COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF
ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENERGY RESOURCES
100 CAMBRIDGE ST., 9th FLOOR
BOSTON, MA 02114
Telephone: 617-626-7300

Maura T. Healey
Governor

Kimberley Driscoll
Lt. Governor

Rebecca L. Tepper
Secretary

Elizabeth Mahony
Commissioner

February 26, 2024

Re: IRS Docket No. REG-117631-23 – Comments in Response to Section 45V Credit for Production of Clean Hydrogen; Section 48(a)(15) Election To Treat Clean Hydrogen Production Facilities as Energy Property

The Massachusetts Department of Energy Resources appreciates this opportunity to provide comments on proposed rules governing Section 45V, the Clean Hydrogen Production Tax Credit. The Department of the Treasury and the Internal Revenue Service should be commended for attempting to balance the concerns of the new clean hydrogen industry with concerns that have been raised regarding the potential impacts that a rapid growth in new clean hydrogen production could have on the cleanliness of electric power delivered to end-users.

Massachusetts is a longtime leader on climate action and is aligned with the Biden Administration's climate goals. We are actively pursuing our mandatory greenhouse gas (GHG) emission limits of 50% below 1990 levels by 2030[1] and 85% below 1990 levels by 2050, as well as net zero GHG requirement by 2050.[2] Moreover, Massachusetts is committed to advancing and deploying clean hydrogen in an equitable manner. Currently, the Massachusetts Department of Energy Resources is developing a Hydrogen Roadmap, which will provide strategic direction to integrate hydrogen into our Climate strategy, where appropriate, identify the end uses that will require hydrogen as their likely solution to decarbonization and define our overall need for, and capacity to produce, clean hydrogen.

The Section 45V tax credit, created by the Inflation Reduction Act of 2022, represents a potential cornerstone for growing a viable hydrogen economy in Massachusetts, the northeast United States and the nation. Cost competitive clean hydrogen can play a role in Massachusetts's

[1] Massachusetts Executive Office of Energy and Environmental Affairs, *Massachusetts Clean Energy and Climate Plan for 2025 and 2030*, June 30, 2022.
[2] Massachusetts Executive Office of Energy and Environmental Affairs, *Massachusetts Clean Energy and Climate Plan for 2050*, December 21, 2022.

decarbonization efforts, but to become that cornerstone, the credit has to be relatively easy to access and cannot add compliance costs that would make a clean hydrogen production facility non-competitive with standard, Steam-Methane Reforming (SMR) based H2 production or with clean hydrogen facilities in other parts of the country.

As currently proposed, we believe that the guidance could severely limit access to the 45V tax credit, and therefore limit the production of clean hydrogen produced using clean energy powered electrolysis. Specifically, the proposed rules do not take into consideration existing renewable energy and climate laws established by states and the negative impact the federal rules could have on the development of clean hydrogen facilities in certain regions. Massachusetts has discussed the draft guidance with several other states[3] that have indicated they plan to submit comments and understand that they share many of our concerns with the "three pillars" of the draft guidance. We offer the following comments.

Geographic Matching / Deliverability

As proposed, Treasury's guidance would require that an electricity generating source needs to be in the same region as the Hydrogen production facility that is using its energy attribute certificates (EACs) for compliance, the region being "derived from the National Transmission Needs Study (DOE Needs Study) that was released by the DOE on October 30, 2023." Massachusetts is placed in the New England region.

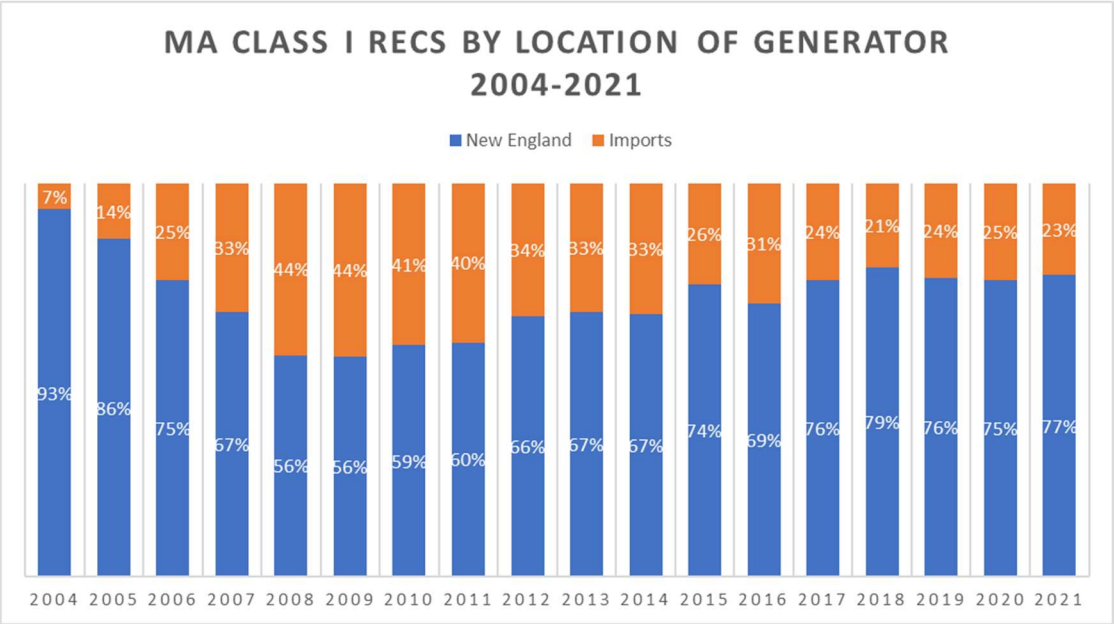
Requiring strict geographic matching with documentation provided via the purchase and retirement of EACs will likely create significant price differentials between different regions of the country and will place regions with greenhouse gas reduction requirements at a major competitive disadvantage relative to those without. This is because in certain regions (e.g., ISO-NE, PJM, NYISO, etc.), robust compliance mechanisms are in place in most states to document the generation, purchase, and settlement of EACs. Accordingly, hydrogen facilities seeking to purchase EACs in order to comply with federal tax credit rules around geographic matching will need to pay considerably higher prices to obtain EACs in these regions as they will be competing with regulated utilities and retail electricity suppliers that must purchase the EACs for compliance with state portfolio standard requirements. At the very least, these requirements will force the clean and renewable energy generation facilities to forego revenues from the sale of EACs that are a key component of project finance in these jurisdictions.

The proposed rules will therefore significantly harm the economics of siting hydrogen facilities in these regions and will create a major economic advantage for hydrogen facilities sited in regions where there is less of an existing market for the EACs generated by the clean/renewable generation that is sited there. In effect, the rules will penalize states with more significant clean energy deployment, clean and renewable portfolio standard, and greenhouse gas reduction requirements, particularly those in the New England, New York, and the Mid-Atlantic regions, for placing a premium value on clean energy generation and greenhouse gas mitigation, rendering hydrogen production less economic in these areas.

[3] Massachusetts has had conversations with CT DEEP, NYSERDA, RI OER, and MN DOC.

Additionally, the proposed geographic restrictions also fail to take into account that a significant amount of clean/renewable energy generation is shared between regions. For example, since 2006, between 21% and 44% of all renewable energy certificates used for compliance under the MA RPS Class I Portfolio Standard have been generated by renewable facilities producing electricity in adjacent regions (see Figure 1 below), but that is physically delivered into the ISO-NE electric grid. Requiring clean energy facilities that provide EACs to clean hydrogen to be physically located in the same region as a clean hydrogen facility ignores this fact and will disqualify many EACs that should otherwise be eligible for compliance, making it even more challenging for regions that import a significant amount of clean electricity.

Figure 1. MA Class I RECs by Location of Generator, 2004-2021



Source: Massachusetts Department of Energy Resources. *2021 RPS/APS Annual Compliance Report*. Nov. 28, 2023.

To further emphasize the importance of imported electricity to certain regions clean energy and climate requirements, Massachusetts electric utilities have entered into a contract with the New England Clean Energy Connect (NECEC) project, which, when completed later this year, will deliver an additional 9.45 million MWh of Canadian hydroelectric power to Massachusetts.[4] This will more than double the amount of clean energy generation attributes in Massachusetts coming from outside the New England region. Accordingly, restricting clean and renewable energy that must be matched with hydrogen production to in region generation only would exacerbate the limitation on the availability of EACs for hydrogen facilities sited in New England, further compounding the economic challenges facing hydrogen facilities under the proposed rules.

An alternative approach for demonstrating compliance that Massachusetts recommends would be to allow any of the following three options to demonstrate geographic matching and deliverability:

[4] https://www.energy.gov/oe/articles/exhibit-o-public-outreach-materials-0

1. Purchase and retirement of regional EACs in an amount equal to the electricity consumed by clean hydrogen facility.
2. Co-location with a clean or renewable energy facility where the facility must be capable of generating a comparable amount of electricity as will be consumed by the clean hydrogen facility, but no requirement for the hydrogen facility to retire regional EACs.
3. Contractual pairing with a clean or renewable energy facility to purchase the energy output from the facility that demonstrates to the IRS's satisfaction that the clean hydrogen facility is supporting the operation of an equivalent amount of clean or renewable energy that is located in or will be delivered to the same region of the clean hydrogen facility. Exercising this option would not require the retirement of regional EACs.

Adopting this approach preserves the proposed approach to compliance in the existing guidance but creates two new options that provide more flexibility to clean hydrogen facilities. Additionally, if Treasury desires, it could limit the availability of options 2 and 3 to facilities located in states or regions with existing portfolio standard and GHG reduction requirements that meet certain stringency criteria.

Incrementality

The guidance proposes that any renewable energy facility must have commenced commercial operation within three years of providing EACs to a clean hydrogen production facility. Massachusetts, like many other states, already has existing portfolio standard requirements and GHG emission limits, so any hydrogen production that increases in-state electric load already must be matched with additional clean energy supply to meet these requirements. Accordingly, requiring hydrogen facilities to purchase and retire EACs directly from new clean energy facilities effectively expands the state's compliance requirements. This is because hydrogen producers will need to buy the EACs to comply with the tax credit rules, but retail electricity suppliers will need to buy more EACs because of the increased electric load from the production of hydrogen. This will increase the costs of both hydrogen and electricity produced in Massachusetts and have the added effect of making it more challenging for Massachusetts to meet its legally mandated greenhouse gas reduction limits as it will reduce the number of EACs available for compliance buyers, driving up the price of EACs and possibly increasing the number of alternative compliance payments that must be made by regulated entities in order to comply with state portfolio standards, which provide none of greenhouse gas reduction benefits that the actual retirement of EACs does. This same dynamic will play out in similarly situated states as Massachusetts.

Also, in Massachusetts, as in other parts of the country, interconnection, siting and permitting, supply chain, and other economic issues have created significant delays for renewable energy facilities seeking to come online, with deployment schedules for solar and wind facilities delayed by years in some instances. The three-year requirement limits could discourage hydrogen production facilities from proceeding with development as there may insufficient new renewable generation capacity to match with the oncoming hydrogen facilities.

Lastly, the majority of clean/renewable generation that is scheduled to come online in the coming years in Massachusetts will be required to sell their EACs to regulated utilities under long-term contracts mandated by state law as minimum obligations increase by 3% each year. This will effectively require hydrogen resources located in jurisdictions like Massachusetts to develop their own sources of clean/renewable generation from scratch, which will add large additional costs to developing hydrogen, especially if they must retire the EACs produced by the facilities. Such costs will likely be far less in regions without climate and clean energy policies and/or that do not have significant amounts of new generation under long-term contract. In these regions, the facilities will be able to contract with similar sources of new clean/renewable generation and procure EACs at a much lower cost, again disadvantaging those states that are serious about acting on climate change.

Massachusetts recommends that Treasury reconsider its requirements in this area, particularly for jurisdictions that have existing portfolio standard and GHG reduction requirements, as these regions already address the issue of incrementality via the operation of their existing policies. At a minimum, Treasury should extend the time horizon well beyond three years. For example, in Massachusetts a new renewable resource is defined as one that commenced operation after 1997.

Temporal Matching

Time matching is a laudable goal and should be permitted (and perhaps encouraged) as a method of compliance in regions where it exists. However, the patchwork of rules and tracking systems across the US do not lend themselves well to establishing hourly tracking requirements at the national level. As a result, the application of this rule will create inequities between regions. Additionally, it may place certain types of clean/renewable generation (e.g., small, distributed generation sources) at a competitive disadvantage as they may not be able to afford real-time or interval meters necessary to track output at such a granular level, which can come at a significant cost relative to total project costs.

Massachusetts has already grappled with this issue in the context of its Clean Peak Energy Portfolio Standard (CPS) rules for energy storage matching with renewable generation, which is the only program of its kind in the United States. The CPS dealt with it by establishing four methods of demonstrating compliance for energy storage systems:[5]

1. Co-location with a renewable energy facility where the renewable energy facility must have a nameplate capacity of at least 75% of the nameplate capacity of the energy storage system.
2. Contractual pairing with a renewable energy facility that demonstrates to the Massachusetts Department of Energy Resources' satisfaction that the energy storage system operates primarily to storage and discharge renewable energy.
3. Inclusion of an operational schedule in the energy storage system's interconnection service agreement demonstrating that the energy storage system services to resolve load flow or power quality concerns otherwise associated with intermittent renewable energy resources.

[5] Massachusetts Department of Energy Resources, *Clean Peak Resource Eligibility Guideline*, September 10, 2021.

4. Charging the energy storage system coincident with periods of typically high renewable energy production as a percent of the grid generation mix as defined below:

	Energy Storage Charging Windows	
Clean Peak Season	**Wind-based Charging Hours**	**Solar-based Charging Hours**
Spring	12:00 A.M. to 6:00 A.M.	8:00 A.M. to 4:00 P.M.
Summer	12:00 A.M. to 6:00 A.M.	7:00 A.M. to 2:00 P.M.
Fall	12:00 A.M. to 6:00 A.M.	9:00 A.M. to 3:00 P.M.
Winter	12:00 A.M. to 6:00 A.M.	10:00 A.M. to 3:00 P.M.

Massachusetts has already recommended versions of options 1 and 2 above as a method to address its concerns regarding the geographic matching and deliverability requirements and argues that those methodologies would also address this temporal matching concern. While option 3 is specific to energy storage and is likely not applicable here, a version of option 4 could work as an alternative requirement to hourly matching and could be tailored to specific states/regions based on their generation mix and load profiles.

Conclusion

The Treasury should strongly reconsider its proposed rules to better align with state climate and clean energy deployment policies. As they are written, compliance with any one of the three pillar requirements that are proposed in guidance will create burdens on clean hydrogen producers, who need the tax credit to be successful. In particular, states that have well developed portfolio standard and GHG emissions reduction requirements will be significantly disadvantaged by the rules as written and Massachusetts recommends that the Treasury amend its rules regarding geographic matching, deliverability, and incrementality to afford clean hydrogen with more options to demonstrate compliance. We also urge Treasury to consider being more flexible on compliance with temporal matching requirements when those go into effect in the future

In Massachusetts we are interested in supporting the growth of a clean hydrogen economy, based on electrolysis-based production. To achieve that goal, and to support our overall decarbonization goals, we will need an active regional clean hydrogen economy. If adopted, our proposed recommended changes will make it much more likely that we, and the nation as a whole, will achieve our objectives with respect to the development of clean hydrogen production facilities.

Sincerely,

Elizabeth Mahony, Commissioner

Massachusetts Department of Energy Resources