



# Georgetown, ME – Solar Evaluation

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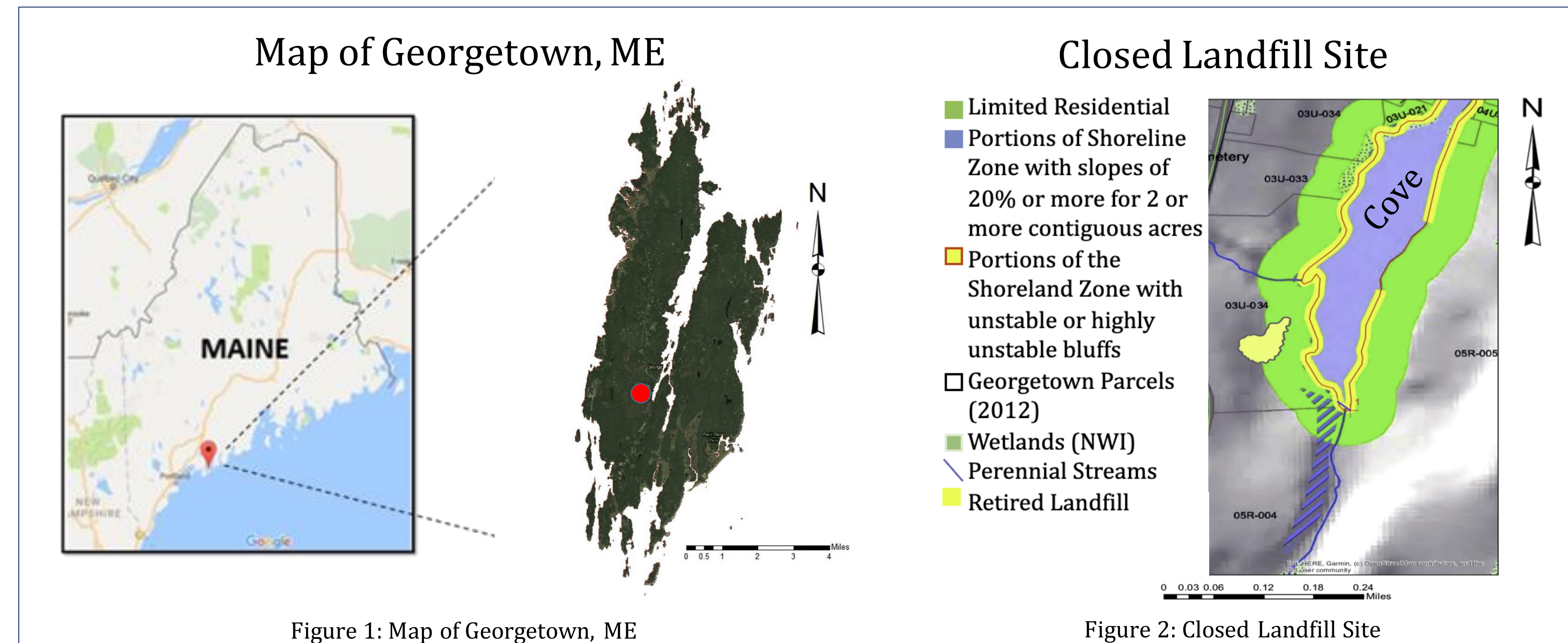
Sponsor: Georgetown Energy Working Group (GEWG)

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## Introduction

- The Georgetown, ME Energy Working Group (GEWG), in conjunction with the Town's Select Board, explored solar energy alternatives that could provide electricity for municipal facilities. In addition, the Select Board requested information for an energy-saving heating method for the Town's elementary school.
- The Senior Project Team assisted the GEWG in evaluating the possible solar companies and heating alternatives. A decision will be made by the Town's Select Board about future investment in these options.

## Study Area



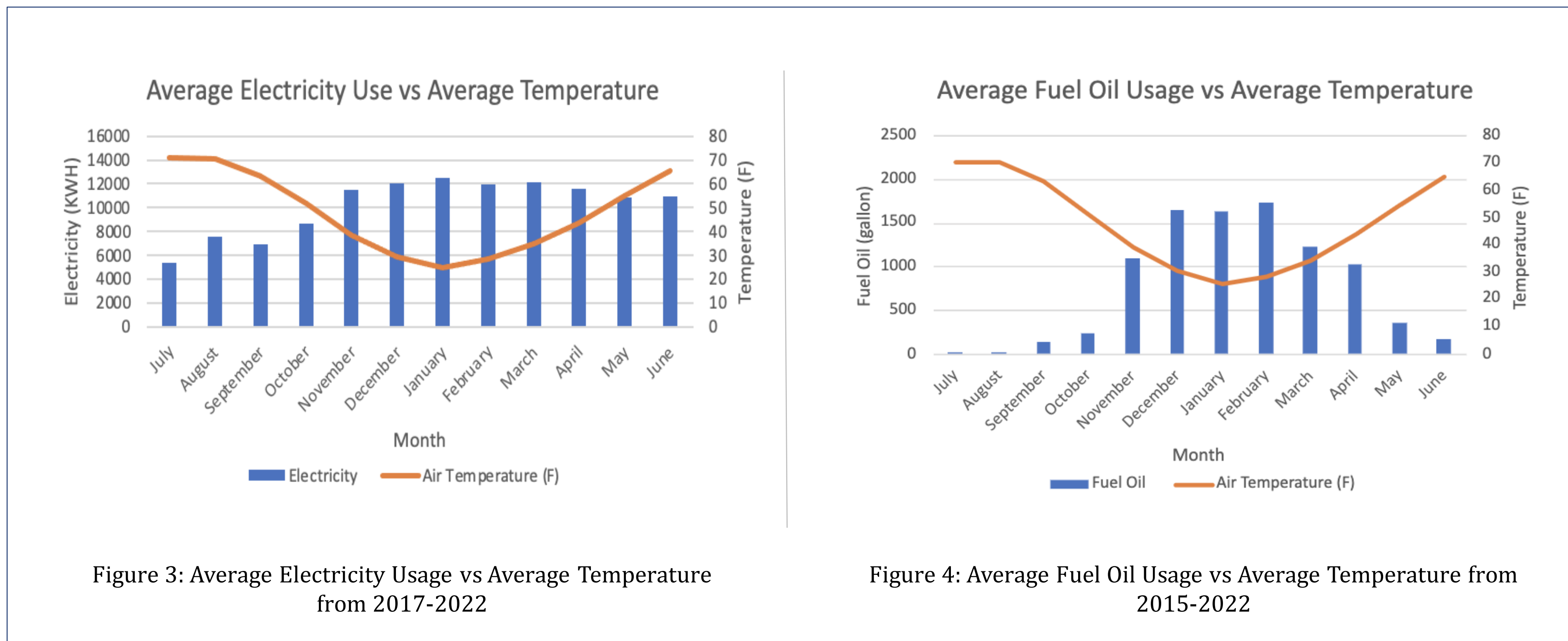
## School Heating Alternatives

- Heating recommendations provided by Mid-Coast Energy for:
  - Oil Burner System
  - Administration Office
  - Library
  - Town Office
- Recommended Equipment:
  - Ceiling Fan
  - Air Conditioning
  - Air-Source Heat Pumps/Ceiling Cassettes
    - Each unit installed ranges from approximately \$10,000 – \$15,000.

## Methodology

- Explored the photovoltaic solar energy alternatives requested by the GEWG and generated a list of potential solar companies. Meetings were arranged with interested companies to discuss the solar options they could provide.
  - The number of solar companies for each option include: PPA: 5 companies, Wholly Owned: 5 companies, Subscription: 7 companies, Solar Farm Share: none available in Midcoast Maine
- Toured the Georgetown Elementary School to evaluate its current heating methods and discussed energy-efficient alternatives with a representative from MidCoast Energy.
- Performed an economic analysis of the potential solar options and created graphs of the school's electrical usage and heating from 2015-2022 monthly.

## Electricity and Heating Oil Usage of the School



## Economic Analysis

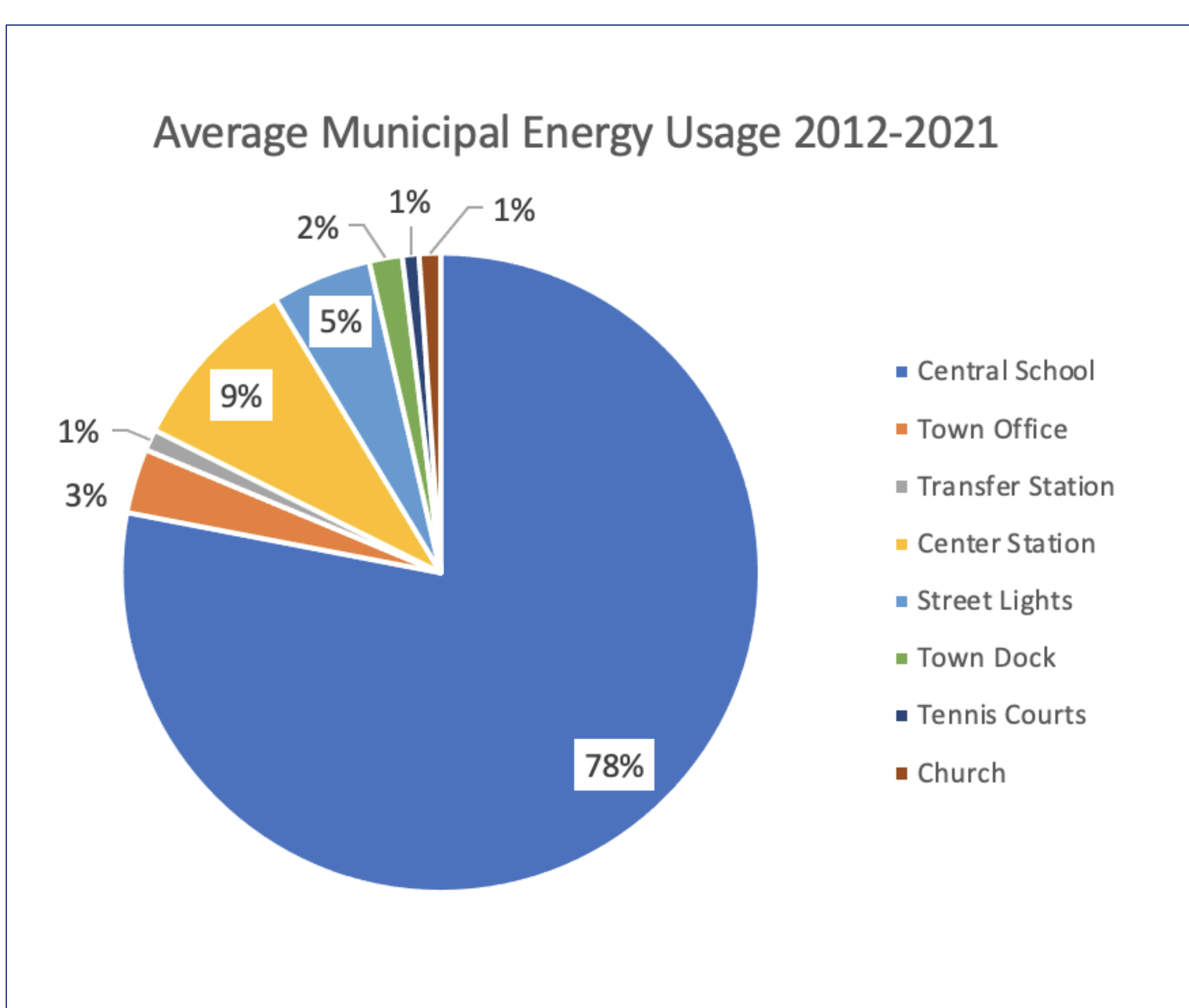
Solar Array Location	Financing Option	Power (kW)	Savings Per kWh (\$)	Savings 30 Year Period (\$)
School Roof	PPA (20 years)	100	0.020	44000
School Roof	PPA (25 years)	100	0.020	54000
Firehouse Roof	Wholly Owned	30	0.157	27170
Midcoast Maine Region	Subscription	Offsite	0.007	34380

Table 1: Revision Energy Solar Analysis

Analysis was performed for a 30-year period as solar panels typically need replacement after this time. Revision Energy can provide the most solar options for the Town, others mostly provide subscription-based services.

(Assuming panels are facing East/West)

## Municipal Energy Usage



## Photovoltaic Energy Generation Methods

- 17 solar companies were interviewed. Options for the Town of Georgetown, ME include:
- Power Purchase Agreement (PPA):** Town buys energy at a reduced rate for an expected amount of time after which could buy the array at a reduced rate
    - Reduced for rate for electricity and gain an array with long agreement time and a purchase cost
  - Wholly Owned Array:** Town pays capital cost to have a photovoltaic array installed on-site, either on the ground or rooftop
    - Reduced energy and delivery rates with a large capital investment and operation fees
  - Subscription Service:** Town subscribes to an existing solar array or one to be constructed
    - No capital cost for reduced energy rate and no long-term commitment, delivery costs still apply
  - Solar Farm Share:** Town buys a share of an array from a community solar farm to be built or for one already operating
    - Does not build an array or pay operation fees but requires a capital investment payment and delivery cost, and there must be a solar farm in the service area

## Conclusion

- Building a wholly owned photovoltaic array in Georgetown, ME provides the Town with their own independent energy source
- Powering municipal buildings with solar energy helps Maine reach its solar goals and makes the Town more sustainable
- Using solar energy helps reduce the electrical cost for the municipal buildings
- Through operation of a wholly owned array or PPA agreement, the Town would benefit from any electricity generation in a 12-month time span
- Photovoltaic solar power will provide the Town with an energy supply in the case of a power outage on the island caused by a weather event

## References

- Georgetown Municipal Working Group. *Progress Report and Recommendations memorandum*, September 21, 2021
- "US Community Energy Projects." -US Community Energy Projects, <http://communityenergyus.net/AllProjects>
- Registration for Distributed Generation (DG)/NET Energy Billing (NEB) project sponsors and related entities <https://apps.web.maine.gov/online/aewiewer/ME/9/list.html>
- Coombs, Kristen. "Georgetown Shoreline Zone Data." *Georgetown Maine*, 8 June 2013, [https://www.georgetownme.com/wp-content/uploads/2014/09/shoreland\\_zoning\\_map\\_3\\_june\\_2013.pdf](https://www.georgetownme.com/wp-content/uploads/2014/09/shoreland_zoning_map_3_june_2013.pdf). Accessed 2 Apr. 2022.

## Acknowledgements

The team would like to acknowledge the GEWG, the Town Select Board members, and Amanda Campbell for her aid in clarification and information regarding the Town's municipal usages and costs. Additionally, the team would like to recognize the Georgetown Central School and the People of Georgetown, ME. The project would not be possible without the support of these individuals.