Fall 2023

GREEN POWER AT LOWER COST

Green Municipal Aggregation continues to be a huge success in the Bay State

GREENENERGYCONSUMERS.ORG/AGGREGATION

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EXECUTIVE SUMMARY

Our mission at Green Energy Consumers Alliance is to harness the power of energy consumers and communities to speed a just transition to a zero-carbon world. We do so by advocating for sound public policy and by operating programs that help consumers access clean energy technologies to reduce their personal greenhouse gas (GHG) emissions. Information about our programs and advocacy work is available on our website. This report highlights our largest program, Green Municipal Aggregation.

This is the fourth edition of the Green Municipal Aggregation (GMA) status report, following previous editions that were published in 2018, 2020, and 2022. This report provides an in-depth description of GMA in Massachusetts, its substantial consumer and climate benefits, and current barriers to its growth.

This report is intended to be a resource for anyone who consumes energy in Massachusetts, to foster a better understanding of the full landscape of energy options available, particularly for ratepayers who have an interest in clean energy and the climate crisis. It is also a resource for public officials and policymakers who have the authority and responsibility to move renewable, sustainable energy solutions forward in our transition to a clean energy future. We recognize that, as an organization working in close partnership with communities to expand municipal aggregation or community choice aggregation, this is not an unbiased document.

Green Energy Consumers Alliance has direct knowledge about the 28 communities (21 in Massachusetts and 7 in Rhode Island) with whom we are currently working by supplying those aggregations with the renewable energy certificates (RECs) above and beyond the RECs they procure to meet the state's mandate, the Renewable Portfolio Standard (RPS). We closely observe other existing aggregations with which we have no direct involvement. We look forward to serving even more cities and towns in the years ahead as both Massachusetts and Rhode Island, and we also hope to see the model grow overall.

In preparation of this report, Green Energy Consumers Alliance has practiced diligence in properly labeling and distinguishing between facts and our opinion throughout this report.

Background

Municipal Aggregation (also called "Community Choice Aggregation") is defined as the process by which a city or town purchases its electricity supply in bulk on behalf of its community, including residential and small-business customers, often with the goal of reducing costs for ratepayers.

Municipal Aggregation was first enabled in Massachusetts in 1997. Building on this concept, Green Energy Consumers Alliance, in collaboration with Good Energy, LLC, developed GMA,

first rolled out in Dedham and Melrose in January 2016, as a solution to incorporate a greater amount of renewable energy into these aggregation programs.

We define GMA as a program with a default energy option that includes at least 5% more Class I RECs — energy from wind, solar, and other renewable sources — than are currently required by the state's RPS.

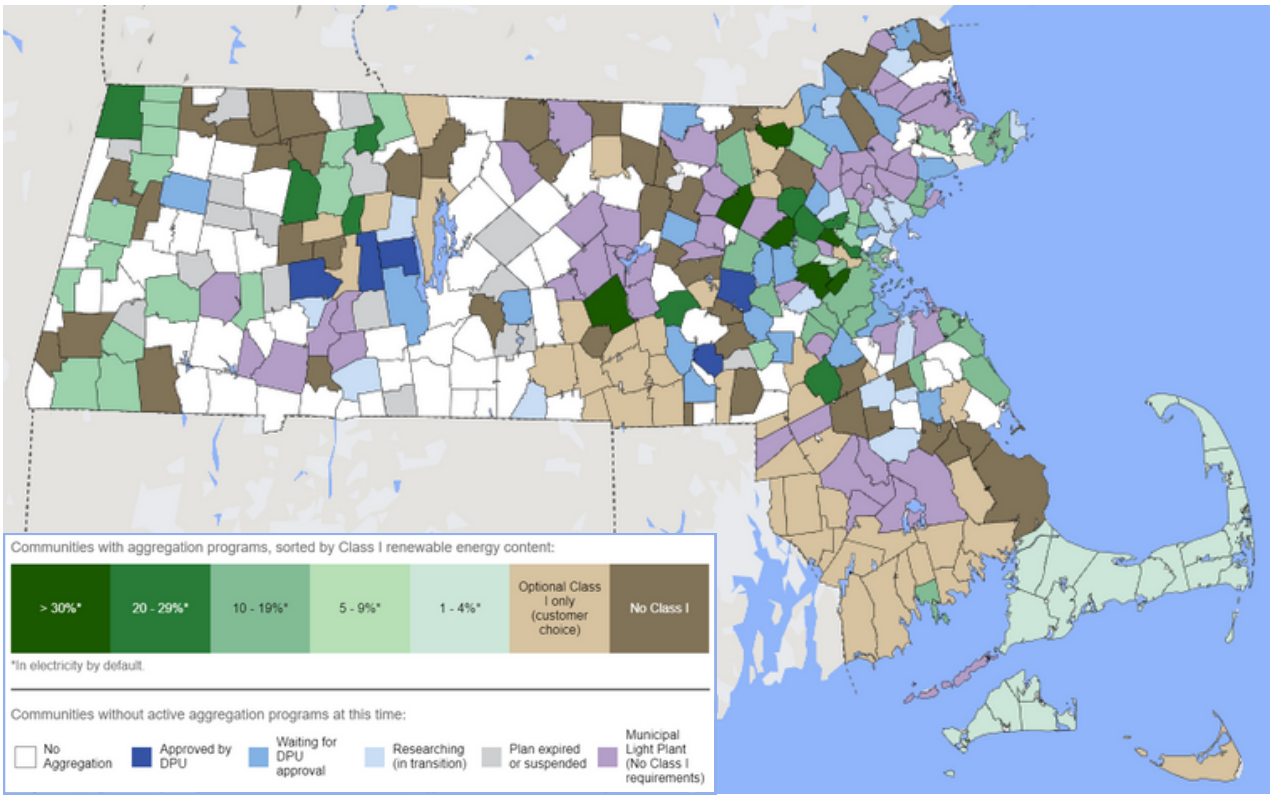
Key Findings & Updates

In the spring of 2022, we released a report, "*Green Power at Lower Cost: Municipal Aggregation is a Huge Success in Massachusetts*," detailing the numerous, cross-sector benefits of GMA to date. With over a year of additional data available, it has only become more apparent that GMA has produced profoundly successful results, both in terms of meaningful cost savings for ratepayers and in support of the Commonwealth's clean energy targets. The following are our key findings:

- Of the 351 municipalities in Massachusetts, 167 cities and towns currently have an aggregation plan approved by the Massachusetts Department of Public Utilities (DPU). *Note that 49 cities and towns receive their power supply from municipal utilities.*

- These plans range from including no Class I renewable options ("brown") to including 30% or more Class I renewable options than are required by state law ("very dark green"), depending on how much renewable content each municipality has opted to incorporate into its program.

Mapping Aggregation in Massachusetts



Cost Savings & Benefits of GMA Programs in Massachusetts

We studied a cohort of 55 GMAs between August 2017 and October 2023, all of which include 5%-11% more Class I RECs than the state's RPS requires. For this cost analysis, we excluded "light green" aggregations that had less than 5% Class I content and "darker green" aggregations that had more than 11% Class I content.

We found that these municipalities within the cohort were able to stabilize their electricity costs over the past six years and saved an average of 3.3 cents per kilowatt-hour (kWh) in comparison to consumers on Basic Service.

For the average household using 500-600 kWh per month, this equates to $200-$237 per year. If these savings per kWh were extrapolated to all residential households served by the investor-owned utilities (Eversource, National Grid, and Unitil), the savings would total over a half billion dollars per year.

	National Grid *Dec 2018 – Oct 2023*	**Eversource** *Aug 2017 – Oct 2023*	**GMA 5%-11%**	**GMA Savings** *¢/kWh vs. Basic Service*
Min ¢/kWh	9.707	9.877	9.534	0.173
Max ¢/kWh	33.891	25.776	15.671	18.220
Avg ¢/kWh	14.491	13.820	10.829	3.327

GMA is Driving Renewable Energy Expansion in Massachusetts

In all, 54 cities and towns in Massachusetts currently have active GMAs. We estimate that these 54 GMAs are adding approximately one million megawatt hours of renewable energy to the grid above and beyond RPS requirements per year. This is equivalent to the total power usage of 150,000 to 200,000 homes.

The default rates charged by those GMAs have been lower than Basic Service rates by an average of 83% of the time between both Eversource and National Grid over the past six years. It's important to note that consumers are able to opt out of the default rate without penalty at any time. Aggregations also typically allow consumers to "opt-up" to higher percentages of renewable energy or to "opt-down" to percentages that meet, but do not exceed, the RPS.

GMA is a Critical Tool to Combat Predatory Competitive Electric Suppliers

Based on this data, we believe municipal aggregation also provides a critical opportunity to offer Massachusetts consumers urgently needed protection from predatory retail electricity suppliers, which pose a growing and distressing threat to communities across the Commonwealth. For example, the Office of Massachusetts Attorney General Andrea Campbell published a report in May of 2023 detailing how, over six years, Massachusetts residents lost $525 million through competitive electric supply contracts. This breaks down to individual residential consumers losing an average of $231 every year. Furthermore, residents of low-income communities, communities of color, and communities with high percentages of households with low English proficiency are twice as likely to be signed up for a competitive supplier. Therefore, these residents are disproportionately harmed by these predatory practices.

Some Communities are Slow to the Party

There are still 69 Massachusetts cities and towns without aggregations, the majority of which are small municipalities. In the 2020 Census, the median population size for Massachusetts municipalities was 10,639 people. Of the 69 communities with no aggregation, 68% of them have populations under the state median population. There are some larger communities like Springfield, Lawrence, and Brockton who we note are researching aggregations but have not yet submitted plans to the DPU. Those three cities account for 350,715 people according to the 2020 Census.

Barriers to the Expansion of GMA in Massachusetts

The greatest barrier to the more widespread success of the aggregation model is the DPU, the state agency responsible for approving aggregation plans. Right now, 22 communities across the Commonwealth are waiting on the DPU to approve their petitions for GMA. Several of those communities have been waiting several years for approval, with no resolution. And yet despite the backlog and proven benefits that the implementation of these plans provide in the context of the state's stated climate goals, no aggregations have been approved thus far in 2023, and only one aggregation, Fitchburg, was approved in 2022.

Recommendations

There is a bill in the Massachusetts legislature – House Bill 3852, An Act Supporting Load Aggregation Programs – which would empower municipalities with existing aggregation programs to more effectively update and operate their programs and foster the expansion of these programs to other cities and towns throughout the Commonwealth.

The DPU recently announced an investigation to establish "guidelines, with the goal of creating a more efficient and streamlined process for Massachusetts cities and towns to establish municipal aggregation programs for their residents and businesses."

The order includes proposed guidelines, as well as a template municipal aggregation plan designed to aid municipalities in developing new municipal aggregation plans. It is debatable whether or not the proposed guidelines and templates would adequately support the municipal aggregation model or further impinge the model's ability to bring economic and environmental benefits to the Commonwealth.

At the time that this report was published, the DPU investigation was just beginning. Whether or not legislation passes amending the municipal aggregation statute or the DPU revises its regulations and guidelines, we encourage the Massachusetts Department of Energy Resources to provide cities and towns with greater support on aggregation, perhaps through the Green Communities Division. Currently, there is no concerted effort by the Commonwealth to capture the benefits of municipal aggregation.

WHAT IS GMA?

This paper describes a community-based energy model, Green Municipal Aggregation (GMA), which we pioneered along with Good Energy, LLC. The model has proven to be greatly successful at reducing carbon emissions cost-effectively and equitably by increasing the demand for renewable energy.

Municipal aggregation is the process by which a municipality (a town or city) purchases electricity in bulk from a competitive supplier on behalf of the residents and businesses within the community. The fundamental characteristic that distinguishes GMA from traditional aggregations is that the default electricity supply in a GMA includes more Class I renewable content than required by the Massachusetts Renewable Portfolio Standard (RPS) and Clean Energy Standard (CES).

As of October 2023, Green Energy Consumers Alliance serves 21 GMAs in Massachusetts by supplying them with renewable energy over and above the amount required to meet the state mandates: Arlington, Bedford, Brookline, Cohasset, Dedham, Fairhaven, Gloucester, Hamilton, Medford, Marshfield, Melrose, Millis, Milton, Rockland, Scituate, Somerville, Stoneham, Waltham, Westford, Westwood, and Winchester. Green Energy Consumers Alliance also supplies additional renewable energy for consumers in these communities who opt-up to 100% renewable energy content. *Note that, in addition to the aforementioned communities, Green Energy Consumers Alliance is serving 7 cities and towns in Rhode Island – Barrington, Central Falls, Narragansett, Newport, North Kingstown, Portsmouth, and Providence.*

Our work in aggregation stems from a long history of offering consumers effective and affordable clean energy solutions. In 1998, our organization became one of the first in the country to market a retail green power product, offering consumers the opportunity to support electricity from renewable energy separately from their utility bills (at that time, solar and landfill gas). In 2002, we launched a product called New England Wind, which allowed consumers the opportunity to similarly support local wind energy. The Hull 1 wind turbine was the first wind project in our portfolio and the first utility-scale wind turbine in the Northeast. Our purchase of Renewable Energy Certificates (RECs) from Hull was probably the first of its kind in New England. Today, our Green Powered Program serves thousands of households and businesses who have voluntarily decided to buy green power. The Green Powered program is the foundation upon which we have built the GMA model with Good Energy, LLC.

This paper is intended to serve as a resource to citizens and public officials wishing to understand GMA and communities considering GMA as part of a comprehensive community-scale clean energy and climate plan. Additional resources for technical assistance and next steps are included at the end.

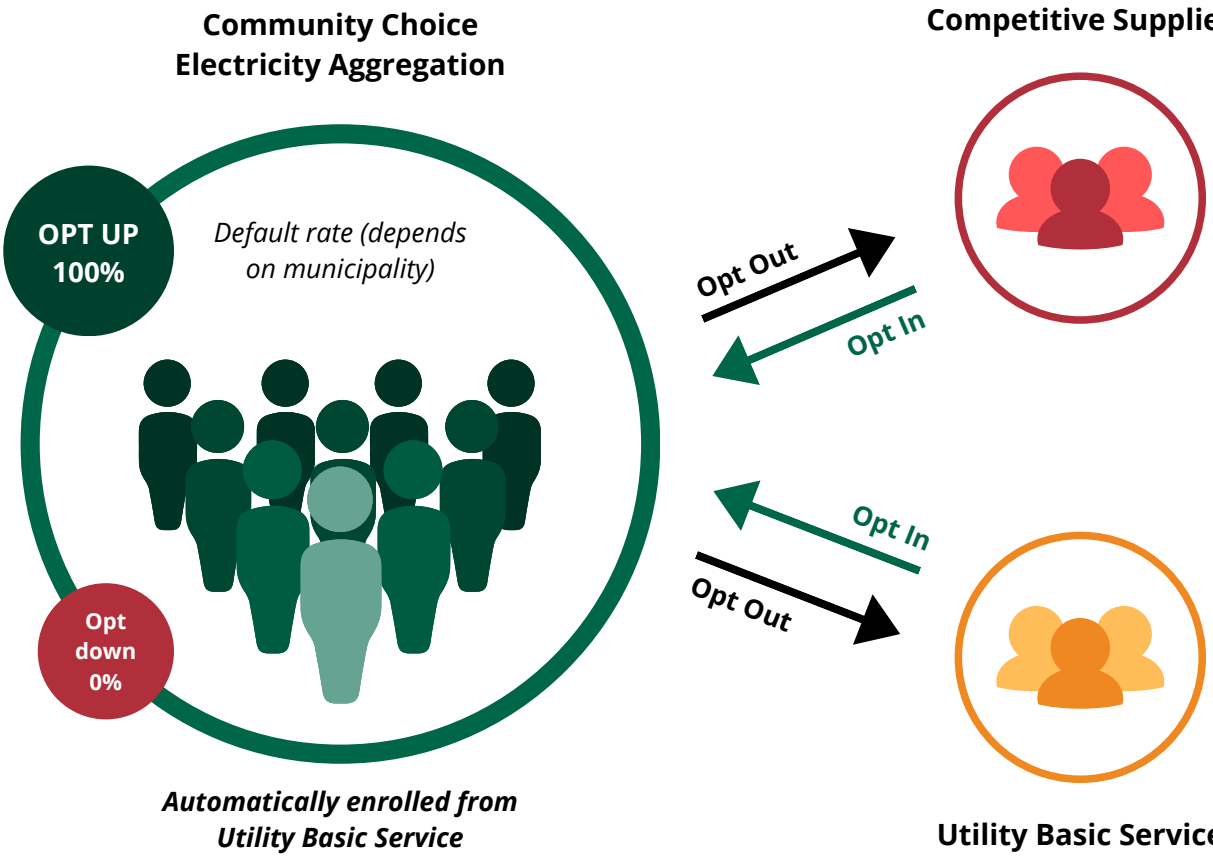
Throughout this report, we will frequently refer to RECs, particularly those that qualify as “Class I.” If you are unfamiliar with these terms, see the appendix for a primer. Both ideas are fundamental to understanding the GMA approach.

KEY ATTRIBUTES OF GMA

The “news value” of this 2023 report is that we can point to recent empirical data that explains how effective GMA is with respect to financial cost and environmental impact, but GMA has other attributes that are worthy of attention.

The significant environmental benefits of increasing renewable energy content via GMA are derived **without public subsidy**. Green Energy Consumers Alliance supports subsidies for clean energy when the subsidies are needed, but the additional renewable energy brought onto the grid by GMA doesn’t require direct investment from state or local government. Rather, it comes about through managed competition enabled by local government and is subject to the assent of every participant.

GMA is perhaps the most **socially equitable** clean energy intervention available today. Everyone benefits from renewable energy, even people who live outside the community, outside the Commonwealth, or even in other countries. Furthermore, ratepayers have every opportunity to opt-out of the aggregation without penalty or to opt-down should they wish to save a few dollars per year.



GMA also guarantees **certainty**. Consumers benefit from stability in their electricity prices and the knowledge that the additional “green” content in their energy mix is having an impact on the New England grid (if it is Class I) and not just “greenwashing.”

According to the agreement with suppliers, RECs, which certify the “greenness” of the electricity, must be retired on the consumers’ behalf. The community and its constituents take on no risk related to financing, project siting, generation, and the like.

GMA enhances the benefits of **electrifying transportation and heating**. According to the Massachusetts Clean Energy and Climate Plan (CECP), by 2030, the Commonwealth will need close to a million electric vehicles and a similar number of heat pumps to achieve the CECP’s greenhouse gas reduction target of 50% under 1990 levels. Those are daunting figures, implying a huge amount of capital investment and almost two million decisions by ordinary people. An electric vehicle or a heat pump powered by GMA is more potent as a carbon reducer than one that is not. This point is illustrated in Appendix V.

Scalability is another strong attribute of GMA. In Massachusetts, it’s available to 302 cities and towns. In addition, when an aggregation goes online, it starts with customers who were previously on the distribution company's Basic Service. Subsequently, new customers to Basic Service or those who were previously with a competitive supplier can join the aggregation, further extending its impact. And each aggregation has the right to increase the percentage of Class I RECs in its default product over time. Finally, within each aggregation, consumers often have the option of selecting a product that is 100 percent Class I.

GREEN ENERGY CONSUMERS ALLIANCE & GMA

Our mission at Green Energy Consumers Alliance is to empower consumers and communities to speed a just transition to a zero-carbon world. We do so by advocating for sound public policy and by operating programs that help consumers access clean energy technologies to reduce their personal greenhouse gas (GHG) emissions. Information about our programs and advocacy work is available on our website. GMA is our largest program and is at the core of our mission.

Municipal aggregation was first enabled by statute in Massachusetts in 1997. In 2016, the model of GMA was developed by Green Energy Consumers Alliance in collaboration with Good Energy, LLC, an energy consultant to municipalities. The first two communities to adopt GMA were Dedham and Melrose.

Green Energy Consumers Alliance purchases Class I RECs sourced from projects in New England that are qualified new hydroelectric, solar, wind, or anaerobic digester facilities. In order to do that, we research projects that are being developed, especially close to our GMA communities and in some cases, we contract directly with the owners and/or developers. Some of our RECs support projects we have long-term agreements with like the wind turbine in Scituate and the landfill solar facility based in Johnston, RI, both pictured below:

We here at Green Energy Consumers Alliance have supplied 177,643 RECs to our 21 GMA communities in 2022, representing a combined population of 652,418. GMA also promotes additionality, which is defined as the result of increased purchases of renewable energy with verifiable GHG reductions above the state's mandates.

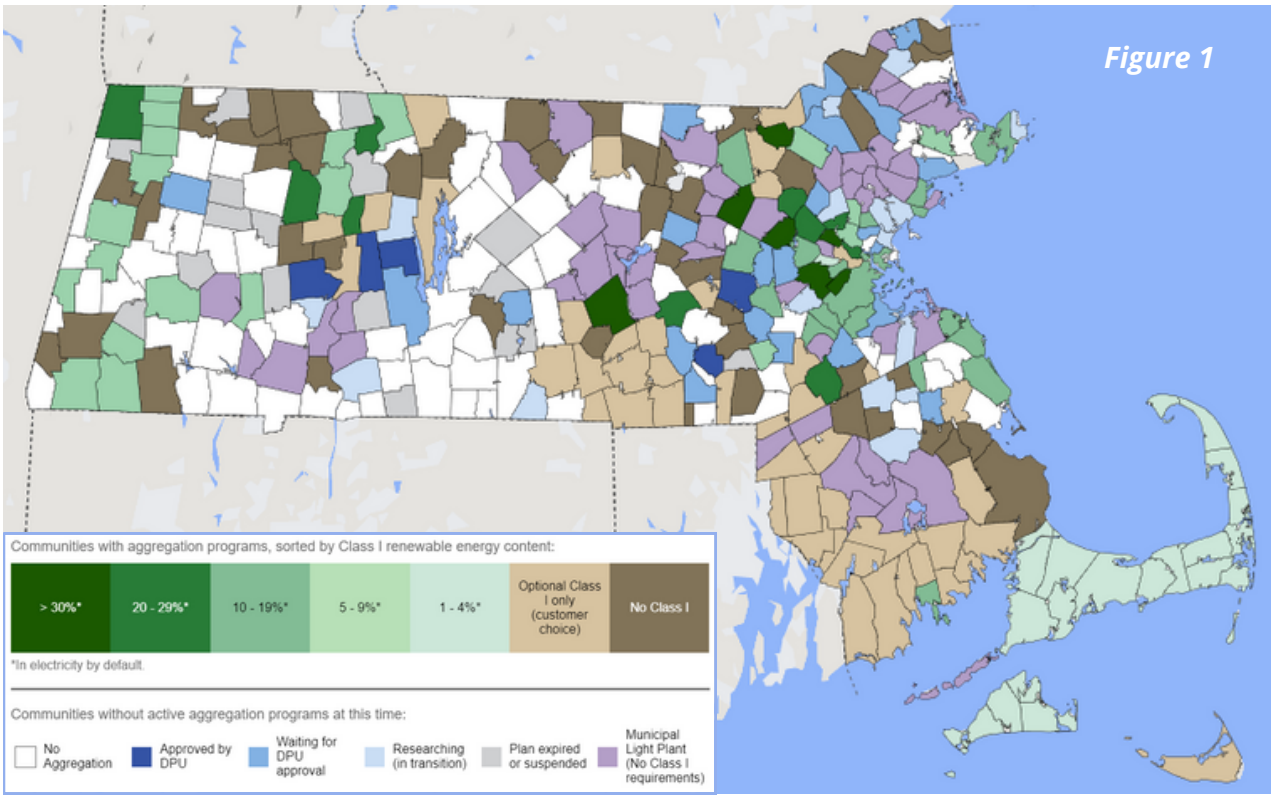
GMA is unique in its ability to deliver clean energy in a way in which everyone can participate and benefit. We will continue to advocate for the expansion of GMA in both Massachusetts and Rhode Island due to its demonstrated success.

The Importance of Class I RECs

We view Class I RECs as the best standard for certifiably adding renewable energy to the electric grid, and therefore, we only count the demand for Class I RECs as adding more renewable energy content from municipal aggregations. One REC is produced for every megawatt-hour (MWh) of electricity generated by a wind turbine, solar panel, or another qualifying renewable energy source. For an entity to claim it is consuming renewable energy, it must purchase one REC for every MWh consumed. In New England, Class I RECs add new, clean, resources and lead to additionality, meaning incremental GHG emissions reductions that would not have occurred without the increased demand from the purchase of a Class I REC. The importance of Class I RECs comes from the notion that they create the demand for more renewable energy on the New England energy grid and verifiably reduce greenhouse gases. Learn more about RECs and the importance of Class I RECs in Appendix I.

MAPPING GMA

The map below represents the 351 municipalities in Massachusetts. 167 cities and towns have an approved aggregation plan. These 167 municipalities are represented in brown and green. Another 62 communities have participated in aggregation in the past, are currently researching aggregation, or are waiting to be approved by the Massachusetts Department of Public Utilities (DPU). These 62 municipalities are represented in blue. The 49 towns and cities with dashed lines are served by municipally-owned utilities.



Check out the status of your community on our map.

The communities in green and brown are divided into groups based on how much they include Class I RECs above the Renewable Portfolio Standard (RPS) requirements. The RPS is a Massachusetts law that requires a certain percentage of the state's electricity to come from renewable energy. In 2023, MA requires that 22% of the state's energy supply come from renewables. This percentage continues to increase 2% every year until 2029 and then increases by 1% each year following.

The green represents the aggregations whose default option includes more renewable energy content than required by the RPS standard. The 54 municipalities in green whose default option includes at least 5% more renewable energy content than required by the RPS standard are the towns we delineate as having Green Municipal Aggregations. Of the 54 Green Municipal Aggregation communities in Massachusetts, 21 are served by us here at Green Energy Consumers Alliance and Good Energy.

Communities We Serve & 2023 Renewable Percentages					
Arlington	30%	**Hamilton**	5%	**Scituate**	10%
Bedford	20%	**Marshfield**	10%	**Somerville**	20%
Brookline	36%	**Medford**	5%	**Stoneham**	10%
Cohasset	10%	**Melrose**	10%	**Waltham**	10%
Dedham	10%	**Millis**	10%	**Westford**	10%
Fairhaven	10%	**Milton**	10%	**Westwood**	10%
Gloucester	10%	**Rockland**	10%	**Winchester**	20%

The brown represents aggregations whose supply is the same as Basic Service because they include the minimum requirements of the RPS. Customers living in municipalities designated in light brown can opt to include Class I RECs above the RPS standard.

The number of cities and towns participating in municipal aggregations has grown. Eighteen cities and towns have begun participating in municipal aggregation in some form since we published the third edition of our report in 2022. However, all but one of those communities was approved by the Massachusetts Department of Public Utilities (DPU) in 2021 or prior.

As we will discuss later in the report, the DPU has been slow in approving the petitions that municipalities file to begin aggregations. There are currently 22 communities waiting for approval of their aggregations by the DPU, many of whom have been waiting for multiple years. As of October 2023, no aggregations have been approved this year. In 2022, only one municipality, Fitchburg, was approved by DPU. It took just under two years to approve this aggregation, as the City of Fitchburg petitioned for an aggregation on December 31, 2020. In 2021, ten municipalities were approved to begin an aggregation. Of the ten approved in 2021, five were GMAs: Milton, Scituate, Cohasset, Marshfield, and Westwood. As of October 2023, many cities and towns have been waiting for well over two years for approval.

BENEFITS OF GMA

Affordability

GMA benefits consumers by stabilizing and often lowering prices in comparison to the electricity supply offered by the investor-owned utilities, Eversource, National Grid, and Unitil. The utility supply is called “Basic Service”. By law and regulation, Basic Service rates fluctuate every six months.

Methodology

The results are based on data compiled between August 2017 – October 2023 for Eversource customers and between December 2018 – October 2023 for National Grid customers. We studied 55 communities that either had or continue to have GMA during that time period. Of those 55, we focused on 41 Massachusetts cities and towns that have a default option between 5% and 11% of additional renewable MA Class I content above the RPS standard. Last year’s report focused on 38 communities within this range. Since then, some have added renewable content above 11% and some new communities have come within that range, like Cohasset, Scituate, Marshfield, and Westwood.

Aggregations with less than 5% or more than 11% Class I content are not included in the following data. We chose to exclude aggregations that are “light green” from the cost savings analysis to focus on communities that are dark green but not “super dark green.” At very high percentages of Class I REC prices, default products tend to have higher rates than Basic Service. However, it is important to note that in many aggregations consumers can “opt-down” to a product that meets, but does not exceed, state renewable energy standards or to “opt-out” of the aggregation entirely at any time without penalty.

Results

Our calculations demonstrate that residential consumers within this GMA cohort of 41 communities saved an average of 3.3 cents per kilowatt-hour (kWh) in comparison to consumers on Basic Service. This equates to household savings averaging approximately $233 per year.

	National Grid *Dec 2018 – Oct 2023*	Eversource *Aug 2017 – Oct 2023*	GMA 5%-11%	GMA Savings *¢/kWh vs. Basic Service*
Min ¢/kWh	9.707	9.877	9.534	0.173
Max ¢/kWh	33.891	25.776	15.671	18.220
Avg ¢/kWh	14.491	13.820	10.829	3.327

As stated above, National Grid and Eversource change their Basic Service rates every six months. We looked at the last ten six-month periods for National Grid customers and the last 13 six-month periods for Eversource customers. Of the ten National Grid periods, the average GMA rate was lower than basic service for seven of them. For Eversource customers, the average GMA rate was lower than basic service for 12 of the 13 six-month periods. Taken together, over the past several years, the average GMA rate has been lower than Basic Service rates 83% of the time. During the times the Basic Service rates were lower than average GMA rates, the most they were under by was 1.1 cents per kWh, or 11% of the overall average GMA rate. The most Basic Service rates were above GMA rates (represented by the highest spike in the winter of 2022), was by 23 cents per kWh, or 217% of the average GMA rate.

In our 2022 report, which compared rates from August 2017 to June 2022, before the winter price spike, we found that GMA communities during that period saved an average of 1.3 cents / kWh. For more details please refer to our 2022 report.

Eversource GMA Communities

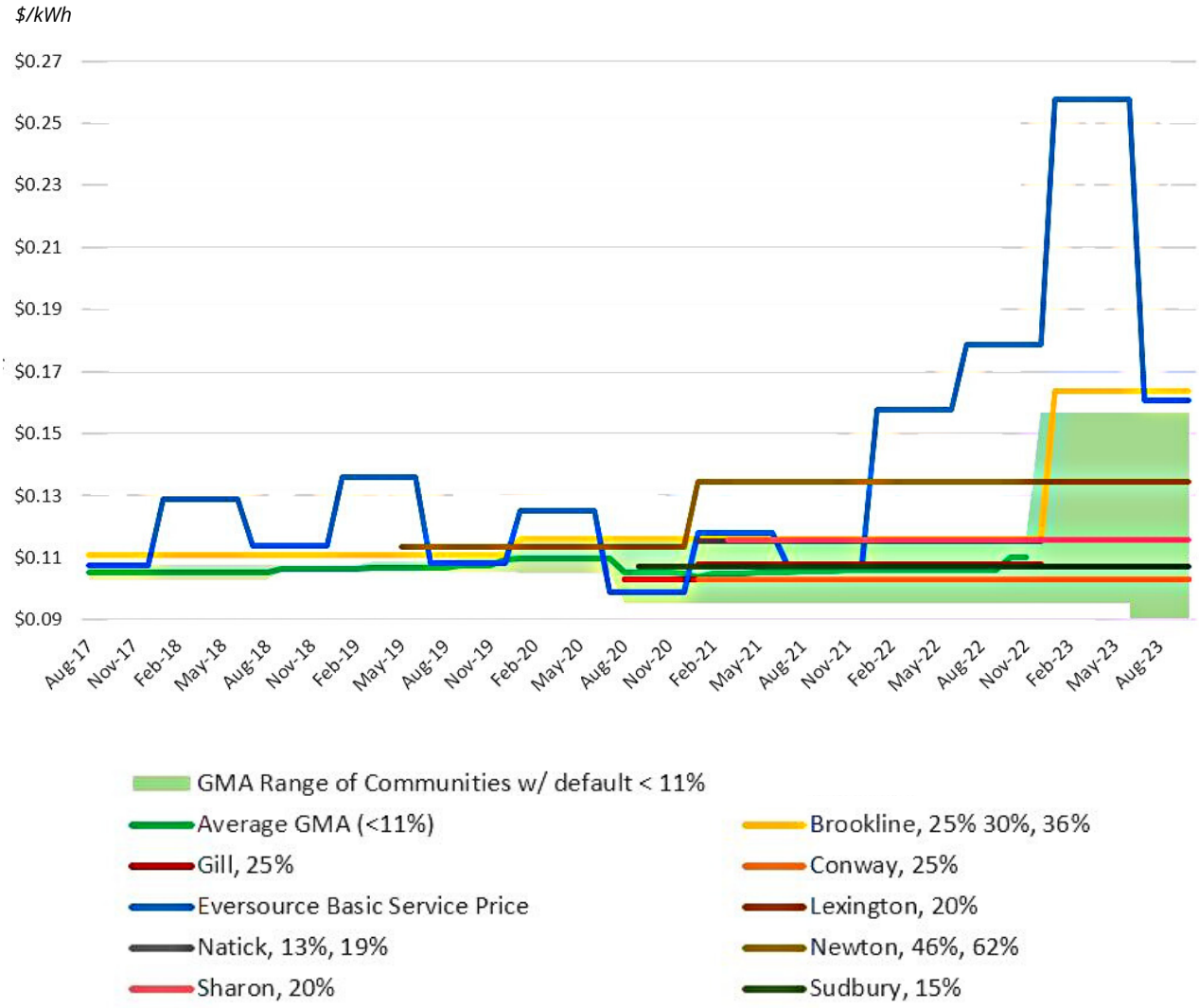


Figure 2: *A comparison between Eversource customers on Basic Service and Eversource customers with a Green Municipal Aggregation between August 2017 and October 2023. The blue line represents the Basic Service price, which changes every six months. The light green line represents the average GMA rate for communities that offer between 5%-11% additional renewable Class I content. The thick light green shading represents the range in rates for 5%-11% GMA communities, and the other lines break out communities over 11% additional renewable Class I content.*

National Grid GMA Communities

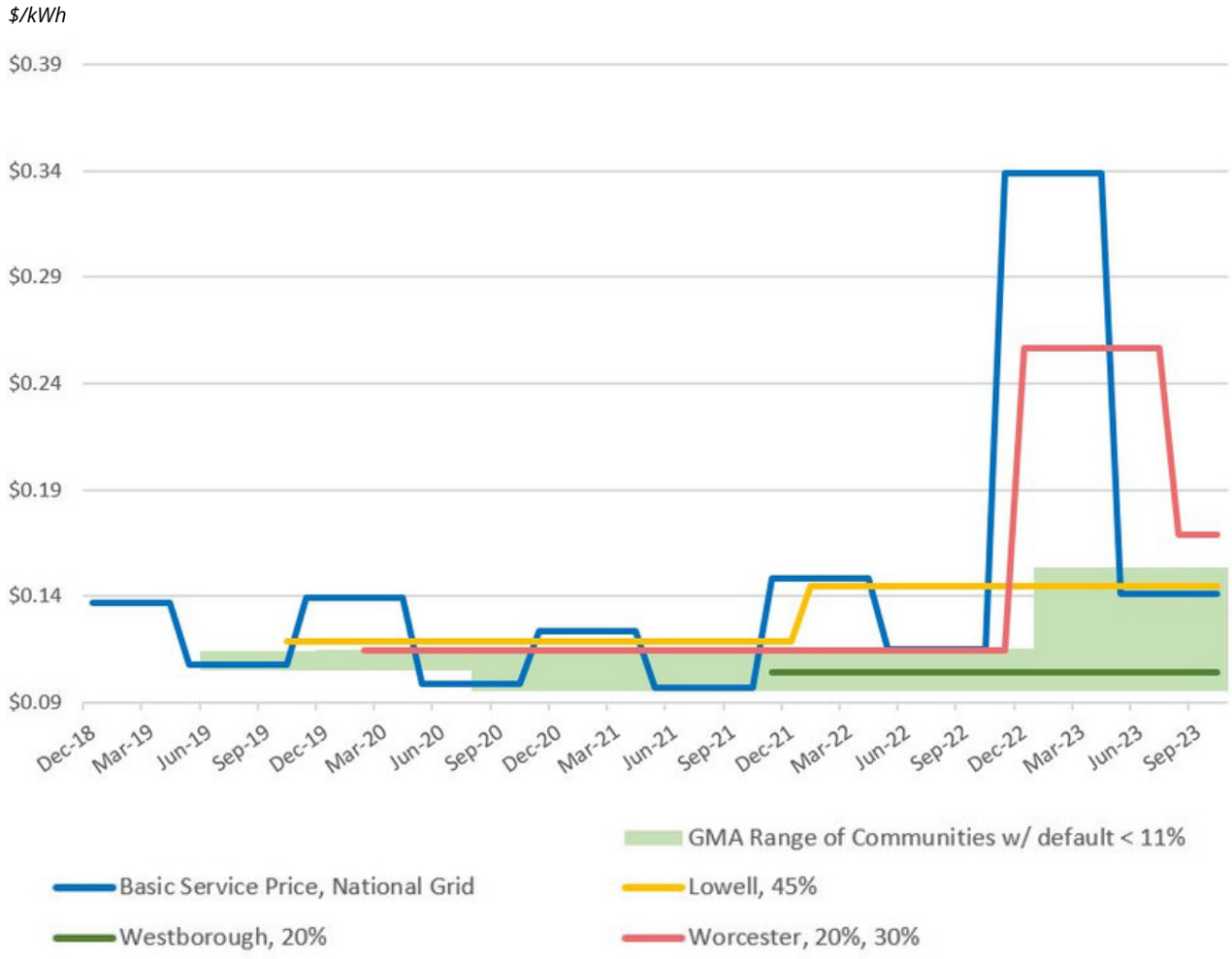


Figure 3: *A comparison between National Grid customers on Basic Service and National Grid customers with a Green Municipal Aggregation between December 2018 and October 2023. The blue line represents the Basic Service price, which changes every six months. The green shading represents the range of GMA rates for communities that offer between 5%-11% additional renewable Class I content.*

For illustrative purposes only, the graph below shows how GMA has been successful at adding renewable energy while saving consumers money. Adding RECs does come with a cost, but the empirical data indicates that aggregations have been able to secure lower power prices than utilities by an amount greater than the cost of additional RECs when the default product is 5-11% more Class I than required by the RPS

A Comparison of GMA & Basic Service Rates *(Numbers are for illustrative purposes only)*

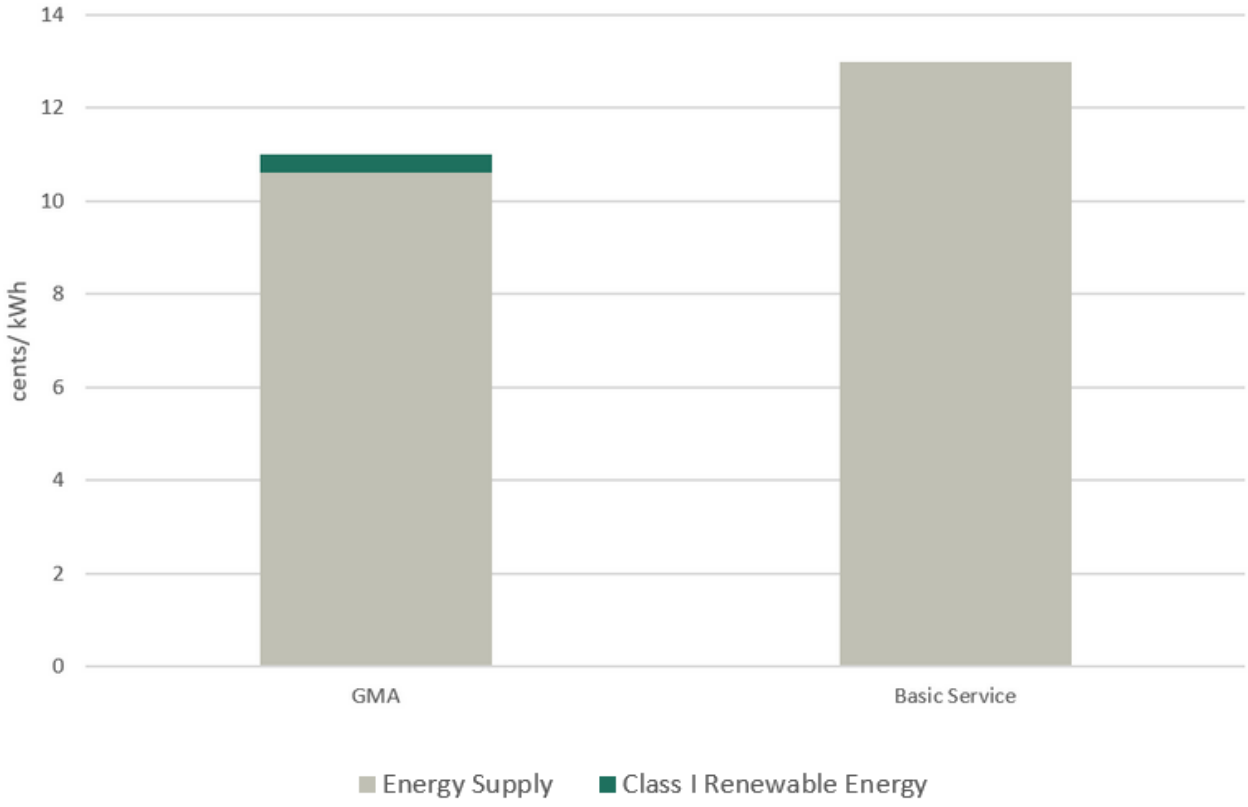


Figure 4: *An illustrative comparison of how additional Class I content adds an incremental cost to GMA rates while in many cases remaining below the average basic service rate.*

2023 UMass Amherst Report Confirms GMA Savings

A report published in March 2023 by the University of Massachusetts Amherst School of Public Policy corroborates our findings that municipal aggregation can deliver renewable energy at a reduced cost. Lead author of the report, Marta Vicarelli, Assistant Professor of Economics and Public Policy at UMass Amherst, describes how the report's results suggest "that fair and equitable access to energy is not compromised by the transition to sustainable/renewable energy, which is urgently needed to mitigate climate change."

Note that the UMass report looked at 2021 exclusively, while we looked at data between 2017-2023. Additionally, the UMass report took its data from all communities that use Class I RECs above the RPS, while we studied a subset of communities with 5%-11% Class I RECs above the RPS.

GMA Communities Are Getting Greener As Contracts Continue

As communities continue to renew their aggregation contracts, some are opting for their default option to include higher percentages of Class I REC content. Although the additional Class I REC content marginally increases aggregation rates, many municipalities are still saving their residents money in comparison to Basic Service rates.

Case Study: Arlington

Arlington has continued to increase the percentage of renewable energy content in its municipal aggregation contracts over the past six years. Arlington's first contract began in August 2017 at 5% above the RPS standard. This percentage increased to 11% in December 2019 and to 30% on their most recent contract in November 2022. As of July 2023, the decrease in Eversource Basic Service rates means that Arlington GMA customers are paying more than those on Basic Service. Despite this, from 2017 through October 2023, Arlington GMA customers have saved an average of 1.5 cents per kWh while simultaneously increasing their Class I REC content.

Other communities who have continued to have greener default GMA options as their contracts continue include Acton, Bedford, Brookline, Dedham, Lowell, Natick, Newton, Rockland, Salem, Somerville, Sunderland, Swampscott, Williamstown, Winchester, and Worcester.

While it is not possible to guarantee savings under a municipal aggregation model, especially for communities with more than 10% Class I RECs above the RPS in the default product, we have six years of empirical data that should be quite dispositive.

The High Winter Prices of 2022/2023

GMA customers saved significantly more money in the winter of 2022/2023 because of large increases in Basic Service rates. Basic Service rates for National Grid and Eversource customers dramatically increased last winter due to natural gas price spikes caused by the war between Russia and Ukraine.

National Grid: Winter Prices of 2022/2023

Between November 2022 – April 2023, National Grid's prices spiked to 33.9 cents per kWh, up from 11.5 cents per kWh. Twenty of the 41 communities we looked at were in National Grid territory. National Grid GMA customers with default option between 5% and 11% of additional renewable MA Class I content above the RPS standard saved 22.6 cents per kWh. This equates to approximately $791 saved per household within this six-month period.

Eversource: Winter Prices of 2022/2023

Between January 2023 – June 2023, Eversource's prices spiked to 26 cents/kWh, up from 17.9 cents/kWh. Twenty-one of the 41 communities we looked at were in Eversource territory. Eversource GMA customers with a default option between 5% and 11% of additional renewable MA Class I content above the RPS standard saved 13.4 cents per kWh during the winter price spike. This equates to approximately $462 saved per household within this six-month period.

Again, although we cannot guarantee that GMA customers will always save as much as this year in comparison to Basic Service, last winter served as an example of how municipal aggregation can protect consumers from volatile fossil fuel prices while contributing to the expansion of renewable energy markets in New England.

Protection Against Third-Party Electric Suppliers

GMA provides consumers with protection from third-party electric suppliers in the sense that it offers an additional option that is approved by the community and accessible to all ratepayers. Third-party competitive electric suppliers are private companies that often employ aggressive marketing to sell electricity directly to residents. These companies are known for knocking door-to-door and, in some instances, have been known to impersonate city officials. These predatory companies end up overcharging residents millions of dollars each year.

The Office of Massachusetts Attorney General Andrea Campbell published a report in May of 2023 detailing how over six years Massachusetts residents lost $525 million through competitive electric supply contracts in comparison to Basic Service. This breaks down to individual residential consumers losing an average of $231 every year.

Low-income communities, communities of color, and communities with high percentages of households with low English proficiency are disproportionately harmed as these groups are twice as likely to be signed up for a competitive supplier.

Taken together, the data sets from UMass-Amherst, Green Energy Consumers, and the Attorney General's office indicate that consumers enrolled in municipal aggregation are far better off than those who are on Basic Service or who have signed up for an individual retail contract.

This table from the Attorney General's report demonstrates the ten municipalities with the highest aggregate monthly net consumer loss in September 2021. Data for all communities is found in Appendix 2B of the report, and Appendix 2C lists this information from many Massachusetts municipalities.

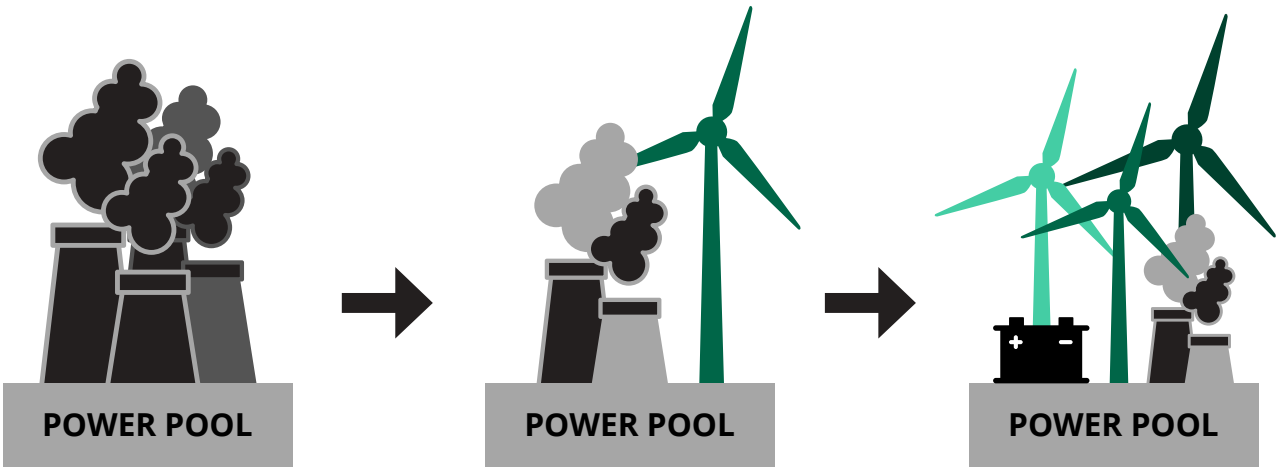
Municipality	Total Consumer Loss in Month	Average Per Household Loss in Month	Premium (per kWh)	% Households Participating in Competitive Supply Market	# Competitive Supply Accounts
Boston	$980,099	$20.42	$0.0375	17%	47,999
Springfield	$396,123	$28.59	$0.0479	23%	13,857
Worcester	$378,145	$24.91	$0.0416	22%	15,183
Lowell	$312,126	$32.96	$0.0522	25%	9,470
Fall River	$280,515	$28.62	$0.0507	25%	9,802
Brockton	$268,377	$24.90	$0.0409	33%	10,777
Newton	$200,049	$40.65	$0.0478	14%	4,921
Lawrence	$192,194	$28.33	$0.0477	26%	6,783
New Bedford	$185,812	$22.15	$0.0374	21%	8,388
Lynn	$154,163	$23.67	$0.0456	25%	6,513

Greenhouse Gas Reductions

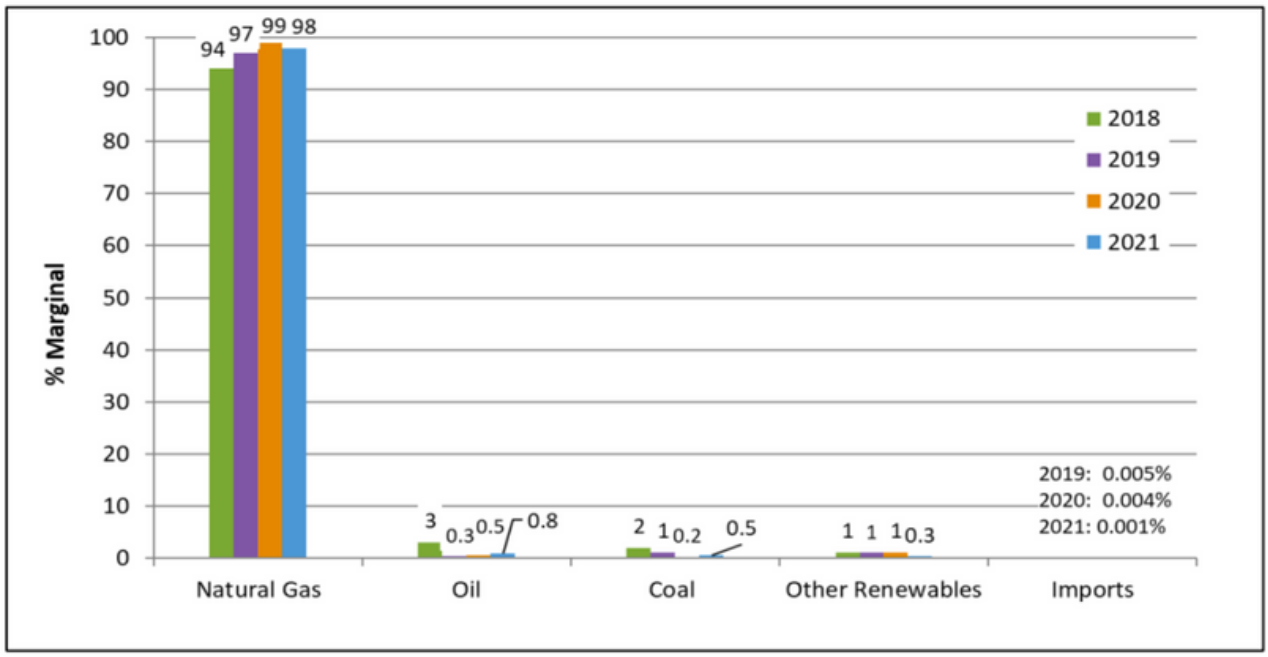
How Green Municipal Aggregation Reduces Greenhouse Gas Emissions

The Massachusetts Clean Energy and Climate Plan (CECP) set a GHG reduction target of 50% under 1990 levels by 2030. Specifically, the MA electric sector is required to reduce emissions 53% under 1990 levels by 2025 and 70% by 2030. By increasing the amount of renewable energy on the grid through programs such as GMA, municipalities are able to contribute to the Commonwealth's greenhouse gas emission reduction efforts.

GMA enables greenhouse gas emissions reductions by adding more renewable energy to the electric grid than is required by state law. GMA does this through what we describe as additionality. Additionality creates the demand necessary to bring one more MWh of renewable energy, onto the grid, displace fossil fuels, and verifiably reduce emissions.



According to the 2021 ISO-New England Electric Generator Air Emissions Report, natural gas accounts for 39% to 62% of the total native electricity generation each month, and natural gas is the marginal resource almost all of the time. The following graph from the ISO-New England report shows the annual percentages of load for when various resource types were marginal.



When more renewable energy is added to the grid, it will displace natural gas and, therefore, reduce greenhouse gas emissions. It is important to note that the official Massachusetts Greenhouse Gas Inventory, as maintained by the Department of Environmental Protection, accounts for only emissions within our borders. It does not include emissions from the well and leakage from pipelines before they reach the Commonwealth. If the GHG inventory were to include those factors, as they should, the GHG reduction value of adding megawatt hours of zero-emission power would be considerably greater.

GMA is Driving Renewable Energy Expansion in Massachusetts

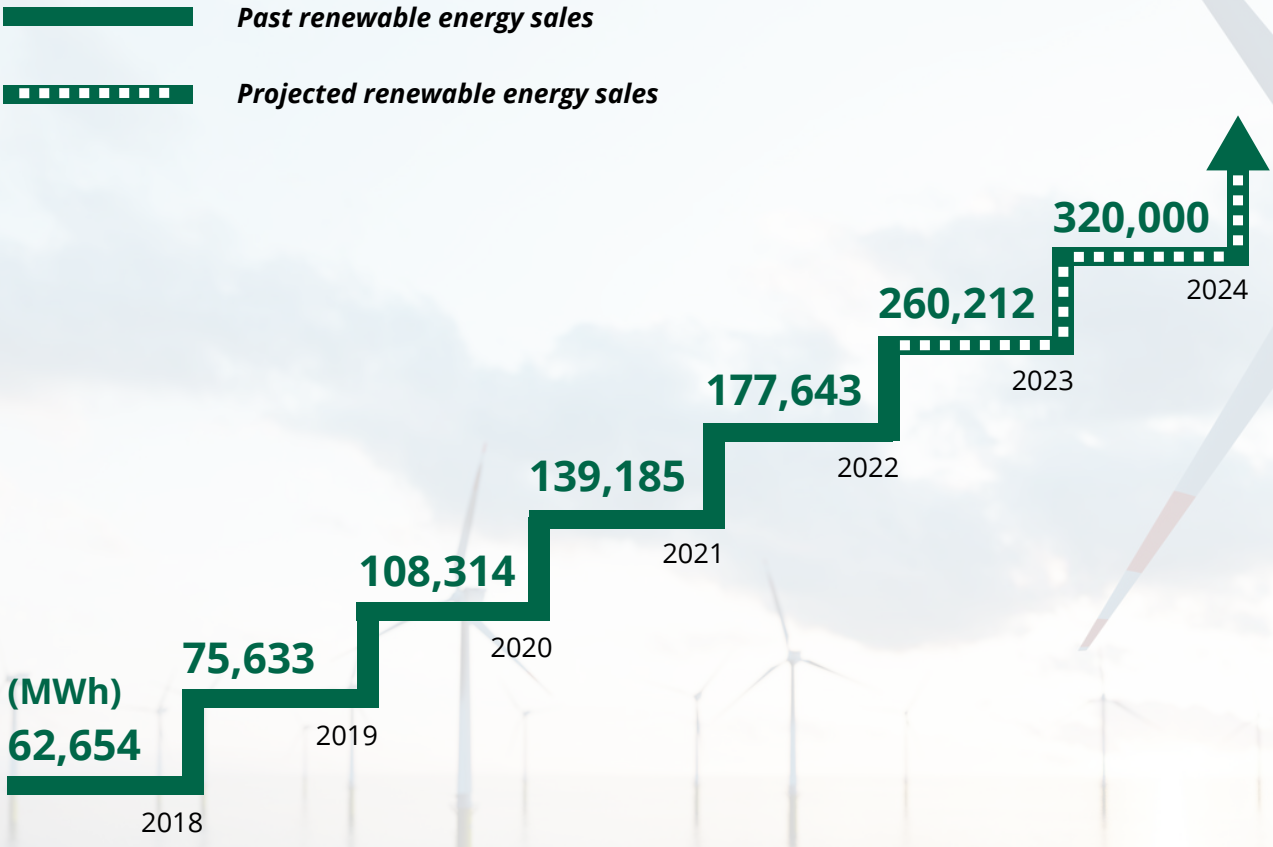
In all, 54 cities and towns in Massachusetts currently have active GMAs. We estimate that these 54 GMAs are adding approximately one million megawatt hours of renewable energy to the grid above and beyond RPS requirements per year. This is equivalent to the total power usage of 150,000 to 200,000 homes.

Green Energy Consumers Alliance Delivers RECs to Reduce Emissions

To claim the use of renewable energy, an equivalent use of RECs must be delivered and retired. Retiring a REC ensures that there is no double counting of renewable energy, meaning the same REC may not be claimed after it has been retired.

Since 2018, Green Energy Consumers Alliance has continued to increase the number of RECs delivered through GMA and our Green Powered program. We have supplied a total of 177,643 RECs on behalf of our GMA communities in Massachusetts. By 2024, we estimate that our GMA program will support demand for 320,000 Class I RECs.

Renewable Energy Supported by Green Municipal Aggregation



Percent of RECs Delivered by Resource Type & State (2022)

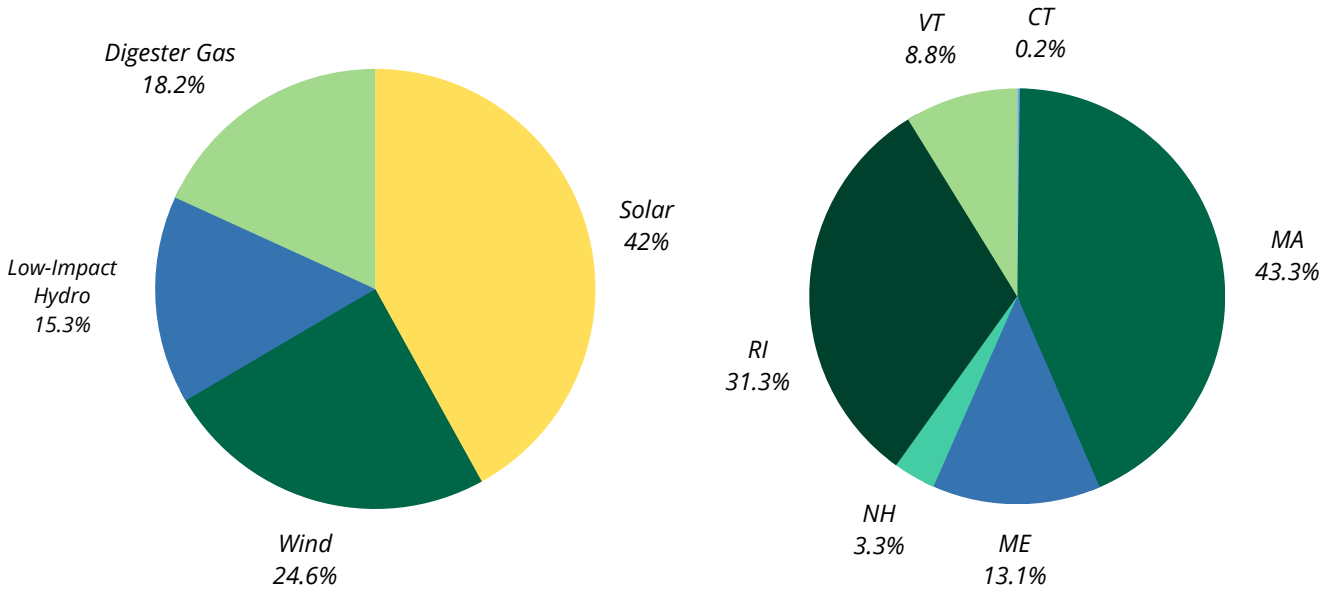


Figure 4: *Represents the distribution of the RECs Green Energy Consumers Alliance delivered by state and by resource type for the 21 Massachusetts GMA communities we serve.*

Percent of RECs Delivered by State & Resource Type (2022)

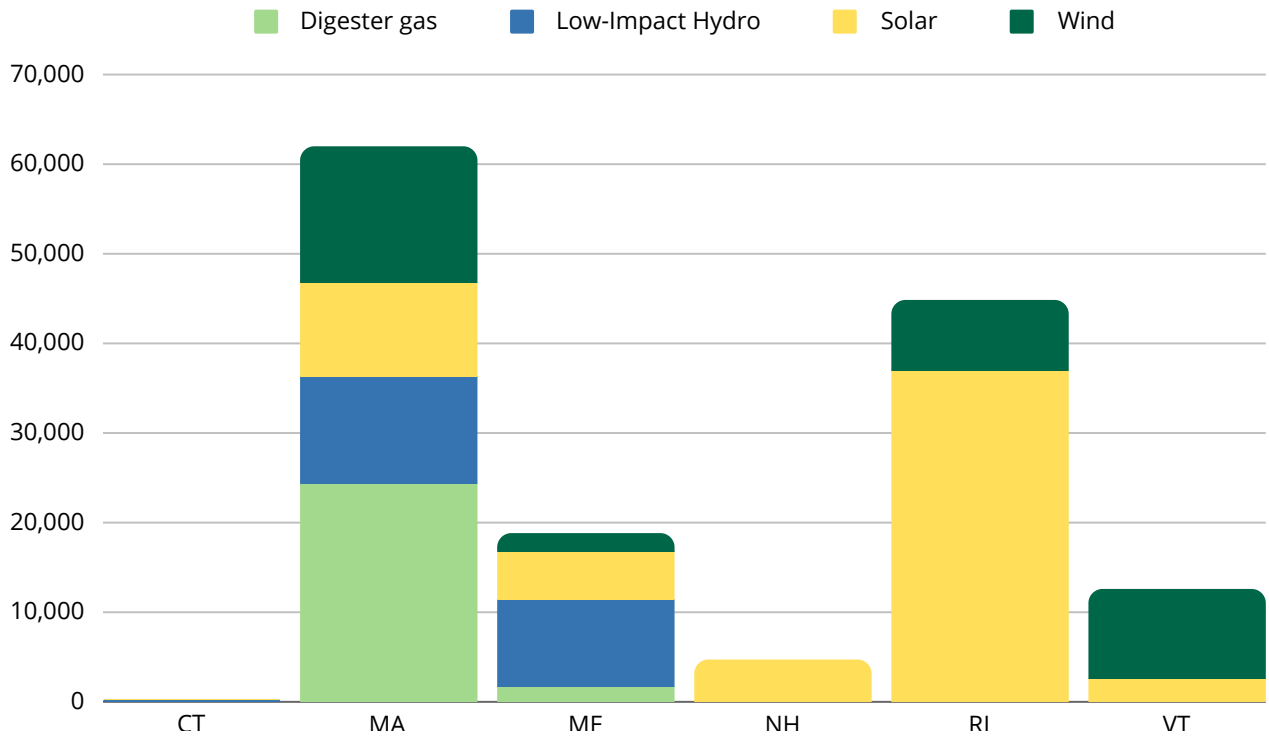


Figure 5: *Represents the percentage of RECs Green Energy Consumers Alliance supplied in New England by resource type for the 21 Massachusetts GMA communities we serve.*

BARRIERS TO SUCCESS

Massachusetts Department of Public Utilities

The Massachusetts Department of Public Utilities (DPU) has been extremely slow in approving new aggregation plans and amendments to existing plans. In many instances, cities and towns have waited over two years for approval and have had to undergo several revision processes. This has led to delays in consumer savings and in the amount of renewable energy that could have been put on the grid.

As October 2023, the following 22 communities, with a total of 189,434 households, are still waiting for DPU approval for their aggregations: Amesbury, Andover, Belchertown, Beverly, Bolton, Boxford, Burlington, Canton, Chelsea, Hanson, Malden, Medfield, Mendon, Methuen, North Brookfield, Pepperell, Quincy, Sherborn, Upton, Wayland, Weston, and Windsor. The longest wait times include North Brookfield and Burlington, which have both been waiting for DPU approval since May 30, 2019.

Other communities have also waited multiple years for DPU approval. This is especially unfortunate because had their plans been approved before the winter 2022 price spikes, residents and businesses in these communities would have saved a lot of money. See the Gloucester case study below for more details on how bid timing affects pricing.

Of the 22 communities waiting for the DPU to approve their aggregations, nine are GMAs, including Andover, Belchertown, Boxford, Hanson, Malden, Medfield, North Brookfield, Quincy, and Weston. Most other communities in the queue offer optional Class I RECs above the RPS as part of their default option.

We can calculate how much the DPU backlog has cost communities. The following data is based on two assumptions: (1) GMA customers are enrolled in default options with between 5% and 11% of additional renewable MA Class I content above the RPS standard and (2) the average household uses 7,000 kWh per year.

A Tale of Two Cities – Quincy & Gloucester

The city of Quincy is the largest municipality in the queue, with 41,322 households and a population of over 100,000 people. Quincy has been waiting for DPU approval since January 29, 2021. On October 14, 2022, amid National Grid's record-setting high Basic Service rates, several Massachusetts legislators wrote a letter to the DPU regarding the long delay in the review and approval of the City of Quincy's aggregation plan. Using data from our aggregations, the average savings for National Grid customers on a GMA versus Basic Service between December 2021 and October 2023 is 7.7 cents per kWh. December 2021 was the date selected for comparison because it would allow ample time for DPU approval. Using Gloucester as a case for comparison, their new aggregation rate for a default product with 10% added Class I RECs also began in December 2021. For the average household, the

difference between the basic service rate and Gloucester's aggregation rate would have amounted to over $1,000 for that 23-month time period.

Longest Waiting Municipality in the Queue: Burlington

The town of Burlington has been waiting in the queue for four years, among the longest of all municipalities. As of June 29, 2023, the DPU has once again requested that the Town of Burlington revise its petition for approval of a municipal aggregation plan.

The average savings for Eversource customers on a GMA vs. Basic Service between May 2019 and May 2023 is 3.3 cents per kWh. Assuming all 10,625 households within the town join the aggregation, consumers in the town could have saved $8.3 million had the aggregation been approved over the past four years, or $781 per household.

The Importance of Bid Timing

The timing of when a municipality goes to bid for energy supply affects pricing. Most often, seeking bids for energy supply in the summer months, when rates are lower, is more advantageous than seeking bids in the winter, when prices are higher. There are other factors that go into the pricing of energy supply, including the load profile of a community, but empirical data shows that the timing of the bid is the key driver of price. That is the main reason that aggregations have consistently scored better than Basic Service, which must set a new price every six months on a fixed schedule.

Legislation

MA Rep. Tommy Vitolo of Brookline and Sen. Jason Lewis of Winchester have introduced legislation supported by Green Energy Consumers Alliance to alleviate some of these issues caused by the DPU. The bill sets a 90-day deadline for the DPU's regulatory review of aggregation plans and plan amendments. Additionally, the bill establishes requirements for ongoing communication about the program to the public via a website, public notices, and mailings. If passed, this legislation would allow communities to develop aggregations more easily. The DPU would continue to have an appropriate level of regulatory authority. This legislation would also give municipalities with existing aggregation plans the flexibility to modify or improve those plans without needing to re-file with the DPU. The City of Lowell, for example, has been waiting since August of 2019 for DPU approval to amend their existing plan to offer residents more options with varying degrees of RECs, including an opt-down option. About 75% of other aggregations in the state already offer this option.

FINAL THOUGHTS & RESOURCES

Green Energy Consumers Alliance will continue to advocate for the expansion of Green Municipal Aggregation due to its demonstrated success and the benefits it brings to consumers. Massachusetts cities and towns can affordably increase the renewable energy content of their electric supply.

Interested in learning more about GMA? Check out these resources:

Green Energy Consumers Alliance

- Subscribe to Our Blog
- Visit our aggregation page
- Check out our events page
- Read our 2020 GMA Report
- Read our 2022 GMA Report

Good Energy LLC
https://goodenergy.com/

MA Attorney General's Office
Consumers Continue to Lose Big: The 2023 Update to An Analysis of the Individual Residential Electric Supply Market in Massachusetts

UMass Amherst
Community Choice Electricity Programs: A Survey of Massachusetts Municipalities

Boston Globe
An innovative state energy program is lowering emissions – and residents' electric bills

MassLive
How Massachusetts cities and towns are leading our transition to clean energy

Commonwealth Magazine
End the DPU's stall on municipal electricity aggregation

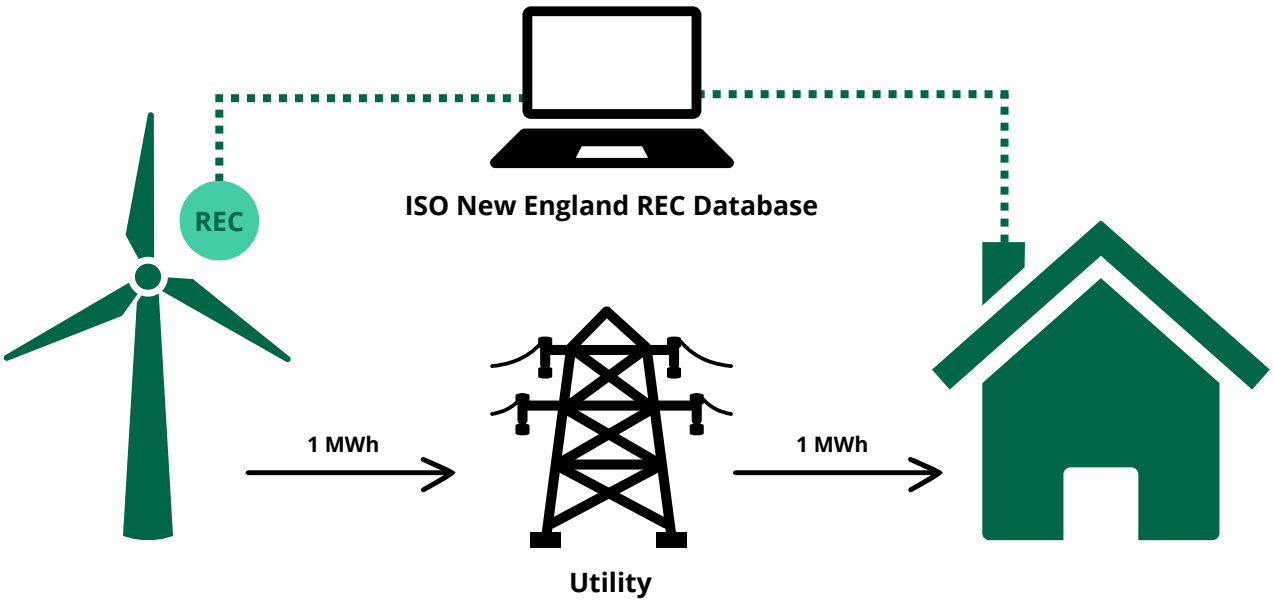
State Legislation We Support
An Act Supporting Electrical Load Aggregation Programs in the Commonwealth

APPENDIX I

RECs in New England & The Importance of Going Class I

Electricity consumers in the six New England states are served by a regional power grid operated by ISO-New England. The grid accepts electrons from generators throughout the region – natural gas facilities, hydroelectricity plants, nuclear, and more. Once an electron leaves its source and enters the power grid, it is moved to the nearest transmission station or electricity user at the moment, but an end-use consumer would never know which generator produced a particular electron. However, when renewable electricity is generated, it creates two things: electrons and a Renewable Energy Certificate (REC). The holder of the REC is entitled to claim the environmental and other nonenergy attributes of the generation. Once on the grid, there is no way to track specific electrons, but the REC is quantifiable and traceable.

One REC is produced for every megawatt-hour (MWh) of electricity generated by a wind turbine, solar panel, or other renewable generator. Once created, a REC is sent to an electronic database administered by the New England Power Pool Generation Information System (NEPOOL). This database is known as the "Generation Information System" (GIS) and serves as a tracking mechanism that helps to avoid double-counting claims of green power purchases.



We know how many MWhs that a given resource feeds into the regional electric grid, and thanks to RECs, we know who is claiming to use each and every one. Therefore, if an entity wishes to claim it is consuming renewable energy, it must purchase one REC for every MWh it consumes, and that REC must be retired rather than resold. This process is illustrated in the image above.

The GIS was created to facilitate a trading system that would allow renewable energy generators to be paid a production incentive or extra revenue over and above what the electricity market could provide. It is based upon a policy construct that acknowledges the additional value that renewable energy promises in comparison to fossil fuels.

There is a lot of renewable energy that would be produced whether someone bought the REC. The salient question is whether the REC purchase is promoting additionality or creating the demand necessary to bring one more renewable MWh onto the grid.

In places like Texas, huge renewable energy projects can be sited and built for less per kWh than it costs to build fossil fuel power in Texas or renewable energy in New England. Because of the low cost of building the project and other renewable incentives, revenue from RECs is not necessary for project feasibility in these places. Furthermore, these areas tend to have weak RPS mandates because actual supply has surpassed mandated supply, and the law was not revised to keep up.

Purchasing RECs from an old hydropower project located in New England is as ineffectual as buying RECs from a Texas wind project. Some New England hydro facilities have been operating for one hundred years and produce electricity profitably with little or no REC revenue. In fact, large hydropower projects built before 1998 are not eligible for the Class I RPS. Texas wind and old hydro RECs are available on the market for a fraction of a penny per kilowatt hour (kWh). While non-Class I RECs are inexpensive, the purchase of non-Class I RECs does not certifiably result in a displacement of fossil fuels. Selling non-Class I RECs is greenwashing and purchasing non-Class I RECs is a waste of money.

It is not that those projects are unproductive; it is that any REC sales from such projects produce surplus profits for developers and are not consequential to the project economics and therefore do not lead to additionality. Dr. Michael Gillenwater is a leading expert on climate change and renewable energy, with a specific focus on greenhouse gas (GHG) measurement, reporting, and verification issues. According to Gillenwater, the purchase of a REC from such a project does not impact project development. The price of the REC is simply too small to make a difference in project economics. In other words, if a REC's value is close to zero, you get what you pay for. While it's great to see wind and solar projects built anywhere, the REC *purchase* is not even shifting Texas's grid away from fossil fuels; it does absolutely nothing other than enrich a generator that did not need the REC revenue to build and operate.

By contrast, Massachusetts Class I REC prices have often traded for more than $35 per MWh or 3.5 cents per kWh. For Massachusetts Class I projects, the REC market is essential. Therefore, buying one Massachusetts Class I REC has a greater impact than buying a thousand RECs that are not Class I. Our assertion is that the purchase of RECs qualifying for the Massachusetts Class I standard is the exception to Dr. Gillenwater's rule.

APPENDIX II

Green Municipal Aggregation Implementation Steps & Bid Process

To ensure the success of implementing a Green Municipal Aggregation, follow these key steps and best practices:

1. Form an aggregation committee to steer the process
2. Authorize aggregation by City/Town Council or Town Meeting vote
3. Hire an energy consultant with deep experience in GMA
4. Create an aggregation plan with public review process
5. Tell the community about the aggregation program through public outreach channels
6. Secure state regulatory approval for the aggregation plan
7. Procure electricity and renewable energy through competitive bidding process
8. Announce enrollment and Opt-Out periods
9. Monitor program participation and market Opt-Up to 100% option

Following approval from the MA Department of Public Utilities, Good Energy puts out to bid municipal aggregations' electricity supply in order to secure competitive pricing. Suppliers who are invited to the bidding process are vetted through a stringent process to ensure their reliability and solvency for the length of the aggregation contract. To prepare their bids, competitive suppliers receive information about the number of service accounts in the municipality, electricity profile (when and how much electricity customers use), and desired green component.

For the green component, suppliers receive pre-renegotiated terms with Green Energy Consumers Alliance in order to secure RECs from preferred sources at competitive market rates. Depending on the municipality's interest, Green Energy Consumers can provide rates for various levels of renewable energy content for the default product once a community goes out to bid. This way, community decision-makers can choose a percentage green that is aligned with their climate goals while also keeping their community's rate competitive compared to basic service. On bid day, suppliers present binding prices to communities which include all three parts: energy, capacity, and renewable content.

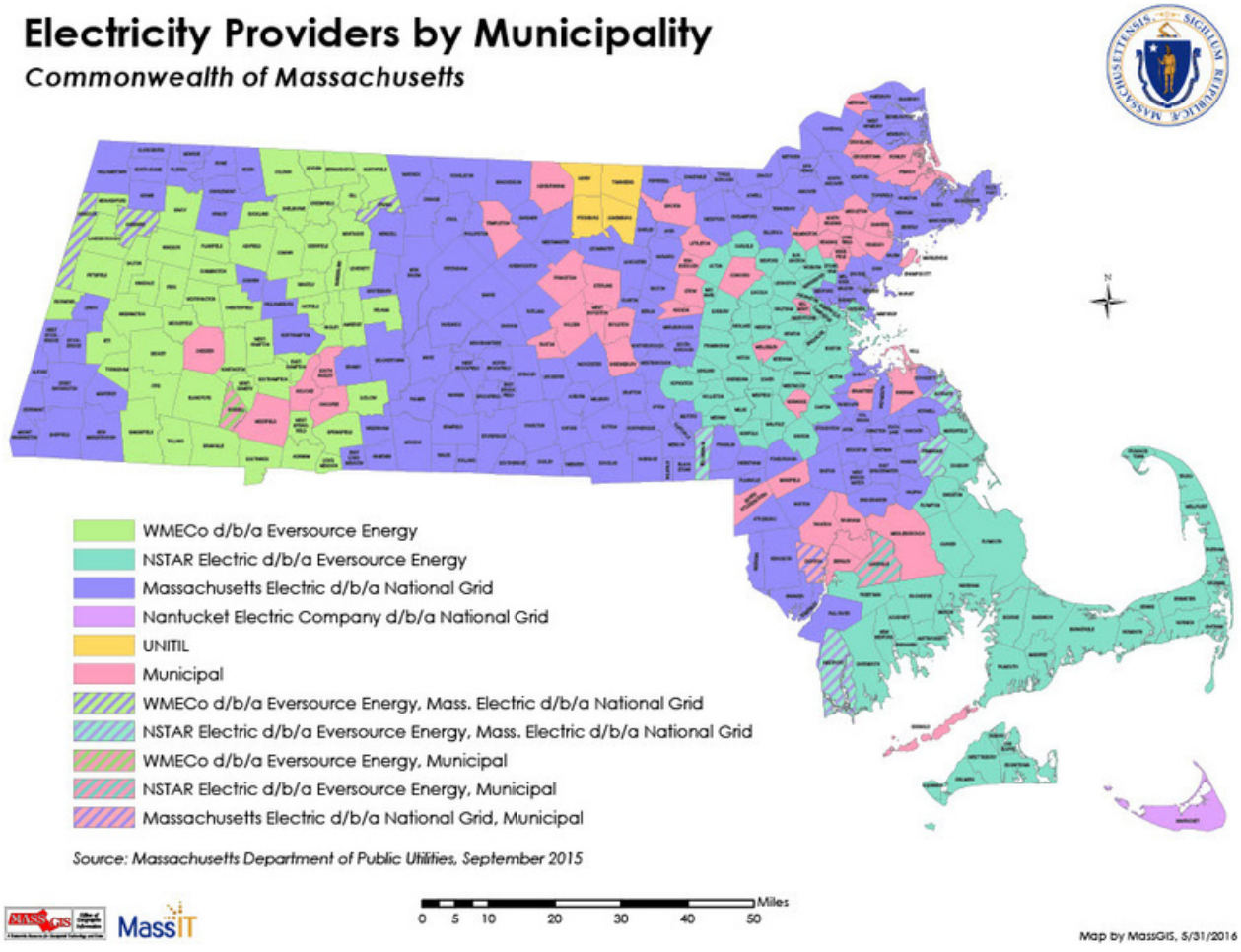
APPENDIX III

Investor-Owned Utilities

Investor-owned utilities (IOUs) are private business organizations that preside over the distribution of electricity. The IOUs in Massachusetts include Eversource, National Grid, and Unitil. In Rhode Island, the investor-owned electric utility is Rhode Island Energy.

These IOUs are tasked with maintaining power lines and providing customer services such as metering and billing to electricity consumers. The Basic Service rates and terms of services of IOUs are regulated by the Mass. Department of Public Utilities and Rhode Island Public Utilities Commission. According to the Massachusetts Electric Power Division, IOUs set Basic Service rates for residential and small businesses every six months based on supply costs, RPS compliance costs, and administrative costs.

This map provided by the MA Bureau of Geographic Information (MassGIS) shows the geographic distribution of Investor-Owned Utilities across Massachusetts: Eversource, National Grid, and Until.



APPENDIX IV

An Adder Specifically Dedicated to a Long-term REC Contract

We recommend that consideration be given to an adder that would support a long-term contract for RECs. Aggregations in Massachusetts have generally been based upon a series of 1-3 year contracts with energy suppliers. Contracts of that length are capable of financing the purchase of RECs, but not through long-term contracts. Long-term contracts are more useful to generators insofar as securing investors to give the money to build their project and they could be useful to a community wishing to support a specific project in its own backyard.

The scenario that we envision would have an adder dedicated to a long-term, say 10-year, contract for RECs. The adder would be collected over the 3-year term that the aggregation would have with its electricity supplier. In each year, 10% of the total adder receipts would be used to buy the RECs that it could assign to the aggregation. The balance would be placed in an escrow account that could only be used to purchase RECs. As long as the project in question was producing RECs, it could be paid from the escrow account. If the project fails to produce, for whatever reason, the escrow account would not have to pay the generator in default. However, the money in escrow could be reallocated to purchase RECs from another source. In either event, it would be relatively straightforward to ensure that people got what they paid for, which is more renewable energy than required by state mandates.

Over time, the aggregation could enter into additional such arrangements and overlay each one on top of the other. Eventually, a considerable portion of the aggregation's load could be met by long-term contracts.

As with any other type of adder, the details of this kind of plan would be subject to scrutiny by the DPU.

APPENDIX V

Greening the Municipal Load is a Logical Extension of GMA

Communities looking to GMA do so with a particular purpose in mind – which is to cost-effectively add more renewables onto the grid. GMA does so generally by harnessing the purchasing power of residential and small commercial accounts. Most large customers prefer to buy from a competitive power supplier. And more often than not, cities and towns buy electricity for their municipal functions (i.e. schools, fire stations, streetlights) from competitive power suppliers because they can get a better deal than utility Basic Service. GMA can and should include the city or town electricity accounts as well. At a minimum, those accounts should receive the same renewable energy content as the GMA's default offering. We recommend that communities leverage the heft of the public accounts to purchase 100% green power through long-term contracts for these reasons:

It's a simple matter of leading by example.

The electricity load for the municipality is already subject to the state's Renewable Portfolio Standard and Clean Energy Standard. So over the life of the long-term contract, an increasing portion of the RECs from a long-term contract could be applied to the obligation of meeting the state mandates. In other words, the municipality already has to pay for RECs, whether directly through mechanisms like this or indirectly as part of the electricity supply they get from a competitive power supplier. If the municipality already has the RECs it needs to meet the RPS/CES mandates, the electricity supplier it hires can take those costs out of the price it charges the municipality for the electricity service.

The community will have rights to the RECs from the project and could sell those RECs that are not required by the RPS/CES to the aggregation. That would contribute to the aggregation's renewable energy content and reduce the cost to the city or town's budget.

Long-term contracts are especially helpful in terms of helping new projects get built. The long-term contract will be useful in securing equity and debt investment into the project. A city or town could select a project under development and be patient as the project proceeds along the process of getting financing, permits, interconnection with the grid, and construction.

The project itself could be located within the community or possibly even on public property in order to maximize local public benefits. A positive variation on this is for one or more communities to jointly participate in such a project as a regional collaboration.

The direct purchase of RECs from a municipality separate from an aggregation does not require approval from the Department of Public Utilities.

APPENDIX VI

Glossary

Additionality - Increased demand for renewable energy with verifiable greenhouse gas (GHG) emission reductions beyond what is required by state law (Renewable Portfolio Standard in Massachusetts). Additionality is the difference between aggregations that claim to be green and those that displace fossil fuels on the regional electricity grid.

Basic Service - The default electricity supply provided by the electric company and delivered to customers who do not purchase an alternative from a competitive supplier or through municipal aggregation.

Class I (MA) or "New" (Rhode Island) Renewable Energy Certificate - RECs generated by renewable energy facilities in New England that began operation after 1997 and create electricity from solar photovoltaic (PV), solar thermal, wind, low impact hydro, aerobic digester gas, geothermal, eligible biomass, or hydrokinetic energy that meets program eligibility criteria.

Competitive Electric Supplier - An entity that sells electricity to consumers as an alternative to Basic Service.

Independent System Operator of New England (ISO-NE) - Non-profit regional transmission organization whose goal is to provide reliable, affordable, and clean electricity to all six New England states.

Investor-Owned Utility (IOU) - Privately owned electric utilities that have a defined geographic service area and are required by law to serve customers in that area. The Public Utilities Commission regulates the IOUs' rates and terms of service. In Massachusetts, the investor-owned electric utilities are Eversource, National Grid, and Unitil. In Rhode Island, the investor-owned electric utility is Rhode Island Energy. The rates and terms of services of IOUs are regulated by the Mass. Department of Public Utilities and Rhode Island Public Utilities Commission.

Renewable Energy Certificate (REC) - Certificates used to track renewable energy. One REC represents one megawatt hour (one million watt-hours) of renewable energy generated from a source. RECs are tradeable but can only be claimed once and are retired after use.

Renewable Portfolio Standard (RPS) - Massachusetts law requiring a certain percentage of the state's electricity to come from renewable energy.

Watt - Unit of power, or the rate at which energy is produced or consumed

Watt-hour - Unit of energy, or a way to measure the amount of work performed or generated in one hour. A kilowatt-hour is 1000-watt hours. The typical home consumes about 7000 kilowatt hours per year.