

Plymouth Energy Committee and Energy Savings Update

Plymouth Six Ponds Association
June 12, 2022

Prepared by:
Plymouth Energy Committee
June 10, 2022

Plymouth Energy Committee

- The Plymouth Energy Committee was formed by the Board of Selectmen in 2004 to consider the option of becoming a Municipal Light Plant.
- Over the years, the Energy Committee evolved to advise on energy policy and recommend energy related initiatives for the town.

Plymouth Energy Committee Goals

Amended December 2020 and Finalized February 2021

SHORT-TERM

- Achieve Green Communities Designation.
- Meet with DPW Director and/or Facilities Manager to discuss ways to improve the energy efficiency at existing municipal buildings, and how energy efficiency can be made a priority in future construction projects.

Green Communities Status

Five Criteria must be met to qualify for Green Community designation. Plymouth has already met criteria 1, 2, 4 and 5.

1. As-of-Right Siting

Adopt as-of-right siting for renewable/ alternative energy generation, research and development, or manufacturing.

✓ **Status: DONE**

2. Expedited Permitting

Adopt expedited application and permitting process for the above – twelve-month timeline between permit application and final approval.

✓ **Status: DONE**

3. Energy Baseline and 20% Energy Reduction Plan

Create and adopt an Energy Reduction Plan to reduce municipal energy use by 20% over five years.

Status: PENDING

4. Fuel-Efficient Vehicle Purchasing Policy

Purchase only fuel-efficient municipal vehicles whenever such vehicles are commercially available and practicable.

✓ **Status: DONE**

5. Stretch Energy Code Adoption

Adopt the Stretch Energy Code, which applies only to new residential construction or new commercial buildings with >40,000 sq. ft. of conditioned space or >100,000 sq. ft. of non-conditioned space.

✓ **Status: DONE**

Plymouth Energy Committee Goals

SHORT-TERM

- Ramp up efforts to reach out and educate both residents and local businesses regarding the benefits of the MassSave Program.
- Meet with the Community Resources Director to discuss the possibility of installing an air curtain at the South Street Library front doors.

Plymouth Energy Committee Goals

MID-TERM

- Explore the potential of installing solar canopies on school and town-owned parking lots. Specifically, determine applicable locations while consider the potential of lease/ownership and energy production agreements.

Plymouth Energy Committee Goals

MID-TERM

- Explore the potential of installing ground mounted solar on landfills.
- Provide updates to the Ground-Mounted Solar Photovoltaic System (GMSPS) Bylaw as needed.

Plymouth Energy Committee Goals

MID-TERM

- Explore the possibility of Plymouth acquiring streetlights, currently leased through Eversource, and converting them to LED technology, with particular emphasis on understanding the cost/benefit trade-offs and Return on Investment (ROI).

Plymouth Energy Committee Goals

LONG-TERM

- Explore bringing the energy efficiency program under Town control, either directly or through a consultant. This would be similar to the Cape Light Compact Program.

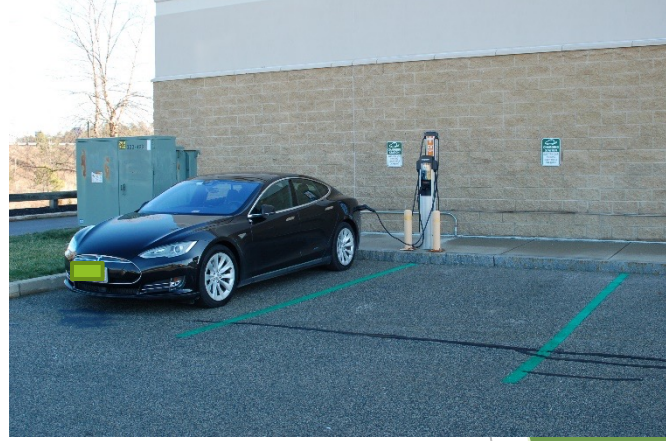
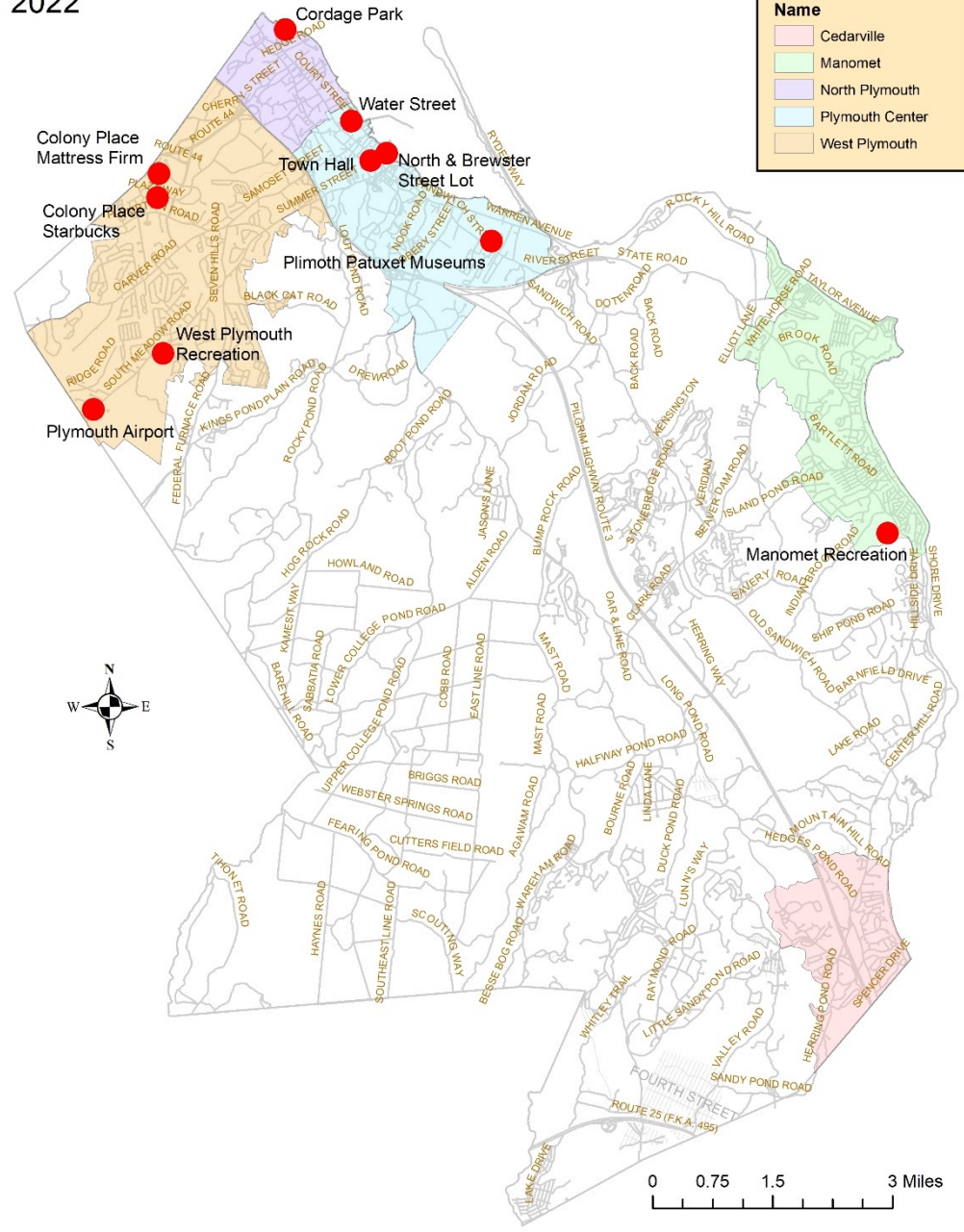
EV Charging Stations

Town-Installed EV Charging Stations 2022

Legend

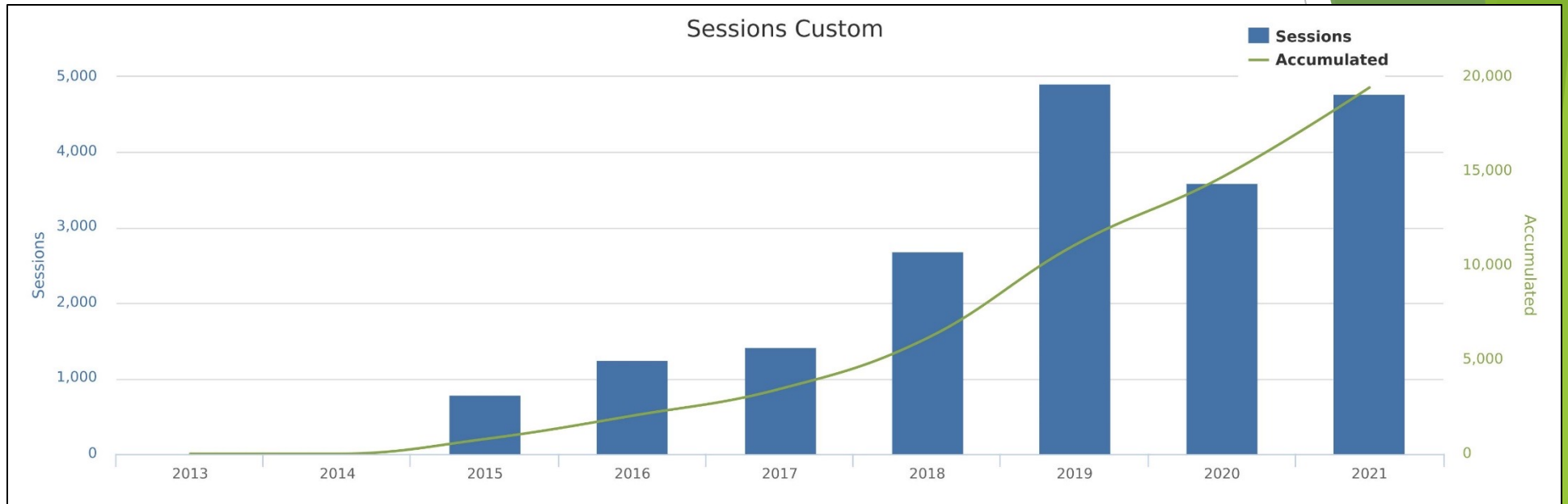
Village Service Area Name

- Cedarville
- Manomet
- North Plymouth
- Plymouth Center
- West Plymouth



Lifetime Program Usage Data (March 2013 – December 2021)

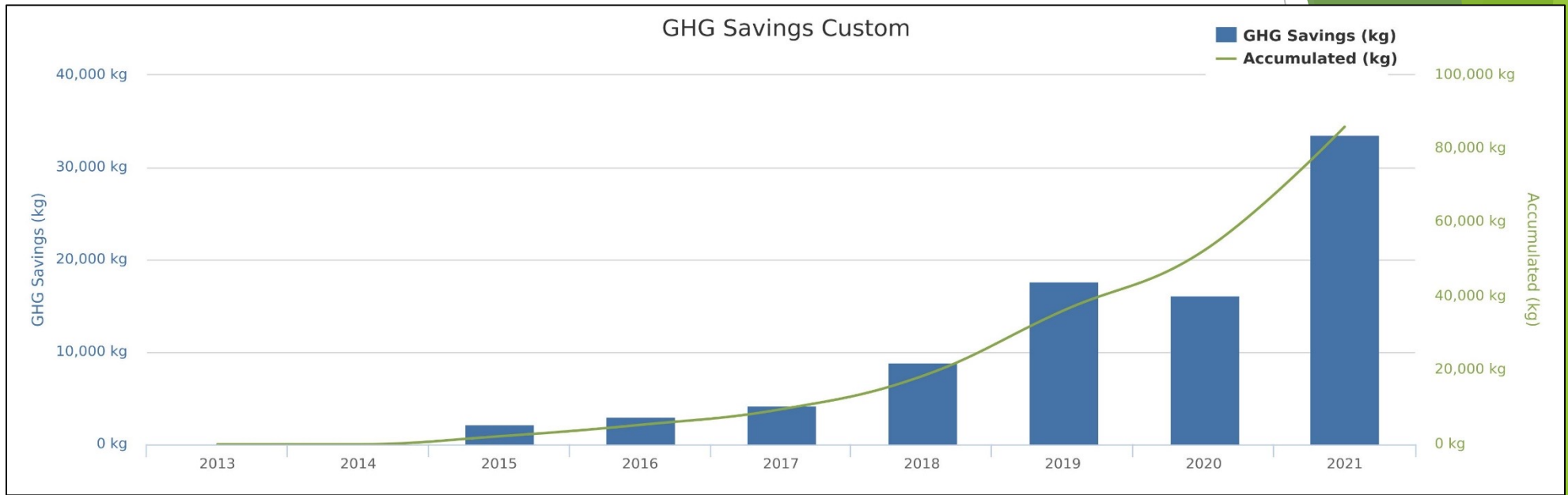
Accumulated Charging Sessions: **19,978**



Total: 141 335 855 1,244 1,418 2,696 4,917 3,603 4,769

Lifetime Program Usage Data (March 2013 – December 2021)

Accumulated Green House Gas Offset : **87,511 Metric Tons**



Total: 411 975 2,340 3,049 4,290 8,919 17,714 16,231 33,582

Lighting & Solar Projects

Municipal LED Light Replacement Projects

2012 - 2022

- Number of Installations/Retrofits: **29**
- Estimated Annual Energy Saved: **4,253,502 kWh~ 4,300 MWh**
- Total Grant Funding: **\$643,309.19**
- Anticipated Annual Savings: **\$173,634.28**

Total Grants Secured

2012 - 2022

- Number of Projects: **37**
- Total Grant Funding: **\$1,110,274.39**
- Town Investment: **\$203,953.97**

Municipal Off-Site Solar Net Metering Credit Summary

Total Program Savings Through FY22: **\$1,276,708.38**

| WAREHAM | |
|-------------|--------------|
| FISCAL YEAR | SAVINGS |
| 2015 | \$83,225.43 |
| 2016 | \$121,887.74 |
| 2017 | \$120,494.55 |
| 2018 | \$104,415.18 |
| 2019 | \$127,412.86 |
| 2020 | \$94,208.26 |
| 2021 | \$82,469.43 |
| 2022 | \$58,845.55 |

| CARVER | |
|-------------|-------------|
| FISCAL YEAR | SAVINGS |
| 2016 | \$19,060.71 |
| 2017 | \$27,485.68 |
| 2018 | \$44,002.42 |
| 2019 | \$50,959.23 |
| 2020 | \$41,448.50 |
| 2021 | \$81,070.79 |
| 2022 | \$66,918.09 |

| FREETOWN | |
|-------------|-------------|
| FISCAL YEAR | SAVINGS |
| 2015 | \$26,344.79 |
| 2016 | \$49,034.20 |
| 2017 | \$44,031.53 |
| 2018 | \$33,393.44 |

Plymouth Community Solar Projects

Residential – Roof & Ground Mounted

- Number of Installed/Permitted Projects as of April 1, 2022:
1,547
- Number of Solar Panels: **40,963**
- Total Residential Rated Output = **8,675.873 kW ~ 8.675 MW**

Average Peak Sunlight Hours/Day in Massachusetts = **3.84***
 $8,675.873 \text{ kW} \times 3.84 \text{ Hr/Day} = 33,315.35 \text{ kWh/Day}$
- Estimated Total Daily Energy Production: **33,315.4 kWh ~ 33.3 MWh**
- Estimated Total Annual Energy Production: **12,160.10 MWh**

*<https://www.turbinegenerator.org/solar/massachusetts/#:~:text=On%20average%2C%20the%20state%20of,affect%20a%20solar%20panels%20ability.>

Plymouth Community Solar Projects

Commercial – Roof Mounted

- Number of Installed and Permitted Projects: **62**
- Number of Solar Panels: **30,836**
- Total Rated Energy Generation: **10,339.0 kW ~ 10.3 MW**
- Estimated Total Daily Energy Production: **39,701.7 kWh ~ 39.7MWh**
- Estimated Total Annual Energy Production: **14,491.1 MWh**

Plymouth Community Solar Projects

Commercial – Ground Mounted

- Number of Installed/Permitted Projects: **20**
- Number of Solar Panels: **100,553**
- Total Rated Energy Generation: **30,650.12 kW**
- Estimated Total Daily Energy Production: **117,696.7 kWh/Day ~ 117.7 MWh/Day**
- Estimated Total Annual Energy Production: **42,960.5 MWh**

Plymouth Community Annual Solar Energy Generated

- Sum of all Solar Projects in Town: 69.6 MWh
- **Plymouth's Electric Load (2019): 400,590 MWh
- % of Plymouth's Electric Load: ~2.0%

3rd Party Power Supply Purchasing

Municipal Power Purchase Supply Program Collaboration with School Department *Town Buildings*

| FISCAL YEAR | SAVINGS |
|--------------------|---------------------|
| 2015 | \$23,625.00 |
| 2016 | \$67,500.00 |
| 2017 | \$56,250.00 |
| 2018 | \$81,000.00 |
| 2019 | \$27,900.00 |
| 2020 | \$65,934.00 |
| ***2021 | \$44,520.00 |
| Total | \$366,729.00 |

*** Partial data provided

Community Choice Power Supply Program

Municipal Aggregation

| | Plymouth's Program* (Supplier Services Only) | | Eversource (Supplier Services Only) |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | STANDARD (default) | OPTIONAL | BASIC SERVICE |
| Rate | | | |
| Residential | \$0.09807 per kWh | \$0.09897 per kWh | \$0.15764 per kWh |
| Small C&I | \$0.09807 per kWh | \$0.09897 per kWh | \$0.14761 per kWh |
| Medium & Large C&I | \$0.09807 per kWh | \$0.09897 per kWh | \$0.10470 per kWh |
| Streetlight | \$0.09807 per kWh | \$0.09897 per kWh | \$0.14761 per kWh |
| Renewable Energy Content | Meets Massachusetts renewable energy requirements | 100% National Wind Renewable Energy Certificates (RECs) | Meets Massachusetts renewable energy requirements |
| Duration | October 2020 – October 2023 <i>[Rates apply to service beginning and ending on the days of the month that your meter is read in your service area.]</i> | | January 1, 2022 – June 30, 2022 <i>[Residential, Small C&I and Streetlight rates change every 6 months. Medium & Large C&I rate changes every 3 months.]</i> |
| Exit Terms | NO CHARGE | | May receive a reconciliation charge or credit <i>[Large C&I only]</i> |

Community Choice Power Supply Program

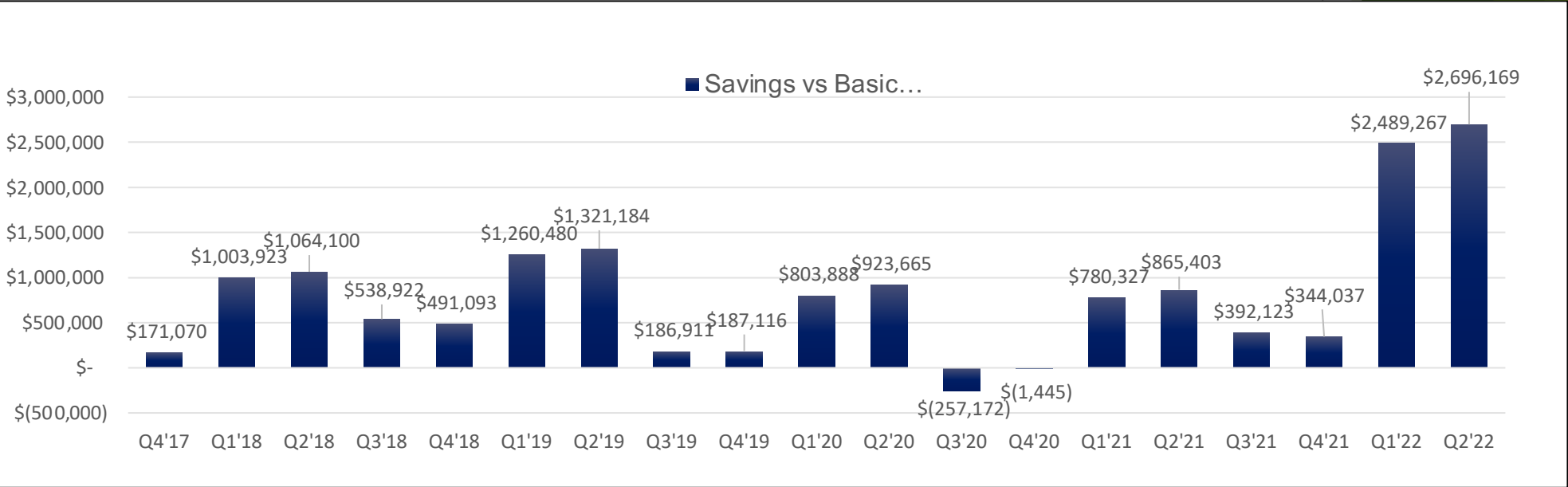
Municipal Aggregation – 100% Green Energy Option

- 9.807 cents per kWh vs. 9.897 cents per kWh
- [Energy Switch website](#)
- 100% renewable energy option: cost difference for average homeowner using 600 kWh per month: 54 cents

Community Choice Power Supply Program

Municipal Aggregation

Anticipated Program Savings through June 2022: **\$15,261,060.00**





Looking Ahead

NSTAR ELECTRIC COMPANY (EMA)

Fixed Price Option: July 1, 2022 – December 31, 2022
Cost/kWh

| | |
|-------------------------------------------|---------------|
| Residential | 17.871 |
| Small C&I | 17.827 |
| Large C&I (NEMA) (through September 2022) | 21.883 |
| Large C&I (SEMA) (through September 2022) | 20.959 |

Anticipated Savings for July – December 2022
+7.7 Million Dollars

Savings Since Program Inception
(October 2017 – December 2022)
+23 Million Dollars

Thank You