

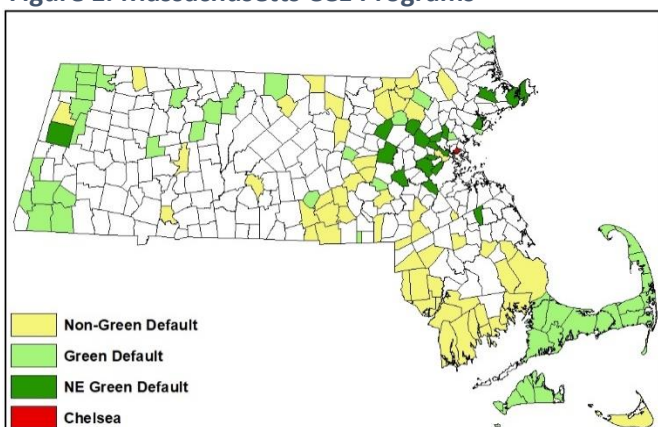
Cost and Emission Impacts of Community Choice Energy: Renewable Energy Options for the City of Chelsea

This Applied Economics Clinic policy brief—prepared on behalf of GreenRoots, a Chelsea-based organization working to achieve environmental justice—presents the cost and emission savings of different designs for Community Choice Energy (CCE) programs across the Commonwealth for comparison with Eversource electric rates. Expected emission savings for the City of Chelsea are presented for CCE programs with varying renewable requirements. We find that all types of CCE programs save residents money on their electric bills, and that Chelsea has the potential to reduce its emissions by an additional 34 percent by 2030 if it chooses to pursue a CCE program that mandates 25 percent more renewable energy than Massachusetts law.

Introduction

As of October 2019, 103 towns in Massachusetts (more than a quarter of the 351 municipalities in the Commonwealth) have active Community Choice Energy (CCE) programs (see Figure 1). Of these 103 programs, 56 have “Non-Green” default programs that mandate no more renewables than Commonwealth law, which requires 14 percent of electricity sold in Massachusetts in 2019 to originate from renewable sources¹; 29 programs mandate more renewables but do not specify where the energy must come from (“Green Default”); and 18 programs mandate more renewable energy that must originate from New England (“NE Green Default”).

Figure 1. Massachusetts CCE Programs



Source: Applied Economics Clinic

What is Community Choice Energy?

Community Choice Energy (CCE)—also referred to as municipal aggregation or Community Choice Aggregation—is a policy to procure electricity supply on behalf of city or town residents and businesses. CCE allows a city to pool customers together to achieve greater bargaining power with electric suppliers and choose the supplier that best meets customer needs. Electric customers may opt out of CCE programs at any time and usually have an “opt-up” option as well—a choice to elect to pay a higher electric rate for a greater share of renewable energy content, often 50 to 100 percent. Customers who do not opt-out or opt-up are automatically enrolled in the city’s CCE default option.

In 1997, Massachusetts restructured its electric market to allow electric customers the choice to purchase power from companies other than their default electric service. (For Chelsea, the default is Eversource.) Customers choosing to leave their default service sign contracts with what are known as “third-party” or “competitive” electric suppliers.

Analysis from Massachusetts’ Attorney General has shown that residential consumers have experienced substantial financial losses from contracting with third-party suppliers. Numerous complaints have been filed regarding third-party suppliers engaging in unfair or deceptive practices, such as: false advertising of

Bryndis Woods, Sagal Alislad and Hannah Brown

November 21, 2019

financial savings or renewable energy sources, use of aggressive sales tactics like door-to-door solicitations and telemarketing campaigns, and making it prohibitively difficult for customers to cancel their contract. Many of these predatory practices have been targeted at elderly, low-income and non-English speaking households.

Municipal CCE programs are a trusted alternative to predatory third-party suppliers. When cities launch CCE programs, they assure the quality of the service customers receive by negotiating with competitive power suppliers to secure low-cost, long-term electric supply contracts with fixed prices on behalf of all participants.

Electric Cost Impacts

Massachusetts towns use CCE programs to reduce electric rates for their residents and businesses, and provide rate stability through longer-term contracts. The average CCE residential electric rate in Massachusetts (10.7 cents per kilowatt-hour (kWh)) is 12 percent less expensive than Eversource’s standard rate (12.2 cents/kWh).

Of the 103 towns with a CCE program, 56 municipalities offer Non-Green Default options, 29 towns (including the 21 Cape Light Compact towns² which function as a single CCE program) offer a Green Default option that does not specify the origin of the renewables, and 18 offer a NE Green Default option.

Table 1. Average Massachusetts CCE residential rate versus Eversource basic service rate (2019)

	Average Residential Rate (cents/kWh)	Cost difference from Eversource
Eversource	12.2 ¢	N/A
Non-Green Default	10.5 ¢	14%
Green Default	10.7 ¢	13%
NE Green Default	10.9 ¢	10%

While slightly greater cost savings are achieved by Non-Green Default programs, all current Massachusetts’ CCE programs are at least 10 percent less expensive than Eversource basic service rate (see Table 1).

Some CCE programs (Green Default) source more renewable energy than state requirements and, therefore, reduce greenhouse gas emissions by more than the minimum set by state law. When Green Default programs require that their renewable energy originate in New England (NE Green Default), they help to ensure that emission reductions and jobs benefits from renewable generation occur within the region. While NE Green Default programs cost slightly more than other CCE program types (a 0.1 cent/kWh difference)—these customers are still saving 1.3 cents/kWh on average, compared to Eversource basic service rates (see Table 1 above).

Emission Impacts

Forty-seven Massachusetts cities and towns offer default CCE programs that reduce greenhouse gas emissions by requiring that a larger share of electricity come from renewable sources than mandated by state law. Pittsfield, for example, is in Eversource’s basic service territory and has a population just 2,400 larger than Chelsea’s 40,000. Pittsfield’s CCE residential rate is 18 percent lower than Eversource while mandating 25 percent more renewables than state law and requiring that this renewable generation come from New England sources. Larger towns, like Newton (with a population more than double that of Chelsea) has a CCE residential rate that is 8 percent lower than Eversource and mandates 60 percent more renewable energy than state law, also locally-sourced.

In 2016, Chelsea’s 13,000 housing units consumed 85 million kWh of electricity (or 0.2 percent of the Commonwealth’s total electric consumption). In the same year, carbon dioxide (CO₂) emissions from Massachusetts’ electric sector totaled 16.2 million short tons.³ Chelsea’s share of Massachusetts’ greenhouse

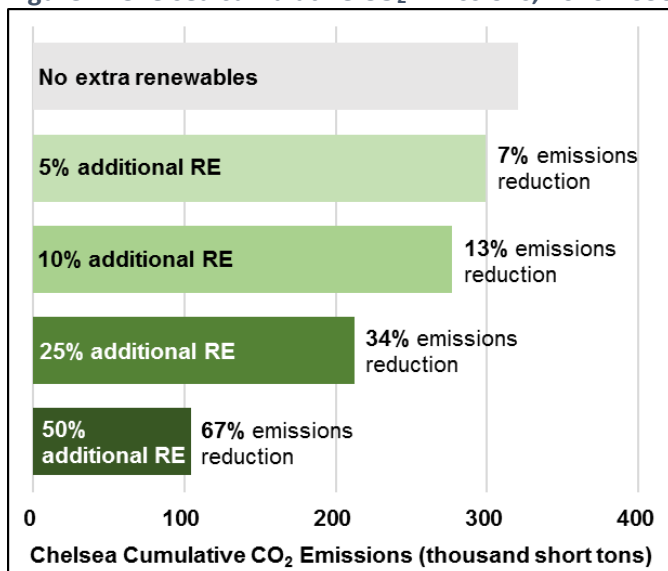
Bryndis Woods, Sagal Alisalad and Hannah Brown

November 21, 2019

gas emissions from electricity is 26,000 short tons.

The cumulative emissions reduction that Chelsea can achieve from adopting a CCE depends on the specific program design chosen (see Figure 2). With a Non-Green Default option where the City complies with the minimum Massachusetts renewable standard, the City would emit 320,000 short tons of CO₂ between 2016 and 2030. By choosing instead to offer a Green Default, Chelsea would achieve emissions savings ranging from 7 percent emissions savings with a 5 percent green default option to 67 percent savings with a 50 percent green default option.

Figure 2. Chelsea cumulative CO₂ Emissions, 2016-2030



Environmental Justice

The City of Chelsea is an Environmental Justice Community. Massachusetts’ Environmental Justice designation is assigned to communities that meet any of the following criteria: an annual mean household income less than or equal to 65 percent of the state median; 25 percent or more residents identify as a race other than white; or 25 percent or more of all households have no one over the age of 14 who speaks English very well. Not only does Chelsea as a whole meet these criteria, but every individual census block

within Chelsea meets the criteria as well. The only other communities in the Commonwealth in which all census blocks meet the Environmental Justice criteria are Aquinnah, Everett, Lawrence and Randolph.

The Massachusetts’ Environmental Justice Policy asserts a right to a clean environment—no group of people should shoulder an uneven burden of pollution or have limited access to natural resources due to race, ethnicity, class, gender, or ability. A major driver behind the adoption of the Environmental Justice Act was the disproportionate exposure of environmental justice communities to risks of local pollution and lack of equal protection against environmental hazards.

Facilities that emit harmful pollutants in the air, water, and soil are disproportionately sited in or near low-income communities of color in the Commonwealth. As a result, already-vulnerable groups experience a greater number of health complications from pollution – including asthma, heart attacks, and premature death. Replacing polluting power plants with renewables can alleviate health impacts by eliminating point sources of pollution. By further developing energy efficiency and renewable resources, Chelsea and other environmental justice communities will experience a host of economic and societal benefits that range from reduced energy costs to improved air quality and lowered healthcare expenses.

Another potential benefit for Chelsea from replacing distantly located fossil fuels with more locally-sited renewable energy (including customer-owned renewable generation, like rooftop solar) is a potential easing of demand for new transmission and distribution lines to bring electricity into Chelsea. This benefit of increased renewable energy may hold particular appeal for Chelsea residents: Eversource’s proposed substation on East Eagle Street in Chelsea has drawn numerous protests from local residents.

Bryndis Woods, Sagal Alisalad and Hannah Brown

November 21, 2019

Methods

Rate Impacts:

For each town with an active, soon to be active, or inactive CCE program in Massachusetts, we collected the following information from publicly available data sources: 1) the residential electricity rate; 2) the CCE default program option; 3) for all green default programs, the amount of renewable resources above the state mandate; and 4) whether green default programs mandate energy be sourced from Massachusetts or New England. (See [accompanying workbook](#) for full list of towns and sources).

For all active CCE programs, we then compared the average residential rate of CCE programs by type (Non-Green Default, Green Default and NE Green Default) to the average residential rate for basic service from Eversource.

Emissions:

Chelsea's 2016 annual electric usage was obtained from MassSave. In order to estimate Chelsea's CO₂ emissions (for which data are not available) in the same year, we applied Chelsea's share of statewide total electric usage

to the total statewide CO₂ emissions in 2016. Emissions were then projected forward for Chelsea under a range of potential CCE program designs available to the City:

1. No additional renewable energy beyond Massachusetts mandate (Non-Green Default);
2. 5 percent additional renewable energy above required Massachusetts levels (5% Green Default);
3. 10% Green Default;
4. 25% Green Default; and
5. 50% Green Default.

For all scenarios, forecasted emissions are the product of three factors:

- The current Massachusetts electric emissions rate (for emitting sources only)
- Chelsea's share of total Massachusetts electric demand
- The share (which varies by scenario) of required renewables (the Massachusetts RPS and CES requirements in the Chelsea CCE Non-Green Default scenario, plus some percentage of additional renewable energy in the Green Default scenarios).

Notes

¹The Renewable Portfolio Standard (RPS) in Massachusetts mandates electric utilities to procure a specific percentage of power from renewables. Starting in 2018, the Clean Energy Standard (CES) requires that utilities must supply a minimum percentage of their electricity from clean sources. Note that RPS Class I compliance also counts towards achieving CES targets. The minimum percentages are 14% and 18% in 2019 for RPS and CES respectively. (See DOER 225 CMR 14.00 and DOER Amend 310 CMR 7.75)

²Cape Light Compact is an energy services organization composed of the 21 towns on the Cape and Martha's Vineyard. The towns are: Aquinnah, Barnstable, Bourne, Brewster, Chatham, Chilmark, Dennis, Eastham, Edgartown, Falmouth, Harwich, Mashpee, Oak Bluffs, Orleans,

Provincetown, Sandwich, Tisbury, Truro, Wellfleet, West Tisbury, and Yarmouth.

³MA Department of Environmental Protection. 2018. Appendix C: Massachusetts Annual Greenhouse Gas Emissions Inventory: 1990-2016, with Partial 2017 Data. Available at: <https://www.mass.gov/lists/massdep-emissions-inventories>.

⁴MassDEP 310 CMR 7.72, 310 CMR 7.73, and 310 CMR 7.74.

For all data sources and works cited see: https://aeclinic.org/s/CCE-Town-Info_Nov2019-1.xlsx.