

NEEP ISSUE BRIEF:**POLICIES DRIVING AIR SOURCE HEAT PUMP MARKET EXPANSION**

Several states in the Northeast and Mid-Atlantic region are embracing policies that, either through legislation or regulatory action, that will support rapid expansion of the market for air-source heat pumps in the next decade. These developments are summarized in the following paragraph and then explained in further detail below.

**Regional Overview**

Vermont's policymakers have made the region's most advanced commitment to air-source heat pump deployment, having built a regulatory framework that essentially enacts a strategic electrification portfolio standard. New York is supporting ambitious clean energy goals with New York State Energy Research and Development Authority (NYSERDA) programs that aim to accelerate market animation on a fuel-neutral basis. Massachusetts recently revised their Alternative Portfolio Standard to include air source heat pumps; previously the alternative portfolio standard could be satisfied only through a limited array of measures focusing on combined heat and power. Rhode Island is considering integration of delivered fuels efficiency into the same least cost procurement planning processes that drive energy efficiency programs, pending the outcome of a recently opened docket.

Vermont

Vermont's 2016 Comprehensive Energy Plan assumes deployment of 35,000 cold-climate heat pumps by 2025 in order to achieve the state's energy goals.¹ Facilitating this rollout, the recently enacted Act 56 establishes an RPS-type avoided compliance payment framework for "Energy Transformation" projects that distribution utilities must procure, including projects facilitating electrification of the transportation and delivered fuels sector.² The legislation explicitly includes air source heat pumps as an acceptable energy transformation project. To comply with Act 56, the state's distribution utilities must procure energy transformation projects equivalent to two percent of retail sales in 2017, rising incrementally to twelve percent of retail sales in 2032, with requirements for small municipal utilities differing slightly. Regulatory stakeholders have developed a preliminary project planning tool to compare MMbtu savings across energy systems, including transportation and delivered fuels.³ Energy Transformation projects are screened for cost-effectiveness under the societal cost test and against an alternative compliance payment of \$0.06/kWh.

New York

The New York State Energy Plan outlines extensive carbon reduction goals that could only be achieved through strategic electrification of the transportation and delivered fuels sectors. In order to achieve these goals, the

¹ Vermont Department of Public Service. 2016 Comprehensive Energy Plan. (January 2016) Page 111. Available at: https://outside.vermont.gov/sov/webservices/Shared%20Documents/2016CEP_Final.pdf

² Vermont Legislature. An Act Relating to Establishing a Renewable Energy Standard. Act No. 56. Available at: <http://legislature.vermont.gov/assets/Documents/2016/Docs/ACTS/ACT056/ACT056%20As%20Enacted.pdf>

³ Vermont Public Service Board Docket 8550. Energy Transformation Measures and Investment Calculator. Available at: <http://psb.vermont.gov/sites/psb/files/docket/8550-RES/Docket%208550%20Planning%20Tool%20103015.xls>



Public Service Commission recently approved NYSERDA's ten-year Clean Energy Fund,⁴ which uses funds collected through an electric surcharge to fund energy savings strategies on a fuel neutral basis, so long as they can provide greater benefits than would electric measures. The Market Characterization and Design Chapter of NYSERDA's Investment Plan explicitly calls for an Air Source Ductless Mini-Split Market Assessment during 2016.

In addition to NYSERDA's efforts toward fuel neutral measures, the Public Service Commission recently noted in their Reforming the Energy Vision proceeding's Track II Order that they "[E]ncourage utilities to propose programs and strategies to enable and facilitate the beneficial conversion of end uses.⁵ They describe two primary benefits of conversion to efficient electric end uses, including: (1) reductions in carbon emissions where charging and pre-heating can occur during off peak times; and (2) improved system load factor and increased electric usage will spreading system costs across a greater number of sales units, saving ratepayers money and reducing long-term business risks for utilities.⁶

The above-mentioned improvements in system load factor are built upon an assumption by the Commission that in the future, flexibility of end-use loads will create an opportunity to limit locational and system-wide peaks, incenting use of flexible loads such as electric vehicles, heat pumps, and other connected devices during times when system capacity costs less. Demand response-enabled heat pumps incorporating Open-ADR or similar communications protocols will be a important tools for realizing this assumption.

The actions in New York are unique because regulators have directed both NYSERDA and the utilities to promote fuel switching as a means of expanding markets for air source heat pumps *without* any explicit legislative directive. This is important because regulators from throughout the country are looking to the New York Public Service Commission's Reforming the Energy Vision proceeding as they contemplate similar actions of their own.

Massachusetts

Massachusetts has long supported air source heat pump market development through incentives offered by the Massachusetts Clean Energy Center.⁷ In addition to this support, Massachusetts may also host growth in the market for air source heat pumps in the near future as a result of recent revisions to the Commonwealth's Alternative Portfolio Standard, which requires retail electric suppliers to procure a portfolio of alternative energy at 0.25 percent of retail sales each year until 2020.⁸

⁴ New York State Public Service Commission. Docket No. 14-M-0094. Order Authorizing the Clean Energy Fund Framework. (January 2016) Page 61. Available at: <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BBB23BE6D8-412E-4C82-BC58-9888D496D216%7D>

⁵ New York State Public Service Commission. Docket No. 14-M-0101. Order Adopting a Ratemaking and Utility Revenue Model Framework. (May 2016) Available at: <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7bD6EC8F0B-6141-4A82-A857-B79CF0A71BF0%7d>

⁶ *id.* at page 90.

⁷ Massachusetts Clean Energy Center. Installer Resources – Residential Air-Source Heat Pumps. Available at: <http://www.masscec.com/installer-resources-residential-air-source-heat-pumps>

⁸ 225 CMR 16.00. Draft Regulations available at: <http://www.mass.gov/eea/docs/doer/renewables/thermal/225-cmr-16-draft-renewable-thermal-regulation-052416.pdf>



The revised regulations — which were published only two days after the state’s high court directed the Department of Environmental Protection to rectify a lack of compliance with the Global Warming Solutions Act⁹ — add renewable thermal generating units, including air source heat pumps, to the list of measures that retail electric suppliers can use to comply with the required portfolio standard. Previously, retail electric suppliers were able to satisfy the standard largely by procuring a portfolio of combined heat and power projects. This change will likely result in further support for air source heat pump market growth by retail electric suppliers in Massachusetts.

Building upon the above-mentioned regulatory market drivers, the Commonwealth’s low income populations are a market sector where air-source heat pumps are poised for tremendous growth.¹⁰ In their July 2016 presentation to the Massachusetts Energy Efficiency Advisory Council,¹¹ the Low Income Affordability Network provided an update on a pending evaluation of non-energy impacts for low income energy efficiency programs in the Northeast. The preliminary results of the evaluation, which attempts to monetize the health benefits from reduced hypothermia and hyperthermia, show a *tenfold increase in previous estimates of low-income sector non-energy impacts*. Such figures would greatly encourage adoption of heat pumps and related weatherization measures in the low income sector, which previously struggled to screen as cost-effective.

Rhode Island

Rhode Island is a state at the cusp of providing widespread support for air source heat pump market development. Their State Energy Plan, Energy 2035,¹² and recent recommendations issued by their Systems Integration Rhode Island (SIRI) working group¹³ also invoke strategic electrification as a key tenet, with the State Energy Plan targeting a 20% reduction in unregulated fuel use.

Furthermore, the state’s least-cost procurement standards, as proposed by the Energy Efficiency Resource Management Council (EERMC),¹⁴ and approved by the Rhode Island Public Utility Commission,¹⁵ explicitly allow the least cost procurement to address “CHP, strategic electrification, integration of grid modernization, [and] gas service expansion.” Yet, stakeholders have been hesitant to incorporate unregulated fuels into least-cost procurement proposals in any significant manner.

⁹ The Global Warming Solutions Act (2008) required the Commonwealth to cut its greenhouse gases 25 percent below 1990 levels by 2020. See generally, Isabel Kain & Others v. Department of Environmental Protection. Available at:

<http://www.socialaw.com/services/slipp-opinions/slipp-opinion-details/isabel-kain-others-1-vs.-department-of-environmental-protection>

¹⁰ While the evaluation has been presented to the Massachusetts Energy Efficiency Advisory council, its focus was on the entirety of Census Region 1, which includes the entire Northeast and Mid-Atlantic region North of Maryland.

¹¹ Oppenheim, J. Low Income Energy Affordability Network. Low Income Impacts of EE. Slide 12. (July 2016) Available at: <http://ma-eeac.org/wordpress/wp-content/uploads/Low-Income-Non-Energy-Impacts-Presentation.pdf>

¹² Rhode Island State Energy Plan: Energy 2035. (October 2015) Page 61. Available at:

<http://www.planning.ri.gov/documents/LU/energy/energy15.pdf>

¹³ Systems Integration Rhode Island Vision Document. (November 2015) Page 57. Available at:

<http://www.energy.ri.gov/documents/siri/Systems%20Integration%20Rhode%20Island%20Vision%20Document%20January%202016%20FINAL.pdf>

¹⁴ Rhode Island Energy Efficiency Resource Management Council. 2011 Least Cost Procurement Standards with Proposed 2014 Revisions. Available at: http://www.ripuc.org/eventsactions/docket/4443-EERMC-LCPS-Final_5-27-14.pdf

¹⁵ Rhode Island Public Utility Commission. Docket No. 4443. Order 21767 Appendix B. Available at:

http://www.ripuc.org/eventsactions/docket/4443-EERMC-Ord21767_12-31-14.pdf



In February 2016, the Rhode Island Public Utility Commission issued a Scoping Solicitation for their “Changing Distribution System” Docket, which solicited comments on what costs and benefits should be considered within the Public Utilities regulatory processes.¹⁶ In response to the solicitation and building upon the recommendations of the State Energy Plan and SIRI initiatives, the Rhode Island Energy Efficiency and Resources Management Council (EERMC)¹⁷ and Rhode Island Office of Energy Resources (OER)¹⁸ both pushed extensively for inclusion of all fuels (transportation and heating) within the auspices of the current least cost procurement process.

While a March 2016 Memorandum from Commission Staff suggests that the Commission is seeking a more limited proceeding scope than suggested by the OER and EERMC comments,¹⁹ substantive discussions during the proceeding may in fact lead to a scope which provides certainty around projects that would bring unregulated fuels within the auspices of the state’s least cost procurement plans.²⁰



ABOUT NEEP

Northeast Energy Efficiency Partnerships (NEEP) is a regional non-profit organization that works to accelerate energy efficiency in homes, buildings and industry across the Northeast and Mid-Atlantic states. We are one of six Regional Energy Efficiency Organizations (REEOs), designated by the U.S. Department of Energy to provide technical guidance to states.

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¹⁶ Rhode Island Public Utility Commission. Docket No. 4600. Request for Comments on a Docket to Investigate the Changing Distribution System Docket. (February 2016) Available at: http://www.ripuc.org/eventsactions/docket/4600-PUC-Memo-Stakeholders_2-5-16.pdf

¹⁷ Rhode Island Public Utility Commission. Docket No. 4600. Comments by the RI Energy Efficiency and Resource Management Council. (February 2016) Available at: [http://www.ripuc.org/eventsactions/docket/4600-EERMC-Comments\(2-19-16\).pdf](http://www.ripuc.org/eventsactions/docket/4600-EERMC-Comments(2-19-16).pdf)

¹⁸ Rhode Island Public Utility Commission. Docket No. 4600. Comments by the Rhode Island Office of Energy Resources. (February 2016) Available at: http://www.ripuc.org/eventsactions/docket/4600-OER-Comments_2-19-16.pdf

¹⁹ Rhode Island Public Utility Commission. Docket No. 4600. Staff Recommendations for a Docket to Investigate the Changing Distribution System. (March 2016). Available at: http://www.ripuc.org/eventsactions/docket/4600-PUC-Recommendation_3-1-16.pdf

²⁰ The Commissioner of the Rhode Island Office of Energy Resource, who filed the comments for the OER, was subsequently appointed as Commissioner with the Rhode Island Public Utility Commission.