

Comments on the Massachusetts Clean Energy Standard Discussion Draft Regulation

Signed Documents

Sterling Municipal Light Department

Brookfield Renewable Energy Group

Jones River Watershed Association

Clean Asset Partners

West Boylston Municipal Light Plant

RENEW

Clean Water Action

Exelon

Mass Energy Consumers Alliance

Municipal Electric Association of Massachusetts

Joint comment from: Danvers Electric Division; Ipswich Municipal Light Department; Norwood Municipal Light Department; Reading Municipal Light Department; Shrewsbury Electric and Cable Operations; West Boylston Municipal Light Department

Moomaw, William

New England Power Generators Association

Sheehan, Margaret

Pilgrim Watch

Sierra Club

Taunton Municipal Light Plant

The Energy Consortium

TransCanada Power Marketing

Joint comment from: Clean Water Action; Toxics Action Center; Environment Massachusetts; Berkshire Environmental Action Team; Pilgrim Watch; No Fracked Gas in Mass; Concerned Neighbors of Pilgrim; Pilgrim Coalition; Cape Downwinders; Duxbury Nuclear Advisory Committee; Golden Rule Farm

Entergy

Covanta

Nalcor Energy

Northeast Utilities Service Company

Bloom Energy

Email Messages

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Arezzo, Diana

Kennedy, Devon

Havel, Timothy

Romatoski, Rebecca

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Maurer, William
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Lightner, Heather M. – Concerned Neighbors of Pilgrim
Dickinson, Elaine
Rosenkranz, Ann
Baker, Anna – Pilgrim Coalition
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Kirkland, Emily - Better Future Project
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Nevin, Sarah
Turco, Diane
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Carlton-Foss, John - Climate Action Citizens
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Agnew, David
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Waldstein, Joseph
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Brown, Mira

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October 17, 2014

Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108

Subject: Massachusetts DEP, Clean Energy Standard

Dear Mass DEP:

Thank you for facilitating stakeholder feedback regarding the Clean Energy Standard (CES) draft regulations. The Sterling Municipal Light Department (SMLD) is one of forty community-owned, non-profit municipal lighting plants (MLP) in Massachusetts. The SMLD provides reliable and cost effective electricity to approximately 3,700 residents and businesses in Sterling, Massachusetts. MLP's were established by vote in individual municipalities to serve the citizens and businesses in those municipalities. The MLP's have the exclusive right to distribute electricity within the borders of the municipalities they serve and many have done so since the early 1900's. This local control of the provision of electricity is termed Public Power.

Sterling and all other MLP's are overseen by locally elected or appointed Boards and their ratepayers directly participate in the MLP decision making process. MLP's are structured and operate under a completely different business model than Investor Owned Utilities (IOU's). One key difference is that MLP's own generation assets and can execute long-term contracts for energy. Because MLP's are structured differently than IOU's and are governed by the ratepayers they serve, they have been excluded from all previous legislation directed at the IOU's such as:

- 1997 Legislation to Restructure the Electric Utility Industry
- 2002 Renewable Energy Portfolio Standard for Retail Electricity Suppliers
- 2008 Green Communities Act

MLP's should be excluded from the Clean Energy Standard for the same reasons MLP's were excluded from previous electric utility legislation targeting the Commonwealth's IOU's. MLP's have historically, on average, been the lowest electric rates in the Commonwealth. The SMLD's long-term power portfolio already includes a diverse mix of renewable, stable and clean energy for all our customers and will continue to be a leader in renewable energy. In May of 2014 the SMLD was recognized as number one in the COUNTRY for solar watts per customer at 831. Our closest competitor was almost half that amount. In the spring of 2014, with 2 solar contracts, 8 hydro contracts and 2 wind contracts we were able to provide over 35% of clean renewable energy to our ratepayers while maintaining a portfolio that is 74% carbon free. SMLD has met the State requirements for 20% of renewable energy already but we remain curious why energy storage (or lack of) is not being addressed.

If energy storage was required it would have prevented the market and capacity deficiencies that National Grid experienced as recently as September 2, 2014. When at 12:00 pm a capacity deficiency notice was received by us from National Grid, at 2 pm a thunderstorm came through requiring the need for replacement power and putting solar into a market that was at \$550/mwhr. Requiring more intermittent resources without adequate energy storage capabilities only compounds this problem.

The SMLD's current portfolio averages between 20-25% renewable energy and we continue to seek additional power supply that meets the needs of our ratepayers. We are invested in a diverse and cost effective energy portfolio that commits us to purchasing the majority of our energy requirements for extended timeframes. Some of our power supply obligations extend beyond 2030 therefore prohibits the SMLD in the CES. For the reasons stated the SMLD highly recommends that the DEP exclude MLP's from the CES.

I thank you for your attention to this matter and look forward to a prompt response from the Massachusetts Department of Environmental Protection.

Sincerely,



Sean Hamilton
General Manager

cc: Senator Jennifer Flanagan
cc: Representative Harold Naughton
cc: Representative Kimberly Ferguson

October 27, 2014

Commissioner David W. Cash
The Massachusetts Department of Environmental Protection
MassDEP Headquarters
One Winter Street
Boston, MA

Re: Proposed Massachusetts Clean Energy Standard

Brookfield Renewable Energy Partners (Brookfield Renewable) operates one of the largest publicly-traded, pure-play renewable power platforms globally. Its portfolio is primarily hydroelectric and totals over 6,700 megawatts of installed capacity. Diversified across 72 river systems and 13 power markets in the United States, Canada, Brazil, and Europe, the portfolio's output is sold predominantly under long-term contracts and generates enough electricity from renewable resources to power more than three million homes on average each year. Brookfield Renewable has a significant presence in Massachusetts including a 600 MW hydroelectric pumped storage facility (Bear Swamp) and a 10 MW hydroelectric facility (Fife Brook) in western Massachusetts, its North American System Control Center located in Marlborough and its United States headquarters in Boston, employing in total nearly 150 people. For more information, please visit www.brookfieldrenewable.com. Additionally, another Brookfield company, Brookfield Property Partners, owns and operates 75 State Street in Boston.

Brookfield Renewable submits these comments in conjunction with the October 27th Stakeholder meeting to discuss a possible Massachusetts Clean Energy Standard.

Massachusetts has led New England in developing progressive policies towards a cleaner energy supply mix. Nonetheless, the region as a whole is facing three fundamental challenges on the electric grid: (i) environmental compliance stemming from state, regional, and federal policies, (ii) price volatility reflected by over reliance on natural gas, and (iii) lack of electric transmission infrastructure to access incremental low-carbon supply.

A Massachusetts Clean Energy Standard (CES) could overlay successfully the existing regulations, and be a way to address all three of these fundamental challenges. Most notably, a CES could provide a framework for Massachusetts to meet its greenhouse gas emissions reduction goals per the Global Warming Solutions Act, while also allowing for compliance with the (possible) federal Environmental Protection Agency's Clean Power Plan.

Previous conversations at the federal level concerning a National Clean Energy Standard have revolved around the questions of "what is clean?" Legislative intent changes the answer, depending on if "clean" is measured by carbon intensity, having a diversified energy mix, and/or wanting to advance technologies that could have importance in a global market.

Brookfield believes our New England facilities should fit into the definition of "what is clean" under all three of the legislative intents listed above.

We operate three technologies in New England:

1. **Hydro Pumped Storage** – Brookfield operates a 600 MW hydro pumped storage facility in Rowe and Florida, Massachusetts. This facility is very flexible and heavily relied upon by ISO-NE to maintain system reliability - periods when New England's electricity consumers place the heaviest demand on the system. The only other large facilities that can provide this benefit are oil or natural gas – both carbon emitting - resources.
2. **Hydro Run of the River** – Brookfield has small low-impact hydro facilities in Massachusetts, New Hampshire, and Maine – with facilities both with and without pondage. Our facilities without pondage capabilities function as intermittent power sources with well-understood characteristics. Our pondage facilities can either be considered peaking or base load. This hydro can be combined with new wind energy projects to provide cleaner, affordable, predictable and reliable, electricity to southern New England.
3. **Wind** – Brookfield has New England's second largest wind farm, the 99 MW Granite Reliable Wind Farm in northern New Hampshire.

Additionally, while Massachusetts has a relatively constrained environment for the development of new clean energy resources, there lies considerable ability to bring in additional clean energy through new transmission infrastructure – firmed with small hydro – from neighboring jurisdictions. Historically, this conversation in Massachusetts has been importing large scale hydro from Canada. Brookfield aims to bring incremental clean energy to Massachusetts by aggregating existing small hydro from neighboring regions, combining it with new Class I renewables, and bringing it into southern New England on new transmission lines.

If Massachusetts decides to develop a CES, much attention should be given on the best ways to define a “clean resource”. If the Commonwealth were to exclude existing non-emitting resources from qualifying, it could provide a framework for small hydro resources to be decommissioned early as they are no longer economical in this environment, which would go against the expected goals of the program. Additionally, Massachusetts could miss out a competitive source to increase the diversity of supply to provide a clean, reliable and cost-effective product (the combination of new wind and existing small low-impact hydro on new transmission lines, for example).

Thank you for the opportunity to submit these comments and I look forward to more discussions.

Jeff Bishop

/s/

Senior Director, Governmental Affairs



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October 31, 2014

Mr. Will Space
Massachusetts Department of Environmental Protection
1 Winter Street
Boston, MA 02108
climate.strategies@state.ma.us

RE: Comments Regarding DEP's Proposed Clean Energy Standard for Massachusetts

Dear Mr. Space,

On behalf of our approximately 1,500 supporters, please accept the following comments from Jones River Watershed Association regarding Mass. Department of Environmental Protection's (DEP) proposed Clean Energy Standard (CES) for Massachusetts. We commend DEP for developing the CES, as well as the Commonwealth for being a leader in energy efficiency efforts and promoting renewable energy. We fully support a plan that phases out the dirtiest energy sources (e.g., fossil fuels) and supports the growth of renewable sources (e.g., solar, wind).

However, we strongly believe DEP should not label nuclear as "clean" energy for the reasons outlined below.

CLEAN ENERGY TECHNOLOGIES

When defining which technologies are to be labeled as clean energy, DEP should not only consider carbon emissions, but the total environmental impact caused by the technology. For example, nuclear power production is fraught with problems related to pollution, water usage, destruction of aquatic life, generation of highly toxic nuclear waste that currently has no repository, etc.

Nuclear reactors use uranium as fuel. In the U.S., in-situ leaching is the most common way to mine uranium – especially in the western part of the country. Uranium ore that is naturally found in the ground is dissolved using chemicals and pumped up to the surface, where it is processed using more chemicals. This process contaminates water, air and soil and has caused significant health problems for mine-workers and surrounding communities. Pollution from uranium mining has had serious health impacts on Native American nations in the U.S., especially the Navajo nation.¹ Just

¹ Klauke E. 2013. Impacts of Resource Development on Native American Lands: Human Health Impacts on the Navajo Nation

this past April, the U.S. EPA and U.S. DOJ announced a record-breaking \$5 billion settlement related to the significant environmental damage and toxic pollution caused by the Kerr-McGee company at multiple sites across the country, including uranium mines in the Navajo Nation. The company exposed people to radioactive waste and contaminated soil and water, and tried to leave it all for the local communities and government to clean up.²

Unlike renewable forms of energy, nuclear plants require huge quantities of water for cooling and generating power. This is especially true for older generation nuclear plants that still rely on antiquated once-through cooling systems, which withdraw millions of gallons of water from natural sources daily. For example, Pilgrim Nuclear Power Station in Plymouth, MA (Pilgrim) uses up to 510 million gallons every day from Cape Cod Bay. While some plants recycle water in a closed-loop system, those, like Pilgrim, that use once-through systems negatively impact the environment through water consumption, wastewater discharge, thermal pollution of source waters, and direct impacts on aquatic organisms of all life stages. Further, in the case of Pilgrim, its NPDES permit has long been expired, and conditions are not being followed.

Nuclear operations also generate large quantities of highly radioactive nuclear waste as a byproduct, and there is currently no national plan for safe long-term storage of this toxic substance. Nuclear waste is expected to be highly radioactive for hundreds of thousands of years according to the Nuclear Regulatory Commission,³ however we currently do not know how to safely store it for even a few hundred years.

Nuclear power cannot be considered a “clean” source of energy. It has tremendous uncalculated costs and poses enormous health consequences to the environment and nearby populations as witnessed in Fukushima and other nuclear disasters.

As discussed in the Synapse report, including nuclear in DEP’s CES would also result in windfall profits (i.e., existing facilities profit from CES at ratepayer expense, without any changes in generation), which would only prevent renewables from growing.

NUCLEAR NOT EMISSIONS FREE

Nuclear energy is not emissions-free. Unlike coal and oil-burning plants, nuclear fission does not produce carbon emissions; however, there are substantial emissions associated with the life-cycle of nuclear power. For example, there are emissions associated with uranium mining/processing, construction of plants and decommissioning processes, and general daily plant operations. One

² U.S. EPA. Case summary: settlement agreement in Anadarko fraud case results in billions for environmental cleanups across the country. <<http://www2.epa.gov/enforcement/case-summary-settlement-agreement-anadarko-fraud-case-results-billions-environmental>>

³ U.S. NRC. 2012. High-level waste. <<http://www.nrc.gov/waste/high-level-waste.html>>

study estimates that, while nuclear CO2 emission levels are well below that of coal and natural gas, it emits twice as much CO2 as solar and wind.⁴

While we are already locked into the costs of decommissioning and waste fuel management at Pilgrim, closing the facility sooner rather than later will also spare the atmosphere added GHG emissions from new uranium fuel production and added waste.

As mentioned above, DEP should not only consider life-cycle carbon emissions when labeling energy sources, but it should also consider broader environmental harms caused by the technology. While we know that the life cycle of nuclear is environmentally destructive today, this fact was not always known. In the late 1950s, the peaceful use of atomic power became a symbol of progress – a solution to impending shortages of fossil fuels, an icon of scientific achievement, and a way to promote cooperation among nations. It wasn't until almost two decades later that the safety and environmental problems associated with nuclear reactors gained increasing attention. DEP should have a way to reassess generators down the line if new information is discovered regarding what we today consider clean energy sources. That way, generators are not locked in as 'clean' forever. We suggest DEP periodically reassess generators for the CES.

ELIGIBILITY OF NEW AND EXISTING GENERATORS

Eligibility should be limited to new generators and all existing nuclear power plants should be excluded. However, if new-generation nuclear facilities are developed, they should also not be labeled as clean energy by DEP due to the reasons outlined above. It should not necessarily only be a date of commencement that excludes generators from being labeled as “clean,” but rather the total environmental harms cause by its life-cycle and the resulting waste generated by the generator (i.e., high- and low-level spent nuclear wastes). We would also support an appropriate eligibility date as long as it would not exclude truly clean renewables from being included.

IMPACTS FROM CLIMATE CHANGE

Consistent with the *Clean Energy and Climate Plan*, and the requirement of reducing greenhouse gas (GHG) emissions by 80% by 2050, DEP intends to implement a CES. DEP is considering energy production impacts to climate change (i.e., CO2 emissions), but it's important to note the serious impacts on some technologies from climate change patterns that are now inevitable.

In July 2013, the U.S. Department of Energy published a report outlining vulnerabilities to these climate trends at energy facilities, including nuclear power stations.⁵ The report specifically cites climate change patterns such as increasing air and water temperatures, increasing intensity of storm events, sea level rise, and storm surges as having potential negative implications for

⁴ Sovacool, B. 2008. Valuing the greenhouse gas emissions from nuclear power: a critical survey. *Energy Policy* (36): 2950–2963. <https://www.nirs.org/climate/background/sovacool_nuclear_ghg.pdf>

⁵ U.S. Dpt. of Energy. 2013. U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather. 84 pp.

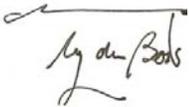
thermoelectric forms of power generation (including nuclear facilities). Implications for coastally-based nuclear facilities include 1) reduction in plant efficiencies and generation capacity due to increasing air and water temperatures, 2) increased risk of exceeding thermal discharge limits due to increasing water temperatures, and 3) increased risk of physical damage and disruption due to increasing intensity of storm events, sea level rise, and storm surge.

In the case of Pilgrim, the effects of climate change patterns (e.g., rising sea levels, warming sea water and air temperatures, increasing intensity of storms and related storm surges) are increasing risks to safety and environmental health. These patterns threaten the functionality of the facility's cooling system that is essential to normal (and safe) operations, are likely to cause flooding events that will have site-wide impacts, including destabilizing the dry cask nuclear waste storage facility being constructed only about 150 feet from the shore of the Bay (please see attachment: marked-up 2014 photo of the Pilgrim site).

In the CES, DEP must consider the impacts that climate change patterns will have on all generators. The environmental harms that result from generator vulnerabilities need to be assessed so that individual generators are not promoted despite their potential to wreak havoc on the environment and human populations.

Thank you for considering our comments.

Sincerely,

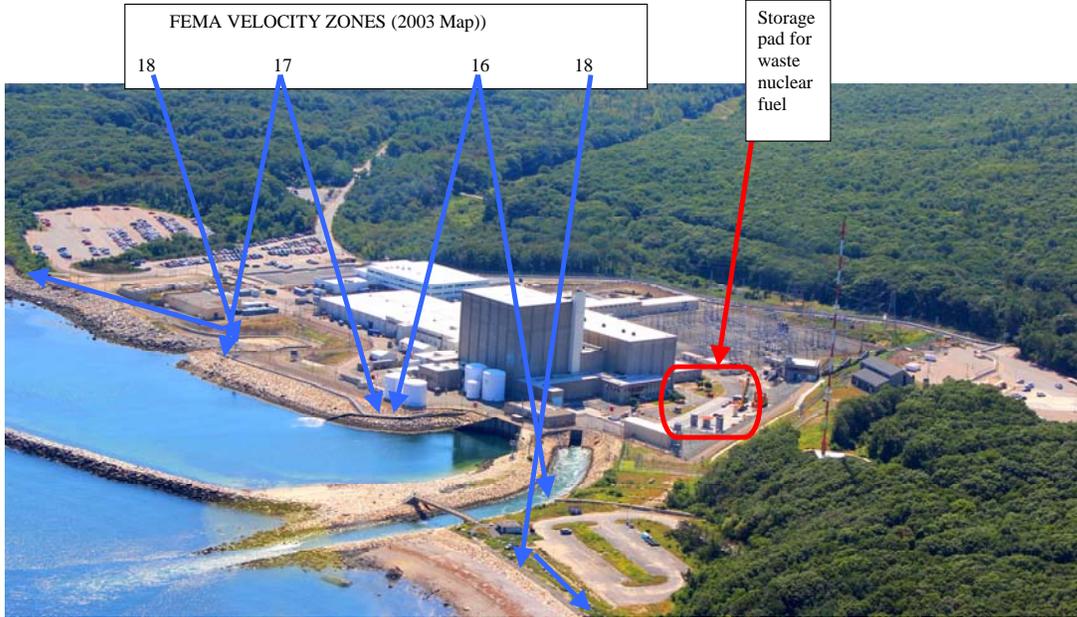
A handwritten signature in black ink, appearing to read "Pine duBois". The signature is written in a cursive style with a horizontal line above the name.

Pine duBois
Executive Director
Jones River Watershed Association
pine@jonesriver.org

A handwritten signature in black ink, appearing to read "Karen Vale". The signature is written in a cursive style.

Karen Vale
Jones River Watershed Association
Cape Cod Bay Watch Program Manager
karen@capecodbaywatch.org

[Attachment: 2014 Photo of the Pilgrim site]
Floodplain arrows are approximate





VIA Email to: climate.strategies@state.ma.us

November 3, 2014

William Space
Environmental Analyst
Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108

Re: Comments on MassDEP Clean Energy Standard Discussion Draft Regulation

Dear Mr. Space,

Clean Asset Partners Corporation appreciates the opportunity to provide comments to the Massachusetts Department of Environmental Protection (“MassDEP”) on the Clean Energy Standard (“CES”) discussion draft regulation.

Clean Asset Partners is a Massachusetts company that manages participation in Renewable Energy Certificate (“REC”) and Solar Renewable Energy Certificate (“SREC”) markets in Massachusetts and the New England region for commercial, non-profit, municipal, and residential renewable energy system owners. Our comments on the discussion draft CES regulation follow.

310 CMR 7.75 (3) Applicability

Synapse Energy Economics’ report on their analysis of potential Massachusetts CES policy found that exempting Municipal Light Plants (MLPs) would increase compliance costs for the majority of Massachusetts ratepayers, including residential, commercial, and industrial ratepayers outside MLP districts. The proposed approach to include MLPs would reduce costs and would enable all Massachusetts ratepayers to collectively participate in achieving the Commonwealth’s environmental objectives set forth in the Global Warming Solutions Act. Under the discussion draft regulation, it appears that MLP communities would be able to host CES-eligible electricity generators; MLP communities would share in the other benefits as well (i.e., the environmental benefits) so it seems reasonable that MLPs should share the compliance requirements. Since the CES would represent a new requirement of MLPs, it would be important to consider options for a longer or phased transition period and/or other accommodations that could ease and support the participation of MLPs.

310 CMR 7.75 (4) and (5)(b) Clean Energy Standard Compliance Period

While the Commonwealth’s Renewable and Alternative Portfolio Standards (RPS and APS) have an annual compliance requirement, a multi-year compliance time period is being considered for the CES. A multiyear fixed time interval or rolling average would increase compliance flexibility and potentially

reduce costs. At the same time, it could be administratively simpler for entities with compliance requirements to have a consistent compliance timeframe for the CES, RPS, and APS. MassDEP and the other agencies involved in developing the potential CES may benefit from the input of entities with an RPS and APS compliance requirement to gain insights about the pros and cons of alternative compliance periods.

310 CMR 7.75 (8) Qualification Process for Clean Energy Generation Units

The discussion drafts says: “NOTE: THE OPTION INCLUDED IN THIS DISCUSSION DRAFT WOULD ESTABLISH A STATEMENT OF QUALIFICATION PROCESS SIMILAR TO THE ONE USED BY THE RPS PROGRAM. HOWEVER, THE STATEMENT OF QUALIFICATION PROCESS MAY NOT BE NECESSARY FOR THE CES IF NO REVIEW OF EMISSIONS OR START-UP DATE IS NECESSARY. IT MAY BE POSSIBLE TO IDENTIFY CANADIAN HYDROELECTRIC RESOURCES WITHOUT A QUALIFICATION PROCESS.”

We think some type of qualification process would be needed for all the sources designated as Clean Energy Units in order for the creation, transfer, and retirement of Clean Generation Attributes to be tracked via NEPOOL GIS. The identification of qualified units to NEPOOL GIS is envisioned under 310 CMR 7.75 (8)h Identification of Clean Generation Units in the discussion draft, which says “[t]he Department shall inform the NEPOOL GIS administrator which generation units should be designated clean generation units pursuant to 310 CMR 7.75.” To enable that, some type of qualification process seems necessary.

We appreciate MassDEP’s work to develop policies and regulations to achieve the goals and objectives of the Global Warming Solutions Act, and are grateful for the opportunity to provide input.

Sincerely,



Steven Kaufman
Managing Director

WEST BOYLSTON MUNICIPAL LIGHTING PLANT

4 Crescent Street, West Boylston, Massachusetts 01583

Telephone (508) 835-3681

Fax (508) 835-2952

November 3, 2014 (Sent via email)

MassDEP
One Winter Street
Boston, MA 02108

Subject: Massachusetts DEP, Clean Energy Standard

Dear MassDEP,

Thank you for allowing the West Boylston Municipal Lighting Plant (WBMLP) to provide comments regarding the draft MassDEP Clean Energy Standard (CES) regulations. WBMLP is one of forty, community owned, non-profit, municipal lighting plants (MLP) in Massachusetts. WBMLP provides reliable and cost effective electricity to approximately 3,500 residents and businesses in West Boylston, Massachusetts. MLP's were established by vote in individual municipalities to serve the citizens and businesses in those municipalities. The MLP's have the exclusive right to distribute electricity within the borders of the municipalities they serve and many have done so since the early 1900's. This local control of the provision of electricity is termed Public Power.

Light Board's Regulate MLP's

WBMLP and all other MLP's are regulated by locally elected or appointed Boards and our consumers directly participate in the MLP decision making process. MLP's operate under a completely different business model than Investor Owned Utilities (IOU's). One significant difference is MLP's own generation assets and can execute long-term contracts for energy. This is not the case for IOU's which manage energy supply using short-term contracts and pass-through these energy supply costs to the consumer. Because of our business model and governance by the ratepayers they serve, MLP's have been excluded from all previous legislation directed at the Commonwealth's IOU's including; 1997 Legislation to Restructure the Electric Utility Industry, 2002 Renewable Energy Portfolio Standard for Retail Electricity Suppliers, and the 2008 Green Communities Act.

Ratepayer local control of the MLP's have typically resulted in lower electricity rates, significant investments in renewable energy projects, and the ability to invest in new cost effective energy production technologies faster than any other entities.

WBMLP's Long-Term and Diverse Energy Portfolio

WBMLP is contractually obligated to purchase 80-90% of our annual energy requirements through various long-term power purchase agreements (PPA) and power supply agreements (PSA). WBMLP's long-term energy portfolio includes a diverse mix of renewable, cost effective and clean energy supply. The majority of our power supply obligations extend beyond 2030 as highlighted in the chart of our generation assets below. Only 10-15% of our annual energy supply is considered an open-position and this portion is typically fulfilled through the ISO-NE day-ahead and real-time energy markets.

West Boylston Municipal Lighting Plant Energy Supply Portfolio					
Fuel Source	Plant Name(s)	Asset Life	Current 2014	Forecasted 2015	Forecasted 2016-2030
Solar	WBMLP Solar	2036	1%	1%	1%
Solar	Borrego Solar	2030	0%	8%	8%
Wind	Berkshire Wind	2036	4%	4%	4%
Wind	Princeton Wind	2023	1%	1%	1%
Wind	Hancock Wind	2035	0%	1%	2%
Hydro	NYPA Hydro	2057	4%	4%	4%
Hydro	Eagle Creek Hydro	2034	1%	2%	2%
Nuclear	Seabrook Nuclear	2030	29%	29%	29%
Nuclear	Millstone Nuclear	2035	13%	14%	14%
Natural Gas	Stony Brook Natural Gas	2030	2%	2%	2%
Oil	Stony Brook Oil	2044	2%	2%	2%
Hedging	ISO-NE	2019	15%	20%	20%
DA/RT Market	ISO-NE	na	27%	12%	11%
			100%	100%	100%

Our consumers expect this long-term planning in order to maintain the lowest cost and stable electricity rates. It is not feasible to impose CES regulations on MLP's that have long-term power supply contracts or to exclude our existing low and no emission generation assets from the CES program. In 2014, approximately 56% of our existing energy supply is considered low or no emission and by 2016 this amount will increase to 65%. If a court determines MassDEP regulations apply to MLP's, and CES regulations excluded existing clean energy generation, WBMLP would have to either buy additional CES qualified energy or make

alternative compliance payments. Either option will significantly increase the cost to our consumers.

Global Warming Solutions Act

The Global Warming Solutions ACT (GWSA) does not specifically include MLP's in a CES standard and therefore, WBMLP questions MassDEP's authority to propose CES regulations on MLP's. As already mentioned, MLP's are regulated by elected Light Board's directly representing our consumers. Until the MassDEP stakeholder meeting on October 27, 2014, MLP's were not included in the stakeholder process or represented on the advisory committee established by Chapter 21N, Section 8 of the GWSA. The GWSA establishes an advisory committee to the executive office in overseeing GHG reduction measures. The advisory committee consists of representatives from all sectors impacted by the new law and MLP's were not specifically included as a sector in the GWSA. WBMLP should not be included in the CES standard because MLP's were not represented on the advisory committee, invited to participate in the stakeholder process prior to October 27, 2014, and the GWSA does not specifically authorize MassDEP to regulate MLP's through a CES standard.

MA Clean Energy and Climate Plan for 2020

The MA Clean Energy and Climate Plan for 2020 (CECP), referenced in the October 27, 2014 stakeholder meeting, was created with input from the applicable GWSA advisory committee stakeholders. Advisory committee members directly participated in the stakeholder discussions that created the proposed CES regulations within the CECP. MLP's are not specifically referenced in the CECP and did not participate as committee members or as potential stakeholders in the creation of the proposed CES regulations within the plan.

The Clean Energy Performance Standards (CPS) on pages 47-48 of the CECP state; "In the near-term, a CPS is likely to have a limited impact on electricity prices for consumers." The footnoted document for this statement is; "Environmental and Technology Policies for Climate Mitigation" written by Carolyn Fischer and Richard G. Newell. This GHG economic policy model is based on nation-wide electricity generation data from the Energy Information Administration (EIA 2006). The model utilizes a baseline fuel mix of 55% coal, 16% natural

gas, 3% renewables, and 26% nuclear & hydro for energy production. These critical inputs to the economic policy model do not reflect the actual fuels used to generate electricity in Massachusetts or the ISO-NE control area. The percentages of fuels used in energy production in Massachusetts or the ISO-NE control area are completely different than the model baseline used to support the claim of limited impact on consumer cost.

The economic policy model relies on a high percentage of coal generation and fuel switching from coal to natural gas to reduce GHG emissions. Massachusetts has essentially eliminated coal generation and switched to natural gas. At the October 27, 2014 stakeholder meeting, MassDEP's presentation illustrated a 49% reduction in power sector GHG since 1990. The graph of power sector GHG's ends in year 2012 which may not account for the June 2014 closure of the coal fueled Salem Harbor Power Plant. The percent reduction in GHG's should be recalculated to account for the closure of this plant and, the Rhode Island Brayton Point Power Station if included the presentation data. The overall goal of an 80% reduction in GHG by 2050 is a worthy goal which MLP's are already contributing too, but it appears fuel switching and the Renewable Energy Portfolio Standard are accomplishing the goal without a CES. Consumers have a right to know the cost impacts of any new regulation proposed by MassDEP. Before new CES regulations are approved, MassDEP should prepare an economic policy model and consumer cost impact study based on the actual sources of fuel for energy production specific to the ISO-NE control area.

Conclusion

On behalf of WBMLP's ratepayer's, local control through Public Power, and for the reasons outlined in this letter please exclude MLP's from the CES regulations.

Sincerely,

A handwritten signature in black ink that reads "Jonathan Fitch". The signature is written in a cursive style with a large initial "J" and "F".

Jonathan Fitch
General Manager



PO Box 383
Madison, CT 06443
Voice: 646-734-8768
Email: fpullaro@renew-ne.org
Web: renew-ne.org

November 3, 2014

Mr. William Space
Environmental Analyst
Massachusetts Department of Environmental Protection
One Winter St.
Boston, MA 02108

Subject: Clean Energy Standard Stakeholder Comments

Mr. Space:

Following the October 27, 2014, MassDEP stakeholder meeting on implementation of a Clean Energy Standard (“CES”), RENEW submits these comments to offer recommendations for how the electric power sector should contribute to meeting the goals of the Global Warming Solutions Act (GWSA”). First, RENEW commends Governor Patrick for his continued commitment to the development of clean energy and his leadership implementing nation-leading programs on energy efficiency and other programs to meet the Commonwealth’s carbon reduction mandates.

RENEW is a non-profit association uniting the renewable energy industry and environmental advocates whose mission involves coordinating the ideas and resources of its members with the goal of increasing environmentally sustainable energy generation in the Northeast from the region’s abundant, indigenous renewable resources. RENEW has focused on highlighting the value of grid-scale resources- specifically offshore and onshore wind and hydropower- and the benefits of transmission investment to deliver renewable energy to load centers in the Northeast.

Rather than amend Massachusetts’ clean energy model by adding a CES at this time, RENEW recommends Massachusetts adopt an explicit “**renewables first**” strategy that increases the size of Class I of the Renewable Portfolio Standard (“RPS”) by an

amount necessary to achieve the carbon reduction goals for the electric power sector. According to a report prepared for New England's governors, the region has over 10,000 MW combined of on-shore and off-shore wind power potential, as well as other low-carbon resources. At a minimum, Massachusetts should increase its 2020 RPS goal from 15 percent to 20 percent and its 2025 goal from 25 percent to 33 percent.

The strengthening of these goals should be complemented by additional long-term clean energy procurements based on Section 83 and Section 83A of the Green Communities Act, and electric transmission upgrades being considered by the New England States, to bring clean and sustainable energy resources, like wind and hydropower, to consumers. Expanding existing programs offers Massachusetts a ready-made and proven approach to reduce carbon emissions on the scale and time needed to achieve the objectives of the RPS and GWSA. This strategy will advance the same goals as a CES and, in fact, is highly compatible with a CES should a CES be pursued in the future.

Strengthening the RPS will give Massachusetts an opportunity to concentrate on advancing the next generation of renewables like offshore wind in the waters off the South Coast. The U.S. Department of Energy has estimated that by the year 2030 there will be 43,000 offshore wind related jobs on the East Coast alone. The states that go first in establishing this new growth industry will capture the largest amount of this market share. A pipeline of offshore wind projects in the billions of dollars will emerge and thousands of jobs will be created over the next decade across the Commonwealth. RENEW supports targeting offshore wind through phased-in competitive solicitations over the next decade. This design will ensure that a vast amount of new, carbon-free resources will become operational just before a significant amount of carbon-free resources like nuclear power plants near the end of their useful lives and retire.

A broader renewable energy strategy also enables Massachusetts to focus on the continued economic development benefits of existing small-scale renewable resources like hydropower and solar which provide renewable energy and economic development for all communities in the Commonwealth. Massachusetts solar programs have been a huge success with Governor Patrick's goal of 250 megawatts of solar power achieved four years early. Now, the governor has an aggressive new goal of 1,600 MW by 2020. Small hydropower facilities, though, have many of the same operations and maintenance costs as larger renewable energy facilities with lower output to spread across the cost. While the RPS Class II provides ways to offset these costs, it only covers projects up to 7.5 MWs. RENEW recommends raising the cap on eligible Class II small hydropower to 30 MW thereby aligning it with the Massachusetts Class I definition and that of many other states.

RENEW appreciates the opportunity to offer these comments on policies that will ensure compliance with Massachusetts's GWSA. RENEW will continue to serve the people of Massachusetts by finding ways to lower the cost of renewable energy, decrease the region's dependence on fossil fuels and ensure a significant role for renewable energy resources that will boost the Commonwealth's economy.

Sincerely,

A handwritten signature in blue ink that reads "Francis E. Pullaro". The signature is written in a cursive style with a large initial "F".

Francis Pullaro
Executive Director

Commonwealth of Massachusetts
Department of Environmental Protection

Comments of Clean Water Action regarding the
MA Clean Energy Standard Discussion Draft Regulation

November 3, 2014

Clean Water Action is encouraged by the Department's continued and commendable focus on advancing towards the emissions reduction targets mandated by the Global Warming Solutions Act, and submits these comments in support of a Clean Energy Standard for the Commonwealth.

We must express concern at the contention in the Department's October 27 Stakeholder Meeting presentation that any generation technology meeting an emissions threshold of perhaps 50% below current combined cycle gas plant emissions would be considered 'clean' and therefore eligible for a CES Statement of Qualification. Setting such a low bar as this for generators to reap benefits from a CES program does not align with the best interests of the Commonwealth's taxpayers, nor meet the public health needs that must be considered alongside climate goals. While we fully support aggressive and accelerated steps toward climate emissions reductions, such policies cannot come at the expense of other social or environmental priorities. Setting up energy policies that force unhealthy competition between our society's core values will leave us all weaker in the long run.

We have submitted separate joint comments regarding the possible inclusion of existing nuclear generation under a CES. In addition, we take issue with the possible inclusion of new large hydropower, to the extent that it violates the human rights of residents in areas that would be affected, especially indigenous peoples whose sovereignty and treaty rights have long been trampled for the benefit of developers. Such violations cannot be allowed to be subsidized by the Commonwealth's taxpayers. In addition, large hydro projects have a history of inundating pristine forests that provide habitat to critical species and a 'sink' for our excess carbon. This can quickly reduce the net emissions benefits of hydropower in a dramatic fashion. We suggest allowing hydro projects under a Massachusetts CES that abide by the Certification Criteria of the [Low Impact Hydro Institute](#), regardless of whether or not they are in the US.

Mention is made on a few occasions in the discussion draft of provisions possibly being removed "due to the size and type of the generation units likely to be eligible." We understand this is a reference to smaller, intermittent generation units being included under the RPS program. However, particularly with regard to micro-grid technologies, which have the potential to grow under some scenarios examined by the state and advocacy groups there are reasons to include the location-specific provision at 310 CMR 7.75(7)(a)4.

Finally, the provision for alternative compliance states that “a retail electricity seller may discharge its obligations under 310 CMR 7.75(6), in whole or in part, for any compliance year by making a CES ACP.” We suggest instead that the Department consider reducing the proportion of the compliance obligation dischargeable through the ACP mechanism, and require that all generators meet at least some portion of their obligation through actual CES compliance. The percentage allowed to be discharged through the ACP mechanism could still remain relatively high, perhaps at 75-80%, but having this requirement would set an initial bar and encourage incrementally better compliance over time. There could also be a mechanism for exemptions in the case of exigencies.

We thank the Department and Synapse for their efforts thus far, and look forward to the remainder of this process.

Sincerely,

Alex Papali
Energy Programs
Clean Water Action
Boston
617-338-8131 x212



100 Constellation Way
Suite 500C
Baltimore, MD 21202

November 3, 2014

William Space
Environmental Analyst
Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108

Re: Exelon Corporation's Comments on the Massachusetts Department of Environmental Protection's Proposed Draft Regulation to Implement a Clean Energy Standard

Dear Mr. Space:

Exelon Corporation ("Exelon") appreciates the opportunity to comment on the possible adoption of a Massachusetts Clean Energy Standard ("CES") and to specifically offer suggestions to the Massachusetts Department of Environmental Protection ("Department") on the regulatory language provided in the form of a draft document offered for the sole purpose of soliciting input prior to the development of regulations ("Discussion Draft"). According to the Discussion Draft, the purposes of the draft regulations are to achieve emission reductions by setting a CES that will increase the amount of clean energy that is used by generation sources producing electricity consumed in Massachusetts, and to implement the requirement for retail sellers of electricity to report statewide greenhouse gas emissions and to monitor and ensure compliance with the reporting provisions of M.G.L. c. 21N, the Climate Protection and Green Economy Act, St. 2008, c.298, § 2(a)(5).

Introduction

At the outset, Exelon would like to thank the Department for providing the Discussion Draft and convening a stakeholder forum in advance of issuing a proposed rule. In seeking to meet its carbon reduction goals under the Massachusetts Global Warming Solutions Act, Massachusetts Session Laws of 2008, Chapter 451, as well as forthcoming regulations under the Federal Clean Air Act, a CES can provide a simple, efficient and cost-effective means of reducing carbon emissions at the lowest achievable cost. Exelon has long supported market-based approaches to implementation of state energy policy goals and Exelon believes a properly designed CES can be an effective market-based approach to carbon reduction. Exelon also commends the Department for looking to the existing renewable portfolio standard ("RPS") regulations adopted by the Department of Energy Resources in developing the Discussion Draft. Adopting a consistent and familiar platform for the CES will minimize confusion and simplify compliance for Retail Electricity Sellers. In particular, the adoption

of banking provisions and provisions for making CES Alternative Compliance Payments have proved important features of an RPS for Retail Electricity Sellers and we strongly support their inclusion in CES regulations.

In terms of the key policy questions identified by the Department, Exelon addresses in these comments three critical aspects of resource eligibility: technology, vintage and location. Exelon also offers its thoughts on the need to adopt an exemption for certain existing retail electric supply contracts.

Eligible Resource Technologies

Exelon would also like to commend the Department for including nuclear resources as Clean Generation Units in the Discussion Draft and Exelon strongly disagrees with the suggestion put forth at the stakeholder session that nuclear resources be excluded. Exelon is proud to be the leading owner and operator of nuclear generation in America. Exelon produces roughly one quarter of the clean nuclear power in this country and are dedicated to sustainability, having both established and exceeded our own corporate sustainability goals (as set forth in Exelon's annual sustainability report and can be found at: <http://www.exeloncorp.com/assets/newsroom/docs/csr/index.html>). Exelon believes that nuclear power as a clean, safe and reliable source of energy and is an essential resource in meeting the world's climate goals. As the New York Times put it:

But while investment in renewable sources is crucially important to meet new energy needs, nuclear power remains the cheapest and most readily scalable of the alternative energy sources. Difficult as it may be to reduce dependence on coal, nuclear power is probably the world's best shot. (Unavoidable Answer for the Problem of Climate Change, NYT 11/19/2013).

For these reasons Exelon strongly encourages the Department to not exclude nuclear power from eligibility.

Resource Vintage

The Discussion Draft proposes the use of a cut-off date for qualification as a Clean Generation Unit that would exclude generation resources brought online prior to such date. This practice, known as "vintaging," creates a number of problems for the marketplace.

Vintaging makes it difficult for all clean energy resources to compete fairly and effectively in the marketplace. Firms who developed resources after the vintaging date will enjoy a permanent, ongoing competitive advantage over older resources, even though they make no greater contribution to carbon abatement. This can lead to retirement of otherwise cost-effective resources and their replacement with newer, higher cost resources, resulting in higher energy prices for consumers. In a competitive market “helping” one resource type inevitably means “harming” another resource type. When both resources are critical parts of a plan to meet environmental policy goals the disparate treatment can undermine the entire plan. Simply put, the problem with vintaging is that it proceeds from the flawed assumptions that existing resources are not at risk for retirement nor will they be put at risk as a result of competitive pressure from new resources. In order to effectively meet environmental policy goals all resources relied upon to meet those goals must be treated equally in the marketplace. A compelling case in point to illustrate this is Vermont. The premature closing of the Vermont Yankee nuclear facility has set Vermont back in meeting its goals for carbon reductions over the next several decades. Forbes Magazine describes the situation as follows:

But 2012 and 2013 saw no progress on carbon, with Vermont’s emissions almost exactly the same as the 8 million tons in 1990. “We have missed the 2012 goal,” said Deb Markowitz, the Secretary of the Agency of Natural Resources. “So now the focus is on 2050.” And those carbon predictions were with Vermont Yankee’s avoidance of a million tons of carbon a year. The state’s 2028 emissions goal of 4 million tons is a pipe dream without Vermont Yankee, which is why they’re now focusing on 2050. Closing Vermont Nuclear Bad Business for Everyone, Forbes Magazine, September 19, 2014.

In short, policies for the benefit of new clean energy resources can not be pursued without regard to the economic impact that those same policies will have on existing clean energy resources. It is best to establish the attributes of clean power and let the market respond with the resources. For these reasons Exelon strongly encourages the Department to include existing as well as new resources within any CES it may adopt.

Resource Location

The third critical aspect of resource eligibility is resource location. In this regard the Discussion Draft borrows from the RPS rules and adopts the New England control area as the primary eligible region along with imports from neighboring control areas to the extent they can demonstrate that the capacity from the unit is dedicated to New England and that the energy is actually being delivered into the region. Exelon agrees with the Department that

imposing geographic limitations is necessary and sensible. While climate change is a global problem, allowing a Massachusetts CES to support resources outside the region is an invitation to free ridership and dilution of the effectiveness of the CES altogether. Exelon supports the geographic limitations in the Discussion Draft as a good starting point, however, it encourages the Department to consider whether additional limitations might be necessary. Unlike the case with an RPS, which most states within the Northeast have adopted in one form or another, Massachusetts would be the first state in the region to adopt a CES. Hence, a narrower zone of eligibility might be necessary to consider. A Massachusetts only standard would be the narrowest, however, such a single-state standard might also be vulnerable to legal challenge as a burden on interstate commerce. Another alternative could be Massachusetts and those states which border it. Before adopting a final rule the Department may want to consider including in its analyses an examination of various alternatives to determine whether a narrower geographic scope is necessary for a CES to be effective.

Grandfathering

When a Massachusetts retail customer contracts with a Competitive Electric Supplier to purchase energy at a fixed price and over a fixed term, the supplier will include the cost of power as well as RPS compliance in the contract price. At the time of contract execution the supplier will purchase “hedges” in the form of wholesale power supply contracts and Renewable Energy Certificates to meet the expected load of the retail customer over the fixed price term. The subsequent imposition of a new requirement, such as a CES, upon the retail sale of electricity imposes an unanticipated cost upon the supplier which could not be included in the contracted fixed price. Unlike a regulated utility, a competitive supplier does not have the ability to petition the Department of Public Utilities for a rate increase to cover the additional cost. The supplier is bound to the terms of the fixed price contract. The consequence, therefore, is the imposition of business losses on retail suppliers and the potential for disputes with customers over the exact terms of contracts which did not anticipate the changed obligation.

Over the years this very same dilemma has been encountered in connection with a number of statutory and regulatory amendments to the RPS in Massachusetts. To alleviate the situation the legislature and the DOER have routinely exempted or “grandfathered” electricity sales under contracts that pre-date the adoption of the new requirement. As the contracts roll off over time the amount of exempt load shrinks and eventually vanishes. Under this transitional approach expectations in the marketplace are preserved and new RPS requirements are in time fully applied. Exelon’s experience with the RPS exemption process for RPS changes has been positive and in considering adoption of a CES it encourages the Department to consult with the DOER and consider a similar exemption here.

Conclusion

Again, thank you for the opportunity to comment and Exelon looks forward to continued participation in the process. Please contact the undersigned below if you have any questions.

Sincerely,

/s/Daniel Allegretti

Daniel Allegretti
Vice President, State Government Affairs – East
Exelon Corp.
100 Constellation Way, Suite 600C
Baltimore, MD 21202
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**Commonwealth of Massachusetts
Department of Environmental Protection (MassDEP)
Comments from Mass Energy Consumers Alliance
Re: MA Clean Energy Standard Discussion Draft Regulation**

Submitted Electronically to climate.strategies@state.ma.us

November 3, 2014

Thank you for the opportunity to provide comment regarding the draft Clean Energy Standard regulation under consideration by MassDEP. As an organization, Mass Energy Consumers Alliance is committed to achieving the GHG emission reductions mandated by the GWSA. We are encouraged by the draft document and what was reiterated in the presentation: that the aim of the proposed CES is to achieve significant emission reductions by setting a standard that will increase the amount of clean energy used by generation sources producing electricity consumed in Massachusetts. We strongly support a Clean Energy Standard that complements Massachusetts' RPS, and places emphasis on maximizing the benefits of energy efficiency and renewable generation technology, without creating incentives for technologies incapable of helping MA meet the GWSA-required emissions reductions.

As this process advances, we look forward to providing more detailed input, however, at this time, we will limit our comments to the questions posed at the stakeholder meeting on October 27th.

Although no standard has been proposed yet, Mass Energy encourages DEP to advance a standard that is consistent with the goal of reducing electric sector emissions 80-95% by 2050 (with commensurate reductions between now and 2030), as indicated on page 6 of the draft. The CES should be drafted in such a way as to be clear about reducing the carbon intensity of non-RPS and non-nuclear resources over time from ALL Massachusetts suppliers. Municipal light companies account for approximately 15% of electrical load. Massachusetts cannot *equitably* achieve the required emissions reductions without their inclusion in the CES. Therefore we believe that all suppliers should be held to the CES and unlike the RPS, municipal light companies should NOT be exempt.

Establishing a Clean Energy Standard creates incentives to achieve a less carbon intensive, more diverse resource mix. For this reason, Massachusetts should be guided by GWSA requirements and maintain an eye toward 2050 when considering which technologies to consider "clean." Toward that end, Mass Energy strongly opposes carbon sequestration as a CES-eligible resource. Additionally, we oppose any incentive that would either encourage additional nuclear power or endorse in any way what is described in the Synapse study as windfall profits. It is not enough to determine CES eligibility on an emissions threshold alone,

and we would urge DEP to consider accounting for life-cycle emissions on any proposed technologies.

We would be the first to suggest that energy efficiency could be a measure used to comply with CES because of its great availability and cost effectiveness. However, energy savings achieved under the proposed standard should not be double-counted against savings achieved towards GWSA goals and the CECP. Cost-effective energy efficiency over and above that required to meet these goals could be used to meet the CES, but this requires further discussion and a CECP for 2030.

In closing, Mass Energy believes a Clean Energy Standard is an important and missing component of Massachusetts' nation-leading energy policies. We commend the leadership of this administration for undertaking contemplation of a standard that has the potential to help MA achieve its low-carbon, sustainable energy future. We look forward to continued collaboration.

For questions or additional information please contact Eugenia Gibbons:
eugenia@massenergy.org, 617-524-3950 x 141.

Sincerely,

A handwritten signature in cursive script, appearing to read "Eugenia T. Gibbons".

Eugenia T. Gibbons, Clean Energy Program Director

M E M O R A N D U M

TO: Massachusetts Department of Environmental Protection
FROM: Municipal Electric Association of Massachusetts
DATE: November 3, 2014
RE: Draft Regulation - Clean Energy Standard

INTRODUCTION

The Massachusetts Department of Environmental Protection (“MassDEP”) proposes a Clean Energy Standard (“CES”) to reduce greenhouse gas emissions (“GHGE”). The CES would require that total annual electricity sales by retail sellers include a minimum percentage of “clean generation.”

MassDEP held a stakeholder meeting to discuss the CES on October 27, 2014.

Over fifteen member representatives of the Municipal Electric Association of Massachusetts (“MEAM”) attended the meeting, and several participated in the discussion. MEAM is a statewide association of all 40 Massachusetts Municipal Light Plants (“MLPs”) which provides a Commonwealth-wide forum to address issues common to the operation of MLPs in Massachusetts. MEAM members serve approximately 15% of all retail customers in Massachusetts.

MassDEP requested stakeholder comments on specific aspects of the CES, including the compliance obligation of MLPs. MEAM’s comments, filed with you today, address only the authority of MassDEP to regulate MLPs under the CES. MEAM’s comments do not address the merits of GHGE reductions. At the outset, please note that several MEAM representatives stated at the stakeholder meeting that their respective MLPs include significant amounts of non-emitting generation in their resource mix (23% to over 50%) at the direction of their respective local municipal light boards.

MEAM COMMENTS

1. **MassDEP does not have the statutory authority to impose CES regulations on Municipal Light Plants.**

At the stakeholder meeting, in response to a question asked by MEAM counsel, MassDEP stated that the statutory authority for including MLPs in the CES is implied in the Global Warming Solutions Act, St. 2008, c. 298 (“GWSA”). Specifically, Mass DEP stated that, even though MLPs are not mentioned in GWSA sections relevant to the MassDEP effort on the draft regulations, there is nothing in the GWSA that states that MLPs are exempt.

The GWSA added G.L. c. 21N, the Climate Change and Green Economy Act. The GWSA charged the Secretary of Energy and Environmental Affairs (“Secretary”), consistent with G.L. c. 21N, to “oversee state agency efforts to address and diminish the impacts of climate change by coordinating state agency actions to achieve the greenhouse gas emission limits established in chapter 21N.”¹ MassDEP is to assist in the implementation of c. 21N.²

Although G.L. c. 21N authorizes MassDEP to issue regulations establishing GHGE limits, nothing in c. 21N authorizes MassDEP to issue regulations obligating MLPs to comply with the CES.

The only statutory reference to MLPs in the GWSA appears as a conditional provision in G.L. 21N, §2(a)(5). Section 2(a)(5) requires the reporting of GHGE from generation sources producing electricity consumed in the Commonwealth; “provided, however that this requirement shall apply to all retail sellers of electricity, including electric utilities, municipal light departments and municipal light boards as defined in section 1 of chapter 164A.” This is the only reference to MLPs in the GWSA.

¹ St. 2008, c. 298, § 3.

² St. 2008, c. 298, § 4.

An administrative agency has no authority to issue regulations that conflict with the statutes or exceed the authority conferred by the statutes by which the agency was created.³ The specific reference to MLPs in G.L. c. 21N, § 2(a)(5) — particularly in the form of a condition or proviso — means, as a matter of law, that the remaining provisions of G.L. c. 21N do not apply to MLPs. The GWSA authorized MassDEP to issue regulations regarding GHGE limits, not regulations regarding reduction activities for MLPs. In effect, the CES would make MLPs subject to a Renewable Portfolio Standard (“RPS”)–like compliance mechanism. By statute, MLPs are exempt from the RPS.⁴

The GWSA vests the authority to adopt GHGE reduction activities in the Secretary. In that regard, the Secretary’s main charge is to coordinate the efforts of state agencies having jurisdiction over sources of GHGE. With respect to GHGE reduction activities in the electric sector, the Secretary must ensure that the activities it undertakes are complementary and non-duplicative of the activities undertaken by state agencies and regional authorities. The statute does not authorize the Secretary to adopt an entirely new scheme of reduction activities for the electric sector but only such activities as are complementary. This complementary authority cannot be interpreted to supplant the RPS and impose on MLPs obligations from which they are statutorily exempt – particularly when c. 21N expressly directs the executive office, MassDEP and the Department of Energy Resources (“DOER”) to take the RPS into account in establishing GHGE limits.⁵ This statutory provision does not mean that in taking RPS into account, the executive office may decide to impose RPS on MLPs who are statutorily exempt from RPS.

MassDEP’s attorney stated at the stakeholder’s meeting that the authority to regulate MLPs under the GWSA derives from the absence of an express exclusion for MLPs in the GWSA. But the absence of such an exclusion requires an opposite conclusion under general

³ *MMWEC v Energy Facilities Siting Council*, 411 Mass. 183, 194 (1991) and cases cited.

⁴ G.L. c. 25A, §11F(i).

⁵ G.L. c. 21N, §3(c).

principles of statutory construction. “As a general rule, when the Legislature has employed specific language in one part of a statute, but not in another part dealing with the same topic, the earlier language cannot be implied where it is not present.”⁶ The Legislature conditionally included MLPs in the reporting requirements mandated by G.L. c. 21N, § 2(a)(5) because it intended the reporting requirement — and only the reporting requirement — to apply to MLPs. The Legislature did not intend the remaining provisions of the GWSA to apply to MLPs, and therefore there was no reason to include the express exemption upon which MassDEP relies for its authority to regulate MLPs.⁷

This conclusion is bolstered by G.L. c. 21N, § 8, which requires the Secretary to convene an advisory committee of representatives of various sectors to advise the executive office in overseeing GHGE reduction measures. MLPs are not included among the sectors listed in the statute. If the GWSA was intended to apply to MLPs generally, MLPs would have been expressly included in the advisory committee described in G.L. c. 21N, § 8, in the same way they were included in the reporting provisions of G.L. c. 21N, § 2(a)(5).

2. Municipal light plants are required only to report GHGE.

The only statutory reference to MLPs in the GWSA appears as a conditional provision in G.L. 21N, §2(a)(5). Section 2(a)(5) requires the reporting of GHGE from generation sources producing electricity consumed in the Commonwealth. This is the only provision of the GWSA applicable to MLPs.

MassDEP implemented this subsection of the GWSA by issuing regulation 310 CMR 7.71(9).⁸ Because the MLPs are specifically listed in this section of the GWSA, the regulations promulgated implementing this section apply to MLPs. This existing regulation allows MLPs to use the same megawatt-hours (“MWh”) reported in their annual returns to the Department of

⁶ *Hartford Insurance Company v. Hertz Corporation*, 410 Mass 279, 283 (1991).

⁷ See, e.g., *Ginther v. Commissioner of Insurance*, 427 Mass. 319, 324 (1998).

⁸ St. 2008, c. 298, § 12 required subsection 2(a)(5) to take effect not later than July 1, 2009.

Public Utilities (“DPU”).⁹ MLPs may also subtract MWh generated by non-emitting generators (hydro, nuclear, solar, wind) from the amount of MWh reported to the DPU for purposes of reporting biogenic and non-biogenic GHGE.¹⁰

The draft regulation would replace this existing reporting regulation with a regulation consistent with the proposed CES.¹¹ The legal flaw with this proposed approach is that the proposed replacement regulation assumes that MLPs have CES compliance obligations. MLPs do not, as a matter of law. If implemented, the proposed regulation would place MLPs in the same position as all retail sellers with respect to reporting requirements. Statutorily, MLPs and retail sellers not subject to the RPS have different requirements than retail sellers which are subject to RPS. Therefore, in contrast to the existing regulation, the draft regulation assumes that MLPs are subject to the RPS which is incorporated in the CES.

3. Municipal light plants are exempt from the Renewable Portfolio Standard.

MassDEP issued the proposed CES in the form of a draft Regulation 310 CMR 7.75 (“draft regulation”). The draft regulation is modelled after, and uses language from, DOER’s RPS regulation 225 CMR 14.00, which was issued under G.L. c. 25A, § 11F. The introduction to the draft regulation shows the corresponding section of the RPS regulation used to develop each section of the draft regulation.

MLPs are exempt from the RPS by statute.¹²

The GWSA authorizes MassDEP to issue regulations establishing a desired level of declining annual aggregate GHGE limits.¹³ For the energy sector, these limits are to be established by the executive office and MassDEP, in consultation with DOER, taking into account the regional greenhouse gas initiative and the RPS.¹⁴ The GWSA requires MassDEP

⁹ 310 CMR 7.71(d)(2).

¹⁰ 310 CMR 7.71(d)(5).

¹¹ 310 CMR 7.75(9)(c).

¹² G.L. c. 25A, §11F(i).

¹³ G.L. c. 21N, §3(d).

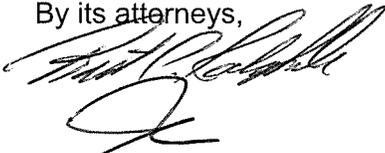
¹⁴ G.L. c. 21N, §3(c).

to consider that MLPs are exempt from the RPS in establishing GHGE limits, but it does not authorize MassDEP to subject to MLPs to an RPS-like compliance obligation. Consequently, it is MEAM's position that MLPs have no legal obligation to comply with the CES.

CONCLUSION

The GWSA limits the authority of MassDEP over MLPs to a reporting requirement only. Therefore the remainder of the act cannot be construed to apply to MLPs. In addition, MLPs are exempt from the RPS program on which the MassDEP models its CES Regulations and underpins the proposed CES. Finally, MLPs were not included in the advisory committee sectors advising the executive office in overseeing GHGE reduction measures. Therefore MEAM's position is that the GWSA does not authorize MassDEP to promulgate a CES that could be imposed on MLPs.

By its attorneys,



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MEMORANDUM

TO: Massachusetts Department of Environmental Protection

FROM: Danvers Electric Division
Ipswich Municipal Light Department
Middleborough Gas and Electric Department
Norwood Municipal Light Department
Reading Municipal Light Department
Shrewsbury Electric and Cable Operations
West Boylston Municipal Light Plant

DATE: November 3, 2014

RE: MassDEP Draft Regulation: Clean Energy Standard

The Danvers Electric Division, Ipswich Municipal Light Department, Middleborough Gas and Electric Department, Norwood Municipal Light Department, Reading Municipal Light Department, Shrewsbury Electric and Cable Operations and the West Boylston Municipal Light Plant join in and support the comments submitted by the Taunton Municipal Lighting Plant (“TMLP”) through its counsel, Rubin and Rudman, LLP.

The undersigned municipal light plants further note that their power portfolios currently contain the following percentages of carbon-free generation or “Clean Energy”:

Danvers Electric Division: forty eight (48%) percent

Ipswich Municipal Light Department: twenty seven (27%) percent

Middleborough Gas and Electric Department: forty seven (47%) percent

Norwood Municipal Light Department: nine (9%) percent

Reading Municipal Light Department: twenty two (22%) percent

Shrewsbury Electric and Cable Operations: twenty eight (28%) percent

West Boylston Municipal Light Plant: fifty six (56%) percent

In summary, and as stated in TMLP’s written comments, it is our position that MassDEP does not have the required statutory authority to promulgate a CES that would be imposed on municipal light plants. It is further our position, as stated in TMLP’s written comments, that the CES that has been proposed by MassDEP is inherently unfair to municipal light plants as it would penalize municipal light plants for their historic support of clean energy.

To: DEP

From: William Moomaw

William.moomaw@tufts.edu

Date: November 3, 2014

Re: Comments on proposed Clean Energy Standard for Massachusetts

Thank you for the opportunity to comment on the Clean Energy Standard for Massachusetts. Engineering, and have spent 25 years working on climate change and energy as a lead author or coordinating lead author of 5 IPCC assessment reports including Carbon Capture and Storage and Renewable Energy.

It appears that the goal of setting a clean energy standard is to expand the options for “low carbon” emitting electric power sources beyond those already included in the Renewable Portfolio Standard. The justification is to make it easier to achieve the mandate of the Massachusetts Global Warming Act to achieve zero emissions in electric power generation by 2050. Following are some observations and then some specific recommendations.

The principle sources being considered are three large-scale options:

- Carbon capture and storage (sometimes referred to as “sequestration”) CCS
- New nuclear power
- Large scale hydropower from Quebec

The definition of “clean” and “energy” is misleading.

- It is not a standard for “energy,” but a standard for electric power production
- The term “clean” only applies to carbon dioxide emissions from direct combustion, and seems to exclude other global warming greenhouse gases (GHGs) such as methane or nitrous oxide, production of heat trapping ozone or any non-GHGs or air pollutants as defined by the Clean Air Act
- Other GHGs throughout the life cycle of power production should be counted towards whatever standard is developed. We should not have to accept greater amounts of conventional pollutants to gain reductions in GHGs. Provisions for valuing these additional pollutants would need to be devised.
- A proposed requirement is that the source not exceed half of the carbon dioxide emissions associated with the most efficient combined cycle natural gas turbine per unit of electricity generated, which is inconsistent with the requirements of the Global Warming Act.
- The requirement for “clean” meaning zero or low carbon dioxide emissions is based upon a compromise reached in counting biofuels as renewables. The use of that definition for “clean” will not achieve the goals of the Global Warming Act.
- The accounting system for emissions should be the same as the one that will be realized in the atmosphere, or else, it is necessary to explicitly recognize that achieving the goals of the Global Warming Act will not be literally achieved, This practice should be discouraged, but if an alternative accounting system that contains exemptions is used, then additional reductions in some other part of the economy should be required to compensate for this discrepancy.

Issues associated with each of the power sources proposed to qualify under the Clean Energy Standard.

- CCS – To date, only a single project has been completed that achieves carbon capture and storage from a large-scale electric power plant and the captured CO₂ is being shipped to a nearby oil field for enhanced recovery of oil. The use of carbon dioxide to produce additional fossil fuels that when burned will produce as much or more carbon dioxide than was removed, should not be counted.
 - Also, there is a substantial energy penalty for capturing and storing carbon dioxide from a fossil fuel power plant. EPA counts efficiency gains in power production towards the 30% carbon dioxide reduction in its new proposed regulations. This parasitic loss might count against meeting the EPA standard.
- New Nuclear Power plants produce very few direct emissions of heat trapping GHGs, and might therefore seem “Clean.”
 - However, considerable carbon dioxide is associated with mining, fuel enrichment, and in preparation for waste storage. These life cycle emissions should be counted against the nuclear option.
 - It is a good idea to limit consideration to new nuclear plants as older plants contain many hidden problems. Considerable thought ought to be given to the new nuclear option before committing to it. It would be better to wait to see if the “next generation” nuclear options live up to the promise of greater safety, lower waste, and the potential for finding a waste storage option.
 - Because of the many unresolved issues of nuclear power including waste management for millennia and the risk of chronic radiation leakage and the risk from catastrophic failure, we should be careful in trading long-term carbon dioxide emissions and global warming for long-term damage from a serious accident at the facility or from nuclear waste.
- Large-scale hydropower from Quebec is currently excluded from the definition of renewable in the RPS, but may have very few GHG emissions.
 - Large hydro was not included within the definition of renewable because it had the potential to swamp smaller sources such as rooftop solar and other distributed renewable sources.
 - Large hydro facilities are known to emit significant amounts of methane from many facilities. The amount of methane from the specific source should be determined before entertaining the incorporation of large-scale hydro into the Clean Energy Portfolio.
 - Another issue with large-scale hydro from Quebec in particular is that a very large-scale power line is needed to bring the electrical power to Massachusetts. This has generated substantial opposition as the proposed route runs right through the White Mountain National Forest, and degrades the quality of major hiking and camping experiences and destroys views that are important to the tourism industry.

- On October 31, I had a private meeting with Quebec’s Minister of Energy, Mr. Pacard, at his request to discuss access issues to New England markets hydro generated electricity from Quebec. I pointed out both the perceived threat of large-scale hydro to distributed solar electricity and other renewables, and the problems with the transmission route.
- Based upon my discussions with Mr. Pacard and my knowledge of the issue as a member of the board of The Nature Conservancy of Massachusetts, I would propose the following before including large-scale hydro in a Clean Energy Standard.
 - Consider including large scale hydro if it can meet certain criteria that do not undermine achieving renewable goals or cause other environmental problems
 - Keep large hydro out of the RPS, and insure that its inclusion would not block the continued growth of distributed solar or any other low GHG source such as any form of solar energy or other distributed types of energy that would substantially reduce GHGs.
 - Do not include large-scale hydro for which the transmission or distribution system transits federal, state or local conservation areas. This provision might lead Hydro Quebec to propose a more acceptable route or to put portions of the line underground.

General remarks on specific provisions of the proposed Clean Energy Standards

- To make clear the coverage, and to reduce ambiguity over what is considered to be “clean,”
 - I propose that “Clean” should refer to carbon dioxide and *all* heat trapping gases, using CO2 equivalents for each gas
 - That specific reference also be made to reducing other air pollutants as defined by the Clean Air Act as there is no need to trade a reduction in global warming for increases in other pollutants, and because it will be more effective to reduce CO2 and other pollutants such as NOx, SO2, particulates and mercury simultaneously.
 - *If this cannot be done*, then the standards should be called the “Low Greenhouse Gas Standard for Electric Power Production Standard.”
- It is essential to include all retail producers of electric power including public sellers (munis) to align with the goals set out in the Global Warming Act.
- Clean Energy Credits (CECs) may include RECs, but not the other way around.
- Requiring that clean energy sources be within ISO New England or adjacent areas is essential to ensure that the electricity being provided in Massachusetts does indeed meet the criteria of the CES.
- There needs to be a provision that any form of aggregation such as is being done for Community Purchasing agreements that are being developed by towns must meet the CES, and the RPS as well. Such suppliers for group purchases must prominently display their supply mix, and assure that their generation mix meets

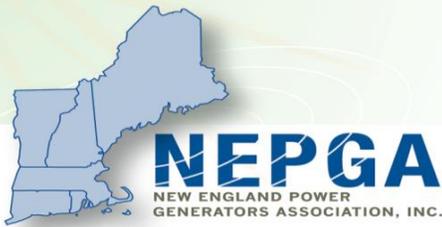
or exceeds the state CES and RPS so that individuals, municipalities will make appropriate decisions that lead to a continuous improvement, and so that the state can monitor the progress.

- It is probably better for the Department to decide which technologies meet the criteria and post those as approved. There then needs to be a procedure for adding or removing specific technologies from the approved list.
- If banking is to be allowed, it should be for a short period, such as one year to smooth out end of year discontinuities rather than pushing action into the future.
- Generation behind the meter and off-grid should count so as to ensure that diesel generation (other than short-term emergency use) and other high emission sources are not introduced.
- The state should move to a system of environmental dispatch in order to minimize adding carbon dioxide and other GHGs and other pollutants into the atmosphere.
- DEP should explore how energy efficiency gains from generation and from end use that deliver energy services with less energy might be incorporated into the system to reduce GHG emissions.
- A decision needs to be made as to what extent Combined heat and Power might be counted – if at all.
- It is important to consider all types of clean and renewable electric power production in the context of the future grid that will carry the load to customers and from net meter providers. Since a growing portion of generation will come from distributed sources, some of which will be variable, it is incumbent to develop a smart grid that can deliver and store electricity or the potential to generate electricity as a wider range of supply sources are incorporated. As electric vehicles penetrate the market, this will become increasingly important.
- Reporting requirements need to be simpler than is currently required for the different tiers of RECs and SRECs. As currently proposed, there will not be reporting by individuals, but only by large producers, but that might change should fuel cells or hydrogen storage become available.

Concluding remarks

Proposing a Clean Energy Standard can help Massachusetts' suppliers and end users to reduce their emissions more rapidly. It is essential that a comprehensive perspective be taken that includes efficient generation and delivery of end use electric services and a grid that will support a more diverse set of supply sources. Life cycle assessments need to be made to ensure that the fuel cycle, including leaks of methane, meets the goals for emission reductions that are established. I am skeptical that CCS will ever qualify, and doubt that nuclear power should count within the Clean Energy criteria. Large scale hydro might have a role to play if it can be done in a manner that is truly low methane, does not cause major disruptions of the RPS, and does not disrupt important conservation areas. Please feel free to contact me if you need additional information.

William.moomaw@tufts.edu



November 3, 2014

William Space
Environmental Analyst
Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108

Dear Mr. Space:

The New England Power Generators Association, Inc. (NEPGA) appreciates the opportunity to submit comments regarding the proposed Clean Energy Standard (CES) for Massachusetts. NEPGA is encouraged to see that the proposed CES attempts to create a market-based mechanism to meet the Commonwealth's goals. While NEPGA does not take a position on the underlying policy driving the CES, these suggested enhancements to the proposed CES would provide greater consistency with competitive electric market principles and protect against providing undue preference for a particular technology type.¹

NEPGA is the trade association representing competitive electric generating companies in New England. NEPGA's member companies represent approximately 26,000 megawatts (MW), or 80% of all generating capacity in the region. In Massachusetts, NEPGA represents nearly 90% or roughly 12,000 MW of generation capacity located in 25 towns and cities from a diverse portfolio of fuels and technologies. NEPGA's members employ 1,600 workers in the Commonwealth and contribute nearly \$100 million in state and local taxes. NEPGA's mission is to promote sound energy policies which will further economic development, jobs, and balanced environmental policy. We believe that sustainable competitive markets are the best means to provide long-term reliable and affordable supplies of electricity for consumers.

NEPGA members have invested tens of billions of dollars in Massachusetts and New England for the opportunity to compete in the marketplace every day. Competitive power generators provide competitively-priced, reliable and environmentally responsible electricity for consumers without any guaranteed cost recovery, guaranteed returns or special state handouts. NEPGA has appreciated the leadership that Massachusetts has played across the region in supporting a competitive electricity market. Massachusetts should continue to rely on a well-regulated and well-designed marketplace to provide the opportunity for generators to compete and benefit the state's consumers.

¹ The comments expressed herein represent those of NEPGA as an organization, but not necessarily the position of any particular member.

NEPGA appreciates the DEP's work to create a market-based CES proposal. However, NEPGA believes the following enhancements are necessary to ensure that the CES adheres to competitive market principles and does not provide undue preference for any generator or technology type.

- ***Eligibility of Both New and Existing Generators*** – As discussed at the October 27 stakeholder meeting, the impetus for the CES proposal is to meet the carbon reduction goals in the Massachusetts Global Warming Solutions Act (GWSA). It is important to note that reaching the carbon goals of the GWSA requires a two-pronged approach – maintaining existing low-carbon resources and providing for new low-carbon resources. Thus, a successful CES will include all resources necessary to meet the carbon reduction goals including both existing and new generation. If an unanticipated consequence of implementing a CES is to raise costs as part of meeting carbon goals, this could cause the retirement of existing generation resources that policy-makers are counting upon to help attain the emission reduction targets. This would be counter-productive to the intent of the CES. Including both existing and new resources is the best option for meeting the CES's carbon goals.
- ***Eligibility of All Resources Meeting the Threshold*** – In addition to allowing both existing and new generation to qualify for a CER, all resources – regardless of technology type – meeting the specified emission rate should qualify. NEPGA has consistently advocated that the optimal approach for reaching emissions goals is to develop a standard rate to achieve the goals and then allow any resource able to meet the standard to be eligible. This avoids putting policy-makers in the position of picking winners and losers, and allows the market to deliver the best mix of resources to meet the carbon reduction goals. In addition, resources from within Massachusetts and throughout the region should qualify for the CES as they currently do for the RPS.
- ***Utilize the RPS Framework*** – NEPGA agrees with the DEP position of utilizing the Renewable Portfolio Standard (RPS) framework for the CES. Thus resources can qualify for both the RPS and the CES. Requiring the use of the Generator Information System (GIS) certificates to demonstrate compliance for the CES would take advantage of the well-developed GIS tracking system and minimize some of the administrative elements of implementing the CES.

As the DEP moves forward with the development and implementation of the CES it should continue to utilize a robust stakeholder process. The current CES proposal leaves many important details that should be thoughtfully considered before any policies are established. The questions identified in the DEP's stakeholder presentation regarding which companies to regulate, which generation technologies to include, the eligibility of existing generation and the level of stringency remain to be addressed. Other fundamental questions such as the relationship between the RPS and the CES, the required percentage levels for the CES, the alternative compliance payment level and use of proceeds, how to qualify resources, and how resources eligible for the Alternative RPS should be treated for the CES also must be addressed. These are important policy details and DEP should continue to seek the active involvement of impacted stakeholders as the CES development process continues. An important policy shift represented by the

implementation of a CES should be done deliberately to ensure its success, and the ultimate attainment of the goals in the GWSA without adverse, unanticipated consequences on consumers, companies or the marketplace.

NEPGA appreciates the opportunity to offer these comments on the proposed CES and looks forward to continued active participation in DEP's efforts. Please do not hesitate to contact me directly with any questions or comments regarding NEPGA's position.

Sincerely,

A handwritten signature in cursive script that reads "Sandi Hennequin". The signature is written in black ink on a white background.

Sandi Hennequin
Vice President
New England Power Generators Association

58C Main Street
Plymouth MA 02360
November 3, 2014

Mr. Will Space
MassDEP
One Winter Street
Boston MA 02108
Climate.strategies@state.ma.us

Re: Comments on Proposed CES

Dear Mr. Space,

I applaud MassDEP in taking steps to address the climate emergency facing our planet and our children's future. The proposed market based strategy underlying MassDEP's proposed CES is flawed, however, as described below.

I. Market based solutions such as the CES are flawed and MassDEP should look to other strategies.

The Massachusetts Clean Energy and Climate Plan for 2020 states, "This approach would require a system of tradable credits; eligible generators would generate a CED (or a portion of a CED) with each megawatt-hour (MWh) produced...This design closely resembles the existing Renewable Portfolio Standard (RPS) in Massachusetts."

The Synapse Energy Economics report done in support of the CES says, "A market-based framework is needed to provide a clear signal to the electricity market to improve upon the cleaner energy portfolios of the last few years. One approach to be considered is a CPS...which would require electricity supplies to favor lower-and no-emissions sources in the mix of electricity delivered to their customers."

The market based framework outlined in MassDEP's CES framework and presented to the public in October 2014 is fundamentally flawed. The premise that a 'market-based' framework and related mechanisms will solve the climate crisis are misplaced and nothing more than false solutions. Various reports and data support this conclusion and show that such carbon- trading schemes are ineffective in addressing the climate emergency. These mechanisms have no proven track record. They are not strong enough and do nothing to support decentralized, distributed energy but lock in infrastructure for a dirty energy future.

For example, the European Union's market based emissions trading system is a failure. As a report from Friends of the Earth states,

"The European Union's Emissions Trading System (EU-ETS), launched in 2005, is the largest carbon trading market in the world. It is the EU's principal policy mechanism for reducing greenhouse gas emissions in the power generation and industrial sectors.

The EU-ETS has been a failure. In an increasingly urgent environmental situation, the system is not delivering the emission cuts required by science, historical responsibility and sound financial practice.

Massive over-allocation of emissions permits means the carbon price is too low to incentivise decarbonisation. Human error has resulted in huge fluctuations in the carbon price. Fraud has led to millions of emissions permits being stolen. And polluting companies have received windfall profits through the free allocation of emissions permits.”

“More than simply delaying or avoiding action on climate change, the choice to invest so much political capital in the EU-ETS is obstructing other tried and tested measures that would lead to more certain results. Regulation, taxation and subsidies are more effective at delivering the scale and speed of emissions reductions necessary to avoid catastrophic climate change.

Friends of the Earth believes it is time for the European Union to recognise that the ETS is failing. Rather than depend on this uncertain, ineffective, and unfair system, the EU must privilege other forms of action. This means stronger laws to cut emissions such as national climate laws, developing renewables, and increasing energy efficiency.”

See, <http://www.foeeurope.org/carbon-trading>

The Synapse report itself, page 27, points out that the California EPS is unproven,

“The California EPS is currently being evaluated in response to environmental organizations’ concerns that investments in non-EPS compliant facilities are not being reviewed by the Energy Commission and that California’s utilities may be continuing to make substantial investments in existing coal plants. The groups have requested that California’s Energy Commission amend the implementing regulations to require review of all procurements made by the utilities. At the same time, the utilities have requested a full re-evaluation of the CA PUC’s and the Energy Commission’s regulations implementing the EPS, as required by Public Utilities Code §8341(f).³⁷ To our knowledge, data regarding actual greenhouse gas emission reductions from the California EPS are not yet available.”

Further, such “market based” solutions are easy for the industry to manipulate and gaming the system has been well documented. See,

“Ten Ways to Game the Carbon Markets”,

www.foe.org/sites/.../10WaystoGametheCarbonMarkets_Web.pdf#sthash.HJk4x2Sl.dpuf

MassDEP lacks the ability to prevent fraud and abuse of the CES scheme that is proposed, and can cite to no reliable data showing that the CES will produce the results necessary to stop the current climate crisis. I hope that DEP will take a broader look at this strategy and implement one that is truly innovative and not simply a rehash of failed strategies. There is an abundance of research from reputable organizations available to DEP review and that can form the basis of a truly groundbreaking climate strategy.

II. Nuclear should not be included as a “clean generation unit” under 225 CMR 14.05(7).

It borders on the absurd for MassDEP to suggest that Pilgrim nuclear, or any other nuclear power generating facility should qualify for ratepayer and taxpayers subsidies as a clean generation unit under the CES. Other commenters, including Pilgrim Watch, have submitted comments on why Pilgrim is dirty energy, polluting our air, water, and bodies for over 42 years. As a native of Plymouth, Massachusetts, I take special offense at such a notion.

Pilgrim nuclear should not be entitled to ratepayer subsidies in the form of RECs or CECs. Existing ratepayer and taxpayer subsidies for the nuclear industry are already big enough. “[R]atepayers and taxpayers have provided more than \$500 billion in subsidies, tax incentives and other financial support to the nuclear power industry over the course of the last 50 years.” Beyond Nuclear Fact Sheet, “Nuclear Subsidies-an outline,” available at: <http://www.beyondnuclear.org/fact-sheets/>

In addition to these ratepayer and taxpayer subsidies are the costs of externalities imposed on the public without our consent. For Pilgrim nuclear this includes:

- damage to natural resources from 42 years of using an outdated cooling water intake structure that has caused massive destruction of marine life in Cape Cod Bay;
- the medical cost and emotional toll of a 400% increased rate of the types of cancer related to the radionuclides emitted by Pilgrim;
- the risk of economic loss from consequences of spent fuel fire and core meltdown, and
- lower real estate values for residents owning homes near Pilgrim.

I am happy to provide detailed data backing up each of these facts.

The Synapse report itself confirms that including nuclear is a “windfall” for Entergy and will increase residential customer bills by 4% in 2020 and 6% in 2030. Synapse report at page 4.

Synapse, page 15, further says that including nuclear *will not* achieve a reduction in greenhouse gases:

“CES Does Not Reduce Emissions If Nuclear Power is Assigned CECs

The likely outcome of including nuclear generation in a CES would be windfall profits to nuclear facilities. Providing rewards to nuclear plants will not increase nuclear generation in New England. With nuclear facilities assigned CECs, there is no change in regional emissions, but residential customers nonetheless see their utility bills grow by 4 percent in 2020 and 6 percent in 2030 with respect to the Reference Case (see Table ES-1). The remaining scenarios shown below assume that existing nuclear generation will not be assigned CES credit.”

One of the key conclusions reached by Synapse: “(3) the CES does not reduce emissions if nuclear power is assigned CECs.” Synapse, page 11.

The Synapse report itself advises MassDEP to eliminate nuclear from the CES, stating at pages 66-67:

“Disallowing nuclear generation from use in meeting an otherwise technology-neutral Massachusetts CES obligation would be a necessary condition for making the program effective, at least until there are significant nuclear retirements in New England. At the same time, disallowing nuclear generation will also prevent “windfall profits” from CES credits to owners of nuclear facilities. Unlike renewables, lowering the marginal price of nuclear generation will not, in our opinion, result in investment in new nuclear generators in the region. Instead, revenues from a larger gap between nuclear’s bid price and the clearing price would be pure profit to plant owners with no investment stimulus effect.”

Providing these subsidies to Pilgrim may even extend the life of this aging, destructive, leaking and unsafe nuclear reactor, according to Synapse:

“Providing rewards for nuclear generation will not prompt the construction of new nuclear facilities in New England (due to regulatory, cost, and political hurdles), *although it may serve to prolong the life of existing facilities.*”

In short, the report commissioned by DEP itself shows that including Pilgrim nuclear in the CES is contrary to the goals sought to be achieved by the Massachusetts Clean Energy and Climate Plan.

III. MassDEP and DOER should comply with MEPA and conduct and environmental impact statement of the direct and cumulative impacts of the CES

As a new regulatory program, the CES is subject to the Massachusetts Environmental Policy Act. There should be a full scope environmental impact that analyzes and calls for the mitigation of indirect and cumulative impacts of the program. MassDEP must identify the potential damage to the environment under MEPA resulting from the continued operation of Pilgrim that would result from awarding subsidies and including it in the CES. Further, the environmental impacts of new natural gas infrastructure including environmental justice impacts should be addressed.

Respectfully submitted,

A handwritten signature in blue ink that reads "Margaret E. Sheehan" with a decorative flourish at the end.

Margaret E. Sheehan

c/o 58C Main Street, Plymouth, Massachusetts 02360

meg@ecolaw.biz

508-259-9154

MA DEP
Via Email
climate.strategies@state.ma.us
william.space@state.ma.us

PILGRIM WATCH COMMENT DEP DRAFT REGULATION CLEAN ENERGY STANDARD (December 3, 2014)

Pilgrim Watch (“PW”) is a non-profit citizens’ organization that serves the public interest in issues regarding the Pilgrim Nuclear Power Station, a GE Mark I BWR. The organization is located at 148 Washington Street, Duxbury, Massachusetts, 02332. Many of its members live within the immediate neighborhood of the reactor, and others either within the 10 -mile Emergency Planning Zone or within the 50-mile ingestion pathway. Mary Lampert who represents PW makes her residence and place of occupation and recreation within an approximate six (6) miles of Pilgrim Nuclear Power Station.

OVERVIEW

Pilgrim Watch comments specifically on two sections in the Draft Regulation¹.

- **Section (2) *Definitions***: The draft does not define “clean.”
 - (1) PW’s position is that DEP must define clean in a broad sense – not simply defining it as not emitting carbon dioxide. It should also include whether the generator in its operations or as a result of an accident emits other significant poisons that harm human health, the environment, and economy; and act as a deterrent to the growth of genuinely clean and affordable technologies like wind, solar, energy efficiency and others.
 - (2) PW argues further that DEP must define “clean” by looking not simply at the carbon emissions of the generator itself but also include its entire fuel cycle. The planet does not distinguish between the carbon dioxide emissions of Pilgrim and the carbon dioxide of the entire nuclear fuel chain from mining, fuel fabrication to developing and operating a permanent waste facility.
- **Section (7): *Eligibility Criteria for Clean Energy Generation Units***. PW shows that nuclear, and Pilgrim NPS here in Massachusetts, should not be considered eligible for clean

¹ <http://www.mass.gov/eea/agencies/massdep/news/comment/ces-meeting.html>

generation units because its entire fuel chain is carbon intensive. Pilgrim is dangerous, and even in normal operation it emits dirty and harmful pollutants; it also is an expensive technology. We have clean, safe and cheaper alternatives that serve to stimulate our economy and provide jobs.

DEP asked for comments of (4) key questions. PW responds to two. DEP asked:

- “Which generation technologies should be considered?” PW’s unequivocal response is NOT nuclear, NOT Pilgrim.
- “Are existing technologies eligible?” Again, PW’s response is NOT nuclear, NOT Pilgrim.

DISCUSSION

Pilgrim/Nuclear Power Does Not Fit Into Our Clean Energy Standard

Unlike renewable energies, Pilgrim Nuclear Power Station does not fit in the Clean Energy standard because: Pilgrim is not carbon free; it is dangerous; it is dirty and harmful to the environment and human health; it uses too much water and harms marine life; it produces bomb making material that the world does not need; and Pilgrim is too expensive and we do not need it. For more detailed information, please see the attachment, *Pilgrim Risks: Accidents and Daily Operations, 2014*.

1. PILGRIM IS NOT CARBON-FREE.

The entire fuel chain must be looked at; the planet does not care where the carbon came from

Nuclear reactors themselves are low carbon-emitters. But when the entire fuel chain is considered, as it should be, nuclear power is carbon-intensive, not to mention harmful to human health and the environment². An analysis of studies conducted in 2008 by Virginia Tech and University of Singapore professor Benjamin Sovacool reported that nuclear power is responsible for about six times the carbon emissions of wind power, and 2-3 times the carbon

² Insurmountable Risks: *The Dangers of Using Nuclear Power to Combat Global Climate Change*, Brice Smith, Institute Energy and Environmental Research, 2006 <http://ieer.org/resource/energy-issues/insurmountable-risks-dangers-nuclear/>

emissions of various types of solar power technologies.³

The manufacture of nuclear fuel for nuclear power reactors does result in carbon dioxide emissions from mining, fuel enrichment and plant construction.

Uranium mining, in fact, is one of the most carbon intensive industrial operations. The production of fuel for nuclear reactors is extremely energy intensive. For example, the Paducah, Kentucky plant, that operated from 1952-2013, needed electrical power from two 1,000-megawatt carbon dioxide producing, coal-fired plants. Further, the enrichment of uranium at the Paducah Gaseous Diffusion plant in Kentucky releases not only carbon but massive amounts of chlorofluorocarbons (“CFCs”) which are more damaging as a global warmer than carbon dioxide. Nuclear fuel production in America creates at least 800,000 pounds of CFCs annually. CFCs remain the primary agent for stratospheric ozone depletion.

The “clean air myth” was demolished on May 13, 1999 when the Nuclear Energy Institute’s (“NEI”) advertising campaign was deemed “misleading” by the National Advertising Division of the Better Business Bureau. The specific ad in question, displayed in *Atlantic Monthly* (December, 1998), featured a cute owl singing the praises of nuclear power, and thanked the NEI for “clean air.”

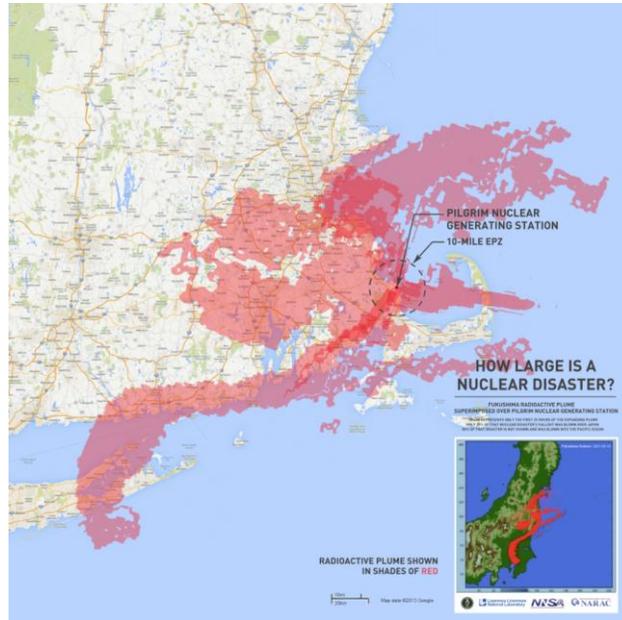
The Business Bureau stated: “The process currently used to produce at least some, if not most, of the uranium enriched fuels that are necessary to power nuclear energy plants emits substantial amounts of environmentally harmful greenhouse gases.”

With the significant disparity in carbon emissions between nuclear and renewables, nuclear should not qualify as a “clean energy” technology even based only on carbon releases, much less on other pollutants. Climate change only knows the amount of carbon dioxide not its specific address.

³ Valuing the greenhouse gas emissions from nuclear power: A critical survey,” Benjamin Sovacool, University of Singapore and Virginia Tech University, Energy Policy 36, June 2008
https://www.nirs.org/climate/background/sovacool_nuclear_ghg.pdf

2. PILGRIM, LIKE OTHER REACTORS, IS DANGEROUS

Who seriously believes that an accident at a wind or solar farm could result in this?



Fukushima's first-day plume superimposed over Pilgrim. Subsequent wind shifts spread the plume further afield.

Accident Costs and Risks

Fukushima was an accident that happened to happen in Japan, an advanced technological society. The reactors that failed at Fukushima, like that at Pilgrim, are General Electric Mark I Boiling Water Reactors.⁴ The reason they failed at Fukushima, and most likely reason they could fail here, was loss of power. Counter intuitively, nuclear power plants do not generate the electric power they need for their own safety systems. They depend on offsite power; offsite power is lost far more often as the result of a hurricane or blizzard than because of a tsunami.

⁴ There are at least two important safety improvements at Fukushima that have not been accomplished at Pilgrim. Both the Fukushima and Pilgrim reactors have a vent that must be opened if there is a reactor accident to relieve pressure in the containment. Fukushima put filters in its vents to reduce the amount of radioactive material that would be released to the public; Pilgrim has not done so. Also, the only spent fuel pool in Pilgrim's GE Mark I reactor is inside the reactor building, about 40 feet in the air. Fukushima built large outdoor ground level spent fuel pools so that it could reduce the density of spent nuclear fuel in the inside spent fuel pools. Pilgrim has not done so; all of the spent fuel that has been generated since Pilgrim was opened is in its inside, up-in-the-air, spent fuel pool.

Beyond that, the buried electric cables that bring power to Pilgrim's safety systems are old and not environmentally qualified. The manholes are periodically submerged or partially submerged and the other always submerged. A recent NRC report indicated an increasing trend in underground cable failures, and the predominant contributing factor was submergence or moisture intrusion that degraded the insulation. The aging management program provides little confidence. Currently: only cables 400 V or more are tested for cable insulation degradation once every six years; the inspection program is silent on the size of the sample required and what is required if deterioration is found; no baseline inspection before license renewal in 2012; and only one inspection each year for water collection in cable manholes and conduits.

When Fukushima failed, three units exploded because the containments surrounding the core were too small to hold in a pressure build-up as the cores began to melt. Pilgrim's containment shares with Fukushima this critical design flaw.

Reactor Core Accident

A reactor core accident at Pilgrim has the potential to release more than twice the amount of Cesium-137 that was released at Chernobyl. The amount of Cs-137 released during the 1986 Chernobyl disaster was 2,403,000 curies. The amount of Cs-137 in the core of Pilgrim's reactor, now and until Pilgrim eventually shuts down, is 5,130,000 curies.

A Spent fuel Pool Accident:

For all practical purposes, Pilgrim's spent fuel pool is full. It is also dangerously overcrowded, in a closed-frame design. It contains more than four-times as much spent nuclear fuel as it was originally designed to hold, and it will remain full and overcrowded for a long time, likely until 2092.

The greatest risk of a spent fuel pool is fire. The water in the pool must cover the tops of the spent fuel assemblies, and circulate. If the water level drops, even to just the top of the assemblies, the fuel assemblies likely will ignite and the fire likely cannot be put out.

The potential consequences of a release from a fire in Pilgrim's spent fuel are about eight (8) times that of the release from a core accident.⁵ Probably even more important, the risks from a spent fuel fire will exist long after Pilgrim stops generating electricity and the nuclear fuel has been removed from the reactor. Pilgrim's operating license expire 2032, and the general expectation is that Pilgrim will shut down well before that for economic reasons. Regardless of when Pilgrim shuts down, the NRC will allow spent fuel to remain in the spent fuel pool until 2092.

A 2013 NRC study found that a pool fire at Peach Bottom NPS (a Pennsylvania reactor having the same Mark I design as Pilgrim) could lead to an average area of **9,400 square miles (24,300 square kilometers) rendered uninhabitable for decades, and displace as many as 4.1 million people.** (NRC Earthquake Study, 2013, Table 33, page 16)

The study by the Massachusetts Attorney General showed that Pilgrim's spent fuel pool was vulnerable to fire and that the estimated consequences of a pool fire could be up to **\$488 billion dollars in damages, and 24,000 latent cancers** from the release of Cs-137.⁶

Dry Cask Accident:

Entergy is on record saying that so long as it continues to operate, Pilgrim plans to fill approximately 3 dry casks - placed on an outside concrete pad near the reactor building - with spent nuclear fuel every 2 years. Until Pilgrim shuts down and likely until 2092, this will have no effect how much spent fuel is in the spent fuel pool. Eventually, long after Pilgrim shuts down, all of the spent fuel will be moved into dry casks. The likely total number of casks will depend on how long Pilgrim operates, but could total 80 to 100. Casks are a far safer storage method of storage than spent fuel pools but they are not without risk. Casks can be penetrated by aircraft and weapons available today, shot from offsite. **Each cask will contain one-half as much Cesium-137, over a million curies, as the total amount released at Chernobyl.** No one knows how

⁵ Report to The Massachusetts Attorney General on the Potential Consequences of a Spent Fuel Pool Fire at the Pilgrim or Vermont Yankee Nuclear Plant, by Jan Beyea, Ph.D., May 25, 2006.

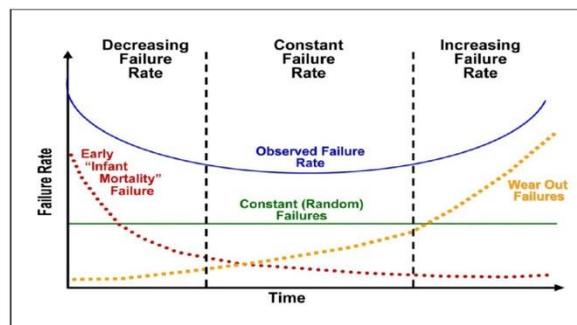
⁶ Ibid

long the casks will remain on site at Pilgrim. There is no place to send them. The NRC contemplates them being there for hundreds of years.

Probability of an Accident There have been 5 nuclear meltdowns in the past 35 years. Do the math, $35 \div 5 = 7$; that equates to a nuclear meltdown every seven years. However, the probability of an accident is essentially irrelevant when one considers the consequences of an accident, outlined above. The NRC postulates (absent any actual history or evidence) a low risk; but there is a risk and the consequences are too great.

We mentioned in the foregoing some of the likely causes of an accident at Pilgrim- loss of offsite power, spent fuel pool fire resulting from a closed-frame, over-crowded spent fuel pool. But it is important to add Pilgrim's age and track record, its security, its susceptibility to extreme natural events, and the role of human error to the list of causative factors.

a. **Age related Degradation could lead to an accident.** Pilgrim received its permit for construction in 1967. It was originally licensed for 40 years and began operations in 1972. How many appliances do you own that are over 40 years old? Pilgrim was re-licensed in 2012 to operate an additional 20 years until 2032. The Union of Concerned Scientists summarized how getting old is one of the reasons safety margins can decrease or disappear over time leading to an accident.⁷ The bathtub curve shown below shows that wear-out failures can cause the overall failure rate to increase.



⁷ *Nuclear Plants and Nuclear Excuses: this is Getting Old*, David Lochbaum, February 25, 2014 Fission Stories #157 <http://allthingsnuclear.org/nuclear-plants-and-nuclear-excuses-this-is-getting-old/>

Pilgrim is old and has been headed in a downward spiral. NRC requires licensees to send information to NRC about certain "reportable events" that occur at their facility. Pilgrim had 20 event reports in 2013 - more than any other plant in the country. About half of the reports were due to equipment problems. The shutdowns and required event reports are clear signs that Entergy is not making the necessary investments in personnel (laid off workers) and maintenance that are needed to safely run this old reactor. Why? Because in Massachusetts' deregulated market, Pilgrim cannot compete with cheaper sources of electricity, mainly natural gas. In 2014 NRC lowered Pilgrim's performance to **DEGRADED**. It now joins 7 other U.S. plants ranked at the bottom.

Also, Pilgrim had two near misses in 2011. A "near miss" raises the risk of damage to the reactor core and thus to the safety of workers and the public.

Reactor and Location	Owner	Highlights
<u>Pilgrim</u> Plymouth, MA	Entergy	SIT: Security problems prompted the NRC to conduct a special inspection. Details of the problems, their causes, and their fixes are not publicly available.
<u>Pilgrim</u> Plymouth, MA	Entergy	SIT: When restarting the reactor after a refueling outage, workers overreacted to indications that the water inside the reactor was heating up too rapidly, and lost control of the reactor. The plant's safety systems automatically kicked in to shut down the reactor.

b. Security Risks at Pilgrim

Nobody lies awake at night worrying about a terrorist attacking a wind farm or solar field; but you should worry about a terrorist attacking Pilgrim.

The terrorist threat did not end after 9/11; acts of malice can occur at random from other parties – example, Timothy McVey the Oklahoma Bomber. Nuclear reactors are pre-deployed nuclear weapons capable of unimaginable destruction to lives, property and our economy. Pilgrim is an especially attractive target located in "America's Hometown."

How secure is Pilgrim? The Massachusetts Attorney General's expert, Dr. Gordon Thompson, put together the following chart showing that Pilgrim is vulnerable from the air, sea and to a lesser degree from the land.⁸

⁸ The Massachusetts Attorney General's Request for a Hearing and Petition for Leave to Intervene With respect to Entergy Nuclear Operations Inc.'s Application for Renewal of the Pilgrim Nuclear Power Plants Operating License

Mode Of Attack	CHARACTERISTICS	PRESENT DEFENSE
Commando-style by land	<ul style="list-style-type: none"> • Could involve heavy weapons/sophisticated tactics • Attack requiring substantial planning and resources 	Alarms, fences, lightly-armed guards, with offsite backup
Commando-style by water	<ul style="list-style-type: none"> • Could involve heavy weapons/sophisticated tactics • Could target intake canal • Attack may be planned to coordinate with a land attack 	500 yard no entry zone – marked by buoys – simply, “no trespassing” signs Periodic Coast Guard surveillance by boat or plane
Land-vehicle bomb	<ul style="list-style-type: none"> • Readily obtainable • Highly destructive if detonated at target 	Vehicle barriers at entry points to Protected Area
Anti-tank missile	<ul style="list-style-type: none"> • Readily obtainable • Highly destructive at point of impact 	None if missile is launched from offsite
Commercial aircraft	<ul style="list-style-type: none"> • More difficult to obtain than pre-9/11 • Can destroy larger, softer targets 	None
Explosive-laden smaller aircraft	<ul style="list-style-type: none"> • Readily attainable • Can destroy smaller, harder targets 	None
10-kilotonne nuclear weapon	<ul style="list-style-type: none"> • Difficult to obtain • Assured destruction if detonated at target 	None

Risk: The above table makes clear that Pilgrim is vulnerable from the air and water. Reactors are robust structures but not designed to resist an intentional attack. Adversaries have ready access to weapons of destruction. Pilgrim’s containment structure is reinforced concrete with (2)

foot thick outer side walls of reinforced concrete, protecting the spent fuel pool; a (5) Ft thick inner reinforced concrete wall around the reactor core; and a light weight roof designed to give in an explosion in order to allow the radiation to go straight up into higher elevations. The reactor core and the pool could be readily breached using instruments of attack that are available to sub-national groups. Dr. Thompson, the MA Attorney General's expert, showed the capability of shaped charges.⁹ He explained that:

A shaped charge could be delivered by a general-aviation aircraft used as a cruise missile in remote-control or kamikaze mode. Alternatively, shaped charges could be placed by attackers who reach the target locations by parachute, ultralight aircraft, helicopter, or site penetration from land or (Cape Cod Bay). The attack might involve a standoff component in which shaped-charge warheads are delivered from an offsite location by an instrument such as the TOW (tube-launched, optically-tracked, wire-guided) missile. A shaped charge could be the first stage of a tandem device. In that configuration, the first stage penetrates a structure and is followed by a second stage that damages equipment inside the penetrated structure via fragmentation, blast, and incendiary or "thermobaric" effects.

Dr. Thompson's tables summarize the reactor's vulnerability today.

Table 7-6: The Shaped Charge as a Potential Instrument of Attack

Category of Information	Selected Information in Category
General information	<ul style="list-style-type: none"> • Shaped charges have many civilian and military applications, and have been used for decades • Applications include human-carried demolition charges or warheads for anti-tank missiles
Use in World War II	<ul style="list-style-type: none"> • The German MISTEL, designed to be carried in the nose of an un-manned bomber aircraft, is the largest known shaped charge

⁹ Environmental Impacts of Storing Spent Nuclear Fuel and High-Level Waste from Commercial Nuclear Reactors: A Critique of NRC's Waste Confidence Decision and Environmental Impact Determination, Dr. Gordon Thompson, February 6, 2009, NRC.gov web based library

A large, contemporary device	<ul style="list-style-type: none"> • Developed by a US government laboratory for mounting in the nose of a cruise missile • Described in an unclassified, published report (citation is voluntarily withheld here) • Purpose is to penetrate large thicknesses of rock or concrete as the first stage of a "tandem" warhead • Configuration is a cylinder with a diameter of 71 cm and
A potential delivery vehicle	<ul style="list-style-type: none"> • A Beechcraft King Air 90 general-aviation aircraft will carry a payload of up to 990 kg at a speed of up to 460 km/hr • A used King Air 90 can be purchased in the US for \$0.4-

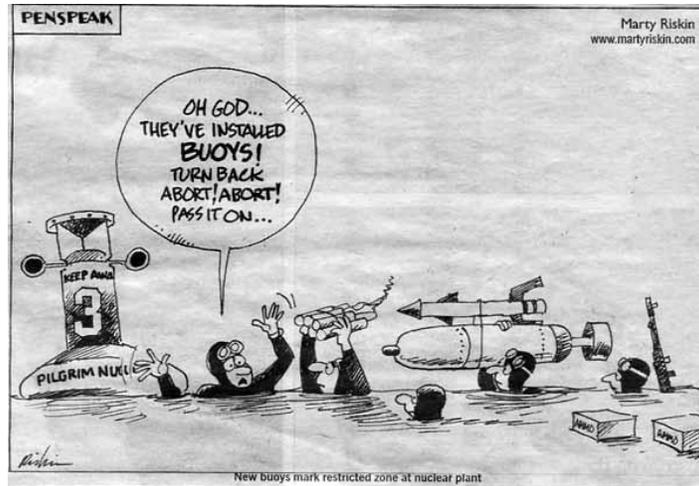
Source: This table is adapted from Table 7-6 of: Thompson, 2007c.

Table 7-7: Performance of US Army Shaped Charges, M3 and M2A3

Target Material	Indicator	Type of Shaped Charge	
		M3	M2A3
Reinforced concrete	Maximum wall thickness that can be perforated	60 in	36 in
	Depth of penetration in thick walls	60 in	30 in
	Diameter of hole	• 5 in at entrance • 2 in minimum	• 3.5 in at entrance • 2 in minimum
	Depth of hole with second charge placed over first hole	84 in	45 in
Armor plate	Perforation	At least 20 in	12 in
	Average diameter of hole	2.5 in	1.5 in

Notes :(a) Data are from: Army, 1967, pp 13-15 and page 100

In addition, Pilgrim was in fact one of seven nuclear plants identified as vulnerable to a ship-borne attack, in a Pentagon-contracted study completed August 2013. The no-entry zone is marked simply by buoys.



Pilgrim's spent fuel pool's location makes it especially vulnerable to attack. It is located in the attic of the reactor, outside primary containment with the light-weight roof overhead. The dry casks, far safer than the pool, also can be penetrated by an air attack or weapons delivered from offsite that are readily available today, discussed above. Each cask contains a considerable amount of radioactivity- ½ the amount cesium-137 emitted during the Chernobyl accident.



Candlepin Bowling for Terrorists

Vulnerability from the land: Pilgrim is not only vulnerable to weapons shot from offsite but access to the grounds is easy. Pilgrim Watch recently filed an allegation with NRC citing 15 trespassing events, most occurred recently. The petition is available on the NRC website, and PW would be happy to provide a copy if you request it. The bottom line is that security is a serious issue.

c. Natural events that could lead to an accident include: seismic, high wind, snow, ice and extreme cold, and extreme high temperature.

- **Flooding:** Flooding and severe storms can cause a loss of power. In serious conditions, flooding can damage backup generators. The main diesel generators are in front of the reactor, close to Cape Cod Bay. Without a cooling system, reactors can overheat and end up

with a serious accident releasing radioactivity offsite. Also the weight of the water on the soil surface during a flood might fail a barrier or cause other damage such as submerging and disabling electric cables that in Pilgrim's case are not environmentally qualified to be in wet conditions. In Fukushima extreme weather conditions at the site prevented workers to perform necessary mitigating actions. Severe storms and flooding could present conditions at Pilgrim so that workers could not perform their jobs to mitigate an accident.



- **Seismic:** Senators Markey and Warren in a letter to NRC Chair Macfarlane,¹⁰ March 31, 2014, noted that, “The new seismic hazard was found to exceed the safe shutdown earthquake at the ground shaking frequencies that are most likely to threaten the equipment needed to safely shut down the reactor.”

e. **Human Error:** Three Mile Island was caused by human error. The studies by President Carter's Kemeny Commission, the US Senate and the NRC agreed that the accident largely resulted from safety reviews that focused on nuclear plant designs and hardware and not adequately on the human factor. The Kemeny Commission October 1979 report said that:

The fundamental problems are people-related problems...wherever we looked, we found problems with the human beings who operate the plant, with the management that runs the key organization, and with the agency that is charged with assuring the safety of the nuclear power plants... the failure of the organization to learn the proper lessons from previous incidents...we are convinced that an accident like Three Mile Island was eventually inevitable.”¹¹

The human factor played into Chernobyl and Fukushima; we expect that it will play again here, especially given NRC's and industry's simplistic belief that no one has to worry because “It Can't Happen here.”

¹⁰ Senators Markey Warren letter NRC 3.31.14 - copy of the letter to the NRC can be found [HERE](#).

¹¹ David Lochbaum, Ed Lyman, Susan Stranahan, Fukushima: The Story of a Nuclear Disaster, 2014, New Press, pg., 150.

f. Post-Accident Clean-up: Fukushima has shown what clean up involves (> \$80 billion); and Chernobyl showed that in a serious accident that cleanup is not possible, leaving “Sacrifice Zones.” Close examination shows that in a serious nuclear accident that the Commonwealth and taxpayers will be left “holding the bag.” Homeowners have no insurance in a nuclear accident. Consider further that:

- No Agreed Upon Cleanup Standard;
- No Federal Agency In Charge - EPA, NRC, DHS all point the finger at one another;
- No Money - Price Anderson¹², the nuclear industry’s indemnity act, is underfunded and covers only the cost of property damage; it does not cover cleanup. Real-world experience in Fukushima has made it clear that it is underfunded,¹³ which is no surprise because the amount was based on the outdated and flawed consequence code- the Melcor Consequence Computer Code¹⁴.
- Waste Disposal: EPA leaves that responsibility to the state and local governments.

Both the Consequences and clean-up costs of an accident at a renewable generator pale in comparison with those of an accident at Pilgrim. Considering the consequences of an accident at Pilgrim, the probability of an accident is irrelevant (though it is very hard to see why an accident at Pilgrim is not the more likely) and providing Pilgrim with a clean energy credit defies commonsense.

3. PILGRIM - HARMFUL TO HEALTH & THE ENVIRONMENT

Seriously, who worries about solar or wind-related cancers, birth defects or reproductive disorders, or other diseases?

Carbon Dioxide is not the only pollutant on the planet. It is a leading cause of climate change; but that does not mean that carbon dioxide is the only pollutant that matters to the health, safety and economy of our planet.

¹² Price Anderson is the nuclear industries indemnity or insurance, established by Congress in 1957. The purpose is to indemnify the industry against liability claims in the event of an accident and ensure monies for the public. Act establishes a no fault insurance type system in which the first approximately \$12.6 billion (as of 2011) is industry-funded as described in the Act. Any claims above the \$12.6 billion would be covered by a Congressional mandate to retroactively increase nuclear utility liability or would be covered by the federal government.

¹³ The Japanese government has budgeted \$14 billion through March 2014 for the cleanup which could take decades. The Japanese Environment Ministry expects the cleanup to generate at least 100 million cubic meters or 130 million cubic yards of soil, enough to fill 80 domed baseball stadiums (Japan decontaminates towns near tsunami-hit nuclear plant, unsure costly effort will succeed, Associated Press, Mari Yamaguchi, March 5, 2012)

¹⁴ See Comments by Pilgrim Watch Regarding SECY-12-0110, Consideration of Economic Consequences within the NRC’s regulatory framework: <http://www.nrc.gov/reading-rm/doc-collections/commission/slides/2012/20120911/>

Radiation is toxic, persistent and a long-lasting pollutant released daily from nuclear reactors. The National Academy of Sciences stated that no amount of radiation is safe; women and children are most at risk. The NAS also noted that relatively high levels of radiation exposure increase the risk, not only of cancer, but also of heart disease and stroke.¹⁵

The Massachusetts Department of Health's Southeastern Massachusetts Health Study 1990 showed a four-fold increase in adult Leukemia between 1978 and 1983. The report stated "a dose-response relationship was observed in that the relative risk of leukemia increased as the potential for exposure to plant emissions also increased."¹⁶ In an attempt to discredit the study, the industry was allowed to appoint its own re-review panel. The second peer review panel could find nothing wrong with the study's methodology. The re-review panel stated clearly in their Executive Summary that, "The [original SMHS] study team adhered to generally accepted epidemiologic principles..." and "the findings of the SMHS cannot be readily dismissed on the basis of methodology errors or proven biases..." But somehow they just couldn't believe it - given Pilgrim's emissions. However for emissions data, they relied on data collected and provided by Pilgrim - not surprisingly it indicated that Pilgrim hardly emitted any radiation.

Subsequent studies continued to show that low, constant levels of radiation exposure cause cancer and genetic mutations. The footprints of radiation-linked disease can be seen in communities surrounding Pilgrim. For example: radiation-linked Cancers in Towns Surrounding Pilgrim show Statistical Significance of SIR a 95% level probability-Massachusetts Cancer Registry 2002 -2009.¹⁷ Plymouth shows statistical significance in leukemia and prostate cancer from 2002-2009; Duxbury in prostate cancer from 2002-2009; Kingston in prostate cancer from 2005-2009; Marshfield in prostate cancer from 2003-2008 and multiple myeloma from 2003-2007. The next MA Cancer Registry report is due summer 2014.

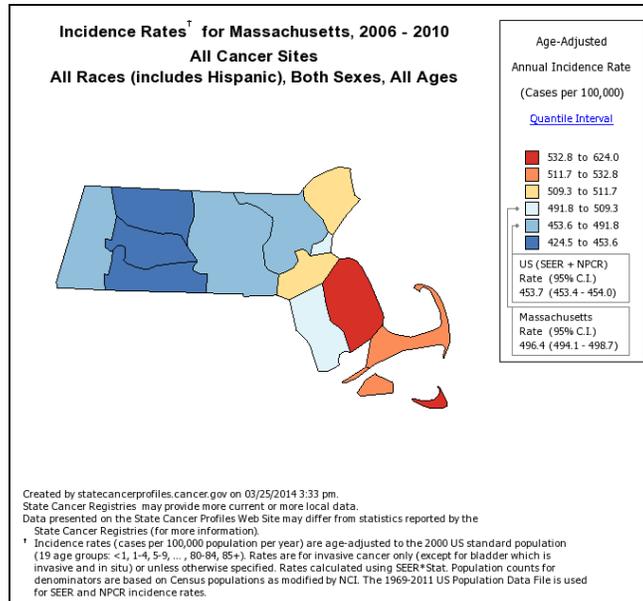
Tritium: MDPH is also concerned about the releases of tritium from Pilgrim. Tritium is especially harmful to children and pregnant women. MDPH is monitoring tritium in wells onsite, but not offsite. Since MDPH's monitoring began, tritium at various levels is found in the onsite wells and the source(s) remain uncertain.¹⁸ How much liquid tritium is getting into Cape Cod Bay also is uncertain. Tritium is released daily in gaseous form from the stack and is brought down by rain offsite. MDPH is not monitoring it so we do not know how much is getting into the ground water and drinking wells.

¹⁵ The National Academy's report is available on the Web at <http://books.nap.edu/>

¹⁶ Adults living and working within ten miles of the Pilgrim reactor had a fourfold increased risk of contracting leukemia between the years of 1978 and 1983 when compared with people living more than 20 miles away, according to a 1990 study by the Massachusetts Department of Public Health. *Southeastern Massachusetts Health Study 1978-1986*, Morris, M.S., Knorr, R.S., Massachusetts Department of Health, Southeastern Massachusetts Health Study, Oct., 1990. Archives of Environmental Health, Vol. 51, p266, 1996, July-Aug. #4

¹⁷ <http://www.mass.gov/eohhs/gov/departments/dph/programs/admin/dmoa/cancer-registry/data/city-town/>

¹⁸ <http://www.mass.gov/eohhs/consumer/community-health/environmental-health/exposure-topics/radiation/environmental-monitoring.html>



Because reactors release radiation on a daily basis, a pollutant that the National Academies say is not safe at any dose, and because the footprints of radiation-linked disease is evidenced in communities around Pilgrim, it makes no sense to call Pilgrim “clean” and provide it with more subsidies.

4. MARINE IMPACT

Solar farms have no marine impact. Cape Wind, the first offshore wind park in the United States off Cape Cod would cause little harm to the environment, according to the 2004 Draft Environmental Impact Statement (DEIS) released by the Army Corps of Engineers... Instead, it would reduce air pollution and energy prices, without causing problems for aircraft, boats, birds or fish, the report projects. The same cannot be said about Pilgrim.

Once Through Cooling: Pilgrim, like all nuclear reactors, generates too much heat. To remove excess heat, it draws in over 500 million gallons of water a day from Cape Cod Bay. Along with the water, it sucks in fish eggs and other microscopic organisms. Larger fish get pulled in by the current too and become trapped on intake screens. The marine life that is drawn in gets pulverized by the reactor condenser system and emerges as sediment that clouds the water around the discharge area, often blocking light from the ocean floor. The sediment cloud results in killing plant and animal life by curtailing the light and oxygen needed to survive. The water that is drawn in cycles through the reactor cooling system, and is then released back into the bay at temperatures 30 degrees above Bay temperature (62F to 100F) – disrupting the ecosystem. The water discharge temperature is averaged over an hour time period. The U.S. Environmental Protection Agency wanted Entergy to measure the water temperature discharged instantaneously

recognizing that some discharges are 130 degrees or more - although the hourly average remains within limits. Entergy prefers the hourly average. Agreement has not been reached. Some organisms are attracted to the warmer environment. But when the reactor is abruptly shut down, water temperatures will drop causing cold-stunning, fatal to fish acclimated to warmer waters.

The following report is from <http://www.pilgrimcoalition.org/facts/environment/>.

Pilgrim has used the equivalent of the entire volume of Cape Cod Bay over the last four decades for cooling, drawing in and killing about a million fish and billions of plankton, fish eggs, larvae, and other marine life. This is a far greater impact than was projected in pre-permitting studies in 1970 that led to the licensing of Pilgrim in the first place. In 2006, Entergy sued Mass DEP to avoid new water pollution regulations. In 2011, the Supreme Judicial Court upheld the new regulations, saying, “The environmental impact of [CWIS] is staggering...destabilizing wildlife populations in the surrounding ecosystem. In areas with a designated use as aquatic habitat (such as Cape Cod Bay where Pilgrim’s CWIS operates), therefore, CWISs hinder the attainment of water quality standards.”

A report by Stratus Consulting 2002 evaluating habitat replacement costs for EPA’s Region I placed the “kill rate” for fish higher. It said that an average of 14.5 million fin fish and 160 billion blue mussels are estimated to be killed on average each year (based on data from 1973-1999) via entertainment and impingement combined. This would mean that more than a million fish have been killed over the past 4 decades.

Violations by Entergy¹⁹:

- No state CWIS permit as required by 2006 regulations.
- Discharge violations: Since at least 1995, discharging toxic corrosion inhibitors without a state or federal permit; chlorine discharge limit violations in 5 of last 12 quarters.
- The joint EPA-DEP Clean Water Act “NPDES” permit expired 16 years ago; and although it has been “administratively extended” for 16 years, Entergy has violated its terms since 2000.
- The Massachusetts “Section 401 certification” of the NPDES permit is outdated and invalid given unpermitted discharges of various pollutants and other violations.
- Since about 2000, no approved “marine monitoring plan” as required by NPDES permit
- Since 2000, Entergy has refused to cooperate with the required technical advisory committee, which was set up as an “integral part” of the NPDES

¹⁹ See NRC Electronic Library, Electronic Hearing Docket <http://adams.nrc.gov/ehd/> Petitioner’s Pleadings in: Pilgrim_CWA; Pilgrim _ ESA-MSA; Pilgrim_ESA-Rosette Tern

permit. Entergy is not meeting its obligations: without compliance with this critical provision, the permit is meaningless.

- Radioactive tritium is leaking into the groundwater which flows into Cape Cod Bay.
- State 2006 coastal zone management “federal consistency certification” is invalid.

5. PILGRIM PRODUCES HIGHLY TOXIC, LONG-LIVED WASTES WITH NO FORWARDING ADDRESS

No other energy source produces waste that will remain lethal for tens of thousands of years

Pilgrim produces radioactive waste that will be lethal for tens of thousands of years placing a burden on generations to come. There is no repository available to put the waste and there is nothing on the horizon. Even if Yucca eventually opened, its maximum capacity has already been reached by waste generated to date. Then another site or sites will have to be developed. Further, generators can trade or sell their spot on the shipping schedule, giving priority to decommissioned reactors. Long litigation along shipping routes is expected. Pilgrim’s plan is to barge the waste to South Boston and then ship it by train through Providence and other cities. Any rationale conclusion is that Plymouth will remain host to a radioactive waste dump for generations to come. Does DEP want to prolong Pilgrim’s life with subsidies, continue to add to the waste pile, located in casks on a pad 100 yards from Cape Cod bay at 25 MSL?

6. PILGRIM PRODUCES BOMB –MAKING MATERIALS

Each reactor produces not just electricity but also about 500 pounds of plutonium a year. We oppose Iran’s nuclear program because it provides the materials for nuclear bombs-both big and small. Therefore why would Massachusetts provide Pilgrim with a clean energy credit?

7. PILGRIM POWER IS EXPENSIVE - WE DO NOT NEED IT

Nuclear industry front groups, some funded by Entergy and Exelon represented at DEP’s October 27 meeting, are making the argument that nuclear reactors need more subsidies and more “friendly” legislative and regulatory policies so that they can compete in a deregulated electric market. Largely natural gas, wind and hydro have made nuclear uncompetitive - smart energy choices now have taken hold.

The front groups incorrectly argue that nuclear is needed because it is important for electric reliability and produces zero carbon emissions. This is simply not so. Pilgrim is old and is not reliable, it results in significant carbon emissions and its power is expensive. Moreover, as pointed out below, it is not needed.

Entergy fought long and hard to deregulate the Massachusetts electric market. Why should Massachusetts ratepayers subsidize an old, dangerous and inefficient electric generator that now finds it cannot compete?

a. Expensive

Pilgrim was highly subsidized at part of the “deals” made when Massachusetts deregulated the electric power industry. Today, even with subsidies, Pilgrim is not cost competitive, particularly with natural gas. One estimate last summer said that Pilgrim’s cost per kwh is 3.5 cents more than the cost per kwh of a natural gas power generator.²⁰ Another estimated using UBS methodology that, in Massachusetts’ deregulated electric economy, Pilgrim annual operating loss will be almost \$30 million.

The back-end costs of dealing with all of Pilgrim’s radioactive waste, costs that will be paid by the taxpayers and rate payers, will run to hundreds of millions of dollars. At the front end, folks forget that nuclear fuel is a nonrenewable energy source with an escalating cost. The same “low-cost” nuclear fuel that sold for \$7 a pound in 2001 now sells for \$34. Imagine the hysteria at America’s gas pumps if a gallon of gas had increased fivefold over a decade.

America imports 84% of its nuclear fuel from “dependable foreign allies” like Russia and Kazakhstan as well as from Canada and Australia – when their mines aren’t flooded. Why would we exchange a dependency on oil from the Middle East for a dependency on expensive, harmful and imported nuclear fuel?

The economics of nuclear power will look far worse if there were another nuclear accident. TEPCO, the owner of the Fukushima plant, estimates that compensation costs for the tens of thousands of people displaced by the accident in Japan will exceed \$50 billion and that it will cost about \$20 billion to decommission the plant. This does not include the cost of eventually decontaminating the surrounding area to what the government defines as an acceptable level, which may also run well over \$50 billion.

b. Not Needed

Pilgrim shuts down to refuel and in 2013 Pilgrim shut down more than 10 times the U.S. nuclear fleet’s average. When Pilgrim is shutdown for refueling or repair, and it has often been off-line for extended periods of time, the lights remain on in the region, providing proof that we do not need Pilgrim’s power.

With the announced closures of Salem, Vermont Yankee, Brayton Point and an oil-fired Norwalk Harbor facility in Connecticut, prices in the near future are expected to increase. However, that is not necessarily a bad thing as it will encourage conservation. According to an

²⁰ Boston Globe, June 14, 2013, Erin Ailworth, Cost of Electricity

article published in Business Wire, April 2014,²¹ that summarized a 2014 ISO NE report,²² the regional market functions is a way that makes the "lights going out" extremely unlikely, but it puts price signals into the market to encourage the construction of new capacity.

Salem Harbor will close this summer taking its 749 MW of base-load power out of the market, but only temporarily. The plant will be torn down and replaced by a \$1 billion, 674 MW natural gas-fired plant being developed by Footprint Power LLC and slated for operation in 2016.

Other plants marked for closure are Entergy Corp.'s 604 MW Vermont Yankee nuclear plant, NRG Energy Inc.'s 342 MW oil-fired Norwalk Harbor facility in Connecticut and the 1,535 MW coal- and oil-fired Brayton Point Station in Massachusetts, which was bought last year by Energy Capital Partners. According to ISO spokeswoman Marcia Blomberg, these plants are part of nearly **3,400 MW of planned** resource retirements over the next five years.

But that is only part of the plan. According to Ms. Blomberg, "**There are 56 proposed projects totaling 6,900 MW in the ISO's interconnection queue.**" "Of that, 26 wind projects represent about 2,100 MW, and 18 natural gas or dual-fuel [natural gas and oil] projects represent about 4,300 MW."

New England uses a combination of power plants, imports of electricity from neighboring regions and demand response -- which reduces power usage during periods of high demand -- to meet its electricity needs. Particularly given the far cleaner and more efficient electrical sources that are in the pipe-line, we do not need Pilgrim.

CONCLUSION

To conclude, we have alternatives to Pilgrim. We can reduce, and are reducing, our overall power needs by using electricity more efficiently. Global warming and pollution are similarly being reduced by energy efficiency, and the use of clean renewable energy such as wind, hydro, solar and biomass. These are the alternatives that will both keep the lights on, and create jobs for Massachusetts. We do not need to subsidize old, expensive, and risky reactors like Pilgrim. We do not need to replace the poison from one source of energy with another, nuclear. All 15 towns on Cape Cod and an additional 5 towns on Martha's Vineyard called for Pilgrim to be closed in

²¹ 2014 Summer Outlook: ISO-NE Expects Adequate Resources to Meet Demand for Power, April 29, 2014
<http://www.businesswire.com/news/home/20140429006405/en/2014-Summer-Outlook-ISO-NE-Expects-Adequate-Resources#.U951mONdWfU>

²² Reliability is the Core of ISO New England's Mission... (facts in report current as of January 2014)
http://www.iso-ne.com/aboutiso/fin/annl_reports/2000/2014_reo.pdf

nonbinding referendums.²³ The people have spoken; we urge you not to include Pilgrim in the Commonwealth's Clean Energy Standard.

Respectfully submitted,

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December 3, 2014

²³ <http://capedownwinders.org/massachusetts-citizens-call-for-pilgrim-closure/>



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Massachusetts Sierra Club Comments Clean Energy Standard (CES) Stakeholder Meeting

November 3, 2014

The Massachusetts Sierra Club appreciated the opportunity to participate with many other stakeholders in the meeting on October 27, 2014, and submits the following comments on the draft regulation. We look forward to continue working constructively with the Department of Environmental Protection (DEP) and all stakeholders in this effort.

The goals of the Massachusetts Sierra Club are the same as those of the Commonwealth as laid out in the Clean Energy and Climate Plan: to reduce greenhouse gas emissions by at least 80% by 2050. Achieving that goal will help us build a vibrant economy and create clean energy jobs. We also agree with Commissioner Cash that over-dependence on natural gas threatens both the prosperity of the state and our ability to meet those clean energy and climate goals.

The DEP is soliciting comment on four key questions: “which generation technologies will count as clean energy, other than those already included in the RPS program; should eligibility be limited to new generators, or should eligible existing generators be included (and how is “new” defined); the compliance obligation of municipal utilities; and the stringency and timeline of emission reductions.”

Which generation technologies should count as clean energy? The Sierra Club believes that the technologies currently eligible for Class 1 of the RPS are sufficient to achieve the Commonwealth’s goals. Those technologies have been demonstrated to deliver the benefits the administration is seeking, and are broadly supported by stakeholders. As has been extensively discussed over the last few years, hydro power is not a clean technology. The unity of the environmental community regarding Canadian Hydro is reflected by their joint comments on House Bill 3968, An Act relative to clean energy resources, which are included as Addendum A. If the administration chooses to pursue the portfolio approach, hydro power should not be included. If the administration chooses to use the emissions threshold approach then it must include a methodology for calculating the greenhouse gas emissions of hydro power that is consistent with analysis conducted by the same firm that provided the report on the Clean Energy Standard, Synapse Energy Economics.¹

Should eligibility be limited to new generators? The Sierra Club supports limiting eligibility to new generators. Existing clean energy facilities are already contributing significant greenhouse

¹ <http://www.clf.org/wp-content/uploads/2012/02/Hydropower-GHG-Emissions-Feb.-14-2012.pdf>

gas reductions and economic benefits to the Commonwealth, but they are insufficient to reach the goals of the Clean Energy and Climate Plan. We recommend using a very straightforward definition of “new” for the purposes of the regulation: any project within or directly connected to the control area of ISO-NE that utilizes eligible technology and completes construction after the date the regulation is enacted. This definition ensures additional job creation from the proposal within the region. It also retains eligibility for projects that have commenced construction to take advantage of the federal renewable energy Production Tax Credit, which could contribute to lower prices for consumers.

Which companies should be regulated? The Sierra Club believes all electric distribution companies serving customers in Massachusetts should be included in the regulation, including municipal utilities. Every customer should receive the benefits of price stability provided by resources such as wind and solar power, especially when compared to the volatility of the price of natural gas.²

What should the stringency and timing of the regulation be? The Sierra Club supports at least doubling the annual escalation of the Class 1 RPS target to 2% per year and implementing the goals of the administration’s proposed SREC II program. If the administration proposes the Clean Energy Standard as presently conceived, at a minimum the regulation should include a floor for RPS-eligible technologies that is higher than the current RPS.

Additional comments consistent with and supporting an achievable clean energy standard

- 1. What clean energy technologies should be incented?** Solar and wind, as well as heat pumps, both air source and ground loop, anaerobic digestion and nascent fuel cell technology such as hydrogen/air and PEM fuel cells, are clean and renewable energy sources. These technologies can benefit from increased Portfolio Standards, whether RPS or APS, as well as renewable energy credits. See comments in Addendum B for an understanding of the impact of heat pump technology on the reduction of electricity demand and the need for thermal gas.
- 2. Energy Efficiency.** Energy efficiency through replacement of incandescent lighting and use of LED lighting should not be underestimated.
- 3. Natural gas pricing.** A principal driver of choice of clean and renewable energy technology will be cost. The major competition for clean and renewable energy resources is natural gas. It cannot be disputed that natural gas will experience upward price pressure due to the export of natural gas as LNG, which may start as early as the end of 2016. See <http://www.eia.gov/analysis/requests/fe/>

² The price of natural gas in Massachusetts has ranged from about \$2.00 to as much as \$6.00 per mBTU in the past 4 to 5 years. It is about \$4.50 to \$5.50 per mBTU since this past winter. Therefore every \$1.00 increase in the natural gas price increases the cost of energy for 60% of the Massachusetts economy by about 20%.

Massachusetts Sierra Club, Clean Energy Standard comments, November 3, 2014

The desired goal is for the Commonwealth to have its economy, public health and environment benefit from a 100% clean energy future That goal will drive how energy policy and infrastructure is developed and built.

We appreciate your considering these comments.

Respectfully

A handwritten signature in black ink, appearing to read 'Edward Woll, Jr.', with a stylized flourish at the end.

Edward Woll, Jr., Massachusetts Sierra Club
Vice-Chair, Chapter Energy Chair
ewoll@sierraclubmass.org
617-338-2859

ADDENDUM A

April 8, 2014

The Honorable Ben Downing
Chair, Joint Committee on Telecommunications
Utilities & Energy
State House, Room 413F
Boston, MA 02133

The Honorable John D. Keenan
Chair, Joint Committee on Telecommunications
Utilities & Energy
State House, Room 473B
Boston, MA 02133

Re: House Bill 3968, *An Act relative to clean energy resources*

Dear Chairman Downing and Chairman Keenan:

The undersigned stakeholders appreciate the opportunity to weigh in regarding House Bill 3968, *An Act relative to clean energy resources*. We oppose the bill as written, and respectfully urge that the bill be re-drafted consistent with the following recommendations so as to maximize potential clean energy benefits and minimize risks. Our organizations strongly support clean, sustainable renewable energy resources such as wind, solar and anaerobic digestion. Long-term commitments for renewable energy sources eligible under the Massachusetts Renewable Portfolio Standard (RPS) deliver tremendous clean energy and economic benefits alike. We agree that there may be a role for increased reliance on electricity generated from imported hydropower – particularly as several large baseload power generating facilities located in Massachusetts and/or serving Massachusetts electric customers approach retirement. However, we are deeply concerned that House Bill 3968 is not tailored to capture clean energy benefits for Massachusetts and instead risks “flooding” the market with enormous procurements of Canadian hydropower without accounting for the climate, environmental, electric system reliability and economic impacts – including lost opportunities to further bolster the burgeoning Massachusetts clean energy sector.

There are important elements of H. 3968 that we believe are inconsistent with the Commonwealth’s clean energy objectives, including economic and environmental interests:

- The bill’s potential advantages for RPS-eligible renewable energy are likely to be illusory in the absence of a minimum threshold for procurement of these high-priority clean energy resources. The bill calls for long-term commitments to a very large¹ amount of electricity from “Class I RPS eligible renewable energy sources... and/or hydroelectric generation” without setting any minimum threshold for RPS-eligible renewable energy, such as land-based and offshore wind. The bill can and should – but does not – prioritize the zero and low-emissions renewable energy resources that Massachusetts has long recognized and sought to advance pursuant to the RPS. The bill’s lack of any measures to ensure a significant minimum commitment to RPS eligible renewable energy represents a lost opportunity to advance these clean energy resources and the local jobs, economic development, electric system reliability, price hedge, climate resilience and other clean energy benefits that these resources provide.
- The bill lacks necessary safeguards to protect economic and environmental interests of the Commonwealth and of ratepayers against decision-making unduly driven by electric utilities’ self-interests. Unlike the electric distribution companies’ solicitations of long-term contracts under Green Communities Act §§ 83 and 83A, the solicitations and commitments contemplated in H.3968 encompass projects where the utilities have direct financial stakes. Critical safeguards are needed to ensure robust and transparent competition among eligible projects and to avoid opportunities for biased and counterproductive self-dealing.

¹ The bill sets a floor of 18.9 Terawatt hours (TWh) per year, equivalent to over 2200 Megawatts (MW) of installed baseload generation. To put that in perspective, this amount of power is roughly 3 to 4 times as much energy as the annual output of the Pilgrim nuclear power plant.

- **H.3968's flawed greenhouse gas (GHG) standard would allow long-term commitments for energy supplies that are inconsistent with the deep emission reduction requirements of the Massachusetts Global Warming Solutions Act (GWSA).** The bill sets a GHG limit of 775 lb/MWh, which is higher than the current average GHG emissions across the ISO-NE electric system, according to recent data.² Such a flawed standard risks locking in long-term commitments for carbon-intensive energy resources that are inconsistent with the GHG reductions needed under the GWSA – particularly over the term of any 20-25 power purchase and delivery commitment (i.e., extending out to 2040, when the Commonwealth will be approaching the 2050 GWSA requirement to reduce emissions 80% below 1990 levels). Hydropower facilities, especially those that include new dams, can have considerable GHG impacts.³ Yet the bill lacks a strong GHG metric to ensure that these GHG impacts are accounted for and minimized.
- **The bill lacks safeguards to minimize other environmental impacts of large hydropower procurements.** Also missing from the bill are criteria to ensure that eligible hydropower facilities would minimize other environmental impacts, including impacts on ecosystem services, important terrestrial and riparian habitats, fish and other aquatic organisms that can be profoundly affected by hydropower facilities. While a requirement for certification of large hydropower facilities by the Low Impact Hydropower Institute may not be feasible at this time, similar environmental criteria should be applied to protect against long-term commitments with facilities having sustained adverse environmental impacts. We strongly support environmental criteria that replicate natural hydrologic cycles such as natural flows (run of river), fish passage and water quality, and nutrient management.

We therefore respectfully urge you not to advance H.3968 in the absence of significant modifications to address the above-mentioned issues. The undersigned would be pleased to work with you and your colleagues to address these concerns and advance the Commonwealth's clean energy objectives, as further discussed below.

- **We support additional long term power purchase agreements for RPS-eligible renewable energy.** Long-term contracts play a critical role in facilitating the financing of new, clean renewable energy generating sources by providing a predictable stream of revenue over time, while also lowering RPS compliance costs and providing an important hedge against fossil fuel price volatility. To this end, we greatly appreciate the General Court's leadership fostering long-term renewable energy commitments through Green Communities Act Sections 83 and 83A. As the Commonwealth looks to continue to grow the renewable energy sector and ensure the RPS targets are met, there continues to be considerable potential for maximizing benefits while reducing economic impacts through further deployment of long-term contracting tools.
- **The Commonwealth should maximize the ability to choose clean energy at every opportunity, including by boosting the RPS targets.** Recent analysis reflects that the Green Communities Act – which significantly expanded commitments to energy efficiency and RPS-eligible renewable energy alike – is delivering an estimated \$1.2 billion in net economic benefits in its first six years of implementation.⁴ Ratepayers are benefitting from factors such as the wholesale market “price suppression” effects of wind and solar facilities that are displacing the most expensive fossil fuel-fired energy. We therefore recommend that, as part of any new large-scale commitment to “clean energy” procurement, consideration should be given to increasing the

² See 2012 ISO New England Electric Generator Air Emissions Report (Draft, released December 2013) available at http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/eag/mtrls/2013/dec202013/draft_2012_emissions.pdf

³ This is due to the one-two punch of GHG emissions released from the decay of newly submerged vegetation, as well as the long-term loss of important carbon sinks such as Canadian boreal forest that no longer can absorb CO₂ after being flooded and submerged.

⁴ The Impacts of the Green Communities Act on the Massachusetts Economy, Analysis Group (March 4, 2014), available at http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Analysis_Group_GCA_Study.pdf

RPS targets – for example, from a 1% per year increase to 2% per year. Given the tremendous potential of offshore wind to deliver truly clean energy in close proximity to electric demand, provide an enormous boost to the burgeoning Massachusetts clean energy sector, and maximize the value of investments already made (e.g., in New Bedford), we encourage, in particular, the inclusion of measures that would provide a meaningful opportunity for offshore wind to compete for cost-effective long-term contracts.

- **To the extent long-term contracts or commitments are made available for non-RPS eligible hydropower, such contracts/commitments must be:**
 - (a) **vetted pursuant to a rigorous, fair, transparent and competitive process** – ideally coordinated by an independent third-party entity whenever there is the potential for consideration of projects in which a distribution company has a direct financial interest;
 - (b) **subject to appropriate environmental standards, including with respect to GHG emissions consistent with the GWSA’s requirements:** to this end, the 775 lb/MWh GHG limit set forth in the bill should be replaced with a limit of 200 lb/MWh (based on average emissions over the term of the commitment);
 - (c) **subject to a minimum blending requirement with RPS-eligible energy:** we recommend that any participating non-RPS hydropower must be combined on at least a one-for-one basis with RPS-eligible energy;
 - (d) **required to establish fixed-pricing over the terms of the commitments in order to provide predictability and hedge against energy price volatility:** long-term hydropower commitments should be required to provide the same price predictability and fuel price hedge benefits that long-term wind and solar commitments can and do provide.

Thank you again for the opportunity to provide feedback on H.3968. We oppose the bill as written, and respectfully urge that the bill be re-drafted consistent with the above recommendations so as to maximize potential clean energy benefits and minimize risks. We would be pleased to work with you and your colleagues in that endeavor.

Respectfully submitted,

Sue Reid,
VP & Director, CLF-
Massachusetts
Conservation Law Foundation

Larry Chretien
Executive Director
Mass Energy Consumers
Alliance

Heather Clish
Director of Conservation &
Recreation Policy
Appalachian Mountain Club

Rob Sargent
Energy Program Director
Environment America

George Bachrach
President
Environmental League of
Massachusetts

Steve Long
Director of Government
Relations
The Nature Conservancy in
Massachusetts

Ben Hellerstein
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Environment Massachusetts

Jack Clarke
Director of Public Policy &
Government Relations
Mass Audubon

Roxanne Eigenbrod Zak
Chairman
Massachusetts Sierra Club

Cindy Luppi
New England Director
Clean Water Action

Peter Shattuck
Director, Market Initiatives
ENE

The Potential Role of Heat Pumps.

We believe that the potential of heat pumps, both ground loop and air source, is not well understood. Heat pumps are subject to an APS by reason of “An Act relative to credit for thermal energy generated with renewable fuels”, at <http://www.eesi.org/articles/view/massachusetts-bill-rewards-renewables-used-for-heating-and-cooling>, passed this year. That legislation can be expected to accelerate their deployment.

Both ground loop and air source heat pumps displace electricity usage as well as natural gas usage. Heat pumps were first primarily used for cooling but they also heat. The cooling capability displaces the use of electricity that powers air conditioners (and the use of gas to power air conditioning systems). The heating capability displaces both electric heat (and gas fueled heating systems). The relatively small amount of electricity to drive the pumps can come from the grid. Electricity from the grid will increasingly be supplied from clean and renewable sources.

Cost effectiveness. It has been mistakenly suggested that heat pumps are too expensive compared with oil and gas heating. The credible study by the Rocky Mountain Institute shows that heat pumps in New England, both ground loop and air source, are far more economic than oil heating, “Heat Pumps, and alternative to oil heat in the northeast” at http://www.rmi.org/Knowledge-Center/Library/2013-05_HeatPumps That analysis is applied also to natural gas heating, especially given the inevitable increase in gas price, and discusses the less desirable alternative of expanding natural gas infrastructure.

It is already well known that cost of energy from the capital investment of a heat pump amortized over its 30 year plus life, will be far less expensive over that period than natural gas or oil driven heating and cooling. Installation of a ground loop system during construction of a ten unit subdivision, for example, would include the cost as part of the cost of water, electricity, sewer, cable, road and driveway infrastructure.

We request that the DEP undertake or recommend undertaking an in depth analysis of the potential impact of ground loop and air source heat pumps. Any study of a clean energy standard would be materially deficient without considering the potential to reduce electricity demand.

November 3, 2014

Commonwealth of Massachusetts
Department of Environmental Protection
One Winter Street
Boston, MA 02108

Re: Discussion Draft Regulation: Clean Energy Standard

Dear Sir/Madam:

The Taunton Municipal Lighting Plant (“TMLP”) files these comments in response to the Massachusetts Department of Environmental Protection’s (“MassDEP”) “Discussion Draft Regulation: Clean Energy Standard” (“Discussion Draft”). The MassDEP has solicited comments on key policy and technical issues relative to its Discussion Draft, which includes among other things, whether to subject municipal light plants to Clean Energy Standard (“CES”) obligations. While TMLP appreciates MassDEP’s efforts to reduce greenhouse gas emissions in Massachusetts, TMLP opposes the imposition of a mandatory CES obligation on municipal light plants. Such regulation of municipal light plant purchases and sales is inconsistent with the longstanding statutory and regulatory schemes governing municipal light plants and is not supported by the language of M.G.L. c. 21N. Moreover, the mandatory CES obligation proposed by MassDEP is inherently unfair to municipal light plants. Accordingly, TMLP urges MassDEP to adopt regulations which specifically exempt municipal light plants that have not opened up their service territories to retail competition from a mandatory CES sales obligation.

I. MassDEP Does Not Have the Statutory Authority to Impose Mandatory CES Regulations on Municipal Light Plants.

The MassDEP seeks to achieve emission reductions by setting a CES that will increase the amount of clean energy that is used by generation sources consumed in Massachusetts, by, among other things, implementing a requirement for retail sellers of electricity to report statewide greenhouse gas emissions and to monitor and ensure compliance with the reporting provisions of M.G.L. c. 21N, the Climate Protection and Green Economy Act, St. 2008, c.298, § 2(a)(5). Discussion Draft, 310 CMR 7.75(1) (emphasis added). Although a specific standard has not been proposed, pursuant to this authority, MassDEP proposes to require all Massachusetts retail sellers of electricity to include in their energy portfolios a minimum amount of power with “clean energy attributes.” *Id.* § 7.75(4). Here, MassDEP seeks to regulate municipal light plants as retail suppliers of electricity regardless of whether they have opened up their service territories

to retail competition. As set forth in the Discussion Draft, MassDEP suggests defining the terms “Retail Electricity Seller” and “Retail Seller” broadly as “a competitive supplier licensed by the Department of Public Utilities or, as each is defined in M.G.L. c. 164A, § 1, an electric utility, municipal electric department or municipal light board.” *Id.* § 7.75(2). MassDEP’s proposal to impose a mandatory CES obligation on all municipal light plants represents a sharp departure from the existing statutory and regulatory framework. Nothing in M.G.L. c. 21N, or even c. 25, c. 25A, or c. 164, evinces a legislative intent to subject municipal light plants to regulation as retail suppliers or to mandate their participation in programs designed to promote clean energy or other environmental objectives. As public entities under local control with no shareholders and who do not participate in the competitive market in selling electricity at retail, municipal light plants should continue to retain the flexibility to structure their own programs in furtherance of the Commonwealth’s clean energy goals based on their individual needs and resources.

As a threshold matter, MassDEP’s Discussion Draft purports to impose a mandatory CES obligation is beyond MassDEP’s statutory authority. Pursuant to M.G.L. c. 21N, § 2(a), MassDEP only possesses authority to impose a *reporting* obligation on retail sellers. Specifically, that provision states in relevant part that MassDEP’s regulations shall:

require reporting of greenhouse gas emissions from generation sources producing all electricity consumed, including transmission and distribution line losses from electricity generated within the commonwealth or imported from outside the commonwealth; provided, however, that this requirement shall apply to all retail sellers of electricity, including electric utilities, municipal electric departments and municipal light boards as defined in section 1 of chapter 164A...

G.L. c. 21N, § 2(a)(5) (emphasis added). Notably, M.G.L. c. 21N does not include any other reference or provision applicable to “retail sellers” or municipal light plants. In addition, it is important to note that M.G.L. c. 21N does not contain any language that provides MassDEP with the authority to impose power purchase requirements on municipal light plants. Indeed, as set forth in the *Massachusetts Clean Energy and Climate Plan* dated December 29, 2010 (“2010 Climate Plan”), MassDEP’s legal authority to impose a CES, formerly referred to as a Clean Energy Performance Standard (“CPS”), warrants further review. As indicated in the 2010 Climate Plan, the Department of Energy Resources (“DOER”) and the Department of Public Utilities (“DPU”) still need to explore the legal authority for implementing a CPS, including “analysis of possible paths forward for creating a CPS, including regulatory or legislative avenues, as well as cost-benefit and implementation issues.” *See* 2010 Climate Plan, at p. 48. Before issuance of the Discussion Draft, it appears that MassDEP did not perform the legal analysis regarding such authority concerning municipal light plants. MassDEP should first perform and make available this legal analysis for review and comment prior to attempting to promulgate the CES.

The lack of express statutory authority to impose a mandatory CES obligation on municipal light plants is significant. Although the absence of an explicit provision is not always conclusive, implied authority to promulgate such regulations still must be established. *See Massachusetts Electric Company v. Department of Public Utilities*, 419 Mass. 239, 246 (1994).

Courts give special scrutiny to assertions of implied authority, which cannot be withstood here. *Id.* at 246.

Nothing in M.G.L. c. 21N or any other statute evinces a legislative intent to subject municipal light plants to requirements for purchasing energy from particular sources.¹ As recognized by MassDEP in its presentation of the Clean Energy Standard (CES) Stakeholder Meeting (October 27, 2014), the CES is very similar to the Renewable Energy Portfolio Standards (“RPS”) program under M.G.L. 25A, § 11F. In contrast to M.G.L. c. 21N, M.G.L. 25A, § 11F contains a clear directive to impose RPS obligations on retail suppliers, and notably, municipal light plants who do not participate in retail competition are exempt (*i.e.*, municipal light plants that do not sell power at retail outside of their service territories). *See* M.G.L. 25A, § 11F (i). There is no statutory or rational basis to impose a similar obligation on municipal light plants now.

To the contrary, the Legislature has consistently recognized that municipal light plants should not be subject to the same statutory and regulatory obligations as private, investor-owned utilities, even with respect to measures that promote clean energy. Notably, municipal light plant power purchases are not subject to DPU regulation or approval under M.G.L. c. 164. As the DPU has acknowledged, because of the statutory framework governing municipal light plants, the DPU ought to defer to the judgment of elected municipal officials in many matters pertaining to management of municipal light plants, including contracts for power supplies. *See Newbay Corp.*, D.P.U. 265, at 18 (1994).

Moreover, the Legislature consistently has exempted municipal light plants from participation in mandatory clean energy-related programs. Under M.G.L. c. 25, §§ 19 and 20, municipal light plants are exempt from mandatory charges designed to promote and require the purchase of energy from renewable energy projects. With the passage of the Green Communities Act in 2008, the Legislature preserved municipal light plant exemptions for mandatory energy efficiency and renewable energy charges and the exemption for mandatory RPS obligations so long as and insofar as the municipal light plant is exempt from the requirements to allow competitive choice of generation supply pursuant to G.L. c. 164, § 47A. *See* St. 2008, c. 169, § 32 (amending G.L. c. 25A, § 11F). Likewise, the Green Communities Act also exempted municipal light plants from Alternative Energy Portfolio Standards (“APS”) and power purchase obligations. *See* M.G.L. 25A, § 11F½(d). Similarly, the Legislature did not subject municipal light plants to mandatory net metering requirements, which are designed to promote customer-owned or operated renewable, basically solar, energy projects. *See* M.G.L. 164, §§ 138, 139. Plainly, at the time of the passage of the Global Warming Solutions Act in 2008, the Legislature clearly and undisputedly manifested an intention through specific statutory language to exempt municipal light plants from a host of mandatory clean energy obligations and required power purchases. Rather, as set forth in M.G.L. c. 21N, § 2(a), the Legislature only went so far as to impose a reporting requirement on municipal light plants. A reporting requirement is fundamentally different than the CES regulations under consideration now that would impose power purchase requirements of clean energy.

¹ The majority of the provisions of M.G.L. c. 21N relate to reporting requirements and the regulation of the emissions sources directly.

Based on the language of M.G.L. c. 21N and an examination of the statutory and regulatory scheme governing municipal light plants, no legislative intent to subject municipal light plants to a mandatory CES obligation and to power purchase obligations can be discerned. *See, e.g., Board of Gas and Electric Commissioners of Middleborough v. Department of Public Utilities*, 363 Mass. 433 (1973). Accordingly, any regulation which attempts to subject municipal light plants to such obligations without a statutory amendment would exceed MassDEP's authority. The TMLP, however, appreciates the Commonwealth's clean energy goals and would continue to implement measures on a voluntary basis, which they have done, to the extent feasible. Indeed, TMLP already has 1.8 MWs of residential solar and 12 MWs of power purchase agreement-based solar power in its energy portfolio. In addition, TMLP already has about 1.25 MWs of nuclear power and over 7.36 MWs of large hydro-electric power in its energy portfolio. Thus, about 18% of TMLP's entire power portfolio is carbon free.

II. The Proposed CES Structure is Inherently Unfair to Municipal Light Plants.

Most municipal light plants, including TMLP, have long-term purchase contracts for carbon-free generation. These include part-ownership of the Seabrook and Millstone nuclear units, an ownership share in the Hydro Quebec HVDC interconnection which brings significant amounts of hydroelectric capacity and energy into Massachusetts, entitlements to hydropower from the Niagara Project in New York, and numerous small scale renewable generation projects, including solar, wind and small scale hydro. Municipal light plants were not required to divest themselves of these contracts under deregulation, and have continued to invest in clean energy. These purchases represent a significant investment on the part of the customers of the municipal light plants. The proposed CES does not recognize the overwhelming majority of the capacity and energy under contract to municipal light plants, but instead requires municipal light plants to purchase all new CECs to cover both the existing and future RPS obligation plus the new CES obligation. This presents the very real possibility that municipal light plants will be paying for more than 100% of their total sales in carbon free generation plus CECs. The cost burden on municipal light plants and its customers / owners would therefore be much greater than that on the customers of regulated suppliers, despite their historic support of clean energy.

Finally, the baseline for measuring the amount of CES obligation, while it is yet to be determined, will, as proposed, look to reduce GHG emissions from some base year. In so doing, and in ignoring pre-existing sources of clean energy, the proposed model effectively takes the non-carbon generation of the MLPs, allocates it to all retail suppliers, and then requires the municipal light plants to buy back their own credits.

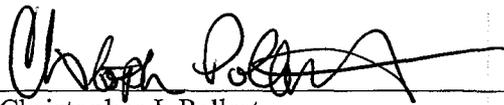
III. Conclusion.

The CES proposed by MassDEP that would impose mandatory power purchase requirements on municipal light plants is wholly inconsistent with the longstanding statutory and regulatory schemes governing municipal light plants and neither express nor implied authority to do so can be found in M.G.L. c. 21N. Moreover, the mandatory CES obligation proposed by MassDEP is inherently unfair to municipal light plants for the reasons discussed above and would, in essence, penalize municipal light plants for their historic support of clean energy. Accordingly, TMLP urges MassDEP to specifically exempt municipal light plants that have not

opened up their service territories to retail competition from mandatory CES power portfolio requirements.

Respectfully submitted,

TAUNTON MUNICIPAL LIGHTING PLANT
By its attorneys,



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The Energy Consortium, Inc.

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A non-profit Association of Industrial, Commercial, Institutional and Governmental Large Energy Users

By Email to: climate.strategies@state.ma.us

November 3, 2014

Attention:

William Space
Massachusetts Department of Environmental Protection
william.space@state.ma.us

Reference: Clean Energy Standard Mass DEP Stakeholder comments due 11/3/14

TEC wishes to make these preliminary comments on the CES as requested.

TEC is a non-profit association that represents large industrial, commercial and institutional electricity and gas end-users in Massachusetts. It has been concerned with Massachusetts's energy policy and regulatory matters for over 40 years. TEC advocates positions that promote fair cost-based energy and distribution rates, diversified supplies and reliable service for its member organizations, their employees and all Massachusetts ratepayers. TEC is a participant in retail and wholesale electric regulatory matters and its members will live with the outcome of the state energy policy.

General comments -

TEC has recently been made aware of the Synapse report that was published in October 2013. The report is well written and suggests several CES scenarios. However, the public (stakeholders and including TEC) have had insufficient time to read and evaluate its recommendations. The report needs to be noticed and reference to its content needs to be publicized.

This CES proposal and report are distressing. The Synapse report notes cost to ratepayers could approach one billion dollars by 2030. How much more do they want the end user to pay? Moreover, the market will be distorted as the state agencies pick winners and losers and the ratepayers will pay the price. Clean energy winners will be handsomely paid with ratepayer money.

Partial List of Members: Acushnet Co., Brandeis University, Harvard University, Longwood Medical Energy Collaborative, MIT, MWRA, Partners Healthcare, P & G (Gillette), Saint Gobain, Tufts University, UMass Medical, Whitehead Institute

Considering the cost implications for ratepayers in a struggling economy and its potential impact on business competitiveness in Massachusetts, TEC questions the timeline to have this done by the end of the year because this severely limits stakeholders' input.

A quick look at the MassDEP website listed no stakeholder CES comments as of this writing. TEC believes that this is the wrong time to implement this standard. The state should delay at least slow the process so that it can evaluate the environmental effects of existing state policies (RGGI and RPS), other initiatives (Cape Wind) and retirement of coal generators as noted in the Synapse report

Below are comments on specific questions:

1.0 Which generation technologies will count as clean energy, other than those already included in the RPS program?

Qualifications for existing technologies/generators needs to be well thought out.

2.0 Should eligibility be limited to new generators, or should eligible existing generators be included (and how is "new" defined)?

TEC doesn't want to incentivize existing hydro facilities which are fairly competitive in today's market which would affect competitiveness and furthermore, would create an artificial floor increasing prices without delivering additional GHG reductions.

3.0 Should municipal utilities have a compliance obligation?

Yes, all MA customers should share/participate in CES since all benefit.

4.0 Should CES specify stringency and timeline of emission reductions?

The stringency of the pounds per MWh should be reviewed without nuclear in the mix. The 50% threshold appears too arbitrary and ambitious.

Thank you for providing the opportunity for TEC to comment on CES and add TEC (me) to the distribution list

Respectively submitted



Roger Borghesani, Chairman
The Energy Consortium

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CLEAN ENERGY STANDARD	:	NOVEMBER 3, 2014
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COMMENTS OF
TRANSCANADA POWER MARKETING LTD
CLEAN ENERGY STANDARD

TransCanada Power Marketing Ltd. (“TCPM”) hereby submits its comments in response to the Department of Environmental Protection’s (“Department” or “DEP”) Clean Energy Standard discussed at the October 27, 2014 Stakeholder Meeting. TCPM appreciates the opportunity to provide these comments.

INTRODUCTION

TransCanada has been granted a license as a competitive electric supplier in the Commonwealth of Massachusetts by the Department of Public Utilities. As a duly licensed supplier serving retail customers in the service territories of each of the regulated Distribution Companies, TransCanada will be obligated to comply with statutory obligations as they pertain to Massachusetts’ retail sales of electric power in the Commonwealth.

BACKGROUND

The DEP has proposed to establish a Clean Energy Standard by which electricity sellers would be obligated to provide an undefined percentage of their retail sales as clean generation

technologies. Aside from the undefined percentage of sales, the definition of eligible technologies and the standard's implementation schedule are also undefined.

COMMENTS

1. Clean Energy Standard requires legislation before it can be imposed

The state's DEP cannot impose a Clean Energy Standard on retail suppliers without action by the Massachusetts legislature. Chapter 298 limits the DEP's authority to "require reporting of greenhouse gas emissions from generation sources...this requirement shall apply to all retail sellers of electricity".

This fact was acknowledged by the Secretary of Environmental Affairs almost four years ago in his "Massachusetts Clean Energy and Climate Plan for 2020" which stated:

Legal authority: DOER and DPU will begin analysis of possible paths forward for creating a CPS [Clean Energy Performance Standard], including regulatory or legislative avenues, as well as cost-benefit and implementation issues.

The DEP cannot regulate the business of retail electric suppliers further than allowed by statute. It has been provided no statutory avenue to impose new regulations on retail suppliers, which would have the effect of increasing costs to Massachusetts consumers. The fact that imposition of a new standard can only result in increased costs to consumers creates a critical need that the Clean Energy Standard be debated and reviewed by the elected representatives of the citizens that pay electric bills.

2. Clean Energy Standard appears to be an administrative “do-over” of failed legislation

In the last legislative session, the administration strongly supported H3968, the Clean Energy Resources bill. That bill was not adopted by the Massachusetts House of Representatives. Now, with a new administration due to be elected in one day, the DEP is bringing forward an administrative remedy that has many similarities to the failed bill sought by the same outgoing administration. H3968 would have required distribution utilities to solicit for purchase of “clean energy generation sources” which were Class I RPS eligible resources or generation from large Canadian hydroelectric facilities. Similarly, the draft Clean Energy Standard presentation (10/27/14) imposes a purchase obligation of RPS eligible resources, and is also clear that “some newer Canadian hydropower generators could qualify.” One difference without a distinction to ratepayers is that the DEP proposes to impose the purchase obligation on “all electricity sellers regulated by RPS” rather than restricting the obligation to distribution utilities. In either case, the ratepayer bears the ultimate cost burden.

3. Rushed implementation of a Clean Energy Standard is a disservice to Massachusetts ratepayers

It was clear during the DEP briefing that significant issues had to be decided before any proposed rule could be issued. The Department's presenters acknowledged them as they made their presentation. Such issues are fundamental to a coherent regulatory program. They cannot be adequately addressed and ventilated in a few weeks nor should they be decided behind closed doors in a rush to adopt a CES before the end of the year. Because they are so critical, any

development of a CES should be considered over a year to two years to assure the public and regulated community that all consequences - intended and un-intended - are understood.

CONCLUSION

For all of the foregoing reasons, TCPM believes further consideration of a Clean Energy Standard by any Massachusetts agency should be halted until such standard is reviewed and deliberated by the incoming administration and the legislature.

Respectfully submitted,
TransCanada Power Marketing Ltd.

By _____
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Commonwealth of Massachusetts
Department of Environmental Protection

Comments of Clean Water Action and other parties regarding the
MA Clean Energy Standard Discussion Draft Regulation

November 3, 2014

Clean Water Action and the ten other undersigned organizations submit these comments in support of a final Clean Energy Standard ('CES' or 'Standard') for the Commonwealth, which we eagerly anticipate will lead us to achieve the Global Warming Solutions Act's emissions reduction requirements. We recommend that such a Standard maximize the benefits of energy efficiency and renewable generation technologies and minimize objectionable consequences of any technology deemed to be eligible.

As the Commonwealth considers policies to bring us within striking distance of the GWSA's ambitious mandates, let us keep in mind the impetus for creating such goals in the first place. Environmental sustainability cannot be achieved piecemeal- it involves building a comprehensive policy framework that creates the conditions for healthy communities and resilient global and local ecosystems. We applaud the Patrick administration for seizing the opportunity to create a far-reaching energy infrastructure, as well as for engaging stakeholders in planning interim steps such as this CES.

We appreciate the effort that the Department and Synapse have invested in creating the discussion draft regulation. We support the phasing out of fossil fuels over time and wholeheartedly endorse a policy that brings distributed generation from renewable sources like solar and wind power to scale in coming years. We further support the Department setting a Standard that would reduce electric sector emissions by 90% or more relative to a 1990 baseline.

However, we must take issue with the consideration of nuclear reactors among the generation sources that could meet a CES eligibility threshold; such a threshold is far too simplistic and would need revising. It would be a serious mistake to allow a 'Clean' standard that endorses current nuclear power systems as viable and desirable alternatives to fossil fuels, based simply on a comparison of lifecycle CO₂e emissions. From mining raw materials to financing and operation to decommissioning and beyond, this industry presents unacceptable burdens to the public beyond carbon pollution. There are far too many risks and costs associated with commercial nuclear power, especially at the state's aging current generating stations, for it to be worthy of a CES Statement of Qualification.

Among the key risks of nuclear plants providing electricity to the region is their proximity to major population centers like the metro Boston area. The possibility is very real of catastrophic accidents that would devastate countless communities and cripple our economy. Already, the Nuclear Regulatory Commission [says](#) that small releases of radiation from reactors are commonplace, and the ones within the ISO-NE control area [exhibit](#) significant age-related deterioration.

The industry's record of pollution leaves much to be desired; indeed, the toxicity of byproducts is one of the factors hastening an end to the era of coal power in Massachusetts. Both the highly radioactive and low-level nuclear waste have few prospects for safe disposal- their toxic effects will [harm life](#) where they are stored or disposed of for millennia to come. They also pose a security threat, making an attractive [target](#) for those with

nefarious intent. And as for-profit corporations, operators face a clear conflict between maintaining bottom lines and reliable safeguards- to the extent those even exist.

The effect of the fuel cooling cycle on adjacent bodies of water, such as Cape Cod Bay into which the Pilgrim plant discharges massive quantities, is to create extreme [alterations](#) to the natural water temperature and quality, and place severe stresses on everything that has evolved to live within that ecosystem. This includes the commercial fishing industry which is deprived of stable fish stocks.

The economic drain that nuclear power represents for taxpayers and ratepayers cannot be overstated. Massive [subsidies](#) are required to maintain industry competitiveness with modern clean energy sources. Nuclear power saddles the public with further massive cleanup and storage costs after the profits are exhausted. Further, including nuclear within a CES could [flood](#) Massachusetts with more credits than could be sold, blocking renewables from further growth and diverting all future subsidies to nuclear. We should not prop up such failed investments with lifelines like CES eligibility, which reward egregious polluters with the very windfall profits that Synapse highlighted as problematic.

Due to these and other public health, security and economic concerns, we recommend that the Standard use a [specific list of eligible technologies](#) rather than an emissions-based eligibility criterion. An eligibility date may be used as well to exclude existing nuclear facilities- to the extent that the final rule does not prevent the eligibility of desirable renewable generators. The Standard also should elaborate on what is meant by the term 'Clean', to clarify that the intent of the Standard extends beyond simply reducing climate pollution. ['Clean' should be defined](#) to allow for new renewable technologies to gain eligibility, and exclude any problematic ones that may otherwise qualify.

We hope our interests coincide with those of the current and incoming administrations, and offer ourselves as a resource to the Department as the CES process continues.

Sincerely,

Cindy Luppi
New England Director
Clean Water Action
Boston

Sylvia Brode
Director
Toxics Action Center
Boston

Ben Hellerstein
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Boston

Jane Winn
Director
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Plymouth

Anna Baker
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Pilgrim Coalition
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David Agnew
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November 4, 2014

William Space
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Dear Mr. Space:

Entergy Nuclear Generating Company ("ENGCO") and Entergy Nuclear Power Marketing ("ENPM") appreciate the opportunity to provide our comments regarding the proposed Clean Energy Standard (CES) for Massachusetts. ENGCO is the owner of the ~ 680 Mw Pilgrim Nuclear Power Station located in Plymouth Massachusetts. On average, Pilgrim generates approximately 5.3 Million MWHRS of near zero carbon electricity every year. ENPM is the designated Market Participant in ISONE on behalf of ENGCO.

ENGCO and ENPM are subsidiaries of Entergy Corporation, a Fortune 500 energy company that has received numerous awards and recognition for being a steward of the environment. Most recently, Entergy Corporation was recognized as a leader among S&P 500 companies by environmental non-profit CDP for its actions to reduce carbon emissions and mitigate the business risks of climate change.

We look forward to working with the DEP in developing a CES for Massachusetts and we are available to answer questions or address any comments that you might have. Please feel free to contact me directly at (914) 272 3391.

Yours Truly,

A handwritten signature in black ink, appearing to read "Marc L. Potkin", with a long horizontal flourish extending to the right.

Marc L. Potkin
Vice President
Entergy Wholesale Commodities

Attachment

Comments of
Entergy Nuclear Generation Company
Entergy Nuclear Power Marketing
Regarding the
Discussion Draft for a Proposed Clean Energy Standard
Massachusetts Department of Environmental Protection
November 4, 2014

Background

On October 9, 2014, the Massachusetts Department of Environmental Protection (MassDEP) released a notice announcing its intention to implement a new Clean Energy Standard (CES).

Accompanying the notice was a discussion draft setting forth the elements of a new proposed CES regulation that would direct sellers of retail electricity service (otherwise known as load-serving entities (LSEs)) to provide a portfolio of supply sources that relies increasingly over time on electricity produced at power plants that emit no or low carbon dioxide (CO₂) emissions. The CES would set the share of supply that would be required to come from clean-energy sources and establish the other terms and conditions of the regulatory framework.

The MassDEP notice states that, among other objectives, a new CES would achieve the following outcomes (with emphasis added):

- A CES would provide a long-term incentive to deliver *increasing amounts of clean electricity* to consumers in Massachusetts, and thereby move toward a stable and reliable energy system.
- The CES would ensure *ongoing progress toward reducing greenhouse gas emissions by 80% by 2050*, as required by the Massachusetts Global Warming Solutions Act of 2008.¹

At the stakeholder meeting regarding the CES discussion draft, MassDEP requested comments on various questions, including: Which companies should be regulated – and whether municipal electric utilities should be included? Which generation technologies should be considered clean? Should existing generators be eligible? What should be the stringency and timeline of emissions reductions?

Entergy offers comments on these questions, with the goal to encourage MassDEP to recognize a foundational issue that should be core to the design of its CES policy (even as other goals, such as affordable supply, figure in to the CES framework eventually adopted by Massachusetts): Above all, the focus should be *avoiding emissions* of CO₂ and other greenhouse gas (GHG) emissions today and in the future. That principle should be the North Star that guides MassDEP's design, because it is consistent not only with the requirements of the state's Global Warming Solutions Act (GWSA) but also with science.

¹ Clean Energy Standard: MassDEP Stakeholder Meeting Invitation, October 9, 2014.

Discussion

Clearly, the scientific consensus makes it clear that a ton of CO₂ (or GHG emissions) avoided today is as important as the ton avoided tomorrow (as in 2030). As a consequence, retention of zero-CO₂-emitting power generation resources currently operating is *as important* as introducing new zero-CO₂-emitting power generation resources in the future. Conversely, the potential loss of zero-CO₂-emitting power generation resources (through failure of markets to reflect the value of the zero CO₂-emissions attribute) means that the addition of new zero-CO₂-emitting supply simply serves only to offset or replace the lost zero-CO₂ generation rather than to help put the state on a pathway toward significantly lowering the overall carbon profile of its power supply.

Because one of the important axioms of climate change is that emissions of GHG are long-lived in the atmosphere, the goal of protecting the continued existence of zero-carbon supply today and avoiding its replacement with fossil-fueled electricity in the near term will reduce the cumulative amount of emissions into (and concentrations of GHG in) the atmosphere from power plants located in Massachusetts and those elsewhere that serve electricity consumers in Massachusetts.

As the owner of Pilgrim Nuclear Station in Plymouth, Massachusetts, Entergy believes that adherence to that principle – *avoiding emissions* of CO₂ and other greenhouse gas (GHG) emissions today and in the future – will lead MassDEP to adopt a CES policy that allows *all existing generation*, including zero-carbon generation produced at nuclear stations in New England, as well as *all new generation*, to be eligible to qualify to produce Clean Energy Certificates (CECs).

Clearly, production of CECs should be tied to the carbon-intensity of electricity actually produced at a power station. To ensure that including all generating resources as eligible for CEC supply does not create an oversupply of CECs (and thus conflict with an intention to design a Massachusetts CES that is “binding”²), there should be a transition period during which all suppliers of power get partial credit for their production of CECs.

With that overall comment, Entergy further suggests that the following principles should guide MassDEP’s design of a CES:

1. **Focus like a laser on carbon emissions from power generation:** The CES should be technology neutral and focus on the degree to which particular electricity resources – whether wind or solar or natural gas or hydro or nuclear – emit CO₂ in conjunction with producing a MWh of electricity. In adhering to this principle, the CES will also be competitively neutral in the regional power market that serves Massachusetts electricity consumers. The GWSA act is focused on GHG emissions reductions, and should not discriminate against any resources that provide zero- and low-carbon electricity supply, as long as the resource is actually produced in or delivered into New England and

² Note that oversupply of CECs could arise in the current situation where the total size of Massachusetts retail electricity demand exceeds the amount of existing clean-power generation in New England. The October 2013 Synapse Report concludes that a CES policy is ineffective if it can be met by simply allowing LSEs to satisfy their CES obligations “by shuffling CECs from existing generation.” As described in the Synapse Report, “Shuffling refers to a situation in which LSEs can comply with a CES standard simply by acquiring energy from a different existing generator or acquiring credits from existing generators.” “CES eligibility terms must ensure a “binding” policy—a CES that cannot be complied with solely by shuffling CECs from existing generation.” Elizabeth A. Stanton, Sarah Jackson, Geoff Keith, Erin Malone, David White, Tim Wolff, “A Clean Energy Standard for Massachusetts: Final Report – Prepared for MassCEC and the Agencies,” Synapse, October 25, 2013.

provides MWh with CO₂ attributes that satisfy the CES standard. The CES should apply to all of the following sources:

- a. MWh of renewables eligible for the Massachusetts Renewable Portfolio Standard (RPS) that are above and beyond the amount required under the RPS;
- b. MWh from existing renewable facilities that would be eligible for the RPS but for the in-service date of the renewable project (i.e., pre-RPS);
- c. MWh produced at large-scale hydro from existing generation and new resources – resources that are not now eligible for the Massachusetts RPS;
- d. MWh produced at existing nuclear generation, as well as MWh from future uprates and/or license renewals for existing nuclear plants.
- e. MWh produced at fossil generating stations.

2. **Generators should receive CECs in proportion to the carbon intensity of the generation produced at each facility.** Electricity produced at fossil-fueled generating units emits higher CO₂ emissions than power produced at renewable and nuclear plants. Illustratively, the Synapse Report cites the following carbon-intensity figures for different power-generation technologies: hydro, solar, wind, and nuclear all have zero pounds per MWh (lbs/MWh); gas-fired combined cycles have 1,100 lbs/MWh; gas combustion turbines have 1,300 lbs/MWh; oil steam turbines have 1,900 lbs/MWh; and coal steam turbines have 2,200 lbs/MWh.³ (Note that in practice, generators within a technology/fuel class actually can have varying levels of CO₂ emissions; for example, new gas-fired combined cycles and combustion turbines will have emissions rates much lower than those listed in the Synapse report. Any CES program should award CECs to a generator based on its actual emissions' rate.) Recognizing that there are these differences in carbon intensity does not predetermine the amount of CECs that a particular generating technology would produce for the power it generates. Synapse's analysis presumes that from Day One of CES implementation, each generator should get one CEC/MWh tied to its avoidance of 2,000 pounds of CO₂, and the Study's recommendations flow from this assumption. But rather than starting with an initial premise that a MWh of power with zero-carbon emissions receives one CEC, the program could begin, for example, by awarding one CEC for every two MWh of zero-carbon emissions produced at a power station in New England (or delivered into New England).⁴ Over time, the CES policy could increase the value of zero-carbon power by moving toward and then reaching a one-to-one relationship between MWhs produced and CECs awarded (taking carbon intensity of generation into account). Other discounting approaches could be used as part of the transition period of CES implementation. But whatever discount is established at the beginning, it should apply to all suppliers. This means that early on, the monetary value of zero-carbon supply would not be as high as it would over time, but such an initial recognition of value would serve several objectives: to correct for the current market's failure to compensate adequately for zero-carbon supply; to avoid premature retirements of zero-carbon resources that would need to be replaced in the near term by

³ Synapse Report, Table 3.

⁴ This statement is based on the premise that MassDEP would intend to adopt its proposal to allow generation located in New England or dedicated to New England's wholesale market to qualify for the CES.

generation at fossil plants; to avoid windfalls; and to allow for a “binding” policy from Day One.

3. **Use the design principle of efficiency and cost-effectiveness:** Today’s existing zero-carbon electricity sources provide a relatively low-cost platform from which Massachusetts is proceeding on its pathway to lower GHG emissions. Adding incremental low-carbon resources beyond those in place today and beyond those expected to meet new RPS requirements in the future will also help. Losing some of the current zero-carbon emissions sources – whether existing hydro or existing nuclear or existing wind turbines already in place – will make it harder (and more costly) in the near term to meet a CES target.
 - a. It is well understood that the electric industry structure in Massachusetts and New England relies on the principle that competitive markets are the means to supply wholesale electricity efficiently. These markets, in turn, provide supply for retail customers in Massachusetts. Consistent with market principles, generators today are compensated for the megawatts (MW) and MWh they produce, without regard to other attributes. Suppliers of zero-carbon supply – whether wind or solar or hydro or nuclear – receive extremely small compensation⁵ for this low-carbon attribute due to market failures, which the CES could move some distance to correct. Including all generators as eligible to generate CECs in inverse proportion to the actual carbon intensity of the MWh they produce would allow for efficient and cost-effective retention of clean energy supply (thus avoiding emissions associated with gas-fired replacement power in the near term⁶) and entry of additional new clean energy generation to help advance Massachusetts towards its statutory goals.
 - b. Given the character of conditions in the markets for electricity in the Northeast, it is not safe to assume (as does the Synapse Report) that existing low-carbon generation resources (e.g., existing nuclear plants) will be able to operate through the full period of their operating licenses. This inaccurate assumption in the Synapse Report undermines many of its conclusions. In the absence of a financial/economic analysis examining the specific conditions at each power plant that seeks to qualify to produce CECs – which, to be clear, should not be the job of the MassDEP in the context of a competitive electricity market – it is not reasonable to conclude that participation in the CES program would produce ‘windfall payments.’ The failure of current power markets to compensate appropriately for the zero-carbon attribute of nuclear generation may create conditions under which a safely operating existing nuclear plant retires prematurely for financial reasons.⁷

⁵ This “small compensation” refers to the effect of carbon-allowance prices (associated with the Greenhouse Gas Emissions Initiative (RGGI) program on electric energy prices in New England.

⁶ Note that in our recommended approach, loss of zero-emitting based electricity supply would require (in the near term, at least) replacement with output at gas-fired power plants for most of the supply. That said, gas-fired power production would need to be phased down over time, consistent with the CES requirements in Massachusetts.

⁷ Note here the decision that Entergy had to reach regarding the continued operation of the Vermont Yankee Nuclear Plant, whose end-of-2014 retirement was announced in the summer of 2013. The announcement included the following statement regarding the company’s decision to close the plant:

“The decision to close Vermont Yankee in 2014 was based on a number of financial factors, including: A natural gas market that has undergone a transformational shift in supply due to the impacts of shale gas, resulting in sustained low

thus leading to replacement of the baseload power supply with a high degree of fossil generation and with its attendant emissions of CO₂ into the atmosphere. Those CO₂ gases will accumulate and contribute to the very same climate change that the GWSA is intended to address. Losing one MWh of nuclear generation and replacing it with one MWh of renewables simply returns the balance to zero; it does not allow the Commonwealth to “deliver increasing amounts of clean energy” nor does it “ensure ongoing progress toward reducing greenhouse gas emissions by 80% by 2050.”

- c. To the extent that baseload suppliers of zero-carbon MWhs retire, they will need to be replaced at more than a one-to-one-MWh basis in order to gain *progress* toward the GWSA’s goal (as compared to simply maintaining today’s level of CO₂ emissions associated with serving Massachusetts electricity consumers’ demand). In the near term and in the absence of cost-effective storage at scale, such replacement and net gains in zero-carbon emissions will occur at true cost to consumers. Many zero-carbon renewable power sources have lower capacity factors (i.e., actual output relative to potential round-the-clock full-load capability to produce power) than nuclear generation. For example, the Synapse Report lists the following capacity factors for different types of renewable generating units: hydro (50 percent); offshore wind (40 percent); onshore wind (38 percent); solar thermal and solar PV (21 percent).⁸ By contrast, nuclear units’ capacity factor is listed at 85 percent. This means that it would require, for example, 2 MW of offshore wind, more than 2 MW of onshore wind, or 4 MW of solar capacity to simply offset the power lost when one MW of nuclear capacity retires, just to offset the same emissions from fossil power generation. Comparing the capacity cost of retaining 1 MW of capacity at an existing unit to the cost to add multiple amounts of capacity at new renewable units, it is much-less costly for consumers to retain nuclear capacity. Similarly, the capacity-related costs associated with retaining 1000 MW of existing nuclear capacity is much lower than the cost of adding 1000 MW of transmission and capacity-costs related to delivering baseload Canadian hydropower into New England. It does not appear that the Synapse study took such capacity costs into account in its analysis of cost to consumers of a CES that includes existing nuclear as compared to one that excludes existing nuclear.⁹ As a consequence, the Synapse Report’s estimate of

natural gas prices and wholesale energy prices; A high cost structure for this single unit plant. Since 2002, the company has invested more than \$400 million in the safe and reliable operation of the facility. In addition, the financial impact of cumulative regulation is especially challenging to a small plant in these market conditions; Wholesale market design flaws that continue to result in artificially low energy and capacity prices in the region, and do not provide adequate compensation to merchant nuclear plants for the fuel diversity benefits they provide.” Entergy press release, August 27, 2013.

Notably ably, the Synapse Report acknowledges this retirement announcement, but all of its analyses assume the continued operation of Vermont Yankee (and all other nuclear plants in New England) to 2030 and beyond.

⁸ Synapse Report, Table 28.

⁹ This conclusion is based on two aspects of the Synapse study: its assumption that all nuclear plants remain in operation (including Vermont Yankee, which is slated to retire at the end of 2014) up through the entire modeling period (which ends in 2030, in Synapse’s analysis, which states on page 3 that modeling beyond 2030 is not viable); and the study’s apparent lack of inclusion of any change in fixed costs of adding/retaining adequate capacity (and/or new transmission investment to deliver hydropower from Canada).

the costs associated with different CES design is deficient and should not be relied upon as an estimate of full cost impacts on consumers.

4. **Use the design principle of fairness:** Given that the GWSA applies to all sectors of the economy and to all electricity produced in and consumed in Massachusetts, it is only fair that if the CES applies to retail sellers of electricity (as opposed to applying to generators of electricity located in Massachusetts), it should apply to all retail suppliers of electricity – whether an investor-owned local distribution company, or a municipal electric utility, or a competitive retail supplier. (As indicated during comments by representatives of municipal electric utilities, many of them already have a relatively high percentage reliance on low- and zero-carbon electricity resources; all such resources should be counted toward their compliance, thus enabling them to be relatively well situated to comply.)
5. **Adopt a relatively stringent standard:** In light of the large resource base of available existing low- and zero-carbon electricity supply, as well as the potential and need to induce new entry of low- and zero-carbon electricity supply over time, the CES standard should be relatively stringent and should begin with a discounted value for the number of CECs to be produced at generators (as described above). This will put MA on the appropriate trajectory toward 80-percent emission reduction over the next decades.
 - a. Starting from the perspective that all existing zero-carbon supply should qualify on Day One: There should be a discount in the value of CECs produced per MWh of output, based on the relative carbon intensity of individual generating facilities. The CES should be established in conjunction with the starting-point discount in order to assure that the CES is binding, while also fair and competitively neutral. Starting the CES this way will establish a non-zero price for CES, without introducing windfalls.
 - b. The discount should be developed so that it declines over time, in conjunction with the trajectory of emissions reductions sought by the CES and consistent with the GWSA targets. The price of a CES will likely rise over time as the discount is diminished and the stringency increases, and as other developments in electricity markets occur (such as increasing reliance on electricity in the transportation sector, which will grow demand for electricity and thus demand for clean-energy resources entering the market).
6. **Design the CES for administrative simplicity, effectiveness and fairness:** The MassDEP should also take this design principle into account as it develops a proposed CES.
 - a. Some parties (at the recent public stakeholder meeting) commented that the CES should reflect life-cycle emissions from any and all eligible generating resources. The MassDEP indicated that it intended to reflect only emissions at the power plant itself. In light of the immature state of the art of performing life-cycle cost analyses and in light of the absence of a conventionally adopted method for measuring/verifying/accounting for GHG emissions in the life cycle of both fuels and the manufacture of materials used in power plants, Entergy agrees that it is

inappropriate as well as administratively infeasible to adopt the use of life-cycle GHG emissions for all technologies on a fair basis.

- b. Notably, it would be patently unfair to apply a life-cycle approach to one source of low-carbon electricity (e.g., nuclear, as suggested by some commenters) and not others (e.g., wind, solar, biomass, hydroelectric, fossil plants with carbon capture and sequestration). A 'fair' and technology-neutral application of life-cycle emissions analysis would account for the GHG emissions associated with such things as: the manufacture and transportation of wind turbines; the manufacture and transportation of solar panels (e.g., from China); the harvesting of biomass materials (which releases GHG emissions) as well as the equipment used in biomass power plants; the loss of peat deposits and boreal forests and decaying organic matter in flooded areas of northern areas of Quebec, leading to methane emissions and CO₂ emissions on a life-cycle basis for large-scale hydro; the methane emissions associated with production and delivery of natural gas; and so forth. Incorporating all such elements would be administratively burdensome at this point.
7. **Smooth transition**: MassDEP should incorporate the types of recommendations noted here in Entergy's comments in order to allow for a smoother transition toward a cleaner electricity supply and avoidance of GHG emissions, while also maintaining affordable power for Massachusetts electricity consumers



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Thank you for the opportunity to submit comments regarding the draft Clean Energy Standard on behalf of Covanta. Covanta is an internationally recognized owner and operator of Waste-to-Energy (WTE) and renewable energy projects and has provided reliable and sustainable municipal solid waste (MSW) management to communities since 1986. Covanta operates over 40 state-of-the-art facilities that convert everyday trash into clean, renewable energy for communities around the world. Covanta's North American facilities supply electricity for approximately 1 million homes.

Here in Massachusetts, Covanta operates four facilities that safely manage nearly 2 million tons of MSW every year and annually generate nearly 1 million MWh of electricity - enough for all of the homes in Worcester. Our facilities also recover and recycle metal from the waste stream. Annually the facilities recover roughly 70,000 tons of ferrous metal, equivalent to the steel in over 8 TD Gardens and over 4,000 tons of non-ferrous metals, equal to the aluminum in roughly 275 million cans. In addition to the four facilities operated by Covanta, there are three other WTE facilities in Massachusetts. All told, the seven WTE facilities employ approximately 500 persons in the state.

MA Should adopt a lifecycle approach

In developing its Clean Energy Standard, we strongly urge DEP to adopt a lifecycle methodology for the quantification of electrical power carbon intensity. Such an approach comes with significant precedent in Massachusetts: biomass facilities are currently evaluated on a lifecycle basis for the RPS. Furthermore, a Life Cycle Assessment (LCA) approach is recognized and recommended by a variety of international organizations involved with GHG management, including the IPCC, the U.S. EPA, and the Clean Development Mechanism of the Kyoto Protocol. An LCA approach also aligns more closely with those of the GHG Protocol, a set of internationally recognized GHG accounting standards, in their final draft of the Policy and Action Accounting and Reporting Standard.¹

When viewed from a lifecycle perspective, WTE is the only major source of electrical generation available that actually reduces net greenhouse gas emissions, even considering stack emissions of anthropogenic CO₂. Anaerobic digestion, currently implemented on a small scale in the United States, also has a negative GHG footprint. WTE and AD facilities are fairly unique as they serve two and sometimes three purposes: waste management, the generation of electricity and, in the case of combined heat and power, steam. Attributing WTE's stack emissions of greenhouse gases without recognition of those emissions avoided by keeping waste of landfills ignores this dual nature of these facilities.

Recognition of WTE as a source of GHG mitigation is widespread both domestically and internationally. The U.S. EPA itself has found that WTE facilities avoid, on average, one ton of GHG emissions as carbon dioxide equivalents for every ton of waste processed when evaluated on a lifecycle basis.² In addition,

the climate benefits of WTE are widely recognized internationally, including by U.S. EPA scientists,³ the Intergovernmental Panel on Climate Change (IPCC)⁴, the Clean Development Mechanism (CDM) of the Kyoto Protocol,⁵ the European Union,^{6,7} and the World Economic Forum^{8,9} Here in the U.S., the Lee County, Hillsborough County, and Honolulu waste to energy facilities have all been validated to generate carbon offset credits under the Verified Carbon Standard program.¹⁰

The key driver in WTE's benefit is its ability to completely avoid landfill methane. When biodegradable waste is placed in landfills, it breaks down anaerobically, generating methane. While most landfills in the U.S. have systems in place to capture and combust this methane, either in flares or engines for energy recovery, it's not a perfect system: U.S. landfills equipped with systems only capture 50 – 70% of the gas generated over their lifetime. As a result, landfills are the third largest source of anthropogenic methane in the United States. The social cost of these landfill methane emissions are between two and fifteen billion dollars annually.

Methane is a potent greenhouse gas, and the climate impact of methane is much larger than previously reported. According to the IPCC's 5th Assessment Report, methane's contribution to climate change is over 40% of the total net drivers of climate change.¹¹ This latest data on methane's contribution to the increase in radiative forcing, a measure of the atmosphere's additional uptake of energy relative to pre-industrial times, and hence global warming of the earth's climate system, is over 75% higher than previously reported. The report updated the 100 year global warming potential ("GWP") to 34 CO₂ when climate-carbon feedbacks are included and 84 times more potent over 20 years.¹² This is 36% greater than the now outdated 100-year GWP of 25 from the IPCC's former report; the same outdated figure just recently adopted by the EPA's GHG reporting program. For years, climate scientists have been calling for separate regulation of climate pollutants like methane owing to their potency and other differences relative to CO₂.^{13,14,15}

The President's Climate Action Plan calls reducing emissions of methane "critical to our overall effort to address global climate change" and initiated an interagency methane strategy. This perspective is consistent with a growing recognition of methane and other short-lived climate pollutants. Last year, the U.S. State Department, the United Nations Environmental Program, and a group of international partners announced the Climate and Clean Air Coalition ("CCAC") to specifically focus on methane and other short-lived climate pollutants ("SLCPs"). Today, the CCAC includes nearly 100 partners, including 39 countries and the European Commission.

The benefits of reducing emissions like methane are significant and can accrue quickly. The CCRA states that "actions to reduce emissions of short-lived climate pollutants will quickly lower their atmospheric concentrations, yielding a relatively rapid climate response. Fast action to reduce short-lived climate pollutants, especially methane and black carbon, has the potential to slow down the warming expected by 2050 by as much as 0.5 Celsius degrees."¹⁶ A failure to address SLCPs, like methane, significantly increases the risk of crossing the 2°C temperature increase threshold widely discussed as most likely to limit severe climate change impacts.¹⁷

MA must use a consistent analytical timeframe for lifecycle analysis

Through the selection of 100 year global warming potentials, the state has established its timeframe for review of climate impacts. As noted by the IPCC 5th Assessment Report, “the choice of time horizon is a value judgment because it depends on the relative weight assigned to effects at different times.”¹⁸ By selecting a 100-year GWP, the state has made its value judgment. However, in its recent changes to the RPS, the state has selected a 20 year requirement for the lifecycle evaluation of biomass, a different value judgment, *without* selecting the appropriate GWPs. The state should select timeframe for evaluation of lifecycle impacts relevant to its focus on short term, or longer term climate impacts. However, a GWP of a similar timeframe should also be used to ensure non-CO₂ gases are averaged over the same relevant timeframe.¹⁹

Certain Existing Generation Should Count Toward the CES

MA DEP has noted that it does not believe that existing facilities should be able to participate in the proposed CES. However, in the interests of maintaining the existing successes in reducing greenhouse gas emissions the commonwealth has achieved from using WTE, there is a strong argument for allowing the state’s WTE facilities to participate in the CES. Furthermore, WTE has such unique benefits that allowing WTE to participate will not open the door to other existing technologies.

The Massachusetts RPS has been successful in encouraging the development of new renewable projects, and the state should be commended for pursuing a strong policy to reduce greenhouse gas emissions. In one respect, however, the RPS as a whole has been less than successful: encouraging jobs within the state. In 2012 (the latest numbers available) only 14.2% of Class 1 renewable electricity was generated in the state.²⁰ This means that more than 85% of renewable power is generated out of state, sending ratepayer dollars and potential commonwealth jobs across the borders.

There is one aspect of the state’s RPS that has been successful in both reducing greenhouse gas emissions and employing people in the state: the state’s seven WTE facilities. All of the state’s renewable energy that is required to be secured from WTE is supplied from in state WTE facilities. Even though 100% of the required WTE electricity in the state’s RPS is generated in Massachusetts, these facilities, because they are in Class 2 in the RPS, receive RECs which are valued considerably lower than Class 1 RECs. Furthermore, the facilities are required to remit 50% of the revenue received from the sale of the RECs to MA DEP to help finance municipal recycling programs. WTE is the only technology that has such a condition placed on it in the RPS. All other technologies, including WTE’s main competition - landfills, retain all the revenue from the sale of RECs. (Landfills, which are the least environmentally sustainable method of dealing with MSW, are also in Class 1 in the RPS, meaning they receive a higher value REC and contribute nothing to advancing municipal recycling programs.)

In addition to receiving lower value RECs (and splitting the revenue with the state), the WTE facilities are under economic pressure because the long term power purchase agreements (PPA) that provided a stable revenue from the sale of electricity have expired. This means that the WTE facilities are forced to compete in the electricity market with electricity generated from natural gas, which is driving down the price for generation. It is important to keep in mind that while natural gas facilities (and all other

electricity generators) are only serving one purpose – i.e. generating electricity – WTE is performing two functions: generating renewable electricity and environmentally sustainably managing solid waste.

Given that WTE is the only major source of electrical generation available that actually reduces net greenhouse gas emissions, even considering stack emissions of anthropogenic CO₂, it is critical that DEP send market signals that indicate this reduction has value and that its economic future should be protected. If one or more of these facilities were to close due to economic pressures, the result would be countless additional tons of MSW being landfilled, contributing additional methane to the atmosphere and thwarting the purpose of both the RPS and the CES (especially since methane is 34 times as potent as CO₂). Additionally, since much of the MSW would have to be landfilled out of state, there would be significant greenhouse gas emissions from the trucks required to transport the MSW to far away landfills.

Given the dual nature of the state's WTE infrastructure, and the significant damage to the state's greenhouse gas reduction goals if they were to close, it is necessary to allow WTE facilities to participate in the CES. To avoid other existing technologies from diluting the effectiveness of the proposed CES, the DEP should impose a standard that only existing technologies that *reduce* greenhouse gas emissions, when analyzed with a LCA methodology, be allowed to participate. This will allow the proposed CES to encourage the development of new low greenhouse gas emitting facilities while at the same time protecting the existing technologies that reduce greenhouse gas emissions (ensuring the state does not lose ground).

Moving in this direction will protect the state's greenhouse gas reducing technologies, save Massachusetts jobs, encourage the development of new low greenhouse gas emitting technologies and ensure the state remains on its path to achieve the goals of the Global Warming Solutions Act.

¹ WRI/WBCSD GHG Protocol (2013) *Policy and Action Accounting and Reporting Standard*.
<http://www.ghgprotocol.org/mitigation-accounting>

² USEPA, Air Emissions from MSW Combustion Facilities webpage, accessed October, 2013
<http://www.epa.gov/epawaste/nonhaz/municipal/EfW/airem.htm#6>

³ Kaplan, P.O, J. DeCarolis, and S. Thorneloe, 2009, Is it better to burn or bury waste for clean electricity generation? *Environ. Sci. Technology* 43 (6) pp1711-1717. Available at: <http://pubs.acs.org/doi/abs/10.1021/es802395e>

⁴ EfW identified as a "key mitigation measure" in IPCC, "Climate Change 2007: Synthesis Report. Contribution of Work Groups I, II, and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change" [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp. Available at:
http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm

⁵ Clean Development Mechanism Executive Board: "Approved baseline and monitoring methodology AM0025: Avoided emissions from organic waste through alternative waste treatment processes." Available at:
<http://www.cdm.unfccc.int/methodologies/DB/3STKBX3UY84WXOQWIO9W7J1B40FMD>

⁶ EU policies promoting EfW as part of an integrated waste management strategy have been an overwhelming success, reducing GHG emissions over 72 million metric tonnes per year, see European Environment Agency, *Greenhouse gas emission trends and*

projections in Europe 2009: Tracking progress towards Kyoto targets
http://www.eea.europa.eu/publications/eea_report_2009_9

⁷ European Environmental Agency (2008) Better management of municipal waste will reduce greenhouse gas emissions. Available at: http://www.eea.europa.eu/publications/briefing_2008_1/EN_Briefing_01-2008.pdf

⁸ World Economic Forum. *Green Investing: Towards a Clean Energy Infrastructure*. January 2009. Available at: <http://www.weforum.org/pdf/climate/Green.pdf>

⁹ World Economic Forum. *Policy Mechanisms to Bridge the Financing Gap*, January 2010. Available at: <http://www.weforum.org/reports/green-investing-2010-policy-mechanisms-bridge-financing-gap>

¹⁰ See Project ID's 290, 1036, PL1305 for the Lee County, Hillsborough County, and Honolulu projects respectively in the VCS Project database, available at: <http://www.vcsprojectdatabase.org/>

¹¹ Methane's contribution to the increase in radiative forcing relative to 1750 is 0.97 W / m², 42% of the total net increase in radiative forcing of 2.29 W / m². See Figure SPM.5 of IPCC WGI. 2013. *Working Group I Contribution to the IPCC Fifth Assessment Report Climate Change 2013: The Physical Science Basis Summary for Policymakers*.

¹² The IPCC concluded that "it is likely that including the climate-carbon feedback for non-CO₂ gases as well as for CO₂ provides a better estimate of the metric value than including it only for CO₂." See Table 8-7 of *IPCC WGI Fifth Assessment Report, Chapter 8: Anthropogenic and Natural Radiative Forcing*.

¹³ Jackson, S., (2009), Parallel Pursuit of Near-Term and Long-Term Climate Mitigation *Science*, **326**: 526-527

¹⁴ Weaver, A., (2011), Toward the Second Commitment Period of the Kyoto Protocol *Science*, **332**: 795-796

¹⁵ See p2 of UNEP, WMO, (2011), *Integrated Assessment of Black Carbon and Tropospheric Ozone: Summary for Decision Makers*. http://www.unep.org/dewa/Portals/67/pdf/Black_Carbon.pdf

¹⁶ Climate and Clean Air Coalition website, accessed 9/2/2014. <http://www.unep.org/ccac/Short-LivedClimatePollutants/BenefitsofMitigation/tabid/130286/Default.aspx>

¹⁷ Shindell, D. *et al.*, (2012) Simultaneously Mitigating Near-Term Climate Change and Improving Human Health and Food Security, *Science*, **335**, 183-189.

¹⁸ See p711-712 of *IPCC WGI Fifth Assessment Report, Chapter 8: Anthropogenic and Natural Radiative Forcing*.

¹⁹ Weaver (2011)

²⁰ MA DOER, April 22, 2014, *Massachusetts RPS and APS Annual Compliance Report for 2012*
<http://www.mass.gov/eea/docs/doer/rps-aps/rps-aps-2012-annual-compliance-report-042214.pdf>



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November 7, 2014

Mr. David Cash, Commissioner
Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108

RE: Comments on Draft Regulations for a Clean Energy Standard

Dear Commissioner Cash:

Thank you for the opportunity to comment on the Discussion Draft Regulations for a Clean Energy Standard recently issued by the Department of Environmental Protection (DEP). Nalcor Energy urges the Department to avoid restricting the eligibility of clean energy imports to generation sources located in electrical control areas immediately adjacent to the New England Control Area.

Power generated by clean energy sources located in non-adjacent control areas can be precisely tracked and its delivery to the New England Control Area can be verified, as needed. That power can and should be eligible for use by retail suppliers to comply with a Clean Energy Standard. The Draft regulations should be revised to eliminate the adjacent control area requirement.

Nalcor

Nalcor Energy is a corporation owned by the Province of Newfoundland and Labrador. The company's business activities include the development, generation, transmission and sale of electricity. We currently operate over 7,000 megawatts (MW) of predominately hydroelectric generating capacity, with more than 800 additional MWs under construction. The output of these resources is largely committed to serve the needs of customers in eastern Canada. However, under the right circumstances, we would be able to develop more than 2,200 MWs of additional hydroelectric generating capacity and use it to deliver clean energy to consumers in Massachusetts.

Nalcor Energy strongly supports the development of a Clean Energy Standard for Massachusetts and we commend you for proposing to develop such a standard. It could make a valuable major contribution to meeting the carbon reduction goals articulated in the Global Warming Solutions Act and in the MA Clean Energy and Climate Plan for 2020. Imports of

hydroelectric power to Massachusetts can and should be a key contributor to achieving those goals.

To that end, it is essential that imports of hydroelectric power be eligible for use by retail electricity suppliers to comply with a Clean Energy Standard. That eligibility would contribute significantly to establishing the right circumstances for Nalcor Energy to develop its hydroelectric resources and deliver its power to Massachusetts. With that outcome in mind, Nalcor Energy is pleased to comment on the Discussion Draft.

Adjacent Control Area Requirement

The Discussion Draft proposes to make all resources eligible to comply with Class I renewable energy requirements also eligible to comply with the CES requirements. Nalcor has no objection to this premise. It makes logical sense for both policy and administrative reasons. However, the Draft goes further and anticipates imposing certain requirements on resources that do not qualify as Class I resources. In particular, it suggests that only resources located in control areas “adjacent” to the New England Control Area would be eligible to participate in the CES.

This is an unnecessary and costly assumption. The reasons the Department of Energy Resources adopted the “adjacent” control area requirement are specific to the goals and objectives of the Renewable Portfolio Standard. These have to do with promoting development of indigenous renewable generating resources, along with the economic benefits of job creation and keeping energy spending circulating within the regional economy.

The objective of a Clean Energy Standard is very explicitly to reduce carbon emissions that contribute to climate change. This goal can be accomplished through the use of resources further afield than merely those located in adjacent control areas. Climate change is a problem of global dimensions. Displacing fossil fuel use to provide power to Massachusetts makes sense regardless of whether the resource used to do this is located near or far from Massachusetts. The only issue should be verifying that the power is actually delivered for consumption in the New England Control Area. In that case, it will definitely displace operation of fossil fueled generation located within the region.

To reach New England, Nalcor’s hydroelectric power must travel through an intervening control area. Thus, a limitation on eligible imports to only those coming from adjacent control areas would prevent Nalcor’s hydroelectric power from qualifying for the CES. That would be most unfortunate because this resource is one of the largest untapped clean energy power sources in North America that can be delivered to Massachusetts. To exclude it from competing to help achieve Massachusetts’ climate goals because it was located outside a boundary that reflects administrative process rather than scientific realities is somewhat arbitrary.

Tracking and Verifying Power Flows

Fortunately, there is a well-established system that is used by the electric grid's operators to track power flows between and through electrical control areas. This system can be used to verify delivery of power from a specific, qualifying source to the New England region. It is administered using electronic "tags" (known as eTags). ETags are similar to FedEx tracking numbers in the sense that similar to how tracking numbers identify and track a parcel from its sender, through various distribution hubs, to its recipient; an eTag identifies each flow of electricity on a transmission line and tracks its movement from its point of creation at a generator to its point of consumption at an electrical load.

In order to participate in an electricity market such as the one operated in the New England Control Area, importers to that market must use eTags to identify to the administrator of that market, in this case ISO-NE, and to each of the operators of control areas in between that market and the one in which the generator is located, how much electricity is scheduled to flow from the generator, across the control areas, using which transmission paths, serving which load, and exactly when it flowed. These tags identify the exact identity and location of the generating unit used to produce the power and each of the transmission interfaces over which the power flowed, all the way to its ultimate point of consumption.

This is a system with substantial government oversight and enforcement. For power flows occurring within the United States, the Federal Energy Regulatory Commission (FERC) oversees eTag rules and enforces compliance with them. For power flows in Canada, the National Energy Board, along with provincial regulators, oversees eTag rules and enforces compliance with them. The North American Energy Standards Board (NAESB) is comprised of Canadian and American transmitters and grid operators and maintains eTag rules and reporting standards ensuring consistency across national borders.

ETags could also be used to reliably track clean energy delivered from non-adjacent control areas to New England. For example, a hydroelectric generating unit located in Canada sending power out of its home control area, through a second control area and into the New England control area, could use eTags to report and verify each such delivery.

We describe this system in detail to assure the DEP that it can reliably determine if clean energy power flows are delivered to New England. There is no reason to exclude flows of clean energy from the Newfoundland and Labrador control area from eligibility for a Massachusetts CES. Doing so would be arbitrary and eliminate a significant source of clean energy from competing to help meet Massachusetts' needs.

Revisions to the Draft Regulations

To avoid this problem, we recommend the following changes be made in the Draft regulations in Section 7.75(7) (c):

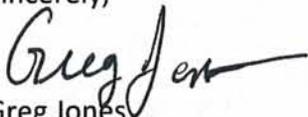
Special Provisions for a Generation Unit Located in a Control Area ~~Adjacent to~~Outside of the ISO-NE Control Area. The portion of the total electrical energy output of a clean generation unit located in a control area ~~adjacent to~~outside of the ISO-NE control area that qualifies as clean generation shall meet the requirements in Rule 2.7(c) and all other relevant sections of the NEPOOL GIS Operating Rules or any successor rule, and the requirements in 310 CMR 7.75(7)(c)....

2. The generation unit owner or operator shall provide documentation, satisfactory to the Department, that:

- a. the electrical energy delivered pursuant to the legal obligation was settled in the ISO-NE Settlement Market System;
- b. the generation unit produced, during each hour of the applicable month, the amount of MWh claimed, as verified by the NEPOOL GIS administrator; if the originating control area employs a generation information system that is comparable to the NEPOOL GIS, information from that system may be used to support such documentation;
- c. the electrical energy delivered under the legal obligation received a NERC tag confirming transmission from the ~~adjacent~~originating control area to the ISO-NE control area; and
- d. the clean generation attributes have not otherwise been, nor will be, sold, retired, claimed, used or represented as part of electrical energy output or sales, or used to satisfy obligations in jurisdictions other than Massachusetts.

We thank you for the opportunity to provide these comments.

Sincerely,


Greg Jones
General Manager
Nalcor Energy Marketing



VIA ELECTRONIC MAIL

November 7, 2014
Will Space
Massachusetts Department of Environmental Protection
1 Winter St
Boston, MA 02108
climate.strategies@state.ma.us

Re: Massachusetts Draft Clean Energy Standard Regulation

Dear Mr. Space,

Thank you for the opportunity to comment on the Department of Environmental Protection’s (“DEP”) Discussion Draft Clean Energy Standard Regulation.

Northeast Utilities (“NU” or “the Company”) recognizes the importance of the Commonwealth’s clean energy goals and applauds DEP for exploring solutions to comply with the requirements of the Global Warming Solutions Act. The Company also recognizes that Massachusetts and the rest of New England are presently facing considerable challenges with respect to the region’s energy markets. Massachusetts electric customers will incur substantially higher costs in 2015 due to inadequate electrical and gas infrastructure and the continued expansion of many existing clean energy programs.

The Company does not believe that the proposed Clean Energy Standard (“CES”) is an appropriate solution to the challenges presently facing Massachusetts electric customers. As noted below in Table 1, existing clean energy programs already have strong financial support and represent a significant investment for customers all over the Commonwealth. NU anticipates that adoption of a CES as outlined in the discussion draft would result in substantial further retail energy cost increases to customers that already face some of the highest energy costs in the nation.

Table 1: Estimated Annual Massachusetts Clean Energy Costs

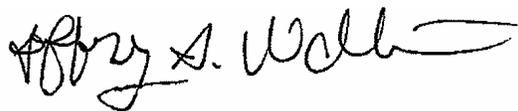
<i>\$M</i>	2013	2014	2015	2018
Solar RPS	50	150	500	415
Long-Term Contracts	8	3	3	265
Other RPS/APS	315	280	275	185
RGGI	65	105	130	180
Net Metering	15	35	65	85
Total	453	573	973	1,130

Moreover, in NU's view, the proposed CES is duplicative and ill-conceived as it is substantially based on the designs of several existing Renewable and Alternative Portfolio Standards ("RPS" and "APS"). Existing portfolio standards have not been effective instruments for supporting sustained development of new resources at competitive prices:

- Nearly 70% of the 2012 Massachusetts APS obligation and 80% of the RPS Class II obligation was met through alternative compliance payments ("ACP") rather than generation purchases.¹ This resulted in customers paying \$55 million to the Massachusetts Clean Energy Center, rather than to suppliers of renewable and alternative energy in 2012.
- Maintaining growth of RPS Class I supply has required passage of Section 83 and 83A of the Green Communities Act to facilitate financing of new resources. Massachusetts Electric Distribution Companies have made over \$5.5 billion in contractual commitments to projects that are still under development and yet to be reflected in customer bills.
- Support of solar development through the RPS Class I carve-outs has required Massachusetts customers to pay substantially higher prices than those in other states. The Solar Carve-Out I program includes a target floor price of \$285/SREC and 2015 SREC prices are presently trading in excess of \$400/SREC. By contrast, Connecticut customers are supporting equivalent solar resources at less than \$100/REC through the ZREC program.

Based on these observations, the Company strongly discourages DEP from adopting an additional portfolio standard at this time. NU expects such a measure would result in customers incurring additional retail energy cost increases to cover high certificate premiums and/or ACP, and would result in only modest changes to the region's generation resource mix. The Company instead encourages DEP to work collaboratively with other agencies and stakeholders to develop competitive, cost-effective solutions to the considerable energy challenges facing Massachusetts and New England.

Thank you,



Jeffery S. Waltman
Manager, Planning and Power Supply
Northeast Utilities

¹ *Massachusetts RPS & APS Annual Compliance Report for 2012*, Massachusetts Department of Energy Resources, April 2014



November 12, 2014

Commonwealth of Massachusetts
Department of Environmental Protection
One Winter Street
Boston, MA 02108

Re: Clean Energy Standard – Comments of Bloom Energy

To Whom it May Concern:

Bloom Energy Corporation (“Bloom Energy”) hereby respectfully submits its Comments in follow up to the October 27, 2014 Clean Energy Standard Stakeholder meeting hosted by the Massachusetts Department of Environmental Protection (DEP). We are submitting comments late due to the need to conduct additional analysis of the proposed regulations and its impact on fuel cell technology.

Bloom Energy is a provider of breakthrough solid oxide fuel cell technology that generates clean, reliable, and highly-efficient onsite power using an environmentally superior non-combustion process. Bloom Energy currently has over 140 megawatts (“MW”) of operating systems at over 120 locations across the United States and in Japan. In Massachusetts, Bloom Energy is seeing growing interest from customers who desire a clean and reliable distributed power generation solution, but do not have the thermal requirements necessary to support a combined heat and power (“CHP”) solution.

Bloom Energy applauds the DEP for unveiling this important Clean Energy Standard initiative, and especially for proposing a technology-neutral

performance based approach. Bloom Energy would like to submit the following specific comments on the Proposal:

1. Eligibility of Behind-the-Meter Generation

DEP should clarify that generation connected to the end-use customer's side of the electric meter is eligible to generate Clean Energy Credits that can be sold to a load serving entity for use against their obligation. Although 'Behind-the-meter generation' is included in the eligibility criteria, DEP should clarify this concept throughout the document. For example, (4) Clean Energy Standard states that *"the total annual sales of each retail electricity product sold to Massachusetts end-use customers by a retail electricity sellers shall include a minimum percentage of electrical energy sales with clean generation attributes."* It should be clarified that the Standard refers to total annual sales *plus credits purchased from behind-the-meter generators in the ISO-NE control area.*

A CES that allows behind the customer-meter generation to participate will have the effect of leveraging private investment and federal investment tax credits along with investments by the Massachusetts EDCs pursuant to the program. This model, which has been successfully used by the State of Connecticut in its ZREC and LREC programs, is a proven mechanism that has resulted in the rapid deployment of clean on-site power generation.

2. Eligibility of Existing Generators

DEP should limit eligibility to new generators to ensure the additionality of emissions reductions from the program. This is important to ensure that the benefits realized by the program are new and additional to the State's goal to reduce emissions 80% from 1990 levels by 2050. 'New' should be defined as projects that become operational after the implementation of the program.

3. Eligibility of Fuel, Energy Resource, and Technology Types

The stated goal of the Clean Energy Standard is to “*achieve emission reductions by setting a clean energy standard (CES) that will increase the amount of clean energy that is used by generation sources producing electricity consumed in Massachusetts*” consistent with the State’s goal to reduce emissions 80% from 1990 levels by 2050.

The current draft report uses as its eligibility criteria for achieving this goal “*Any other fuel, energy resource, or technology that yields at least a 50% reduction of greenhouse gas emissions per unit of useful energy relative to a new combined cycle natural gas electric generating facility.*” This criterion is based upon the concept of the *build margin*¹, or the alternative type of power plant that could be built to meet demand for new capacity instead of the proposed project. This is appropriate for utility-scale projects because it compares the emissions associated with a potential new utility-scale investment to the emissions associated with the alternative, which is the “*most efficient commercially available [combined cycle natural gas] technology.*”

However, this same standard is not appropriate for distributed generation. The alternative to a particular DG project would not be to construct a CCGT facility. In almost every case the alternative would be to do nothing and continue to purchase power from the traditional power grid. Therefore, the appropriate eligibility criteria is to require a reduction in emissions in comparison to the marginal power plants that decrease their output in response to reduced demand provided by the behind-the-meter generation, inclusive of the transmission and distribution losses avoided by distributed generation. These power plants are the last to be switched

¹ GHG Protocol Guidelines for Grid-Connected Electricity Projects.
http://ghgprotocol.org/files/ghgp/electricity_final.pdf

on-line or first to be switched off-line and therefore would have provided the generation were the project not completed. This point of comparison is termed the *operating margin*¹ and is consistent with industry-standard carbon accounting practices¹ as well as standards set in other jurisdictions. For example, the California Self Generation Incentive Program requires an emissions rate below 835 lbs/MWh, which was calculated to be the marginal emissions rate. It is recommended that Massachusetts perform a similar analysis. The EPA eGRID database provides a non-baseload emissions rate for Massachusetts of 1,254 lbs/MWh plus T&D losses of 5.82%.

This approach will allow the program to achieve actual and immediate emissions reductions, and could be implemented with a progressively more stringent emissions reduction requirement that has a “technology-forcing” effect over time.

4. Include Criteria Pollutants in the Standard

While reducing carbon emissions is critical to addressing global climate change, it should not be at the expense of local health priorities. MA DEP should include environmental parameters in addition to CO₂ in the Clean Energy Standard. The California Air Resources Board has established limits for criteria pollutants that should be replicated by MA DEP in the Clean Energy Standard:

1. **NOX:** .07 lbs/MwHr
2. **Volatile Organic Compounds (VOCs):** .02 lbs/MwHr
3. **Carbon Monoxide (CO):** 1.0 lbs/MwHr
4. **Particulate Matter (PM 10):** An emission limit corresponding to natural gas with fuel sulfur content of less than 1 grain/100 scf²

In addition, consistent with the goals of MA Water Management Act, the Clean Energy Standard should give preference to technologies that withdraw nor

² California Air Resources Board. <http://www.arb.ca.gov/energy/dg/2006regulation.pdf>

discharge no more water than the newest combined cycle natural gas electric generating facility using the most water-efficient cooling technology.

Very truly yours,

/S/

Charles Fox
Director, East Coast Regulatory Affairs
& Business Development
Bloom Energy Corporation
PO Box 1406
Princeton, NJ 08540
212-920-7151
charles.fox@bloomenergy.com

Good Afternoon,

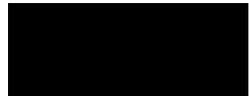
I am a life-long Massachusetts state resident, I care very much about climate change and about our government taking action to ensure a safe future.

I am unable to make the stakeholder meeting that Governor Deval Patrick is holding on Monday October 27, 2014. I would like to send along my support for the clean energy standard Governor Patrick is pushing that would require power plants to use renewable energy first and fossil fuels only as a last resort. I truly believe this is a great effort by the Patrick administration and I wish him luck.

Thank you,
Pari Jean Fariborz

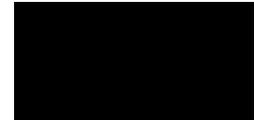
I am unable to attend the meeting Oct. 27th but want to emphasize my support for clean energy. My appreciation goes to Gov. Patrick for his call for a fossil-free future. The urgency of this goal is more and more apparent each day as scientists discover new information. We must not delay. Each delay increases the severity of the consequences. We must build the fossil-free infrastructure to meet our energy needs. We as individuals are doing as much as we can. We need the state to take the steps that only government can take. I respectfully request that Gov. Patrick implement the clean energy standard before the end of his term.

Carolin vanderLaan



I would be at the Clean Energy Standard Stakeholder Meeting if I did not have to work. Governor Patrick, this will be your most important and lasting legacy. No other cause will matter if we continue on the path of destroying our planet's delicate ecological balance, and life as we know it. Your Clean Energy Standard is bold, far reaching, and absolutely the right thing to do. Massachusetts will again lead the way in progressive action to combat the most potentially catastrophic crisis the world has ever known. Last month, I was so inspired as I traveled on one of 22 full buses from Boston to the People's Climate Change March in New York (we had a bus waiting list of 500), and joined in with 400,000 passionate Climate Change demonstrators and activists. The world is ready for this. The world desperately needs bold initiatives such as this. Thank you for your strong climate leadership. Please implement the Clean Energy Standard before the end of your term. It will be the most important thing you ever do, and millions of us will thank you. Future generations will thank you.

Diana Arezzo, Ph.D.



Hi,

I'd like to submit a written comment for Governor Patrick's meeting on Monday:

"I commend Governor Patrick for addressing the importance of creating a transition in our energy system and for acting to move our system away from the energy sources that emit greenhouse gases. Action must be taken now before the problem of climate change becomes any more urgent. I strongly urge the state administration to set this new energy standard so that Massachusetts can be one of the states leading the nation in accelerating this necessary change.

Thank you,

Devon Kennedy

Brandeis University

Hello Patrick Administration,

'Fraid I won't be able to make it, but I wanted you to know that I've yoked my future to a clean energy future by inventing a simple, clean, safe and durable form of energy storage to enable high levels of renewables penetration into Massachusetts's energy portfolio. Please see the attached as well as our web site below!

With best wishes,

--

Dr. Timothy F. Havel

CTO & Founder

Energy Compression Inc.

www.energycompression.com

Gov. Patrick,

As a climate justice activist, this clean energy standard is a step in the right direction. I fully support it as it is moving toward a place we need to be for a livable future. I stand with the climate legacy campaign: ban the worst, build the best, and tax the rest.

Thank you,

Becky

Rebecca Romatoski

MIT Department of Nuclear Engineering

NW14-2317



Good Morning,

Having reviewed the Massachusetts Clean Energy and Market Plan for 2020, I was struck by the Policy Descriptions, which seems to largely focus on benefits such as avoided emissions and

jobs created, but which seems to address incremental costs to consumers somewhat less explicitly.

At the health care institution where I work, an electric cost increase of one penny per kilowatt-hour increases our annual cost of delivering health care by approximately \$1,000,000. Thus, any policies that might price energy at an incremental premium to “market” have a direct and significant effect on our operating costs (I suppose I should mention that we very aggressively pursue energy conservation as well, in an effort to control costs.)

Specifically, the possible cost premiums associated with the Renewable Portfolio Standard, the Regional Greenhouse Gas Initiative, power plant retirements resulting from more stringent EPA power plant rules and the possible costs (including transmission and distribution charges) associated with expanded clean energy imports are concerning.

As the MassDEP is probably aware, hospitals are already under tremendous pressure to reduce the cost of delivering care. I would be interested to hear how the proposed policies are to be reconciled with our urgent need to drive costs downward. I would also be most interested in a “best guess estimate” of per-kWh incremental energy charges that would result from the full implementation of the portfolio of policies over the next few years.

I concur that the goals and many of the policies of the Plan are laudable, but the economic ramifications of some of the policies could be quite abrupt and difficult to manage in this struggling economy.

Thank you for your consideration.

Jim Turner
Brigham and Women's Hospital
Engineering Services
75 Francis Street
Boston, MA 02115



Hello,

I am a Boston resident. I would like to voice my support for Governor Patrick's proposal for a clean energy standard that requires power plants to use renewable energy first, and fossil fuels only as a last resort. This is an important step toward mitigating climate change. According to scientific consensus, we must take prompt, far-reaching action to reduce greenhouse gas emissions if we wish to avoid highly destructive effects of climate change, which poses a particularly high risk for coastal cities like Boston.

I hope that the Patrick administration will take this historic opportunity to be remembered as taking decisive, visionary steps to protect current and future generations from this threat.

Sincerely,

Zoe Vanderschmidt



My comments deal exclusively with nuclear energy in the "Massachusetts Clean Energy and Climate Plan for 2020".

I am an elected Town Meeting Member in Brookline. I serve as co-chair of our Green Caucus of Town Meeting Members, but am not writing on behalf of that organization.

I am not in favor of nuclear energy and never have been. My position has stood for over 40 years.

There is no way to measure the carbon impact of nuclear energy when it is impossible to perform a life-cycle assessment. Such an assessment cannot be conducted since there is no solution to the disposal of nuclear waste. Furthermore the Plan does not even discuss the known carbon impacts of nuclear from mining, enrichment and transportation of the fuel nor the construction and operation of nuclear plants.

Nor does the Plan mention the danger from this toxic fuel or nuclear accidents. Nuclear accidents are potentially catastrophic in the same way that global warming may be catastrophic. No other fuel carries such immediate high risks.

While the generation of nuclear energy does not produce CO₂ as a direct byproduct of electrical generation, it does produce possibly the most toxic waste that humankind has created. And this toxic waste is also the most long-lived waste that we have created as well. The generational inequity for nuclear waste is as important as that of fossil fuels. Therefore it is false and misleading to designate nuclear energy as "clean". An artificially narrow definition of "clean" that allows such large-scale, toxic, permanent waste undermines the credibility of our regulatory agencies.

It would be more accurate to describe the Plan as eliminating fossil fuels, and avoid the term "clean" when discussing nuclear energy (e.g., p. 47). That is why a RPS is still needed. Renewable energy is traditionally based on natural processes such as the sun and the wind; and is locally distributed and resilient. Nuclear power is neither. The inclusion of large-scale hydroelectric power to eliminate fossil fuels is reasonable to consider, but not nuclear. I urge the Office of Energy and Environmental Affairs to make the elimination of nuclear energy an equally important goal as the elimination of fossil fuels. We can begin by eliminating it as "clean" from the Plan. We can continue by not allowing any expansion of nuclear power (including up-rating) as any part of the Plan.

Respectfully,

Clinton Richmond



Comments on the proposed Clean Energy Standard

I am concerned that the real environmental impact of nuclear power get's lost in industry claims that it is clean energy - it is not.

Ignored is the fact that the front end of nuclear power generation is very dirty indeed. Please recognize the carbon released from mining and processing nuclear fuel and in the tritium and other radioactive releases from the Pilgrim Nuclear Plant. Overshadowing all of the front end impacts are those required in the

future to deal with dangerous nuclear waste. Monitoring radioactive waste will require continued energy and carbon emissions for thousands of years - that adds up to one heck of a lot of energy when projected over so many many years. Nuclear power generation is indeed very dirty from the front end to the back.

Ed Russell



Dear Mr. Space,

I am writing to comment on the Department of Environmental Protection's (DEP) proposed Clean Energy Standards for Massachusetts.

While I commend DEP's attempt to phase out fossil fuels and promote green energy sources such as solar and wind, I would urge you to exclude nuclear energy from the list of green energy sources as it is neither clean nor green. To include nuclear energy would be counterproductive to the environmental movement and to efforts to reverse the tide of climate change.

Nuclear reactors create radioactive waste which can contaminate soil and water for thousands of years. No other source of energy can pollute at this deep, long-lasting and irreversible level. In addition, the process of creating nuclear fuel is carbon intensive since a large amount of fossil fuel energy goes into the production of small amounts of nuclear fuel. The resulting nuclear fuel does NOT burn fossil fuels during its time in a reactor; therefore it requires the burning of fossil fuels both before and after this process.

Equally as important as the issues stated in the previous paragraph is this: communities exposed to radiation from nuclear plants (such as Pilgrim in Plymouth) face higher levels of disease than communities that are not situated near a nuclear plant. As a resident of Cape Cod, less than an hour away from Pilgrim, I consider this issue to be of great concern to myself and others who live here.

I urge you to make your determination based on consideration of ALL the facts, especially those whose validity cannot be denied or refuted.

I thank you for considering the above stated perspective as you set about the difficult and important task of creating new standards for the Commonwealth.

Most sincerely,
Rosanne Shapiro



As a Massachusetts resident taxpayer and voter I am very strongly in support of a robust Clean Energy Standard for power generation in the state.

This is one modest and essential step toward achieving our state's goals under the Global Warming Solutions Act

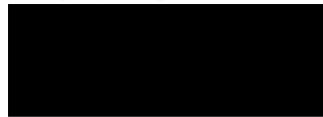
The standard should have these essential features:

- All utilities (including municipal utilities) should be required to comply with the standard
- The CES should only include wind, solar, geothermal, small-scale hydro, and other renewables as clean energy (alternatively, the Renewable Portfolio Standard should be raised)
- The standard should require utilities to use 100% clean energy by 2050, including strong and aggressive 2020 and 2030 targets
- Overall, the CES should dramatically increase the amount of clean energy available on the market and dramatically decrease climate pollution and associated public health risks

Thank you very much for taking this responsibility seriously and not being influenced by short sighted and vested interests.

--

Gregory Caplan



There's nothing "green" or clean about nuclear power. Nuclear power creates pollution through the mining and processing of uranium, produces carbon emissions throughout a facility's lifecycle, and kills billions of aquatic organisms via once-through cooling processes each year.

Additionally, nuclear power generates highly-toxic nuclear waste as a byproduct - waste that will likely be stored indefinitely in Plymouth - at an unknown cost to the environment, economy, and public health of the State. Please don't label nuclear power -- specifically Pilgrim Nuclear Power Station -- clean!

Respectfully,

Heather M. Lightner
Concerned Neighbors of Pilgrim



Nov. 2, 2014

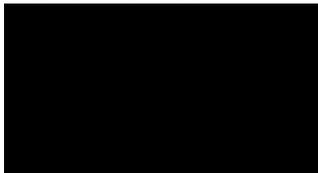
Dear Mr. Space,

I am writing to comment on the the Department of Environmental Protection's (DEP) proposed Clean Energy Standard for Massachusetts.

The DEP should not include Nuclear energy in the list of "green" energy sources. To include nuclear power as clean or green, would be counterproductive to the environmental movement, and is short-sighted. Nuclear reactors create radioactive waste, which can contaminate soil - and communities - for thousands of years. No other source of energy can pollute at such a deep and long-lasting level. Additionally, the process of creating nuclear fuel is carbon intensive. Lastly, communities exposed to radiation from nuclear plants face higher levels of disease than non-nuclear communities. Massachusetts would be misguided to include nuclear as a green energy source.

Thank you for strongly considering this perspective as you create new standards for our state

Sincerely,
Elaine Dickinson



November 2, 2014

Mr. William Space
Massachusetts Department of Environmental Protection
Via Email
climate.strategies@state.ma.us
william.space@state.ma.us

Dear Mr. Space;

I am writing to comment on the Department of Environmental Protection's proposed Clean Energy Standard for Massachusetts. I would like to take this opportunity during the public comment period, to urge you not to issue a clean credit to nuclear energy in our state . I contend that nuclear energy should not be included in the list of "green" energy sources.

Nuclear reactors create radioactive waste which currently pollutes our water, soil and air and will continue to endanger the health and environment of communities for thousands of years since the storage of nuclear waste is still an unsolved problem that has been passed on for decades without resolution. Cancer rates around the vicinity of Pilgrim Nuclear Power Station in Plymouth,

are remarkably higher than anywhere else in the state. The pollution that nuclear plants generate is unacceptable.

Furthermore, the process of creating nuclear fuel, the mining of uranium, is carbon intensive. A large amount of fossil fuel energy goes into the production of very small amounts of nuclear fuel. "According to James Hansen who supports nuclear energy: "Gen 2 reactors burn ~0.6% of the energy in the original nuclear fuel, i.e. less than 1%. There is not debate about this."

Additionally, the cost of nuclear energy, both that incurred in mining and manufacture as well as the provisions necessary to safely store radioactive waste, is prohibitive. Nuclear reactors now also serve as nuclear waste dumpsites since no Federal repository exists.

For these reasons it would be a travesty to include nuclear as a green, clean energy source in Massachusetts. To consider nuclear energy to be comparable to other renewables such as solar, wind, and geothermal would be a regrettable and highly contested categorization by a huge segment of the population.

As you consider standards for green energy in our state, please take my thoughts into consideration. They are representative many hundreds of thousands of citizens who have voted, because of safety concerns, to support the closing of the Pilgrim plant in all 15 towns on the Cape and in all 6 towns on Martha's Vineyard specifically, and in countless other communities all over the state. The tragedy and ongoing catastrophe at Fukushima should be a wake up call to the world and our state of Massachusetts about our poor choice of nuclear energy as a clean and viable energy. We need to invest in newer, sustainable forms of energy and that's where our efforts should be directed.

I urge you to make your determination based on science, math and evidence rather than on the manipulation of words by the powerful nuclear industry and its supporters. Please do the right thing.

Thank you.

Sincerely,

Ann Rosenkranz



November 2, 2014

Mr. William Space
Massachusetts Department of Environmental Protection
Via Email
climate.strategies@state.ma.us
william.space@state.ma.us

Re: Department of Environmental Protection's (DEP) proposed Clean Energy Standard for Massachusetts.

Dear Mr. Space,

Pilgrim Nuclear Power Station (PNPS) is in no way “clean,” regardless of how much carbon dioxide it emits. It is alarming that the plan ignores and dismisses PNPS's destructive impact on water resources and the enormous amounts of toxic and radioactive waste it creates from uranium mining to radioactive discharges during routine operations to decommissioning and nuclear waste. Currently PNPS is leaking tritium into the environment from an unknown source that has defied Entergy's efforts to identify since 2006. PNPS EPA permit expired 18 years (+/-) ago and has only been renewed by temporary administrative approvals for 18 years....how long is temporary going last? The CES does not even consider the impact of severe accidents like Fukushima, just one of which could wipe out decades of alleged benefits from PNPS. The NRC and DOE still don't have a plan to store spent nuclear fuel safely for essentially eternity, yet we keep producing nuclear waste.....that's an energy policy of self destructive behavior akin to cigarette smoking. How bad does it have to hurt before we quit?

Alarming, recent discoveries about dry cask storage systems located in coastal marine environments are showing premature signs of stress corrosion cracking suggesting premature cask failures. To date a remediation plan and equipment are not yet developed to handle dry cask failures. PNPS plans to transfer spent nuclear fuel from it's pool to dry casks this year....with many questions still unanswered about it's safety, dry cask life spans, anticipated on site storage timelines, sea level rise, etc.

Therefore I urge you to take all support for PNPS out of the Clean Energy Standards. No new nuclear plants were built for over 30 years because they are simply too expensive and too risky, and they are only becoming more so.

Wall Street won't finance development or construction of commercial nuclear power stations (requires government guaranteed loans) and the insurance industry won't underwrite indemnity coverage (limited insurance is provided by Price Andersen Act).....the smart money says nuclear is too risky. Specific to PNPS, in 2013/14 the NRC dropped PNPS operational ranking due to the number of unplanned shut downs. 40 year old PNPS is more costly to operate....safely.

The opposite is true of renewable energy, efficiency, and other sustainable solutions, which are growing rapidly while their costs are plunging. Replacing non-competitive nuclear reactors with sustainable energy solutions is more cost-effective and keeps our priorities straight, driving innovation and accelerating the transition to a low-carbon and a "*genuine clean energy*" economy. Nuclear is not a green or clean energy strategy.

William Maurer



November 2, 2014

Mr. William Space
Massachusetts Department of Environmental Protection
Via Email
climate.strategies@state.ma.us
william.space@state.ma.us

Dear Mr. Space,

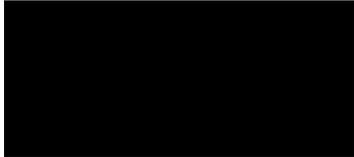
I am writing to comment on the the Department of Environmental Protection's (DEP) proposed Clean Energy Standard for Massachusetts.

The DEP should be commended for its attempt to phase out fossil fuels and promote green energy sources, such as solar and wind. Nuclear energy, however, should not be included in the list of "green" energy sources. To include nuclear power as clean or green, would be counterproductive to the environmental movement, and is short-sighted. Nuclear reactors create radioactive waste, which can contaminate soil - and communities - for thousands of years. No other source of energy can pollute at such a deep and long-lasting level. Additionally, the process of creating nuclear fuel is carbon intensive. Lastly, communities exposed to radiation from nuclear plants face

higher levels of disease than non-nuclear communities. Massachusetts would be misguided to include nuclear as a green energy source.

Thank you for strongly considering this perspective as you create new standards for our state.

Sincerely,
Anna Baker
Chair, Pilgrim Coalition



MA DEP
Via Email
climate.strategies@state.ma.us
william.space@state.ma.us

COMMENT DEP DRAFT REGULATION CLEAN ENERGY STANDARD (November 3, 2014)

1. PILGRIM IS NOT CARBON-FREE.

The entire fuel chain must be looked at; the planet does not care where the carbon comes from

Nuclear reactors themselves are low carbon-emitters. But when the entire fuel chain is considered, as it should be, nuclear power is carbon-intensive, not to mention harmful to human health and the environment. In total, nuclear power is responsible for about six times the carbon emissions of wind power, and 2-3 times the carbon emissions of various types of solar power technologies.

Age related Degradation could lead to an accident. Pilgrim received its permit for construction in 1967. It was originally licensed for 40 years and began operations in 1972. How many appliances do you know that are over 40 years old? Pilgrim was re-licensed in 2012 to operate for an additional 20 years until 2032.

Pilgrim is old and has been headed in a downward spiral. NRC requires licensees to send information to NRC about certain "reportable events" that occur at their facility. Pilgrim had 20 event reports in 2013 - more than any other plant in the country. About half of the reports were due to equipment problems. The shutdowns and required event reports are clear signs that Entergy is not making the necessary investments in personnel (laid off workers) and maintenance that are needed to safely run this old reactor. Why? Because in Massachusetts' deregulated market, Pilgrim cannot compete with cheaper sources of electricity, mainly natural

gas. In 2014 NRC lowered Pilgrim's performance to **DEGRADED**. It now joins 7 other U.S. plants ranked at the bottom. Also, Pilgrim had two near misses in 2011. A "near miss" raises the risk of damage to the reactor core and thus to the safety of workers and the public.

Reactor Core Accident

A reactor core accident at Pilgrim has the potential to release more than twice the amount of Cesium-137 that was released at Chernobyl. The amount of Cs-137 released during the 1986 Chernobyl disaster was 2,403,000 curies. The amount of Cs-137 in the core of Pilgrim's reactor, now and until Pilgrim eventually shuts down, is 5,130,000 curies.

When Fukushima failed, three units exploded because the containments surrounding the core were too small to hold in a pressure build-up as the cores began to melt. Pilgrim's containment shares with Fukushima this critical design flaw.

Natural events that could lead to an accident include: seismic, high wind, snow, ice and extreme cold, and extreme high temperature.

Seismic: Senators Markey and Warren in a letter to NRC Chair Macfarlane, March 31, 2014, noted that, "The new seismic hazard was found to exceed the safe shutdown earthquake at the ground shaking frequencies that are most likely to threaten the equipment needed to safely shut down the reactor."

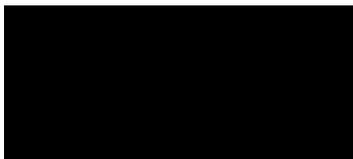
PILGRIM - HARMFUL TO HEALTH & THE ENVIRONMENT

Carbon Dioxide is not the only pollutant on the planet. It is a leading cause of climate change; but that does not mean that carbon dioxide is the only pollutant that matters to the health, safety and economy of our planet.

Radiation is toxic, persistent and a long-lasting pollutant released daily from nuclear reactors.

To conclude, there are alternatives to Pilgrim. We can reduce, and are reducing, our overall power needs by using electricity more efficiently. Global warming and pollution are similarly being reduced by energy efficiency, and the use of clean renewable energy such as wind, hydro, solar and biomass. These are the alternatives that will both keep the lights on, and create jobs for Massachusetts. We do not need to subsidize old, expensive, and risky reactors like Pilgrim. We do not need to replace the poison from one source of energy with another, nuclear. I urge you not to include Pilgrim in the Commonwealth's Clean Energy Standard.

Respectfully submitted,
Rebecca J. Chin, Co-Chair Duxbury Nuclear Advisory Committee



Attention MA Department of Environmental Protection,

Nuclear power is not carbon-free or green and should not be part included as part of the state's Clean Energy and Climate plan!!

Sincerely,
Molly Kamps
A concerned citizen.

Dear Massachusetts DEP,

If any of you have paid any attention to the nuclear power industry over the past forty or so years, you would not need to even need to consider certifying Pilgrim Nuclear Power Plant as green.

Below are just two, of the many items that demonstrate that the entire nuclear industry should be labeled RED and DANGER, not to be considered safe.

1. Kills about 14.5 million fish and 160 billion blue mussels every year with its once-through cooling system
2. Its life-cycle is not emission-free (there are CO₂ emissions associated with uranium mining and processing, construction and decommissioning, and daily operations)

Closing Pilgrim will not solve the problem either, but it will be a very important first step. I am proud of my father for protesting the building of Pilgrim 2 back in the '70s. But little did he know that the waste from these plants is far more dangerous than the plant itself, and that there was NO PLAN for the disposal of this material.

The radioactive waste from the operation of the plant needs to be handled in a way that cannot be entrusted to Entergy, the owners of the plant. Real scientists, with a loyalty to we the people, need to handle this project of storing our overcrowded nuclear waste. This needs to be done NOW, because of the world-altering danger that it is presenting.

I'm sure that you can find many reasons to close this outdated, environmental disaster. Set an example for the rest of the world and take the first step by closing this plant now.

Sincerely,

Art Egerton

Art Egerton



Nuclear Power is NOT a green energy source.
Its dirty and dangerous and there is nothing environmentally friendly about it.

Kati Carloni



ATT. CES/DEP: Pilgrim Nuclear Reactor Is in No Way Green (small correction)

----- Forwarded message -----

(My apologies, it is Dr. Richard not David Clapp below)

Dear D.E.P. and Mr William Space,

As a former award winning environmental educator and state commended environmentalist as well a Woods Hole Ocean Science Journalism Fellow, I am writing to ask that you do NOT label Pilgrim Nuclear Reactor as green nor include it in any CES credits.

The processing and transportation of material to run the reactor emits tons and tons of green house gases a year. Even were that not the case the trade off between no carbon emissions and energy production which uses lethal, long lasting radioactive materials, subject to the threats from both climate change and terrorism is unacceptable.

"Green" energy is that which is benign, sustainable, renewable and causes no harm, such as solar. In no way does Pilgrim fit those parameters.

Pilgrim is one of the worst performing reactors in the US, it has had numerous malfunctions.

(Engineers will tell you that a system with continuing malfunctions points to a system on its way to total failure.) Designed to hold 800 rod assemblies it now holds

thousands in a pool on top of the structure open to airplanes as Senator Dan Wolf has pointed out numerous times, and under oath.

Dr. Richard Clapp, who headed the state's cancer registry has also testified that there are statistically higher rates of cancer around the reactor, to a 95 percent degree of accuracy. As one youngster at a public meeting put it: My brother is dying of leukemia; if there is any chance that the plant caused this, I beg you to shut it. (May I note that truly green technologies do not cause cancers.)

Officials responsible for evacuation of southeastern MA in the event of an accident such as Kevin Nord, fire chief of Duxbury, have stated there is no feasible evacuation plan for the hundreds of thousands of Cape Cod and southeastern MA, residents, a figure which can swell to over a million in the summer.

The reactor is powered by a Mark One Boiling Water reactor, the very same which failed at Fukushima, The Union of Concerned Scientists has written that these are subject to system failure which would cause melt down in the event of an accident. The accident does not have to be a tsunami. It could be storm surge due to hurricane, more and more likely with a sea level already raised and getting higher due to climate change and heightened ocean temperatures. It is estimated that were both main frame and back up generators to be shut down for five days, this lethal malfunction could begin, threatening the lives and economy of an area whose biosystems are unique and valuable for their own sake and for tourist dollars, fishing and more. Do not forget how close to sea level and to Cape Cod bay Pilgrim is!

This reactor needs to be closed down. It should not have been relicensed (and Atty. General Coakley fought the relicensing,) The reactor is way past its due date and is an accident waiting to happen. To call something "green" which will leave tons of radioactive waste for thousands of years, and which every day produces radionuclides so threatening to human health that Dr. Helen Caldicott has called the plant a "dangerous situation," is unconscionable.

In short:

1. Kills about 14.5 million fish and 160 billion blue mussels every year with its once-through cooling system
2. Its life-cycle is not emission-free (there are CO₂ emissions associated with uranium mining and processing, construction and decommissioning, and daily operations).

3. Uses uranium as fuel. Uranium mining and processing contaminates water, air and soil and has caused significant health problems for mine-workers and surrounding communities.
4. Requires huge quantities of water for cooling and generating power (up to 510 million gallons per day!)
5. Permitted and unpermitted pollution occurs, including wastewater discharge, thermal pollution of source waters, and leaks of tritium, tolyltriazole, sodium nitrite, and more. Radionuclides damaging to human cells are emitted into the air as well in unacceptable frequency.
6. Generates large quantities of highly radioactive nuclear waste as a byproduct, and there is currently no national plan to safely store nuclear waste long-term. Nuclear waste is expected to be highly radioactive for hundreds of thousands of years.
7. Cited at about 20 feet above mean sea level and directly on the shoreline – making it inherently unsafe from climate change patterns such as sea level rise, stronger storms, storm surge, flooding, and wave action. Presently the FEMA velocity zone for Pilgrim ranges between 16 and 18 feet above mean sea level, demonstrating that Pilgrim is vulnerable!

I sincerely beg you not to list Pilgrim as "green" in any way, but to help us get it closed before it closes down our tourism economy, our environment, our health and well being.

Sincerely Yours,

Lee Stephanie Roscoe



We need to stop the addiction to fossil fuels asap! Please do all you can to make this happen:

- All utilities (including municipal utilities) should be required to comply with the standard
- The CES should only include wind, solar, geothermal, small-scale hydro, and other renewables as clean energy (alternatively, the Renewable Portfolio Standard should be raised)
- The standard should require utilities to use 100% clean energy by 2050, including strong and aggressive 2020 and 2030 targets
- Overall, the CES should dramatically increase the amount of clean energy available on the market and dramatically decrease climate pollution and associated public health risks

Thank you
All the best,

Bouzha

Bouzha Cookman



We have to leverage municipalities as large scale buyers of green energy. By committing to an aggressive target, we will create a demand in the market around Massachusetts for green energy. Investors will gladly jump in as we provide certainty that we will buy the green energy product.

Thanks,

Kenneth Weiss



Better Future Project (BFP) is a Cambridge-based nonprofit that builds a powerful grassroots movement to confront the fossil fuel industry and meet our energy needs without contributing to climate change, oppression or human suffering. Since our founding in 2011, we've become one of the strongest voices demanding swift action on climate change in Massachusetts, with hundreds of highly engaged volunteers in every part of the state and ten thousand in our broader network.

The proposed Clean Energy Standard represents an opportunity to craft a bold policy that can serve as a model for other states and for countries around the world. A strong and

comprehensive Clean Energy Standard could be a major step forward towards Governor Patrick's vision of a "future free of fossil fuels".

To be successful, the Clean Energy Standard must dramatically increase the amount of clean energy available on the market and dramatically decrease climate pollution and associated public health risks.

Specifically, the Clean Energy Standard should include all utilities, including municipal utilities, and all power generators, including existing power generators. The standard should require utilities to use 100% clean energy by 2050, including strong and aggressive 2020 and 2030 targets.

Only wind, solar, geothermal, small-scale hydro, and other renewables as outlined by the RPS should qualify as clean energy under the CES. There is an overwhelming scientific consensus that we need to transition aggressively to low-carbon sources of energy as quickly as possible to preserve a livable climate. Massachusetts has a tremendous opportunity to lead the way: by promoting renewables in general and prioritizing distributed and small-scale renewables, we can incentivize innovation, encourage economies of scale, and bring down costs for all consumers. As an alternative to a strong and comprehensive CES, the state could increase the Renewable Portfolio Standard by 3% a year starting in 2020; that would allow Massachusetts to reach 100% renewable energy by 2050.

Over the past three years, we have seen tremendous grassroots support for clean energy and climate solutions in Massachusetts, from the thousands of MA residents who traveled to New York City for the People's Climate March to the scores who have been arrested at civil disobedience actions calling for the shutdown of the state's coal plants. Again and again, ordinary citizens have called on their elected officials to act. The Clean Energy Standard is a chance to display the leadership on climate change that our state, our nation and our world so desperately need.

Signed,

Better Future Project

--

Emily Kirkland
Communications Coordinator
[Better Future Project](#)



Overall, the CES should dramatically increase the amount of clean energy available on the market and dramatically decrease climate pollution and associated public health risks. The standard should require utilities to use 100% clean energy by 2050, including strong and aggressive 2020 and 2030 targets. As clean energy, the CES should only include: wind, solar, geothermal, small-scale hydro, and any other true renewables. All utilities (including municipal utilities) should be required to comply with the standard.

Thank you.
Marguerite Toll



Pilgrim Nuclear Power Plant is not green and is a disaster waiting to happen, as described beautifully by these letters from Antigone Rosenkranz and Lee Stephanie Roscoe.

--

Sarah Nevin



To Whom It May Concern,

Nuclear power in Massachusetts should not be considered as a clean and green in the new Clean Energy Standard. Pilgrim nuclear releases damaging radiation into the environment at the risk of damage to the health of citizens according to Dr. Richard Clapp who completed a study which found that the rate of leukemia increased four fold as one works or lives near Pilgrim nuclear. A 2006 study completed for the AGO office by Dr. Gordon Thompson concluded that the public is at serious risk due to the densely packed spent fuel pool with the risk of spontaneous fire that would contaminate hundreds of miles downwind, cause \$488 billion in damages, and 24,000 latent cancers.

In service to the public health and safety, nuclear power SHOULD NOT be considered as green and clean and the state should not label nuclear power in the new Clean Energy Standards as green.

Diane Turco, 

I am writing to encourage the strongest possible compliance regarding the CES. "When something is worth doing, it's worth doing well," the saying goes. Recognizing the impact of clean energy and its necessity for our long term viability on the planet means that we should go all the way to ensuring that future generations are not left to clean up a bigger mess. After the IPCC's most recent report, we're not talking about some distant future. Critical ramifications are happening now and devastating ones will be witnessed by my children, if we don't act as leaders to help turn the tide. Please ensure the following:

All utilities (including municipal utilities) should be required to comply with the standard

The CES should only include wind, solar, geothermal, small-scale hydro, and other renewables as clean energy

The standard should require utilities to use 100% clean energy by 2050, including strong and aggressive 2020 and 2030 targets

Overall, the CES should dramatically increase the amount of clean energy available on the market and dramatically decrease climate pollution and associated public health risks.

Thanks for your attention.

Sincerely,

Beatrice Martin Wood



Gentlepeople:

I write as an award-winning applied physicist and applied psychologist with degrees from MIT and Harvard. My comments below are primarily technical in nature, referring in part to the MEOER decision in recent years about whether wood represents a clean fuel.

A proper accounting of the life cycle for nuclear fuel yields a determination more extreme than the MEOER determination for whether wood pellets constitute a form of "clean energy." It was determined that burning wood did not constitute using clean energy. Wood might be "renewable" but not "clean." In similar fashion, nuclear energy is not clean because a large amount of fossil fuel energy goes in to the production of small amounts of nuclear fuel.

Although the resulting nuclear fuel does not burn fossil fuels during the time it is in a reactor, it definitely requires the burning of fossil fuels before and after the time it is in a reactor. Thus it is fraudulent and manipulative to assert that nuclear fuel is a "clean fuel" or a "green fuel."

The following numbers and math will support this statement.

It takes about 11% to 12% of the energy available in nuclear fuel to capture it, refine it, and get it to the reactor. (References from refereed publications will be provided if you request.)

According to James Hansen: "Gen 2 reactors (all those operating in the U.S. today are Gen 2) burn [about] 0.6% of the energy in the original nuclear fuel, i.e., less than 1%. There is no debate about this."

Doing the math, that is 100 units of uranium energy are harvested, 11 units of fossil fuels used to produce those 100 units. This yields a net of 89 units. Then only 0.6 % of the original 100 units that is usable, is actually used. The remaining 99.4 % is wasted and is actually a liability for present and future generations. So, even ignoring the risk and cost to deal with spent nuclear fuel, that is a total of about 18 times as much fossil fuel to get a single unit of used nuclear electricity.

Now having cut through the propaganda, we again see a confirmation of the laws of thermodynamics and entropy. You don't get something for nothing; nuclear energy is no exception. If you like warfare you

would say that nuclear fuel is still great for submarines because it enables them to stay underwater for more than a month at a time with a power source that enables creation of oxygen from water rather than consuming it. But the cost to produce that concentration of energy is a dramatic polluting of the environment far greater than the burning of fossil fuel. Multiplying thousands of tons per year of long term nuclear waste by 40 years and counting and then by 100 U.S. reactors yields a staggering amount of nuclear waste, much of which still can melt if something goes wrong.

Clearly it is time to reduce this ever present danger, to retire all presently operating nuclear electric reactors. Gen 4 reactors may turn out better in terms of costs and liabilities, but we can address that technology on its own merits when it is actually more ready. It is disturbing that DEP would devote precious resources on a stakeholder assessment of this question for which the science and math are so clear. DEP would do well to make its own determination based on science, math, and evidence rather than inviting word manipulation by the nuclear industry and its supporters.

John Carlton-Foss, S.M. Ph.D.
Climate Action Citizens

William Space
Massachusetts Department of Environmental Protection
Via Email

Dear Mr. Space,

I am concerned about the Department of Environmental Protection's proposed Clean Energy Standard for Massachusetts. While phasing out fossil fuels and promoting "green energy" is important, it is also critical to realize that nuclear power is not "green," and should not be included as a clean energy source. The manufacture of nuclear fuel has a large carbon footprint. Nuclear reactors produce high level radioactive waste that turns the host community into a long-term nuclear waste dump with no hope of clean up. Our local Pilgrim I reactor creates vast thermal pollution in Cape Cod Bay. Its cooling system sucks in, overheats and discharges millions of gallons of sea water every day, entraining, impinging, and killing thousands of marine organisms, and scouring the sea bed. Back in 2000 the Massachusetts Office of Coastal Zone Management reported: "Twenty-five years of data clearly show that millions of fish larva and eggs are destroyed by Pilgrim every year..." The plant may not emit much carbon in its actual operation, but it does leak tritium into the ground water, and release large numbers of radioisotopes into the air and water as part of "normal" daily operations, increasing cancers in the local population. No stretch of the imagination can render nuclear power clean or green.

It is my hope, and the hope of many in my community, that the DEP considers these issues when creating new clean energy standards for the Commonwealth.

Thank you for your attention to this critical matter.

Sincerely,

Heidi Mayo



Heidi Mayo
www.heidimayo.com

Department of Environmental Protection
Commonwealth of Massachusetts

Comments regarding MA Clean Energy Standard Discussion Draft Regulation

Please do not confuse a cesspool with a swimming pool. Nuclear energy has never been clean energy. Show me a single nuclear reactor which has not contaminated its environment with radionuclides, some of the most toxic of all proven carcinogens. Is there a nuclear reactor in the nation which has demonstrated the ability to safely isolate its high-level waste for the million years that the EPA deems necessary? No. In fact there is no working PLAN to do so, and the federal government's attempt to do so with weapons waste was successful for just 15 years before contaminating a nearby town with plutonium. Nuclear reactors emit dozens, if not hundreds, of radionuclides *routinely*, and after 7 decades we don't know what to do with the waste. Is this what the state means by clean energy?

Hereafter, I focus on the Pilgrim Nuclear Power Station for 2 reasons: I'm most familiar with it (it's about 30 miles upwind of my home); it's the sole operating power reactor in Massachusetts. Pilgrim is a , a boiling water reactor, but pressurized water reactors are not much cleaner.

Pilgrim has been leaking tritium for about a dozen years. The operator and the state still don't know where the leak originates. Tritium is one of the most dangerous radionuclides since: it cannot be removed from water; it can be absorbed through the skin or breathed in; once in the body the alpha-emitter is especially carcinogenic; the body does not distinguish between tritiated water and normal water, so the isotope becomes a part of cells. Is this what the state means by clean energy?

Early in its operation, Pilgrim had a batch of 'failed fuel' which resulted in replacing a roof due to spewed resin, and repaving a parking lot. Two peer-reviewed studies found a correlation between (considerably) increased cancer rates and proximity to the reactor. Is this what the state means by clean energy?

Pilgrim requires uranium fuel. Our nation is littered with hundreds of small mountains of uranium mill tailings, which will remain carcinogenic for billions of years, and which freely blow about in the wind. Is this what the state means by clean energy?

Pilgrim is a design which is virtually certain to fail to contain a severe accident. Nine percent of such designs have already suffered core melt accidents with breach of containment, as was predicted in 1972. And Pilgrim is older than the average age of the Fukushima reactors when that disaster befell us. Well over three years after those meltdowns, Pilgrim's sister-designs spew 3,000 tons of radioactive water into the environment daily. Pilgrim's spent fuel is not inside even that shoddy containment, and a fire in the radwaste pool could contaminate hundreds of miles downwind for centuries. Is this what the state means by clean energy?

Pilgrim also releases chemicals which are introduced into its water waste stream as corrosion inhibitors and algae killers. The 510 million gallons that it dumps into Cape

Cod Bay, having killed all life in that water, is about 30 degrees warmer than the water that was taken from the Commonwealth. Is this what the state means by clean energy?

Perhaps DEP is looking only at carbon emissions. [The Sovacool survey](#) of 103 studies of life-cycle carbon emissions from nuclear reactors found average life cycle emission of 66 g CO₂e/kWh. Nuclear emits considerably less carbon than coal, oil, or even natural gas. But that does not make it clean. Electrical generation by photovoltaics, wind, hydro, geothermal, wave, ocean-swell and biomass are all cleaner than nuclear, and most of these technologies are becoming cheaper with each passing month. Canada has plenty of hydroelectric capacity to provide.

Finally, Mass. DEP has given Pilgrim Nuclear administrative extensions to its cooling water intake structure permit, which expired 18 years ago. I believe that permit should be properly reviewed before providing yet another dispensation to this dangerous, polluting electrical generating station. As Albert Einstein said, "Nuclear power is a hell of a way to boil water."

Sincerely,

David and Mary Agnew



Dear Governor Patrick and administration,

I'm writing to express my support for a strong clean energy standard. Natural gas is not clean energy. The news is filled with calls for more natural gas pipelines, but that's the wrong solution to our energy needs. The news should be filled with stories about thousands -- tens of thousands -- of existing houses, apartment buildings, and commercial buildings having insulation installed, air leaks sealed, and big, inefficient heating systems replaced with small, efficient ones that will be enough to heat well-insulated buildings. The news should be filled with reports of new buildings being built to a zero-energy standard -- not just a handful of buildings, but the majority. The news should be about the end of air conditioning as all A/C gets replaced by high efficiency, low temperature air source heat pumps and geothermal.

If we get serious about reducing our energy needs, we will be able to transition to truly clean energy sources -- wind, solar, tidal, geothermal, and other truly renewable and low-GHG sources. Please set a target of 100% clean energy from utilities by 2050, with strong interim targets for 2020, 2030, and 2040.

Regards,
Sue Felshin
Concord, MA
sfelshin@alum.mit.edu

Mr. William Space
Massachusetts Department of Environmental Protection
Via Email
climate.strategies@state.ma.us
william.space@state.ma.us

Dear Mr. Space,

I am writing to comment on the Department of Environmental Protection's (DEP) proposed Clean Energy Standard for Massachusetts.

The goal of phasing out fossil fuel use & replacing it with green energy sources such as solar, wind & thermal power is certainly a necessary project.

However, in no way should the promotion of Nuclear energy be considered as part of this effort. Nuclear energy production is neither clean nor green since the mining of its basic fuel, Uranium, is a nasty & dirty enterprise and the byproduct of its use, radioactive waste, is probably impossible to store safely over the length of its almost eternal life cycle. In fact, nuclear energy is undoubtedly the most dangerous and costly environmental hazard that we have been forced to live with.

It is not sensible to consider any fuel source to be green if it poses a safety hazard to the health & welfare of the community.

The release of dangerous radionuclides, a normal byproduct of nuclear power production, is a constant disease producing threat to our lives & livelihood as well as those of future generations.

Massachusetts would be remiss to sanction Nuclear power as a green energy source.

Sincerely yours,
Joseph Waldstein



jwaldstein@maline.com

Mr. William Space
Massachusetts Department of Environmental Protection

Dear Mr. Space and The Massachusetts DEP,

My husband and I are citizens of the town of Falmouth on Cape Cod. We moved here thirteen years ago, unaware of the nuclear power plant that sits across our Bay. We are now fully aware of the issues that our 'neighbor' Pilgrim Nuclear Reactor Plant presents, to us, our family and friends, our community, and to the life of our beloved Cape Cod.

Today we are responding to your invitation for public comment concerning the state's

DEP misguided and disgraceful, anti-scientific, anti-factual assertion that would include nuclear reactors in a 'clean, green energy' category. Having studied the problem for many years, we are not in doubt: this calculation is not only absurd and insulting, it is fraudulent. Lets be specific: the threats posed by Pilgrim Nuclear leaves my family, friends and community of Cape Cod as just so much 'collateral damage' in the event of an accident or heavy release at the plant, incidental & dismissed like so much garbage that enables free rein to the Louisiana-based corporation, Entergy in its soulless pursuit of ever more profits, currently at \$1M. daily. This cannot be the basis on which lives and the communities we have built over hundreds of years are tossed aside.

Our Governor, Attorney General, our Senators (Markey & Warren), Congressman Keating, our State representatives Sen. Dan Wolf, Rep. Sarah Peake, candidates Matt Patrick, Mark Forest, Brian Manal and THE PEOPLE OF CAPE COD AND THE ISLANDS who all VOTED to either 'make Pilgrim safe or shut it down'....have all STATED THEIR OBJECTION TO THE CONTINUING dangers that Pilgrim poses to our region....additionally and almost comically, WITH THE ACKNOWLEDGEMENT THAT THE ELECTRICITY IT PRODUCES IS UNNECESSARY TO THE WEALTH & HEALTH & WELL-BEING OF THE PEOPLE OF MASSACHUSETTS. To ignore these facts is a dereliction of duty, your duty, to protect us and our environment. We are counting on you to 'do the right thing'.

Even contemplating the inclusion of Nuclear Power in the 'clean, green' category is not only short-sighted and counterproductive in the global move toward true green energy....solar, geothermal, wind, tidal and more (see Germany, Britain, France and leading industrialized democracies beating us in the future 'green energy market'), ...it is unconscionable in view of the increased diseases and consistently documented increased cancer rates found in communities such as Plymouth (highest in the state/MA Cancer Registry/Dr. Richard Clapp) and my home on Cape Cod (second highest/MA Cancer Registry/Dr. R. Clapp).

Regarding the 'rational' to move toward TRULY GREEN, RENEWABLE, SAFE AND CLEAN ENERGY SOURCES and the need to at least not increase CO2 emissionsPilgrim and all nuclear energy facilities add CO2 at the Uranium mining stage, then DAILY emit toxins including Cesium into the air and water, damage and kill marine life to supply water to the coolant 'pools', returned 'hot' and polluted, the 'cooling pools' themselves now overloaded nearly 4 times their designed-for capacity, and lastly and most unbelievably to any human being using commonsense- requires the SAFE! storage for 100,000's of years of highly radioactive waste...now numbering about 75,000 TONS across our country. This travesty must stop. Adding further injury by claiming it is a 'green energy source' , and thereby perpetrating The Big Lie to unknowing Americans, defies all reason and all sense of basic human responsibility to our future generations. THERE IS NO SAFE STORAGE, LONG TERM, POSSIBLE...yet the plant is allowed by our government to continue to add to the unsolvable problem. The NRC recently green-lighted the plan to allow radioactive waste dumps 'for an indeterminate time' to be left in Plymouth along the (ever-rising) waters of our beautiful Cape Cod Bay. This is madness. It must stop. But will you help?

You will be found 'GUILTY' in the course of our history if you, representing not only science and rational objectivity and charged with the protection of our people and our environment, would actually decide to go ahead with this indefensible 'plan'. We Americans are beginning to lose all trust and faith in our government's ability to protect us, our children, our future, our planet. This is reason for you to listen carefully to the voices being raised 'by the People'. I implore you, as a mother and grandmother, cast your lot with the People you are mandated to protect... and with the only reasonable course people of good faith would follow: KEEP NUCLEAR POWER OUT OF ANY CATEGORIZATION THAT WOULD PERMIT IT TO BE LABELLED "GREEN"...We would not only be the laughingstock of the world, we would be giving our nation's sanction to go back to 'the past', not forward towards the future...and allowing our already too scarce economic investments in REAL green energy projects to be diverted by this monstrosity. Nuclear is over. Lets let it die away and replace it with the sunlight and spirit of a bright, clean, hopeful future. We ignore the facts at OUR peril.

PLEASE HELP BUILD A SAFE, HEALTHY, RENEWABLE & GREEN FUTURE,
Lillia Frantin and Herb Edwards
Retired professors of Art and Art History,



William Space
Massachusetts Department of Environmental Protection

Dear Mr. Space,

I am concerned about the Department of Environmental Protection's proposed Clean Energy Standard for Massachusetts. Many of the nuclear power plants in the United States are operating way past the time frame they were designed. For almost a half a century since this very risky technology was created there is still not place to store all the highly radioactive spent fuel. How can a technology that creates waste that is the most dangerous substance known to man be green, safe and clean? Yes it is very important for the future of our climate to eliminate carbon producing energy sources but it is just as important to rid the planet of nuclear waste that will remain highly radioactive for hundreds of thousands of years. I don't think Plymouth signed up to become a nuclear waste dump when they allowed Pilgrim to enter their town many years ago. Massachusetts should set a powerful example by being a leader in solar and wind. A leader in making this planet safer from climate change. Please use sensible judgment when planning the best path for the safe green energy. The people of the Commonwealth deserve nothing less.

We all know what can happen when something goes terribly wrong at a nuclear power plant. It is irresponsible on the part of our government to think that the people of Massachusetts should be subject to those risks. The mining and refining of

uranium leaves a tremendous carbon foot print burning massive amounts of coal to achieve the final grade uranium for nuclear fuel.

This very old nuclear facility is leaking tritium into the ground water and expelling pollutants and carcinogens into the air and Cape Cod Bay on a daily basis.

The cancer rate near this facility are the highest in the state and yet we think its perfectly fine to keep stock piling spent fuel into a cram packed wet pool for an indefinite amount of time. Even if the spent fuel is off loaded into dry cask storage, the platform for the casks sits at near sea level and with sea level rise and major coastal storm surge that is very poor planning. There are tougher rules and permits to build a garden shed than a nuclear waste dump.

Please consider all these issues when laying out the plan and standards for clean energy in Massachusetts. Set an example and be a good leader in wind and solar. It is a win win for jobs and safe clean energy for generations to come.

Thank you for your attention to this critical matter.

Sincerely,

Arlene Williamson



We need a hierarchy when making decisions about future energy investments:

First – energy efficiency must be the TOP priority. All new buildings should meet requirements of insulation and air sealing, especially government buildings – local, state, and federal. New appliances and vehicles should meet strict energy efficiency levels.

Next – all renewable sources must be evaluated for life cycle feasibility. In other words, ALL costs (fuel source acquisition/mining, transportation of fuel, efficiency loss over transmission via long distances, greenhouse gas emissions) must be considered. Local production of energy should be chosen over large-scale distant production. Municipal scale projects (small-scale hydro, community-owned solar, wind farms) keep the risks and benefits of energy generation in view of consumers.

Lastly, fossil fuels should be a LAST resort. When used, all efforts must be made to avoid leakage of methane at drilling sites, and the capture and sequestration of carbon when combusted. The net energy should be factored in when using sources that are great distances from end users.

Our future starts now. We cannot afford "business as usual". Scientists had made it clear – we must change because the climate is.

I totally agree with these goals/demand statements:

- All utilities (including municipal utilities) should be **required** to comply with the standard

- The CES should only include wind, solar, geothermal, small-scale hydro, and other renewables as clean energy (alternatively, the Renewable Portfolio Standard should be raised)
- The standard should require utilities to use 100% clean energy by 2050, including strong and aggressive **2020** and **2030** targets
- Overall, the CES should dramatically increase the amount of clean energy available on the market and dramatically decrease climate pollution and associated public health risks

Sincerely,
Carol Castonguay

In terms of a new clean energy standard, it's very important to me that

- All utilities (including municipal utilities) should be required to comply with the standard
- The CES should only include wind, solar, geothermal, small-scale hydro, and other renewables as clean energy (alternatively, the Renewable Portfolio Standard should be raised)
- The standard should require utilities to use 100% clean energy by 2050, including strong and aggressive 2020 and 2030 targets
- Overall, the CES should dramatically increase the amount of clean energy available on the market and dramatically decrease climate pollution and associated public health risks

Sincerely,

Dave Damm-Luhr, Brookline, MA

This is the informal comment of the Low Income Weatherization and Fuel Assistance Network (The Low Income Network), at the invitation of the Department of Environmental Protection (DEP) at the Clean Energy Stakeholder Meeting on October 27, 2014. DEP is considering the issuance of regulations for a Clean Energy Standard (CES) for electric utilities and has circulated a draft thereof for informal comment.

The Low Income Network is the organization of agencies that make up the low-income weatherization and fuel assistance program network that is appointed by statute to implement low-income energy efficiency programs in the Commonwealth (G.L. c. 25, sec. 19(c); (Green Communities Act, St. 2008, c. 169, sec. 11). Network agencies also implement the federal Fuel Assistance and Weatherization Assistance Programs administered by the Department of Housing and Community Development. Members of the Network counsel utility customers about rates and payment options, and arrange rate payment assistance, including Fuel Assistance, arrearage management, and other forms of assistance for low-income utility customers. Low-income utility customers currently face winter electricity price increases of up to 51%, with similar winter price spikes likely in the near future. At the same time, fuel assistance for the coming winter is about 61% of what it was five years ago. The Low Income Network agrees that the clean generation of electricity is very important. So, however, is the affordability of that electricity.

BACKGROUND

The proposed Clean Energy Standard for electricity would work much like the current Renewables Portfolio Standard, but with coverage beyond RPS-defined renewables. If the CES rewarded emissions lower than 50% of a natural gas generator, it would favor (in addition to RPS-eligible renewables) large hydro (including Hydro Quebec) and perhaps biomass. Implicitly, though not explicitly, a CES would also favor energy efficiency (EE) since EE reduces the need for generation. A CES would disfavor gas (presumably), and perhaps nuclear (on the theory that no new nuclear plants will be built no matter what, so there is nothing to be gained from an incentive for them). There is also debate about whether municipal utilities (munis) should be covered.

Residential bill impacts by 2030 of likely technology choices under a CES range from 2% to 10%. Bill impact is lowest if munis are covered (which spreads the cost) and nuclear units are excluded (because nothing is to be gained by including them). In that case, residential bill impacts by 2030 are projected to be 10% (about 0.6%/year on average)-- this falls to 2% (about 0.1%/year) if gas generation gets no credits. The purpose of this comment is to emphasize the importance of affordability and to urge DEP to give preference to least-cost choices.

COMMENT

The Network makes the following preliminary recommendations:

1. Minimize bill impacts by not giving credits to nuclear or gas units and by encompassing munis. Giving credits to technologies that do not reduce emissions, or do not meet emission requirements, is obviously counter-productive. Munis should be subject to state policy in any event; there is no legislative exclusion for them, as there is in other contexts (such as EE).

2. DEP should make explicit the now only implicit point that EE will reduce utility costs by providing a zero emissions resource, thereby requiring fewer other resources (and thus fewer clean energy credits) to meet whatever emission standard is decided upon. See e.g., proposed 310 CMR sec. 7.75(4).

3. Bills are nevertheless projected to rise sharply assuming the clean resources of Hydro Quebec and wind, along with associated transmission, are added to the grid -- 33% (1.7%/year) according to a Synapse study; others project nearly double (which would be 4.2%/year). As the portfolio of policies to encourage clean resources is developed, such as a Clean Energy Standard, attention should be directed to developing strategies to mitigate these increases for low-income customers in order to help them remain on the electricity grid.

Sources:

*Clean Energy Standard costs:

E. Stanton, et al., "A Clean Energy Standard for Massachusetts" (Synapse 2013) at 4-7, 83; <http://www.mass.gov/eea/agencies/massdep/climate-energy/climate/ghg/ces.html>.

*Hydro expansion costs:

R. Hornby et al., "Incremental Benefits and Costs to New England of Large-Scale

Hydroelectric Energy Imports" (Synapse draft memo to Mass. DOER, 2013) at 29-31, 37-38; clf.org/wp-content/uploads/2014/06/Synapse-Memo-Large-Scale-Hydro-12-31-13.pdf; see clf.org/blog/clean-energy-climate-change/governors-infrastructure-plan.

C. Courchesne, "Three Ugly Numbers Behind the Governor's Push for Canadian Hydropower" (Conservation Law Foundation, 2014); clf.org/blog/clean-energy-climate-change/three-ugly-numbers-behind-governors-push-canadian-hydropower.

Please direct any questions to the undersigned.

Thank you.

Respectfully submitted,

Jerrold Oppenheim, Democracy And Regulation
Attorney for The Low Income Weatherization and Fuel Assistance Network



Dear Governor Deval Patrick and staff:

Back in May, you, the Governor, called for a future free of fossil fuels and you promised to push for a clean energy standard that would require power plants to use renewable energy first and fossil fuels only as a last resort. It is time to move forward! The clean energy standard could be a huge step forward for our state, and for the nation and the world. However, if the clean energy standard is not as strict and comprehensive as possible, it will not have the needed impact.

Please assure that the standard includes these points:

- All utilities (including municipal utilities) should be required to comply with the standard
- The CES should only include wind, solar, geothermal, small-scale hydro, and other renewables as clean energy (alternatively, the Renewable Portfolio Standard should be raised)
- The standard should require utilities to use 100% clean energy by 2050, including strong and aggressive 2020 and 2030 targets
- Overall, the CES should dramatically increase the amount of clean energy available on the market and dramatically decrease climate pollution and associated public health risks

Thank you for your leadership on this (literally) most important issue.

Respectfully yours,

Mira Brown

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Mira Brown

