

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 Orders issued March 28, 2017, in Case No. U-16601 and August 23, 2017, in Case No. U-18409, 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,

DICKINSON WRIGHT PLLC
Attorneys for the City of Charlevoix

By: _____

Peter H. Ellsworth (P23657)

Nolan J. Moody (P77959)

Business Address:

215 S. Washington Square, Suite 200

Lansing, MI 48933-1816

Telephone: (517) 371-1730

Dated: November 30, 2017

CITY OF CHARLEVOIX

RENEWABLE ENERGY PLAN U-16601

NOVEMBER 2017

- 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 2017-2029 thereby complying with PA 342.
- 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 342.
- The City will comply with Section 45 of PA 342 which refers to methods of notification to customers, charges for costs associated with its REP.

Row #		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1	Sales and Requirement Calculation														
2	Method: Weather Normalized of 3 Year Average		Same as 2015	Same as 2015	3 Year Average	3 Year Average	3 Year Average	3 Year Average	3 Year Average	3 Year Average	3 Year Average	3 Year Average	3 Year Average	3 Year Average	3 Year Average
3	If Selected Weather Normalized:														
4	Current Year Sales to Retail Customers														
5	Current Year Weather Normalization Factor														
6	Current Year Weather Normalized Sales (Row # 4 * 5)														
7	If Selected 3 Year Average:														
8	Current Year Retail Sales to Retail Customers	58,076	62,946	63,237	63,594	63,995	64,424	64,870	65,327	65,791	66,261	66,736	67,213	67,689	68,165
9	3 Year Average of Retail Sales				61,420	63,259	63,609	64,004	64,430	64,874	65,329	65,793	66,263	66,737	67,213
10	RPS Required Energy Credits (for 2017 and 2018 enter the same amount as 2015 requirement in MIRECS, for 2019 and 2020 enter 12.5% of row 6 or 9, for 2021 enter 15% of row 6 or 9)		5,966	5,966	7,677	7,907	9,541	9,601	9,664	9,731	9,799	9,869	9,939	10,011	10,082
11	Energy Credits														
12	Energy Credit Beginning Balance		5,749	4,751	9,660	14,373	17,418	20,403	23,324	26,214	29,000	31,717	34,364	36,973	39,477
13	Energy Credits Obtained Through Generation/BOT		-	-	-	-	-	-	-	-	-	-	-	-	-
14	Energy Credits Obtained Through PPA		4,851	4,968	12,586	12,620	12,586	12,586	12,586	12,620	12,586	12,586	12,586	12,620	12,586
15	Energy Credits Obtained Through REC Purchases		-	-	-	-	-	-	-	-	-	-	-	-	-
16	Plus: Energy Credits Obtained (Row 13 + 14 + 15)		4,851	4,968	12,586	12,620	12,586	12,586	12,586	12,620	12,586	12,586	12,586	12,620	12,586
17	Less: Energy Credits Sold		-	-	-	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
18	Available Energy Credits (Row 12 + 16 - 17)		10,600	9,719	22,246	27,993	31,004	33,988	36,910	39,834	42,586	45,303	47,950	50,593	53,063
19	Compliance Requirement (Row 10)		5,966	5,966	7,677	7,907	9,541	9,601	9,664	9,731	9,799	9,869	9,939	10,011	10,082
20	Less: Energy Credit Expiration		0	0	0	0	0	0	0	0	0	0	0	0	0
21	Energy Credit Ending Balance (Row 18 - 19 - 20)		4,634	3,753	14,569	20,086	21,463	24,388	27,246	30,103	32,787	35,434	38,011	40,583	42,981
22	Revenue Requirement														
23	Cost of Renewable Energy Generation/BOT		0	0	0	0	0	0	0	0	0	0	0	0	0
24	Cost of Renewable Energy PPA		\$ 457,868	\$ 480,577	\$ 811,898	\$ 831,250	\$ 846,521	\$ 864,378	\$ 882,636	\$ 903,772	\$ 920,386	\$ 939,894	\$ 959,837	\$ 982,984	\$ 1,001,136
25	Cost of Renewable Energy Credit Purchases		\$ -	\$ -	\$ -	\$ (1,245)	\$ (1,276)	\$ (1,308)	\$ (1,340)	\$ (1,374)	\$ (1,408)	\$ (1,443)	\$ (1,479)	\$ (1,516)	\$ (1,554)
26	Costs of Administration of Renewable Energy Plan		\$ 3,722.13	\$ 3,722.13	\$ 3,722.13	\$ 3,722.13	\$ 3,722.13	\$ 3,722.13	\$ 3,722.13	\$ 3,722.13	\$ 3,722.13	\$ 3,722.13	\$ 3,722.13	\$ 3,722.13	\$ 3,722.13
27	Less: Revenue obtained from Renewable Energy Sales (non-retail)		0	0	0	0	0	0	0	0	0	0	0	0	0
28	Total Revenue Requirement for Renewable Energy Plan (Row 23 + 24 + 25 + 26 - 27)		\$ 461,590	\$ 484,299	\$ 815,620	\$ 833,727	\$ 848,967	\$ 866,793	\$ 885,018	\$ 906,121	\$ 922,700	\$ 942,173	\$ 962,079	\$ 985,190	\$ 1,003,303
29	Cost Recovery														
30	Forecasted Transfer Price per MWH		\$ 100.27	\$ 103.00	\$ 87.27	\$ 90.02	\$ 92.56	\$ 106.49	\$ 100.30	\$ 104.47	\$ 106.45	\$ 109.19	\$ 112.79	\$ 117.66	\$ 121.55
31	MWH of Renewable Energy		4,851	4,968	12,586	12,620	12,586	12,586	12,586	12,620	12,586	12,586	12,586	12,620	12,586
32	Amount Recovered Through the PSCR (Row 30 * 31)		\$ 486,402	\$ 511,649	\$ 1,098,363	\$ 1,136,076	\$ 1,164,922	\$ 1,340,277	\$ 1,262,331	\$ 1,318,401	\$ 1,339,795	\$ 1,374,210	\$ 1,419,574	\$ 1,484,868	\$ 1,529,856
33	Incremental Cost of Compliance (Row 28 - 32)		\$ (24,812)	\$ (27,350)	\$ (282,743)	\$ (302,349)	\$ (315,955)	\$ (473,484)	\$ (377,313)	\$ (412,281)	\$ (417,095)	\$ (432,036)	\$ (457,495)	\$ (499,678)	\$ (526,552)
34	Non-Volumetric Surcharge Meter (or customer) Forecast														
35	Residential		3,765	3,783	3,804	3,828	3,854	3,880	3,908	3,935	3,963	3,992	4,020	4,049	4,077
36	Secondary		913	917	922	928	934	941	947	954	961	968	975	982	989
37	Primary		8	9	9	9	9	9	9	9	9	9	9	9	9
38	Total (Row 35 + 36 + 37)		4,686	4,708	4,735	4,765	4,797	4,830	4,864	4,898	4,933	4,969	5,004	5,040	5,075
39	Planned Surcharge Revenue														
40	Residential		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
41	Secondary		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
42	Primary		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
43	Total (Row 40 + 41 + 42)		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
44	Year End Regulatory Liability Balance														
45	Current Year Regulatory Liability Balance (Row 43 - 33)		\$ 24,812.27	\$ 27,349.56	\$ 282,742.75	\$ 302,348.81	\$ 315,954.74	\$ 473,483.73	\$ 377,313.20	\$ 412,280.52	\$ 417,094.97	\$ 432,036.41	\$ 457,494.69	\$ 499,678.05	\$ 526,552.24
46	Forecasted Ending Balance Prior to Current Year Interest (Row 48 for prior year + Row 45 of current year)		\$ 269.31	\$ 27,619.15	\$ 310,389.51	\$ 613,048.71	\$ 929,616.50	\$ 1,404,029.85	\$ 1,782,747.08	\$ 2,196,810.35	\$ 2,616,102.13	\$ 3,050,754.64	\$ 3,511,300.09	\$ 4,014,489.44	\$ 4,545,056.17
47	Carrying Charges (short-term interest)		\$ 0.27	\$ 27.62	\$ 310.39	\$ 613.05	\$ 929.62	\$ 1,404.03	\$ 1,782.75	\$ 2,196.81	\$ 2,616.10	\$ 3,050.75	\$ 3,511.30	\$ 4,014.49	\$ 4,545.06
48	Total Balance (Row 46 + 47)	\$ (24,542.96)	\$ 269.58	\$ 27,646.76	\$ 310,699.90	\$ 613,661.76	\$ 930,546.12	\$ 1,405,433.88	\$ 1,784,529.83	\$ 2,199,007.16	\$ 2,618,718.23	\$ 3,053,805.40	\$ 3,514,811.39	\$ 4,018,503.93	\$ 4,549,601.23

2017 RENEWABLE ENERGY CREDIT SUMMARY

	2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029			
	RECs	Percent	RECs	Percent	RECs	Percent	RECs	Percent	RECs	Percent	RECs	Percent	RECs	Percent	RECs	Percent	RECs	Percent	RECs	Percent	RECs	Percent	RECs	Percent	RECs	Percent		
Technology Mix																												
Wind	-	0.00%	-	0.00%	7,618	60.53%	7,639	60.53%	7,618	60.53%	7,618	60.53%	7,618	60.53%	7,639	60.53%	7,618	60.53%	7,618	60.53%	7,618	60.53%	7,618	60.53%	7,639	60.53%	7,618	60.53%
Solar	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Biomass	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Steam	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Geothermal	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Municipal Solid Waste	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Landfill Gas	4,851	100.00%	4,968	100.00%	4,968	39.47%	4,981	39.47%	4,968	39.47%	4,968	39.47%	4,968	39.47%	4,981	39.47%	4,968	39.47%	4,968	39.47%	4,968	39.47%	4,968	39.47%	4,981	39.47%	4,968	39.47%
Hydroelectric	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Incentive	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Other	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	4,851	100.00%	4,968	100.00%	12,586	100.00%	12,620	100.00%	12,586	100.00%	12,586	100.00%	12,586	100.00%	12,620	100.00%	12,586	100.00%	12,586	100.00%	12,586	100.00%	12,586	100.00%	12,620	100.00%	12,586	100.00%
Program Type																												
PURPA																												
Net Metering																												
Feed-In Tariffs																												
Community Solar																												
Other	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	PPA	
Total																												

*RECs generated and obtained during the year less RECs sold or expired.

CHARLEVOIX

M:\RPS\IRPS-2017-11\Charlevoix\FINAL REP-CHAR

Used for Compliance in...

LFG Entitlement	4.07%
Beebe 1b Entitlement	0.00%
Pegasus Wind Entitlement	4.06%

Baseline RECs	2012	2013	2014	2015	2016
-	1,226	2,040	2,994	5,966	5,966

Total Credits	Yearly Addition	Required	Current Surplus (Deficiency)	Year-End Surplus (Deficiency)	Expired or Sold
2012 3,372	2012 3,372	2012 1,226	2012 -	2012 2,146	2012 -
2013 7,975	2013 4,603	2013 2,040	2013 -	2013 6,809	2013 2,100
2014 12,960	2014 4,985	2014 2,994	2014 -	2014 8,800	2014 -
2015 17,944	2015 4,984	2015 5,966	2015 8,800	2015 7,818	2015 -
2016 22,956	2016 5,012	2016 5,966	2016 -	2016 6,864	2016 -
2017 27,807	2017 4,851	2017 5,966	2017 -	2017 5,749	2017 -
2018 32,775	2018 4,968	2018 5,966	2018 -	2018 4,751	2018 -
2019 45,361	2019 12,586	2019 7,677	2019 -	2019 9,660	2019 -
2020 57,981	2020 12,620	2020 7,907	2020 -	2020 14,373	2020 -
2021 70,567	2021 12,586	2021 9,541	2021 -	2021 17,418	2021 -
2022 83,153	2022 12,586	2022 9,601	2022 -	2022 20,403	2022 -
2023 95,738	2023 12,586	2023 9,664	2023 -	2023 23,324	2023 -
2024 108,359	2024 12,620	2024 9,731	2024 -	2024 26,214	2024 -
2025 120,944	2025 12,586	2025 9,799	2025 -	2025 29,000	2025 -
2026 133,530	2026 12,586	2026 9,869	2026 -	2026 31,717	2026 -
2027 146,116	2027 12,586	2027 9,939	2027 -	2027 34,364	2027 -
2028 158,736	2028 12,620	2028 10,011	2028 -	2028 36,973	2028 -
2029 171,322	2029 12,586	2029 10,082	2029 -	2029 39,477	2029 -

2016	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	46	39	25	24	24	23	20	23	22	23	22	23	314
iRECs	4	3	3	2	2	2	2	2	2	2	2	2	28
Brent Run West	17	16	18	17	17	16	18	16	17	18	16	17	203
iRECs	1	2	2	1	2	1	2	2	1	2	1	2	19
Brent Run #3	84	81	114	109	111	106	108	107	88	102	126	135	1,271
iRECs	7	7	11	10	10	11	9	10	9	9	11	12	116
Grand Blanc	102	97	104	104	110	101	109	111	103	107	106	108	1,262
iRECs	8	9	11	9	10	10	9	11	9	10	10	9	115
Orchard Hills	86	83	85	79	82	74	77	80	74	84	88	89	981
iRECs	16	14	8	7	7	7	7	7	7	8	8	8	104
Venice Park	47	44	45	45	44	42	45	48	55	45	43	45	548
iRECs	4	5	4	4	4	5	3	5	5	4	4	4	51
Current Vintage	422	400	430	411	423	398	409	422	392	414	437	454	5,012
Used for Compliance in 2016	422	400	430	411	423	262	-	-	-	-	-	-	2,348
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Surplus	-	-	-	-	-	136	409	422	392	414	437	454	2,664

IN MIRECS

2017	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	24	21	23	22	23	23	23	22	23	23	22	23	271
Brent Run West	17	16	16	17	17	14	18	17	17	17	16	17	200
Brent Run #3	135	117	129	124	132	127	125	123	123	129	125	129	1,516
Grand Blanc	82	94	106	110	111	108	95	94	94	109	105	109	1,218
Orchard Hills	89	80	88	83	88	83	89	86	78	87	84	87	1,023
Venice Park	45	42	49	59	90	44	42	46	48	53	51	53	621
Current Vintage	392	369	412	415	460	399	392	388	383	418	404	418	4,851
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-	-

2018	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Total
3-Year Avg Sales													59,664
Baseline RECs													-
Required REC's													5,966
Brent Run #1	22	20	22	21	22	21	22	22	21	22	21	22	256
Brent Run West	16	15	16	16	16	16	16	16	16	16	16	16	192
Brent Run #3	131	118	131	126	131	126	131	131	126	131	126	131	1,538
Grand Blanc	109	98	109	105	109	105	109	109	105	109	105	109	1,282
Orchard Hills	87	79	87	84	87	84	87	87	84	87	84	87	1,026
Venice Park	57	52	57	55	57	55	57	57	55	57	55	57	673
Pegasus Wind	-	-	-	-	-	-	-	-	-	-	-	-	-
Current Vintage	422	381	422	408	422	408	422	422	408	422	408	422	4,968
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-	-

2019	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Total
3-Year Avg Sales													61,420
Baseline RECs													-
Required REC's													7,677
Brent Run #1	22	20	22	21	22	21	22	22	21	22	21	22	256
Brent Run West	16	15	16	16	16	16	16	16	16	16	16	16	192

Brent Run #3	131	118	131	126	131	126	131	126	131	126	131	1,538
Grand Blanc	109	98	109	105	109	105	109	109	105	109	105	1,282
Orchard Hills	87	79	87	84	87	84	87	87	84	87	84	1,026
Venice Park	57	52	57	55	57	55	57	57	55	57	55	673
Pegasus Wind	647	584	647	626	647	626	647	647	626	647	626	7,618
Current Vintage	1,069	965	1,069	1,034	1,069	1,034	1,069	1,069	1,034	1,069	1,034	12,586
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-

2020	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Total
3-Year Avg Sales													63,259
Baseline RECs													-
Required REC's													7,907
Brent Run #1	22	20	22	21	22	21	22	22	21	22	21	22	257
Brent Run West	16	15	16	16	16	16	16	16	16	16	16	16	193
Brent Run #3	131	122	131	126	131	126	131	131	126	131	126	131	1,543
Grand Blanc	109	102	109	105	109	105	109	109	105	109	105	109	1,285
Orchard Hills	87	81	87	84	87	84	87	87	84	87	84	87	1,028
Venice Park	57	53	57	55	57	55	57	57	55	57	55	57	675
Pegasus Wind	647	605	647	626	647	626	647	647	626	647	626	647	7,639
Current Vintage	1,069	1,000	1,069	1,034	1,069	1,034	1,069	1,069	1,034	1,069	1,034	1,069	12,620
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-	-

2021	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Total
3-Year Avg Sales													63,609
Baseline RECs													-
Required REC's													9,541
Brent Run #1	22	20	22	21	22	21	22	22	21	22	21	22	256
Brent Run West	16	15	16	16	16	16	16	16	16	16	16	16	192
Brent Run #3	131	118	131	126	131	126	131	131	126	131	126	131	1,538
Grand Blanc	109	98	109	105	109	105	109	109	105	109	105	109	1,282
Orchard Hills	87	79	87	84	87	84	87	87	84	87	84	87	1,026
Venice Park	57	52	57	55	57	55	57	57	55	57	55	57	673
Pegasus Wind	647	584	647	626	647	626	647	647	626	647	626	647	7,618
Current Vintage	1,069	965	1,069	1,034	1,069	1,034	1,069	1,069	1,034	1,069	1,034	1,069	12,586
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-	-

2022	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Total
3-Year Avg Sales													64,004
Baseline RECs													-
Required REC's													9,601
Brent Run #1	22	20	22	21	22	21	22	22	21	22	21	22	256
Brent Run West	16	15	16	16	16	16	16	16	16	16	16	16	192
Brent Run #3	131	118	131	126	131	126	131	131	126	131	126	131	1,538
Grand Blanc	109	98	109	105	109	105	109	109	105	109	105	109	1,282
Orchard Hills	87	79	87	84	87	84	87	87	84	87	84	87	1,026
Venice Park	57	52	57	55	57	55	57	57	55	57	55	57	673
Pegasus Wind	647	584	647	626	647	626	647	647	626	647	626	647	7,618
Current Vintage	1,069	965	1,069	1,034	1,069	1,034	1,069	1,069	1,034	1,069	1,034	1,069	12,586
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-	-

2023	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Total
3-Year Avg Sales													64,430
Baseline RECs													-
Required REC's													9,664
Brent Run #1	22	20	22	21	22	21	22	22	21	22	21	22	256
Brent Run West	16	15	16	16	16	16	16	16	16	16	16	16	192
Brent Run #3	131	118	131	126	131	126	131	131	126	131	126	131	1,538
Grand Blanc	109	98	109	105	109	105	109	109	105	109	105	109	1,282
Orchard Hills	87	79	87	84	87	84	87	87	84	87	84	87	1,026
Venice Park	57	52	57	55	57	55	57	57	55	57	55	57	673
Pegasus Wind	647	584	647	626	647	626	647	647	626	647	626	647	7,618
Current Vintage	1,069	965	1,069	1,034	1,069	1,034	1,069	1,069	1,034	1,069	1,034	1,069	12,586
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-	-

2024	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Total
3-Year Avg Sales													64,874
Baseline RECs													-
Required REC's													9,731
Brent Run #1	22	20	22	21	22	21	22	22	21	22	21	22	257
Brent Run West	16	15	16	16	16	16	16	16	16	16	16	16	193
Brent Run #3	131	122	131	126	131	126	131	131	126	131	126	131	1,543
Grand Blanc	109	102	109	105	109	105	109	109	105	109	105	109	1,285
Orchard Hills	87	81	87	84	87	84	87	87	84	87	84	87	1,028
Venice Park	57	53	57	55	57	55	57	57	55	57	55	57	675
Pegasus Wind	647	605	647	626	647	626	647	647	626	647	626	647	7,639
Current Vintage	1,069	1,000	1,069	1,034	1,069	1,034	1,069	1,069	1,034	1,069	1,034	1,069	12,620
Expired/Sold RECs	-	-	-	-	-	-	-	-	-	-	-	-	-

2025	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Total
3-Year Avg Sales													65,329
Baseline RECs													-
Required REC's													9,799

CHARLEVOIX

GRANGER (LFG)

			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
CAPACITY FACTOR			0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
NET GENERATION	MWh	***	3,926	4,229	4,295	4,295	4,306	4,295	4,295	4,295	4,306	4,295	4,295	4,295	4,306	4,295
CAPACITY	MW	***	0.512	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545
RENEWABLE ENERGY CREDITS																
BASE GENERATION	RECS		3,926	4,229	4,295	4,295	4,306	4,295	4,295	4,295	4,306	4,295	4,295	4,295	4,306	4,295
ON-PEAK & MICH INCENT RECS	RECS	***	514	453	459	408	409	408	408	408	409	408	408	408	409	408
TOTAL	RECS		4,441	4,682	4,754	4,702	4,715	4,702	4,702	4,702	4,715	4,702	4,702	4,702	4,715	4,702
FORECASTED TRANSFER PRICE PER MWH	\$/MWh		\$ 103.00	\$ 105.00	\$ 108.00	\$ 113.00	\$ 117.00	\$ 122.00	\$ 158.00	\$ 134.00	\$ 141.00	\$ 143.00	\$ 148.00	\$ 154.00	\$ 164.00	\$ 171.00
GRANGER UNIT COST	\$/ MWh		\$ 91.39	\$ 93.67	\$ 96.01	\$ 98.41	\$ 100.87	\$ 103.40	\$ 105.98	\$ 108.63	\$ 111.35	\$ 114.13	\$ 116.98	\$ 119.91	\$ 122.90	\$ 125.98
O & M	\$/ MWh		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ADMIN	\$/ MWh		\$ 0.82	\$ 0.84	\$ 0.86	\$ 0.89	\$ 0.91	\$ 0.93	\$ 0.95	\$ 0.98	\$ 1.00	\$ 1.03	\$ 1.05	\$ 1.08	\$ 1.11	\$ 1.13
WDS CHARGES	\$/ MWh		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
INCREMENTAL UNIT COST	\$/ REC		\$ 92.21	\$ 94.51	\$ 96.88	\$ 99.30	\$ 101.78	\$ 104.33	\$ 106.93	\$ 109.61	\$ 112.35	\$ 115.16	\$ 118.03	\$ 120.99	\$ 124.01	\$ 127.11
TOTAL INCREMENTAL COST	\$		\$ 362,042.20	\$ 399,729.82	\$ 416,040.53	\$ 426,441.54	\$ 438,300.12	\$ 448,030.14	\$ 459,230.90	\$ 470,711.67	\$ 483,801.32	\$ 494,541.45	\$ 506,904.98	\$ 519,577.61	\$ 534,026.13	\$ 545,881.22
WITH PILOT (PAYMENT IN LIEU OF TAXES)	\$	1	\$ 362,042.20	\$ 399,729.82	\$ 416,040.53	\$ 426,441.54	\$ 438,300.12	\$ 448,030.14	\$ 459,230.90	\$ 470,711.67	\$ 483,801.32	\$ 494,541.45	\$ 506,904.98	\$ 519,577.61	\$ 534,026.13	\$ 545,881.22
INTERCONNECTION COSTS	\$	***	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
WITH PILOT	\$	1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
GRANGER ENERGY COST	\$		\$ 362,042	\$ 399,730	\$ 416,041	\$ 426,442	\$ 438,300	\$ 448,030	\$ 459,231	\$ 470,712	\$ 483,801	\$ 494,541	\$ 506,905	\$ 519,578	\$ 534,026	\$ 545,881
GRANGER INTERCONN COST	\$		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
GRANGER TOTAL COST	\$		\$ 362,042	\$ 399,730	\$ 416,041	\$ 426,442	\$ 438,300	\$ 448,030	\$ 459,231	\$ 470,712	\$ 483,801	\$ 494,541	\$ 506,905	\$ 519,578	\$ 534,026	\$ 545,881
GRANGER TOTAL COST	\$/ MWh		\$ 92.21	\$ 94.51	\$ 96.88	\$ 99.30	\$ 101.78	\$ 104.33	\$ 106.93	\$ 109.61	\$ 112.35	\$ 115.16	\$ 118.03	\$ 120.99	\$ 124.01	\$ 127.11

CHARLEVOIX

NANR (LFG)

			2016	2017	2018	2019	2020	2021	2022	2023	2024
CAPACITY FACTOR			0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
NETGENERATION	MWh	***	548	621	673	673	675	673	673	673	675
CAPACITY	MW	***	0.065	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085
RENEWABLE ENERGY CREDITS											
BASE GENERATION	RECS		548	621	673	673	675	673	673	673	675
ON-PEAK & MICH INCENT RECS	RECS	***	52	59	64	64	64	64	64	64	64
TOTAL	RECS		600	680	737	737	739	737	737	737	739
FORECASTED TRANSFER PRICE PER MWH	\$/MWh		\$ 65.24	\$ 68.10	\$ 71.08	\$ 73.65	\$ 76.11	\$ 79.12	\$ 82.44	\$ 85.48	\$ 89.22
NANR UNIT COST	\$/ MWh		\$ 90.46	\$ 92.72	\$ 95.04	\$ 97.41	\$ 99.85	\$ 102.34	\$ 104.90	\$ 107.52	\$ 110.21
O & M	\$/ MWh		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ADMIN	\$/ MWh		\$ 0.81	\$ 0.83	\$ 0.86	\$ 0.88	\$ 0.90	\$ 0.92	\$ 0.94	\$ 0.97	\$ 0.99
WDS CHARGES	\$/ MWh		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
INCREMENTAL UNIT COST	\$/ REC		\$ 91.27	\$ 93.55	\$ 95.89	\$ 98.29	\$ 100.75	\$ 103.26	\$ 105.85	\$ 108.49	\$ 111.20
TOTAL INCREMENTAL COST	\$		\$ 50,009.75	\$ 58,137.97	\$ 64,536.81	\$ 66,150.23	\$ 67,989.75	\$ 69,499.09	\$ 71,236.56	\$ 73,017.48	\$ 75,047.96
WITH PILOT (PAYMENT IN LIEU OF TAXES)	\$	1	\$ 50,009.75	\$ 58,137.97	\$ 64,536.81	\$ 66,150.23	\$ 67,989.75	\$ 69,499.09	\$ 71,236.56	\$ 73,017.48	\$ 75,047.96
INTERCONNECTION COSTS	\$	***	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
WITH PILOT	\$	1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
NANR ENERGY COST	\$		\$ 50,010	\$ 58,138	\$ 64,537	\$ 66,150	\$ 67,990	\$ 69,499	\$ 71,237	\$ 73,017	\$ 75,048
NANR INTERCONN COST	\$		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
NANR TOTAL COST	\$		\$ 50,010	\$ 58,138	\$ 64,537	\$ 66,150	\$ 67,990	\$ 69,499	\$ 71,237	\$ 73,017	\$ 75,048
NANR TOTAL COST	\$/ MWh		\$ 91.27	\$ 93.55	\$ 95.89	\$ 98.29	\$ 100.75	\$ 103.26	\$ 105.85	\$ 108.49	\$ 111.20

CHARLEVOIX

NANR (LFG)

			2025	2026	2027	2028	2029
CAPACITY FACTOR			0.84	0.84	0.84	0.84	0.84
NETGENERATION	MWh	***	673	673	673	675	673
CAPACITY	MW	***	0.085	0.085	0.085	0.085	0.085
RENEWABLE ENERGY CREDITS							
BASE GENERATION	RECS		673	673	673	675	673
ON-PEAK & MICH INCENT RECS	RECS	***	64	64	64	64	64
TOTAL	RECS		737	737	737	739	737
FORECASTED TRANSFER PRICE PER MWH	\$/MWh		\$ 93.23	\$ 96.16	\$ 99.69	\$ 103.67	\$ 107.99
NANR UNIT COST	\$/ MWh		\$ 112.97	\$ 115.79	\$ 118.69	\$ 121.65	\$ 124.69
O & M	\$/ MWh		\$ -	\$ -	\$ -	\$ -	\$ -
ADMIN	\$/ MWh		\$ 1.02	\$ 1.04	\$ 1.07	\$ 1.09	\$ 1.12
WDS CHARGES	\$/ MWh		\$ -	\$ -	\$ -	\$ -	\$ -
INCREMENTAL UNIT COST	\$/ REC		\$ 113.98	\$ 116.83	\$ 119.75	\$ 122.75	\$ 125.82
TOTAL INCREMENTAL COST	\$		\$ 76,713.99	\$ 78,631.84	\$ 80,597.63	\$ 82,838.91	\$ 84,677.89
WITH PILOT (PAYMENT IN LIEU OF TAXES)	\$	1	\$ 76,713.99	\$ 78,631.84	\$ 80,597.63	\$ 82,838.91	\$ 84,677.89
INTERCONNECTION COSTS	\$	***	\$ -	\$ -	\$ -	\$ -	\$ -
WITH PILOT	\$	1	\$ -	\$ -	\$ -	\$ -	\$ -
NANR ENERGY COST	\$		76,714	78,632	80,598	82,839	84,678
NANR INTERCONN COST	\$		-	-	-	-	-
NANR TOTAL COST	\$		\$ 76,714	\$ 78,632	\$ 80,598	\$ 82,839	\$ 84,678
NANR TOTAL COST	\$/ MWh		\$ 113.98	\$ 116.83	\$ 119.75	\$ 122.75	\$ 125.82

CHARLEVOIX

PEGASUS (WIND)

			2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
NETGENERATION	MWh	***	-	7,618	7,639	7,618	7,618	7,618	7,639	7,618	7,618	7,618	7,639	7,618
CAPACITY	MW	***	2.558	2.558	2.558	2.558	2.558	2.558	2.558	2.558	2.558	2.558	2.558	2.558
RENEWABLE ENERGY CREDITS														
BASE GENERATION	RECS		-	7,618	7,639	7,618	7,618	7,618	7,639	7,618	7,618	7,618	7,639	7,618
ON-PEAK & MICH INCENT RECS	RECS	***	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	RECS		-	7,618	7,639	7,618	7,618	7,618	7,639	7,618	7,618	7,618	7,639	7,618
FORECASTED TRANSFER PRICE PER MWH	\$/MWh		\$ 74.18	\$ 73.97	\$ 76.04	\$ 77.15	\$ 79.58	\$ 82.61	\$ 85.22	\$ 87.02	\$ 88.46	\$ 90.72	\$ 92.77	\$ 94.88
PEGASUS UNIT COST	\$/ MWh		\$ 41.54	\$ 41.54	\$ 42.16	\$ 42.80	\$ 43.44	\$ 44.09	\$ 44.75	\$ 45.42	\$ 46.10	\$ 46.79	\$ 47.50	\$ 48.21
O & M	\$/ MWh		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ADMIN	\$/ MWh		\$ 0.37	\$ 0.37	\$ 0.38	\$ 0.39	\$ 0.39	\$ 0.40	\$ 0.40	\$ 0.41	\$ 0.41	\$ 0.42	\$ 0.43	\$ 0.43
WDS CHARGES	\$/ MWh		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
INCREMENTAL UNIT COST	\$/ REC		\$ 41.91	\$ 41.91	\$ 42.54	\$ 43.19	\$ 43.83	\$ 44.49	\$ 45.15	\$ 45.83	\$ 46.51	\$ 47.21	\$ 47.93	\$ 48.64
TOTAL INCREMENTAL COST	\$		\$ -	\$ 319,306	\$ 324,960	\$ 328,991	\$ 333,911	\$ 338,907	\$ 344,923	\$ 349,131	\$ 354,358	\$ 359,661	\$ 366,119	\$ 370,577
WITH PILOT (PAYMENT IN LIEU OF TAXES)	\$	1	\$ -	\$ 319,306	\$ 324,960	\$ 328,991	\$ 333,911	\$ 338,907	\$ 344,923	\$ 349,131	\$ 354,358	\$ 359,661	\$ 366,119	\$ 370,577
INTERCONNECTION COSTS	\$	***	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
WITH PILOT	\$	1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
PEGASUS ENERGY COST	\$		\$ -	\$ 319,306	\$ 324,960	\$ 328,991	\$ 333,911	\$ 338,907	\$ 344,923	\$ 349,131	\$ 354,358	\$ 359,661	\$ 366,119	\$ 370,577
PEGAUS INTERCONNECTION COST	\$		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
PEGASUS TOTAL COST	\$		\$ -	\$ 319,306	\$ 324,960	\$ 328,991	\$ 333,911	\$ 338,907	\$ 344,923	\$ 349,131	\$ 354,358	\$ 359,661	\$ 366,119	\$ 370,577
PEGASUS TOTAL COST	\$/ MWh		#DIV/0!	\$ 41.91	\$ 42.54	\$ 43.19	\$ 43.83	\$ 44.49	\$ 45.15	\$ 45.83	\$ 46.51	\$ 47.21	\$ 47.93	\$ 48.64

CHARLEVOIX

ATTACHMENT C - RENEWABLE ENERGY PLAN SURCHARGE SUMMARY FOR MUNICIPAL UTILITIES

ITEM	Units	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Sales Forecast - 3 yr running average	MWH	59,664	59,664	59,664	61,420	63,259	63,609	64,004	64,430	64,874	65,329	65,793	66,263	66,737	67,213
10% Compliance Factor		0.10	0.1	0.1	0.125	0.125	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
RPS Requirement	MWH	5,966	5,966	5,966	7,677	7,907	9,541	9,601	9,664	9,731	9,799	9,869	9,939	10,011	10,082
RECS - RPS Required	RECS	5,966	5,966	5,966	7,677	7,907	9,541	9,601	9,664	9,731	9,799	9,869	9,939	10,011	10,082
RECS - PRE-REP (BASELINE)	RECS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RECS - Incremental Difference	RECS	5,966	5,966	5,966	7,677	7,907	9,541	9,601	9,664	9,731	9,799	9,869	9,939	10,011	10,082
FACTOR		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Required New RECS	RECS	5,966	5,966	5,966	7,677	7,907	9,541	9,601	9,664	9,731	9,799	9,869	9,939	10,011	10,082
RPS Renewable Energy Credit Compliance															
RECS CARRIED OVER	RECS	6,864	5,749	4,751	9,660	14,373	17,418	20,403	23,324	26,214	29,000	31,717	34,364	36,973	39,477
RECS OBTAINED (NEW)	RECS	5,012	4,851	4,968	12,586	12,620	12,586	12,586	12,586	12,620	12,586	12,586	12,586	12,620	12,586
RECS OBTAINED (BASELINE)	RECS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
REC PURCHASES / (SALES) FROM OTHER SOURCES	RECS	-	-	-	-	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
TOTAL RECS SOURCES		11,876	10,600	9,719	22,246	25,993	29,004	31,988	34,910	37,834	40,586	43,303	45,950	48,593	51,063
REQUIRED RECS (BASELINE PLUS NEW)	RECS	5,966	5,966	5,966	7,677	7,907	9,541	9,601	9,664	9,731	9,799	9,869	9,939	10,011	10,082
RECS USED FOR COMPLIANCE	RECS	5,966	5,966	5,966	7,677	7,907	9,541	9,601	9,664	9,731	9,799	9,869	9,939	10,011	10,082
EXPIRED RECS	RECS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RECS CUMULATIVE BALANCE	RECS	5,910	4,634	3,753	14,569	18,086	19,463	22,387	25,246	28,103	30,787	33,434	36,011	38,582	40,981
Incremental Compliance with New RECs	%	84%	81%	83%	164%	160%	132%	131%	130%	130%	128%	128%	127%	126%	125%
Compliance % with Cumulative REC Balance	%	199%	178%	163%	290%	329%	304%	333%	361%	389%	414%	439%	462%	485%	506%
Revenue Requirements for New Renewables															
Build (see project sheets for information)	\$														
PPA	\$	\$ 412,052	\$ 457,868	\$ 480,577	\$ 811,898	\$ 831,250	\$ 846,521	\$ 864,378	\$ 882,636	\$ 903,772	\$ 920,386	\$ 939,894	\$ 959,837	\$ 982,984	\$ 1,001,136
REC Purchases (Sales)	\$	\$ -	\$ -	\$ -	\$ -	\$ (1,245)	\$ (1,276)	\$ (1,308)	\$ (1,340)	\$ (1,374)	\$ (1,408)	\$ (1,443)	\$ (1,479)	\$ (1,516)	\$ (1,554)
Total	\$	\$ 412,052	\$ 457,868	\$ 480,577	\$ 811,898	\$ 830,005	\$ 845,245	\$ 863,071	\$ 881,296	\$ 902,398	\$ 918,978	\$ 938,451	\$ 958,357	\$ 981,468	\$ 999,581
RECs Obtained															
Generation Based															
Build (see project sheets for information)	RECs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PPA	RECs	4,474	4,851	4,968	12,586	12,620	12,586	12,586	12,586	12,620	12,586	12,586	12,586	12,620	12,586
Subtotal	RECs	4,474	4,851	4,968	12,586	12,620	12,586	12,586	12,586	12,620	12,586	12,586	12,586	12,620	12,586
Purchase (Sold) From New RECS	RECs	-	-	-	-	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Incentive (SB 213 Sec 39 (2))	RECS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	RECS	4,474	4,851	4,968	12,586	12,620	12,586	12,586	12,586	12,620	12,586	12,586	12,586	12,620	12,586
FORECASTED TRANSFER PRICE PER MWH (SEE INCR COST-TPRICE SHEET)															
GRANGER	\$/MWH	\$ 103.00	\$ 105.00	\$ 108.00	\$ 113.00	\$ 117.00	\$ 122.00	\$ 158.00	\$ 134.00	\$ 141.00	\$ 143.00	\$ 148.00	\$ 154.00	\$ 164.00	\$ 171.00
NANR	\$/MWH	\$ 65.24	\$ 68.10	\$ 71.08	\$ 73.65	\$ 76.11	\$ 79.12	\$ 82.44	\$ 85.48	\$ 89.22	\$ 93.23	\$ 96.16	\$ 99.69	\$ 103.67	\$ 107.99
PEGASUS	\$/MWH	\$ -	\$ -	\$ 74.18	\$ 73.97	\$ 76.04	\$ 77.15	\$ 79.58	\$ 82.61	\$ 85.22	\$ 87.02	\$ 88.46	\$ 90.72	\$ 92.77	\$ 94.88
AMOUNT RECOVERED THROUGH PSCR (TPRICE X ENERGY) (SEE INCR COST -TPRICE SHEET)															
GRANGER	\$	\$ 404,413	\$ 444,079	\$ 463,810	\$ 485,283	\$ 503,837	\$ 523,933	\$ 678,537	\$ 575,468	\$ 607,189	\$ 614,119	\$ 635,591	\$ 661,359	\$ 706,234	\$ 734,366
NANR	\$	\$ 35,747	\$ 42,323	\$ 47,839	\$ 49,565	\$ 51,367	\$ 53,248	\$ 55,487	\$ 57,528	\$ 60,215	\$ 62,745	\$ 64,717	\$ 67,097	\$ 69,962	\$ 72,680
PEGASUS	\$	\$ -	\$ -	\$ -	\$ 563,515	\$ 580,871	\$ 587,740	\$ 606,252	\$ 629,335	\$ 650,998	\$ 662,932	\$ 673,902	\$ 691,119	\$ 708,672	\$ 722,810
INCREMENTAL COST OF COMPLIANCE (SEE INCR COST-TPRICE	\$	\$ (28,108)	\$ (28,534)	\$ (31,072)	\$ (286,465)	\$ (306,071)	\$ (319,677)	\$ (477,206)	\$ (381,035)	\$ (416,003)	\$ (420,817)	\$ (435,759)	\$ (461,217)	\$ (503,400)	\$ (530,274)

CHARLEVOIX

INCREMENTAL COST FOR NEW RECS

		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
DISCOUNT RATE	(a)	8.98%														
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	\$ 1.37	\$ 1.41	\$ 1.44	\$ 1.48	\$ 1.52	\$ 1.55
GRANGER INCREMENTAL REVENUE REQUIREMENTS																
GRANGER COST	\$	\$ 358,796	\$ 362,042	\$ 399,730	\$ 416,041	\$ 426,442	\$ 438,300	\$ 448,030	\$ 459,231	\$ 470,712	\$ 483,801	\$ 494,541	\$ 506,905	\$ 519,578	\$ 534,026	\$ 545,881
GRANGER RECS	NO.	3,932	3,926	4,229	4,295	4,295	4,306	4,295	4,295	4,295	4,306	4,295	4,295	4,295	4,306	4,295
FORECASTED TRANSFER PRICE PER MWH (SUGGESTED)	\$/MWH	\$ 100.00	\$ 103.00	\$ 105.00	\$ 108.00	\$ 113.00	\$ 117.00	\$ 122.00	\$ 158.00	\$ 134.00	\$ 141.00	\$ 143.00	\$ 148.00	\$ 154.00	\$ 164.00	\$ 171.00
AMOUNT RECOVERED THROUGH PSCR WHICH EQUALS	\$	\$ 393,192	\$ 404,413	\$ 444,079	\$ 463,810	\$ 485,283	\$ 503,837	\$ 523,933	\$ 678,537	\$ 575,468	\$ 607,189	\$ 614,119	\$ 635,591	\$ 661,359	\$ 706,234	\$ 734,366
TRANSFER PRICE X VOLUME OF ENERGY (SUGGESTED)	\$	\$ 393,192	\$ 404,413	\$ 444,079	\$ 463,810	\$ 485,283	\$ 503,837	\$ 523,933	\$ 678,537	\$ 575,468	\$ 607,189	\$ 614,119	\$ 635,591	\$ 661,359	\$ 706,234	\$ 734,366
TOTAL INCREMENTAL COST OF COMPLIANCE	\$	\$ (34,397)	\$ (42,371)	\$ (44,349)	\$ (47,769)	\$ (58,841)	\$ (65,537)	\$ (75,903)	\$ (219,306)	\$ (104,756)	\$ (123,387)	\$ (119,577)	\$ (128,666)	\$ (141,781)	\$ (172,207)	\$ (188,485)
NANR INCREMENTAL REVENUE REQUIREMENTS																
NANR COST	\$	\$ 47,725	\$ 50,010	\$ 58,138	\$ 64,537	\$ 66,150	\$ 67,990	\$ 69,499	\$ 71,237	\$ 73,017	\$ 75,048	\$ 76,714	\$ 78,632	\$ 80,598	\$ 82,839	\$ 84,678
NANR RECS	NO.	536	548	621	673	673	675	673	673	673	675	673	673	673	675	673
FORECASTED TRANSFER PRICE PER MWH (SUGGESTED)	\$/MWH	\$ 43.05	\$ 65.24	\$ 68.10	\$ 71.08	\$ 73.65	\$ 76.11	\$ 79.12	\$ 82.44	\$ 85.48	\$ 89.22	\$ 93.23	\$ 96.16	\$ 99.69	\$ 103.67	\$ 107.99
AMOUNT RECOVERED THROUGH PSCR WHICH EQUALS	\$	\$ 23,075	\$ 35,747	\$ 42,323	\$ 47,839	\$ 49,565	\$ 51,367	\$ 53,248	\$ 55,487	\$ 57,528	\$ 60,215	\$ 62,745	\$ 64,717	\$ 67,097	\$ 69,962	\$ 72,680
TRANSFER PRICE X VOLUME OF ENERGY (SUGGESTED)	\$	\$ 23,075	\$ 35,747	\$ 42,323	\$ 47,839	\$ 49,565	\$ 51,367	\$ 53,248	\$ 55,487	\$ 57,528	\$ 60,215	\$ 62,745	\$ 64,717	\$ 67,097	\$ 69,962	\$ 72,680
TOTAL INCREMENTAL COST OF COMPLIANCE	\$	\$ 24,650	\$ 14,263	\$ 15,815	\$ 16,698	\$ 16,585	\$ 16,622	\$ 16,251	\$ 15,749	\$ 15,489	\$ 14,833	\$ 13,969	\$ 13,915	\$ 13,501	\$ 12,877	\$ 11,998
BEEBE 1B INCREMENTAL REVENUE REQUIREMENTS																
BEEBE 1B COST	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
BEEBE 1B RECS	NO.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FORECASTED TRANSFER PRICE PER MWH (SUGGESTED)	\$/MWH	\$ 70.09	\$ 70.40	\$ 71.99	\$ 73.89	\$ 74.08	\$ 74.01	\$ 76.66	\$ 78.49	\$ 79.94	\$ 80.91	\$ 82.80	\$ 85.33	\$ 86.98	\$ 88.69	\$ 90.41
AMOUNT RECOVERED THROUGH PSCR WHICH EQUALS	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TRANSFER PRICE X VOLUME OF ENERGY (SUGGESTED)	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL INCREMENTAL COST OF COMPLIANCE	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
PEGASUS INCREMENTAL REVENUE REQUIREMENTS																
PEGASUS COST	\$	\$ -	\$ -	\$ -	\$ -	\$ 319,306	\$ 324,960	\$ 328,991	\$ 333,911	\$ 338,907	\$ 344,923	\$ 349,131	\$ 354,358	\$ 359,661	\$ 366,119	\$ 370,577
PEGASUS RECS	NO.	-	-	-	-	7,618	7,639	7,618	7,618	7,618	7,639	7,618	7,618	7,618	7,639	7,618
FORECASTED TRANSFER PRICE PER MWH (SUGGESTED)	\$/MWH	\$ -	\$ -	\$ -	\$ 74.18	\$ 73.97	\$ 76.04	\$ 77.15	\$ 79.58	\$ 82.61	\$ 85.22	\$ 87.02	\$ 88.46	\$ 90.72	\$ 92.77	\$ 94.88
AMOUNT RECOVERED THROUGH PSCR WHICH EQUALS	\$	\$ -	\$ -	\$ -	\$ -	\$ 563,515	\$ 580,871	\$ 587,740	\$ 606,252	\$ 629,335	\$ 650,998	\$ 662,932	\$ 673,902	\$ 691,119	\$ 708,672	\$ 722,810
TRANSFER PRICE X VOLUME OF ENERGY (SUGGESTED)	\$	\$ -	\$ -	\$ -	\$ -	\$ 563,515	\$ 580,871	\$ 587,740	\$ 606,252	\$ 629,335	\$ 650,998	\$ 662,932	\$ 673,902	\$ 691,119	\$ 708,672	\$ 722,810
TOTAL INCREMENTAL COST OF COMPLIANCE	\$	\$ -	\$ -	\$ -	\$ -	\$ (244,209)	\$ (255,912)	\$ (258,749)	\$ (272,342)	\$ (290,428)	\$ (306,075)	\$ (313,801)	\$ (319,544)	\$ (331,457)	\$ (342,553)	\$ (352,234)
REC PURCHASES / SALES																
RECS PURCHASED / (SOLD)	RECS	***	-	-	-	-	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
REC UNIT VALUE	\$/REC	(b)	\$ 1.10	\$ 1.13	\$ 1.16	\$ 1.18	\$ 1.21	\$ 1.24	\$ 1.28	\$ 1.31	\$ 1.34	\$ 1.37	\$ 1.41	\$ 1.44	\$ 1.48	\$ 1.52
TOTAL REC VALUE	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (1,245)	\$ (1,276)	\$ (1,308)	\$ (1,340)	\$ (1,374)	\$ (1,408)	\$ (1,443)	\$ (1,479)	\$ (1,516)	\$ (1,554)
TOTAL INCREMENTAL COST OF COMPLIANCE	\$	\$ (9,747)	\$ (28,108)	\$ (28,534)	\$ (31,072)	\$ (286,465)	\$ (306,071)	\$ (319,677)	\$ (477,206)	\$ (381,035)	\$ (416,003)	\$ (420,817)	\$ (435,759)	\$ (461,217)	\$ (503,400)	\$ (530,274)
NPV INCREMENTAL COST OF COMPLIANCE	\$ NPV	\$ (1,978,946)	\$ (4,625,637)	\$ (4,597,530)												
LEVELIZED INCREMENTAL COST OF COMPLIANCE	\$ NPV	\$ (253,876)	\$ (593,417)	\$ (589,811)												

TOTAL ICC FOR 2017	\$ (28,534)
TOTAL TRANSFER COST FOR 2017	\$ 486,402
TOTAL COSTS TO COMPLY IN 2017	\$ 457,868
FORECAST OF TRANSFER COST FOR 2018-2029	\$ 14,980,322
FORECAST OF TOTAL EXPENDITURES FOR 2018-2029	\$ 10,411,328
FORECAST OF INCREMENTAL COST OF COMPLIANCE FOR 2018-2029	\$ (4,588,995)

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.

WEIGHTED FORECASTED TRANSFER PRICE PER MWH		\$ 98.38	\$ 100.27	\$ 103.00	\$ 87.27	\$ 90.02	\$ 92.56	\$ 106.49	\$ 100.30	\$ 104.47	\$ 106.45	\$ 109.19	\$ 112.79	\$ 117.86	\$ 121.55
GRANGER TRANSFER PRICE	\$/MWH	\$ 103.00	\$ 105.00	\$ 108.00	\$ 113.00	\$ 117.00	\$ 122.00	\$ 158.00	\$ 134.00	\$ 141.00	\$ 143.00	\$ 148.00	\$ 154.00	\$ 164.00	\$ 171.00
NANR TRANSFER PRICE	\$/MWH	\$ 68.10	\$ 71.08	\$ 73.65	\$ 76.11	\$ 79.12	\$ 82.44	\$ 85.48	\$ 89.22	\$ 93.23	\$ 96.16	\$ 99.69	\$ 103.67	\$ 107.99	
BEEBE 1B TRANSFER PRICE	\$/MWH	\$ 70.40	\$ 71.99	\$ 73.89	\$ 74.08	\$ 74.01	\$ 76.66	\$ 78.49	\$ 79.94	\$ 80.91	\$ 82.80	\$ 85.33	\$ 86.98	\$ 88.69	\$ 90.41
PEGASUS TRANSFER PRICE	\$/MWH			\$ 74.18	\$ 73.97	\$ 76.04	\$ 77.15	\$ 79.58	\$ 82.61	\$ 85.22	\$ 87.02	\$ 88.46	\$ 90.72	\$ 92.77	\$ 94.88
GRANGER GENERATION	MWH	3,926,337	4,229,325	4,294,537	4,294,537	4,306,302	4,294,537	4,294,537	4,294,537	4,306,302	4,294,537	4,294,537	4,294,537	4,306,302	4,294,537
NANR GENERATION	MWH	547,931	621,451	673,024	673,024	674,868	673,024	673,024	673,024	674,868	673,024	673,024	673,024	674,868	673,024
BEEBE 1B GENERATION	MWH	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PEGASUS GENERATION	MWH	-	-	-	7,618,152	7,639,023	7,618,152	7,618,152	7,618,152	7,639,023	7,618,152	7,618,152	7,618,152	7,639,023	7,618,152

CHARLEVOIX

		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
DISCOUNT RATE		8.98%															
TERM		14															
Non-Volumetric Surcharge																	
Meter (or customer) Forecast (Number)																	
Residential	No.	3,583	3,474	3,765	3,783	3,804	3,828	3,854	3,880	3,908	3,935	3,963	3,992	4,020	4,049	4,077	
Commercial	No.	869	842	913	917	922	928	934	941	947	954	961	968	975	982	989	
Industrial	No.	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9	
Streetlights	No.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Unmetered	No.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total	No.	4,460	4,324	4,686	4,708	4,735	4,765	4,797	4,830	4,864	4,898	4,933	4,969	5,004	5,040	5,075	
Maximum Surcharge (all rate classes at caps)																	
Residential	\$ / MO	\$ 3.00	\$ 128,984	\$ 125,056	\$ 135,544	\$ 136,171	\$ 136,937	\$ 137,801	\$ 138,726	\$ 139,687	\$ 140,670	\$ 141,669	\$ 142,682	\$ 143,705	\$ 144,731	\$ 145,756	\$ 146,780
Commercial	\$ / MO	\$ 16.58	\$ 172,837	\$ 167,574	\$ 181,627	\$ 182,467	\$ 183,494	\$ 184,652	\$ 185,891	\$ 187,178	\$ 188,496	\$ 189,834	\$ 191,192	\$ 192,563	\$ 193,937	\$ 195,312	\$ 196,684
Industrial	\$ / MO	\$ 187.50	\$ 18,182	\$ 17,628	\$ 19,107	\$ 19,195	\$ 19,303	\$ 19,425	\$ 19,555	\$ 19,691	\$ 19,829	\$ 19,970	\$ 20,113	\$ 20,257	\$ 20,402	\$ 20,546	\$ 20,691
Streetlights	\$ / MO	\$ 0.60	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Unmetered	\$ / MO	\$ 0.60	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ / MO		\$ 320,003	\$ 310,259	\$ 336,278	\$ 337,832	\$ 339,735	\$ 341,878	\$ 344,173	\$ 346,556	\$ 348,996	\$ 351,473	\$ 353,988	\$ 356,525	\$ 359,070	\$ 361,615	\$ 364,155
TOTAL NPV	\$ NPV		\$ 2,742,292	\$ 2,668,547	\$ 2,597,923												
TOTAL PAYMENT	\$ NPV		\$ 351,805	\$ 342,344	\$ 333,284												
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 0.0000%