



File Number: EB-2016-0091

Date Filed: August 26, 2016

EXHIBIT 7

COST ALLOCATION



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Exhibit 7

Tab 1 of 1

Overview



1 COST ALLOCATION STUDY REQUIREMENTS

2 THE 2017 COST ALLOCATION MODEL

3 London Hydro is filing a cost allocation study based on the model provided by the Board for
4 distributors filing 2017 cost of service applications version 3.4 released on July 21, 2016.
5 London Hydro has used the allocators prescribed in worksheet E-4 of the model are used in all
6 instances, except for one instance of direct allocation explained below in **Schedule 6**. The cost
7 allocation model is included in live Excel format as part of London Hydro's pre-filed evidence.

8 London Hydro proposes to retain the existing rate class definitions. The model has two classes,
9 Co-Generation and Backup/Standby that consist of the same four customers. Except for these
10 customers, each load customer and distributed generation customer is assigned to a single
11 class. Distributed generation entities are not treated as a class because there is no allocation of
12 capital or O&M cost to these entities.

13 TABLE 7.1.1.1 below is submitted per the Board's requirement to file RRWF Sheet 11 Cost
14 Allocation, Table A (see Exhibit 7 Tab 1 Schedule 3 Attachment 5). In the table, the 2017 class
15 revenue requirements are shown, along with those approved in London Hydro's previous 2013
16 cost-of-service rate application EB-2012-0146. The table also shows each class revenue
17 requirement as a proportion of the whole revenue requirement. The changes in these
18 proportions parallel the changing shares of electricity consumption amongst London Hydro's
19 customers, as described in Exhibit 3. The changed proportions can also be traced to the
20 changing structure of London Hydro's costs, particularly increased automation of meter-reading
21 and billing. Finally, London Hydro is submitting load data that is updated significantly compared
22 to that used in the 2013 cost allocation study.



1 **Table 7.1.1.1 - 2013 Approved and 2017 Proposed Class Revenue Requirements**

Classes		Costs Allocated from Previous Study 2013	%		Costs Allocated in Test Year Study (Column 7A)	%
Residential		\$ 37,252,651	56.2%		\$ 45,620,249	62.3%
GS < 50 kW		\$ 9,516,761	14.3%		\$ 7,815,906	10.7%
GS > 50 kW		\$ 15,604,675	23.5%		\$ 16,819,055	23.0%
Large User		\$ 1,343,950	2.0%		\$ 606,631	0.8%
Street Lighting		\$ 1,576,108	2.4%		\$ 1,026,334	1.4%
Sentinel Lighting		\$ 65,751	0.1%		\$ 84,407	0.1%
Unmetered Scattered Load		\$ 156,180	0.2%		\$ 210,241	0.3%
Cogeneration	\$ 229,772		0.3%	\$ 504,706		0.7%
Backup /Standby	\$ 580,185		0.9%	\$ 488,876		0.7%
Cogen and Backup together		\$ 809,957	1.2%		\$ 993,582	1.4%
Total		\$ 66,326,033	100.00%		\$ 73,176,406	100.00%

2
 3 **FUNCTIONALIZATION OF USOA ACCOUNTS**

4 The values of the various allocators shown in worksheet E-2 are derived from updated forecast
 5 information.

6 The model requires that four accounts be split according to voltage level (above and below
 7 750V) in worksheet I-4 "Break-Out Assets". The purpose of these splits is to accurately allocate
 8 primary system costs to all distribution customers while allocating secondary system costs only
 9 to those customer classes that receive their power at the lower voltages. For two of the
 10 accounts, London Hydro's review of the engineering assumptions and costs showed that the
 11 2013 proportions within the respective accounts remain appropriate: USoA accounts 1835
 12 'Overhead Conductors and Devices', and 1845 'Underground Conductors and Devices'.
 13 Engineering information has been used to update the split of USoA account 1830 'Poles,
 14 Towers and Fixtures' between 1830-4 (primary voltage) and 1830-5 (secondary voltage), and of
 15 USoA account 1840 'Underground Conduit' between 1840-4 (primary voltage) and 1840-5
 16 (secondary voltage). Table 7.1.1.2 below shows the proportions of each of the four accounts in
 17 the respective sub-accounts.



1 **Table 7.1.1.2 - Split according to voltage level (above and below 750V)**

Account	Description	2017 Break Out %	2013 Break Out %
1830	Poles, Towers and Fixtures		
1830-4	Poles, Towers and Fixtures - Primary	60%	63%
1830-5	Poles, Towers and Fixtures - Secondary	40%	37%
1835	Overhead Conductors and Devices		
1835-4	Overhead Conductors and Devices - Primary	74%	73%
1835-5	Overhead Conductors and Devices - Secondary	26%	27%
1840	Underground Conduit		
1840-4	Underground Conduit - Primary	80%	92%
1840-5	Underground Conduit - Secondary	20%	8%
1845	Underground Conductors and Devices		
1845-4	Underground Conductors and Devices - Primary	92%	90%
1845-5	Underground Conductors and Devices - Secondary	8%	8%

2

3 The proportion of Pole Rental attributed to primary and secondary voltage matches USoA

4 account 1830. The model attributes the revenue offset to the customer classes in the

5 corresponding proportions.



1 **WEIGHTING FACTORS**

2 **Services:** London Hydro has reviewed its costs for typical connections in each rate class, and
3 proposes the weighting factors shown in Table7.1.1.3 below. The weight for the Residential
4 class is defined to stay constant at 1.0. Compared to the weighting factors approved in 2013,
5 the weight for the GS<50 kW, Large User and Cogeneration classes have increased, and for
6 Unmetered Scattered Load has decreased, while the others remain unchanged.

7 **Table7.1.1.3 - 2017 Cost Allocation Inputs Services - Account 1855 Weighting Factors**

Classes	2017	2013
Residential	1	1
GS < 50 kW	2.5	1.5
GS > 50 kW	7.5	7.5
Large User	15	0
Street Lighting	0.6	0.6
Sentinel Lighting	0.6	0.6
Unmetered Scattered Load (USL)	0.4	0.6
Cogeneration	7.5	0
Backup /Standby	7.5	0

8
9 **Meter Capital:** The numbers of each type of meter forecast for mid-2017 are shown in
10 worksheet I-7.1 in the Cost Allocation Model. As described in Exhibit 2, London Hydro's
11 investment in meters has remained stable since its previous rebasing, except for the
12 replacement of demand meters with interval meters in the GS>50 kW class. The number of the
13 latter will increase through the period following this rebasing. The weighting factors in Table
14 7.1.1.4 are derived from the 2017 meter numbers and installed costs.



1 **Table 7.1.1.4 - Cost Allocation Inputs - Meter Capital Cost Weighting Factors**

Classes	2017	2013
Residential	1.00	1.00
GS < 50 kW	1.07	6.44
GS > 50 kW	11.73	17.75
Large User	141.66	181.92
Street Lighting		
Sentinel Lighting		
Unmetered Scattered Load (USL)		
Cogeneration	109.83	181.92
Backup /Standby		

2
3 **Meter Reading:** Meter reading has been largely replaced by the uploading of data from meters
4 into London Hydro’s billing system. During the test year 2017, consistent with the meter types
5 discussed in the previous heading, there will still be manual reads of demand meters and of
6 interval (MIST) meters that are not capable of electronic uploads. The cost of meter reading
7 relative to the monthly per-customer cost of uploading load data is shown in the model
8 worksheet I-7.2, and the derived weighting factors are shown in Table 7.1.1.5.

9 **Table 7.1.1.5 - Cost Allocation Inputs - Meter Reading Weights**

Classes	2017	2013
Residential	1.00	1.00
GS < 50 kW	1.04	1.00
GS > 50 kW	8.68	18.46
Large User	9.00	49.00
Street Lighting		
Sentinel Lighting		
Unmetered Scattered Load (USL)		
Cogeneration	9.00	49.00
Backup /Standby		

10
11 **Billing and Collecting:** London Hydro has analyzed the labour costs required to prepare the
12 bills for each class, as well as the costs of collecting and recording the revenue. It has also
13 analyzed its non-labour costs, of which the largest component is postage. The outcome of this



1 analysis is a break-down of the costs in USoA accounts 5315 – 5340 (except 5335) by rate
2 class. Because the cost allocation model is constructed to use weighting factors, the costs are
3 calculated on a per-customer basis for each class, and are then expressed as factors relative to
4 the cost per Residential customer = 1.0. The weighting factors are shown in Table 7.1.1.6
5 below.

6 **Table 7.1.1.6 - Cost Allocation Inputs -Billing and Collecting Weighting Factors**

Classes	2017	2013
Residential	1.00	1.00
GS < 50 kW	1.30	1.00
GS > 50 kW	1.30	6.50
Large User	60.50	15.00
Street Lighting		1.00
Sentinel Lighting	0.64	0.10
Unmetered Scattered Load (USL)	1.30	1.00
Cogeneration	23.00	15.00
Backup /Standby	23.00	

7
8 As explained below in Schedule 6, the cost of preparing and issuing the Street Lighting bill is
9 allocated directly. As a result the weighting factor for Street Lighting is zero.

10 **CUSTOMER AND REVENUE DATA**

11 The amount of cost that is categorized as customer-related, and hence allocated to classes
12 based on customer data, is shown in the cost allocation model at worksheet E-1. The
13 proportion of various rate base accounts that is categorized as customer-related is determined
14 by customer density. London Hydro’s forecast total length of distribution line is 2713 km, shown
15 in worksheet I-5.1 ‘Miscellaneous Data’. With the forecast increase in customer numbers, the
16 customer density will remain above 60 customers per km, leaving the proportion of asset
17 accounts as between customer-related and demand-related costs unchanged from London
18 Hydro’s previous cost allocation studies.

19 The forecast of 2017 electricity consumption and billing quantities for each class is described in
20 Exhibit 3. This information is input to the cost allocation model at worksheet I-6.1 Revenue (see



1 Exhibit 7 Tab 1 Schedule 3 Attachment 1 Number 1), along with the currently approved rates.
2 The number of customers and connections in each class is required to calculate the allocators
3 for customer-related costs. The forecast number of customers is described in Exhibit 3, and is
4 entered in worksheet I 6.2 Customer Data (see Exhibit 7 Tab 1 Schedule 3 Attachment 1
5 Number 2) of the model. The forecast number of customer connections and devices is required
6 in worksheet I-6.2 for classes where these do not correspond one-to-one with the number of
7 customers. For the Street Lighting customer, the forecast of the number of devices (fixtures)
8 has been updated for 2017, while the proportion of connections including daisy-chains has been
9 assumed to remain constant with the information provided in 2013.

10 Revenue from each class at the current approved rates is calculated at the bottom of worksheet
11 I-6.1. The revenue shown in the microFIT column is the current approved rate of \$5.40 per
12 month. Later in the model, the revenue from each class is multiplied by a constant factor to
13 calculate "Distribution Revenue at Status Quo Rates". There is an exception to this procedure
14 in London Hydro's model

15 **CUSTOMER LOAD PROFILES**

16 Demand-related costs are the predominant factor in the allocation of costs to customer classes.
17 The input data for the demand-related allocators is found in worksheet I-8 Demand Data (see
18 Exhibit 7 Tab 1 Schedule 3 Attachment 2) of the model. For its largest customers and most of
19 its unmetered load customers, London Hydro is using load profiles derived in the same manner
20 as in previous cost of service applications. However, for the great majority of its metered
21 customers, in this application London Hydro is using load profiles based on updated
22 comprehensive hourly load data.

23 In the Board Report "Application of Cost Allocation for Electricity Distributors " (EB-2007-0667)
24 at p. 5 the Board anticipated that more accurate cost allocation would become possible with
25 the use of Smart Meter data. London Hydro has analyzed the data from all of its interval
26 meters, including Smart Meters, for the year 2015, and is using this information as the basis for
27 its 2017 demand-related allocators. London Hydro believes that using comprehensive interval



1 billing data from its own customers is a significant step forward from the previous practice of
2 using load profiles inferred from a province-wide statistical sample.

3 The data base comprises hourly consumption during 2015 of 139,200 Residential customers,
4 12,430 customers in the GS<50 kW class, and 1,475 customers in the GS>50 kW class, along
5 with the Large User and Cogeneration/Backup/Standby customers. For the GS>50 kW class, a
6 profile for those customers that did not have an interval meter (customers up to 200 kW billing
7 demand) was calculated as the average of the profile for GS<50 kW and the interval customers
8 in the GS>50 kW class. GS>50 kW customers were split into two groups: customers with smart
9 or interval meters, and customers with demand meters. The first group (smart & interval) have
10 reads at least once an hour, so they can easily be aggregated to determine an hourly sum for
11 the entire group. The customers in the demand meter group only have monthly reads,
12 necessitating a more complicated approach.

13 An assumption was made that the load profile of the GS>50 kW demand group would resemble
14 the load profiles of the GS>50 kW smart & interval group as well as the GS<50 kW group. Load
15 profiles for GS>50 kW smart & interval and GS<50 kW classes were calculated individually then
16 averaged with each given equal weighting. This load profile (GS>50 kW Demand Load Profile)
17 was then applied against each monthly read for each GS>50 kW demand meter, giving hourly
18 estimates for each meter that follow the load profile curve and retain the total consumption
19 between monthly reads.

20 All hourly estimates for the GS>50 kW Demand meters were aggregated to get a total hourly
21 consumption for the group (GS>50 kW Demand). This total was added to the total hourly
22 consumption for the GS>50 kW smart & interval group (GS>50 kW Non-demand) to get a total
23 hourly consumption for the entire GS>50 kW group (GS>50 kW Total).

24 For each class the data is summed for all of the customers and is expressed as an hourly
25 profile.

26 As in previous applications, a profile is also formed for each class of unmetered loads. London
27 Hydro has used the same profile as it has used in previous applications for Street Lighting and
28 Sentinel Lighting. For the Unmetered Scattered Load class, London Hydro uses a combination



1 of uniform 24-hour loads and daylight-sensitive loads to produce the updated load profile. For
2 the daylight sensitive component, the long-established Street Lighting profile is used.

3 The resulting class load profiles have been prorated to match the load forecast for each class.
4 London Hydro has performed the detailed analysis of these scaled profiles that is necessary to
5 produce the coincident and non-coincident peak load of each class for each month of 2017.
6 The class-by-class loads are found in worksheet I-8 Demand Data (see Exhibit 7 Tab 1
7 Schedule 3 Attachment 2) of the cost allocation model.

8 For most classes, the load data required to allocate line transformer costs is either the entire
9 class load, or zero. For the GS> 50 kW class, some customers provide their own transformer
10 while others do not. The proportion of the class total billing demand that does not qualify for the
11 Transformer Ownership Allowance is used to derive transformer non-coincident demand for that
12 class.

13 London Hydro acknowledges that the load profiles submitted in previous applications were
14 normalized for average weather conditions, and that the profiles used in this application for the
15 Residential and General Service classes are based on a single year of measured consumption
16 with actual weather. In the future it will be possible and desirable to use several years of data to
17 ensure weather-normalized load profiles. London Hydro submits that the interval billing data
18 measured in 2015 yields a valid basis for the demand-related cost allocators.

19 The predominant allocator of demand-related costs is NCP4, which is the peak load of each
20 class during the four months of highest demand. For London Hydro, these are the summer
21 months June – September. Information is provided in Table 7.1.1.7 below showing peak
22 temperatures during the peak months of 2015.

23 Table 7.1.1.7 below shows the London peak temperature at London Airport on the days of
24 London Hydro's four highest load days in 2015, which are the days that determine the
25 coincident demand allocator 4CP. Comparing the temperature on those days with the hottest
26 days in the same months during the period 2010-2014, it can be seen that the coincident peak
27 loads in 2015 were established on days that are fairly typical of peak days in London in recent
28 years. Similarly, in the second part of Table 7.1.1.7 below, the temperature on the four days of



1 respective class peaks is shown for the three classes with weather-sensitive demand. These
 2 temperatures can be compared with the hottest days in the same months over the previous
 3 years (shown in the first part of the table). The loads on the days shown establish the non-
 4 coincident demand allocator 4NCP. Again, it can be seen that the class peaks in 2015 occurred
 5 on days when the temperature was not extreme over recent years.

6 **Table 7.1.1.7 - Temperature on London Hydro Peak Days 2015**

Peak Temperature, ° C.

2015 Peak Day			Temperature on Hottest Day				
			2010	2011	2012	2013	2014
15-Jun-15	27.3	June	29.1	32.7	32.6	30.3	31.2
29-Jul-15	30.7	July	34.0	36.7	36.1	33.7	28.4
17-Aug-15	30.4	August	31.8	29.8	34.2	29.6	29.6
8-Sep-15	28.8	September	30.0	31.2	31.4	34.2	28.9

Temperature on Day of Class Peak, 2015

	Residential	GS < 50 kW	GS > 50 kW *
June	25.7	26.8	27.3
July	30.7	30.7	30.7
August	30.4	30.4	30.4
September	28.8	31	28.8

7 * interval metered only

8 To summarize, 2015 was a very moderate year with respect to the temperature when weather-
 9 sensitive classes were establishing their load peaks. It is therefore a reasonable year from
 10 which to calculate demand-based allocators.

11



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1 **DIRECT ALLOCATION**

2 The cost of preparing the monthly bill for Street Lighting is readily identifiable from the other
3 components of billing and collecting. The cost is also unusually high, as the City of London is in
4 the process of steadily replacing its streetlights with more efficient technology. The monthly bill
5 is calculated largely from the kW connected load, which is updated each month for the devices
6 that have been upgraded. The annual cost of calculating the billing quantity is allocated directly
7 to the class. There is no cost of collecting from the customer.

8 Direct allocation to the Street Lighting class is consistent with Board policy on allocation to
9 unmetered customers. In its report "Board Directions on Cost Allocation Methodology for
10 Electricity Distributors" (EB-2005-0317) the Board states at p. 87 "If known and identifiable,
11 expenses such as tracking additions and deletions of connections or revising estimated
12 consumption should be directly allocated."

13 In the cost allocation model, the direct allocation is shown in worksheet I-9, and the forecast
14 amount directly allocated is removed from the normal allocation process in worksheet I-3. The
15 direct allocation is \$3,770. As noted above in Schedule 3, the weighting factor for Street
16 Lighting Billing and Collecting is zero to avoid double-counting.



1 **CLASS REVENUE REQUIREMENTS**

2 **REVENUE AT EXISTING RATES**

3 Forecasts of billing quantities of all rate classes can be found in Exhibit 3. London Hydro's
4 existing 2016 distribution rates are entered in the Cost Allocation Model worksheet I-6.1
5 Revenue (see Exhibit 7 Tab 1 Schedule 3 Attachment 1 Number 1), together with the 2017
6 forecast billing quantities. The resulting forecasts of 2017 revenue if rates were to remain
7 unchanged are found in the cost allocation model in worksheet O-1, row 18.

8 The forecast of total Miscellaneous Revenue is found in Exhibit 3, Tab 3 Schedule 1. London
9 Hydro has followed Board policy with respect to the allocation of the various components of
10 Miscellaneous Revenue, which is to allocate revenue in the same proportion as the
11 corresponding cost drivers¹. Specifically with respect to revenue from Pole Rental, London
12 Hydro has divided the forecast revenue from Pole Rentals in the same proportion as USoA
13 account 1830 'Poles, Towers, and Fixtures'. The forecast revenue is split between primary and
14 secondary voltage, and then allocated to rate classes using the allocators for sub-accounts
15 1830-4 and 1830-5 respectively.

16 **REVENUE AT "STATUS QUO"**

17 London Hydro's revenue deficiency can be stated as a percentage of its distribution revenue at
18 existing rates. It follows that, if each distribution rate were to be increased by this percentage,
19 the deficiency would be reduced to zero. These hypothetical rates would retain the existing rate
20 structure and are referred to as "Status Quo" rates. The class revenues that would result from
21 these hypothetical rates are calculated in the Cost Allocation model and are shown in the
22 second column of Table 7.1.2.1. This column shows revenues with status quo rates increased
23 by the same percentage as distribution rates.

¹ Reference: Board Report "Review of Electricity Distribution Cost Allocation Policy" (EB-2010-0219) at page 18



1 The third column shows Miscellaneous Revenue, allocated on a class-by-class basis.
 2 Miscellaneous Revenue does not change between the “existing rates” and “status quo rates”
 3 scenarios.

4 The third data column shows the class revenue requirements. The final column shows the ratio
 5 of class revenue (including Miscellaneous Revenue) to class revenue requirement. The ratios
 6 are referred to as “status quo revenue to cost ratios”.

7 **Table 7.1.2.1 Revenue at “Status Quo”**

Classes	Distribution			Allocated		Class Revenue	Allocated Costs	Revenue to Cost	Status quo Revenue to Cost Ratio
	Total Revenue At Current Rates	Revenue At Status Quo	Miscellaneous Revenue	Total Revenue At Status Quo					
	A	B	C	D	E	F	G = F - G	H = F / G	
Residential	\$ 44,403,958	\$ 43,183,365	\$ 3,393,056	\$ 46,576,421	63.6%	\$ 45,620,249	\$ (956,172)	102.1%	
General Service Less Than 50 kW	\$ 9,384,092	\$ 9,268,000	\$ 582,345	\$ 9,850,345	13.5%	\$ 7,815,906	\$ (2,034,439)	126.0%	
General Service 50 to 4,999 kW	\$ 13,076,488	\$ 12,909,804	\$ 849,326	\$ 13,759,131	18.8%	\$ 16,819,055	\$ 3,059,924	81.8%	
General Service 1,000 To 4,999 kW (co-generation)	\$ 385,400	\$ 393,747	\$ 13,449	\$ 407,196	0.6%	\$ 504,706	\$ 97,510	80.7%	
Standby Power	\$ 391,996	\$ 404,042	\$ 12,953	\$ 416,995	0.6%	\$ 488,876	\$ 71,881	85.3%	
Large Use	\$ 621,131	\$ 626,170	\$ 26,461	\$ 652,632	0.9%	\$ 606,631	\$ (46,001)	107.6%	
Street Lighting	\$ 1,244,474	\$ 1,233,756	\$ 72,785	\$ 1,306,541	1.8%	\$ 1,026,334	\$ (280,207)	127.3%	
Sentinel Lighting	\$ 51,048	\$ 49,399	\$ 4,135	\$ 53,534	0.1%	\$ 84,407	\$ 30,874	63.4%	
Unmetered Scattered Load	\$ 146,369	\$ 143,958	\$ 9,653	\$ 153,611	0.2%	\$ 210,241	\$ 56,630	73.1%	
microFIT	\$ -	\$ -	\$ -	\$ -	0.0%	\$ -	\$ -	-	
Total	\$ 69,704,955	\$ 68,212,243	\$ 4,964,164	\$ 73,176,406	100.0%	\$ 73,176,406	\$ (0)	100.0%	

Revenue Deficiency	\$ 3,471,451
Revenue Deficiency Percentage	5.0%

8
 9 Exhibit 7 Tab 1 Schedule 3 Attachment 3 is a copy of the Cost Allocation Model worksheet O-1,
 10 which is filed per the Board’s Filing Requirements. It shows the derivation of the status quo
 11 revenue to cost ratios, and also shows the detailed components of the class revenue
 12 requirements. Revenue at existing rates and status quo rates are shown at rows 18 and 23
 13 respectively.

14 It may seem remarkable that the status quo ratios differ considerably from the previously
 15 approved ratios, which are shown in the first column of Table 7.1.2.2. While some change is to
 16 be expected over the four-year interim, London Hydro believes that the size of the changes in
 17 this evidence stem in part from the improved load data described in Exhibit 7 Tab 1 Schedule 1.
 18 In particular, the actual monthly load factor of the London Hydro’s General Service < 50 kW
 19 class is about 10% lower than in the statistical province-wide sample used previously, which



1 results in a higher cost allocation to that class compared to the 2013 cost-of-service application.
 2 The load profile of the Cogeneration/Standby customers changed somewhat over the interim,
 3 also resulting in a lower allocation in 2017 compared to 2013. With cost allocation being a zero-
 4 sum game, there inevitable effect on the remaining classes is a larger proportion of total cost,
 5 and it follows that status quo revenue-to-cost ratios are pushed lower than what was approved
 6 in the previous Decision.

7 **Table 7.1.2.2 2013 Approved vs 2017 Status Quo Revenue Cost Ratio**

Classes	2013 BA	2017 Status Quo
	Revenue Cost Ratio	Revenue Cost Ratio
	A	
Residential	109.7%	102.1%
General Service Less Than 50 kW	93.8%	126.0%
General Service 50 to 4,999 kW	82.7%	81.8%
General Service 1,000 To 4,999 kW (co-generation)	109.1%	80.7%
Standby Power	64.5%	85.3%
Large Use	115.8%	107.6%
Street Lighting	81.3%	127.3%
Sentinel Lighting	81.1%	63.4%
Unmetered Scattered Load	82.0%	73.1%
microFIT		

8



REVENUE-TO-COST RATIOS

REVENUE RE-BALANCING

For purposes of this cost allocation exercise London Hydro has determined to maintain the rate classes that have the status quo allocation within the OEB target range to remain in place. For those classes whose status quo ratios fall outside of the OEB target range, London Hydro proposes to phase in adjustments to the floor or ceiling values over a four year period. It can be seen that in column 2 of Table 7.1.3.1 below that the classes whose status quo revenue to cost ratios fall outside the Board’s policy range for the following classes: General Service < 50 kW, Street Lighting, Sentinel Lighting, and Unmetered Scattered Load.

London Hydro has however determined that the General Service greater than 50 kW class will absorb the allocation adjustments. Hence Table 7.1.3.1 shows London Hydro’s proposed revenue rebalancing for 2017. The first data column in Table 7.1.3.1 shows the 2013 Board Approved Allocation. The second column shows the status quo revenue to cost ratios derived in Table 7-10, and the final two columns in Table 7.1.3.1 show the Board’s policy range for each rate class.

Table 7.1.3.1 Rebalancing Revenue-to-Cost (R/C) Ratios

Rate Class	Previously Approved Ratios	Status Quo Ratios	Proposed Ratios	Target Range	
	Most Recent Year: 2013	(7C + 7E) / (7A)	(7D + 7E) / (7A)	Floor	Ceiling
Residential	109.7%	102.1%	102.1%	85%	115%
General Service Less Than 50 kW	93.8%	126.0%	124.5%	80%	120%
General Service 50 to 4,999 kW	82.7%	81.8%	82.6%	80%	180%
General Service 50 to 4,999 kW (Wholesale)	0.0%	0.0%	0.0%	80%	180%
General Service 1,000 To 4,999 kW (co-gen)	109.1%	80.7%	80.7%	80%	180%
Standby Power	64.5%	85.3%	85.3%	0%	0%
Large Use	115.8%	107.6%	107.6%	85%	115%
Street Lighting	81.3%	127.3%	125.5%	70%	120%
Sentinel Lighting	81.1%	63.4%	65.1%	70%	120%
Unmetered Scattered Load	82.0%	73.1%	74.8%	80%	120%
microFIT	0.0%	0.0%	0.0%	0%	0%



1 London Hydro reasons that the proposed allocations are reasonable as our first cut at applying
 2 the new load profiles using the smart meter and interval data. Table 7.1.3.2 shows the impact
 3 analysis of our proposed rate class changes.

4 **Table 7.1.3.2 Impact Analysis Rate Class Change**

Rate Class	Proposed			Current Revenue	Change \$ Revenue	Current % Revenue from Volumetric	Status Quo	Proposed Cost	Target Range	
	Proposed Fixed Service Charge Revenue	Distribution Volumetric Revenue	Proposed Total Revenue				Revenue To Expense %	Allocation Revenue To Expense %		
	A	B	C						Floor	Ceiling
Residential	34,106,088	9,077,278	43,183,365	41,010,902	2,172,463	5.3%	102.2%	102.2%	85.0%	115.0%
General Service Less Than 50 kW	5,128,422	4,020,407	9,148,828	8,801,746	347,082	3.9%	126.1%	124.6%	80.0%	120.0%
General Service 50 to 4,999 kW	3,138,040	10,564,347	13,702,387	12,886,659	815,727	6.3%	81.6%	82.4%	80.0%	180.0%
General Service 50 to 4,999 kW (Wholesale)	0	0	0	0	0	0.0%	0.0%	0.0%	80.0%	180.0%
General Service 1,000 To 4,999 kW (co-ge)	127,200	306,054	433,254	411,458	21,796	5.3%	80.3%	80.3%	80.0%	180.0%
Standby Power	0	496,922	496,922	471,923	24,999	5.3%	84.3%	84.3%	0.0%	0.0%
Large Use	256,200	369,970	626,170	594,669	31,501	5.3%	107.6%	107.6%	85.0%	115.0%
Street Lighting	732,778	482,064	1,214,842	1,171,689	43,154	3.7%	127.4%	125.5%	70.0%	120.0%
Sentinel Lighting	27,075	23,703	50,778	46,914	3,865	8.2%	63.5%	65.1%	70.0%	120.0%
Unmetered Scattered Load	41,412	106,168	147,580	136,716	10,864	7.9%	73.1%	74.8%	80.0%	120.0%
microFIT	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
	43,557,213	25,446,914	69,004,127	65,532,676	3,471,451	5.3%				

5
 6 As discussed above London Hydro proposes to bring the revenue-to-cost ratios to the
 7 boundaries of the ranges applicable to the respective classes. In order to avoid a large increase
 8 in the distribution rates encountered by customers in the classes whose ratios will be increased,
 9 London Hydro proposes a phase-in period of four years. The proposed future year revenue to
 10 cost ratios adjustments are shown in Table 7.1.3.3 London Hydro has however determined that
 11 the General Service greater than 50 kW class will absorb the allocation adjustments.

12 **Table 7.1.3.3 Impact Analysis Rate Class Change**

Rate Class	Proposed Ratios				Target Range	
	2017	2018	2019	2020	Floor	Ceiling
Residential	102.1%	102.1%	102.1%	102.1%	85%	115%
General Service Less Than 50 kW	124.5%	123.0%	121.5%	120.0%	80%	120%
General Service 50 to 4,999 kW	82.6%	83.4%	84.2%	85.0%	80%	180%
General Service 50 to 4,999 kW (Wholesale)	0.0%	0.0%	0.0%	0.0%	80%	180%
General Service 1,000 To 4,999 kW (co-ge)	80.7%	80.7%	80.7%	80.7%	80%	180%
Standby Power	85.3%	85.3%	85.3%	85.3%	0%	0%
Large Use	107.6%	107.6%	107.6%	107.6%	85%	115%
Street Lighting	125.5%	123.6%	121.8%	120.0%	70%	120%
Sentinel Lighting	65.1%	66.7%	68.4%	70.0%	70%	120%
Unmetered Scattered Load	74.8%	76.5%	78.3%	80.0%	80%	120%
microFIT	0.0%	0.0%	0.0%	0.0%	0%	0%



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1 **OTHER COST ALLOCATION INFORMATION**

2 Board worksheet O-2 is provided below,

3 Per the Filing Requirement the Cost Allocation model has been filed in live Excel format. The

4 tables from Appendix 2-P are also filed in Excel format.

OEB CA Input Sheet I-6.1 Revenue	Exhibit 7 Tab 1 Schedule 3 Attachment 1.1
OEB CA Input Sheet I-6.2 Customer Data	Exhibit 7 Tab 1 Schedule 3 Attachment 1.2
OEB CA Input Sheet I-8	Exhibit 7 Tab 1 Schedule 3 Attachment 2
OEB CA Output Sheet O-1	Exhibit 7 Tab 1 Schedule 3 Attachment 3
OEB CA Output Sheet O-2	Exhibit 7 Tab 1 Schedule 3 Attachment 4
OEB RRWF Sheet 11 Tables 1 to	Exhibit 7 Tab 1 Schedule 3 Attachment 5

5



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1 **Confirmation of Communication - Unmetered Load**

2

3 London Hydro acknowledges that the OEB expects distributors to document its communications
4 with unmetered load customers, including street lighting customers, and how the distributor
5 assisted them in understanding the regulatory context in which distributors operate and how it
6 affects unmetered load customers.

7

8 London Hydro herein confirms communication with unmetered load customers, street lighting
9 and sentinel lighting customers with respect to notification filing of this application. Please
10 reference sample letter attached Exhibit 7 Tab 1 Schedule 4 Attachment 1.1.



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Attachment 1 of 6

Sample Letter to USL Customers

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
LONDON ON [REDACTED]

Re: London Hydro Rate Filing – Unmetered Scattered Loads
Billing Number [REDACTED]

Dear [REDACTED]

This letter is to advise you that London Hydro is preparing an application to the Ontario Energy Board to update its distribution rates as of May 1, 2017. The application will include comprehensive updates on London Hydro's costs to provide service to its customers and on the electricity loads on London Hydro's distribution system. As part of its Cost of Service application, London Hydro will submit a cost allocation study to support the rates applied for from each customer class, reflecting the electricity load of each class on the distribution system.

As an Unmetered Load customer, your monthly bill is based on an estimate of your electricity consumption, determined by the wattage of your devices and the estimated amount of time that they are in use each month. The following factors are used to calculate your billable consumption each month.

Service ID	Rate Category	Service Description	# of Units	Daily kWh
[REDACTED]	EUSL_DIST	● PARKING LOT LIGHTS PLUS PAY & DISPLAY EQUIPMENT	●	[REDACTED]

Cost Allocation studies are performed approximately every five years. You may contact us at any time to update information about the wattage or duty cycle of your devices, which may affect your bill in the future. Verified updates may result in an adjustment to your monthly invoice; they will not affect London Hydro's rate structure until the next Cost of Service application to the Ontario Energy Board.

London Hydro is currently updating its Conditions of Service document, which is published on our web-site. The revision will include our plan to advise Unmetered Load customers prior to any cost allocation study as is now required of all distributors by the Ontario Energy.

The Distribution System Code can be found on the Ontario Energy Board website under “Industry”¹. London Hydro’s current Conditions of Service can be found on London Hydro’s web-site².

Please contact me directly with any questions or concerns at 519-661-5800 Ext. 5940 or by e-mail at kilbourp@londonhydro.com.

Yours truly,

LONDON HYDRO INC.

A handwritten signature in black ink, appearing to read 'P. Kilbourne', with a long horizontal flourish extending to the right.

Paul Kilbourne
Customer Relationship Manager
PAK/pak

1

<http://www.ontarioenergyboard.ca/OEB/Industry/Rules+and+Requirements/Rules+Codes+Guidelines+and+Forms#dsc>

2

<https://www.londonhydro.com/site/binaries/content/assets/lhcontent/pdfs/conditionsof servicemay2015.pdf>



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ATTACHMENT 2 OF 6 OEB CA INPUT SHEET I-6

2017 Cost Allocation Model

EB-2016-0091
Sheet 16.1 Revenue Worksheet -

Total kWhs from Load Forecast	3,070,021,511
-------------------------------	---------------

Total kW from Load Forecast	4,214,804
-----------------------------	-----------

Deficiency/sufficiency (RRWF 8. cell F51)	3,471,450
---	-----------

Miscellaneous Revenue (RRWF 5. cell F48)	4,964,164
--	-----------

			1	2	3	5	6	7	8	9	11
	ID	Total	Residential	GS <50	GS>50-Regular	Cogeneration	Large Use >5MW	Street Light	Sentinel	Unmetered Scattered Load	Back-up/Standby Power
Billing Data											
Forecast kWh	CEN	3,070,021,511	1,068,671,798	371,911,863	1,486,650,047	10,203,346	82,923,505	19,502,488	706,221	5,464,035	23,988,209
Forecast kW	CDEM	4,214,804			3,778,018	65,844	159,628	54,607	1,907		154,800
Forecast kW, included in CDEM, of customers receiving line transformer allowance		1,319,807			1,099,163	65,844					154,800
Optional - Forecast kWh, included in CEN, from customers that receive a line transformation allowance on a kWh basis. In most cases this will not be applicable and will be left blank.		-									
KWh excluding KWh from Wholesale Market Participants	CEN EWMP	3,052,419,394	1,068,671,798	371,911,863	1,469,047,929	10,203,346	82,923,505	19,502,488	706,221	5,464,035	23,988,209
Existing Monthly Charge			\$16.42	\$32.25	\$157.55	\$2,523.99	\$20,286.64	\$1.64	\$3.48	\$2.08	
Existing Distribution kWh Rate			\$0.0121	\$0.0104						\$0.0180	
Existing Distribution kW Rate					\$2.6298	\$4.4090	\$2.2003	\$8.5143	\$11.4837		\$3.0486
Existing TOA Rate					\$0.60	\$0.60					\$0.60
Additional Charges											
Distribution Revenue from Rates		\$65,532,676	\$41,010,902	\$8,801,746	\$12,886,659	\$411,457	\$594,669	\$1,171,689	\$46,914	\$136,716	\$471,923
Transformer Ownership Allowance		\$791,884	\$0	\$0	\$659,498	\$39,506	\$0	\$0	\$0	\$0	\$92,880
Net Class Revenue	CREV	\$64,740,792	\$41,010,902	\$8,801,746	\$12,227,162	\$371,951	\$594,669	\$1,171,689	\$46,914	\$136,716	\$379,043

2017 Cost Allocation Model

EB-2016-0091
Sheet I6.2 Customer Data Worksheet -

		1	2	3	5	6	7	8	9	11	
	ID	Total	Residential	GS <50	GS>50-Regular	Cogeneration	Large Use >5MW	Street Light	Sentinel	Unmetered Scattered Load	Back-up/Standby Power
Billing Data											
Bad Debt 3 Year Historical Average	BDHA	\$417,592	\$339,047	\$39,179	\$39,365	\$0	\$0	\$0	\$0	\$0	\$0
Late Payment 3 Year Historical Average	LPHA	\$1,193,957	\$778,085	\$171,746	\$237,837	\$0	\$6,289				
Number of Bills	CNB	1,875,558	1,702,128	152,232.00	18,834.00	48	12.00	12.00	1,872.00	420.00	
Number of Devices	CDEV							35,912	599	1,537	
Number of Connections (Unmetered)	CCON	18,978						16,842	599	1,537	
Total Number of Customers	CCA	157,016	142,509	12,749	1,561	4	1	1	156	35	
Bulk Customer Base	CCB	157,016	142,509	12,749	1,561	4	1	1	156	35	
Primary Customer Base	CCP	159,298	142,509	12,749	1,561	4	1	2,474			
Line Transformer Customer Base	CCLT	159,260	142,509	12,749	1,528	-	-	2,474			
Secondary Customer Base	CCS	155,512	142,509	12,749	62	-	-	1	156	35	
Weighted - Services	CWCS	185,926	142,509	31,873	465	-	-	10,105	359	615	-
Weighted Meter -Capital	CWMC	29,775,403	24,129,847	2,318,836	3,100,596	130,178	95,945	-	-	-	-
Weighted Meter Reading	CWMR	2,024,694	1,702,800	158,280	163,074	432	108	-	-	-	-
Weighted Bills	CWNB	1,928,082	1,702,128	197,902	24,484	1,104	726	-	1,192	546	-

Bad Debt Data

Historic Year:	2012	302,622	186,339	49,648	66,635						
Historic Year:	2013	456,120	402,600	17,206	36,314						
Historic Year:	2014	494,034	428,203	50,684	15,147						
Three-year average		417,592	339,047	39,179	39,365	-	-	-	-	-	-



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ATTACHMENT 3 OF 6 OEB CA INPUT SHEET I-8

2017 Cost Allocation Model

EB-2016-0091

Sheet 18 Demand Data Worksheet -

This is an input sheet for demand allocators.

CP TEST RESULTS	4 CP
NCP TEST RESULTS	4 NCP

Co-incident Peak	Indicator
1 CP	CP 1
4 CP	CP 4
12 CP	CP 12

Non-co-incident Peak	Indicator
1 NCP	NCP 1
4 NCP	NCP 4
12 NCP	NCP 12

Customer Classes	Total	1	2	3	5	6	7	8	9	11	
		Residential	GS <50	GS>50-Regular	Cogeneration	Large Use >5MW	Street Light	Sentinel	Unmetered Scattered Load	Back-up/Standby Power	
CO-INCIDENT PEAK											
1 CP											
Transformation CP	TCP1	609,729	247,260	72,409	256,134	4,425	16,043	46	2	511	12,900
Bulk Delivery CP	BCP1	609,729	247,260	72,409	256,134	4,425	16,043	46	2	511	12,900
Total Sytem CP	DCP1	609,729	247,260	72,409	256,134	4,425	16,043	46	2	511	12,900
4 CP											
Transformation CP	TCP4	2,338,764	913,281	287,005	1,001,793	25,006	57,846	182	7	2,043	51,600
Bulk Delivery CP	BCP4	2,338,764	913,281	287,005	1,001,793	25,006	57,846	182	7	2,043	51,600
Total Sytem CP	DCP4	2,338,764	913,281	287,005	1,001,793	25,006	57,846	182	7	2,043	51,600
12 CP											
Transformation CP	TCP12	5,988,397	2,319,997	712,509	2,577,128	46,443	136,832	31,803	1,152	7,733	154,800
Bulk Delivery CP	BCP12	5,988,397	2,319,997	712,509	2,577,128	46,443	136,832	31,803	1,152	7,733	154,800
Total Sytem CP	DCP12	5,988,397	2,319,997	712,509	2,577,128	46,443	136,832	31,803	1,152	7,733	154,800
NON CO-INCIDENT PEAK											
1 NCP											
Classification NCP from											
Load Data Provider	DNCP1	700,578	304,461	75,863	271,897	13,563	16,422	4,563	165	742	12,900
Primary NCP	PNCP1	700,578	304,461	75,863	271,897	13,563	16,422	4,563	165	742	12,900
Line Transformer NCP	LTNCP1	657,693	304,461	75,863	271,897	-	-	4,563	165	742	-
Secondary NCP	SNCP1	657,693	304,461	75,863	271,897	-	-	4,563	165	742	-
4 NCP											
Classification NCP from											
Load Data Provider	DNCP4	2,571,554	1,051,217	294,137	1,039,589	51,143	61,987	18,251	661	2,970	51,600
Primary NCP	PNCP4	2,571,554	1,051,217	294,137	1,039,589	51,143	61,987	18,251	661	2,970	51,600
Line Transformer NCP	LTNCP4	2,406,824	1,051,217	294,137	1,039,589	-	-	18,251	661	2,970	-
Secondary NCP	SNCP4	2,406,824	1,051,217	294,137	1,039,589	-	-	18,251	661	2,970	-
12 NCP											
Classification NCP from											
Load Data Provider	DNCP12	6,679,524	2,581,764	775,350	2,825,227	121,036	155,753	54,706	1,981	8,907	154,800
Primary NCP	PNCP12	6,679,524	2,581,764	775,350	2,825,227	121,036	155,753	54,706	1,981	8,907	154,800
Line Transformer NCP	LTNCP12	5,203,964	2,581,764	775,350	1,726,064	55,192	-	54,706	1,981	8,907	-
Secondary NCP	SNCP12	5,203,964	2,581,764	775,350	1,726,064	55,192	-	54,706	1,981	8,907	-



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ATTACHMENT 4 OF 6

OEB CA OUTPUT SHEET 0-1

2017 Cost Allocation Model

EB-2016-0091

Sheet 01 Revenue to Cost Summary Worksheet -

Instructions:
Please see the first tab in this workbook for detailed instructions

Class Revenue, Cost Analysis, and Return on Rate Base

Rate Base	Total	1	2	3	5	6	7	8	9	11	
		Residential	GS <50	GS>50-Regular	Cogeneration	Large Use >5MW	Street Light	Sentinel	Unmetered Scattered Load	Back-up/Standby Power	
Assets											
crev	Distribution Revenue at Existing Rates	\$64,740,792	\$41,010,902	\$8,801,746	\$12,227,162	\$371,951	\$594,669	\$1,171,689	\$46,914	\$136,716	\$379,043
mi	Miscellaneous Revenue (mi)	\$4,964,164	\$3,393,056	\$582,345	\$849,326	\$13,449	\$26,461	\$72,785	\$4,135	\$9,653	\$12,953
	Miscellaneous Revenue Input equals Output										
	Total Revenue at Existing Rates	\$69,704,956	\$44,403,958	\$9,384,092	\$13,076,488	\$385,400	\$621,131	\$1,244,474	\$51,048	\$146,369	\$391,996
	Factor required to recover deficiency (1 + D)	1.0536									
	Distribution Revenue at Status Quo Rates	\$68,212,243	\$43,209,938	\$9,273,703	\$12,882,791	\$391,895	\$626,556	\$1,234,515	\$49,429	\$144,047	\$399,368
	Miscellaneous Revenue (mi)	\$4,964,164	\$3,393,056	\$582,345	\$849,326	\$13,449	\$26,461	\$72,785	\$4,135	\$9,653	\$12,953
	Total Revenue at Status Quo Rates	\$73,176,406	\$46,602,994	\$9,856,048	\$13,732,118	\$405,344	\$653,017	\$1,307,300	\$53,564	\$153,700	\$412,321
Expenses											
di	Distribution Costs (di)	\$16,722,447	\$9,411,782	\$1,888,364	\$4,585,757	\$140,925	\$175,504	\$294,412	\$22,220	\$56,805	\$146,678
cu	Customer Related Costs (cu)	\$6,812,753	\$5,776,845	\$609,839	\$409,005	\$8,591	\$6,014	\$0	\$1,687	\$773	\$0
ad	General and Administration (ad)	\$15,258,030	\$9,812,695	\$1,621,104	\$3,263,412	\$97,539	\$118,349	\$195,591	\$15,711	\$37,964	\$95,664
dep	Depreciation and Amortization (dep)	\$17,128,312	\$10,379,203	\$1,822,731	\$4,202,010	\$126,682	\$149,791	\$251,136	\$21,775	\$55,864	\$119,120
INPUT	PILs (INPUT)	\$1,377,498	\$817,641	\$149,628	\$348,055	\$10,458	\$12,534	\$22,472	\$1,838	\$4,698	\$10,174
INT	Interest	\$4,781,399	\$2,838,093	\$519,370	\$1,208,126	\$36,300	\$43,508	\$78,001	\$6,378	\$16,307	\$35,315
	Total Expenses	\$62,080,439	\$39,036,259	\$6,611,037	\$14,016,366	\$420,495	\$505,699	\$841,612	\$69,610	\$172,411	\$406,950
Direct Allocation		\$3,770	\$0	\$0	\$0	\$0	\$3,770	\$0	\$0	\$0	
NI	Allocated Net Income (NI)	\$11,092,198	\$6,583,991	\$1,204,869	\$2,802,689	\$84,212	\$100,932	\$180,952	\$14,797	\$37,830	\$81,925
	Revenue Requirement (includes NI)	\$73,176,406	\$45,620,249	\$7,815,906	\$16,819,055	\$504,706	\$606,631	\$1,026,334	\$84,407	\$210,241	\$488,876
	Revenue Requirement Input equals Output										
Rate Base Calculation											
Net Assets											
dp	Distribution Plant - Gross	\$429,559,933	\$254,307,474	\$46,523,758	\$109,759,913	\$3,181,538	\$3,816,187	\$6,822,325	\$574,492	\$1,474,798	\$3,099,449
gp	General Plant - Gross	\$79,013,410	\$46,892,982	\$8,607,228	\$20,008,635	\$580,119	\$695,908	\$1,291,139	\$107,218	\$274,015	\$566,166
accum dep	Accumulated Depreciation	(\$196,745,924)	(\$116,182,456)	(\$21,138,905)	(\$50,761,865)	(\$1,491,455)	(\$1,787,811)	(\$3,015,899)	(\$256,834)	(\$663,057)	(\$1,447,941)
co	Capital Contribution	(\$48,058,788)	(\$28,451,151)	(\$5,328,890)	(\$12,338,433)	(\$277,484)	(\$335,267)	(\$733,548)	(\$72,133)	(\$183,978)	(\$277,903)
	Total Net Plant	\$263,768,633	\$156,556,848	\$28,663,191	\$66,668,250	\$1,993,017	\$2,389,018	\$4,304,017	\$352,743	\$901,780	\$1,939,770
	Directly Allocated Net Fixed Assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
COP											
	Cost of Power (COP)	\$399,239,563	\$140,395,419	\$48,548,312	\$191,537,796	\$1,328,962	\$10,800,593	\$2,682,373	\$97,042	\$724,657	\$3,124,408
	OM&A Expenses	\$38,793,230	\$25,001,322	\$4,119,307	\$8,258,174	\$247,054	\$299,866	\$490,003	\$39,619	\$95,542	\$242,342
	Directly Allocated Expenses	\$3,770	\$0	\$0	\$0	\$0	\$0	\$3,770	\$0	\$0	\$0
	Subtotal	\$438,036,563	\$165,396,741	\$52,667,619	\$199,795,970	\$1,576,017	\$11,100,460	\$3,176,146	\$136,661	\$820,199	\$3,366,750
	Working Capital	\$37,977,770	\$14,339,897	\$4,566,283	\$17,322,311	\$136,641	\$962,410	\$275,372	\$11,849	\$71,111	\$291,897
	Total Rate Base	\$301,746,403	\$170,896,746	\$33,229,473	\$83,990,560	\$2,129,658	\$3,351,428	\$4,579,389	\$364,592	\$972,891	\$2,231,667
	Rate Base Input equals Output										
	Equity Component of Rate Base	\$120,698,561	\$68,358,698	\$13,291,789	\$33,596,224	\$851,863	\$1,340,571	\$1,831,755	\$145,837	\$389,156	\$892,667
	Net Income on Allocated Assets	\$11,092,198	\$7,566,735	\$3,245,011	(\$284,248)	(\$15,150)	\$147,318	\$461,918	(\$16,046)	(\$18,711)	\$5,370
	Net Income on Direct Allocation Assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Net Income	\$11,092,198	\$7,566,735	\$3,245,011	(\$284,248)	(\$15,150)	\$147,318	\$461,918	(\$16,046)	(\$18,711)	\$5,370
RATIOS ANALYSIS											
	REVENUE TO EXPENSES STATUS QUO%	100.00%	102.15%	126.10%	81.65%	80.31%	107.65%	127.38%	63.46%	73.11%	84.34%
	EXISTING REVENUE MINUS ALLOCATED COSTS	(\$3,471,451)	(\$1,216,291)	\$1,568,186	(\$3,742,567)	(\$119,307)	\$14,500	\$218,139	(\$33,359)	(\$63,873)	(\$96,880)
	Deficiency Input equals Output										
	STATUS QUO REVENUE MINUS ALLOCATED COSTS	(\$0)	\$982,745	\$2,040,142	(\$3,086,937)	(\$99,362)	\$46,386	\$280,966	(\$30,843)	(\$56,542)	(\$76,555)
	RETURN ON EQUITY COMPONENT OF RATE BASE	9.19%	11.07%	24.41%	-0.85%	-1.78%	10.99%	25.22%	-11.00%	-4.81%	0.60%



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OEB CA OUTPUT SHEET 0-2

2017 Cost Allocation Model

EB-2016-0091

Sheet 02 Monthly Fixed Charge Min. & Max. Worksheet -

Output sheet showing minimum and maximum level for Monthly Fixed Charge

Summary

Customer Unit Cost per month - Avoided Cost
 Customer Unit Cost per month - Directly Related
 Customer Unit Cost per month - Minimum System with PLCC Adjustment
 Existing Approved Fixed Charge

	1	2	3	5	6	7	8	9	11
	Residential	GS <50	GS>50-Regular	Cogeneration	Large Use >5MW	Street Light	Sentinel	Unmetered Scattered Load	Back-up/Standby Power
Customer Unit Cost per month - Avoided Cost	\$3.47	\$2.93	\$11.54	\$415.22	\$315.58	\$0.00	\$0.21	\$0.03	0
Customer Unit Cost per month - Directly Related	\$5.71	\$5.52	\$27.31	\$591.99	\$819.80	\$0.00	\$0.35	\$0.06	0
Customer Unit Cost per month - Minimum System with PLCC Adjustment	\$17.02	\$20.63	\$40.84	\$600.35	\$833.49	\$3.97	\$11.73	\$8.77	0
Existing Approved Fixed Charge	\$16.42	\$32.25	\$157.55	\$2,523.99	\$20,286.64	\$1.64	\$3.48	\$2.08	\$0.00



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Tab: 1

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ATTACHMENT 6 OF 6

OEB RRWF SHEET 11 TABLES 1 TO 4



Revenue Requirement Workform (RRWF) for 2017 Filers

Cost Allocation and Rate Design

This spreadsheet replaces **Appendix 2-P** and provides a summary of the results from the Cost Allocation spreadsheet, and is used in the determination of the class revenue requirement and, hence, ultimately, the determination of rates from customers in all classes to recover the revenue requirement.

Stage in Application Process: *Initial Application*

A) *Allocated Costs*

Name of Customer Class ⁽³⁾	Costs Allocated from Previous Study ⁽¹⁾	%	Allocated Class Revenue Requirement ⁽¹⁾	%
From Sheet 10. Load Forecast				
(7A)				
1 Residential	\$ 37,252,651	56.17%	\$ 45,620,249	62.34%
2 GS < 50 kW	\$ 9,516,761	14.35%	\$ 7,815,906	10.68%
3 GS > 50 - 4,999 kW	\$ 15,604,675	23.53%	\$ 16,819,055	22.98%
4 Wholesale Market Participant				
5 Co-Generation	\$ 229,772	0.35%	\$ 504,706	0.69%
6 Standby	\$ 580,185	0.87%	\$ 488,876	0.67%
7 Large Use	\$ 1,343,950	2.03%	\$ 606,631	0.83%
8 Street Lights	\$ 1,576,108	2.38%	\$ 1,026,334	1.40%
9 Sentinel Lights	\$ 65,751	0.10%	\$ 84,407	0.12%
10 Unmetered Scattered Load	\$ 156,180	0.24%	\$ 210,241	0.29%
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
Total	\$ 66,326,034	100.00%	\$ 73,176,406	100.00%
Service Revenue Requirement (from Sheet 9)			\$ 73,176,406.38	

- (1) Class Allocated Revenue Requirement, from Sheet O-1, Revenue to Cost || RR, row 40, from the Cost Allocation Study in this application. This excludes costs in deferral and variance accounts. For Embedded Distributors, Account 4750 - Low Voltage (LV) Costs are also excluded.
- (2) Host Distributors - Provide information on any embedded distributor(s) as a separate class, if applicable. If embedded distributors are billed in a General Service class, include the allocated costs and revenues of the embedded distributor(s) in the applicable class, and also complete Appendix 2-Q.
- (3) Customer Classes - If these differ from those in place in the previous cost allocation study, modify the customer classes to match the proposal in the current application as closely as possible.

B) **Calculated Class Revenues**

Name of Customer Class	Load Forecast (LF) X current approved rates (7B)	LF X current approved rates X (1+d) (7C)	LF X Proposed Rates (7D)	Miscellaneous Revenues (7E)
1 Residential	\$ 41,010,902	\$ 43,183,365	\$ 43,183,365	\$ 3,393,056
2 GS < 50 kW	\$ 8,801,746	\$ 9,268,000	\$ 9,148,828	\$ 582,345
3 GS > 50 - 4,999 kW	\$ 12,227,162	\$ 12,909,804	\$ 13,042,889	\$ 849,326
4 Wholesale Market Participant				
5 Co-Generation	\$ 371,951	\$ 393,747	\$ 393,747	\$ 13,449
6 Standby	\$ 379,043	\$ 404,042	\$ 404,042	\$ 12,953
7 Large Use	\$ 594,669	\$ 626,170	\$ 626,170	\$ 26,461
8 Street Lights	\$ 1,171,689	\$ 1,233,756	\$ 1,214,842	\$ 72,785
9 Sentinel Lights	\$ 46,914	\$ 49,399	\$ 50,778	\$ 4,135
10 Unmetered Scattered Load	\$ 136,716	\$ 143,958	\$ 147,580	\$ 9,653
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
Total	\$ 64,740,792	\$ 68,212,243	\$ 68,212,243	\$ 4,964,164

- (4) In columns 7B to 7D, LF means Load Forecast of Annual Billing Quantities (i.e., customers or connections, as applicable X 12 months, and kWh, kW or kVA as applicable. Revenue quantities should be net of the Transformer Ownership Allowance for applicable customer classes. Exclude revenues from rate adders and rate riders.
- (5) Columns 7C and 7D - Column Total should equal the Base Revenue Requirement for each.
- (6) Column 7C - The OEB-issued cost allocation model calculates "1+d" on worksheet O-1, cell C22. "d" is defined as Revenue Deficiency/Revenue at Current Rates.
- (7) Column 7E - If using the OEB-issued cost allocation model, enter Miscellaneous Revenues as it appears on worksheet O-1, row 19,

C) Rebalancing Revenue-to-Cost Ratios

Name of Customer Class	Previously Approved Ratios Most Recent Year: 2013 %	Status Quo Ratios (7C + 7E) / (7A) %	Proposed Ratios (7D + 7E) / (7A) %	Policy Range %
1 Residential	109.68%	102.10%	102.10%	85 - 115
2 GS < 50 kW	93.76%	126.03%	124.50%	80 - 120
3 GS > 50 - 4,999 kW	82.67%	81.81%	82.60%	80 - 120
4 Wholesale Market Participant				80 - 120
5 Co-Generation	109.10%	80.68%	80.68%	80 - 120
6 Standby	64.53%	85.30%	85.30%	80 - 120
7 Large Use	115.75%	107.58%	107.58%	85 - 115
8 Street Lights	81.30%	127.30%	125.46%	80 - 120
9 Sentinel Lights	81.06%	63.42%	65.06%	80 - 120
10 Unmetered Scattered Load	82.03%	73.06%	74.79%	80 - 120
11				
12				
13				
14				
15				
16				
17				
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19				
20				

- (8) Previously Approved Revenue-to-Cost (R/C) Ratios - For most applicants, the most recent year would be the third year (at the latest) of the Price Cap IR period. For example, if the applicant, rebased in 2012 with further adjustments to move within the range over two years, the Most Recent Year would be 2015. However, the ratios in 2015 would be equal to those after the adjustment in 2014.
- (9) Status Quo Ratios - The OEB-issued cost allocation model provides the Status Quo Ratios on Worksheet O-1. The Status Quo means "Before Rebalancing".
- (10) Ratios shown in red are outside of the allowed range. Applies to both Tables C and D.

(D) Proposed Revenue-to-Cost Ratios ⁽¹¹⁾

Name of Customer Class	Proposed Revenue-to-Cost Ratio			Policy Range
	Test Year 2017	Price Cap IR Period		
		2018	2019	
1 Residential	102.10%	102.10%	102.10%	85 - 115
2 GS < 50 kW	124.50%	123.00%	121.50%	80 - 120
3 GS > 50 - 4,999 kW	82.60%	83.39%	84.18%	80 - 120
4 Wholesale Market Participant				80 - 120
5 Co-Generation	80.68%	80.68%	80.68%	80 - 120
6 Standby	85.30%	85.30%	85.30%	80 - 120
7 Large Use	107.58%	107.58%	107.58%	85 - 115
8 Street Lights	1.254588547	123.64%	121.82%	80 - 120
9 Sentinel Lights	0.650573271	66.70%	68.35%	80 - 120
10 Unmetered Scattered Load	0.747865765	76.52%	78.26%	80 - 120
11				
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(11) The applicant should complete Table D if it is applying for approval of a revenue-to-cost ratio in 2017 that is outside of the OEB's policy range for any customer class. Table D will show that the distributor is likely to enter into the 2018 and 2019 Price Cap IR models, as necessary. For 2018 and 2019, enter the planned revenue-to-cost ratios that will be "Change" or "No Change" in 2017 (in the current Revenue/Cost Ratio Adjustment Workform, Worksheet C1.1 'Decision - Cost Revenue Adjustment, column d), and enter TBD for class(es) that will be entered as 'Rebalance'.