MODIFICATION TO OEB COST ALLOCATION METHODOLOGY AND RESULTS

1.0 INTRODUCTION

This exhibit details the modifications that Hydro One Distribution made to the Board's Cost Allocation model to reflect its unique circumstances and also presents the results of the Cost Allocation Study.

2.0 COMPUTER MODEL

Hydro One Distribution modified the Board's Cost Allocation model to take into account density aspects, serving a large number of Embedded customers through its Low Voltage system and having multiple customer classes in addition to over 270 customer classes for Acquired LDCs.

Hydro One Distribution used Version 50 of the Cost Allocation model as a starting point and understands from Board staff that differences between version 50 and the first official Cost Allocation model version are mainly cosmetics. In addition, Hydro One has implemented updates to version 50 as identified by Board staff in the releases of the latest Cost Allocation Model versions 1.1 and 1.2. This is the same model used by Hydro One in Proceeding EB-2007-0681. Attachment 1 includes the Cost Allocation model.

3.0 DENSITY WEIGHTING FACTORS

Density factors have been incorporated as weighting factors for Overhead lines and Transformers, consistent with the customer classes approved by the Board that are based

on Density definitions. The Density definitions are unchanged from Proceeding EB-2007-0681.

For lines, Customer Density weighting factors were developed by calculating for all feeders the number of customers by customer class on each feeder and assigning the total distance of the feeders to the various customer classes proportionally. A similar method was used to develop Demand Density weighting factors, by using energy by customer class by feeder and total energy supplied by feeder to assign the feeder length for each feeder to customer classes proportionally.

For transformers, Customers Density weighting factors were developed by calculating Net Book Value of Transformation Assets by feeder and assigning the total Net Book Value of Transformation assets by feeder to the various customer classes proportionally. A similar method was used to develop Demand Density weighting factors, by using energy by customer class by feeder and total energy supplied by feeder to assign the Net Book Value of Transformation assets for each feeder to customer classes proportionally.

4.0 MODIFICATIONS

Hydro One's Subtransmission ("ST") class includes all previously classified Directs, Large Users, most T-class customers, all Embedded LDCs, some three-phase General Service, one Farm customer, some Acquired General Service customers, and some Urban General Service customers. All these customers are directly served at voltages between 44 kV and 13.8 kV, have consumption above 500 kW and provide their own transformation. Some of the LDCs are served below 13.8 kV and Hydro One provides an additional level of transformation.

Distribution assets which are used to supply the ST customer group include: High Voltage Distribution Stations, a small number of Low Voltage Distribution Stations whose secondary voltages are between 27.6 kV and 13.8 kV inclusive, and power lines between the voltages of 44 kV and 13.8 kV inclusive. In addition Distribution assets which are used to supply customers below 13.8 kV include Low Voltage Distribution Stations and power lines between the voltages of 12.5 kV and 4.16 kV inclusive.

Hydro One received Board approval in Proceeding EB-2007-0681 to have four Residential customer classes:

1. Urban includes the previous Urban Residential customer class and customers from 11 Acquired LDC Residential customer classes who met the Urban Density Criteria,
2. Residential R1 includes the previous high density and 88 Residential Acquired LDCs customers
3. Residential R2 includes the previous normal density residential classes as well as Farm single phase and three phase energy billed customer classes that receive RRRP,
4. Seasonal includes the previous high density and normal density seasonal residential customer classes.

Four General Service customer classes:

1. General Service below 50 kW includes the previous single-phase General Service, three-phase General Service, Farm single-phase and Three-phase that do not qualify for RRRP, T-class customers that are energy billed, and Acquired General Service customers that are energy billed.

2. General Service above 50 kW includes the previous General Service single-phase, General Service three-phase, T-class customers that are demand billed and consumption below 500 kW and all Farms that are demand billed.
3. Urban General Service below 50 kW includes all previous Urban General Service customers that are energy billed and energy billed single-phase General Service, three-phase General Service, single–phase Farms and Acquired General Service customers in 10 Acquired LDCs that meet the Urban density criteria.
4. Urban General Service above 50 kW includes all previous Urban General Service customers that are demand billed and demand billed single-phase General Service, three-phase General Service, and Acquired General Service customers in 10 Acquired LDCs that meet the Urban density criteria.

As approved by the Board, Hydro One Distribution created a customer class for Merchant Generators (Distributed Generators). This class is composed of 88 customers. These customers were previously three-phase General Service, T-class customers, and Acquired General Service customers. The load profile for this class is based on the consumption Distributed Generators require as station service when the active generators are not operating. No meter costs have been allocated to this class, as these customers are required to provide their own meters.

Customer classes (Input Sheet 2)

In Input Sheet 2, reproduced below, Hydro One is using the following Customer classes compared to the customer classes in the Model:

		Utility's Class Definition
1	Residential	Urban - Residential, Acquired Residential
2	GS <50	Residential – R1, Acquired Residential
3	GS>50-Regular	Residential – R2, Farms with RRRP
4	GS> 50-TOU	Seasonal
5	GS >50-Intermediate	General Service Energy-Billed
6	Large Use >5MW	General Service Demand-Billed
7	Street Light	Street Lights
8	Sentinel	Sentinel Lights
9	Unmetered Scattered Load	N/A
10	Embedded Distributor	N/A
11	Back-up/Standby Power	N/A
12	Rate Class 1	Distributed Generators
13	Rate Class 2	Sub-Transmission
14	Rate Class 3	Urban General Service Energy-Billed
15	Rate Class 4	Urban General Service Demand-Billed

4.0 MODEL CHANGES

As per Board staff instructions in version 1.1, Hydro One Distribution removed reference to step 4 and updated text for steps 1-3.

Trial Balance (Input Sheet 3)

Transformer Ownership Allowance not populated as Hydro One Distribution's proposed 2010 Revenue Requirement of $1,181 million excludes the cost of Transformer Ownership allowance.

The formula in Cell G20 has been adjusted to reflect the proposed Hydro One total working Capital of $312.8 million, or 11.7% instead of 15% for other LDCs. Hydro One

Distribution's Working Capital includes $304.7 million of cash working capital and $8.1 million of Materials and Supplies Inventory in USoA 1330. USoA 1985 Sentinel Lights is also taken into account when calculating Working Capital. Hydro One has an exemption from the Government that allows it to continue maintaining Sentinel Lights.

Wholesale meters of $1.44 million reclassified from USoA 1815 to USoA 1820.

External Revenues of $40.6 million reclassified from USoA 4330 to USoA 5135.

$4.9 million in USoA 5340 for Interval Meter Reads and Retail Settlements directly allocated to classes using number of interval meters by delivery point by customer class.

Amortization Environmental Assets of $12.8 million in USoA 5715 mapped 10% to USoA 5112 and 90% to USoA 5114 based on number of stations per category.

$1.4 million moved from USoA 5170 to USoA 5665 to reflect Sentinel Light and allocated directly to this class.

$0.35 million moved from USoA 5172 to USoA 5665 to reflect Sentinel Lights and allocated directly to this class.

Billing and Settlement Costs directly attributable to Interval Metered customers was determined for further direct assignment to classes using number of interval meters by delivery point by customer class. Balances direct assigned are: $73k from USoA 5610, $740k from USoA 5615, $14k from USoA 5630, $196k from USoA 5665 and $210k from USoA 5675.

Asset Breakout (Input Sheet 4)

Created sub-accounts for USoA 1815 1-5 Transformer Station Equipment to take into account that Hydro One owns High Voltage Distribution Stations and Low Voltage Distribution Stations. The stations can be shared between Low Voltage ("LV") system customers and other end-use customers, or used exclusively by one customer group.

Created sub-accounts for USoA 1830-3 Poles, Towers and Fixtures – Sub-Transmission Bulk Delivery to provide a split between LV and other end use customers.

Created sub-accounts for USoA 1830-4 Poles, Towers and Fixtures - Primary to provide a split between LV and other end use customers.

Created sub-accounts for USoA 1835-3 Overhead Conductors and Devices – Sub-Transmission Bulk Delivery to provide a split between LV and other end use customers.

Created sub-accounts for USoA 1835-4 Overhead Conductors and Devices - Primary to provide a split between LV and other end use customers.

Created sub-accounts for USoA 1850 1-2 Line Transformers to provide a split between LV and other end use customers.

Created sub-accounts for USoA 1860 Meters to provide a split between single, poly, LV, and Smart meters.

Added USoA 1985 Sentinel Lights.

Modified Totals to include Sub Accounts and exclude Main Accounts when creating new sub-accounts.

Miscellaneous Data (Input Sheet 5)

The fixed service charge for the rate classes is the customer weighted average service charge of the customer classes being mapped to the customer classes.

Customer Data (Input Sheet 6)

The default Billing weighting factors were aligned with Hydro One Distribution's customer classes.

Meter Capital (Input Sheet 7.1)

Hydro One Distribution matched its customer classes (column B) with the default "Cost per Meter (installed) Col 1". Column C default rate class definition not used.

Meter Reading (Input Sheet 7.2)

Used Hydro One Distribution specific Meter Reading weighting factors based on Hydro One Meter Reading Optimization analysis. The weights range between values of 1 to 4.

Demand Data (Input Sheet 8)

Total Loss Factor by class introduced in cells C16 to W25 to calculate load data at different delivery levels: TS, Bulk, Primary, and Secondary. The LT NCPs were developed using the ratio of the billed demand for customers that receive transformer ownership allowance over the total customer class billed demand as shown in Input Sheet 6.

Direct Allocation (Input Sheet 9)

The following USoA accounts were directly allocated:

5340 Miscellaneous Customer Account Expenses ($4.9 million),
5610 Management Salaries and Expenses ($73,000),
5615 General Administrative Salaries and Expenses ($0.7 million),
5630 Outside Services Employed ($14,000)
5665 Miscellaneous General Expenses ($1.9 million)
5675 Maintenance of General Plant ($0.21 million).

These expenses relate to interval meters and to staff dealing with this type of larger customers and Sentinel Light costs.

The allocation factor used for all these accounts is number of Interval Meter by delivery point by class except for Sentinel Lights included in account 5665 ($1.77 million) that has been allocated directly to Sentinel Lights.

Revenue To Cost RR (Output Sheet 1)

Hydro One Distribution Depreciation Expense includes $12.8 million for Environmental work. Environment was added to USoA 5112/5114 in Input Sheet 3. [Refer to rows 53 and 54.]

In Input Sheet 3 $8.1 million of Materials and Supplies Inventory was included in USoA 1330. Since Output Sheet 1 picks up the OM&A values from Input Sheet 3, Hydro One has to deduct these two amounts from the OM&A and add USoA 1330 when calculating Working Capital as a percentage of OM&A costs.[Refer to row 59]

Hydro One Distribution's Working Capital is based on 11.7% of OM&A instead of 15% in RP-2005-0020/EB-2005-0378. [Refer to row 58]

Rows 76 to 100 have been added to reflect Hydro One's Miscellaneous External Revenues and Common and Preferred Equity financial structure.

Rows 87 to 94 have been added to properly allocate Miscellaneous External Revenues instead of using Weighted Number of Bills ("CWNB") as per OEB model.

Rows 97 to 100 reflect revenues and costs of standard distribution rates, including Miscellaneous External Revenues. The proposed Revenue Requirement of $1,181 million is recovered from Standard Distribution rates and from Miscellaneous External Revenues.

Adjusted the Rate Base checking formulae in Row 62 to be based on nearest million dollar.

Fixed Charge Floor Ceiling (Output Sheet 2)

Formula on row 28 changed for Gross Plant to include USoA 1985 Sentinel Light Assets.

Adjusted formulas in rows 94, 97, 131, 148, 149, 152, 153, 163 and 164 to reflect new sub-accounts.

Allocation of Miscellaneous Services Revenue (USoA 4235) has been divided into two sub accounts on row 181 and 182. This has been revised to allocate revenue in a manner similar to the allocation of associated costs.

Line Transformers PLCC Adjustment (Output Sheet 2.1)

Adjusted formulas in rows 11, 41, and 42 to reflect new sub-accounts.

Formula on row 28 changed for Gross Plant to include USoA 1985 Sentinel Light Assets.

Formula on row 25 adjusted to ensure allocated cost does not exceed total cost when the PLCC kW is changed from the default of 400 W in E3: PLCC.

Primary Costs PLCC Adjustment (Output Sheet 2.2)

Adjusted formulas in rows 11, 12, 43, 44, 49, 50, 58, and 59 to reflect new sub-accounts.

Formula on row 30 changed for Gross Plant to include USoA 1985 Sentinel Light Assets.

Secondary Costs PLCC Adjustment (Output Sheet 2.3)

Titles of USoA accounts in rows 11, 12, 13, 14, 41, 42, 43, 44, 47, 48, 49 and 50 changed to Secondary – 5, instead of -4.

Formula on row 28 changed for Gross Plant to include USoA 1985 Sentinel Light Assets.

Line Transformer Unit Costs (Output Sheet 3.1)

Adjusted formulas in rows 11, 44, and 45 to reflect new sub-accounts.

Formula on row 31 changed for Gross Plant to include USoA 1985 Sentinel Light Assets.

Substation Transformation Unit Costs (Output Sheet 3.2)

Formula on row 36 changed for Gross Plant to include USoA 1985 Sentinel Light Assets.

Primary Cost Pools (Output Sheet 3.3)

Adjusted formulas in rows 11, 12, 37, 38, 43, 44, 52, and 53 to reflect new sub-accounts.

Formula on row 24 changed for Gross Plant to include USoA 1985 Sentinel Light Assets.

Secondary Cost Pools (Output Sheet 3.4)

Titles of USoA accounts in rows 11, 12, 13, 14, 37, 38, 39, 40, 43, 44, 45, and 46 changed to Secondary – 5, instead of -4.

Formula on row 24 changed for Gross Plant to include USoA 1985 Sentinel Light Assets.

Formulas on rows 52 and 53 adjusted to reflect new sub-accounts.

USL Metering Credit (Output Sheet 3.5)

Formulas on rows 11, 41, and 42 adjusted to reflect new sub-accounts.

Formula on row 28 changed for Gross Plant to include USoA 1985 Sentinel Light Assets.

Summary By Class and Accounts (Output Sheet 4)

New rows added to reflect new Sub-accounts: 1815 -1, 2, 3, 4, 5, and 1830 – 3A and 3B, 4A and 4B, 1835 -3A and 3B, 4A and 4B, 1850 – 1 and 2, 1860 – 1, 2, 3, and 4, and 1985 Sentinel Lights.

An additional row has been added to reflect the new sub account 4235b.

Details By Class and Accounts (Output Sheet 5)

New rows added to reflect new Sub-accounts: 1815 -1, 2, 3, 4, 5, and 1830 – 3A and 3B, 4A and 4B, 1835 -3A and 3B, 4A and 4B, 1850 – 1 and 2, 1860 – 1, 2, 3, and 4, and 1985 Sentinel Lights.

Trial Balance Totals in column E of Main Accounts are zero to avoid double counting with new sub-accounts.

An additional row has been added to reflect the new sub account 4235b.

Source Data for E2, (Output Sheet 6)

New rows added to reflect new Sub-accounts: 1815 -1, 2, 3, 4, 5, and 1830 – 3A and 3B, 4A and 4B, 1835 -3A and 3B, 4A and 4B, 1850 – 1 and 2, 1860 – 1, 2, 3, and 4, and 1985 Sentinel Lights.

Main account formulas adjusted to reflect the sum of sub-accounts.

Amortization (Output Sheet 7)

New rows added to reflect new Sub-accounts: 1815 -1, 2, 3, 4, 5, and 1830 – 3A and 3B, 4A and 4B, 1835 -3A and 3B, 4A and 4B, 1850 – 1 and 2, 1860 – 1, 2, 3, and 4, and 1985 Sentinel Lights.

Main account formulas adjusted to reflect the sum of sub-accounts.

USoA 1985 directly allocated to Sentinel Lights.

Categorization (Exhibit Sheet 1)

New rows added to reflect new Sub-accounts: 1815 -1, 2, 3, 4, 5, and 1830 – 3A and 3B, 4A and 4B, 1835 -3A and 3B, 4A and 4B, 1850 – 1 and 2, 1860 – 1, 2, 3, and 4, and 1985 Sentinel Lights.

Based on an updated Minimum System done for Hydro One Distribution , the Categorization factors for Fixtures, Conductors and Rural Transformers have been updated from the Rural default of 60% to 47.8%, 54.8% and 61.9%, respectively.

This was accommodated in the model by using the above on the following USoA Asset accounts and sub-accounts:

1830	Overhead Fixtures	47.8%
1835	Conductors	54.8%
1840/45	Underground	54.8%
1850	Transformers	61.9%

Further, the associated O&M accounts were also adjusted to track the Asset Accounts. For example:

USoA 5035, 5055 and 5160 for Rural Transformers was set at 61.9%

USoA 5120 for Fixtures Maintenance was set at 47.8%

Conductor Related USoA set to 54.8%.

An additional row has been added to reflect the new sub account 4235b.

USoA 5340 categorization factor has been revised to allocate Miscellaneous Customer Accounts Expenses using O&M instead of using Weighted Number of Bills ("CWNB") as per OEB model.

Allocators (Exhibit Sheet 2)

New Allocators applicable to Hydro One added after row 119.

Allocator	ID	Basis
Mtr-Single	CWMC-1	Number of single-phase meters by class
Mtr-Poly	CWMC-2	Number of poly-phase meters by class
Mtr-LV	CWMC-3	Number of LV meters by class
Mtr-Smart	CWMC-4	Number of smart meters by class
1805/1806/1808/1810-	BCP(1-4-12)AA	Bulk CP with est of RCD of ST

Allocator	ID	Basis
2: <50 kV Assets		
1815-1	BCP (1-4-12) B	High Voltage DS Rural Only
1815-2	1815-2D	High Voltage DS Low Specific - LV Only
1815-3	1815-3D	High Voltage DS High Specific - LV Only
1815-4	1815-4D	High Voltage DS Low LV - LV Only
1815-5	1815-5D	High Voltage DS High LV - LV Only
1820-2	PNCP(1-4-12)AA	NCP with estimate for RCD of ST
1820-3	Cen2	Class Energy less Market Participants
1830-3A	1830-3A	Bulk Fixtures LV
1830-3B	BCP(1-4-12) DlinesB	Bulk Fixtures Retail (Density Weights)
1830-4A	1830-4AC 1830-4AD	Primary Fixtures LV Customer Related Primary Fixtures LV Demand Related
1830-4B	PNCP(1-4-12) DlinesB CCP-DLinesC	Primary Fixtures Retail (Density Wts) Retail customers with Density Wts
1835-3A	1835-3A	Bulk Lines LV
1835-3B	BCP(1-4-12)-DlinesB	Bulk Lines Retail (Density Weights)
1835-4A	1835-4AC 1835-4AD	Primary Lines LV Customer Related Primary Lines LV Demand Related
1835-4B	PNCP(1-4-12)-DlinesB CCP-DLinesC	Primary Lines Retail (Density Weights) Retail Customers Density Weighted
1840-4 &1845-4	PNCP(1-4-12)C CCP-C	Excludes ST/LV Excludes ST/LV
1840-5 & 1845-5	SNCP(1-4-1)C CCS-C	Excludes ST/LV Excludes ST/LV

Allocator	ID	Basis
1850-1	1850-1D 1850-1C	100% to ST/LV class 100% to ST/LV class
1850-2	LTNCP(1-4-12)RtransfB CCLT-RtransfB	Rural Transformers Retail Demand Related (Density Weights) Rural Transformers Retail Customer Related (Density Weights)

PLCC (Exhibit Sheet 3)

Hydro One Distribution has updated the 400 W PLCC default with new values based on Updated Minimum System study : 544 W for Conductors and 3100 W for Rural Transformers.

The PLCC-Customer Watts calculated in rows 24 to 28 were updated to replace 400 W:

PLCC-CCA	544W x number of customers
PLCC-CCB	544W x number of customers on bulk
PLCC-CCP	544W x number of customers on primary
PLCC-CCLT	3100W x number of customers with Rural Transformation
PLCC-CCS	544W x number of customers on secondary

Trial Balance Allocation Details (Exhibit Sheet 4)

New rows added to reflect new Sub-accounts: 1815 -1, 2, 3, 4, 5, 1830 – 3A and 3B, 4A and 4B, 1835 -3A and 3B, 4A and 4B, 1850 – 1 and 2, 1860 – 1, 2, 3, and 4, and 1985 Sentinel Lights.

Hydro One Distribution specific allocators were chosen and derived in E2: Allocators.

An additional row has been added to reflect the new sub account 4235b.

Reconciliation (Exhibit Sheet 5)

New rows added to reflect new Sub-accounts: 1815 -1, 2, 3, 4, 5, 1830 – 3A and 3B, 4A and 4B, 1835 -3A and 3B, 4A and 4B, 1850 – 1 and 2, 1860 – 1, 2, 3, and 4, and 1985 Sentinel Lights.

An additional row has been added to reflect the new sub account 4235b.

Cost Allocation Results

The results of the 2010 cost allocation methodology are presented below. Revenues collected from each customer class, Revenue Requirement by customer class, revenue cost ratios and the amount of miscellaneous revenues credited to each customer class is shown. The Board Cost Allocation Methodology also determines the fixed charges based on three methods: a) Avoided costs, b) Directly Related customer costs and c) Minimum System with PLCC Adjustment. The table shows the results of methods a and c. Finally, the credit applicable to USL connections is shown.

	Existing Rev [$M]	Alloc Cost Rev Req [$M]	Rev-Cost Ratio	Misc Rev [$M]	Fixed Charge Avoid Cost	Fixed Charge Min System	USL Credit
UR	64.55	59.28	1.09	4.53	$9.63	$22.51	
R1	254.06	277.12	0.92	21.23	$9.63	$32.56	
R2	450.73	440.54	1.02	31.04	$10.32	$52.36	
Seasonal	97.59	83.96	1.16	5.73	$6.95	$32.25	
GSe	130.10	121.19	1.07	7.56	$12.45	$38.71	$6.15
GSd	113.34	128.25	0.88	5.58	$30.22	$60.06	

	Existing Rev [$M]	Alloc Cost Rev Req [$M]	Rev-Cost Ratio	Misc Rev [$M]	Fixed Charge Avoid Cost	Fixed Charge Min System	USL Credit
UGe	10.44	8.64	1.21	0.54	$12.52	$17.88	
UGd	15.69	12.55	1.25	0.41	$32.15	$49.00	
St Lgt	6.45	9.44	0.68	0.41	$7.00	$11.34	
Sen Lgt	5.07	7.62	0.67	3.45	$3.31	$34.83	
Dgen	0.56	0.41	1.35	0.01	$13.60	$25.78	
ST	32.38	31.95	1.01	1.69	$176.53	$424.36	
Total	1,180.96	1,180.96	1.00	82.19			

Minimum System Study

Hydro One Distribution retained Black and Veatch in 2007 to update the Minimum System Study used in the Cost Allocation Methodology. The Minimum System Study was first developed in the mid 1980's by Ontario Hydro. The results of the original Ontario Hydro study and the current Black and Veatch study are presented below.

Minimum System Study % of Fixed Costs

% Fixed	1980's	2007
Overhead Lines	61	54.8
Underground Lines	61	Included in Overhead Lines
Transformers	62	61.9
Poles Towers and Fixtures	N/A	47.8

The Minimum System Study update from Black and Veatch also updated the value of the Peak Load Carrying Capabilities ("PLCC") and the new value for Conductors is 544 Watts and for Transformers is 3,100 Watts. These new values have been used in the Cost Allocation Study.