

REGULATORY IMPACT STUDY FOR SET-TOP BOXES

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[HTTP://WWW.EMPR.GOV.BC.CA/EEC/STRATEGY/EEA/PAGES/DEFAULT.ASPX](http://www.empr.gov.bc.ca/EEC/STRATEGY/EEA/PAGES/DEFAULT.ASPX)

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COMMENTS MUST BE RECEIVED BY OCTOBER 30, 2012

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SCOPE AND REQUIREMENTS

TYPE OF DEVICE	<p>Set-top box (STB) means a device for the reception of television and related services from terrestrial, cable, satellite, or broadband networks, which are then decoded and delivered to a consumer display and/or recording device.</p> <p>Note:</p> <ul style="list-style-type: none"> -The proposed regulation would apply to the STB itself, not the television service provider, nor to how the provider operates the STB on the network. - The proposed regulation would only apply to “new” STBs, i.e., does not apply to STBs manufactured prior to the proposed effective date (see Effective Date below). - The proposed regulation would not apply to over-the-top boxes (devices that stream over-the-top content through the internet).
TEST STANDARD	<p>For the measurement of energy consumption use either:</p> <ul style="list-style-type: none"> • Canadian Standards Association CSA – 380-11 Test procedure for the measurement of energy consumption of set-top boxes (STBs) <p>Or</p> <ul style="list-style-type: none"> • ENERGY STAR® Program Requirements Product Specification for Set-top Boxes – Test Method (Rev. Aug-2011).
PROPOSED ENERGY PERFORMANCE STANDARD	<p>See below – same as the technical standard for ENERGY STAR® Eligibility Criteria version 3.0:</p> <p>http://www.energystar.gov/ia/partners/product_specs/program_reqs/STB_Version_3_Program_Requirements_Service_Providers.pdf?59f9-8d0e</p> <p>Note: The proposed regulation would not reference ENERGY STAR® Version 3.0 but instead contain the same technical standard.</p>

The Total Energy Consumption (TEC) is to be determined as per the technical standard contained in ENERGY STAR® Eligibility Criteria for Set-top Boxes Version 3.0. The combined TEC of a set-top box (STB) must be less than or equal to the maximum TEC Requirement. The proposed regulation is intended to apply only to the hardware of a set-top box at the time of sale, lease or installation, and not with respect to the operation of the device on the television network.

1 Typical Energy Consumption (TEC) Requirements

1.1 Combined TEC ($TEC_{COMBINED}$), as determined in Section 1.2 shall be less than or equal to the Maximum TEC Requirement (TEC_{MAX}), as determined in Section 1.3.

1.2 Combined TEC shall be calculated per Equation 1.

Equation 1: Calculation of Combined TEC ($TEC_{COMBINED}$)

$$TEC_{COMBINED} = TEC_{PRIMARY} + TEC_{PLAY/REC}$$

Where:

TEC_{PRIMARY} is the Primary TEC calculated per Equation 2; and
 TEC_{PLAY/REC} is the Playback/Record TEC calculated per Equation 3.

- i. Primary TEC (TEC_{PRIMARY}) shall be calculated per Equation 2.

Equation 2: Calculation of Primary TEC (TEC_{PRIMARY})

$$TEC_{PRIMARY} = 0.365 \cdot ((P_{TV} \cdot T_{TV}) + (P_{SLEEP} \cdot T_{SLEEP}) + (P_{APD} \cdot T_{APD}) + (P_{DEEP_SLEEP} \cdot T_{DEEP_SLEEP}))$$

Where:

T_{TV} is the time coefficient for On Mode, as determined per Table 1;
 P_{TV} is the measured power in On Mode (W);
 T_{SLEEP} is the time coefficient for Sleep Mode, as determined per Table 1;
 P_{SLEEP} is the measured power in Sleep Mode (W);
 T_{APD} is the time coefficient for Auto Power Down (APD), as determined per Table 1;
 P_{APD} is the measured power after APD (W);
 T_{DEEP_SLEEP} is the time coefficient for Deep Sleep State, as determined per Table 1; and
 P_{DEEP_SLEEP} is the measured power in Deep Sleep State (W).

Table 1: Primary TEC Equation Time Coefficients

APD to Sleep Enabled by Default	APD to Deep Sleep Enabled by Default	TTV	TSLEEP	TAPD	TDEEP_SLEEP
NO	NO	14	10	0	0
NO	YES	14	6	0	4
YES	NO	7	10	7	0
YES	YES	7	6	7	4

- ii. For products with DVR, Removable Media Playback, or Removable Media Playback / Record capabilities, Playback/Record TEC (TEC_{PLAY/REC}) shall be calculated per Equation 3, with weightings for Playback and Record mode as specified in Table 2. Only one playback/record function may be selected per product. For all other products, Playback/Record TEC (TEC_{PLAY/REC}) shall be equal to zero.

Equation 3: Calculation of Playback/Record TEC (TEC_{PLAY/REC}) For Products with DVR or Removable Media Player

$$TEC_{PLAY/REC} = 0.365 \cdot [((P_{PLAYBACK} - P_{TV}) \cdot H_{PLAYBACK}) + ((P_{RECORD} - P_{TV}) \cdot H_{RECORD})]$$

Where:

P_{PLAYBACK} is the measured power during recorded video playback (W);
 P_{RECORD} is the measured power during video recording (W); and
 H_{PLAYBACK} and H_{RECORD} are weightings for time spent in playback and record, as specified in Table 3.

Table 2: Weightings for Playback/Record

TEC Calculation Function	DVR	Removable Media Playback	Removable Media Playback w/ Record
Playback Duration (H _{PLAYBACK})	2.0 hrs/day	2.0 hrs/day	2.0 hrs/day
Record Duration (H _{RECORD})	3.0 hrs/day	0	1.0 hrs/day

1.3 The Maximum TEC Requirement (TECMAX) shall be calculated as per Equation 4.

Equation 4: Calculation of Maximum TEC Requirement (TECMAX)

$$TECMAX = TEC_{BASE_MAX} + \sum_{i=1}^n TEC_{ADDL_i}$$

Where:

TEC_{BASE_MAX} is the Base Type TEC Allowance (kWh); and
 TEC_{ADDL_i} is each applicable Additional Functionality TEC Allowance (kWh).

- i. The Base Type TEC Allowance (TEC_{BASE_MAX}) shall be as specified in Table 3, subject to the following requirements:
 - a) If the STB meets the definition of Cable DTA base type, the Base Functionality shall be CABLE DTA.
 - b) If the STB meets the definition of Cable STB base type, and/or the STB is capable of receiving cable service after installation of a CableCARD or other type of conditional access system, the Base Functionality shall be CABLE.
 - c) If the STB Base Functionality is not CABLE, and the STB meets the base type definition of Satellite STB, the Base Functionality shall be SATELLITE.
 - d) If the STB Base Functionality is not CABLE, SATELLITE, or CABLE DTA, and the STB meets the base type definition of IP STB, the Base Functionality shall be IP.
 - e) If the STB Base Functionality is not CABLE, SATELLITE, CABLE DTA, or IP, and the STB meets the base type definition of Terrestrial STB, the Base Functionality shall be TERRESTRIAL.
 - f) If the STB Base Functionality is not CABLE, SATELLITE, CABLE DTA, IP, or TERRESTRIAL, and the STB otherwise meets the base type definition of Thin-Client/Remote, the Base Functionality shall be THIN-CLIENT / REMOTE.

- ii. Additional Functionality TEC Allowances (TEC_{ADDL_i}) shall be as specified in Table 4, subject to the following requirements:
 - a) The HIGH DEFINITION allowance is the only additional functionality allowance that may be applied to STBs with CABLE DTA base functionality.
 - b) The ADVANCED VIDEO PROCESSING, HOME NETWORK INTERFACE, HIGH DEFINITION, REMOVABLE MEDIA PLAYER, and REMOVABLE MEDIA PLAYER/RECORDER allowances are the only additional functionality allowances that may be applied to STBs with THIN CLIENT / REMOTE base functionality.
 - c) The ADVANCED VIDEO PROCESSING allowance may only be applied once per STB, regardless of the number of advanced video processing options offered by the device.
 - d) The CableCARD allowance may only be applied once per STB, regardless of the number of CableCARDS installed in the STB.

- e) The DOCSIS allowance may only be applied to STBs that are installed in a Service Provider network with DOCSIS capability.
- f) The HIGH DEFINITION (HD) allowance shall not be applied to STBs with TERRESTRIAL base functionality.
- g) The MULTI-ROOM allowance may only be applied once per STB, regardless of the number of remote outputs served by the device.
- h) The MULTI-ROOM allowance may not be combined with the HOME NETWORK INTERFACE allowance on a single device.
- i) The MULTI-STREAM allowances may only be applied once per STB, regardless of the number of simultaneous streams supported by the device.

Table 3: Base Type TEC Allowance

(TEC_{BASE_MAX}) Base Functionality	Version 3.0 Allowance (kWh/year)
Cable	60
Satellite	70
Cable DTA	35
Internet Protocol (IP)	50
Terrestrial	22
Thin-client / Remote	35

Table 4: Additional Functionality TEC Allowance (TEC_{ADDL_i})

Additional Functionality	Version 3.0 Allowance (kWh/year)
Advanced Video Processing	12
CableCARD	15
Digital Video Recorder (DVR)	45
DOCSIS®	20
High Definition (HD)	25
Home Network Interface	10
Multi-room	40
Multi-stream – Cable/Satellite	16
Multi-stream – Terrestrial/IP	8
Removable Media Player	8
Removable Media Player / Recorder	10

2 Products with Multi-room Capability:

2.1 Products with Multi-room capability shall be evaluated per the following requirements:

- i. If the Combined TEC for the product as tested in single-output configuration is less than or equal to the Maximum TEC Requirement minus the Multi-room additional functionality allowance, the product is qualified under BC’s regulation (e.g., single-TV installations or multi-room installations).

- ii. For products that can support a second N/ATSC display output over standard RF cabling without the need for a Thin Client, if the Combined TEC for the product as tested in dual-output configuration is less than or equal to the Maximum TEC Requirement plus one half (50%) of the Thin Client / Remote base functionality allowance, the product is qualified under BC's regulation.
- iii. For products that can support a second display output via a Thin Client, if the Combined TEC for the product as tested in dual-output configuration is less than or equal to the Maximum TEC Requirement, the product is qualified under BC's regulation.

3 Testing

3.1 Representative Models shall be selected for testing per the following requirements:

- i. For qualification of an individual product model, a product configuration equivalent to that which is intended to be marketed is considered the Representative Model;
- ii. For qualification of a product family, any product configuration within a family may be considered the Representative Model.

3.2 A single unit of each Representative Model shall be selected for testing. If test results for any operational mode power measurement are within 5% of the requirements, two additional units of the same Representative Model with an identical configuration shall be tested.

3.3 Products shall be tested for qualification at input 120 voltages/ 60 hertz frequency combination for the BC market.

DEFINITIONS

- A) Product Type (Base Type): The primary means of access to video content for a STB. All base types may be configured as a simple STB that provides a single primary function, or as part of a complex STB that provides a primary function and one or more additional functionalities.
- 1) Cable: A STB whose primary function is to receive television signals from a broadband, hybrid fiber/coaxial, or community cable distribution system with conditional access (CA) and deliver them to a consumer display, thin-client/remote STB, and/or recording device.
 - 2) Satellite: A STB whose primary function is to receive television signals from satellites and deliver them to a consumer display, thin-client/remote STB, and/or recording device.
 - 3) Cable Digital Transport Adapter (DTA): A minimally-configured STB whose primary function is to receive television signals from a broadband, hybrid fiber/coaxial, or community cable distribution system and deliver them to a consumer display and/or recording device.
 - 4) Internet Protocol (IP): A STB whose primary function is to receive television/video signals encapsulated in IP packets and deliver them to a consumer display, thin-client/remote STB, and/or recording device.
 - 5) Terrestrial: A STB whose primary function is to receive television signals over the air (OTA) or via community cable distribution system without conditional access (CA) and deliver them to a consumer display, thin-client/remote STB, and/or recording device.
 - 6) Thin-client / Remote: A STB that (1) is designed to interface between a Multi-room STB and a TV (or other output device), (2) has no ability to directly interface with a Service Provider, and (3) relies solely on a Multi-room STB for content. Any STB that meets the definition of a cable, satellite, IP, or terrestrial STB is not a thin-client/remote STB.

B) Product Features:

- 1) Base Functionality: The primary functionality that defines the criteria applicable to a particular STB. Base Functionality is one of the following: Cable, Satellite, IP, Terrestrial or Thin-Client/Remote.
- 2) Additional Functionality:
 - i) Advanced Video Processing: The capability to encode, decode, and/or transcode audio/video signals in accordance with standards H.264/MPEG4 or SMPTE 421M.
 - ii) CableCARD: The capability to decrypt premium audio/video content and services and provide other network control functions via a plug-in conditional access module that complies with the ANSI/SCTE 28 HOST-POD Interface Standard¹.
 - iii) Digital Video Recorder (DVR): The capability to store video in a digital format to a rewritable disk drive or other non-volatile storage device integrated into a STB. This definition excludes video capture software for personal computers or server-based DVR capabilities.
 - iv) DOCSIS: The capability to distribute data and audio/video content over cable television infrastructure in accordance with the CableLabs Data Over Cable Service Interface Specification².
 - v) High Definition (HD) Resolution: The capability to transmit or display video signals with resolution greater than or equal to 720p.
 - vi) Home Network Interface: The capability to interface with external devices over a high bandwidth network (e.g., IEEE 802.11 (WiFi), MoCA, HPNA). For purposes of this specification, IEEE 802.3 wired Ethernet is not considered a Home Network Interface.
 - vii) Multi-room: The capability to provide independent audio/video content to multiple devices within a single family dwelling. This definition does not include the capability to manage gateway services for multi-subscriber scenarios.
 - viii) Multi-stream: The capability to deliver two or more simultaneous audio/video streams to a consumer display, thin-client/remote STB, or recording device. The simultaneous streams may be delivered via a physically separate input or via the primary input. This definition does not include out-of-band tuners.
 - ix) Removable Media Player: The capability to decode digitized audio/video signals on DVD or Blu-ray Disc optical media.
 - x) Removable Media Player / Recorder: The capability to decode and record digitized audio/video signals on DVD or Blu-ray Disc optical media.

C) Automatic Power Down (APD): The capability of a device to switch itself from On mode to Sleep mode after a predetermined period of time (APD timing) has elapsed. APD timing begins when the following criteria have been met:

- 1) The device has ceased performance of all primary functions; or
- 2) The last user input has been received (e.g., remote control signal, volume adjustment).

¹ <http://www.scte.org/standards/>

² <http://www.cablelabs.com/specifications/>

D) Primary Function:

- 1) Delivery of live or recorded audio/video content to a thin-client/remote STB or local/remote recording device is considered a primary function;
- 2) Delivery of live or recorded audio/video content to a consumer display within 4 hours of last user interaction/input is considered a primary function;
- 3) Continuous device functions (e.g., clocks, status displays, indicator lamps) are NOT considered primary functions.

E) Operational Modes:

- 1) On Mode: Where the product is connected to a mains power source, has been activated and may be providing one or more primary functions. The common terms “active”, “in-use” and “normal operation” also describe this mode.
- 2) Sleep Mode: Where the product is connected to a mains power source, is not providing a primary function, and offers one or more of the following user oriented or protective functions which may persist for an indefinite time:
 - i) To facilitate the activation of other modes (including activation or deactivation of On mode) by remote switch (including remote control), internal sensor, timer;
 - ii) Continuous function: information or status displays including clocks;
 - iii) Continuous function: sensor-based functions.
- 3) Deep Sleep State: A power state within Sleep Mode characterized by reduced power consumption and increased time required to return to full On Mode functionality.

F) Other Definitions:

- 1) Service Provider: A business entity that provides audio/video content to subscribers with whom it has an ongoing contractual relationship. A Service Provider distributes STBs to end users under a lease or rental arrangement.
- 2) Conditional Access: The encryption, decryption, and authorization techniques employed to protect content from unauthorized viewing. CableCARD and Downloadable Conditional Access System (DCAS) are examples of conditional access technology.
- 3) Digital Television Adapter (DTA): A device that receives terrestrial (over the air) digital signals and converts them to an analog output suitable for analog TVs. DTAs do not provide digital signal output. This definition does not include converters for satellite or cable digital signals or devices that perform multiple functions (e.g., DVD players with DTA capability).
- 4) Out-of-band Tuner: A tuner compliant with standards ANSI/SCTE 55-1 2002, ANSI/SCTE 55-2 2002, or similar, that is used to gain access to data channels outside of the primary audio/video source signal. These tuners may facilitate two-way communication to allow a STB to exchange data (e.g., diagnostics) with the Service Provider, and may enable access to Pay-Per-View or other rich-media interactive content.
- 5) Typical Energy Consumption (TEC): A means for evaluating energy efficiency through a calculation of expected energy consumption for a typical user over a one year period, expressed in units of kWh/year.
- 6) Unit Under Test (UUT): The device being tested.

G) **Product Family:** A group of product models that are (1) made by the same manufacturer, (2) subject to the same qualification criteria, and (3) of a common basic design.

Product models within a family differ from each other according to one or more characteristics or features that either (1) have no impact on product performance with regard to qualification criteria, or (2) are specified herein as acceptable variations within a product family.

For Set-top Boxes, acceptable variations within a product family include aesthetic housing changes that do not affect the thermal characteristics of the device (e.g., color, labelling, or other cosmetic modifications).

Proposed Exemptions

None

Proposed Effective Date

Effective January 1, 2014, products manufactured after January 1, 2012 are to be compliant with the proposed regulation.

This follows the effective date of the revised voluntary standard of ENERGY STAR® 4.0 of July 1, 2013. The principle is that regulatory standards be timed to benefit from market transformation gains achieved by earlier versions of voluntary standards and should not duplicate the current version of voluntary standards.

Certification

Compliance with the proposed regulation will be based on testing and verification by Standards Council of Canada accredited Certification Organizations on adherence of manufactured products with the “Proposed Energy Performance Standard” using the proposed "test standard". Compliance established through EPA ENERGY STAR® testing and verification is also acceptable. The Ministry of Energy and Mines will maintain a compliant product database on the internet, and therefore, no unique labelling will be required to demonstrate compliance with the British Columbia standard.

Need for Regulation

In some instances, consumers in British Columbia are not provided with a choice of energy efficient products that are available in the global marketplace.

The proposed regulation supports the target for BC Hydro to meet 66% of electricity demand growth through demand-side measures by 2020, as stated in the *Clean Energy Act*.

Harmonization

To be consistent with North American performance standards regarding product specifications (ENERGY STAR®) and test methods (either CSA 380 or ENERGY STAR®), there will be no requirement for a BC-specific prescribed label to be affixed to the device.

If the California Energy Commission, the US Department of Energy or a Canadian authority proposes minimum energy performance standards for STBs, BC will review the proposed regulations to ensure harmonization.

Transparent Regulation Development

The development of this regulation follows the procedure as outlined below:

1. Identification of a potential standard consistent with other jurisdictions (NRCan and EPA ENERGY STAR[®])
2. Market analysis completed by BC Hydro
3. Economic assessment
4. Dialogue with other regulators (e.g., California) and experts (e.g., Northwest Energy Efficiency Alliance) through steering committee
5. Regulatory assessment
6. Feedback on the workbook in April, 2012
7. Formal stakeholder consultation (60-day written comment period, starting in September 2012)

Market Transformation Strategy

Currently, BC Hydro Power Smart is partnering with one major service provider operating in British Columbia to promote ENERGY STAR[®] set-top boxes.

While ENERGY STAR[®] 3.0 qualified set top boxes are at least 30% more efficient than conventional models, this particular service provider has chosen a box that is at least 50% more efficient than conventional models for the BC market.

Power Smart promotes ENERGY STAR[®] qualified set-top boxes, as they are recognized by consumers as the most energy efficient products in today's market. BC Hydro encourages British Columbians to choose an ENERGY STAR[®] service provider.

Analysis was conducted on the availability of compliant products in each major product segment in the market, e.g., high-definition STBs with DVR.

Demand-Side Management Attribution

This proposed regulation can be promoted by energy utilities through their Demand-Side Management (DSM) programs, leading to increased market share of compliant products prior to the effective date. In turn, part of the energy savings from the proposed regulation can be attributed back to those DSM programs as per Section 4 (1.4) of the Demand-Side Measures Regulation under the *Utilities Commission Act*:

http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/10_326_2008

ASSESSMENT FROM AN INDUSTRY PERSPECTIVE

RANGE OF PRODUCTS AFFECTED	All newly deployed set-top boxes supplied by service providers and retailers in British Columbia would be affected. One of the three high-definition TV service providers has already changed their product fleet to provide only compliant products.
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COST IMPACT	\$8.0/unit. This estimate is conservatively high as it includes cost impacts related to both hardware and network operation requirement to operate deep sleep mode; however, it should be noted that a <u>network operation requirement is not included in the proposed regulation.</u>
COMPETITIVE ANALYSIS	<p>Currently there are no manufacturers of the products covered by this regulation in British Columbia.</p> <p>Given that compliant products are available for all major product segments (e.g., HD DVR) where standards may apply (i.e., not exempted), the competitiveness of manufacturers, service providers and retailers should not be affected.</p> <p>To date, no information has been received to the contrary.</p>
MARKET SHARE OF COMPLIANT PRODUCTS	<p>The new products provided by one of the three major service providers are already 100% compliant.</p> <p>To comply, the other service providers would be expected to upgrade their new product offerings with energy-efficient set-top boxes that would meet this proposed regulation prior to the effective date.</p>
WASTE MANAGEMENT	Return-It Electronics locations across the province accept set-top boxes drop-offs. (http://www.return-it.ca/electronics/).

ASSESSMENT FROM A CONSUMER PERSPECTIVE

CAPITAL / PURCHASE COSTS	\$8.0, possibly in the form of an adjustment to the cost of purchase/lease of the set-top box and/or service charges.
COST-BENEFIT ANALYSIS ENERGY SAVINGS BY CONSUMER	<p>The result of the analysis shows that the proposed regulation for set-top boxes will have a positive financial impact on consumers. Discounted energy savings, net of assumed incremental capital costs, provide a positive return on investment.</p> <p>Electrical energy savings associated with replacing a typical (non-compliant) set-top box with a compliant one are estimated at 53 kWh/year.</p> <p>To a consumer in the BC Hydro service area, this results in an equivalent cost savings of \$18.04 over an estimated 7-year life of the product. The simple payback period on investment is 1.7 years.</p> <p>The costing analysis is based on the 2011 rate structure escalating by 8.0%, 7.1% and 1.44% through to 2014 (including the rate rider effective April 1, 2012), reflecting the BC Utilities Commission Order G-17-12, dated February 15, 2012, and the announcement of the provincial government's direction to the Commission in May 2012 (http://www2.news.gov.bc.ca/news_releases_2009-2013/2012ENER0063-000720.htm).</p> <p>After that, a factor of 2.1% is applied, representing assumed inflation. The impact of the second tier of the residential inclining block (conservation rate) has been taken into consideration, assuming that 33% of an average consumer bill is in the second tier.</p> <p>To a consumer in the FortisBC service area, the savings will likely be greater due to higher rates.</p>

ASSESSMENT FROM A PROVINCIAL GOVERNMENT PERSPECTIVE

<p>ECONOMIC ASSESSMENT FROM A PROVINCIAL PERSPECTIVE</p>	<p>The economic analysis considers the province-wide impact. Based on data from BC Hydro’s draft 2012 <i>Integrated Resource Plan</i>, the marginal cost of electricity supply is assumed to be 12.90 cents per kWh in fiscal 2013 plus a 2.1% inflation rate. The product life of set-top boxes is assumed at 7 years. The incremental capital cost of products is estimated at \$8.0 as noted in the consumer impact assessment section.</p> <p>The estimated cumulative electricity and cost savings generated by this regulation from the proposed effective date to year 2020 are shown below:</p> <table border="1"> <tr> <td>Cumulative Annual Electricity Savings in 2020</td> <td>106.9 GWh per year \$50.8 million per year</td> </tr> <tr> <td>Provincial net present value over the period 2013 to 2020</td> <td>Positive \$37.8 million</td> </tr> </table> <p>The proposed regulation will result in a reduction of yearly greenhouse gas (GHG) emissions. The estimated cumulative emissions saving from the proposed effective date to year 2016 is shown below, assuming an emission factor of 28 tonnes per GWh for electricity until 2016:</p> <table border="1"> <tr> <td>Cumulative annual GHG reductions in 2016</td> <td>827 tonnes per year</td> </tr> </table>	Cumulative Annual Electricity Savings in 2020	106.9 GWh per year \$50.8 million per year	Provincial net present value over the period 2013 to 2020	Positive \$37.8 million	Cumulative annual GHG reductions in 2016	827 tonnes per year
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Provincial net present value over the period 2013 to 2020	Positive \$37.8 million						
Cumulative annual GHG reductions in 2016	827 tonnes per year						
<p>REGULATORY REQUIREMENTS AVOID OR ELIMINATE DUPLICATION WITH OTHER JURISDICTIONS</p>	<p>There is no regulatory requirement under the Canadian federal jurisdiction.</p> <p>The California Energy Commission has identified set-top boxes as a "short-term" priority for their 2012 Rulemaking Proceedings³.</p>						
<p>ADMINISTRATIVE FEASIBILITY FOR COMPLIANCE AND ENFORCEMENT</p>	<p>The compliance and enforcement approach under the <i>Energy Efficiency Act</i> is based on third-party verification, labelling of products and education of manufacturers, distributors, retailers and consumers with respect to energy efficiency standards and labelling requirements, which will enhance compliance.</p> <p>The Ministry of Energy and Mines (MEM) would not require a unique BC label on products, but rather would provide a product listing on the MEM website for compliant products.</p>						

³ http://www.energy.ca.gov/business_meetings/2012_packets/2012-03-14/Item_16_Appliance_Efficiency_OIR.pdf

NOTES

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DATE	August 31, 2012