Clean Heating Pathways Citations

Acadia Center
Advancing the Clean Energy Future

Where Are Heat Pumps Being Used Today?

Rural & Suburban Northeast

Maine heat pump installations from: Efficiency Maine, FY 2019 Annual Report, available here: https://www.efficiencymaine.com/docs/FY19-Annual-Report_final.pdf

Vermont heat pump installations from: NRDC and VEIC, Driving the Heat Pump Market: Lessons Learned from the Northeast, Feb 2018, available here: https://www.veic.org/documents/default-source/resources/reports/veic-heat-pumps-in-the-northeast.pdf

Cities

New York City Local Law 97, available here: https://www1.nyc.gov/assets/buildings/local_laws/ll97of2019.pdf

Brookline, MA ban on fossil fuel in new construction and major renovations passed November 20, 2019. See e.g.: https://www.bostonglobe.com/metro/2019/11/20/first-for-massachusetts-brookline-votes-ban-oil-and-gas-pipes-new-buildings/24RdqjUOldI5qrqF6zfiHP/story.html

Western U.S.

In rulemaking 13-11-005, the California Public Utilities Commission allowed gas to electric conversions in energy efficiency programs if they reduce energy consumption and greenhouse gases: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M310/K053/310053527.PDF

The Sacramento Municipal Utility District rebate information available here: https://www.smud.org/en/Rebates-and-Savings-Tips/Rebates-for-My-Home/Heating-and-Cooling-Rebates

The Energy Trust of Oregon rebate information available here: https://www.energytrust.org/solutions/heating-and-cooling/

International

Canada heat pump installations: https://www.cer-rec.gc.ca/nrg/ntgrtd/mrkt/snpsht/2019/04-03grwnghtpmpdptn-eng.html and http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/showTable.cfm?type=CP&sector=res&juris=ca&rn=28&page=0

Denmark, see: https://ens.dk/sites/ens.dk/files/EnergiKlimapolitik/accelerating_green_energy_towards_2020.pdf

Norway, see: https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/58167_Norway-BR4-1-Norway_BR4%20(2).pdf

What are the Benefits of Heat Pumps?

Pollution Reduction and Improved Health and Safety

Three[3] and NMR Group, "Massachusetts Special and Cross-Cutting Research Area: Low-Income Single-Family Health- and Safety-Related Non-Energy Impacts (NEIs) Study," available here: http://ma-eeac.org/wordpress/wp-content/uploads/Low-Income-Single-Family-Health-and-Safety-Related-NonEnergy-Impacts-Study.pdf

Chart: Acadia Center analysis using data from the U.S. Energy Information Administration, ISO New England, NY ISO, and the U.S. Census American Community Survey.

Winter Fuel Savings

Chart: Acadia Center analysis using data from the U.S. Energy Information Administration, ISO New England, NY ISO, and the U.S. Census American Community Survey.

Educate Consumers and Vendors

Table sources

- MA: Massachusetts Joint Statewide Electric and Gas Three-Year Energy Efficiency Plan 2019–2021, available here: http://ma-eeac.org/wordpress/wp-content/uploads/2019-2021-Three-Year-Energy-Efficiency-Plan-April-2018.pdf. Other venues for consumer heat pump outreach include Massachusetts Clean Energy Center, see e.g.: https://www.masscec.com/residential/clean-heating-and-cooling
- RI: National Grid 2018-2020 Energy Efficiency and System Reliability Procurement Plan, August 30, 2017, available here: http://rieermc.wpengine.com/wp-content/uploads/2017/08/2018-2020-3-year-plan-puc-8-30-17.pdf; Annual Energy Efficiency Plan for 2018 Settlement of the Parties, November 1, 2017, available here: http://rieermc.ri.gov/wp-content/uploads/2017/11/4755-ngrid-eepp2018_11-1-17.pdf; Annual Energy Efficiency Plan for 2019 Settlement of the Parties, October 15, 2018, available here: http://rieermc.ri.gov/wp-content/uploads/2019/10/4888-ngrid-eepp201910-15-18.pdf. Other venues for consumer heat pump outreach include the Rhode Island Office of Energy Resources website, see e.g.: http://www.energy.ri.gov/heating/heat-pumps/learn-about-heat-pumps.php
- CT: 2019-2021 Plan Conservation & Load Management Plan Update, March 1, 2019, available here: https://www.energizect.com/sites/default/files/FINAL%202019%202021%20Plan%20%283-1-19%29.pdf. Other venues for consumer heat pump outreach include the CT GreenBank website, through their Smart-E loan offerings see e.g.: https://ctgreenbank.com/programs/special-offer-heat-pump-financing/
- NH: New Hampshire does not offer incentives to install heat pumps to displace fossil fuels. New Hampshire Statewide Energy Efficiency Plan 2018-2020, September 1, 2017, available here: https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-136/INITIAL%20FILING%20-%20PETITION/17-136_2017-09-01_NHUTILITIES_EE_PLAN.PDF
- ME: Proposed Triennial Plan for Fiscal Years 2020-2022, October 3, 2018, available here: https://www.efficiencymaine.com/docs/Proposed_Triennial_Plan_for_FY2020_2022_10_22_2018_PUC_Filing.pdf

- VT: Revised 2019 Update to the Triennial Plan 2018-2020, April 2019, available here: https://www.efficiencyvermont.com/Media/Default/docs/plans-reports-highlights/2018/2019-update-2018-2020-triennial.pdf
- NY: NYSERDA has provided $14.95 million in incentives for installers to pass on to customers: https://www.nyserda.ny.gov/All-Programs/Programs/Air-Source-Heat-Pump-Program. NYSERDA offers information about heat pumps on their website, see e.g.: https://www.nyserda.ny.gov/Residents-and-Homeowners/Heat-and-Cool-Your-Home/Heat-Pumps. NYSERDA also made $2 million available for it's Cooperative Advertising and Training for Clean Heating and Cooling Partners: https://portal.nyserda.ny.gov/CORE_Solicitation_Detail_Page?SolicitationId=a0rt0000000AHoZZAA1

Couple Heat Pumps with Home Weatherization and Integrated Controls

Table sources

- MA: Massachusetts Joint Statewide Electric and Gas Three-Year Energy Efficiency Plan 2019–2021. More information on integrated controls is available from Mass Save: https://www.masssave.com/en/saving/residential-rebates/electric-heating-and-cooling/
- RI: National Grid 2018-2020 Energy Efficiency and System Reliability Procurement Plan, August 30, 2017. More information on integrated controls is available from National Grid: https://www.masssave.com/en/saving/residential-rebates/electric-heating-and-cooling/https://www.nationalgridus.com/media/pdfs/resi-ways-to-save/ee7342-ri-hvac-rebate-(4).pdf
- CT: 2019-2021 Plan Conservation & Load Management Plan Update, March 1, 2019
- NH: New Hampshire Statewide Energy Efficiency Plan 2018-2020, September 1, 2017
- ME: Proposed Triennial Plan for Fiscal Years 2020-2022, October 3, 2018
- VT: Revised 2019 Update to the Triennial Plan 2018-2020, April 2019. Information on VPPSA's weatherization adder is available here: https://vppsa.com/cold-climate-heat-pump-rebate/
- NY: Information on NYSERDA's heat pump incentive is available here: https://www.nyserda.ny.gov/All-Programs/Programs/Air-Source-Heat-Pump-Program.

Install Only Clean Electric Heating in New Homes

See generally: *Accelerating the Pace to Fossil-Free Residential New Construction. Reed, et. al. 2018 ACEEE Summer Study Proceedings,* https://energyfuturesgroup.com/wp-content/uploads/2019/05/Accelerating-the-Pace-to-Fossil-Free-Residential-New-Construction.pdf

Table sources

- MA: Massachusetts Joint Statewide Electric and Gas Three-Year Energy Efficiency Plan 2019–2021. Brookline, MA banned fossil fuel use in new construction and major renovations on November 20, 2019. See e.g.: https://www.bostonglobe.com/metro/2019/11/20/first-for-massachusetts-brookline-votes-ban-oil-and-gas-pipes-new-buildings/24RdqjUOldI5qrqF6zfiHP/story.html
- RI: National Grid 2018-2020 Energy Efficiency and System Reliability Procurement Plan, August 30, 2017.

- CT: 2019-2021 Plan Conservation & Load Management Plan Update, March 1, 2019
- NH: New Hampshire Statewide Energy Efficiency Plan 2018-2020, September 1, 2017
- ME: Proposed Triennial Plan for Fiscal Years 2020-2022, October 3, 2018
- VT: Revised 2019 Update to the Triennial Plan 2018-2020, April 2019.
- NY: New York utilities and NYSERDA offer residential new construction efficiency incentives based on the Energy Star Homes standard, see e.g.: https://www.nyserda.ny.gov/All%20Programs/Programs/Low%20Rise%20Residential.

Decrease Operating Costs through Smart Electricity Pricing

Acadia Center, UtilityVision: https://acadiacenter.org/document/utilityvision/

Table sourced from state IOU rate information and filings.

Stop Fossil Gas Companies from Expanding

Acadia Center, Incentives for Change: https://acadiacenter.org/document/incentives-for-change-why-utilities-continue-to-build-and-how-regulators-can-motivate-them-to-modernize/

Table sources

- MA: Eversource offers customers free line extension up to $5000, see e.g.: https://www.eversource.com/content/ema-c/residential/switch/choose-natural-gas/why-switch. Consumers are also able to spread their contribution in aid of construction (CIAC) over a 10 year period, minimizing their upfront costs, see e.g.: NARUC, Report of the NARUC Task Force on Natural Gas Access and Expansion, November 2017, available here: https://pubs.naruc.org/pub.cfm?id=8F38EF6F-D44F-80A0-578C-CF1610C47520
- RI: Most customers pay CIAC and must pay it before the start of construction, up to $6000. Amounts in excess of $6000 can be paid on a payment plan, see e.g.: https://www.nationalgridus.com/media/pdfs/billing-payments/rigas_tariff.pdf
- CT: New gas customers pay a 10% premium over existing distribution rates for 10 years if they live near a gas main or a 30% premium if they do not live near an existing main, see e.g.: NARUC, Report of the NARUC Task Force on Natural Gas Access and Expansion, November 2017
- NH: New Liberty Utilities customers get 100 feet of connection free, and the managed expansion program rates allow customers to pay for any expansion costs over time, see e.g.: https://www.puc.nh.gov/Regulatory/Orders/2016orders/25933g.pdf
- ME: Summit Natural Gas offers residents a construction allowance up to $6684, as well as promotional rebates, see e.g.: https://summitnaturalgasmaine.com/documents/SNG%20Maine%20Tariff%20as%20of%206.1.19.pdf and https://summitnaturalgasmaine.com/rebates. Unitil's Targeted Area Build-out program allows customers to pay a monthly surcharge on their gas bill instead of an upfront CIAC, see e.g.: NARUC, Report of the NARUC Task Force on Natural Gas Access and Expansion, November 2017
- VT: Vermont Gas Systems was allowed to recover $134 million in gas expansion costs across its ratebase, see e.g.: https://www.vpirg.org/wp-content/uploads/2016/01/PSB_Decision_1_8_2016.pdf

- NY: In New York utilities have been allowed to ratebase the cost of gas expansion projects, and some utilities offer CIAC payment plans and rebates for gas conversions, see e.g.: NARUC, Report of the NARUC Task Force on Natural Gas Access and Expansion, November 2017

Align Energy Efficiency Program Incentives with State Policy Objectives

Table sources

- MA: Massachusetts Joint Statewide Electric and Gas Three-Year Energy Efficiency Plan 2019–2021. Massachusetts includes an avoided cost of carbon in its cost testing based on the Avoided Energy Supply Costs in New England study by Synapse Economics, available here: https://www.synapse-energy.com/project/avoided-energy-supply-costs-new-england.
- RI: National Grid 2018-2020 Energy Efficiency and System Reliability Procurement Plan, August 30, 2017. Rhode Island uses the Rhode Island test, which includes a $100/ton avoided cost of carbon, see e.g.: http://www.ripuc.ri.gov/eventsactions/docket/4684-NGrid-RITest-Tech%20Session(9-13-17).pdf
- CT: 2019-2021 Plan Conservation & Load Management Plan Update, March 1, 2019
- NH: New Hampshire Statewide Energy Efficiency Plan 2018-2020, September 1, 2017
- ME: Proposed Triennial Plan for Fiscal Years 2020-2022, October 3, 2018
- VT: Revised 2019 Update to the Triennial Plan 2018-2020, April 2019. Vermont's Tier III Renewable Energy Standard requires utilities to reduce fossil fuel consumption and greenhouse gas emissions, see e.g.: https://puc.vermont.gov/electric/renewable-energy-standard
- NY: Information on NYSERDA's heat pump incentive at the time of publication is available here: https://www.nyserda.ny.gov/All-Programs/Programs/Air-Source-Heat-Pump-Program. In January 2020, the DPS approved new budgets for building electrification and ordered the utilities to develop proposals to accelerate building electrification and fuel switching, which will result in expanded incentives. The text of the order is available here: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={06B0FDEC-62EC-4A97-A7D7-7082F71B68B8}

Set State Targets for Beneficial Electrification

Table sources

- MA: Massachusetts' Alternative Portfolio Standard includes heat pumps as eligible thermal generation units, see e.g.: https://www.mass.gov/guides/aps-renewable-thermal-statement-of-qualification-application#-eligibility-criteria-
- RI:
- CT: Public Act 18-50 requires the state to reduce energy consumption by at least 1.6 million MMBTU annually from 2020-2025, though not exclusively through heat pump expansion, see e.g.: https://www.cga.ct.gov/2018/ACT/pa/pdf/2018PA-00050-R00SB-00009-PA.pdf
- NH: New Hampshire has a thermal carve-out in its renewable portfolio standard, but heat pumps are not eligible, see e.g.: https://www.puc.nh.gov/Sustainable%20Energy/Renewable_Portfolio_Standard_Program.htm

- ME: In 2019, Maine passed legislation requiring the state to install 100,000 heat pumps by 2025, see e.g.: https://www.maine.gov/governor/mills/news/governor-mills-signs-bill-promoting-energy-efficient-heat-pumps-maine-2019-06-14
- VT: Vermont's Tier III Renewable Energy Standard requires utilities to reduce fossil fuel consumption and greenhouse gas emissions, see e.g.: https://puc.vermont.gov/electric/renewable-energy-standard.
- NY: New York is required to reduce energy consumption by 5 TBTU by 2025 through the installation of heat pumps, see e.g.: https://www.governor.ny.gov/news/governor-cuomo-announces-dramatic-increase-energy-efficiency-and-energy-storage-targets-combat