, Signatories, NRCan, the Data Aggregator or any third party or other individuals or entities with respect to any alleged noncompliance with any term, provision or obligation of the CEEVA SNE by a Signatory. Nothing in the preceding sentence limits rights that Parties may have under other legally-binding

agreements or applicable law. In addition, if NRCan or provincial regulators, after ineffective course correction actions, determine that on balance Signatories are not meeting the letter or the spirit of the Agreement, then NRCan or other regulators may decide to terminate their Membership and develop federal or provincial regulatory approaches to improving the energy efficiency of SNE.

NRCan shall preserve the confidentiality of information exchanged between NRCan and non-compliant Service Providers via mechanisms outlined in the Access to Information Act. If NRCan refers a matter to the Steering Committee, then the non-compliant Service Provider shall not be required to share confidential information with other Members. Because the Steering Committee may have less information than NRCan about the source of non-compliance and progress towards completion of the corrective action plan—because some or all of this information would put the non-compliant Service Provider at risk in terms of its competitive position—the Steering Committee may rely heavily on NRCan's recommendation to continue working with the non-compliant Service Provider to correct its course or to remove it from CEEVA SNE.

11 Termination

Any Signatory may elect to terminate its Signatory status by giving twenty-eight days' written notice to the Chair of the Steering Committee. Such termination shall immediately terminate all of that Signatory's rights and obligations under the Agreement except that all confidentiality obligations arising from this Agreement shall survive such termination. The Chair will notify all Members of the Steering Committee and such other persons as the Chair may deem appropriate of the termination. Any Non-signatory Member may elect to terminate its Member status by giving twenty-eight days' written notice to the Chair of the Steering Committee. Such termination shall immediately terminate that Member's access to Member-only meeting and other information shared by Members and not the general public.

12 Term

The initial term of this Agreement began on January 1, 2020. In 2022, CEEVA SNE was extended through December 31, 2026, with the publication of the annual report in 2027. The Agreement may be renewed by mutual agreement.

13 Legal Effect; Miscellaneous

13.1 Intention of Agreement

CEEVA SNE sets out a course of action for the Signatories to improve the energy efficiency of Small Network Equipment. CEEVA is not a commercial agreement, does not create any legally binding obligations on any of the parties hereto, and does not in itself create any contractual relationship, partnership, joint venture or other agency relationship among the Signatories. Nothing in this Agreement shall be deemed to create a third-party beneficiary relationship.

13.2 Confidentiality

By their signature of CEEVA SNE, the Parties agree that the Confidentiality Agreement for the Canadian Energy Efficiency Voluntary Agreement for Set-top Boxes shall govern all confidential information related to CEEVA SNE, and that references to the Steering Committee in that agreement includes the Steering Committee for CEEVA SNE. Nothing in this document shall limit a party's rights pursuant to that separate agreement.

13.3 Governing Law

CEEVA SNE shall be governed by the laws of the Province of Ontario and the federal laws of Canada applicable therein, without regard to its choice of law principles.

13.4 Conflicts

In the event of any conflict between the terms of CEEVA SNE with CEEVA STB, the terms of CEEVA SNE shall govern with respect to Small Network Equipment.

Annex A Glossary of Acronyms

Acronym	Term
ADSL	Asymmetric Digital Subscriber Line
ANSI	American National Standards Institute
CEEVA	Canadian Energy Efficiency Voluntary Agreement
CRTC	Canadian Radio-television and Telecommunications Commission
CTA	Consumer Technology Association
DECT	Digital Enhanced Cordless Telecommunications
DOCSIS	Data Over Cable Service Interface Specification
ETSI	European Telecommunications Standards Institute
FDX	Full Duplex
FXS	Foreign Exchange Station
GHz	Gigahertz
GigE	Gigabit Ethernet
GPON	Gigabit Passive Optical Networks
HDD	Hard Disk Drive
HPNA	Home Phoneline Networking Alliance
IAD	Integrated Access Device
ISO	International Standards Organization
ITU	International Telecommunication Union
LAN	Local Area Network
LNE	Local Network Equipment
MAC	Media Access Control
MIMO	Multiple Input Multiple Output
MoCA	Multimedia over Coax Alliance
mW	milliwatt(s)
NRCan	Natural Resources Canada
PCIe	Peripheral Component Interconnect Express
RF	Radio Frequency
SATA	Serial ATA (Advanced Technology Attachment)
SFP	Small Form Factor Pluggable
SMTL	Supervised Manufacturer Test Laboratory
SMTL	Supervised Manufacturer's Test Laboratory
SNE	Small Network Equipment
STB	Set-top Box
USB	Universal Serial Bus
USVA	U.S. Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Small Network Equipment
VDSL	Very High-Speed Digital Subscriber Line
VoIP	Voice over IP (Internet Protocol)
W	Watt(s)
WAN	Wide Area Network

Annex B SNE Program Requirements and Test Method

1. Introduction

This document defines base and additional feature energy allowances and allowance rules used to determine which models of Small Network Equipment meet the energy efficiency levels of the CEEVA SNE Commitments. The initial allowances for Canada are described as Tier 2 to correspond to the second tier of allowances in effect in the United States. The Tier 3 allowances become applicable on January 1, 2024.

2. Definitions

2.1. ADSL2plus: an International Telecommunication Union standard for asymmetric digital subscriber line (ADSL) broadband Internet access as defined by ITU G.992.5.

2.2. VDSL2: an International Telecommunication Union standard for very high-speed digital subscriber line (VDSL) broadband Internet access as defined by ITU G.993.2.

2.3. G.fast: an International Telecommunication Union standard for DSL broadband Internet access as defined by ITU G.9700 and G.9701. References to G.fast herein and the associated allowances are only for single twisted pair implementations using a +4 dBm, 106 MHz profile, or coax implementations using a +2 dBm, 106 MHz or 212 MHz profile.

2.4. DOCSIS 3.0: DOCSIS® 3.0 interface as defined by CableLabs Data Over Cable Service Interface Specifications 3.0.

2.5. DOCSIS 3.1: DOCSIS® 3.1 interface as defined by CableLabs Data Over Cable Service Interface Specifications 3.1. References to DOCSIS 3.1 herein and the associated allowances do not include support for symmetrical full duplex (FDX) DOCSIS 3.1 as initially defined in Annex F of the CableLabs Specification CM-SP-PHYv3.1-I12-17026 or later versions.

2.6. Advanced LNE: Local Network Equipment (LNE) that incorporates multi-port routing, wireless access point, and/or VoIP functionality.

2.7. MoCA Home: home networking specification as defined by the Multimedia Over Coax Alliance (including versions MoCA Home 1.1, and 2.0, and 2.5).

2.8. SFP - small form-factor pluggable: a compact, hot-pluggable transceiver used to interface a device to a fiber optic or copper networking cable.

2.9. WAN – Wide Area Network: the interface(s) to the service provider network.

2.10. LAN – Local Area Network: the interface(s) to the consumer networking devices within the premise.

2.11. MIMO - Multiple-Input and Multiple-Output: the use of multiple antennas at both the transmitter and receiver in a bidirectional wireless communication device to improve communication.

2.12. HPNA: HomePNA Alliance, formerly the Home Phoneline Networking Alliance.

2.13. FXS (Foreign Exchange Station): device interface, such as RJ-11, to connect directly to a standard telephone, fax machine, or similar device and supply voltage for the ring and dial tones.

2.14. DECT: Digital Enhanced Cordless Telecommunications is the ETSI standard for short-range cordless communications over unlicensed frequency used for voice, data and networking applications with a range up to 500 meters.

2.15. USB: Universal Serial Bus.

2.16. SATA – Serial ATA: interface for connecting devices to external storage devices, such as a hard disk drive (HDD).

2.17. Bluetooth: a wireless technology standard for exchanging data over short distances.

2.18. Zigbee: a specification for a suite of high-level communication protocols used to create personal area networks built from small, low-power digital radios.

2.19. Z-wave: a wireless communications protocol designed for home automation.

2.20. PCIe (Peripheral Component Interconnect Express): a high-speed serial computer expansion bus standard.

2.21. G.hn: a home networking specification as defined by ITU-T G.9960 for data transmission over telephone wiring, coaxial cables, power lines, and Plastic Optical Fiber (POF).

2.22. 10G EPON: Ethernet Passive Optical Networking WAN interface supporting 10 Gbps symmetrical high speed data service as defined by IEEE 802.3av.

2.23. GigE: Gigabit Ethernet.

3. Test Method

Satisfaction of the CEEVA SNE efficiency levels shall be demonstrated using tests conducted in accordance with the ANSI/CTA-2049-A test method.

4. Idle Operational State

The testing and power allowances are based on the device operating in idle state as defined in ANSI/CTA-2049-A. This state is defined as powered on and ready to pass traffic, but no user-generated traffic is initiated during the test. ANSI/CTA-2049-A also defines an idle interface as an interface that is configured and active and capable of passing traffic.

5. Efficiency Criteria

5.1. Significant Digits and Rounding – all measured and calculated power values shall be rounded as follows:

5.1.1. To the nearest 0.01 W for power values of 10 W or less

5.1.2. To the nearest 0.1 W for power measurements of greater than 10 W and less than 100 W

5.1.3. To the nearest 1 W for power measurements of greater than 100 W

5.2. Idle power as measured per the Test Method shall be less than or equal to the maximum requirement for allowed power in the idle state as calculated per equation 1.

Equation 1 – Maximum Idle Power Calculation for Small Network Equipment

$$P_{IDLE\_MAX} = P_{Base} + \sum_{i=1}^{n} P_{ADD_i}$$

where

- P_{Base} = Base power allowance (W) from Table 1;
- P_{ADD_i} = The power allowance (W) as specified in Tables 2, 3 and 4 for each feature present in the device, for a total of *n* such allowances.

Table 1 – Base Power Allowances

Base Allowance: IAD Devices (by WAN interface)	Tier 2 (watts)	Tier 3 (watts)	Notes
ADSL2plus	3.7	3.7	
VDSL2 (8, 12a, 17a, but not 30a)	4.5	4.5	
VDSL2 (all above profiles including 30a)	6.0	6.0	
VDSL2 (all above profiles including 35b)		6.0	
DOCSIS 3.0 basic configuration (4x4)	6.0	4.5	
DOCSIS 3.1 (no FDX)	15.1	14.0	
MoCA Home 1.1/2.0	5.7	3.7	MoCA Home 2.5 devices may either take MoCA Home 1.1/2.0 or propose new feature allowance
1 Gigabit Ethernet (1GigE)	4.0	3.7	
2.5 Gigabit Ethernet (2.5GigE)		4.5	
5 Gigabit Ethernet (5GigE)		5.0	
10 Gigabit Ethernet (10GigE)		5.5	
SFP (1000BaseLX/SX)	4.0	4.0	
SFP (GPON)	5.0	5.0	
10G EPON	13.0	13.0	
On-board fiber WAN (without SFP)		5.0	
10GB PON WAN (with SFP)		13.0	
Base Allowance: Broadband Modems (by WAN Interface)	**Tier 2 (watts)**	**Tier 3 (watts)**	
ADSL2plus	2.2	2.2	
VDSL2 (8, 12a, 17a, but not 30a)	3.0	3.0	
VDSL2 (all above profiles including 30a)	4.5	4.5	
DOCSIS 3.0 basic configuration (4x4)	4.5	3.0	
DOCSIS 3.1 (no FDX)	13.6	11.0	
G.fast	4.2	4.2	Reverse power feed (if available) should be disabled when testing
10G EPON		10.0	
Base Allowance: LNE	**Tier 2 (watts)**	**Tier 3 (watts)**	
LNE other than Advanced LNE	1.5	1.5	
Advanced LNE	3.5	3.2	

Table 2 – Additional WAN Power Allowances

Allowances for Additional Backup WAN Interface	Tier 2 (watts)	Tier 3 (watts)	Notes
1 Gigabit Ethernet (1GigE) WAN	0.4	0.4	
SFP Not Present	0.7	0.7	
SFP Present (1000BaseLX/SX or GPON)	2.0	2.0	
VDSL2 (8, 12a, 17a, but not 30a)	0.7	0.7	
Allowances for Simultaneous WAN Interface	**Tier 2 (watts)**	Tier 3 (watts)	
VDSL2 (8, 12a, 17a, but not 30a)	3.2	3.2	For VDSL bonding
VDSL2 (profile 30a)	4.7	4.7	For VDSL bonding
DOCSIS 3.0 additional power allowance for each additional 4 downstream channels above 4	1.3	1.0	e.g. a 16x4 cable modem has 12 downstream channels above 4, take 1.0x3=3.0W allowance for Tier 3. Not applicable to a DOCSIS 3.1 broadband modem or IAD.

Table 3 – Additional LAN Power Allowances

Allowances for LAN interfaces and Additional Functionality	Tier 2 (watts)	Tier 3 (watts)	Notes
Fast Ethernet port	0.2	0.2	For each port whether or not connected during test
1GigE port	0.2	0.2	For each port whether or not connected during test
2.5GigE port connected (active link)		2.5	Applies to integrated copper LAN ports
2.5GigE port not connected		0.8	Applies to integrated copper LAN ports
5GigE port connected (active link)		2.5	Applies to integrated copper LAN ports
5GigE port not connected		0.8	Applies to integrated copper LAN ports
10GigE port connected (active link)		3.5	Applies to integrated copper LAN ports
10GigE port not connected		1.5	Applies to integrated copper LAN ports
Wi-Fi IEEE 802.11n radio at 2.4 GHz or at 5 GHz with a conducted output power less than 200 mW per chain (up to 2x2, i.e. 400 mW)	1.0	See Table 4	For each radio. A dual-band Wi-Fi router would take 1.0x2=2.0W allowance
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)	1.8	See Table 4	
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	0.3	See Table 4	e.g. for a 4x4 radio, take 0.3x2=0.6W allowance

Allowances for LAN interfaces and Additional Functionality	Tier 2 (watts)	Tier 3 (watts)	Notes
Wi-Fi IEEE 802.11n radio at 2.4 GHz or at 5 GHz with a conducted output power greater than or equal to 200 mW per chain (up to 2x2, i.e. 400 mW)	1.1	See Table 4	For each radio. A dual-band Wi-Fi router would take 1.1x2=2.2W allowance for Tier 2.
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)	2.2	See Table 4	
Additional allowance per RF chain above a 2x2 MIMO configuration (e.g., for 3x3 and 4x4) with a conducted output power greater than or equal to 200 mW per chain	0.3	See Table 4	e.g. for a 4x4 radio, take 0.3x2=0.6W allowance for Tier 2
Wi-Fi IEEE 802.11n at 2.4GHz supporting 256-QAM	0.5	0.3	Take this allowance in addition to 802.11n if supporting 256-QAM at 2.4GHz
HPNA	1.5	1.5	
G.hn	2.0	2.0	
MoCA Home 1.1/2.0 Single Channel	2.2	2.2	MoCA Home 2.5 devices may either take MoCA Home 1.1/2.0 or propose new allowance
FXS	0.3	0.3	For each port (up to four)
DECT	0.5	0.5	
USB 2.0 - no load connected	0.1	0.1	
USB 3.0 - no load connected	0.2	0.2	
SATA - no load connected	0.3	0.3	
Built-in back-up battery	0.4	0.4	If battery is present during test
Bluetooth	0.5	0.5	
Zigbee	0.2	N/A	
Z-wave	0.2	0.2	
802.15.4 for ZigBee, Thread, etc.		0.2	Per active radio, up to 2
PCIe Interface Gen 1 & 2 Base (includes first lane)	0.2	0.2	For connected PCIe interfaces only
PCIe Gen 1 & 2 Additional Lane		0.1	
PCIe Gen 3 Base (includes first lane)		0.3	
PCIe Gen 3 Additional Lane		0.25	
Application Processor 5-10K DMIPS	1.0	1.0	
Application Processor > 10K DMIPS (for every additional 5K DMIPS)		0.5	
Speaker (rated at <= 10 W rms power per speaker) (maximum 2 speakers)		0.3	Allowance is per speaker (up to 2). No speaker output in idle mode but enabled
Voice control		0.5	No active input for idle mode test, but enabled and sensing

Table 4 – Wi-Fi Allowances for Tier 3

Tier 3 Wi-Fi Allowances	Tier 3 (watts)	Notes
LOW POWER VARIATIONS		
Wi-Fi 2.4 GHz radio with a conducted output power of less than 200 mW per chain up to 2x2	1.0	For each radio
Additional allowance per RF chain above 2x2 MIMO at 2.4 GHz with a conducted output power of less than 200 mW per chain	0.1	
Wi-Fi 5 GHz radio up to 80 MHz channel bandwidth with a conducted output power of less than 200 mW per chain up to 2x2	1.6	For each radio
Additional allowance per RF chain above 2x2 MIMO at 5 GHz up to 80 MHz channel bandwidth with a conducted output power of less than 200 mW per chain	0.1	
Wi-Fi 5 GHz radio at 160 MHz channel bandwidth with a conducted output power of less than 200 mW per chain up to 2x2	2.0	For each radio. Must be tested with a test client operating at 160 MHz channel bandwidth.
Additional allowance per RF chain above 2x2 MIMO at 5 GHz at 160 MHz channel bandwidth with a conducted output power of less than 200 mW per chain	0.1	Must be tested with a test client operating at 160 MHz channel bandwidth
Wi-Fi 6 GHz radio up to 80 MHz channel bandwidth with a conducted output power of less than 200 mW per chain up to 2x2	1.6	For each radio
Additional allowance per RF chain above 2x2 MIMO at 6 GHz up to 80 MHz channel bandwidth with a conducted output power of less than 200 mW per chain	0.1	
Wi-Fi 6 GHz radio at 160 MHz channel bandwidth with a conducted output power of less than 200 mW per chain up to 2x2	2.0	For each radio. Must be tested with a test client operating at 160 MHz channel bandwidth
Additional allowance per RF chain above 2x2 MIMO at 6 GHz at 160 MHz channel bandwidth with a conducted output power of less than 200 mW per chain	0.1	Must be tested with a test client operating at 160 MHz channel bandwidth
HIGH POWER VARIATIONS		
Wi-Fi 2.4 GHz radio with a conducted output power of greater than or equal to 200 mW per chain up to 2x2	1.1	For each radio

Tier 3 Wi-Fi Allowances	Tier 3 (watts)	Notes
Additional allowance per RF chain above 2x2 MIMO at 2.4 GHz with a conducted output power of greater than or equal to 200 mW per chain	0.2	
Wi-Fi 5 GHz radio up to 80 MHz channel bandwidth with a conducted output power of greater than or equal to 200 mW per chain up to 2x2	2.1	For each radio
Additional allowance per RF chain above 2x2 MIMO at 5 GHz up to 80 MHz channel bandwidth with a conducted output power of greater than or equal to 200 mW per chain	0.3	
Wi-Fi 5 GHz radio at 160 MHz channel bandwidth with a conducted output power of greater than or equal to 200 mW per chain up to 2x2	2.6	For each radio. Must be tested with a test client operating at 160 MHz channel bandwidth.
Additional allowance per RF chain above 2x2 MIMO at 5 GHz at 160 MHz channel bandwidth with a conducted output power of greater than or equal to 200 mW per chain	0.3	Must be tested with a test client operating at 160 MHz channel bandwidth
Wi-Fi 6 GHz radio up to 80 MHz channel bandwidth with a conducted output power of greater than or equal to 200 mW per chain up to 2x2	2.1	For each radio
Additional allowance per RF chain above 2x2 MIMO at 6 GHz up to 80 MHz channel bandwidth with a conducted output power of greater than or equal to 200 mW per chain	0.3	
Wi-Fi 6 GHz radio at 160 MHz channel bandwidth with a conducted output power of greater than or equal to 200 mW per chain up to 2x2	2.6	For each radio. Must be tested with a test client operating at 160 MHz channel bandwidth.
Additional allowance per RF chain above 2x2 MIMO at 6 GHz at 160 MHz channel bandwidth with a conducted output power of greater than or equal to 200 mW per chain	0.3	Must be tested with a test client operating at 160 MHz channel bandwidth

6. Usage rules for establishing the maximum allowable values:

6.1. One and only one base allowance (P_{Base}) shall be used from either the IAD group, the broadband modem group, or the LNE group in Table 1.

6.2. For an IAD or a broadband modem, the WAN interface is included in the base allowance. For an LNE device all interfaces should be taken as additional allowances from Table 3: LAN Power Allowances, even if a WAN interface is explicitly defined (because LNE does not have a WAN that connects directly to the service provider network, as is the definition of WAN in this document).

6.3. For VDSL channel bonding, take an allowance from Table 2 (Allowances for Simultaneous WAN Interface).

6.4. For DOCSIS 3.0 channel bonding above 4x4, take an allowance for every four downstream channels greater than 4. For example, a 16x4 cable modem will take an additional 1.3x3=3.9W allowance.

6.5. A device can only take either the allowance for a backup WAN interface with SFP Not Present (if the device contains an SFP cage that is not populated) or the allowance with SFP Present, but not both.

6.6. Tier 2 Wi-Fi allowances are based upon the Wi-Fi protocol employed in the device (e.g. 802.11n, 802.11ac). Tier 3 Wi-Fi allowances are based upon physical radio attributes (e.g. center frequency and channel bandwidth). For example, the same Tier 3 allowance applies to a 5GHz radio whether it is operating with the 802.11ac protocol or the 802.11ax protocol. See the Sample Calculations in the next section for more details. A future protocol that supports a new feature and that causes a device to exceed the prescribed allowances may be eligible for consideration for a new feature allowance pursuant to Annex C.

6.7. A device that supports more than two Wi-Fi RF chains (or spatial streams) per radio (i.e. a 2x2) can take one allowance for each RF chain greater than 2 for each radio. See the Sample Calculations in the next section for more details on how to take the additional RF chain allowances.

6.8. A device can take either the low power Wi-Fi allowances or the high power Wi-Fi allowances but not both to characterize a specific radio in a device. In a device with more than one concurrent radio, it is possible to have one or more radios in the low-power category and one or more radios in the high-power category.

6.9. A device that includes 802.11n supporting 256-QAM at 2.4GHz can take the “Wi-Fi IEEE 802.11n at 2.4GHz supporting 256-QAM”allowance in addition to other applicable Wi-Fi allowances.

6.10. The DOCSIS 3.1 allowances for the broadband modem or IAD are defined for DOCSIS 3.1 devices that support two OFDM channels at 192 MHz and 4096 QAM and up to thirty-two SC-QAM channels at 256 QAM simultaneously in the downstream. A device that supports more than two OFDM channels will need to be evaluated under the new features process. A DOCSIS 3.1 broadband modem or IAD cannot take any additional DOCSIS 3.0 Simultaneous WAN Interface allowances.

6.11. A device with a combination of 1GigE LAN ports, 2.5GigE LAN ports, 5GigE LAN ports, and/or 10GigE LAN ports should be tested with half the ports connected for each category of port (if any port quantity is an odd number, round the result up), such as:

- Total number of 1GigE ports / 2 rounded up
- Total number of 2.5GigE ports / 2 rounded up
- Total number of 5GigE ports / 2 rounded up
- Total number of 10GigE ports / 2 rounded up

Examples:

1. A device with four 1GigE ports and two 2.5GigE ports would be tested with two of the 1GigE ports connected and one of the 2.5GigE ports connected.
2. A device with only one 1GigE port and one 2.5GigE port would be tested with both the 1GigE and the 2.5GigE ports connected.
3. A device with two 1GigE ports, one 5GigE port, and one 10GigE port would be tested with one of the 1GigE ports and both the 5GigE and the 10GigE ports connected.

Each connected port must be connected to an end point that supports the same speed (e.g., a 10GigE port must be connected to a 10GigE end point).

The allowances for 2.5, 5, and 10 GigE ports differ depending on whether the port is connected during the test. The allowance for all 1GigE ports is the same.

6.12. A device that supports Power over Ethernet (PoE) on the Ethernet LAN ports is also be considered a separate category for testing in accordance with ANSI/CTA-2049-A.

The following examples illustrate testing a device with PoE ports:

1. A device with three 1GigE ports (one of which supports PoE) and one 2.5GigE port would be tested with one non-PoE 1GigE port, one PoE 1GigE port, and one 2.5GigE port connected.
2. A device with eight 1GigE ports (four of which support PoE) would be tested with two 1GigE PoE ports connected and two 1GigE non-PoE ports connected.

The test client connected to a PoE port must not draw power from the unit under test. The allowances defined for the Ethernet LAN interfaces (Fast Ethernet, 1GigE, 2.5GigE, 5GigE, and 10GigE) are the same whether or not the port supports PoE.

6.13. The Application Processor (AP) allowance may be taken for devices with an application processor that is rated at > 5K DMIPS. If the processor is >10K DMIPS, the additional allowance may also be taken for every 5K DMIPS above 10K DMIPS. For example, a 10K DMIPS-rated processor would only take the initial AP allowance. A 12K DMIPS-rated processor would take the initial AP allowance (1.0 watt) and the additional AP allowance (0.5 watt) for a total of 1.5 watts. A 20K DMIPS-rated processor would take the initial AP allowance (1.0 watt) and two times the additional AP allowance (2 x 0.5=1.0 watt) for a total of 2 watts.

6.14. To be eligible to take the speaker allowance, the speaker(s) must be enabled during the power consumption test, but no speaker output should occur during the idle mode test. The allowance can be taken once per speaker up to 2. Devices with more than two speakers or any speaker with an output of more than 10 watts is deemed to have primary function of audio output and is therefore not SNE.

6.15. To be eligible to take the voice control allowance, the voice control feature must be enabled during test, but the test environment and process should not include any activity (audible or manual such as a button press) that could activate the voice control.

7. Sample Calculations

7.1. **Product 1**: Integrated Access Device (IAD) with a DOCSIS 3.0 24x4 Cable WAN connection and the following LAN connections:

1. Four 1 GigE ports
2. Dual-band simultaneous wireless router using three receive streams of 5GHz 802.11ac and two receive streams of 2.4GHz 802.11n (both low power)

Feature	Tier 2 Allowance (watts)	Tier 3 Allowance (watts)
DOCSIS 3.0 base configuration (4x4)	6.0	4.5
DOCSIS 3.0 Simultaneous WAN (each 4 DS channels above 4x4)	6.5 (5 x 1.3)	5.0 (5 x 1.0)
Four 1GigE ports	0.8 (4 x 0.2)	0.8 (4 x 0.2)
TIER 2: Wi-Fi IEEE 802.11n radio at 2.4 GHz or at 5GHz with a conducted output power up to 200 mW per chain (up to 2x2, i.e. 400 mW)	1.0	
TIER 3: Wi-Fi 2.4 GHz radio with a conducted output power of less than 200 mW per chain up to 2x2		1.0
TIER 2: Wi-Fi, IEEE 802.11ac radio at 5 GHz with a conducted output power up to 200 mW per chain (up to 2x2, i.e. 400 mW)	1.8	
TIER 3: Wi-Fi 5 GHz radio up to 80 MHz channel bandwidth with a conducted output power of less than 200 mW per chain up to 2x2		1.6
TIER 2: Additional allowance per RF chain above a 2x2 MIMO configuration (e.g., for 3x3 and 4x4) with a conducted output power up to 200 mW per chain	0.3	
TIER 3: Additional allowance per RF chain above 2x2 MIMO at 5 GHz up to 80 MHz channel bandwidth with a conducted output power of less than 200 mW per chain		0.1
Total	16.4	13.0

7.2. **Product 2**: Advanced Local Network Equipment (LNE) wireless router with a 1 GigE WAN interface to connect to a modem and the following additional features:

1. Four 1 GigE Ethernet ports
2. Dual-band simultaneous wireless access point using 3 transmitters at 2.4 GHz and 3 transmitters at 5 GHz, supporting 802.11n at 2.4 GHz and 5 GHz, and 802.11ac at 5 GHz. (higher power radios that operate at > 200 mW conducted output power per chain)
3. USB 2.0
4. USB 3.0

Feature	Tier 2 Allowance (watts)	Tier 3 Allowance (watts)
Advanced LNE	3.5	3.2
FIVE 1GigE ports	1.0 (5 x 0.2)	1.0 (5 x 0.2)
TIER 2: Wi-Fi IEEE 802.11n radio at 2.4 GHz or at 5 GHz with a conducted output greater than or equal to 200 mW per chain (up to 2x2, i.e. 400 mW)	1.1	
TIER 3: Wi-Fi 2.4 GHz radio with a conducted output power of greater than or equal to 200 mW per chain up to 2x2		1.1
TIER 2: 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)	2.2	
TIER 3: Wi-Fi 5 GHz radio up to 80 MHz channel bandwidth with a conducted output power of greater than or equal to 200 mW per chain up to 2x2		2.1
TIER 2: Additional allowance per RF chain above a 2x2 MIMO configuration (e.g., for 3x3 and 4x4) with a conducted output power greater than or equal to 200 mW per chain	0.6 (2x0.3)	
TIER 3: Additional allowance per RF chain above 2x2 MIMO at 2.4 GHz with a conducted output power of greater than or equal to 200 mW per chain		0.2
TIER 3: Additional allowance per RF chain above 2x2 MIMO at 5 GHz up to 80 MHz channel bandwidth with a conducted output power of greater than or equal to 200 mW per chain		0.3
USB 2.0	0.1	0.1
USB 3.0	0.2	0.2
Total	8.7	8.2

Annex C New Feature Process

C.1 Purposes

C.1.1 This new feature process is intended to encourage innovation and competition by Service Providers and Manufacturers and also to encourage energy efficiency by design.

C.1.2 This new feature process is intended to provide a path for Service Providers and Manufacturers to innovate and add new features, including features with no assigned allowances and features that are in the early stages of design, without being treated as in violation of CEEVA SNE energy allowances or commitments.

C.1.3 This new feature process is intended to assure that most SNE models remain under the procurement commitments of the CEEVA SNE program, with sufficient transparency for appropriate allowances to be established for new features.

C.1.4 All requests for new allowances will be reviewed and approved by the Steering Committee, regardless of whether they have already been approved by the USVA to ensure that made-in-Canada standards prevail.

C.2 Testing

C.2.1 If an SNE model subject to a CEEVA SNE commitment includes one or more new energy consuming features that do not have energy allowances, the model should be tested as deployed under the current test method provided in CEEVA SNE.

C.3 Allowances

C.3.1 If a Service Provider deploys SNE that includes a new feature with no allowance, and the presence of the feature causes the SNE to exceed the existing levels, the Service Provider will set and report an appropriate initial allowance for the power consumption of that feature when it reports the device under CEEVA SNE.

C.3.2 The initial allowance will be reported within nine months of the initial deployment of such SNE model if the Service Provider expects that its percentage of procurement of such SNE will be sufficient to be reported in its next annual report.

C.3.3 The initial allowance will represent the Service Provider's best estimate of the amount of energy consumed by the new feature in that particular unit. All new features, associated initial allowances, and justifications for such allowance, will be submitted to the Data Aggregator together with other required testing data.

C.3.4 The Data Aggregator shall inform the Steering Committee of the Service Provider created allowance for the new feature, except as it affects confidentiality and competitiveness.

C.3.5 If the new feature is confidential and the Service Provider seeks an allowance, the Service Provider shall confidentially report the initial allowance, the basis for the allowance, and a written justification for its confidentiality to the Data Aggregator. The new feature may remain

confidential until the feature is marketed or otherwise made public. The Service Provider shall inform the Data Aggregator within thirty days of marketing or otherwise making public a previously confidential new feature. In no case may a new feature remain confidential for purposes of this Agreement, for longer than eighteen months from initial deployment. Once a new feature is reported as public information or the eighteen-month period has elapsed, the Data Aggregator shall inform the Steering Committee of the Service Provider created allowance for the new feature. Annual reports should include the total energy use of SNE that include confidential new features, but need not identify the new feature.

C.3.6 When the information is reported to the Steering Committee, the Steering Committee shall propose appropriate allowances and effective dates when the allowances would go into effect under the processes of CEEVA SNE. Initial allowances set by the Steering Committee will reflect the Steering Committee's best estimates of the energy consumption required for systems incorporating the new feature to meet the CEEVA SNE levels. Initial allowances shall be set within six months of submission, and become effective at such time as is prescribed by the Steering Committee.

C.3.7 If a Service Provider includes in its report to the Data Aggregator a SNE model that it has Received but has not yet deployed that includes a new feature with no allowance, and the presence of the feature causes the SNE to exceed the applicable allowances, the Service Provider may report a provisional Service Provider created allowance until an initial allowance is submitted after deployment.

C.3.8 Allowance setting would be designed to not prejudice a variety of implementations. If a new feature is specific to one particular sub-sector of the Internet service market sector and its energy consumption when applied to other sectors is undetermined, it may be adopted as applicable only to a particular sector. The process for adopting a level for that feature will apply to other sectors when one of its Service Provider Members submits an allowance for that feature to the Data Aggregator.

C.3.9 Allowances established by the Steering Committee for a new feature would be publicly reported.

SIGNATURES

The undersigned Signatories agree to the Voluntary Agreement.

Bell Canada

Signature: /s/ Steven Cummings
Name: Steven Cummings
Title: Director, Product Management
Date: December 16, 2019

COGECO Connexion Inc.

Signature: /s/ Michel Blais
Name: Michel Blais
Title: Vice President, Network, Operations and Technology Delivery
Date: December 13, 2019

Rogers Communications Canada Inc.

Signature: /s/ James Marshall
Name: James Marshall
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Signature: /s/ Cynthia Rathwell
Name: Cynthia Rathwell
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Signature: /s/ Peter Johnson
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Title: EVP & Chief Legal and Regulatory Officer
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