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DETERMINATION OF GREENHOUSE GAS EMISSION LIMIT FOR 2020

Pursuant to the Global Warming Solutions Act (Chapter 298 of the Acts of 2008, and as codified at M.G.L. c. 21N, "Chapter 21N") **I hereby establish a statewide greenhouse gas (GHG) emissions limit of 25 percent below statewide 1990 GHG emissions levels by the year 2020**. As detailed below, this legally binding statewide greenhouse gas emissions limit is consistent with the directives of the Massachusetts legislature as embodied in the Global Warming Solutions Act (GWSA) and Chapter 21N, the Climate Protection and Green Economy Act. In a separate report entitled Massachusetts Clean Energy and Climate Plan for 2020 also issued today pursuant to Chapter 21N, I have outlined a portfolio of policies designed to achieve the 2020 emissions limit established herein. Establishing this statewide GHG emissions limit and outlining the specific and practical policy measures that can achieve that limit is a milestone in the Commonwealth's ongoing efforts to create a vibrant clean energy economy, reduce energy costs for consumers, increase energy independence and contribute toward stabilizing our climate.

Background

Massachusetts is at the end of the energy pipeline, and our customers pay for that in increasing and volatile costs, and dependence on sources of energy outside our state and region. The global market is also showing greater demand for clean energy technology and services and Massachusetts has the entrepreneurial know-how, the venture capital, and the quality workforce to seize an enormous economic opportunity, and to address one of the most pressing environmental concerns of our era.

The international consensus on climate released in 2007 by the Intergovernmental Panel on Climate Change (IPCC) found that the "*warming of the climate system is unequivocal.*" There is broad agreement and very high confidence that the documented increase in greenhouse gas concentrations is changing the Earth's climate—not only raising average global temperatures

but more importantly altering regional and local climatic and weather patterns.[1] Our climate is already changing, and there is scientific consensus that the changes are largely due to the combustion of fossil fuels and other human activities that increase atmospheric concentrations of GHGs.

The ongoing debate in the scientific community is not about whether climate change will occur, but rather about the rate and extent to which it will occur, what the regional and local impacts will be, and what adjustments will be needed to address its impacts through adaptation or mitigation efforts. Changes to Massachusetts' climate have already begun and will continue over the course of this century.

Since GHG emissions are primarily and directly tied to the use of fossil fuels for energy, the best strategy against climate change is moving toward a clean energy economy of energy efficiency, renewable energy, and other non-emitting ways to meet our energy needs. With its unparalleled academic and technical resources, local sources of investment capital, and highly skilled workforce, Massachusetts is poised to lead the transition to a clean energy economy nationally and to disproportionately benefit from the economic development and jobs resulting from that transition. Taking action to reduce GHG emissions in Massachusetts can both set an example of climate change mitigation for the nation and jumpstart the growth of clean energy jobs in the Commonwealth.

The GWSA, passed by the Massachusetts Legislature in 2008 and signed into law by Governor Deval Patrick, was a clear directive to limit and reduce the emissions of GHGs in Massachusetts in response to the overwhelming scientific evidence concerning global climate change and to the economic opportunity for Massachusetts inherent in leading the transition to a clean energy economy. That legislative directive, the formulation of this GHG emissions limit for the year 2020, and the establishment of a series of GHG reduction mitigation measures as outlined in the *Massachusetts Clean Energy and Climate Plan for 2020* collectively constitute a strong commitment by the Commonwealth to reducing its contribution to global climate change, while seizing opportunities to lower energy costs and grow our clean energy economy.

Statutory Mandate

In August 2008, Governor Deval Patrick signed the GWSA into law; Chapter 21N became effective in November of that year. The core mandate of the GWSA is that the Secretary of the Executive Office of Energy and Environmental Affairs (EEA), in consultation with other State agencies and the public, set economy-wide GHG emission limits for Massachusetts that are:

- Between 10 percent and 25 percent below statewide 1990 GHG emission levels by 2020; and
- 80 percent below statewide 1990 GHG emission levels by 2050.

[1] IPCC (Intergovernmental Panel on Climate Change), 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Chapter 21N required that these emissions limits be established by January 1, 2011 and that a plan be created addressing how the emissions reductions will be achieved. Sections 3(a) and 14 of Chapter 21N also required the Massachusetts Department of Environmental Protection ("MassDEP") to determine, "*the statewide greenhouse gas emissions level in calendar year 1990 and reasonably project what the emissions level will be in calendar year 2020 if no measures are imposed to lower emissions other than those formally adopted and implemented as of January 1, 2009. This projection shall hereafter be referred to as the projected 2020 business as usual level.*"[2] MassDEP issued its *Statewide Greenhouse Gas Emissions Level: 1990 Baseline and 2020 Business As Usual Projection* on July 1, 2009.

In March 2009, I established a Climate Protection and Green Economy Advisory Committee to provide input on measures to reduce GHG emissions in accordance with the GWSA. As required by the GWSA, the Climate Protection and Green Economy Advisory Committee included members representing the following sectors: commercial, industrial and manufacturing; transportation; low-income consumers; energy generation and distribution; environmental protection; energy efficiency and renewable energy; local government; and academic institutions. Advisory committee meetings were held on May 11, 2009; September 16, 2009; February 5, 2010; June 14, 2010; and November 18, 2010.

On April 30, 2010, the consultant commissioned by the state to analyze clean energy and climate strategies, Eastern Research Group, submitted a report to the Advisory Committee, *Initial Estimates of Emissions Reductions from Existing Policies Related to Reducing Greenhouse Gas Emissions*. This report analyzed the expected GHG reductions through 2020 that would result from the policies and programs implemented or initiated since the beginning of the Patrick Administration.

On April 30, 2010, EEA issued a *Draft Climate Implementation Plan: A framework for meeting the 2020 and 2050 goals of the Global Warming Solutions Act*. In that *Draft Climate Implementation Plan*, I signaled my intention to set a 2020 emissions reduction requirement of 18 to 25 percent below 1990 levels and, for the plan to achieve this limit, to give greatest consideration to those measures that show potential for significant energy cost savings and job creation.

In May, 2010, Eastern Research Group submitted an additional report, *Cost-Effective Greenhouse Gas Mitigation in Massachusetts: An Analysis of 2020 Potential*. In this second report, I asked the consultants to consider additional GHG reductions (beyond those already in place) that would be possible with further cost-effective policies.

Chapter 21N directed me to analyze the feasibility of measures such as electric generating facility aggregate limits, direct emissions reduction measures in various sectors of the economy, alternative compliance mechanisms, market-based compliance mechanisms, and the use of potential monetary and non-monetary incentives to achieve the emissions reduction limit.

A total of eight public hearings were held in June 2010 to solicit comment on the *Draft*

Climate Implementation Plan. Nearly 200 individuals and organizations provided oral or written comment on the 2020 emissions reduction requirement and on measures to meet the requirement.

Analysis conducted by the staff of my agencies pursuant to the requirements of Chapter 21N and information gathered from the Climate Protection and Green Economy Advisory Committee, the public hearings, and written public comments were all used to advise me in the preparation of the final *Massachusetts Clean Energy and Climate Plan for 2020.* The *Massachusetts Clean Energy and Climate Plan for 2020*, issued separately, outlines a range of proposed measures to be adopted, in whole or in part, by the Commonwealth.

Findings of Fact

In accordance with Section 4 of Chapter 21N, I make the following findings:

- I have considered relevant information pertaining to GHG emissions reduction programs in other states and nations when establishing the emissions reduction limit and selecting GHG reduction portfolio measures;
- I have considered and evaluated the total potential costs and economic and non-economic benefits of various reduction measures to the economy, environment and public health. Analyses have been conducted using the best available economic models, emissions estimation techniques, and other scientific measures;
- I have identified opportunities for emissions reduction measures from all verifiable and enforceable voluntary actions and incorporated them into the *Massachusetts Clean Energy and Climate Plan for 2020* as applicable;
- I considered establishing emission limits by sources or categories of sources as well as *de minimis* exemptions from such limits, but rejected this approach as inconsistent with the preference I have expressed for measures that result in cost savings and/or job growth.
- A series of public hearings was held in accordance with the provisions of M.G.L. c.30A to solicit input on the proposed 2020 GHG emissions limit and a draft version of the implementing plan. As directed in the GWSA, a portion of these hearings were held in regions that have the most significant exposure to air pollutants, including, but not limited to, communities with minority populations, communities with low-income populations, or both. A total of eight hearings were held between June 1 and June 22, 2010, with hearings held in Pittsfield, Worcester, Lowell, Lakeville, Springfield, Falmouth, and Boston. Written comments were accepted through July 15, 2010.
- MassDEP determined the statewide GHG emissions level in calendar year 1990 and projected the emissions level in calendar year 2020 if no measures are imposed to lower emissions other than those formally adopted and implemented as of January 1, 2009. This "Business as Usual" (BAU) analysis indicated that GHG emissions in Massachusetts have been generally stable since 1990 and will remain relatively stable through 2020;
- The report *Initial Estimates of Emissions Reductions from Existing Policies Related to Reducing Greenhouse Gas Emissions* estimated that policies and programs instituted since January 2007 should result in approximately an 18 percent reduction in GHG below 1990 levels by 2020;
- The report *Cost-Effective Greenhouse Gas Mitigation in Massachusetts: An Analysis of*

2020 Potential indicated that the technical potential of additional cost-effective policies and programs could result in GHG emission reductions of up to 35 percent below 1990 levels by 2020;

- Based on analysis presented in the *Massachusetts Clean Energy and Climate Plan for 2020*, the portfolio of measures examined could reduce GHG emissions 18 percent to 33 percent below 1990 levels by 2020. This range captures uncertainties in future economic trends, energy markets, and implementation of proposed policies.

Determination of 2020 Limit

In determining the GHG emissions limit for 2020, I am aware that actions taken under other statutory mandates, such as the Green Communities Act of 2008, and established state policies to promote energy conservation and cleaner energy sources are expected to produce GHG reductions of 18 percent below 1990 levels by 2020. Therefore, the question before me is where in the remaining statutory range of 18 percent to 25 percent reduction it is practical and appropriate to set the 2020 limit. Central to that question is what additional actions of policy, regulation, and legislation could be pursued that would achieve additional emissions reduction by 2020 and beyond. As I indicated in the *Draft Climate Implementation Plan* issued April 30, 2010, I have considered a wide range of measures but included in the *Massachusetts Clean Energy and Climate Plan for 2020* only those additional measures that provide significant energy cost savings or create clean energy jobs, and I use the sum total of GHG reductions that would be achieved by those cost saving and job producing measures as guidance for setting the 2020 limit.

I received many public comments urging me to set the 2020 limit at or above 25 percent, as well as a smaller number of comments suggesting going no further than 19 or 20 percent. I note that, in setting the limit, I am constrained by the statutory range of 10 to 25 percent below 1990 levels for 2020. I am also mindful of the statutory mandate of 80 percent reduction by 2050, which leads me to reach as high as is practical in setting the initial limit for 2020.

I also take note of the many constructive comments I received on possible measures to achieve the 2020 limit and, indeed, go beyond it in reducing GHG emissions. While I cannot respond to each comment individually, rest assured that all of these comments were carefully considered in the development of the policies incorporated in the Massachusetts Clean Energy and Climate Plan for 2020.

Based on the findings above and with full consideration of the public comments received, I hereby determine that a responsible and achievable GHG emissions reduction limit for 2020 that maximizes opportunities to realize energy cost savings, increase energy independence, and promote growth in clean energy jobs in Massachusetts is 25 percent and that the aggregate of the portfolio of measures, discounting for uncertainty and potential implementation constraints, outlined in the *Massachusetts Clean Energy and Climate Plan for 2020* is sufficient for the Commonwealth to achieve the 2020 reduction limit of 25 percent. I also find that a limit of 25 percent will not have an undue economic impact but rather provide opportunities for energy cost savings and spur economic growth, even as it moves the Commonwealth towards the ultimate statutory mandate of 80 percent reduction by 2050.

Conclusion

Pursuant to the findings and determination made above, I have met my obligations under Chapter 21N to establish a GHG emissions limit between 10 percent and 25 percent below 1990 levels for the year 2020 by January 1, 2011. This limit, which I have set at 25 percent, together with the portfolio of GHG mitigation measures presented in the *Massachusetts Clean Energy and Climate Plan for 2020*, is a substantial step forward in the Commonwealth's ongoing efforts to grow our clean energy economy, reduce energy costs, become more energy independent and minimize climate change impacts to the citizens, environmental resources, and economy of Massachusetts.

December 29, 2010
Date

Ian A. Bowles