Middlesex Power Distribution Corp. (MPDC) is submitting to the Ontario Energy Board (OEB) a rate rider for smart meters in accordance to the guidelines provided by the OEB on January 29, 2007.

Smart Meter Implementation Plan

MPDC had provided the OEB with a Smart Meter Implementation Plan (SMIP) in December 2006 which provided details of the expenditures that MPDC will under take until the end of 2007. The smart meter rate that is being submitted to the OEB ties into the SMIP that was provided in December.

MPDC would like to provide some additional information from that submission to the OEB;

- MPDC currently has $0.38 / customer / month in their rates
- MPDC has been given priority status from the Ministry of Energy in Ontario Regulation 427/06 and 428/06 and is fully deploying smart meters to all customers
- MPDC is projecting to have smart meters in all residential customers by November 2007
- MPDC will be billing customers the time-of-use rates in 2007, allowing the customers to benefit from shifting their consumption
- MPDC is expected to have a smart meter debit variance of $74,331 at the end of April 2007

- The smart meter submission provided to the OEB assumed that MPDC would receive an additional $1.00 / customer / month for a total of $1.38
- At $1.38 in rates effective May 2007, MPDC would have a smart meter debit variance of $110,286 at the end of April 2008
- In order for MPDC to bring the smart meter debit variance to zero at the end of April 2008, the rate would have to be increased by $1.54 / customer / month to recover the variance ($110,286 / 5,985 customers / 12 months)
- Therefore the all in rate for smart meters would be $2.92 / customer / month which would include $1.54 for the smart meter variance
- The monthly operating costs for the MPDC smart meter plan is $10,499, or $1.75 / customer / month ($10,499 / 5,985 customers)
- The monthly cost of $1.75 includes;
    - The carrying costs for the capital investment
    - The depreciation for the capital investment
    - Communication costs
    - Monthly operating costs
    - Reduction in operating costs such as meter reading and re-reads
    - Full billing solution
    - Web presentment that will allow customers to review their consumption the next day
    - Includes $0.50 for Meter Data Management Repository costs

Smart Meter Rate Rider

MPDC, as noted above, is named in Ontario Regulation 427/06 and 428/06 and therefore is one of the Local Distribution Company (LDC) that is in full deployment of smart meters to all customers in the service area. MPDC is working towards completing the program by the end of 2007, as more than 20% of the customers have a smart meter by February 9, 2007.

MPDC is submitting the OEB's rate rider model and has calculated the rate rider that would be included in the rate submission (EB-2007- 0553). The final rate rider that MPDC is recommending (Page 4 of Model) is $2.29 / customer / month.

Assumptions

In calculating the smart meter rate rider MPDC has used a number of assumptions. These assumptions are based upon the pilot project that MPDC undertook in November 2004 and the experiences gained during full deployment which started in October 2006.

- Smart meter unit costs

  MPDC has chosen a smart meter solution that is a retro fit of the majority of the current meters in service. The retro fit modules are provided from a Canadian company, Tantalus Systems Corporation. This system allows for a significant reduction in stranded meters.

Each meter, whether new or used, will require a module, therefore there will be 5985 modules purchased. Another key component to the system is a collector system that will receive and transmit the meter information to the office. Each collector can manage approximately 42 meters; therefore 143 collectors will be required.

The estimate for the smart meter unit costs is;

Items Purchased	Units	Cost
Modules	5,985	$746,258
Collectors	143	$64,350
Total Costs		$810,608
Meters		5,985
Cost per meter		$135.44

- Smart meter other unit costs

There are other smart meter costs that are required in order to implement the system that are direct costs to the smart meters. Some meters require a meter socket retrofit kit; these are older meters that have a different base. By using the socket kit these meters are able to be used and not stranded. There are also shipping costs required.

Items Purchased	Costs	
Socket kits	$	26,261
Shipping	$	8,100
Total costs	$	34,361
Meters		5,985
Cost per meter	$	5.74

- Smart meter installation costs

MPDC will use internal staff to install the smart meters. It is estimated that the costs will be $191,500. This cost will include labour, benefits and vehicle costs.

Items Purchased	Cost
Installation	$ 191,500
Meters	5,985
Cost per meter	$ 32.00

- Smart meter other costs per unit

The module will not work for all meters, particularly very old meters and therefore a quantity of new meters will be required. The new meters will be approximately one third of the current meter population, 1,950.

Item Purchased	Quantity	Cost
New meters	1,950	$ 68,250
Meters		5,985
Cost per meter		$ 11.00

- AMI Computer Hardware costs

A base station is required at MPDC that will receive the meter read information from the collectors, the cost for the base station is $6,303.

- AMI Software costs

The smart meter solution will require its won software that will manage the system, the costs for the software will $11,730.

- Other Capital Costs – Computer hardware

There will be additional PCs, servers and RF equipment for the communication to manage the smart meter system, which will cost $8,754.

- Other Capital Costs – Computer Software

In order to bill the customers the time-of-use rates additional changes to the customer information system (CIS) and training of staff will be required. The additional costs will be;

Items	Costs	
CIS	$	2,626
Training	$	2,101
Total costs	$	4,727

- Incremental AMI Operational Expenses – O&M

There will be a number of additional software and licensing fees that will be incurred due to smart meters, these costs are;

Item	Cost / month		Annual Cost	
Tantalus software fees	$	198	$	2,376
Radio licence	$	168	$	2,016
EBT fees	$	417	$	5,004
Meter maintenance	$	167	$	2,004
Total			$	11,400

- Incremental AMI Operational Expenses – Admin

MPDC will be billing customers in 2007 and therefore there are a number of additional costs that relate to the billing of customers which are additional costs caused by billing time-of-use rates. A summary of the costs are as follows;

Item	Cost / month	Annual Cost
2006 costs		
CIS vendor	$ 8	$ 3,000
Meter reverification costs	$ 208	$ 3,504
Server support	$ 100	$ 800
MDMR	50 cents per meter	$ 2,138
Total 2006		$ 9,442
2007 Costs		
CIS vendor	$ 8	$ 96
Meter reverification costs	$ 208	$ 2,496
Server support	$ 100	$ 1,200
MDMR	50 cents per meter	$ 27,169
Total 2007		$ 30,961

- Incremental Other Operating Expense – Other Administration

MPDC will require the less than one additional staff members to manage the smart meter system and the billing of time-of-use rates. Total costs including benefits will be;

Year	Months	Cost
2006	1	$ -
2007	12	$ 24,000
2008	12	$ 24,000

Summary

MPDC rate rider is $2.29 per customer /month. This rate is for the cost only and includes 50 cents per meter for MDMR cost since MPDC will begin billing in 2007.

The final rate to the customer will be less than $2.00/customer/month after the synergies are realized and reflected in the rates.

Ontario Energy Board

2007 EDR Smart Meter Rate Calculation Model

Sheet 1 Utility Information Sheet

Legend:	Input Cell	Pull-Down Menu Option	Output Cell
	From Another Sheet	To The 2007 IRM Model	To Another Sheet

Please note that this model uses MACROS. Before starting, please ensure that macros have been enabled.

Name of LDC:	Middlesex Power Distribution Corporation		
Licence Number:	ED-2003-0059	Smart Meter Grouping:	Listed
IRM 2007 EB Number:	EB-2007-0553		
EDR 2006 RP Number:	RP-2005-0020	EDR 2006 EB Number:	EB-2005-0351
Date of Submission:	February 9, 2007	Revision:	0
Version:	1.0		

Contact Information

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Please Note: In the event of an inconsistency between this model and any element of the January 2007 "Report of the Board on 2nd Generation Incentive Regulation of Ontario's Electricity Distributors - Addendum for Smart Metering Rates ", the Report governs.

Ontario

2007 EDR Smart Meter Rate Calculation Model

Middlesex Power Distribution Corporation
EB-2007-0553
February 9, 2007

Sheet 2. Smart Meter Capital Cost and Operational Expense Data

Smart Meter Unit Installation Plan: *(From Smart Meter Plan filed December 15, 2006)*

assume calendar year installation	2006	2007	2008	2009	2010	Total
Planned number of Residential smart meters to be installed	1,297	4,689	-	-	-	5,986
Planned number of General Service Less Than 50 kW smart meters	-	100	125	222	222	669
Planned Meter Installation (Residential and Less Than 50 kW only)	1,297	4,789	125	222	222	6,655
Planned Meter Installation Completed before January 1, 2008		6,086				

Smart Meter Unit Cost

	Per Unit	
Smart Meter Unit Cost *Enter the invoiced cost per smart meter purchased* *Please provide details in Manager's Summary*	$ 135.44	A
Smart Meter Other Unit Cost *Enter the invoiced other costs per smart meter unit purchased* *Please provide details in Manager's Summary*	$ 5.74	B
Smart Meter Installation Cost per Unit *Enter the time and material cost per smart meter unit installed* *Please provide details in Manager's Summary*	$ 32.00	C
Smart Meter Other Cost per Unit *Enter the other cost per smart meter unit installed* *Please provide details in Manager's Summary*	$ 11.00	D
Total Unit cost per Smart Meter	**$ 184.18**	E = A + B + C + D

3. LDC Assumptions and Data

AMI Capital Cost

	2006	2007	2008	2009	2010	Total	
AMI Computer Hardware Costs *Enter the estimated capital costs for AMI related Computer Hardware* *Please provide details in Manager's Summary*	$ 11,730	$ -	$ -	$ -	$ -	$ 11,730	F
	3. LDC Assumptions and Data						
AMI Computer Software Costs *Enter the estimated capital costs for AMI related Computer Software* *Please provide details in Manager's Summary*	$ 6,303	$ -	$ -	$ -	$ -	$ 6,303	G
	3. LDC Assumptions and Data						
Total AMI Capital Cost	**$ 18,033**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 18,033**	H = F + G

Other Capital Cost

	2006	2007	2008	2009	2010	Total	
Other Computer Hardware Costs *Enter the estimated capital costs for other related Computer Hardware* *Please provide details in Manager's Summary*	$ 8,754	$ -	$ -	$ -	$ -	$ 8,754	I
	3. LDC Assumptions and Data						
Other Computer Software Costs *Enter the estimated capital costs for other related Computer Software* *Please provide details in Manager's Summary*	$ 4,727	$ 2,626	$ -	$ -	$ -	$ 7,353	J
	3. LDC Assumptions and Data						
Total Other Capital Cost	**$ 13,481**	**$ 2,626**	**$ -**	**$ -**	**$ -**	**$ 16,107**	K = I + J

Incremental AMI Operational Expenses

	2006	2007	2008	2009	2010	Total	
Incremental AMI O&M Expenses *Enter the estimated incremental AMI related O&M expenses* *Please provide details in Manager's Summary*	$ 7,600	$ 11,400	$ 11,400	$ 11,400	$ 11,400	$ 53,200	L
	3. LDC Assumptions and Data						
Incremental AMI Admin Expenses *Enter the estimated incremental AMI related Admin expenses* *Please provide details in Manager's Summary*	$ 4,668	$ 30,962	$ 39,708	$ 39,708	$ 39,708	$ 154,754	M
	3. LDC Assumptions and Data						
Total Incremental AMI Operation Expenses	**$ 12,268**	**$ 42,362**	**$ 51,108**	**$ 51,108**	**$ 51,108**	**$ 207,954**	N = L + M

Incremental Other Operational Expenses

	2006	2007	2008	2009	2010	Total	
Incremental Other O&M Expenses *Enter the estimated incremental Other related O&M expenses* *Please provide details in Manager's Summary*						$ -	O
	3. LDC Assumptions and Data						
Incremental Other Admin Expenses *Enter the estimated incremental Other related Admin expenses* *Please provide details in Manager's Summary*	$ -	$ 24,000	$ 24,000	$ 24,000	$ 24,000	$ 96,000	P
	3. LDC Assumptions and Data						
Total Incremental Other Operation Expenses	**$ -**	**$ 24,000**	**$ 24,000**	**$ 24,000**	**$ 24,000**	**$ 96,000**	Q = O + P

AMI - Advanced Metering Infrastructure
Other - Cost or expenses not AMI but does not include stranded assets

2007 EDR Smart Meter Rate Calculation Model

Middlesex Power Distribution Corporation
EB-2007-0553
February 9, 2007

Sheet 3. LDC Assumptions and Data

Assumptions:

1. Planned meter installations occur evenly through the year.
2. Year assumed January to December
3. Amortization is straight line and has half year rule applied in first year

2006 EDR Data Information

Deemed Debt (from 2006 EDR Sheet "3-2 COST OF CAPITAL (Input)" Cell C 18)	50%	*4. Smart Meter Rate Calc*
Deemed Equity (from 2006 EDR Sheet "3-2 COST OF CAPITAL (Input)" Cell C 19)	50%	*4. Smart Meter Rate Calc*
Weighted Debt Rate (from 2006 EDR Sheet "3-2 COST OF CAPITAL (Input)" Cell C 25)	7.25%	*4. Smart Meter Rate Calc*
Proposed ROE (from 2006 EDR Sheet "3-2 COST OF CAPITAL (Input)" Cell E 32)	9.00%	*4. Smart Meter Rate Calc*
Weighted Average Cost of Capital	8.13%	

2006 EDR Total Metered Customers

Sum of Residential, General Service, and Large User *from 2006 EDR Sheet "7-1 ALLOCATION - Base Rev. Req." Cells H16 thru H93*	6,764	*4. Smart Meter Rate Calc*

2006 EDR Tax Rate

Corporate Income Tax Rate *(from 2006 PILs Sheet "Test Year PILs,Tax Provision" Cell D 14)*	28.14%	*5. PILs*

Capital Data:

	2006	2007	2008	2009	2010	Total
Smart meter including installation ($184.18 times Planned Meters Installed)	$ 238,881	$ 882,038	$ 23,023	$ 40,888	$ 40,888	$ 1,225,718
Computer Hardware Costs *2. Smart Meter Data; AMI (F) plus Other (I)*	$ 20,484	$ -	$ -	$ -	$ -	$ 20,484
Computer Software Costs *2. Smart Meter Data; AMI (G) plus Other (J)*	$ 11,030	$ 2,626	$ -	$ -	$ -	$ 13,656
Total Computer Costs *2. Smart Meter Data; AMI (H) plus Other (K)*	$ 270,395	$ 884,664	$ 23,023	$ 40,888	$ 40,888	$ 1,259,858

6. SM Avg Net Fixed Assets &UCC

LDC Amortization Policy:

Smart Meter Amortization Rate *Enter Amortization Policy*	15	Years	*6. SM Avg Net Fixed Assets &UCC*
Computer Hardware Amortization Rate *Enter Amortization Policy*	5	Years	*6. SM Avg Net Fixed Assets &UCC*
Computer Software Amortization Rate *Enter Amortization Policy*	3	Years	*6. SM Avg Net Fixed Assets &UCC*

Operating Expense Data:

	2006	2007	2008	2009	2010	Total
Incremental O&M Expenses *2. Smart Meter Data; AMI (L) plus Other (O)*	$ 7,600	$ 11,400	$ 11,400	$ 11,400	$ 11,400	$ 53,200
Incremental Admin Expenses *2. Smart Meter Data; AMI (M) plus Other (P)*	$ 4,668	$ 54,962	$ 63,708	$ 63,708	$ 63,708	$ 250,754
Total Incremental Operating Expense *2. Smart Meter Data; AMI (N) plus Other (Q)*	$ 12,268	$ 66,362	$ 75,108	$ 75,108	$ 75,108	$ 303,954

4. Smart Meter Rate Calc

Per Meter Cost Split:

	Per Meter	Installed	Investment	% of Invest
Smart meter including installation	$ 184.18	6,655	$ 1,225,718	78%
Computer Hardware Costs	$ 3.08	6,655	$ 20,484	0%
Computer Software Costs	$ 2.05	6,655	$ 13,656	0%
Smart meter incremental operating expenses	$ 45.67	6,655	$ 303,954	0%
Total Smart Meter Capital Costs per meter	$ 234.98		$ 1,563,812	78%

Smart Meter Rate Calculation

	2007				
Average Asset Values					
Net Fixed Assets Smart Meters *(6. SM Avg Net Fixed Assets &UCC)*	$ 649,274				
Net Fixed Assets Computer Hardware *(6. SM Avg Net Fixed Assets &UCC)*	$ 16,387				
Net Fixed Assets Computer Software *(6. SM Avg Net Fixed Assets &UCC)*	$ 8,448				
Total Net Fixed Assets	$ 674,109	$ 674,109			*A*
Working Capital					
Operation Expense	$ 66,362				
15 % Working Capital	$ 9,954	$ 9,954			*B*
Smart Meters included in Rate Base		$ 684,063			*C = A + B*
Return on Rate Base					
Deemed Debt *(3. LDC Assumptions and Data)*	50.0%	$ 342,032			*D = C * Deemed Debt*
Deemed Equity *(3. LDC Assumptions and Data)*	50.0%	$ 342,032			*E = C * Deemed Equity*
		$ 684,063			
Weighted Debt Rate *(3. LDC Assumptions and Data)*	7.3%	$ 24,797			*F = D * Weighted Debt Rate*
Proposed ROE *(3. LDC Assumptions and Data)*	9.0%	$ 30,783			*G = E * Proposed ROE*
Return on Rate Base		$ 55,580	$ 55,580		*H = F + G*
Operating Expenses					
Incremental Operating Expenses *(3. LDC Assumptions and Data)*			$ 66,362		*I*
Amortization Expenses					
Amortization Expenses - Smart Meters *(6. SM Avg Net Fixed Assets &UCC)*		$ 45,327			
Amortization Expenses - Computer Hardware *(6. SM Avg Net Fixed Assets &UCC)*		$ 4,097			
Amortization Expenses - Computer Software *(6. SM Avg Net Fixed Assets &UCC)*		$ 4,114			
Total Amortization Expenses			$ 53,538	*5. PILs*	*J*
Revenue Requirement Before PILs			$ 175,480		*K = H + I + J*
Calculation of Taxable Income					
Incremental Operating Expenses			-$ 66,362		*I*
Depreciation Expenses			-$ 53,538		*J*
Interest Expense			-$ 24,797		*F*
Taxable Income For PILs			$ 30,783	*5. PILs*	*L = K - I - J - F*
Grossed up PILs *(5. PILs)*			$ 10,753		*M*
Revenue Requirement Before PILs			$ 175,480		*K*
Grossed up PILs *(5. PILs)*			$ 10,753		*M*
Revenue Requirement for Smart Meters			**$ 186,233**		*N = K + M*
2007 Smart Meter Rate Adder					
Revenue Requirement for Smart Meters			$ 186,233		*N*
2006 EDR Total Metered Customers *(3. LDC Assumptions and Data)*			6,764		*O = 2006 EDR Total Metered Customers*
Annualized amount required per metered customer			$ 27.53		*P = N / O*
Number of months in year			12		*Q*
2007 Smart Meter Rate Adder			**$ 2.29**		*R = P / Q*

Enter this amount in the 2007 IRM Model sheet "4. 2006 Smart Meter Information" in cells F 17 thru F 32 (as required)

PILs Calculation

INCOME TAX		
Net Income *(4. Smart Meter Rate Calc)*	$	30,783
Amortization *(4. Smart Meter Rate Calc)*	$	53,538
CCA - Class 47 (8%) Smart Meters *(6. SM Avg Net Fixed Assets &UCC)*	-$	53,628
CCA - Class 45 (45%) Computers *(6. SM Avg Net Fixed Assets &UCC)*	-$	11,581
Change in taxable income	$	19,112
Tax Rate *(3. LDC Assumptions and Data)*		28.14%
Income Taxes Payable	$	5,378
ONTARIO CAPITAL TAX		
Smart Meters *(6. SM Avg Net Fixed Assets &UCC)*	$	1,067,630
Computer Hardware *(6. SM Avg Net Fixed Assets &UCC)*	$	14,339
Computer Software *(6. SM Avg Net Fixed Assets &UCC)*	$	7,703
Rate Base	$	1,089,672
Less: Exemption	$	-
Deemed Taxable Capital	$	1,089,672
Ontario Capital Tax Rate		0.300%
Net Amount (Taxable Capital x Rate)	$	3,269

Gross Up

	PILs Payable	Gross Up	Grossed Up PILs	
Change in Income Taxes Payable	$ 5,378	28.14%	$ 7,484	
Change in OCT	$ 3,269		$ 3,269	
PIL's	$ 8,647		**$ 10,753**	*4. Smart Meter Rate Calc*

Smart Meter Average Net Fixed Assets

Net Fixed Assets - Smart Meters

	2006	2007	
Opening Capital Investment	$ -	$ 238,881	
Capital Investment Year 1 *(3. LDC Assumptions and Data)*	$ 238,881		
Capital Investment Year 2 *(3. LDC Assumptions and Data)*		$ 882,038	
Closing Capital Investment	$ 238,881	$ 1,120,919	
Opening Accumulated Amortization	$ -	$ 7,963	
Amortization Year 1 (15 Years Straight Line)	$ 7,963	$ 15,925	
Amortization Year 2 (15 Years Straight Line)		$ 29,401	
Closing Accumulated Amortization	$ 7,963	$ 53,289	
Opening Net Fixed Assets	$ -	$ 230,919	
Closing Net Fixed Assets	$ 230,919	$ 1,067,630	*5. PILs*
Average Net Fixed Assets	$ 115,459	$ 649,274	*4. Smart Meter Rate Calc*

Net Fixed Assets - Computer Hardware

	2006	2007	
Opening Capital Investment	$ -	$ 20,484	
Capital Investment Year 1 *(3. LDC Assumptions and Data)*	$ 20,484		
Capital Investment Year 2 *(3. LDC Assumptions and Data)*		$ -	
Closing Capital Investment	$ 20,484	$ 20,484	
Opening Accumulated Amortization	$ -	$ 2,048	
Amortization Year 1 (5 Years Straight Line)	$ 2,048	$ 4,097	
Amortization Year 2 (5 Years Straight Line)		$ -	
Closing Accumulated Amortization	$ 2,048	$ 6,145	
Opening Net Fixed Assets	$ -	$ 18,436	
Closing Net Fixed Assets	$ 18,436	$ 14,339	*5. PILs*
Average Net Fixed Assets	$ 9,218	$ 16,387	*4. Smart Meter Rate Calc*

Net Fixed Assets - Computer Software

	2006	2007	
Opening Capital Investment	$ -	$ 11,030	
Capital Investment Year 1 *(3. LDC Assumptions and Data)*	$ 11,030		
Capital Investment Year 2 *(3. LDC Assumptions and Data)*		$ 2,626	
Closing Capital Investment	$ 11,030	$ 13,656	
Opening Accumulated Amortization	$ -	$ 1,838	
Amortization Year 1 (3 Years Straight Line)	$ 1,838	$ 3,677	
Amortization Year 2 (3 Years Straight Line)		$ 438	
Closing Accumulated Amortization	$ 1,838	$ 5,953	
Opening Net Fixed Assets	$ -	$ 9,192	
Closing Net Fixed Assets	$ 9,192	$ 7,703	*5. PILs*
Average Net Fixed Assets	$ 4,596	$ 8,448	*4. Smart Meter Rate Calc*

For PILs Calculation

UCC - Smart Meters

CCA Class 47 (8%)	2006	2007	
Opening UCC	$ -	$ 229,326	
Capital Additions	$ 238,881	$ 882,038	
UCC Before Half Year Rule	$ 238,881	$ 1,111,364	
Half Year Rule (1/2 Additions - Disposals)	$ 119,441	$ 441,019	
Reduced UCC	$ 119,441	$ 670,345	
CCA Rate Class 47	8%	8%	
CCA	$ 9,555	$ 53,628	5. PILs
Closing UCC	$ 229,326	$ 1,057,737	

UCC - Computer Equipment

CCA Class 45 (45%)	2006	2007	
Opening UCC	$ -	$ 24,423	
Capital Additions Hardware	$ 20,484	$ -	
Capital Additions Software	$ 11,030	$ 2,626	
UCC Before Half Year Rule	$ 31,514	$ 27,049	
Half Year Rule (1/2 Additions - Disposals)	$ 15,757	$ 1,313	
Reduced UCC	$ 15,757	$ 25,736	
CCA Rate Class 45	45%	45%	
CCA	$ 7,091	$ 11,581	5. PILs
Closing UCC	$ 24,423	$ 15,468	