

# 2019 Annual Report

## Canadian Energy Efficiency Voluntary Agreement for Set-Top Boxes

**D+R**  
International

Prepared on behalf of the  
Steering Committee by:  
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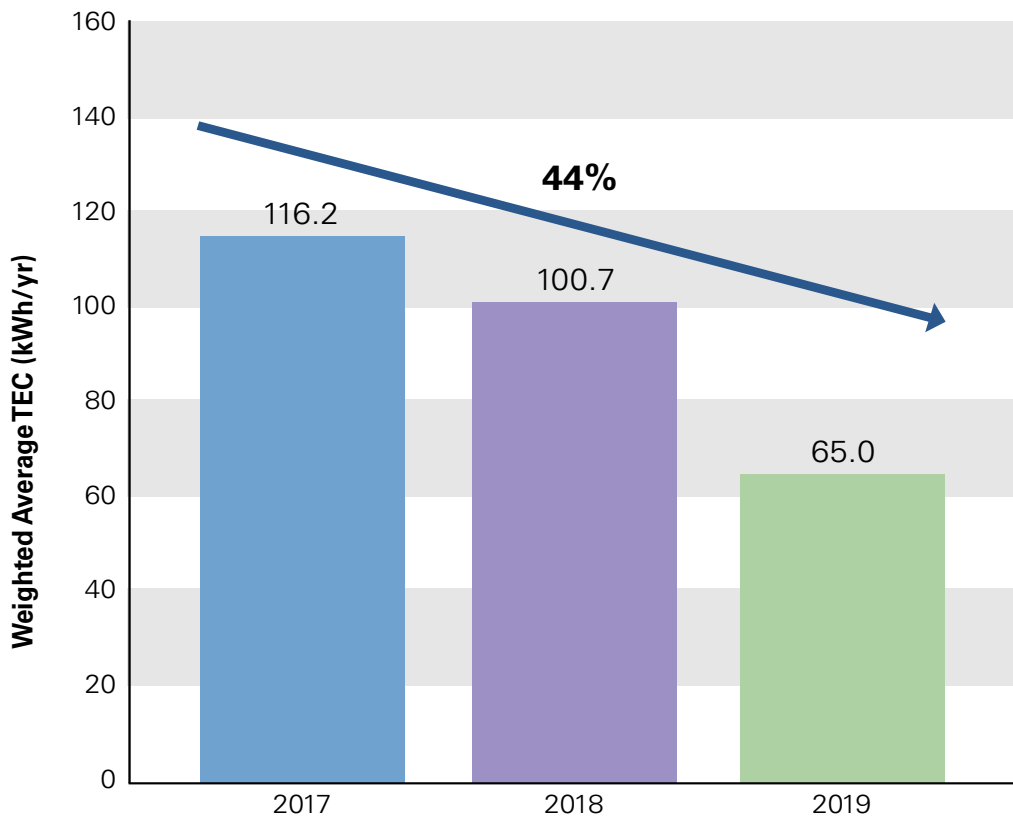
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## EXECUTIVE SUMMARY

In 2017, as a result of discussions encouraged by Natural Resources Canada (NRCan), five of the largest Canadian Pay TV service providers and three leading set-top box manufacturers signed the Canadian Energy Efficiency Voluntary Agreement for Set-Top Boxes (“CEEVA” or “the Agreement”).<sup>1</sup> The primary objective of CEEVA is to improve the energy efficiency of set-top boxes while promoting innovation and introduction of new features without compromising the customer experience.

CEEVA's core commitment is that 90% of new set-top box purchases beginning in 2017 meet efficiency levels prescribed by the Agreement. 98% of all new set-top boxes met these efficiency levels in 2019. In only three years since the Agreement's commitments initiated, the average weighted energy consumption for new set-top boxes has declined by 44%. These conclusions are based on 2019 procurement data and the results of independent testing and auditing described in this report.

**Figure 1: Weighted Average Energy Consumption of Received Set-Top Boxes**



In addition to meeting the efficiency levels set forth in CEEVA, the signatories provide public access to information about the energy consumption characteristics of reported devices. The Data Aggregator, D+R International (D+R), oversees these commitments while continuing to monitor the effectiveness of CEEVA year over year.

In late 2019, the service provider signatories of CEEVA, two equipment manufacturers, NRCan, provincial governments, and leading utilities collaborated to launch a second CEEVA program for small network equipment (SNE) such as modems and routers used for residential Internet service in Canada.<sup>2</sup> The service providers have each committed that 90% of new SNE will meet rigorous efficiency levels beginning January 1, 2021. A report will be prepared next year to measure early progress during 2020 toward fulfillment of the commitments that begin in 2021.

1 - Canadian Pay TV Set-Top Box Energy Efficiency Voluntary Agreement available at <https://www.energyefficiency-va.ca/wp-content/uploads/2020/05/CEEVA-STB-as-Amended-Jan-2020.pdf>.

2 - Canadian Energy Efficiency Voluntary Agreement for Small Network Equipment, available at [energyefficiency-va.ca/wp-content/uploads/2019/12/CEEVA-SNE-Final-12-17-19.pdf](https://www.energyefficiency-va.ca/wp-content/uploads/2019/12/CEEVA-SNE-Final-12-17-19.pdf).

## OVERVIEW OF CEEVA

Canadian Pay TV providers deliver television service to approximately 10.6 million households using a variety of specialized devices referred to as set-top boxes.<sup>3</sup> These devices allow homes to receive encrypted television programming and related services from providers. They also support a variety of services such as program guides, Personal Video Recorders (PVRs), and multi-room viewing, all of which help to deliver reliable viewing and enhance the customer experience. Set-top boxes vary among service providers and include both hardware components and software programming which are updated frequently to deliver the newest services to customers.

All set-top boxes require power to operate. To help improve the energy efficiency of these devices, five of the largest Pay TV service providers, manufacturers of set-top boxes, and other supporting organizations participate in CEEVA. CEEVA generally reflects the approach taken in the U.S. Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Set-Top Boxes<sup>4</sup> coupled with provisions specific to Canada, including terms for the active participation of NRCan.

This report classifies the set-top boxes received by the signatories in 2019 into two categories:

- **Personal Video Recorder:** Set-top boxes with features that enable recording and playback of video content from a local hard disk drive or other local storage.
- **Non-PVR:** Set-top boxes (including Thin Clients) that do not include a local hard disk drive or other local storage for recording and playback of video content.<sup>5</sup>

## CEEVA Objectives

The overall objective of CEEVA is to encourage deployment of energy-efficient set-top boxes while allowing for innovation and advances in rapidly changing technologies and supporting the customer experience. CEEVA aims to improve the health of Canada's natural environment and reduce its carbon footprint in a manner that neither stifles innovation nor disrupts the provision of high-quality services by Canada's Pay TV service providers to meet the demand from Canadian consumers.

## Signatories and Steering Committee

The current signatories and participants in CEEVA are listed below. Each signatory and non-signatory member listed has representation on the Steering Committee.

### Service Provider Signatories

- Bell Canada
- Cogeco
- Rogers Communications
- Shaw Communications
- Videotron

### Manufacturer Signatories

- CommScope (formerly ARRIS)
- DISH Technologies
- Technicolor

3 - Total Canadian subscriber count was calculated by taking the 10.8 million subscribers reported at the end of 2018 from Canadian Radio-television and Telecommunications Commission, "2019 Communication Monitoring Report" available at <https://crtc.gc.ca/pubs/cm2019-en.pdf> (pg. 207), and applying a 1.2% reduction factor, which the CRTC report indicated is the average annual subscriber decline over the prior five years.

4 - Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Set-Top Boxes available at <https://www.energy-efficiency.us>.

5 - One signatory purchased another type of set-top box as defined in CEEVA, a Thin Client, which is described as a set-top box that can receive and decode video content solely over a Home Network Interface from another set-top box and does not include a service provider network interface. To maintain the confidentiality of information provided by signatories and prevent the ability to deduce a company's procurement information, the Thin Client model was included in the Non-PVR category.

## Non-Signatory Members of the Steering Committee

- Natural Resources Canada (NRCan)
- CableLabs
- Consumer Technology Association (CTA)

The Steering Committee is established as the coordinating and governing body of CEEVA. Its purpose includes ensuring that the following goals of CEEVA are met:

- Guaranteeing a made-in-Canada agreement and energy-efficiency objectives that take into account the North American marketplace for set-top boxes;
- Creating a simplified, transparent, and accountable process for evaluating and reporting energy consumption and compliance with energy-efficiency standards;
- Supporting a consensus approach to decision making, with the need for votes to be used in very limited circumstances; and,
- Promoting innovation and avoiding disruption of the Canadian market and Canadian consumers.

Additionally, the Steering Committee selects the Data Aggregator responsible for compiling and reporting data from each signatory and publishing the annual reports. D+R was first appointed as the Data Aggregator in 2017 and has continued in this role in 2019.

## Service Provider Commitments

The service providers' primary commitment under CEEVA is that 90% of the new set-top boxes that each receives each year will meet CEEVA's energy-efficiency levels. The year 2019 marks the second year in which the Tier 2 efficiency levels are in effect. Service providers have also committed to provide information to consumers about the general energy consumption characteristics of set-top boxes that they receive and to monitor and ensure the ongoing effectiveness of CEEVA by reviewing its terms annually.

## Data Aggregator Role

The Data Aggregator is a third-party organization selected by the Steering Committee. Pursuant to CEEVA, the Data Aggregator must aggregate and analyze confidential procurement data submitted by the signatories to determine compliance with CEEVA commitments. Additionally, this role includes verifying the test results of each set-top box reported by service providers. If any of the commitments are not met, the Data Aggregator initiates a remedial process following the procedures set forth in CEEVA.

In addition to aggregating and analyzing the annual data submissions from each signatory, the Data Aggregator is also tasked with auditing one randomly selected service provider's procurement figures each year. The results of the 2019 audit are summarized in Appendix C.

## Market Coverage

In CEEVA, the signatories established an objective to cover at least 85% of the residential Canadian Pay TV market. The signatories met this goal in prior years but fell short in 2019 by serving about 8.7 million subscribers, accounting for approximately 82% of the total residential Pay TV market.<sup>6</sup> The largest non-signatory, TELUS, serves a significant portion of the market not covered by CEEVA.<sup>7</sup>

6 - See *supra* n.4.

7 - Canadian Radio-television and Telecommunications Commission, "2019 Communication Monitoring Report" available at <https://crtc.gc.ca/pubs/cm2019-en.pdf>.

## Equipment Covered

CEEVA covers all new set-top boxes received by service provider signatories after January 1, 2017. New set-top boxes do not include any units received for the first time before that date, or any units that have been refurbished.

## Set-Top Box Testing

To demonstrate that the set-top boxes purchased by service provider signatories in 2019 met the Tier 2 efficiency levels, CEEVA required all set-top boxes to be tested running the service provider's software as it is normally installed for the end user. Testing must be conducted by a Steering Committee-approved organization with ISO 17065 or 17025 accreditation and/or recognized by the Standards Council of Canada for set-top box testing.

For the 2019 reporting year, all five service provider signatories submitted their accredited third-party testing results to the Data Aggregator. The Data Aggregator has verified the test results and energy consumption values against the reported values and Tier 2 requirements. All models tested at or below the energy consumption values reported by signatories. The evaluation of the test results against Tier 2 efficiency levels concluded that all but one model met Tier 2.

## New Feature Allowances

To keep pace with fast-changing technologies and consumer demands, CEEVA includes a process that enables parties to develop and deploy set-top boxes with new energy-consuming features without seeking advance approval of a new energy allowance for that feature. Without this flexibility, innovation and competition could be stifled as consumers could face delays in obtaining new features and services while providers would be deprived of first-mover advantages in bringing new capabilities to the market.

If a service provider deploys a set-top box which includes a new feature without an allowance and the applicable Tier levels are exceeded, it may set and report an appropriate initial allowance for the power consumption of said feature when reporting the device. The Steering Committee will review the best available evidence to set a new allowance for that feature within six months. In 2019, there were no new feature allowances reported by signatories.

## REPORT ON PROCUREMENT COMMITMENT

CEEVA's primary commitment is to procure energy-efficient set-top boxes, including that 90% of all new set-top boxes received in 2019 would meet the Tier 2 efficiency levels. In 2019, 98% of set-top boxes received by service provider signatories met Tier 2 levels, up from 97% in 2018 and 86% in 2017 in the year before Tier 2 levels were in effect. The percentage of PVRs meeting the Tier 2 levels trailed, but because the number of PVRs declined by more than 50% in 2019 while non-PVR purchases increased by 19% during the same period, the signatories' overall percentage of purchases meeting the levels increased.

Table 1 shows the number of set-top boxes received by service providers and the percentage that met the Tier 2 efficiency levels.

**Table 1: Received Set-Top Box Units by Category 2017-2019**

Category	2017		2018		2019	
	Received Units	Percentage of Units Meeting Tier 2 Levels EARLY	Received Units	Percentage of Units Meeting Tier 2 Levels	Received Units	Percentage of Units Meeting Tier 2 Levels
<b>PVR</b>	876,729	91%	894,532	89%	442,258	88%
<b>Non-PVR</b>	1,137,735	77%	1,133,194	100%	1,349,190	100%
<b>Total</b>	<b>2,014,464</b>	<b>86%</b>	<b>2,027,726</b>	<b>97%</b>	<b>1,791,448</b>	<b>98%</b>

Note that the commitment to meet Tier 2 didn't start until 2018, but early compliance was measured in 2017. 100% of all models were Tier 1 compliant in 2017.



## ENERGY EFFICIENCY TRENDS AND BASELINE

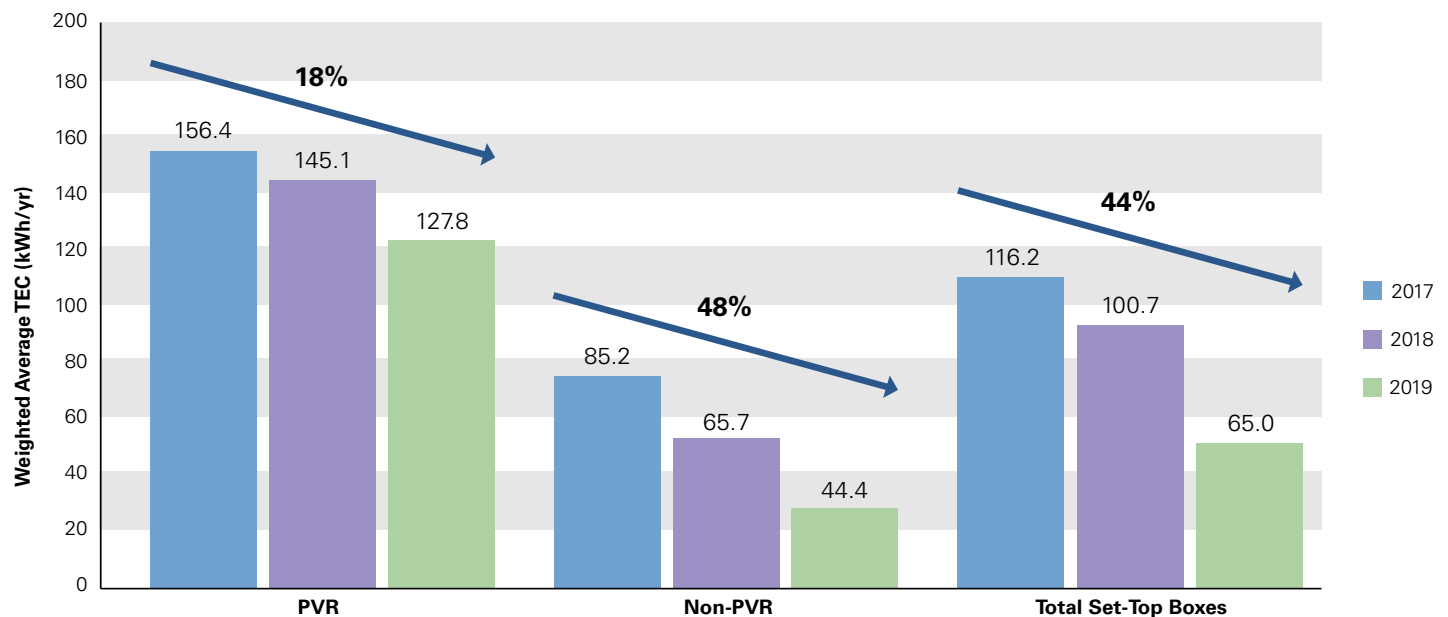
The weighted average Typical Energy Consumption<sup>8</sup> (TEC) for new set-top boxes received by the service provider signatories in 2019 was 127.8 kWh/year for PVRs and 44.4 kWh/year for non-PVRs. These figures represent 12% and 32% year-over-year declines from 2018 and 18% and 48% declines compared to 2017, the baseline established by the Agreement for measuring energy-efficiency trends. These declines, illustrated in Table 2 and Figure 2 below, are particularly noteworthy given customers' continued demand for increased functionality in these devices.

**Table 2: Weighted Average TEC, by Set-Top Box Category 2017-2019**

Category	Average Weighted TEC (kWh/yr)			Percent Change		
	2017	2018	2019	2017-2018	2018-2019	2017-2019
<b>PVR</b>	156.4	145.1	127.8	-7%	-12%	-18%
<b>Non-PVR</b>	85.2	65.7	44.4	-23%	-32%	-48%
<b>Total Set-Top Boxes</b>	116.2	100.7	65.0	-13%	-35%	-44%

Thin clients procured in 2019 are included in the non-PVR category. See *supra* n. 5.

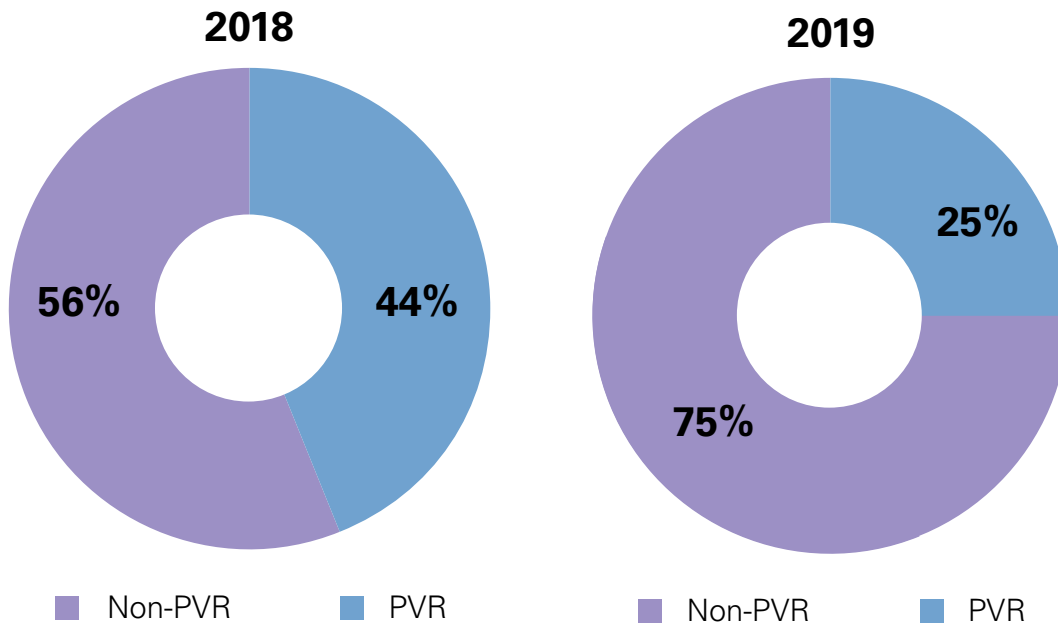
**Figure 2: Weighted Average TEC, by Set-Top Box Category 2017-2019**



Even more significant than the 18% and 48% reductions in the two major categories is a **44% reduction overall** in the weighted TEC of new 2019 devices. These savings are driven in part by the 51% decline in 2019 procurement of PVRs, which are generally more energy consumptive than non-PVR devices. Service providers have deployed whole-home architectures that enable customers to view recorded content throughout their home using a single PVR, and some have deployed cloud-based services that enable customers to record and view recorded content without any PVR at all. The impact of the growth of these innovative offerings is illustrated in Figure 3 below by the increase in non-PVRs and decrease in PVRs received in 2019, resulting in a mix of 75% non-PVRs and 25% PVRs after a nearly even distribution in the two prior years.

<sup>8</sup> -TEC is the product of a method for evaluating energy consumption through a calculation of the expected typical energy consumption for a specific model of set-top box during a one-year period, expressed in units of kWh/year.

**Figure 3: Percentage of Set-Top Boxes Received, by Category for 2018 and 2019**



In sum, the conjunction of the improved energy efficiency of models and the shift to a greater proportion of lower-powered models have dramatically reduced the overall energy usage of new devices.

## ENERGY EFFICIENCY INFORMATION FOR CONSUMERS

All service provider signatories committed to provide their subscribers and prospective customers with reasonable access to energy-efficiency information about reported set-top boxes. This information allows consumers to learn about their options for energy-efficient devices. Links to this information are shown in Appendix B and posted online at <http://www.energyefficiency-va.ca>.

## A SECOND CEEVA PROGRAM FOR INTERNET EQUIPMENT

In late 2019, the service provider signatories of CEEVA, two equipment manufacturers, NRCan, provincial governments, two industry organizations, and leading utilities collaborated to launch a second CEEVA program for small network equipment (SNE), such as modems and routers used for residential Internet service in Canada.<sup>9</sup> CEEVA SNE aims to achieve the deployment of efficient SNE without restricting the rapid pace of technological innovation characteristic of Internet services. CEEVA SNE aligns with the technical standards and test methods of a similar SNE voluntary agreement adopted in the United States, but—as with the CEEVA STB—contains appropriate provisions unique to the Canadian context, including terms for the participation of NRCan. The service providers have each committed that 90% of their new modems, routers, and other program equipment will meet rigorous efficiency levels beginning January 1, 2021. While this commitment does not formally apply to SNE received in 2020, an annual report will be prepared next year to measure early progress during calendar year 2020 toward fulfillment of the commitments that begin in 2021.

## CONCLUSION

CEEVA achieved its most significant success to date in 2019, with a 35% year-over-year reduction in weighted energy use, resulting in a 44% reduction since 2017. These improvements in energy efficiency are widespread, with 98% of new set-top boxes meeting Tier 2 energy levels in 2019. As noted above, the signatories seek to build upon this success and promote Canada's shared energy-efficiency and climate change objectives through implementation of a second CEEVA program for residential Internet equipment in 2020.

9 - See *supra* n. 2.

## APPENDIX A: SET-TOP BOXES RECEIVED DURING REPORTING PERIOD

Table 3 lists the reported TEC for new Tier 2 set-top box models received by CEEVA signatories in 2019. These values are reported TEC, rather than calculated TEC. In CEEVA, service providers have the option to publish a “reported TEC” that rounds up calculated TEC values for reporting purposes to account for production variances. Modal power and reported TEC figures in this Appendix are rounded up to the next one-tenth digit (e.g., 99.11 kWh/year would be rounded up to 99.2 kWh/year). Please note that the same model could have variances in TEC for several reasons, including differences in reported versus calculated TEC, enabling of different product features, and/or deployment of the device by service providers running different software. CEEVA calculates maximum allowable TEC for a product using the base-type allowances outlined in Table 4 and the feature allowances outlined in Table 5. Table 5 also includes descriptions of the features abbreviated in Table 3 in the “Claimed Allowances” column. CEEVA sets forth rules for how to claim feature allowances, so the column for claimed allowances lists only the features used when calculating the maximum allowable TEC for the specific product.

**Table 3: Tier 2 Set-Top Boxes Received by Signatories in 2019**

Set-Top Boxes Received by CEEVA Signatories in 2019					Claimed Allowances	Modal Characteristics (W)		TEC (kWh/yr)
Service Provider	Base Type	Primary Function	Brand	Model No.		On	Sleep	
<b>Bell</b>	IP	Non-PVR	ARRIS	2502	Adv Video, HD, HNI, MS, MS-A, W-HNI, MIMO-5(4)	11.9	11.6	103.0
<b>Bell</b>	IP	PVR	ARRIS	5662	Adv Video, DVR, HD, HNI, MS, W-HNI, MIMO-5(4)	13.5	12.2	113.4
<b>Bell</b>	Satellite	Non-PVR	DISH Technologies	6400	Adv Video, APD, HD	7.4	7.0	62.3
<b>Bell</b>	Thin Client	Thin Client	DISH Technologies	7500	Adv Video, HD, HNI, HEVP	5.2	5.0	44.9
<b>Bell</b>	Satellite	PVR	DISH Technologies	9400	Adv Video, APD, DVR, HD, MS	14.0	13.8	121.4
<b>Bell</b>	Satellite	PVR	DISH Technologies	9500	Adv Video(2), APD, DVR, HD, HNI, M-HNI, S-DVR, MS, HEVP	14.2	13.8	122.6
<b>Cogeco</b>	Cable	Non-PVR	ARRIS	DCX525/ 0310/001 Phase 1	Adv Video, HD, HNI	7.6	7.3	66.0
<b>Cogeco</b>	IP	Non-PVR	ARRIS	DCX860/ R4CC/9322	Adv Video, HD, HNI, M-HNI	5.9	5.1	50.0
<b>Cogeco</b>	Cable	PVR	ARRIS	DCX900/ P68C/0322/ 1000 Phase 1	Adv Video, CableCARD, DVR, HD, M-HNI, Multi-room, MS, MS-A, HEVP, UHD-4	17.5	14.6	143.0
<b>Cogeco</b>	IP	Non-PVR	Technicolor	UIW4020COG (Sapphire)	Adv Video, HD, HNI, W-HNI, MIMO-2.4(3), MIMO-5(3), HEVP, UHD-4	5.0	2.9	40.0
<b>Rogers</b>	IP	Non-PVR	ARRIS	AX061AEI	Adv Video, APD, HD, HNI, W-HNI, MIMO-2.4(2), MIMO-5(2), HEVP, UHD-4	5.6	3.9	42.0
<b>Rogers</b>	IP	Non-PVR	Technicolor	TX061AEI	Adv Video, APD, HD, HNI, W-HNI, MIMO-2.4(2), MIMO-5(2), HEVP, UHD-4	5.2	3.3	42.0
<b>Shaw</b>	Satellite	Non-PVR	ARRIS	DSR800	Adv Video, HD, MIMO-5(2)	7.0	6.3	65.0
<b>Shaw</b>	Satellite	PVR	ARRIS	DSR830	Adv Video, DVR, HD, MS, MIMO-5(2)	12.7	11.8	110.0

Set-Top Boxes Received by CEEVA Signatories in 2019					Claimed Allowances	Modal Characteristics (W)		TEC (kWh/yr)
Service Provider	Base Type	Primary Function	Brand	Model No.		On	Sleep	
<b>Shaw</b>	Cable	PVR	ARRIS	XG1v4-A AX014ANM	Adv Video, DVR, D3, HD, Multi-room, MS, MS-A, HEVP	15.9	14.0	140.0
<b>Shaw</b>	IP	Non-PVR	ARRIS	Xi6 AX061AEI	Adv Video, HD, HNI, W-HNI, MIMO-2.4(2), MIMO-5(2), HEVP	4.0	3.0	40.0
<b>Shaw</b>	IP	Non-PVR	Technicolor	Xi6 TX061AEI	Adv Video, HD, HNI, W-HNI, MIMO-2.4(2), MIMO-5(2), HEVP	3.9	2.9	40.0
<b>Shaw</b>	IP	Non-PVR	Technicolor	XiD CXD01ANI	Adv Video, HD, HNI, M-HNI	5.1	3.8	44.0
<b>Shaw</b>	IP	Non-PVR	Pace	XiD PXD01ANI	Adv Video, HD, HNI, M-HNI	5.6	4.3	47.0
<b>Videotron</b>	IP	Non-PVR	ARRIS	AX061AEI	Adv Video, HD, HNI, W-HNI, MIMO-2.4(2), MIMO-5(2), HEVP, UHD-4	5.1	3.2	40.0
<b>Videotron</b>	Cable	PVR	Technicolor	CAV10455HD	Adv Video, APD, DVR, D3, HD, HNI, M-HNI, S-DVR, MS, MS-A, HEVP, UHD-4	23.5	17.1	174.0
<b>Videotron</b>	IP	Non-PVR	Technicolor	TX061AEI	Adv Video, HD, HNI, W-HNI, MIMO-2.4(2), MIMO-5(2), HEVP, UHD-4	5.5	3.4	43.0

**Table 4: Set-Top Box Base Allowances**

Table 4 lists the base type and allowances (kWh/year) for set-top boxes received in 2019 shown in Table 3.

Base Type	Tier 2 Allowance (kWh/yr)
<b>Cable</b>	45
<b>Internet Protocol (IP)</b>	45
<b>Satellite</b>	50

## Table 5: Set-Top Box Feature Allowances

Table 5 lists the features, feature descriptions, and allowances (kWh/year) for set-top boxes received in 2019 shown in Table 3.

Feature	Description	Tier 2 Allowance (kWh/yr)
<b>Adv Video</b>	Advanced Video Processing	8
<b>APD</b>	Automatic Power Down (4hrs)	-
<b>CableCARD</b>	CableCARD	15
<b>D3</b>	DOCSIS 3.0	50
<b>DVR</b>	Digital Video Recorder (DVR)	45
<b>HD</b>	High Definition (HD)	12
<b>HEVP</b>	High Efficiency Video Processing	10
<b>HNI</b>	Home Network Interface	10
<b>M-HNI</b>	MoCA HNI	12
<b>MIMO-2.4</b>	MIMO WiFi HNI 2.4	2
<b>MIMO-5</b>	MIMO WiFi HNI 5	4
<b>MS</b>	Multi-stream	8
<b>MS-A</b>	Multi-stream Additional	8
<b>Multi-room</b>	Multi-room	40
<b>S-DVR</b>	Shared DVR	20
<b>UHD-4</b>	Ultra High Definition - 4K	5
<b>W-HNI</b>	WiFi HNI	15

## APPENDIX B: CONSUMER ENERGY EFFICIENCY INFORMATION

The service provider signatories committed to providing reasonable, public access to energy-efficiency information for reported set-top box devices. The URLs for such information are posted below. Information for all companies is also available at <http://www.energyefficiency-va.ca>.

**Table 6: Consumer Energy Efficiency Information**

<b>Service Provider</b>	<b>Consumer Information Location</b>
<b>Bell Canada</b>	<a href="http://www.energyefficiency-va.ca/wp-content/uploads/2019/08/Bell-En-2019.pdf">http://www.energyefficiency-va.ca/wp-content/uploads/2019/08/Bell-En-2019.pdf</a>
<b>Cogeco</b>	<a href="https://energyca.cablelabs.com/cogeco/?lang=en">https://energyca.cablelabs.com/cogeco/?lang=en</a>
<b>Rogers Communications</b>	<a href="https://energyca.cablelabs.com/rogers/?lang=en">https://energyca.cablelabs.com/rogers/?lang=en</a>
<b>Shaw Communications (Cable)</b>	<a href="https://community.shaw.ca/docs/DOC-11219">https://community.shaw.ca/docs/DOC-11219</a>
<b>Shaw Communications (Satellite)</b>	<a href="http://www.shawdirect.ca/english/support/article?articleid=8389&amp;languageid=1033">http://www.shawdirect.ca/english/support/article?articleid=8389&amp;languageid=1033</a>
<b>Videotron</b>	<a href="https://energyca.cablelabs.com/videotron/?lang=en">https://energyca.cablelabs.com/videotron/?lang=en</a>



CEEVA requires service provider signatories to submit annual procurement data to the Data Aggregator, D+R, which collects and analyzes the data, and publishes the results in an annual report. To protect confidential information, all data in the annual report are aggregated. In order to verify the accuracy of the submitted information from each service provider, CEEVA also requires an annual audit of one service provider's procurement figures.

Accordingly, the Data Aggregator conducted an audit of the 2019 procurement data of one randomly selected service provider, which was used to develop the findings published in the 2019 Annual Report. The service provider was selected at random using the "random" function in Excel, and was prompted to provide the Data Aggregator a list of all new set-top boxes received in 2019, as well as shipment details and specification sheets for each model procured.

D+R, as the Data Aggregator, has determined that the data submitted by the service provider for the audit are consistent with the annual report submitted by that party.

August 17, 2020





**D+R**  
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