

**Draft F2016 Cost of Service (COS) Model**

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**Description**

**February 2015**

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1 This document provides a high level description of the draft F2016 COS model. The  
2 model was posted to the BC Hydro 2015 Rate Design Application (**RDA**) website on  
3 February 6, 2015 and has been prepared on an embedded cost basis with existing  
4 rate classes. BC Hydro is seeking feedback on the draft F2016 COS model through  
5 a 30-day written comment period ending on March 8, 2015. The RDA team is also  
6 available to answer questions concerning the draft F2016 COS model. After  
7 consideration of any feedback, BC Hydro will finalize the F2016 COS model. Further  
8 work is still required to determine whether the existing rate classes remain  
9 appropriate, which BC Hydro expects to complete by spring 2015.

10 The draft F2016 COS model does not address the 2007 RDA COS methodology  
11 except for comparison purposes; rather, the draft F2016 COS model is based on  
12 BC Hydro's proposed 2015 RDA COS methodology. The draft F2016 COS model  
13 should be reviewed in conjunction with BC Hydro's consideration memo for the  
14 October 7, 2014 RDA workshop, which is posted on the RDA website, and in  
15 particular the conclusion of the consideration memo which: (1) summarizes the  
16 2007 RDA directives and proposed 2015 RDA COS methodological differences; and  
17 (2) compares Revenue-to-Cost (**R/C**) ratios for F2016 using the 2007 RDA  
18 COS methodology and proposed 2015 RDA COS methodology.

19 The COS model uses F2016 financial and load information from the F2015 to F2016  
20 Revenue Requirements Application (**RRA**), which was filed with the British Columbia  
21 Utilities Commission (**BCUC or Commission**) in March 2014. Schedule 4.0 of the  
22 model (lines 13 to 33) includes drop down menus to allow users to sensitivity test the  
23 COS results. BC Hydro identified preferred COS methodologies and included  
24 alternative approaches in cases where BC Hydro believes stakeholders have not  
25 reached a fair degree of consensus on particular COS methods, including Heritage  
26 hydroelectric and Smart Meter Infrastructure (**SMI**) classification. The areas of a fair  
27 degree of consensus/lack of consensus are described in the October 7, 2014  
28 workshop consideration memo. BC Hydro's preferred options were developed after,

1 among other things, considering stakeholder feedback from the two COS RDA  
2 workshops held on June 19, 2014 and October 7, 2014.

3 At this time, the preferred 2015 RDA COS methodologies produce the following  
4 R/C ratios by rate class as shown in [Table 1](#). The results are slightly different than  
5 the table shown in the October 7, 2014 Consideration memo for two reasons: 1) the  
6 First Nations regulatory account is now functionalized partly to Generation and partly  
7 to Transmission instead of entirely to Transmission because it contains First Nation  
8 settlement costs related to the construction of generation assets; and 2) refinements  
9 to Distribution classification including a correction for Information Technology (IT)  
10 costs and a separate 100 per cent demand classification of Substation Distribution  
11 Assets.

12 **Table 1 R/C Ratios**

Rate Class	DRAFT F2016 COS results		F2013 COS
	Using BC Hydro's Proposed Methodology (%)	Using the Same Methodology as the F2013 Study (using 2007 RDA Decision) (%)	Filed with the Commission on February 8, 2014 (using 2007 RDA Decision) (%)
<b>COLUMN</b>	<b>A</b>	<b>B</b>	<b>C</b>
Residential	93.9	91.8	89.8
Small General Service (SGS) Under 35 kilowatts (kW)	112.0	118.5	126.7
Medium General Service < 150 kW	120.5	124.2	120.8
Large General Service > 150 kW	99.7	98.1	102.1
Irrigation	85.2	93.0	86.6
Street Lighting	134.1	126.5	115.7
Transmission	101.5	105.4	104.4
Total Classes	100.0	100.0	100.0

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1 **1. Explanation of changes between the draft F2016 COS results, using the**  
2 **same (2007 RDA decision) methodologies as past studies, and the**  
3 **previously filed F2013 COS (column B relative to column C)**

4 A number of COS R/C ratios have changed despite using the same methodology as  
5 the F2013 COS study. This occurs for a variety of reasons including:

- 6 • Changes in the relative proportions of Generation, Transmission, Distribution  
7 and Customer care costs<sup>1</sup>;
- 8 • The energy allocator has been updated using forecast F2016 sales by rate  
9 class; and
- 10 • Forecast revenues by rate class have changed as they are based on F2016  
11 sales and rate increases between F2013 and F2016.

12 Two examples of the impact of these changes on rate class R/C ratios are:

- 13 • A fall in the SGS class R/C ratio from 126.7 per cent to 118.5 per cent because  
14 forecast revenues from the class are 11 per cent higher than F2013 but costs  
15 assigned to the class have risen by 18 per cent (which is still less than the  
16 overall 24 per cent rise in the revenue requirement). Forecast revenues are not  
17 growing as fast as costs because SGS energy consumption is forecast to  
18 decline between F2013 and F2016; and
- 19 • A rise in the Transmission class R/C ratio from 104.4 per cent to 105.4 per cent  
20 because the portion of cost functionalized to Generation is higher in F2016 than  
21 F2013 and Transmission customer sales are forecast to rise 12 per cent  
22 between F2013 and F2016 relative to a 5 per cent increase in total customer  
23 sales.

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<sup>1</sup> For example, Generation accounts for 58 per cent of costs in F2016 relative to 56 per cent in F2013.

1 **2. Impact of BC Hydro’s preferred options (column A) relative to status quo**  
 2 **methodologies (column B)**

3 For illustration purposes, [Table 2](#) uses the residential R/C ratio to show the impact of  
 4 selecting BC Hydro’s preferred options relative to the 2007 RDA decision study quo  
 5 (column B). BC Hydro has highlighted areas where methodology changes  
 6 significantly impact the results and notes that, in many cases, the changes offset  
 7 each other.

8 **Table 2 Impact on the Residential R/C Ratio**

Major methodology changes	Column A relative to column B (%)	Explanation
Distribution Classification	1.6	The 2007 RDA decision directed BC Hydro to classify Distribution as 65% demand and 35% customer related. Revised to about 76% demand and 24% customer based on sub-functionalization <sup>2</sup> of the distribution system that is consistent with consultant recommendations.
Independent Power Producer (IPP) Capital Leases Functionalization	1.4	These costs are currently functionalized across multiple business groups. For COS purposes, they should be considered entirely Generation related.
Customer Care Classification	-1.2	The 2007 RDA decision directed BC Hydro to classify Customer Care as 65% demand and 35% customer related. These costs are now 100% customer related consistent with consultant recommendations and industry best practices as demonstrated by the jurisdictional assessment discussed at the June 19, 2014 COS workshop.
Heritage Hydroelectric Classification	0.8	This is still an area of uncertainty as stakeholders disagree on methodology: load factor (BC Hydro’s preferred option – 55% energy/45% demand); capacity factor (45% energy/55% demand); or a 50% energy/50% demand split). Depending on the option selected, the impact could range from 0.2% to 0.8%. For reference the 2007 RDA directed a 45% energy/55% demand split.
IT Cost Functionalization	-0.6	100% of IT costs were functionalized to Generation. These costs are now functionalized across all business groups.

<sup>2</sup> Key components of the distribution system (substations, primary system, transformers, secondary system, and meters) were classified individually to derive an overall classification factor.

1 **3. Description of the Model**

2 The COS model includes the functionalization, classification and allocation of  
3 BC Hydro's F2016 Revenue Requirement of \$4.4 billion. The format of the model is  
4 largely consistent with previous versions filed with the Commission annually  
5 between F2008 and F2013.

6 The major sections of the model are listed below along with a description of key  
7 changes relative to previous versions.

8 ***Schedule 1.0 –Functionalization of the revenue requirement:***

- 9 • Each regulatory account is listed separately so stakeholders can understand  
10 how each is being functionalized. In past COS studies, regulatory accounts  
11 were not functionalized individually and only total additions and total recoveries,  
12 across all the accounts, were shown.
- 13 • Customized treatment has been applied to larger costs. For example IT  
14 Operating, Maintenance and Administrative (**OMA**) costs are included in the  
15 Generation OMA schedule of the RRA model. However, for COS purposes  
16 these costs have been allocated across BC Hydro's business functions.
- 17 • IPP capital lease costs have been functionalized entirely to Generation. A  
18 significant portion of these costs is financing related and was previously  
19 functionalized to all business groups.
- 20 • Corporate costs continue to be allocated across functional areas on a pro rata  
21 basis. Previous versions of the COS study did not include a corporate allocation  
22 of depreciation and taxes to the Transmission function as the methodology  
23 reflected British Columbia Transmission Corporation as a separate entity.

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**Schedules 2.0 to 2.3 – Classification of the revenue requirement:**

- BC Hydro's classification methods are consistent with the preferred options shown in [Table 1](#) of the Discussion guide for the October 7, 2014 COS workshop, which is posted on the RDA website. The model allows stakeholders to select alternative classification options for Heritage hydroelectric, Heritage thermal and SMI on schedule 4.0.

**Schedules 3.0 to 3.3 –Allocation of the revenue requirement:**

- BC Hydro's allocation methods are consistent with the preferred options shown in [Table 1](#) of the Discussion Guide for the October 7, 2014 COS workshop.

**Schedules 4.0 to 4.1 summarize COS results.**

- Schedule 4.0 (lines 13-33) includes drop down menus to allow users to sensitivity test the COS results.

**Schedules 5.0 to 5.4 show the energy, demand, distribution customer, customer care, and transformer allocation factors used in the study:**

- Energy allocation factors for F2013, F2016, and a five-year average are provided for comparison purposes.
- Demand allocation factors are provided for F2013 and a five-year average for comparison purposes. BC Hydro has reviewed the hourly loads of the City of New Westminster and FortisBC Inc. and ensured they are included in the transmission class load profile used in the 4 Coincident Peak calculation.
- The Distribution transformer allocation factors have been updated from those shown on slide 50 of the 7 October 2014 COS presentation. The revised analysis reflects the fact that three phase overhead transformers are counted as three separate units within BC Hydro's asset management system while three phase underground transformers are counted as a single unit. This is due to the fact that a three phase overhead transformer actually consists of three



1 separate single phase transformers wired together whereas a three phase  
2 underground transformer is physically self-contained within a single enclosure.

3 ***Schedule 6.0 to 6.1 – Rate Base***

- 4 • These schedules summarize the sub-functionalization of Distribution rate base  
5 and functionalization of system rate base. Refinements have been made to the  
6 analysis shown on slide 20 of the October 7, 2014 presentation to account for  
7 Contributions in Aid of Construction.