



Massachusetts Clean Energy
& Climate Scorecard

2016



GWSP Global Warming
Solutions Project

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Global Warming Solutions Project (GWSP)

Coordinated by:

Environmental League of Massachusetts

GWSP members:

- Better Future Project
- Clean Water Action
- Conservation Law Foundation
- Acadia Center
- Environmental Entrepreneurs (E²)
- Environment Massachusetts
- Health Care Without Harm
- Mass Energy Consumers Alliance
- Massachusetts Climate Action Network
- Metropolitan Area Planning Council
- National Wildlife Federation
- Northeast Energy Efficiency Partnerships

The Massachusetts Clean Energy & Climate Scorecard

February 2016

Executive Summary

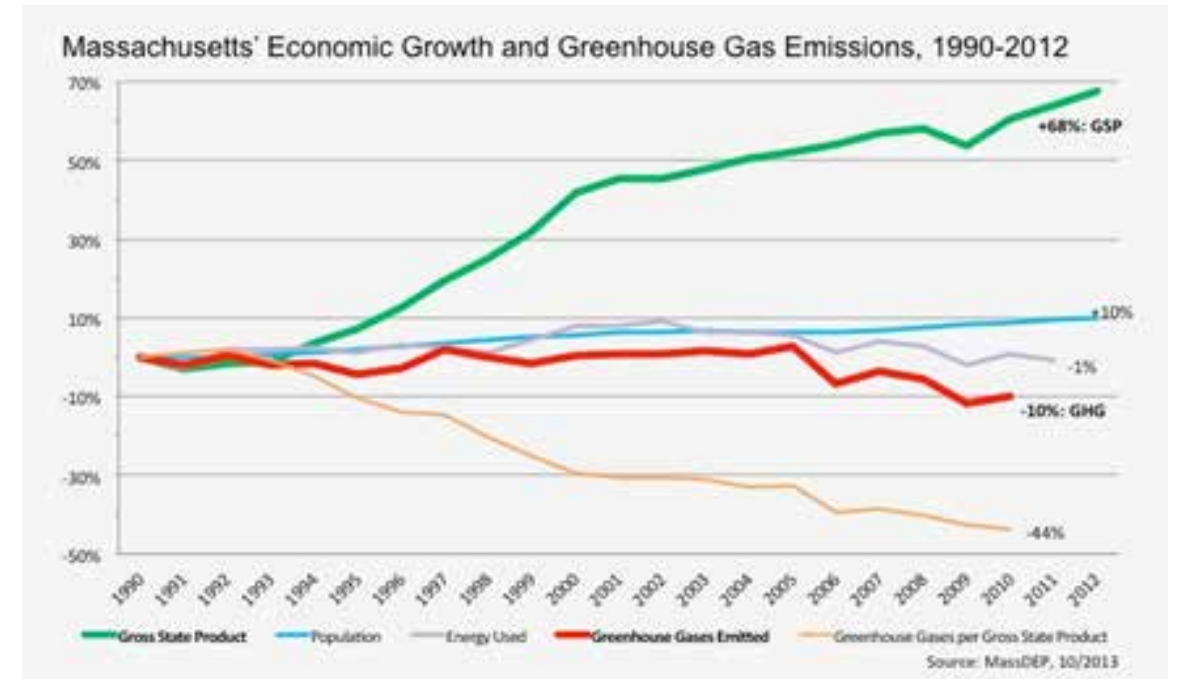
Massachusetts has long been a leader in air quality, climate protection and clean energy. Over the last 25 years, the Commonwealth has pursued energy policies and environmental regulations designed to favor clean energy production and to make our state a national leader in the areas of energy efficiency, pollution reduction, renewable energy, and market-based environmental and energy programs.

The substantial reductions in our energy use and growth in our clean energy industry achieved over this time under both Republican and Democratic governors

demonstrate that our state’s environmental leadership contributes to a vibrant and thriving Massachusetts economy.

The Global Warming Solutions Act (GWSA) and the Green Communities Act, both enacted in 2008, represent the core of the Commonwealth’s commitment to continue this effort and protect our citizens from the risks of climate change while reducing our dependence on fossil fuels.

The Global Warming Solutions Project (GWSP) was created as a multi-disciplinary effort to facilitate and maximize the implementation of



the GWSA. This report and climate scorecard is the second annual report to be issued. The first scorecard covered actions in 2014, and the current scorecard covers progress in 2015. This Scorecard by the GWSP represents our initial assessment of the actions by the Baker administration to live up to that commitment and comply with the requirements of the GWSA. In it we evaluate the actions of the first year of the Baker administration and the policy actions outlined in its recent Clean Energy and Climate Plan (CECP) Update and provide additional recommendations to reduce greenhouse gas emissions.

However, as in our previous Scorecard, we find that, without new policy action, Massachusetts is not likely to achieve our 2020 requirement of 25% below 1990 levels and remain on track to achieve of 2050 requirement of 80% below 1990 levels.



Reviewing the Baker Administration Climate Plan

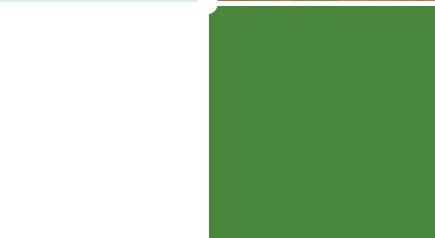
Governor Charlie Baker has come into office with a unique opportunity to ensure that our state meets its mandatory greenhouse gas emission reduction requirements under the GWSA of 25% by 2020 and is on track to achieve reductions of at least 80% by 2050. The Governor and Secretary of Energy and Environmental Affairs (EEA) Matthew Beaton have stated their commitment to remaining a national leader in climate change and clean energy.

The Baker administration’s CECP Update, released in mid-January, expresses optimism about meeting the legislatively required 25% GHG reduction by 2020. While the Governor initially supported a “combo-platter” or “all of the above” approach to renewable energy and energy policy, his CECP Update primarily focused on importing large quantities of

hydropower from Canada for electricity generation. After a detailed study of the CECP Update, we have arrived at a different conclusion.



Our initial 2014 Scorecard found that Massachusetts would cut GHG emissions by 20% below 1990 levels by 2020, falling short by 5%. As we review 2015, we unfortunately stand by this assessment. While the new Baker administration plan does, add some



new initiatives to make up for the 5% gap, but others have been jettisoned or have not yet met their full emission reduction potential, leaving a shortfall we do not expect to be rectified under the current plan. We conclude that the actions outlined in the plan will likely be insufficient to meet the 2020 requirements and will not put our state on a realistic pathway to meet and ideally, exceed the 2050 requirements.

Of primary importance, the new climate plan fails to account for major new energy policy developments, such as our state’s plans to substantially increase gas pipeline capacity. It is impossible to evaluate the GHG reductions from the policies included in the CECP unless we also include any long-term

increase in GHG emissions that would come from expanded gas pipeline capacity and the influence on the market as we move towards decarbonization. A wide range of analysis, most recently for Attorney General Maura Healey, demonstrates that this expanded pipeline capacity is incompatible with the GWSA, and is not a wise choice on economic or environmental grounds.

Additionally, Other trends and policies may also slow our progress, including low oil prices, a proposed MBTA fare increase, and a lack of progress on many of the long-range policies in the existing plan (for example on the Smart Growth policy suite). To meet our 2020 requirements, the Baker administration will need to act with a sense of urgency to articulate and implement a set of strategic and mutually supportive policies beyond just hydropower procurement. Notably, both the prior and current administrations have not

promulgated regulations statutorily required under GWSA Chapter 21 section 3(d) to create annual, economy-wide limits on GHG emissions, which are critical to meeting the 2020 requirements and laying the groundwork for achievement of the 2050 requirements. The administration has also failed to apply the GWSA in agency consideration of permits and approvals for new fossil fuel facilities in the state. These are actions that must be taken to show a commitment to meeting our 2020 requirements.

However, Governor Baker and Secretary Beaton deserve credit for the positive steps they have taken to address GHG emissions. The administration has shown continuing support for our nation- leading energy efficiency programs and for expanding the use of electric vehicles and their charging infrastructure. Along with his fellow Governors and Premiers in the New England Governors and Eastern Canadian Premiers (NEG/ECP) process, Governor Baker signed a resolution to reduce GHG emissions by 40% below 1990 levels by 2030 and 75-85% below 2001 levels by 2050; this is encouraging. The CECP Update demonstrates an understanding that our state must act now to “reduce, electrify, and decarbonize” in all sectors of the economy to meet our

long-term GWSA requirements, especially in the transportation and heating sectors. With proper performance management, these commitments can help shape the policies to achieve long-term emissions reduction.

The administration states that implementation of the climate policies in the CECP Update “will set the Commonwealth on course for a sustained, vibrant state economy with environmentally-responsible economic growth for decades to come.” Full implementation of the CECP and more will be necessary to fulfill that promise. We share this goal. Now action must better align with these words.

The Global Warming Solutions Project (GWSP) is a diverse stakeholder network whose members are committed to ensuring Massachusetts achieves the objectives of the GWSA.

Key Findings

1. Massachusetts Will Not Meet its 2020 GHG Reduction Requirement Without Urgent Action by the Baker Administration

The CECP Update expresses optimism about meeting the 25% GHG emissions reduction requirement by 2020. The varied impacts of new federal and state policies, innovative technologies, the retirement of our state’s coal-fired power plants, changes in fuel prices, the global economic slowdown³, new information and communications technology all result in Massachusetts achieving emissions reductions of around 20% below 1990 levels across all sectors as of 2013⁴.

But while it is possible to reduce emissions by the additional 4-5% needed by 2020, as the CECP Update states, the Baker administration’s plans must go beyond what is in the CECP Update to make this a reality. Every policy or action called for in the CECP Update would need to be implemented in short order as a first step. And given the high degree of uncertainty about some of these policies, especially the Clean

Economy-wide Greenhouse Gas Emission Equivalents (in million metric tons) and % reductions

	1990	2010	2011	2012	2013
Buildings	29.4	24.1	24.0	20.6	23.9
Transportation	30.5	30.5	30.7	29.9	31.2
Electricity	28.2	22.9	18.1	15.8	16.3
Other ^A	6.3	5.7	5.8	5.8	5.6
Total	94.5	83.2	78.6	72.1	76.9
Reduction (% of 1990 level)	0%	12%	17%	24%	19%

strategy, additional policy measures must be identified and aggressively pursued to achieve the necessary emissions reductions in time.



2. Hydropower Imports Alone Will Not Be Sufficient to Achieve our Climate Goals

The primary strategy in the Baker administration’s CECP Update is imports of large-scale hydropower from Canada. The administration has proposed legislation designed to significantly boost hydropower imports via long-term contracts. This strategy represents 4.2% of the emissions reductions anticipated in the plan by 2020. EEA Secretary Beaton has admitted that the state will not achieve the 2020 GHG reduction requirements without large-scale hydropower imports from Canada⁵.

However, hydropower imports alone are not sufficient to make up the gap in emissions reductions. Even if the Legislature acts this year to authorize such imports, it is not clear that the transmission would be in service in time to deliver the full 4.2% of emissions reductions estimated by 2020. Furthermore, the administration’s approach in S. 1965, calling for imports of hydropower alone, would likely undermine or delay development of in-region renewable energy resources, such as onshore and offshore

wind. Those resources are critical as part of any large-scale energy procurement to transition towards zero-carbon renewable energy resources.

3. Expanded Gas Pipeline Infrastructure is Incompatible with the GWSA and our Clean Energy Goals

The CECP Update calls for the Commonwealth to “reduce, electrify, and decarbonize” to create a pathway to achieving the 2050 requirements.⁶ However, the plans underway with support from the Baker administration to build massive new gas pipelines, such as the Kinder Morgan Northeast Energy Direct Project, threaten our progress on reducing GHG emissions. As the Attorney General’s recent Electric Reliability Study shows, expanded gas pipeline capacity is incompatible with the steep reductions necessary to achieve our GWSA goals. It is here that Governor Baker’s “combo platter” concept falls short.

It is essential to address the impact that adding new gas infrastructure will have on

our state’s future GHG emissions and our energy market. Gas is a carbon-based fuel supplied by infrastructure that will be used for decades and recent studies show that in terms of warming, it is not a significant improvement over coal-fired power plants.⁷ By pursuing policies that dramatically expand Massachusetts’ gas capacity and greater fossil fuel use at precisely the time when the Commonwealth needs to be decreasing our use of carbon-intensive fuels, we are locking in emissions and stranding investments. Additionally, as ratepayers, we are distressed that these policies include an unprecedented new charge on electricity customers for the expanded natural gas capacity, which will raise our emissions levels and distort the market for emissions-free electricity.



4. Additional Actions Needed in the Transportation Sector

Achieving progress between now and 2020 in the transportation sector will be essential, as transportation has become the Commonwealth’s largest source of GHG emissions at over 40% of total GHG emissions. It is time to get serious on transportation emissions, to explore innovative approaches to transport such as setting a 2035 sunset date for the sale of gasoline cars and doing more to rapidly deploy electric vehicles (EVs).

The administration’s climate plan includes a commitment to electric vehicles and smart growth initiatives. These are steps in the right direction. But the CECP relies primarily on federal fuel economy standards to achieve significant reductions in emissions between now and 2020. There are major

opportunities to achieve further emissions reductions through state action to incentivize a shift to lower emissions forms of travel and accelerate the transition to electric vehicles over the next four years. Additional strategies must be articulated to make any progress here.

5. Planning for 2050 Must Begin Now, including Interim Requirements for 2030 and 2040 - WE CAN DO THIS!

The recent Paris Climate Agreement has moved the bar for action on climate change, with nations around the globe calling for strong, multi-decade action to keep temperature rise below 2 degrees Celsius. The

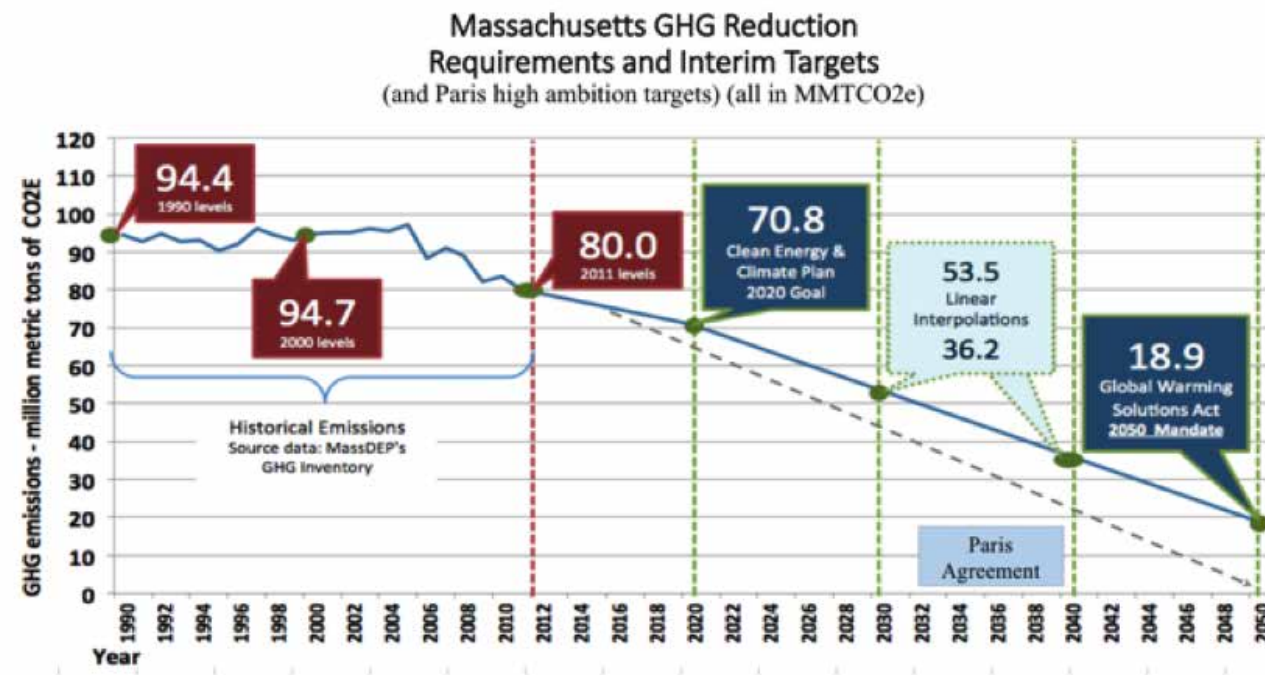
agreement puts into focus the need to begin to plan now and evaluate our policy actions to achieve our 2050 GWSA requirements of at least 80% below 1990 levels, including establishing interim climate emissions limits for 2030 and 2040. As an immediate step, we recommend a requirement of at least 40% by 2030 and at least 65% by 2040 to ensure compliance with our 2050 limit. Let’s be bold and pragmatic.

It is also imperative that the administration begin planning for 2050 in a coordinated, data-driven way. If we are to reach our 2050 requirements, we cannot afford to act in a piecemeal fashion. A comprehensive study in the vein of the EU 2050 Roadmap or the Deep Decarbonization Pathways Project is

essential to continuing our state’s leadership in climate protection. Such a study would enable state officials to have the confidence to undertake proactive measures to achieve further reductions in emissions, such as carbon pricing, the tracking of transportation fuels, and to consider new business models for our electric and gas utilities that align their financial interests with that of a low-carbon economy.



Massachusetts GHG Reduction Requirements under the GWSA: 2020 & 2050 (MMTCO²e)



The Paris agreement promises to unleash a wave of clean energy investment and innovation across the world. The much-celebrated move of GE to Boston, for example, can in large part be traced to the clean energy and climate change policies we have previously put in place and the related firms who have located here as a result. However, competition among states and nations for the clean energy jobs of the future is likely to become stiffer. We need look no further

than New York to see what aggressive pro-consumer, pro-clean energy action looks like. The Empire State has launched a bold effort to reform the electric utility industry to bring online more local clean energy resources and reduce the cost of maintaining our aging and outdated electricity grid.⁸ Without bold action, Massachusetts risks losing its leadership position in our growing clean energy sector.

Climate Leadership Action the Baker Administration Should Take this Year

A number of important choices need to be made to advance the Commonwealth’s climate leadership and to promote our economy. We suggest the Baker administration achieve solid progress on the following this year:

1. Work to pass comprehensive energy legislation that includes Class 1 renewable energy resources, including offshore wind power
2. Direct the Department of Environmental Protection (DEP) to promulgate regulations required in the GWSA (Section 3(d) under Chapter 21 N)
3. Partner with RGGI states to encourage deeper carbon cuts beyond 2020
4. Avoid investments in gas pipelines and other infrastructure that would hinder compliance with the 2020 and 2050 requirements
5. Promulgate MassDEP regulations on refrigerant equipment to curb HFC leakage.
6. Ensure the electric and gas utilities meet their 2016-2018 energy efficiency savings requirements and set ambitious goals for the 2019-2021 plan.

In the City of Boston’s most recent Greenovate Update Plan⁹, the City proposes to work with the Commonwealth to explore:

- Removal of any legal and regulatory impediments to district energy and renewables.
- Standardized rules, minimal fees, and an adequate feed-in tariff for grid interconnection.
- Continued lowering of the cap on greenhouse gas emissions through RGGI.
- Measures to ensure that solar PV owners can interconnect to the grid with standardized rules, minimized fees, and reasonable feed-in tariffs.
- More aggressive statewide clean energy goals, and the use of those goals to evaluate proposals for energy infrastructure.
- A citywide or regional carbon tax.

7. Update the “stretch” energy code for new residential and commercial buildings to achieve savings above the 2015 base energy code.

8. Adopt measures to reduce transportation emissions in line with economy-wide reductions of at least 80% by 2050, including taking a leadership role in the Transportation & Climate Initiative.

9. Support legislation to upgrade Massachusetts' outdated zoning laws to encourage more mixed-use and transit-

oriented development and walkable communities.

10. Set economy - wide interim planning requirements (at least 40% reduction by 2030 and at least 65% by 2040), start using these immediately in all state policymaking and decision-making, and make concrete progress toward a deep decarbonization study.

Policy Analysis By Sector

Buildings and Energy Efficiency

GHG Emissions from Buildings	31%
GHG Reductions Target from CECP Update	9.5%
Strategies in CECP Update	
Utility Electric and Gas Energy Efficiency Programs	5.8%
Advanced Building Energy Codes	1.6%
Expanding Oil Heat Programs to Commercial Customers	0.1%
Federal Appliance and Product Energy Efficiency Standards	1.1%
Renewable Heating and Cooling Technologies	1.1%
Tree Planting & Retention	0.1%

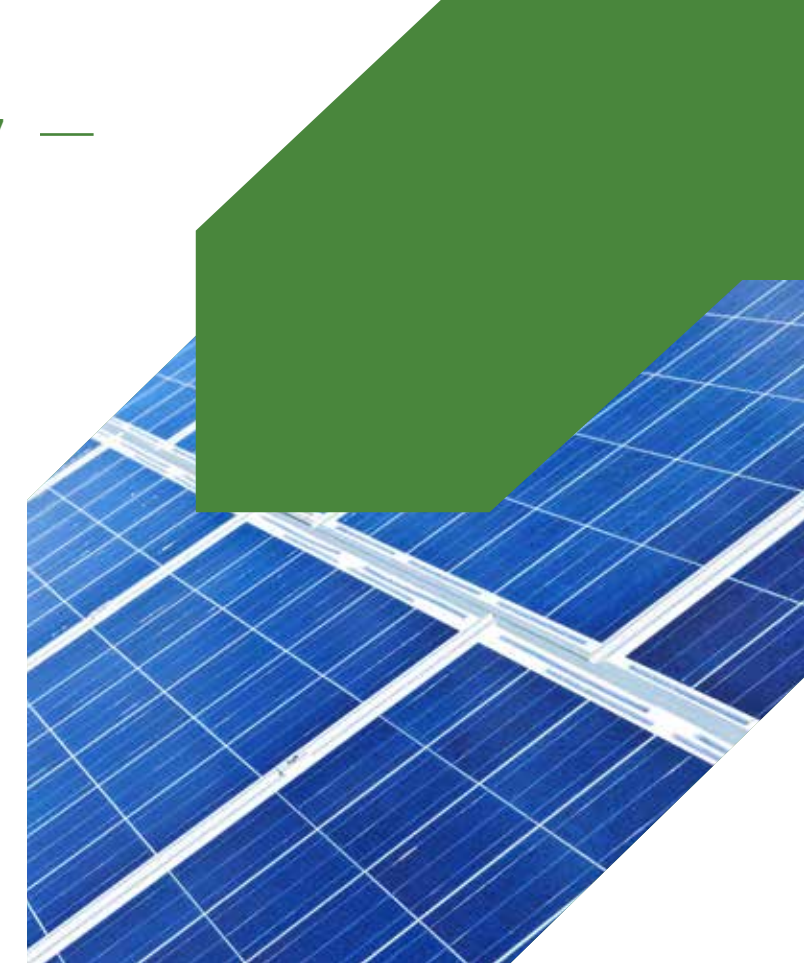
Overview

The Baker administration has shown support for energy efficiency in the building sector as a major strategy to reduce GHG emissions. Energy efficiency and energy savings programs in our buildings represent the most cost-effective strategy to meet our energy needs and reduce greenhouse gas emissions. To date, energy efficiency has been the most effective measure for reducing emissions, with our energy efficiency programs representing the largest single source of GHG reductions through 2020.

The strategies the Baker administration calls for in the CECP Update are generally the correct ones, maintaining our current utility energy efficiency programs, more stringent building energy codes, and greater deployment of renewable heating and thermal heating technology. Here, the Baker administration must ensure that these programs are implemented adequately and expediently. The Three-Year energy efficiency plans, for example, already have fallen short of the achievable emissions reductions in the original CECP in 2010, falling from the original 7.1% to 5.8%.

It also appears that the emissions reductions forecast for advanced building energy codes and renewable thermal are likely to fall short without additional policy initiatives and implementation. A shortfall here means the need for more-costly GHG reductions in the electricity supply or transportations sector.

We focus our review on three key areas:
1- the Three-Year utility energy efficiency programs
2- advanced building energy codes
3- renewable thermal





Ensure the Utilities Achieve the Savings Targets in the 2016-2018 Energy Efficiency Plans

The Green Communities Act requires our state’s electric and gas utilities to achieve all savings that are cost-effective or cost less than purchasing new supplies from power plants or building new pipeline or transmission lines. The Department of Public Utilities’ approval of the current Three-Year energy efficiency plans for 2016-2018 is a good first step. The plans require the electric utilities to achieve nation-leading savings levels of roughly 3% reductions in annual electricity use and 1.25% reductions in annual natural gas use.¹⁰ The success in the last few years of the Mass Save programs demonstrates that such high levels of savings are possible while the per-unit cost of savings has remained flat.¹¹

Given that our energy efficiency programs are falling short of their original GHG savings of 7% of total emissions, it is crucial that the administration maintain firm oversight of the utilities to ensure that they meet these targets. The savings levels in the current plan, for example, represent a compromise from the levels of cost-effective savings demonstrated by the consultants for the Energy Efficiency Advisory Council (EEAC).¹² Particularly at a time when the state is pursuing an expansion of transmission and gas pipeline capacity, the Baker administration should seek to go further and pursue the level of emissions identified in the recent Attorney General’s “Regional Electric Reliability Options” study. The study identified an additional amount of 1,300 MW of peak energy efficiency measures and 1,100 MW of new demand response measures to help curb future winter peak energy demands and pinned the cost at

\$0.0675/kWh, still well below our current electricity prices. As such, this represents the best and logical place to pursue greater emissions reductions at a net positive cost to residents and businesses.¹³

The state has managed to reduce energy use over the last 6 years while achieving powerful economic growth and creating thousands of new jobs in energy efficiency. Our electric and gas utilities can and should do more to build on this success.

Act Quickly to Update the “Stretch” Energy Code

Enhanced building energy codes are a cost-effective long-term strategy for saving energy and reducing greenhouse gas emissions in new buildings. The state, as required by

the Green Communities Act, must update its residential and commercial building energy codes this year, based upon the 2015 model codes as other Northeast states have already done.¹⁴

However, to achieve the level of emissions reduction forecast in the CECP Update, the state must update the optional “stretch” energy code adopted by 161 municipalities across the Commonwealth to achieve savings 20% greater than the base code. The stretch energy code has not been updated since 2009, so the stretch code is effectively the same as the 2012 base energy code. Disappointingly, the most recent version of the proposed energy code would include only the largest buildings of only over 100,000

square feet.¹⁵ As a number of stakeholders noted in a recent letter to Secretary Beaton, that is likely to exclude the majority of new construction in stretch code communities. The administration should quickly work with the Board of Building Regulations and Standards to adopt the most recent version of the code and update the stretch code this year to prevent further shortfalls in GHG reductions.

Invest More in Renewable Heating and Cooling Technologies

Significant opportunities exist to expand the market for renewable heating technologies. The current CECP Update recognizes the recommendations made in our 2014 Scorecard, noting that the cost declines for cold climate air source heat pumps and renewable heating technologies open the possibility for greater emissions reduction by 2020 to as much of 0.7% of 1990 levels. This technology also has the potential to reach oil heat customers more rapidly than gas distribution expansion. The adoption in 2014 of renewable thermal technologies to the Alternative Energy Portfolio Standard (APS) by the Legislature

enables a significant expansion of support for this market and significant future reductions in expenditures on fossil fuels for heating.¹⁶

The administration and the Mass Clean Energy Center have shown support for this market, as evidenced by the recent announcement about a renewable thermal initiative¹⁷. However, the 1.1% emissions reduction identified in the report is unlikely to be achieved without further policy action, especially in light of the recent drop in oil prices. The CECP Update notes that the state plans to include many renewable thermal technologies in the APS. DOER should move quickly to adopt the rules and commensurate financial incentives to spur adoption of these technologies and realize enough savings by 2020.

Recommendations

- Ensure that the utilities achieve all cost-effective energy efficiency and pursue additional savings recommended by the Attorney General
- Update the stretch energy code as soon as possible
- Implement a specific plan to increase use of renewable thermal technology

Electricity Supply: Generation and Distribution

GHG Emissions from Electricity Supply	21%
GHG Reductions Target from CECP Update	8.2%
Strategies in CECP Update	
Large-Scale Hydropower Imports.	4.2%
Coal-Fired Power Plant Retirements.	2.9%
Renewable Portfolio Standard	1.1%
Regional Greenhouse Gas Initiative	-
Electricity Grid Modernization	-

Overview

Expanding the use of renewable sources for energy production is one of the key drivers for a low-carbon future. Shifting energy production to renewables neatly decouples economic development from increasing emissions, making it vital for realizing improvements in both climate protection and jobs. With no native supplies of natural gas, coal, or oil of our own, nearly all the money we pay for the fuels we import for electricity, heating and transportation leaves

the local economy, with estimates of as much as \$18 billion leaving the Commonwealth each year.¹⁸ For Massachusetts, improving energy security means using local resources of wind, solar, responsible biomass, and energy efficiency. Three major policy decisions have helped drive substantial change away from coal-fired power plants and towards clean renewable energy: The Regional Greenhouse Gas Initiative (RGGI), the expansion of the

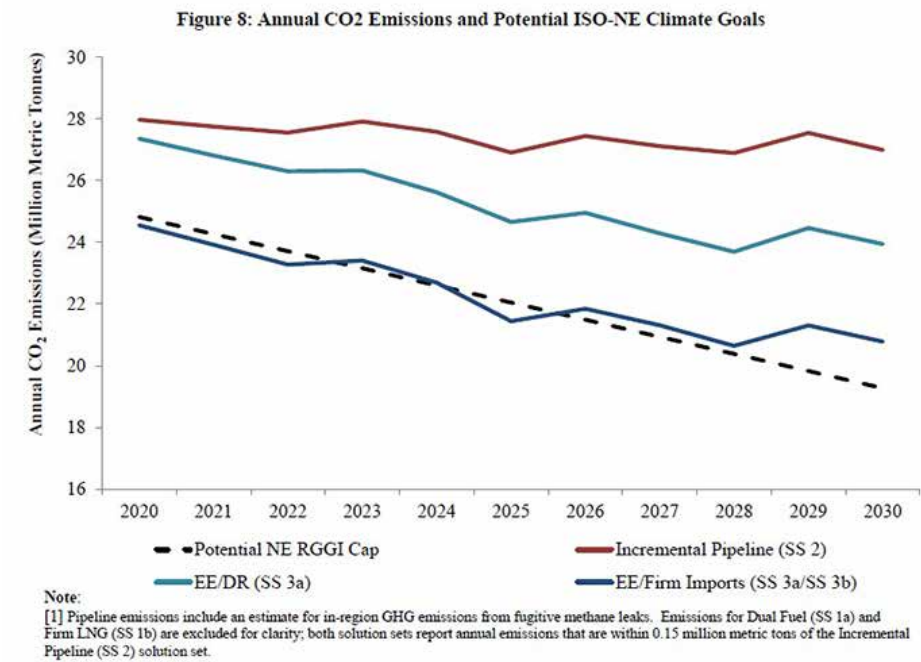
Renewable Portfolio Standard, and the state’s solar net metering and carve-out programs. A recent study by the nonpartisan Analysis Group found that these programs resulted in \$1.2 billion in net benefits for Massachusetts in just the first six years of implementation.¹⁹ Recent research finds that decarbonizing the electric sector will continue to be central to meeting the Global Warming Solutions Act and long-term emissions reduction between now and 2050.²⁰

But we find ourselves at an inflection point: With the retirements of the Brayton Point Coal Plant and the Pilgrim nuclear plant and a host of coal and oil plants through the region, we must continue to find ways to bring online zero carbon renewable energy resources to replace some of this existing capacity and move towards a fully decarbonized electricity grid.²¹ We review the CECP Update’s recommendations in five areas: expanded gas pipeline development, hydropower/clean energy imports, strengthening the Regional Greenhouse Gas Initiative (RGGI), investments in in-region renewable resources, and solar compensation.

Gas Pipeline Expansion Is Incompatible with Compliance with the GWSA

While the new Clean Energy and Climate Plan Update quantifies reductions from methane leaks in our gas distribution system and the replacement of Pilgrim’s generation with gas-fired power plants, it does not account for the impact of gas pipeline expansion on future greenhouse gas emissions levels. This is a significant omission. As the Attorney General’s recent Electric Reliability Study shows, expanded gas pipeline capacity is incompatible with the steep reductions necessary to achieve our GWSA requirements.²²

Gas-fired power plants may be an improvement over coal and oil, but they still emit significant amounts of greenhouse gases. The impact of building the NED project or the Eversource Access Northeast gas pipeline would be to lock-in substantial emissions from gas-fired power plants in the electric sector and the heating sector, making it challenging to decarbonize and move away from fossil fuels. Additional ratepayer support for gas pipelines, as the electric utilities are seeking approval for from the Department of Public Utilities (DPU), is



inconsistent with the GWSA and unnecessary to meet our energy needs. We urge the Baker administration to reconsider these large new gas pipeline additions.

Avoid Too Much Reliance on Hydropower Imports for Meeting our 2020 GHG Reductions

The CECP Update places a strong emphasis on enacting legislation to import substantial quantities of hydropower from Canada to achieve the 2020 GWSA requirements, a full 4.2% of the total emissions reductions planned for 2020. The Governor’s chief energy policy legislation, S. 1965, would

enable our state’s electric companies to enter into 20+ year contracts for up to 2400 MW of hydropower via transmission, or two large transmission lines, such as Eversource’s proposed Northern Pass project. This legislation as filed allows for but does not require Class 1 sources of renewable energy to be part of the procurement.²³ This is similar to the hydropower imports strategy in the original Clean Energy and Climate Plan.

Done properly, hydropower imports could play a role in achieving the 2050 requirements, but we reiterate that a strategy built around hydropower alone is insufficient to meet the GWSA’s 2020 requirements. First, any long-term contracts for clean energy



is an initial “pulse” of GHG emissions from the organic matter that is submerged and then decomposes. Due to this, large dams probably do not yield net GHG reductions until some years after construction.²⁴ As in our previous Scorecard, we believe that this must be properly accounted for when tallying lifecycle emissions reductions from hydropower facilities.

Strengthen the Regional Greenhouse Gas Initiative (RGGI)

Massachusetts led the way in securing a historic commitment by the nine Regional Greenhouse Gas Initiative (RGGI) states to lower the regional cap on power plant emissions from 165 million short tons per year to 91 million short tons per year in 2014, with an annual regional reduction of 2.5% each year through 2020. RGGI has constituted a win-win for the economy and the environment, having driven down emissions while creating jobs and economic opportunities by creating revenue to invest in energy efficiency projects.

Yet there are significant opportunities to achieve greater savings from electric power

supply must include a significant percentage of Renewable Portfolio Standard (RPS) eligible resources, especially onshore wind to avoid crowding these resources out of transmission opportunities. The good news is that a number of transmission proposals that plan to participate in future competitive clean energy contract solicitations would enable at least 30% onshore wind or more, helping to bring cost-effective and local wind energy resources online. Second, even if one or more new transmission lines delivering imported power were to become operational by 2020 (a very close question at this point), the assumption of the delivery of zero-carbon power needs reassessment. When a new hydroelectric dam is constructed, there

plants between now and 2030. In addition, we can assist other states to make a choice about whether to join RGGI or prepare themselves for trading in the RGGI market. Massachusetts should take a leading role in adjusting the RGGI program to achieve deeper emissions reductions and to begin to think through the framework for utilities to align the electric sector with the 2050 GWSA requirement.²⁵

Make the Case for Renewable Energy and Offshore Wind

Governor Baker stated in his State of the Commonwealth address that that “meeting our needs with renewable energy requires that we act now.²⁶ “ But the administration should embrace renewable resources in addition to Canadian hydropower. The CECP Update notes the need to look at renewable energy supplies other than hydropower in the long-term, but makes no definitive policy commitments. Moreover, the administration has largely stepped away from supporting Massachusetts’ solar leadership.

This represents a missed opportunity. In order to speed our transition to a zero carbon electricity supply by mid-century, we must

take bold steps to bring those resources online between now and 2020. For example, Massachusetts could and should be leading the country in building offshore wind off our coast. We must commit now to the process needed to bring these resources online. The administration should work to support a clean energy resources bill that includes a procurement of at least 2000 MW of offshore wind power. **Additionally, Massachusetts should go beyond the current expansion of the Renewable Portfolio Standard (RPS) and require an annual increase in the RPS of 2% per year.** This would help to bring new in-region renewable energy resources online independent any long-term commitments to offshore wind or hydropower resources.



Play a Positive Role in Addressing our Solar Policy Impasse

Massachusetts has been a leader in the development of solar resources. The administration has endorsed the goal of 1600 MW of solar adopted by the Patrick administration, but has taken steps that have slowed the further development of our solar resources. Secretary Beaton initially opposed an increase in our net metering caps last June, when the major proposals came before the state Legislature’s Telecommunications, Utilities, and Energy (TUE) Committee. The administration’s solar legislation released last August has some helpful elements, but also proposes substantial cuts in compensation under net metering for low-income, community shared, and municipal solar projects, which would likely undermine future solar development, and even bigger cuts for other project types.²⁷

The current impasse in the Legislature on solar policy threatens our solar market and the nearly 15,000 jobs that accompany it. The Baker administration can play a positive role in resolving this impasse and creating a balanced solar program that preserves

net metering at or near the retail rate for priority projects, while appropriately scaling back solar incentives under the renewable portfolio standard over time.

Recommendations

- ❑ Work to pass comprehensive energy legislation that includes Class 1 renewable energy resources, including offshore wind power
- ❑ Partner with RGGI states to push for deeper carbon cuts in the program beyond 2020
- ❑ Boost the RPS from a 1% gain per year to a 2% increase year over year
- ❑ Avoid investments in gas pipelines and other infrastructure that would hinder compliance with the 2050 requirements
- ❑ Take a positive and active role in preserving Massachusetts’ leadership in solar and resolving the impasse at the Legislature over net metering compensation and solar incentives



Transportation

GHG Emissions from Transportation	40.5%
GHG Reductions Target from CECP Update	6.1%
Strategies in CECP Update	
Federal and California GHG Standards	3.9%
GreenDOT	1.1%
Smart Growth	0.4%
Federal Emissions and Fuel Efficiency Standards for Heavy Duty Vehicles	0.4%
Regional Clean Fuel Standard	0.1%
Electric Vehicle Incentives	0.1%

Overview

Transportation is now our largest single source of GHG emissions, approaching 40.5%. Since 2010, the state has made the least progress in addressing emissions from the transportation sector, with emissions falling only slightly from their 2005 peak.²⁸ While the federal fuel economy standards have created substantial gains in efficiency in new passenger vehicles, the Baker administration

needs to embrace new strategies to drive down emissions in this sector. However, the CECP Update does not articulate new strategies to reduce emissions significantly by 2020, other than the existing federal vehicle fuel economy standards. The updated plan also drops a number of key policies to reduce emissions in the transportation sector from the previous



climate plan, including the Regional Clean Fuel Standard, pay as you drive (PAYD) auto insurance, and sales tax incentives for cars with lower emissions.²⁹ The administration is free to select its own policies, but additional state initiatives must be identified and pursued now or we risk an increase in pollution from our vehicles.

We review progress and make suggestions in four areas: GreenDOT, electric vehicles, the Transportation and Climate Initiative (TCI), and smart growth and zoning reform.

Take Prompt Action on Mass DOT Reforms

GreenDOT is one of the few state strategies that the CECP Update identifies in the transportation sector to achieve additional emissions reductions by 2020. GreenDOT originally sought to make GHG reductions a critical component of Mass DOT state and

regional transportation planning and in MassDOT and MBTA vehicles and operations, and to triple the share of travel by walking, biking, or public transit.³⁰ Since the 2014 Scorecard, MassDOT and Mass DEP issued a regulatory framework for achieving emissions reductions as called for by the original CECP under then-Governor Deval Patrick.³¹

But as the CECP Update notes, the required GHG assessment by MassDOT or the specific measures to make up any shortfall in emissions reductions have not been identified, leading the state to conclude that MassDOT will be short of its required GHG reductions.³² It is unclear how the administration anticipates reducing emissions by the 1 MMTCO²e identified in the report without any clear strategies to do so. While the new plan states that the administration will identify policy measures to close the gap, the best place to have done

so was in the CECP Update. Progress on MassDOT reforms should begin with filling the vacant position of the Assistant Secretary for GreenDOT.

Good Steps Forward on Electric Vehicle Deployment

Massachusetts has committed to being a leader in deploying zero-emissions vehicles with the 2013 Memorandum of Understanding (MOU) with states around the country calling for putting 3.3 million ZEVs on the road by 2025. A recent report notes that Massachusetts needs to increase deployment of electric vehicles from 5,500 this year to over 80,000 electric vehicles by 2020 to meet its goals under the MOU.³³

The Baker administration has initially shown support for greater deployment of electric vehicles, a major part of that strategy. For example, the Department of Energy Resources (DOER) announced that \$2 million in RGGI income will fund the electric vehicle (EV) rebate program. This program, entitled MOR-EV, provides rebates ranging from \$750 to \$2,500 based on vehicle category and battery capacity.³⁴ DOER will partner with the Massachusetts Auto Dealers Association to provide training for new “EV Specialists” for dealerships and provide recognition opportunities to Massachusetts dealers. This is a good step to increase EVs in the fleet and to help the private sector sell the vehicles. The administration is also in position to take further steps on EVs that

would constitute national leadership on this issue. First, the state should commit to continuous consumer rebate incentive funding, rather than funding that expires and must be replenished. Second, the state should add a dealer incentive to the rebate program similar to Connecticut’s EV rebate program and an increased rebate program focused on increasing EV adoption in low-income communities. The administration should also consider measures to substantially build out fast-charging infrastructure, especially along major highways and working with utilities to offer EV-specific charging rates and reducing or eliminating demand charges for EV charging infrastructure, especially in the case of RTA bus fleets.

Help Lead the Transportation and Climate Initiative (TCI) to Reduce Transportation Sector Emissions Region-wide

Massachusetts has participated in the regional Transportation and Climate Initiative (TCI), an initiative by Northeast and mid-Atlantic states to reduce fossil fuel consumption in the transportation sector. A recent report by the Georgetown Climate Center finds that clean transportation policies could cut transportation emissions by 11% across the region by 2030, over and above the sizable benefits from the federal fuel efficiency standards for cars and trucks. Comprehensive implementation of these policies could bring net cost savings of up to \$72.5 billion over 15 years for businesses and consumers, along with tens of thousands of new jobs and improvements in public health.³⁵ A focal point of the effort is a transportation pricing policy, such as a carbon allowance fee, a direct carbon fee or a mileage-based user fee to decrease emissions and provide funds for lower-carbon transportation options (similar to RGGI in the electric sector). Five



states (including four of Massachusetts’ immediate neighbors) and the District of Columbia announced that they would work together to develop potential market-based policies building on the TCI’s work to date. Massachusetts declined to participate actively in laying the groundwork for such a pricing policy.³⁶ Aligning with other states in a market-based program to internalize the cost of fossil fuels in the transportation sector is well worth the effort. We expect that the effort will bring analytic and innovative ideas to the states for consideration. We urge the Baker administration not only to actively participate, and also to lead.

Move Forward with Smart Growth and Zoning Reforms

State-of-the-art in smart growth planning encourages mixing residential, commercial, and public uses to create walkable neighborhoods where people can live, work, and shop without needing a car for many trips. The Baker administration’s new economic development bill includes a variety of incentives to promote such development which we applaud.³⁷ The administration should build on this by pursuing the following policies:

□ Pass zoning reform legislation to encourage compact, mixed-use development and reduce vehicle miles travelled (VMT):

The administration should take an active role in passing legislation that provides municipalities a better framework for planning and zoning, enhanced tools to plan for and manage growth, and incentives to reduce VMT and GHG emissions through better development patterns.³⁸ The zoning reform proposals before the Legislature offer the administration an important opportunity to achieve the increases in compact, mixed use development called for by the CECP Update.



□ Revise the Smart Growth Package:

The Smart Growth Policy Package (including the Sustainable Development Principles) as originally proposed was slated to achieve 0.5% of economy-wide savings forecast in the 2020 Plan but as time goes by without action that likelihood is shrinking. The administration has taken steps to include support smart growth, such as increasing funding for the MassWorks program. Now, the entire Smart Growth package needs to be supported and strengthened by building on the administration’s new “Community Compact Program” to support smart growth and putting the smart growth criteria in MassWorks into statute.³⁹

□ Use the Green Communities Program as a model for a “Communities for Sustainable Transportation” program:

Relying on existing models such as the Green Communities Act, and the Partnership for Southeastern Massachusetts Smart Growth Audit⁴⁰, create an incentive-based program to reward communities implementing sustainable transportation and land planning programs. The state could give priority to “smart growth” project proposals in cities and towns which are implementing a suite of integrated measures as an incentive for constant improvement in policies,

programs and approaches that lead to smart transportation and land use decisions.

Recommendations

- Promptly identify and implement strategies to achieve the GreenDOT emissions reductions by 2020
- Fully participate and lead in the regional Transportation and Climate Initiative
- Support zoning reform legislation and incentives for smart growth development



NON-ENERGY EMISSIONS: Reduce Highly Warming Chemicals

Emissions from Non-Energy Sources	7.3%
GHG Reductions Target from CECP Update	2.6%
Strategies in CECP Update	
Reducing Emissions from the Natural Gas Distribution Network	1.8%
Reducing SF ₆ Emissions from Gas-Insulated Switchgear	0.4%
Reducing Emissions from Plastics Combustion	0.3%
Stationary Equipment Refrigerant Management	0.1%

Overview

Greenhouse gas emissions from non-energy sources represent a small portion of Massachusetts’ overall emissions, but remain an important area in which to make cost-effective reductions in greenhouse gas emissions, given their high warming properties and long lifetimes. These gases include hydrofluorocarbons (HFC), methane, nitrous oxide, and sulfur hexafluoride

(SF6). Emissions are caused by leakage of refrigerants used in air conditioning and for electric utility transmission systems applications, as well as methane gas leaking from aging pipelines around the state. The CECP Update significantly increases the amount of reductions expected from non-energy emissions from 1.8% to 2.6% from 1990 levels because of the inclusion



of reductions in methane leaks from the natural gas pipeline distribution system. Recent action by the Legislature to curb gas leaks has spurred the Department of Public Utilities (DPU) to issue regulations on our utilities to replace gas pipelines that are leaking methane and costing ratepayers. Under these regulations, National Grid and Eversource have plans to replace leaking gas pipelines over the next 20-25 years. This pace should be accelerated to get this done more quickly. Additionally, Mass DEP promulgated regulations in 2014 to reduce emissions from (SF6) often-used circuit-breakers used in high-voltage electric transmission, making the reduction estimates of 0.4% reasonable and attainable.

However, further progress could be made to implement the regulations around stationary equipment refrigerant management as planned in the original Clean Energy and Climate Plan to reduce the use of HFCs as refrigerants. While DEP regulations in this area may not achieve the full 1.2% in the original CECP, they could still achieve additional reductions in GHGs before 2020.

Recommendations

- Promulgate Mass DEP regulations on stationary refrigerant equipment management
- Accelerate the replacement of leak-prone pipelines through utility action, greater municipal utility coordination, and account for the costs from leakage in utility business models



Planning for 2030: Policies for the 15 and 25-year Time Horizon

As we approach 2020, it is essential that the Baker administration and major institutions make decisions and undertake the planning now to ensure we can achieve our long-term GWSA requirement of at least 80% emissions reductions by 2050. To capture the expected emissions reduction benefits of many facets of long-term energy, transportation, land-use, and other policy planning requires thoughtful decisions to be made now if we would like them to bear fruit by 2030 and beyond, much like planting trees now will bear fruit and offer shade 15-25 years out. For policies on issues, such as new development patterns and major electricity grid improvements, it is time to set mid-term goals to lay the groundwork for Massachusetts' low-carbon economy.

Even with the work for 2020 underway, planning for future energy and climate policies is vital to create business certainty and to ensure that decisions being made today will not lead to stranded investments in the future. Providing clear regulatory certainty for investors in low-carbon technologies will spur research and innovation in the search for new technologies and know-how.

To begin this next phase, we recommend that the state set a greenhouse gas emissions reduction planning target of at least 40% by 2030 relative to emissions in 1990 and at least 65% by 2040 with separate targets for each sector: electricity, buildings and efficiency, transportation and non-carbon emissions. Such planning targets will be essential for the state to continue to track progress in reducing emissions and evaluate how its energy and economic development plans align with achieving our emissions goals.

It is also important to note that as the science of climate change has become clearer, the trend has been in the direction of consequences being worse than predicted at faster timeframes than predicted. As a result, Massachusetts may need to seek more aggressive emissions reductions strategies. Making sure that we are thinking about the long-term impact of our decisions will maximize our ability to move up the implementation timeframe of various policies, and minimize the pitfalls of making investments in technologies or policies that will provide short-term, partial reductions in

sectors where the ultimate goal is to zero out emissions. To this end, the administration must move forward with modeling in the vein of the EU 2050 Roadmap or the Deep

Decarbonization Pathways Project to ensure that we are planning efficiently to achieve deep decarbonization by 2050.

Massachusetts GHG Reduction Requirements & Recommendations for Interim Targets under the GWSA (MMTCO2e)

Horizon Year	Million metric tons in CO2 equivalent	% reductions
2020 (required by GWSA)	70.8	25%
2030 ⁴¹ (proposed)	53.5	40%
2040 (proposed)	36.2	65%
2050 (required by GWSA)	18.9	80%
Paris Agreement (under 2° C)	0.00	100%

Source: Hamel Consulting

The Conference of New England Governors and Eastern Canadian Premiers

In August 2015, at the 39th Conference of New England Governors and Eastern Canadian Premiers (NEG/ECP), Governor Baker joined

with governors from around the region in extending the goals in the 2001 NEG/ECP Climate Change Action Plan and adopting a

2030 reduction marker range of at least 35% - 45% below 1990 levels.⁴² The resolution states “that for the region to successfully continue reducing its emissions, the governors and premiers must identify and implement additional strategies, policies and measures at the regional level” in order to make the target. Massachusetts should

take an active role in staffing the Steering Committee designated to present a plan at the 2016 conference on how to move forward on the 2030 target. The 2030 target is meant to put the states and provinces on solid footing to achieve their long-term goal of 75-85% of 2001 emission levels by 2050 (at least 80% according to the GWSA).

Planning for A Modern, Low-Carbon Electricity Grid

The transition to low carbon electricity requires fundamental changes in the culture and regulatory structure of the electricity utilities. We must take steps to change the electric grid from a one-way wire to a two-way system that performs more like the Internet – managing energy and information to deliver more and cost less. A modern electricity grid presents the possibility of reducing greenhouse gas emissions and reducing energy costs to customers by moving away from inefficient, capital-intensive investments in centralized generating plants and new transmission infrastructure. For example, this new structure could connect solar panels, wind turbines, energy storage technologies, and ultra-efficient buildings in a web of more affordable electricity. Under the previous administration, the state

created a framework for the state’s electric utilities to begin to adopt new business models that would enable a transition to this more modern grid.⁴³ We are concerned that the focus of the Baker administration has shifted primarily to building new infrastructure, such as gas pipelines, rather than optimal outcomes for customers and for the environment. Secretary Beaton stated recently that utility reform should be done gradually so as to avoid “dramatic spikes in our utility costs.”⁴⁴ Rather, this should be achieved by aligning the financial incentives of our electric utilities with customer priorities, including reducing emissions, bringing online rooftop solar and other forms of local energy generation, and minimizing costly transmission investments. The need to re-engineer the electricity

services industry must be a multi-stakeholder process, and it must shift into high gear now. As the utilities are not yet fully able to envision their business without the current structure, the Baker administration needs to encourage innovative technologies, “big data” analytics, smart meters, and thinking beyond the meter. Governor Baker’s recent commitment to grid modernization with governors from around the country is positive and should be a basis for speeding implementation of electric utility industry reform.⁴⁵

Carbon Pricing as a Long-Term Policy

Massachusetts and the New England region have benefited greatly from a market-based approach to reducing emissions in the electric sector. The RGGI program is a good example of using a market based price signal and spending to build a virtuous cycle. Through 2013, the RGGI states reinvested over \$1 billion in auction proceeds in energy efficiency, clean and renewable energy, and other strategic energy programs to reduce demand, therefore making it easier and cheaper to cut emissions. More than 3.7 million households and 17,800 businesses

have participated in programs funded through these investments. The auction proceeds are reinvested in clean energy and consumer benefit programs that further reduce carbon emissions and consumer and business energy bills across the region. Recent analysis shows that the RGGI program has achieved economic benefits of \$1.3 billion from 2012-2014.⁴⁶

When we look at the mid-term and long-term, a clear, transparent price on carbon in all sectors of our economy is an important step. It would help boost many other policies, particularly in the transportation sector. A recent study for the Department of Energy Resources (DOER) on the impact of a statewide carbon fee found that such a policy would create substantial additional emissions reductions while having positive impacts on employment and personal income.⁴⁷ A number of leading companies support enacting a meaningful carbon price as a key strategy to cut emissions.⁴⁸ A carbon price must be on the table as a policy option and we need to have a full exchange of views on the use of the market for the mid- and long-term.

No Backsliding

Example

The Import of Increasingly Dirtier Gasoline in the Commonwealth Requires Tracking and Monitoring

Cutting fuel use is critically important, but if the fuels entering the state are getting dirtier, the hard won emissions reductions from reducing consumption will be for naught. North Dakota oil extraction has grown 535% from 2008 to 2014 and that shale oil with its very high carbon intensity is making its way into the Massachusetts fuel supply. At present, we can’t account for these emissions

because the fuel distributors are not required to disclose their production sources.⁴⁹ The fuel wholesalers and distributors selling fuel oil in the Commonwealth should be required to disclose the origin of their products, at least at the wholesale level. Two identical bills are pending in the legislature (H. 745 and S. 456) that call for fuel tracking.

Alignment to The Paris Agreement

The adoption of the International Paris Agreement this past December by over 190 governments is a major turning point in the global fight against climate change. The world’s nations agreed to limit global average temperature rise to “well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.”⁵⁰ Each nation also agreed to review and ratchet up efforts every five years from 2018, as well as provide financing support to developing countries. The Paris Agreement urges that the global

long-term ambition must be to achieve net zero carbon emissions by 2050 to avoid the very worst impacts of climate change. Increasingly, all major institutions must transition away from fossil fuels to clean energy to achieve GHG emissions reductions that are sufficient to limit temperature changes to these levels. We must keep the Paris Accord in mind while planning for the mid and long term. This outcome sends unmistakable signals to the global markets that governments are willing to do their part to tackle global climate change.



Approach

In 2014, GWSP Network members collaborated with the state Executive Office of Energy and Environmental Affairs (EEA) and a panel of state agency staff to perform a thorough review of existing state policies. In that effort, the GWSP assessed the potential of each policy to deliver GHG reductions by 2020.⁵¹ For the second Scorecard, we have re-examined those key policies and programs to see which were being implemented, at what level, what else had changed in the economy and if the expected emissions reductions were likely to be realized under the plans enumerated in the most recent Clean Energy

and Climate Plan (CECP) Update by Governor Baker and EEA officials. We used the updated CECP data and particularly examined trends and projects that were left out of the CECP Update.

Further, we used the state’s Greenhouse Gas Emissions Inventory as the basis for reviewing the emissions baseline year (1990), their projected “business-as-usual” emissions for 2020 and progress made under the GWSA and public presentation materials from administration reports, public statements and presentations. MassDEP prepared emissions estimates using the U.S. Environmental Protection Agency’s (EPA) State Inventory Tool (SIT), which forecasts emissions through 2030.⁵²

Since this is the Baker administration’s first plan, we decided that a high-level assessment of the policies and emissions reductions estimates included in their Clean Energy and Climate Plan Update was most reasonable for the 2016 scorecard.

Finally, we solicited feedback from the members of the GWSP and their assessments in diverse areas including energy efficiency, renewables, legal frameworks and land use as the basis for our evaluation and joint recommendations.

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About the GWSP

The Global Warming Solutions Project (GWSP) is a multi-year initiative supporting a network of diverse stakeholders, each wanting to help the Commonwealth honor its climate commitments by meeting the GHG reductions mandated by the GWSA. The network is coordinated by ELM and

comprised of stakeholders from business, environmental, public health, planning, and environmental justice organizations. The network members engage in joint action and advocacy on shared priorities. The members strengthen connections between each other and their constituencies, as well as across coalitions and networks. The network independently assesses the state’s progress on achieving its GHG emissions reductions requirements: 25% below 1990 levels by 2020 and at least 80% below 1990 levels by 2050.



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