# GREENING OUR GRID

## MAPC's Community Electricity Aggregation PLUS Strategy and the City of Melrose


A publication of the Metropolitan Area Planning Council.


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## ABOUT MAPC

The Metropolitan Area Planning Council (MAPC) is the regional planning agency serving the people who live and work in the 101 cities and towns of Metropolitan Boston. Our mission is to promote smart growth and regional collaboration. Our regional plan, MetroFuture, guides our work as we engage the public in responsible stewardship of our region's future.

We work toward sound municipal management, sustainable land use, protection of natural resources, efficient and affordable transportation, a diverse housing stock, public safety, economic development, clean energy, healthy communities, an informed public, and equity and opportunity among people of all backgrounds.

MAPC's Clean Energy Department provides a range of services to communities, including comprehensive local energy and climate planning, energy-related technical assistance, and regional energy procurements. Our goal is to advance markets for clean technology while reducing greenhouse gas emissions and dependence on fossil fuel consumption in the Commonwealth.

www.mapc.org/clean-energy

## ACKNOWLEDGEMENTS

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# Greening Our Grid

Last year, Melrose residents collectively saved $200,000 on their electric bills while adding the equivalent of a one-megawatt wind turbine to the New England grid. Their city had pioneered a new strategy with the Metropolitan Area Planning Council (MAPC) to enable its residents to buy electricity in a way that accelerates development of clean local generation while maintaining stable rates.

Melrose took advantage of a state law that allows municipalities to join their residents together to act as a single large purchaser of electricity. This process of municipal aggregation, sometimes called community choice aggregation, lets residential customers use their collective bargaining power to negotiate stable and often lower prices for electricity and increase the proportion of renewable energy in their electricity supply. Residents still have their electricity delivered and billed by their electric utility, but their electricity supply is selected by the community.

While other communities have used municipal aggregation, Melrose was the first to use it to increase purchases from new local renewable generators to accelerate local renewable development. Melrose relied on MAPC's expertise to connect it with energy consultants who submitted proposals for a green aggregation plan. The winner identified a strategy for securing five percent more local renewable energy than state law requires (16% of the total supply rather than 11% in 2016), while still saving money over basic service. These purchases from local renewable generators signal to the market that Massachusetts can support additional clean energy generation.

In the first full year of Melrose's aggregation program households saved an average of $23 per household, keeping $200,000 in the local economy. Participants saw their electricity supply rate remain stable, while customers who stayed on basic service experienced large fluctuations with the seasons. Participants also purchased an additional 2,900 megawatt hours of local renewable energy, the equivalent of adding a new one-megawatt wind turbine to the grid. The city's increased use of local renewables has put them five years ahead of the rest of Massachusetts in moving to local renewable energy.

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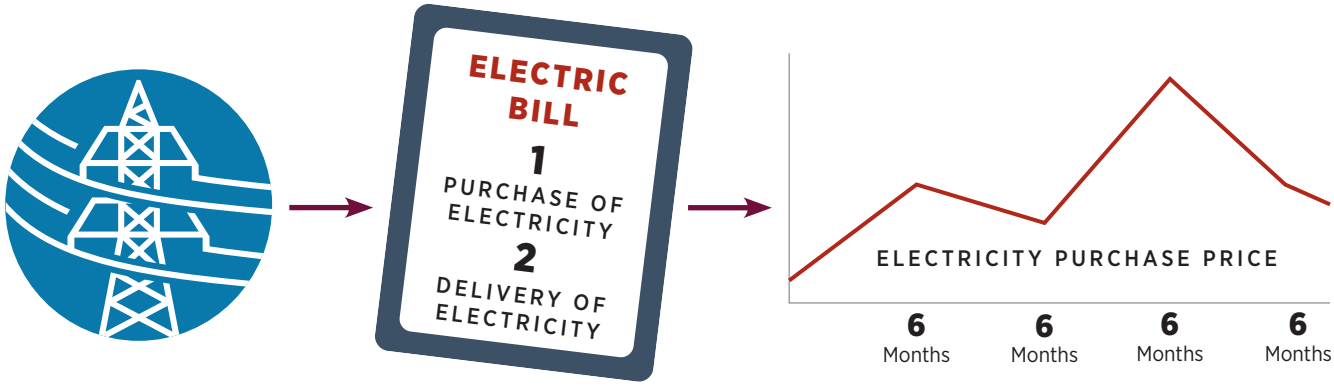
The Melrose example is being replicated and expanded. Dedham was first to follow. Salem and Swampscott pursued a similar model. Now Arlington, Brookline, Gloucester, Hamilton, Millis, Somerville, Sudbury, and Winchester are in the process of developing their own aggregations with MAPC. Brookline is pushing their percentage of additional local renewables to 25%. In 2017, under this program, 37% of their electricity supply would come from local renewables, a target Massachusetts electricity suppliers are not required to meet until 2042. If these communities achieve results like Melrose did, their impact will be the equivalent of deploying 17 new one-megawatt wind turbines. Cambridge, Newton, and Cape Light Compact are also adding local renewable requirements via municipal aggregation.

Melrose's experiment with MAPC has given Massachusetts communities a clear path forward for getting their residents a good deal on their electricity bills while accelerating the greening of our New England grid. This is the story of how Melrose

## How Your Local Electric Utility Works




**Most residential customers buy electricity from the electric utility that serves their town.**

**Bills include two charges: delivery of electricity (the primary service the utility provides) and the purchase of the actual electricity from third-party suppliers.**

**The local electric utility contracts for the electricity they sell to their customers every six months. This means the basic service they offer is subject to significant short-term swings in price.**

worked with MAPC to create a powerful new model that empowers cities and towns to lead on climate action.

### The Standard Way to Buy Electricity

To understand what is innovative about what Melrose and MAPC did, it is helpful to start with some background about how people buy electricity. Most residential customers buy electricity from the electric utility that serves their town. Their bills include two charges: the first is for delivery of electricity (the primary service the utility provides); the second is for the purchase of the actual electricity which comes from third-party suppliers. The local electric utility contracts for the actual electricity they buy for their customers every six months. The requirement for electric utilities to contract for basic service supply every six months means the basic service they offer can be subject to significant short-term swings in price.

Customers are not required to buy their electricity from their utility. Most large businesses and municipalities take advantage of their ability to purchase electricity from suppliers who may offer better prices than the utility offers, using their size and sophistication to secure better deals and avoid the price instability of basic service. But it is harder for individual residential customers and smaller businesses, due to their small size and the complexities of the energy purchasing process, to leave basic service and obtain these benefits. Most residential customers and small businesses have therefore remained on basic service.

### Community Choice Aggregation

Massachusetts is one of a handful of states, including New Jersey, New York, Ohio, Illinois and California, that allow cities and towns to buy electricity for residents and smaller businesses that remain on basic service. This mechanism—called municipal aggregation or community choice aggregation—allows a city to choose what type of electricity its residents receive. The electric utility continues to deliver the electricity, maintain the lines, and bill customers, but decisions about where their electricity comes from are made by the community. By banding together these smaller customers, a municipal aggregation creates a purchaser with the size and sophistication necessary to buy electricity the way large entities do, and to enjoy the benefits of more stable and often lower pricing.

Under municipal aggregation, electricity customers still receiving basic service are defaulted to the electricity suppliers the aggregation has selected. Customers on basic service who do not want to switch must opt out of the aggregation.

Community interest in municipal aggregation increased significantly, as a path to more stable pricing, after the electricity price spikes of the winter of 2013–14 with its dreaded "polar vortex." As increased use of natural gas heating collided with heavy reliance on natural gas for electricity generation, spikes in the price of gas resulted in record electricity rates. At the same time, electricity supply brokers, some less scrupulous than others, were moving aggressively into the residential and small business market, offering complex energy-supply products that left confused and sometimes abused customers in their wake.

## Melrose Partners with MAPC

Melrose's Energy Efficiency Manager, Martha Grover, turned to MAPC's Clean Energy Department as she fielded calls from residents about spiking electricity bills. Melrose was concerned about how to mitigate energy price spikes while maintaining its commitment to moving toward clean energy. Grover had a track record of building successful programs in partnership with MAPC. With MAPC's support, Melrose had rolled out successful residential weatherization and solar campaigns; partnered with National Grid (the local electric and natural gas utility) to enroll small businesses in energy assessments; converted streetlights to LEDs; and used MAPC's Energy Service Company procurement program to make energy saving upgrades to city facilities. Melrose had engaged all sectors of the community on clean energy work; the rate crisis was an opportunity to accelerate its progress toward meeting its sustainability goals.

MAPC has been exploring the potential of municipal aggregation to support clean energy goals for several years. But the only clear example of an aggregation designed to advance clean energy was the Cape Light Compact, which uses municipal aggregation both to purchase supply and to run the energy efficiency programs for Cape communities. Cape Light Compact's scale allows it to administer full efficiency programs with the required evaluation, measurement, and verification. The other Massachusetts communities using community choice aggregation were mainly focused on securing lower rates.

Municipal aggregation creates a purchaser with the size and sophistication . . . to enjoy the benefits of more stable and often lower pricing.


Photo courtesy of MAPC

Lowell and Greenfield had pioneered the use of community aggregation to increase renewable energy purchases. But the generators they secured renewable energy from were not required to have generated their renewable power on the New England Grid or to have delivered it to the New England grid. Nor did it need to come from newer facilities. While this was a step in the right direction, MAPC wanted to push the market to build additional new local renewable generation.

## How to Build a Market for Clean Energy

Massachusetts has a regulatory framework for encouraging the generation of renewable energy. The state has established a renewable energy portfolio standard (RPS), which requires electricity suppliers to include increasing percentages of renewable generation in the electricity they sell to their Massachusetts consumers. Electricity suppliers must either purchase the required percentage of their supply from renewable generators or make an alternative compliance payment (ACP). When a unit of energy is produced by a renewable generation unit such as wind or solar, the generator receives a Renewable Energy Certificate ("REC") to reflect the environmentally beneficial characteristics of the energy. Suppliers demonstrate their compliance with the RPS by securing RECs from generators.

Demand for RECs helps support renewable development because it ensures that there is a market for renewable generation.

Renewable generators rely on the sale of RECs to finance and operate their plants. If a supplier does not purchase sufficient RECs, it has to make the ACP, and the ACP funds are then used to support the development of new renewable energy. In practice, the ACP guarantees a market for RECs and sets the ceiling on their price.

The point of RECs is to increase the price that generators receive for renewable energy. Demand for RECs helps support new renewable development because it ensures that there is a market for renewable generation. This makes it easier for developers and operators of renewable generation to secure sufficient financing and operating capital to develop additional renewable supply.

For purposes of encouraging the development of renewable generation that is local and new, however, not all RECs are created equal. The problem is that renewable facilities far from the New England grid, such as Texas wind, and facilities built a long time ago, such as older Maine hydro plants, are able to sell RECs in Massachusetts, because the energy they produce qualifies as renewable. These RECs are relatively inexpensive, because Texas wind and Maine hydropower are cheap, and older facilities have retired their development costs over long operating periods. But these RECs do not support the development of new local clean generation capacity within Massachusetts or on the New England grid. Recognizing these issues, Massachusetts requires that the RPS be met with a specific form of RECs, Massachusetts Class I RECs.

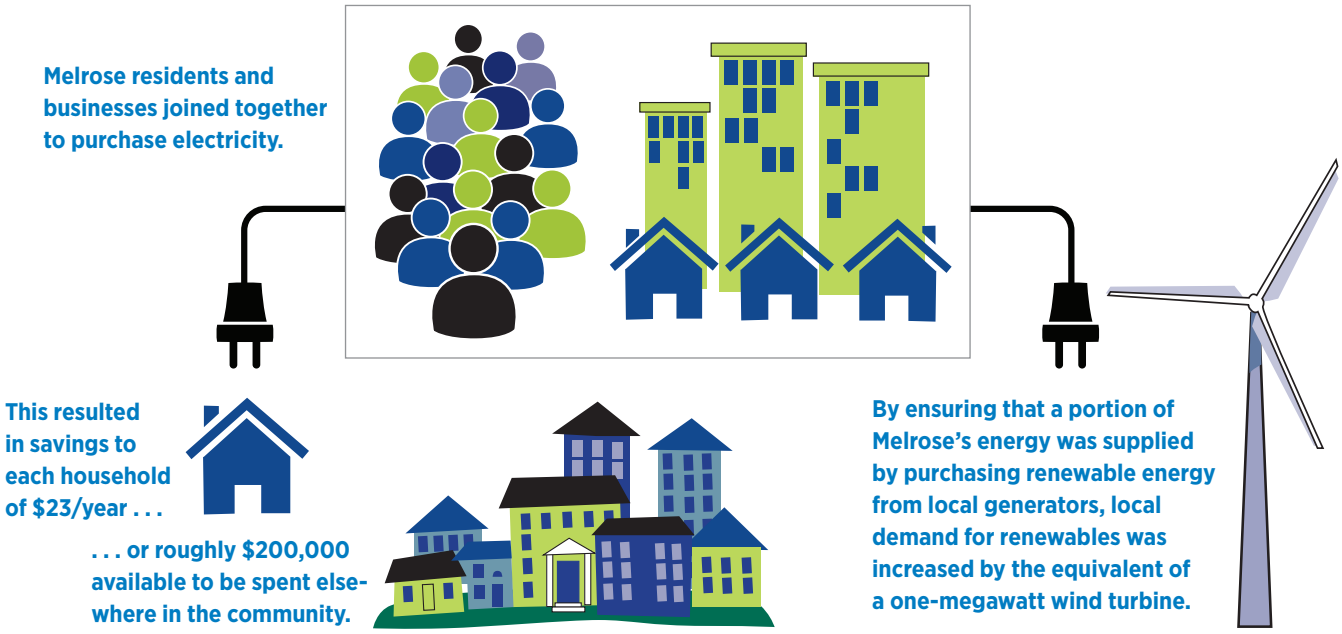
To qualify for Class I RECs, renewable generation must be delivered to the New England grid, and the generation units must have been brought online after 1997. Due to the increasing RPS, additional generation units must come online each year for electricity suppliers to avoid the ACP penalty. These characteristics ensure that Class I RECs support new, local renewable generation that provides the full set of clean energy benefits: lower climate emissions, local pollution reduction, and the local jobs and economic benefits that local clean generation creates.

## The Innovation: How to Build More Local Clean Energy & Preserve Affordability

Class I RECs were a great choice for promoting clean energy in Massachusetts, but they come at a significant price premium. So Melrose and the other communities working with MAPC needed a way to help their residents afford them.

The solution Melrose and MAPC devised was to leverage the price and stability benefits of community aggregation to make supporting local clean generation affordable to residential consumers. MAPC believed that a blend of a modest amount of Class I RECs into the energy mix could provide the right balance between encouraging local renewables and controlling costs. The key was having everyone in the community (except those

## Melrose: How Community Choice Aggregation Works




who opted out) participate in the move toward local renewables. While 100 households buying 100% renewable energy might support an addition of 600,000 kilowatt hours of renewable generation, a town with 10,000 households (about Melrose's size) buying just 1% renewable energy would support the same 600,000 kilowatt hours of renewable generation. Increasing the percentage to 5% would support 3,000,000 kilowatt hours of renewable generation, or 3,000 megawatt hours. For perspective, Melrose had saved about 800,000 kilowatt hours from its conversion of streetlights to LEDs, the largest single action Melrose had previously taken to reduce energy use and local greenhouse gas emissions.

In other words, including even a small percentage of Class I RECs over the minimum the state requires would be magnified by the aggregation to have an impact on the market, effectively increasing the RPS and thereby supporting the development of local renewable generation, while limiting the price premium each customer would bear. This type of aggregation would provide communities with price stability, likely meet or beat the basic service rates, and support new local renewable generation at a rate five years ahead of the state.

### Melrose Goes First

Melrose was excited to execute MAPC's new strategy for creating a community aggregation that also delivered on the goal to stimulate new, local renewable generation. But this had never been done before, and no existing energy broker was offering the product. Melrose and MAPC were able to act quickly and nimbly to fill the void. Working with MAPC, Martha Grover, the city's Energy Efficiency Manager, secured approval from the mayor and aldermen to pursue a community aggregation.

MAPC's Clean Energy Department then developed a Request for Proposals (RFP) for Melrose to test the market and determine if there were aggregation brokers who could deliver a community aggregation program that expanded local renewables and purchased Class I RECs at an affordable price. The RFP set three objectives for the aggregation plan:

- Do not increase rates compared to projected rates for basic service.
- Decrease greenhouse gas emissions more than the projected decrease for basic service.
- Maximize the portion of increased emissions reductions that support new local renewable generation by purchasing additional Massachusetts

Photo courtesy of MAPC

***"Patrick [MAPC Clean Energy Coordinator] put into words what I was talking about trying to do. He put the words into an RFP that asked the question in a way that got the answer and spurred brokers to develop a response: a program. . . . Having 10,000 people buy an additional five percent [green energy] makes a bigger impact than 100 buying current premium green energy products available, and the cost is competitive."***

*— Martha Grover, Energy Efficiency Manager, Melrose*

Class I RECs above the requirements of the state's RPS.

The RFP asked for qualifications and price bids. The broker would be responsible for setting up and running a municipal aggregation for Melrose. This would entail developing the aggregation plan, securing approval from the state, and administering the aggregation. Administering the aggregation would include conducting community education and customer enrollment, providing required reporting to the Department of Public Utilities (DPU), reporting to municipal officials on enrollment details, providing market information and savings analyses, and contracting with energy suppliers. Proposals would include a fee to be paid by the energy supplier to the energy broker on a per-unit-of-energy basis to compensate the broker for its services and expenses in developing and administering the aggregation. MAPC would also collect a very small fee through this mechanism during the first year to cover administrative costs. The aggregation broker would bear all of the costs and risks, collecting no fees until after the aggregation was approved and operating.

The RFP brought in three competitive bids, demonstrating that aggregation providers were willing to shift their business models when presented with demand to develop aggregations that support more local renewable generation while maintaining price stability and affordability.

MAPC led a rigorous review process with a selection committee that included representatives from Melrose and MAPC's Clean Energy Department. The selection committee chose Good Energy to be the aggregation broker for Melrose. Peregrine Energy Group and Colonial Power Group also submitted competitive responses.

Good Energy is a broker with deep experience in municipal aggregation. It is active in every state that allows municipal aggregations, and has delivered more community aggregations than any other broker. To respond to the unique RFP, Good Energy shifted their usual model by reaching out to a local energy advocacy group, Mass Energy Consumers Alliance (Mass Energy). Mass Energy runs two green power programs that allow individual consumers to buy renewable energy. Through these programs, Mass Energy has built expertise in how to buy Class I RECs and has promoted using MA Class I RECs to support new local generation.

The MAPC-Melrose RFP called for a new way to deliver a community choice aggregation. Good Energy's proposal combined its community aggregation experience with Mass Energy's local renewable buying expertise to produce a strategy for a municipal aggregation that delivered on all three of Melrose's and MAPC's objectives (don't increase rates, reduce greenhouse gas emissions more than basic service, and maximize new local renewable generation). Good Energy's proposal offered to add 5% more Class I RECs than are required by state law (the RPS), effectively increasing the portion of Class I RECs from the 11% the state required in basic service in 2016 to 16%.

## Ease of Implementation

With a well-vetted consultant secured, the remaining steps went smoothly. Good Energy developed the aggregation plan. It then worked closely with Martha Grover to share the plan with the Melrose community and solicit feedback, helping to finalize the plan for authorization by the City before it proceeded on the path to state approval. Good Energy then shepherded the aggregation plan through consultation with the Department of Energy Resources and submission and approval by the DPU. Upon securing state approval, Good Energy went out to bid to find electricity suppliers who would provide the local renewable electricity the plan required.

The standard offer for participants in the Melrose aggregation was called Melrose Local Green, and included the 5% in Class I RECs. This was the supply Melrose customers would be defaulted into unless they opted out to remain on basic service. The aggregation also offered two opt-in options. The first, Melrose Premium Local Green, allowed Melrose customers to choose to have 100% of their supply covered with Class I RECs. The second, Melrose Basic, included only the minimum Class I RECs required by state law (11% in 2016), the same level as in the utility's basic service, but with the price stability benefits of the aggregation.

### Melrose Aggregation Rates

| | | | |
|---|---|---|---|
| **Melrose Local Green** | Default | 16% Class I RECs | $0.096/kWh |
| **Melrose Premium Local Green** | Opt-In | 100% Class I RECs | $0.132/kWh |
| **Melrose Basic** | Opt-in | 11% Class I RECs | $0.094/kWh |
| **National Grid Basic Service** | Opt-out | 11% Class I RECs | $0.130 at time of aggregation |

**Aggregation delivered highly competitive pricing achieving rates well below winter basic service. The 100% renewable opt-in was only slightly above the winter basic service rate offered at the time.**

### Residential National Grid Basic Service Rates (per kWh)

| | |
|---|---|
| **Fall/Winter 16–17** (11/16–4/17) | $0.09787 |
| **Spring/Summer 16** (5/16–10/16) | $0.08042 |
| **Fall/Winter 15–16** (11/15–4/16) | $0.13038 |
| **Spring/Summer 15** (5/15–10/15) | $0.09257 |
| **Fall/Winter 14–15** (11/14–4/ 2015) | $0.16273 |
| **Spring/Summer 14** (5/14–10/14) | $0.08277 |

**Residential basic service rates fluctuate strongly between winter and summer, reaching 16 cents in the 2014–2015 winter.**

## Melrose: Aggregation Results, Year 1 (2016)

| Customer | Melrose Local Green | Melrose Premium Local Green | Melrose Basic | Total Usage in kWh | Per Participant Annual Savings/ (Cost) | Collective Savings/ cost |
|---|---|---|---|---|---|---|
| **Residential** | 8,479 | 28 | 70 | 56,131,219 | $23.16 | $198,634 |
| **Small Commercial** | 649 | 0 | 1 | 6,523,675 | ($37.97) | ($24,681) |
| **Large Commercial** | 12 | 0 | 0 | 1,141,988 | ($1,676.25) | ($20,115) |

**Residents, the majority of enrolled aggregation consumers saw savings. Businesses that opted to stay in the aggregation paid only modest premiums to support local clean energy.**

## Results

The experience of a year of MAPC's Community Choice Aggregation program in Melrose has proven that municipal aggregation with additional Class I RECs can deliver stable prices, support a cleaner grid, and deliver savings to residents. Melrose also learned some other key lessons.

***"One of the biggest benefits of our aggregation program has been the impact of our public education efforts and the increased awareness among residents about where their energy comes from and understanding their electric bills better. Information is empowerment."***

*— Martha Grover, Melrose Energy Efficiency Manager*

Over 99% of Melrose's basic service customers entered the aggregation. Only 485 of the eligible basic service customers opted out. A handful (six) opted for the 100% renewable immediately, while that number grew over the year to 28. After a year of aggregation, Good Energy provided an analysis of participant data. They compared the prices paid by participants in the aggregation to what they would have paid as basic service customers. Over 90% of the aggregation participants in Melrose are residential customers, and they received a modest annual savings of $23. The small business and large commercial participants paid modest premiums as compared to basic service. Since all customers have the right to opt out of the aggregation at any time with no penalty, the businesses that remained in the aggregation presumably found the benefits of supporting local clean energy goals and having a stable price worth the small premium.

There is a risk in every aggregation that, because of short-term price fluctuations and unexpected market events, the basic service rate will be lower than the aggregation rate for limited periods of time. It is the potential downside to the stable pricing that the aggregation provides. In the northeast area of Massachusetts, where Melrose is located, there have been constraints on bringing electricity to the area that are leading to higher electricity supply rates. National Grid, the electricity utility servicing Melrose, is able to spread these charges across its residential customers both in the constrained area and outside the constrained area, allowing their residential customers on basic service to experience a short-term price advantage. The most recent aggregation price secured by Good Energy for January to June 2017 is $0.1022, while National Grid's basic service rate is $0.09787 through April. But participants in the Melrose aggregation continue to enjoy price stability and local generation benefits. With a premium of less than half a penny, that's still a good deal for consumers, and a great deal for securing clean energy.

The community education and outreach that accompanies the development of municipal aggregation has helped to create more educated consumers who value having a choice in their electricity supply and understand its complexity. These consumers are better able to deflect predatory offers and are empowered to actively participate in energy policy discussions that affect their future.

## Many Communities Are Following Melrose's Lead

Dedham followed Melrose's lead immediately, independently contracting with Good Energy to develop their aggregation. MAPC quickly developed a second procurement that allows any municipality in its region to quickly build a Community Electricity Aggregation *PLUS* program—the name MAPC has given to its program of including additional Class I RECs in an aggregation—with a vetted vendor, Good Energy, who was selected again under the competitive procurement process. Several communities—Arlington, Brookline, Gloucester, Hamilton, Millis, Somerville, Sudbury and Winchester—are either in the process of developing or approving aggregation plans or launching their aggregations. Brookline has sought to add 25% Class I RECs above the RPS. Brookline's big buy will help us learn how far aggregations can go toward promoting local renewables while still maintaining affordable prices.

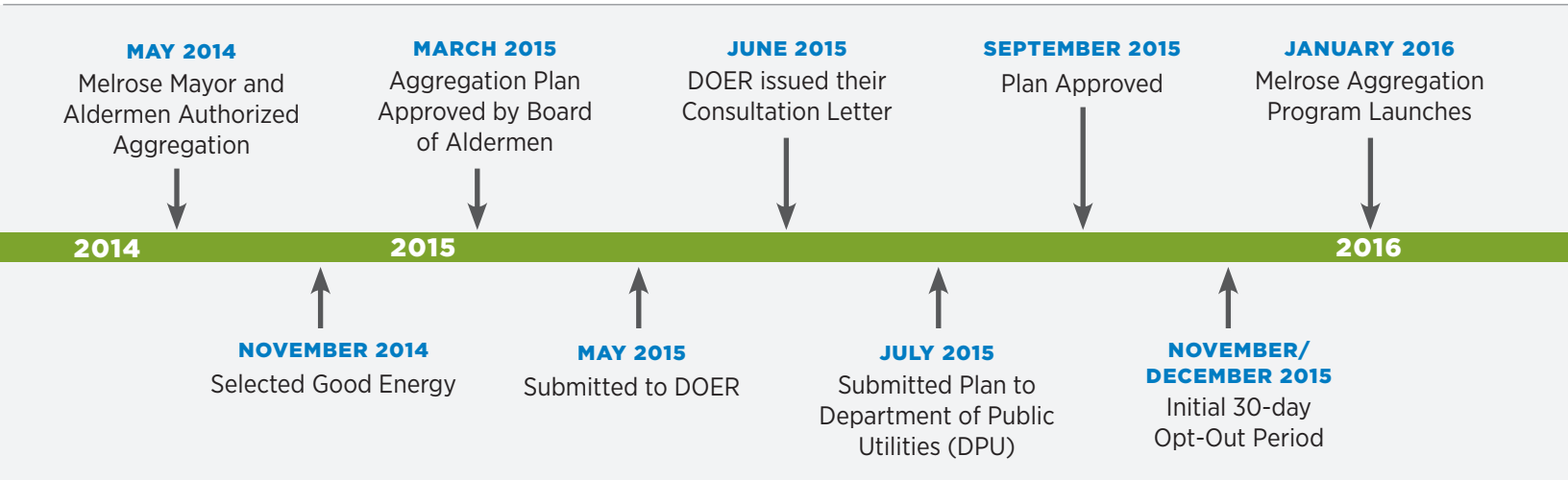
The potential for using the municipal aggregation model to increase local renewable energy deployment is vast. The impact of just the ten communities currently working with MAPC to develop and deploy municipal aggregation will support adding the equivalent of 17 new local wind turbines. The more communities that adopt this model, the greater the boost to local renewable generation.

Melrose and MAPC's work to pioneer Community Electricity Aggregation *PLUS* has demonstrated the success of the basic strategy, proving that the addition of a modest percentage of local renewable energy, through Massachusetts Class I RECs, can simultaneously advance both affordability and clean energy goals. Communities do not have to use Good Energy, or an aggregation broker secured through an RFP run by MAPC, to achieve these benefits. Larger communities may find that it makes sense to develop their own selection process for an aggregation broker, and could opt to strike a different balance between price and clean energy benefits.

For some communities, maintaining cost savings over basic service, or achieving price stability, may be the top priority. Others may be more focused on supporting renewable generation and willing to pay a premium to have a higher percentage of Class I RECs that pushes the transition to clean energy faster. Cape Light Compact, the largest and most sophisticated community aggregation, is now also adding an additional voluntary one percent increase in Class I RECs above the RPS requirement to their procurement. MAPC expects to look next at using Community Electricity Aggregation *PLUS* to support even more local renewables projects.

Continued activity and market development will likely bring additional brokers and players into the market. MAPC's work will continue to ensure that municipalities can leverage the combined electricity purchases of their residents for both competitive pricing and clean energy. And, Melrose will always be the little city that led the way.

### Melrose Aggregation Timeline



**If you are interested in participating in or learning more about MAPC's Community Electricity Aggregation *PLUS* program, contact:**

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