

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

* * * * *

In the matter, on the Commission's own motion,)
regarding the regulatory reviews, revisions,)
determinations, and/or approvals necessary for)
the CITY OF CHARLEVOIX to fully comply with)
Public Act 295 of 2008)
_____)

Case No. U-16601

APPLICATION FOR BIENNIAL REVIEW OF RENEWABLE ENERGY PLAN

In accordance with the Michigan Public Service Commission's Order issued January 27, 2015, the City of Charlevoix hereby submits its Application for Biennial Review of Renewable Energy Plan ("REP"). A copy of the REP, including any and all exhibits, is attached. The City of Charlevoix respectfully requests that the Commission review the REP for compliance with 2008 PA 295.

Respectfully submitted,

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By: _____

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Dated: July 1, 2015

CITY OF CHARLEVOIX

RENEWABLE ENERGY PLAN U-16601

June, 2015

- Based on this Renewable Energy Plan (REP) the City of Charlevoix (City) will have the required Renewable Energy Credits (RECs) for the REP time period of 2015-2029 thereby complying with PA 295.
- The primary source of RECs is participation in the Michigan Public Power Agency (MPPA) Granger and North American Natural Resources (NANR) Projects. These projects will utilize landfill gas for electric power generation from a variety of locations in Michigan and possibly in neighboring states.
- The City will have excess RECs to sell during various time periods throughout the REP planning period. Selling of RECs represents a source of income to the City which will reduce overall power supply costs. The cost per REC will be determined to a large extent by market forces in the Michigan REC market. This REP assumes the sale of some of the excess RECs keeping the balance in reserve.
- The City has chosen to use the Transfer Price method of calculating the incremental cost of compliance rather than the Cost of RECs method.
- The City will not exceed the renewable energy surcharge caps specified in PA 295.
- The City will comply with Section 45 of PA 295 which refers to methods of notification to customers, charges for costs associated with its REP.

CHARLEVOIX

GRANGER

			2015	2016	2017	2018
CAPACITY FACTOR			0.90	0.90	0.90	0.90
NET GENERATION	MWH	***	4,041	4,820	4,807	4,807
CAPACITY	MW	***	0.512	0.610	0.610	0.610
RENEWABLE ENERGY CREDITS						
BASE GENERATION	RECS		4,041	4,820	4,807	4,807
ON-PEAK & MICH INCENT RECS	RECS	***	487	612	508	508
TOTAL	RECS		4,528	5,432	5,315	5,315
GRANGER UNIT COST						
O & M	\$/ MWh		\$ 89.16	\$ 91.39	\$ 93.67	\$ 96.01
ADMIN	\$/ MWh		\$ -	\$ -	\$ -	\$ -
WDS CHARGES	\$/ MWh		\$ 0.62	\$ 0.64	\$ 0.66	\$ 0.67
INCREMENTAL UNIT COST	\$/ REC		\$ -	\$ -	\$ -	\$ -
TOTAL INCREMENTAL COST			\$ 89.78	\$ 92.03	\$ 94.33	\$ 96.68
WITH PILT		1.04	\$ 362,802	\$ 443,610	\$ 453,457	\$ 464,794
INTERCONNECTION COSTS		***	\$ -	\$ -	\$ -	\$ -
WITH PILT		1.04	\$ -	\$ -	\$ -	\$ -
GRANGER ENERGY COST			\$ 377,315	\$ 461,354	\$ 471,596	\$ 483,386
GRANGER INTERCONN COST			\$ -	\$ -	\$ -	\$ -
GRANGER TOTAL COST			\$ 377,315	\$ 461,354	\$ 471,596	\$ 483,386
GRANGER TOTAL COST	\$/ MWH		\$ 93.37	\$ 95.71	\$ 98.10	\$ 100.55

CHARLEVOIX

GRANGER

			2019	2020	2021	2022	2023
CAPACITY FACTOR			0.90	0.90	0.90	0.90	0.90
NET GENERATION	MWH	***	4,807	4,820	4,807	4,807	4,807
CAPACITY	MW	***	0.610	0.610	0.610	0.610	0.610
RENEWABLE ENERGY CREDITS							
BASE GENERATION	RECS		4,807	4,820	4,807	4,807	4,807
ON-PEAK & MICH INCENT RECS	RECS	***	457	458	457	457	457
TOTAL	RECS		5,264	5,278	5,264	5,264	5,264
GRANGER UNIT COST	\$/ MWh	\$	98.41	100.87	103.40	105.98	108.63
O & M	\$/ MWh	\$	-	-	-	-	-
ADMIN	\$/ MWh	\$	0.69	0.71	0.72	0.74	0.76
WDS CHARGES	\$/ MWh	\$	-	-	-	-	-
INCREMENTAL UNIT COST	\$/ REC	\$	99.10	101.58	104.12	106.72	109.39
TOTAL INCREMENTAL COST	\$	\$	476,414	489,662	500,532	513,045	525,872
WITH PILT	\$	1.04 \$	495,470	509,248	520,553	533,567	546,906
INTERCONNECTION COSTS	\$	***	-	-	-	-	-
WITH PILT	\$	1.04 \$	-	-	-	-	-
GRANGER ENERGY COST	\$		495,470	509,248	520,553	533,567	546,906
GRANGER INTERCONN COST	\$	\$	-	-	-	-	-
GRANGER TOTAL COST	\$	\$	495,470	509,248	520,553	533,567	546,906
GRANGER TOTAL COST	\$/ MWH	\$	103.07	105.64	108.28	110.99	113.77

CHARLEVOIX

GRANGER

			2024	2025	2026	2027	2028
CAPACITY FACTOR			0.90	0.90	0.90	0.90	0.90
NET GENERATION	MWH	***	4,820	4,807	4,807	4,807	4,820
CAPACITY	MW	***	0.610	0.610	0.610	0.610	0.610
RENEWABLE ENERGY CREDITS							
BASE GENERATION	RECS		4,820	4,807	4,807	4,807	4,820
ON-PEAK & MICH INCENT RECS	RECS	***	458	457	457	457	458
TOTAL	RECS		5,278	5,264	5,264	5,264	5,278
GRANGER UNIT COST	\$/ MWh	\$	111.35	\$ 114.13	\$ 116.98	\$ 119.91	\$ 122.90
O & M	\$/ MWh	\$	-	\$ -	\$ -	\$ -	\$ -
ADMIN	\$/ MWh	\$	0.78	\$ 0.80	\$ 0.82	\$ 0.84	\$ 0.86
WDS CHARGES	\$/ MWh	\$	-	\$ -	\$ -	\$ -	\$ -
INCREMENTAL UNIT COST	\$/ REC	\$	112.12	\$ 114.93	\$ 117.80	\$ 120.75	\$ 123.76
TOTAL INCREMENTAL COST	\$	\$	540,495	\$ 552,494	\$ 566,306	\$ 580,464	\$ 596,606
WITH PILT	\$	1.04 \$	562,115	\$ 574,594	\$ 588,958	\$ 603,682	\$ 620,470
INTERCONNECTION COSTS	\$	***	\$ -	\$ -	\$ -	\$ -	\$ -
WITH PILT	\$	1.04 \$	\$ -	\$ -	\$ -	\$ -	\$ -
GRANGER ENERGY COST	\$		562,115	574,594	588,958	603,682	620,470
GRANGER INTERCONN COST	\$	\$	-	\$ -	\$ -	\$ -	\$ -
GRANGER TOTAL COST	\$	\$	562,115	\$ 574,594	\$ 588,958	\$ 603,682	\$ 620,470
GRANGER TOTAL COST	\$/ MWH	\$	116.61	\$ 119.52	\$ 122.51	\$ 125.58	\$ 128.72

CHARLEVOIX

GRANGER

2029

CAPACITY FACTOR			0.90
NET GENERATION	MWH	***	4,807
CAPACITY	MW	***	0.610
RENEWABLE ENERGY CREDITS			
BASE GENERATION	RECS		4,807
ON-PEAK & MICH INCENT RECS	RECS	***	457
<hr/>			
TOTAL	RECS		5,264
GRANGER UNIT COST	\$/ MWh	\$	125.98
O & M	\$/ MWh	\$	-
ADMIN	\$/ MWh	\$	0.88
WDS CHARGES	\$/ MWh	\$	-
INCREMENTAL UNIT COST	\$/ REC	\$	126.86
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TOTAL INCREMENTAL COST	\$	\$	609,850
WITH PILT	\$	1.04 \$	634,244
INTERCONNECTION COSTS	\$	*** \$	-
WITH PILT	\$	1.04 \$	-
GRANGER ENERGY COST	\$		634,244
GRANGER INTERCONN COST	\$	\$	-
<hr/>			
GRANGER TOTAL COST	\$	\$	634,244
GRANGER TOTAL COST	\$ / MWH	\$	131.93

CHARLEVOIX

OTHER LANDFILL - ALL SITES

			2015	2016	2017
CAPACITY FACTOR			0.90	0.90	0.90
NETGENERATION	MWH	***	1,201	1,543	1,538
CAPACITY	MW	***	0.195	0.325	0.325
RENEWABLE ENERGY CREDITS					
BASE GENERATION	RECS		1,201	1,543	1,538
ON-PEAK & MICH INCENT RECS	RECS	***	114	147	146
TOTAL	RECS		1,315	1,689	1,684
OTHER LANDFILL UNIT COST					
O & M	\$/ MWh		\$ 78.00	\$ 79.95	\$ 81.95
ADMIN	\$/ MWh		\$ -	\$ -	\$ -
WDS CHARGES	\$/ MWh		\$ 0.55	\$ 0.56	\$ 0.57
INCREMENTAL UNIT COST	\$/ REC		\$ 78.55	\$ 80.51	\$ 82.52
TOTAL INCREMENTAL COST	\$		\$ 94,347.16	\$ 124,190.65	\$ 126,947.62
WITH PILT	\$	1.04	\$ 98,121.04	\$ 129,158.28	\$ 132,025.52
INTERCONNECTION COSTS					
WITH PILT	\$	1.04	\$ -	\$ -	\$ -
OTHER LANDFILL ENERGY COST	\$		98,121	129,158	132,026
OTHER LANDFILL INTERCONN COST	\$		\$ -	\$ -	\$ -
OTHER LANDFILL TOTAL COST	\$		\$ 98,121	\$ 129,158	\$ 132,026
OTHER LANDFILL TOTAL COST	\$/ MWH		\$ 81.69	\$ 83.73	\$ 85.82

CHARLEVOIX

OTHER LANDFILL - ALL SITES

			2018	2019	2020	2021
CAPACITY FACTOR			0.90	0.90	0.90	0.90
NETGENERATION	MWH	***	1,538	1,538	1,543	1,538
CAPACITY	MW	***	0.325	0.325	0.325	0.325
RENEWABLE ENERGY CREDITS						
BASE GENERATION	RECS		1,538	1,538	1,543	1,538
ON-PEAK & MICH INCENT RECS	RECS	***	146	146	147	146
TOTAL	RECS		1,684	1,684	1,689	1,684
OTHER LANDFILL UNIT COST						
O & M	\$/ MWh	\$	84.00	\$ 86.10	\$ 88.25	\$ 90.46
ADMIN	\$/ MWh	\$	-	\$ -	\$ -	\$ -
WDS CHARGES	\$/ MWh	\$	0.59	\$ 0.60	\$ 0.62	\$ 0.63
INCREMENTAL UNIT COST	\$/ REC	\$	-	\$ -	\$ -	\$ -
TOTAL INCREMENTAL COST		\$	84.59	\$ 86.70	\$ 88.87	\$ 91.09
WITH PILT		\$ 1.04	\$ 130,121.31	\$ 133,374.34	\$ 137,083.24	\$ 140,126.42
INTERCONNECTION COSTS		\$ ***	\$ -	\$ -	\$ -	\$ -
WITH PILT		\$ 1.04	\$ -	\$ -	\$ -	\$ -
OTHER LANDFILL ENERGY COST		\$	135,326	138,709	142,567	145,731
OTHER LANDFILL INTERCONN COST		\$	-	\$ -	\$ -	\$ -
OTHER LANDFILL TOTAL COST		\$	135,326	\$ 138,709	\$ 142,567	\$ 145,731
OTHER LANDFILL TOTAL COST	\$/ MWH	\$	87.97	\$ 90.17	\$ 92.42	\$ 94.73

CHARLEVOIX

OTHER LANDFILL - ALL SITES

			2022	2023	2024	2025
CAPACITY FACTOR			0.90	0.90	0.90	0.90
NETGENERATION	MWH	***	1,538	1,538	1,543	1,538
CAPACITY	MW	***	0.325	0.325	0.325	0.325
RENEWABLE ENERGY CREDITS						
BASE GENERATION	RECS		1,538	1,538	1,543	1,538
ON-PEAK & MICH INCENT RECS	RECS	***	146	146	147	146
TOTAL	RECS		1,684	1,684	1,689	1,684
OTHER LANDFILL UNIT COST						
O & M	\$/ MWh	\$	92.72	\$ 95.04	\$ 97.41	\$ 99.85
ADMIN	\$/ MWh	\$	-	\$ -	\$ -	\$ -
WDS CHARGES	\$/ MWh	\$	0.65	\$ 0.67	\$ 0.68	\$ 0.70
INCREMENTAL UNIT COST	\$/ REC	\$	-	\$ -	\$ -	\$ -
TOTAL INCREMENTAL COST		\$	93.37	\$ 95.70	\$ 98.09	\$ 100.55
WITH PILT		\$	143,629.58	\$ 147,220.31	\$ 151,314.25	\$ 154,673.34
INTERCONNECTION COSTS		\$	1.04	\$ 1.04	\$ 1.04	\$ 1.04
WITH PILT		\$	-	\$ -	\$ -	\$ -
OTHER LANDFILL ENERGY COST		\$	149,375	\$ 153,109	\$ 157,367	\$ 160,860
OTHER LANDFILL INTERCONN COST		\$	-	\$ -	\$ -	\$ -
OTHER LANDFILL TOTAL COST		\$	149,375	\$ 153,109	\$ 157,367	\$ 160,860
OTHER LANDFILL TOTAL COST	\$/ MWH	\$	97.10	\$ 99.53	\$ 102.02	\$ 104.57

CHARLEVOIX

OTHER LANDFILL - ALL SITES

			2026	2027	2028	2029
CAPACITY FACTOR			0.90	0.90	0.90	0.90
NETGENERATION	MWH	***	1,538	1,538	1,543	1,538
CAPACITY	MW	***	0.325	0.325	0.325	0.325
RENEWABLE ENERGY CREDITS						
BASE GENERATION	RECS		1,538	1,538	1,543	1,538
ON-PEAK & MICH INCENT RECS	RECS	***	146	146	147	146
TOTAL	RECS		1,684	1,684	1,689	1,684
OTHER LANDFILL UNIT COST	\$/ MWh		\$ 102.34	\$ 104.90	\$ 107.52	\$ 110.21
O & M	\$/ MWh		\$ -	\$ -	\$ -	\$ -
ADMIN	\$/ MWh		\$ 0.72	\$ 0.73	\$ 0.75	\$ 0.77
WDS CHARGES	\$/ MWh		\$ -	\$ -	\$ -	\$ -
INCREMENTAL UNIT COST	\$/ REC		\$ 103.06	\$ 105.64	\$ 108.28	\$ 110.98
TOTAL INCREMENTAL COST	\$		\$ 158,540.18	\$ 162,503.68	\$ 167,022.62	\$ 170,730.43
WITH PILT	\$	1.04	\$ 164,881.78	\$ 169,003.83	\$ 173,703.52	\$ 177,559.65
INTERCONNECTION COSTS	\$	***	\$ -	\$ -	\$ -	\$ -
WITH PILT	\$	1.04	\$ -	\$ -	\$ -	\$ -
OTHER LANDFILL ENERGY COST	\$		164,882	169,004	173,704	177,560
OTHER LANDFILL INTERCONN COST	\$		\$ -	\$ -	\$ -	\$ -
OTHER LANDFILL TOTAL COST	\$		\$ 164,882	\$ 169,004	\$ 173,704	\$ 177,560
OTHER LANDFILL TOTAL COST	\$/ MWH		\$ 107.18	\$ 109.86	\$ 112.61	\$ 115.42

CHARLEVOIX

LFG Entitlement 4.07%

Used for Compliance in...				
Baseline RECs	2012	2013	2014	2015
-	1,226	2,040	2,994	-

Total Credits	Yearly Addition		Required	Current Surplus (Deficiency)	Year-End Surplus (Deficiency)		Expired or Sold		
2015	18,803	2015	5,843	2015	5,966	2015	4,477	2015	-
2016	25,925	2016	7,122	2016	5,966	2016	-	2016	5,633
2017	32,925	2017	7,000	2017	5,966	2017	-	2017	6,667
2018	39,925	2018	7,000	2018	5,966	2018	-	2018	7,701
2019	46,873	2019	6,948	2019	5,966	2019	-	2019	7,683
2020	53,840	2020	6,967	2020	5,966	2020	-	2020	7,684
2021	60,788	2021	6,948	2021	5,966	2021	-	2021	7,666
2022	67,736	2022	6,948	2022	5,966	2022	-	2022	7,648
2023	74,684	2023	6,948	2023	5,966	2023	-	2023	7,630
2024	81,651	2024	6,967	2024	5,966	2024	-	2024	7,631
2025	88,599	2025	6,948	2025	5,966	2025	-	2025	7,613
2026	95,547	2026	6,948	2026	5,966	2026	-	2026	7,595
2027	102,495	2027	6,948	2027	5,966	2027	-	2027	7,577
2028	109,462	2028	6,967	2028	5,966	2028	-	2028	7,578
2029	116,410	2029	6,948	2029	5,966	2029	-	2029	7,560

2015	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	48	43	48	46	48	46	48	48	46	48	46	48	561
Brent Run West	18	16	18	17	18	17	18	18	17	18	17	18	211
Brent Run #3	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Brent Run #4	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Blanc	119	108	119	115	119	115	119	119	115	119	115	119	1,404
Orchard Hills	104	97	104	101	104	101	104	104	101	104	101	104	1,229
Venice Park	48	43	48	46	143	138	143	143	138	143	138	143	1,315
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	432	393	432	418	527	510	527	527	510	527	510	527	5,843
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-	-

2016	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	48	45	48	46	48	46	48	48	46	48	46	48	563
Brent Run West	18	17	18	17	18	17	18	18	17	18	17	18	211
Brent Run #3	95	89	95	92	95	92	95	95	92	95	92	95	1,126
Brent Run #4	52	49	52	50	52	50	52	52	50	52	50	52	614
Grand Blanc	143	134	143	138	143	138	143	143	138	143	138	143	1,689
Orchard Hills	104	97	104	101	104	101	104	104	101	104	101	104	1,229
Venice Park	143	134	143	138	143	138	143	143	138	143	138	143	1,689
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	603	564	603	584	603	584	603	603	584	603	584	603	7,122

Expired/Sold RECs

2017	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	48	43	48	46	48	46	48	48	46	48	46	48	561
Brent Run West	18	16	18	17	18	17	18	18	17	18	17	18	211
Brent Run #3	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Brent Run #4	52	47	52	50	52	50	52	52	50	52	50	52	613
Grand Blanc	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Orchard Hills	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Venice Park	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	594	537	594	575	594	575	594	594	575	594	575	594	7,000
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-	-

2018	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	48	43	48	46	48	46	48	48	46	48	46	48	561
Brent Run West	18	16	18	17	18	17	18	18	17	18	17	18	211
Brent Run #3	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Brent Run #4	52	47	52	50	52	50	52	52	50	52	50	52	613
Grand Blanc	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Orchard Hills	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Venice Park	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	594	537	594	575	594	575	594	594	575	594	575	594	7,000
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-	-

2019	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	48	43	48	46	48	46	48	48	46	48	46	48	561
Brent Run West	18	16	18	17	18	17	18	18	17	18	17	18	211
Brent Run #3	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Brent Run #4	48	43	48	46	48	46	48	48	46	48	46	48	561
Grand Blanc	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Orchard Hills	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Venice Park	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	590	533	590	571	590	571	590	590	571	590	571	590	6,948
Expired/Sold RECs	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(1,000)

2020	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-

Required REC's														5,966
Brent Run #1	48	45	48	46	48	46	48	48	46	48	46	48	563	
Brent Run West	18	17	18	17	18	17	18	18	17	18	17	18	211	
Brent Run #3	95	89	95	92	95	92	95	95	92	95	92	95	1,126	
Brent Run #4	48	45	48	46	48	46	48	48	46	48	46	48	563	
Grand Blanc	143	134	143	138	143	138	143	143	138	143	138	143	1,689	
Orchard Hills	95	89	95	92	95	92	95	95	92	95	92	95	1,126	
Venice Park	143	134	143	138	143	138	143	143	138	143	138	143	1,689	
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	
Current Vintage	590	552	590	571	590	571	590	590	571	590	571	590	6,967	
Expired/Sold RECs	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(1,000)	

2021	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	48	43	48	46	48	46	48	48	46	48	46	48	561
Brent Run West	18	16	18	17	18	17	18	18	17	18	17	18	211
Brent Run #3	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Brent Run #4	48	43	48	46	48	46	48	48	46	48	46	48	561
Grand Blanc	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Orchard Hills	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Venice Park	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	590	533	590	571	590	571	590	590	571	590	571	590	6,948
Expired/Sold RECs	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(1,000)

2022	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	48	43	48	46	48	46	48	48	46	48	46	48	561
Brent Run West	18	16	18	17	18	17	18	18	17	18	17	18	211
Brent Run #3	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Brent Run #4	48	43	48	46	48	46	48	48	46	48	46	48	561
Grand Blanc	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Orchard Hills	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Venice Park	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	590	533	590	571	590	571	590	590	571	590	571	590	6,948
Expired/Sold RECs	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(1,000)

2023	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	48	43	48	46	48	46	48	48	46	48	46	48	561
Brent Run West	18	16	18	17	18	17	18	18	17	18	17	18	211
Brent Run #3	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Brent Run #4	48	43	48	46	48	46	48	48	46	48	46	48	561
Grand Blanc	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Orchard Hills	95	86	95	92	95	92	95	95	92	95	92	95	1,123

Venice Park	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	590	533	590	571	590	571	590	590	571	590	571	590	6,948
Expired/Sold RECs	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(1,000)

2024	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	48	45	48	46	48	46	48	48	46	48	46	48	563
Brent Run West	18	17	18	17	18	17	18	18	17	18	17	18	211
Brent Run #3	95	89	95	92	95	92	95	95	92	95	92	95	1,126
Brent Run #4	48	45	48	46	48	46	48	48	46	48	46	48	563
Grand Blanc	143	134	143	138	143	138	143	143	138	143	138	143	1,689
Orchard Hills	95	89	95	92	95	92	95	95	92	95	92	95	1,126
Venice Park	143	134	143	138	143	138	143	143	138	143	138	143	1,689
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	590	552	590	571	590	571	590	590	571	590	571	590	6,967
Expired/Sold RECs	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(1,000)

2025	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	48	43	48	46	48	46	48	48	46	48	46	48	561
Brent Run West	18	16	18	17	18	17	18	18	17	18	17	18	211
Brent Run #3	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Brent Run #4	48	43	48	46	48	46	48	48	46	48	46	48	561
Grand Blanc	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Orchard Hills	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Venice Park	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	590	533	590	571	590	571	590	590	571	590	571	590	6,948
Expired/Sold RECs	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(1,000)

2026	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	48	43	48	46	48	46	48	48	46	48	46	48	561
Brent Run West	18	16	18	17	18	17	18	18	17	18	17	18	211
Brent Run #3	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Brent Run #4	48	43	48	46	48	46	48	48	46	48	46	48	561
Grand Blanc	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Orchard Hills	95	86	95	92	95	92	95	95	92	95	92	95	1,123
Venice Park	143	129	143	138	143	138	143	143	138	143	138	143	1,684
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	590	533	590	571	590	571	590	590	571	590	571	590	6,948
Expired/Sold RECs	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(1,000)

	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total
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2027														
3-Year Avg Sales														59,664
Baseline RECs														-
Required REC's														5,966
Brent Run #1	48	43	48	46	48	46	48	48	46	48	46	48	48	561
Brent Run West	18	16	18	17	18	17	18	18	17	18	17	18	18	211
Brent Run #3	95	86	95	92	95	92	95	95	92	95	92	95	95	1,123
Brent Run #4	48	43	48	46	48	46	48	48	46	48	46	48	48	561
Grand Blanc	143	129	143	138	143	138	143	143	138	143	138	143	143	1,684
Orchard Hills	95	86	95	92	95	92	95	95	92	95	92	95	95	1,123
Venice Park	143	129	143	138	143	138	143	143	138	143	138	143	143	1,684
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	590	533	590	571	590	571	590	590	571	590	571	590	590	6,948
Expired/Sold RECs	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(1,000)

2028														
	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total	
3-Year Avg Sales														59,664
Baseline RECs														-
Required REC's														5,966
Brent Run #1	48	45	48	46	48	46	48	48	46	48	46	48	48	563
Brent Run West	18	17	18	17	18	17	18	18	17	18	17	18	18	211
Brent Run #3	95	89	95	92	95	92	95	95	92	95	92	95	95	1,126
Brent Run #4	48	45	48	46	48	46	48	48	46	48	46	48	48	563
Grand Blanc	143	134	143	138	143	138	143	143	138	143	138	143	143	1,689
Orchard Hills	95	89	95	92	95	92	95	95	92	95	92	95	95	1,126
Venice Park	143	134	143	138	143	138	143	143	138	143	138	143	143	1,689
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	590	552	590	571	590	571	590	590	571	590	571	590	590	6,967
Expired/Sold RECs	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(1,000)

2029														
	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Total	
3-Year Avg Sales														59,664
Baseline RECs														-
Required REC's														5,966
Brent Run #1	48	43	48	46	48	46	48	48	46	48	46	48	48	561
Brent Run West	18	16	18	17	18	17	18	18	17	18	17	18	18	211
Brent Run #3	95	86	95	92	95	92	95	95	92	95	92	95	95	1,123
Brent Run #4	48	43	48	46	48	46	48	48	46	48	46	48	48	561
Grand Blanc	143	129	143	138	143	138	143	143	138	143	138	143	143	1,684
Orchard Hills	95	86	95	92	95	92	95	95	92	95	92	95	95	1,123
Venice Park	143	129	143	138	143	138	143	143	138	143	138	143	143	1,684
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	590	533	590	571	590	571	590	590	571	590	571	590	590	6,948
Expired/Sold RECs	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(83)	(1,000)

CHARLEVOIX

ATTACHMENT C - RENEWABLE

<u>ITEM</u>	<u>Units</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
Sales Forecast - 3 yr running average	MWH	59,664		
10% Compliance Factor		0.10		
RPS Requirement	MWH	5,966		
RECS - RPS Required	RECS	5,966	5,966	5,966
RECS - PRE-REP (BASELINE)	RECS	-	-	-
RECS - Incremental Difference	RECS	5,966	5,966	5,966
FACTOR		1.00	1.00	1.00
Required New RECS	RECS	5,966	5,966	5,966
RPS Renewable Energy Credit Compliance				
RECS CARRIED OVER	RECS	4,600	4,477	5,633
RECS OBTAINED (NEW)	RECS	5,843	7,122	7,000
RECS OBTAINED (BASELINE)	RECS	-	-	-
REC PURCHASES / (SALES) FROM OTHER SOURCES	RECS	-	-	-
TOTAL RECS SOURCES		10,443	11,599	12,633
REQUIRED RECS (BASELINE PLUS NEW)	RECS	5,966	5,966	5,966
RECS USED FOR COMPLIANCE	RECS	5,966	5,966	5,966
EXPIRED RECS	RECS	-	-	-
RECS CUMULATIVE BALANCE	RECS	4,477.000	5,633	6,667
Incremental Compliance with New RECS	%	98%	119%	117%
Compliance % with Cumulative REC Balance	%	175%	194%	212%
Revenue Requirements for New Renewables				
Build (see project sheets for information)	\$	\$ -	\$ -	\$ -
PPA	\$	\$ 475,436	\$ 590,512	\$ 603,621
REC Purchases (Sales)	\$	\$ -	\$ -	\$ -
Total	\$	\$ 475,436	\$ 590,512	\$ 603,621
RECs Obtained				
Generation Based				
Build (see project sheets for information)	MWH	-	-	-
PPA	MWH	5,242	6,363	6,346
Subtotal	MWH	5,242	6,363	6,346
Purchase (Sold) From New RECS	RECS	-	-	-
Incentive (SB 213 Sec 39 (2))	RECS	601	758	654
Total	RECS	5,843	7,122	7,000
FORECASTED TRANSFER PRICE PER MWH (SEE INCR COST-TPRICE SHEET)	\$/MWH	\$ 70.09	\$ 70.40	\$ 71.99
AMOUNT RECOVERED THROUGH PSCR (TPRICE X ENERGY) (SEE INCR COST -TPRICE SHEET)				
GRANGER	\$	\$ 283,231	\$ 339,362	\$ 346,079
OTHER LANDFILL	\$	\$ 84,190	\$ 108,596	\$ 110,745
INCREMENTAL COST OF COMPLIANCE (SEE INCR COST-TPRICE SHEET)	\$	\$ 108,015	\$ 142,554	\$ 146,797
Additional investment above PA 295 requirements	\$	\$ -	\$ -	\$ -
Non-Volumetric Surcharge				
Meter (or customer) Forecast (Number)				
Residential	No.	3,914	4,019	4,107
Commercial	No.	949	975	996
Industrial	No.	9	9	9
Streetlights	No.	-	-	-
Unmetered	No.	-	-	-
Total	No.	4,871	5,003	5,112
Maximum Surcharge (all rate classes at caps)				
Residential	\$ \$ 3.00	\$ 140,889	\$ 144,694	\$ 147,865
Commercial	\$ \$ 16.58	\$ 188,789	\$ 193,889	\$ 198,137
Industrial	\$ \$ 187.50	\$ 19,860	\$ 20,397	\$ 20,844
Streetlights	\$ \$ 0.60	\$ -	\$ -	\$ -
Unmetered	\$ \$ 0.60	\$ -	\$ -	\$ -
Total	\$	\$ 349,538	\$ 358,980	\$ 366,846
Planned Surcharge				
Residential	\$	\$ -	\$ -	\$ -
Commercial	\$	\$ -	\$ -	\$ -
Industrial	\$	\$ -	\$ -	\$ -
Streetlights	\$	\$ -	\$ -	\$ -
Unmetered	\$	\$ -	\$ -	\$ -
Total	\$	\$ -	\$ -	\$ -

CHARLEVOIX

INCREMENTAL COST FOR NEW RECS

			2015	2016	2017	2018	2019	2020	2021	2022	2023								
DISCOUNT RATE	(a)		5.00%																
TERM FOR DISCOUNTING			14																
MARKET VALUE OF RECS	(b)	\$	1.10	\$	1.13	\$	1.16	\$	1.18	\$	1.21	\$	1.24	\$	1.28	\$	1.31	\$	1.34

GRANGER INCREMENTAL REVENUE REQUIREMENTS

GRANGER COST		\$	\$	377,315	\$	461,354	\$	471,596	\$	483,386	\$	495,470	\$	509,248	\$	520,553	\$	533,567	\$	546,906	
GRANGER RECS		NO.		4,041		4,820		4,807		4,807		4,807		4,820		4,807		4,807		4,807	
FORECASTED TRANSFER PRICE PER MWH (SUGGESTED)		\$/MWH	(c)	\$	70.09	\$	70.40	\$	71.99	\$	73.89	\$	74.08	\$	74.01	\$	76.66	\$	78.49	\$	79.94
AMOUNT RECOVERED THROUGH PSCR WHICH EQUALS TRANSFER PRICE X VOLUME OF ENERGY (SUGGESTED)		\$	\$	283,231	\$	339,362	\$	346,079	\$	355,213	\$	356,126	\$	356,764	\$	368,529	\$	377,326	\$	384,297	
TOTAL INCREMENTAL COST OF COMPLIANCE		\$	\$	94,084	\$	121,992	\$	125,517	\$	128,173	\$	139,344	\$	152,484	\$	152,025	\$	156,241	\$	162,610	

OTHER LANDFILL INCREMENTAL REVENUE REQUIREMENTS

OTHER LFILL COST		\$	\$	98,121	\$	129,158	\$	132,026	\$	135,326	\$	138,709	\$	142,567	\$	145,731	\$	149,375	\$	153,109	
OTHER LFILL RECS		NO.		1,201		1,543		1,538		1,538		1,538		1,543		1,538		1,538		1,538	
FORECASTED TRANSFER PRICE PER MWH (SUGGESTED)		\$/MWH	(c)	\$	70.09	\$	70.40	\$	71.99	\$	73.89	\$	74.08	\$	74.01	\$	76.66	\$	78.49	\$	79.94
AMOUNT RECOVERED THROUGH PSCR WHICH EQUALS TRANSFER PRICE X VOLUME OF ENERGY (SUGGESTED)		\$	\$	84,190	\$	108,596	\$	110,745	\$	113,668	\$	113,960	\$	114,165	\$	117,929	\$	120,744	\$	122,975	
TOTAL INCREMENTAL COST OF COMPLIANCE		\$	\$	13,931	\$	20,562	\$	21,280	\$	21,658	\$	24,749	\$	28,402	\$	27,802	\$	28,630	\$	30,134	

REC PURCHASES / SALES

RECS PURCHASED / (SOLD)		RECS	***	-	-	-	-	-	-	-	(500)	(500)	(500)								
REC UNIT VALUE		\$/REC	(b)	\$	1.10	\$	1.13	\$	1.16	\$	1.18	\$	1.21	\$	1.24	\$	1.28	\$	1.31	\$	1.34
TOTAL REC VALUE		\$	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	(638)	\$	(654)	\$	(670)	

TOTAL INCREMENTAL COST OF COMPLIANCE		\$	108,015	\$	142,554	\$	146,797	\$	149,831	\$	164,093	\$	180,886	\$	179,189	\$	184,218	\$	192,074
NPV INCREMENTAL COST OF COMPLIANCE		\$ NPV	\$	1,833,622															
LEVELIZED INCREMENTAL COST OF COMPLIANCE		\$ NPV	\$	185,240															

TOTAL ICC FOR 2014	\$	90,877
TOTAL TRANSFER COST FOR 2014	\$	313,465
TOTAL COSTS TO COMPLY 2014	\$	404,343
FORECAST OF TRANSFER COST FOR 2015-2029	\$	7,445,624
FORECAST OF TOTAL EXPENDITURES FOR 2015-2029	\$	10,204,608
FORECAST OF INCREMENTAL COST OF COMPLIANCE FOR 2015-2029	\$	2,758,984

FOOTNOTES:

- (a) BASED ON LONG TERM MUNICIPAL DEBT RATE
- (b) MPPA INTERPOLATED FROM Q4 2014 CLEAR ENERGY MARKET REPORT
- (c) TRANSFER PRICES AS GIVEN BY THE 2015 MPSC STAFF TRANSFER PRICE SCHEDULE.

	2024	2025	2026	2027	2028	2029
	\$ 1.37	\$ 1.41	\$ 1.44	\$ 1.48	\$ 1.52	\$ 1.55
	\$ 562,115	\$ 574,594	\$ 588,958	\$ 603,682	\$ 620,470	\$ 634,244
	4,820	4,807	4,807	4,807	4,820	4,807
	\$ 80.91	\$ 82.80	\$ 85.33	\$ 86.98	\$ 88.69	\$ 90.41
	\$ 390,026	\$ 398,046	\$ 410,208	\$ 418,140	\$ 427,529	\$ 434,630
	\$ 172,089	\$ 176,548	\$ 178,750	\$ 185,542	\$ 192,941	\$ 199,614
	\$ 157,367	\$ 160,860	\$ 164,882	\$ 169,004	\$ 173,704	\$ 177,560
	1,543	1,538	1,538	1,538	1,543	1,538
	\$ 80.91	\$ 82.80	\$ 85.33	\$ 86.98	\$ 88.69	\$ 90.41
	\$ 124,808	\$ 127,375	\$ 131,267	\$ 133,805	\$ 136,809	\$ 139,081
	\$ 32,559	\$ 33,486	\$ 33,615	\$ 35,199	\$ 36,894	\$ 38,478
	(500)	(500)	(500)	(500)	(500)	(500)
	\$ 1.37	\$ 1.41	\$ 1.44	\$ 1.48	\$ 1.52	\$ 1.55
	\$ (687)	\$ (704)	\$ (722)	\$ (740)	\$ (758)	\$ (777)
	\$ 203,961	\$ 209,329	\$ 211,644	\$ 220,001	\$ 229,077	\$ 237,315

CHARLEVOIX

			<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
DISCOUNT RATE			5.00%					
TERM			14					
Non-Volumetric Surcharge								
Meter (or customer) Forecast (Number)								
Residential	No.		3,914	4,019	4,107	4,187	4,262	4,336
Commercial	No.		949	975	996	1,015	1,033	1,051
Industrial	No.		9	9	9	9	10	10
Streetlights	No.		-	-	-	-	-	-
Unmetered	No.		-	-	-	-	-	-
Total	No.		4,871	5,003	5,112	5,211	5,305	5,397
Maximum Surcharge (all rate classes at caps)								
Residential	\$ / MO	\$ 3.00	\$ 140,889	\$ 144,694	\$ 147,865	\$ 150,724	\$ 153,436	\$ 156,086
Commercial	\$ / MO	\$ 16.58	\$ 188,789	\$ 193,889	\$ 198,137	\$ 201,968	\$ 205,603	\$ 209,153
Industrial	\$ / MO	\$ 187.50	\$ 19,860	\$ 20,397	\$ 20,844	\$ 21,247	\$ 21,629	\$ 22,003
Streetlights	\$ / MO	\$ 0.60	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Unmetered	\$ / MO	\$ 0.60	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ / MO		\$ 349,538	\$ 358,980	\$ 366,846	\$ 373,939	\$ 380,668	\$ 387,242
TOTAL NPV	\$ NPV		\$ 4,088,427					
TOTAL PAYMENT	\$ NPV		\$ 413,029					
Planned Surcharge								
Residential	\$ / MO		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Commercial	\$ / MO		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Industrial	\$ / MO		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Streetlights	\$ / MO		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Unmetered	\$ / MO		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ / MO		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Residential	\$		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Commercial	\$		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Industrial	\$		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Streetlights	\$		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Unmetered	\$		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
LEVELIZED COST OF COMPLIANCE	\$ NPV		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OVER / (UNDER) COLLECT	\$		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
NPV OF OVER / (UNDER COLLECT)			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SURCHARGE SCALING FACTOR USING SOLVER		0%						

CHARLEVOIX

		<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>
DISCOUNT RATE									
TERM									
Non-Volumetric Surcharge									
Meter (or customer) Forecast (Number)									
Residential	No.	4,409	4,482	4,555	4,630	4,704	4,780	4,856	4,933
Commercial	No.	1,069	1,087	1,105	1,122	1,141	1,159	1,177	1,196
Industrial	No.	10	10	10	10	11	11	11	11
Streetlights	No.	-	-	-	-	-	-	-	-
Unmetered	No.	-	-	-	-	-	-	-	-
Total	No.	5,488	5,579	5,670	5,763	5,856	5,950	6,045	6,141
Maximum Surcharge (all rate classes at caps)									
Residential	\$ / MO	\$ 158,716	\$ 161,350	\$ 163,998	\$ 166,667	\$ 169,361	\$ 172,081	\$ 174,828	\$ 177,604
Commercial	\$ / MO	\$ 212,678	\$ 216,206	\$ 219,755	\$ 223,332	\$ 226,942	\$ 230,587	\$ 234,268	\$ 237,987
Industrial	\$ / MO	\$ 22,373	\$ 22,745	\$ 23,118	\$ 23,494	\$ 23,874	\$ 24,257	\$ 24,645	\$ 25,036
Streetlights	\$ / MO	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Unmetered	\$ / MO	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ / MO	\$ 393,767	\$ 400,301	\$ 406,871	\$ 413,494	\$ 420,177	\$ 426,926	\$ 433,741	\$ 440,627
TOTAL NPV	\$ NPV								
TOTAL PAYMENT	\$ NPV								
Planned Surcharge									
Residential	\$ / MO	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Commercial	\$ / MO	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Industrial	\$ / MO	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Streetlights	\$ / MO	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Unmetered	\$ / MO	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ / MO	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Residential	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Commercial	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Industrial	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Streetlights	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Unmetered	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
LEVELIZED COST OF COMPLIANCE	\$ NPV	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OVER / (UNDER) COLLECT	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
NPV OF OVER / (UNDER COLLECT)	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

SURCHARGE SCALING FACTOR USING SOLVER