



Northeast/Mid-Atlantic ASHP Market Transformation Progress Report (August 2020)

In May 2020, following the Q2 working group meeting of the High Performance Air Source Heat Pump Initiative, NEEP surveyed stakeholders to assess progress in implementing the seven key market strategies outlined in NEEP’s [Northeast/Mid-Atlantic Air-Source Heat Pump Market Strategies Report](#). The purpose of this survey was threefold:

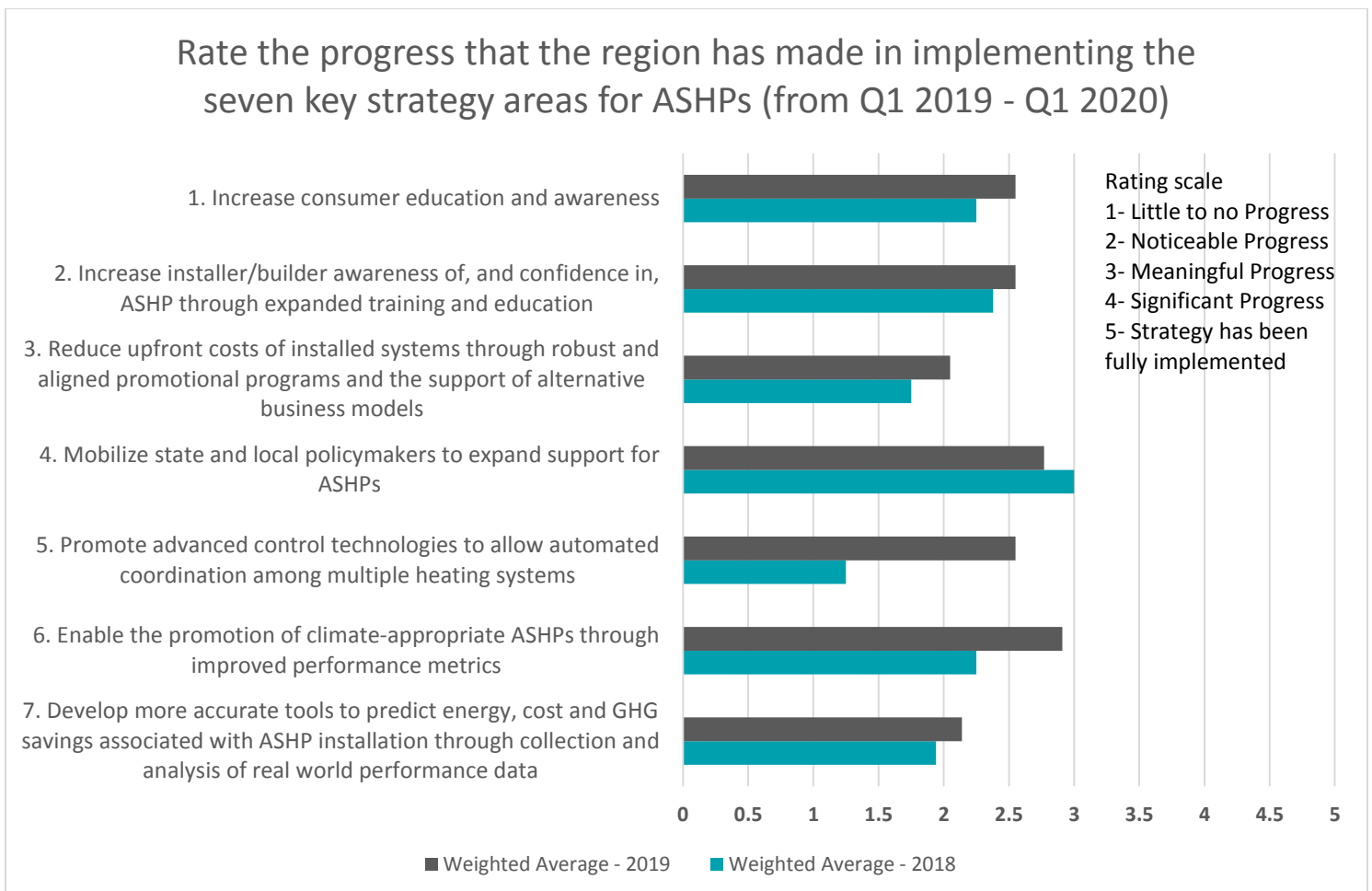
1. To measure implementation progress by market strategy area;
2. To collect perceived impacts of the ongoing COVID-19 health crisis on the ASHP market;
3. To obtain input on the evolution of the ASHP Initiative strategies going forward.

As NEEP plans for 2021 and the coming years, this stakeholder input is valuable guidance for the strategic direction of NEEP-led activities, events, and resources to support the accelerated adoption of air source heat pumps.

Twenty four members of the ASHP working group responded to the survey. The following report goes into detail on results collected from each section:

1. 2019 Implementation Progress

Using Q1 2019 as a baseline, section 1 of the survey asked respondents to rate implementation progress in each of the seven market strategy areas made through Q1 2020. For data continuity, this section was structured in the same fashion as the 2018 Market Transformation Progress Survey:



Graph 1: Rated Progress by Market Transformation Strategy Area, 2018 & 2019 Weighted Averages

As captured in the graph above, “noticeable progress” or higher was reported in 2019 across all strategy areas, and results for 2019 reflected more general progress being made than in 2018, with exception of mobilizing state and local policymakers to expand supports for ASHPs. The largest leap in progress reported from 2018 to 2019 was promotion of advanced control technologies.

In addition to capturing rated progress, section 1 of the survey asked respondents to report specific activities driving or holding back implementation progress. These activities are captured by order of strategy area below:



1) Increase consumer education and awareness

Increased progress was reported in consumer education, supported through activities such as utility-sponsored programs with relatively large marketing budgets and consumer campaigns at the community level (i.e. [HeatSmart MA](#), [NY CH&C Campaigns](#), etc.). Reported progress was hindered by the burden of consumer awareness falling overwhelmingly on HVAC contractors, who are limited on resources and should not solely bear the weight of education and marketing. Respondents highlighted the importance of case studies and success stories through public outlets, such as public service announcements. One example is the Governor of Maine [championing a retrofit of the Governor’s Mansion with heat pumps](#), which made news and increased local interest in the technology.



2) Increase installer/builder awareness of, and confidence in, ASHP through expanded training and education

Very similar to consumer education, there was a slight increase in installer education progress from 2018 to 2019. Reported activities contributing to the increase in progress include more [widely available training for installers](#), expanded electrification policies, and support from utilities. Challenges were gaps in available installer workforce capacity to meet demand for ASHPs, as well as general lack of knowledge of how ASHPs can efficiently operate at low temperatures and the need to pair ASHPs with proper weatherization and insulation. One survey respondent reported that the general sentiment of contractors surrounding electrification is mostly negative, except for the few companies who focus specifically on green buildings. Respondents also reported there is still not enough incentive for contractors to transition their scopes of work to include more heat pump technology.



3) Reduce upfront costs of installed systems through robust and aligned promotional programs and the support of alternative business models

Progress in reducing upfront costs of ASHPs increased from 2018 to 2019 but was still relatively low compared to other strategy areas. Working group respondents cited that demand for ASHPs has increased and, therefore, so has cost. Simultaneously, however, more robust [incentives](#) were reported to be available, helping to offset the uptick in upfront cost, but some respondents argue these may not be enough. “According to [MassCEC](#), multi-head ASHP installations cost more than \$4,000 per ton. You’d need an incentive of \$2,000 per ton to even begin to cover the incremental cost between a heat pump system and a BAU boiler or furnace.” Another insightful survey result is that until heat pumps become the proposed de facto system, ASHPs will continue to be the more expensive and more complex option.



4) Mobilize state and local policymakers to expand support for ASHPs

The one strategy area that reported a reduction in progress compared to 2018 is mobilization of state and local policymakers to expand support for ASHPs. While survey respondents commended NEEP for making policy recommendations and collaborating with state/local policymakers, longstanding preference for natural gas was reported to be a major barrier in passing more comprehensive legislation favoring heat pump adoption. For states that do incentivize fuel switching –such as MA, RI, CT, and NY – progress was made but respondents stated there is still much work to do to align the region for policies supporting ASHPs. “Champions exist in every legislature,” wrote one



respondent, “[Maine has a target](#), [New York has a target](#). The movement is there, but many legislators and policymakers are still on the ‘heat pumps just don’t work’ train.”



5) Promote advanced control technologies to allow automated coordination among multiple heating systems

The strategy area reporting the largest leap in progress since 2018 is promotion of advanced control technologies to allow automated coordination among multiple heating systems. With some programs rolling out generous incentives for integrated controls – namely in [MA](#), [RI](#), and [CT](#) – it is not surprising to see the jump in progress for advanced controls within the Northeast region. However, survey respondents reported that knowledge of integrated controls is not ubiquitous to the point that typical consumers understand and feel confident in the technology. Furthermore, one respondent wrote that if we want to meet our climate targets, we need to prioritize more whole-building electrification projects that move away from prolonged use of fuel-fired heating systems.



6) Enable the promotion of climate-appropriate ASHPs through improved performance metrics

Enabling the promotion of climate-appropriated ASHPs through improved performance metrics was another strategy area reporting significant progress. Survey respondents cited increased use of NEEP’s cold-climate Air Source Heat Pump [Product List](#) and increased leveraging of NEEP’s [ccASHP Specification](#) as the two standards becoming a “national reference point.” However, with some programs opting to use their own QPL over the ccASHP Product List, several respondents deducted progress in regional alignment. It was also put forward that self-reported performance data at low temperatures can be problematic, and that the industry still needs to establish reliable and objective performance standards for temperatures below zero. However, one respondent stated NEEP and other entities looking to establish these standards need to be cognizant of the implications of higher efficiency requirements on market growth.



7) Develop more accurate tools to predict energy, cost and GHG savings associated with ASHP installation through collection and analysis of real world performance data

For the last strategy area, survey respondents only reported slight progress. A majority of respondents stated they had no knowledge of such tools, and others reported inconsistencies in research studies that make it difficult to draw conclusions about accurate measurements. One respondent reported challenges as not enough data and the need for data from recent systems. Products, systems, and controls have evolved a great deal since last studies in 2016 by [MA](#) and [VT](#), and better performance data is required to come up with more accurate estimations. Some suggested this effort be coordinated and led by utilities, and/or combine this strategy with policy to mandate collection and reporting of such data. Privacy issues regarding customer data could be circumvented if utilities lead the development of measurement tools, one respondent stated.

2. COVID-19 Responses

Part 2 of the market transformation survey collected challenges and opportunities in the ASHP industry as related to the COVID-19 public health crisis. The last question of this section sought to gather input on how to best respond to these challenges regionally.

As expected, survey results reported an anticipated impact of COVID-19 on sales, program funding, and overall adoption of air source heat pumps. Some of the specific challenges reported by the working group include:

- Significant reduction in completed projects



- Cut investment by manufacturers and programs
- Factory closures and inventory delay
- Inability to enter a home and make any progress on a project
- The general sentiment that the HVAC industry is going to be severely impacted

It is important to note these anticipated impacts were reported in May 2020, when there was much greater uncertainty on the ability for the industry to formulate responses (i.e. increased installation safety protocols, PPE, etc.).

Some of the opportunities reported from the working group include:

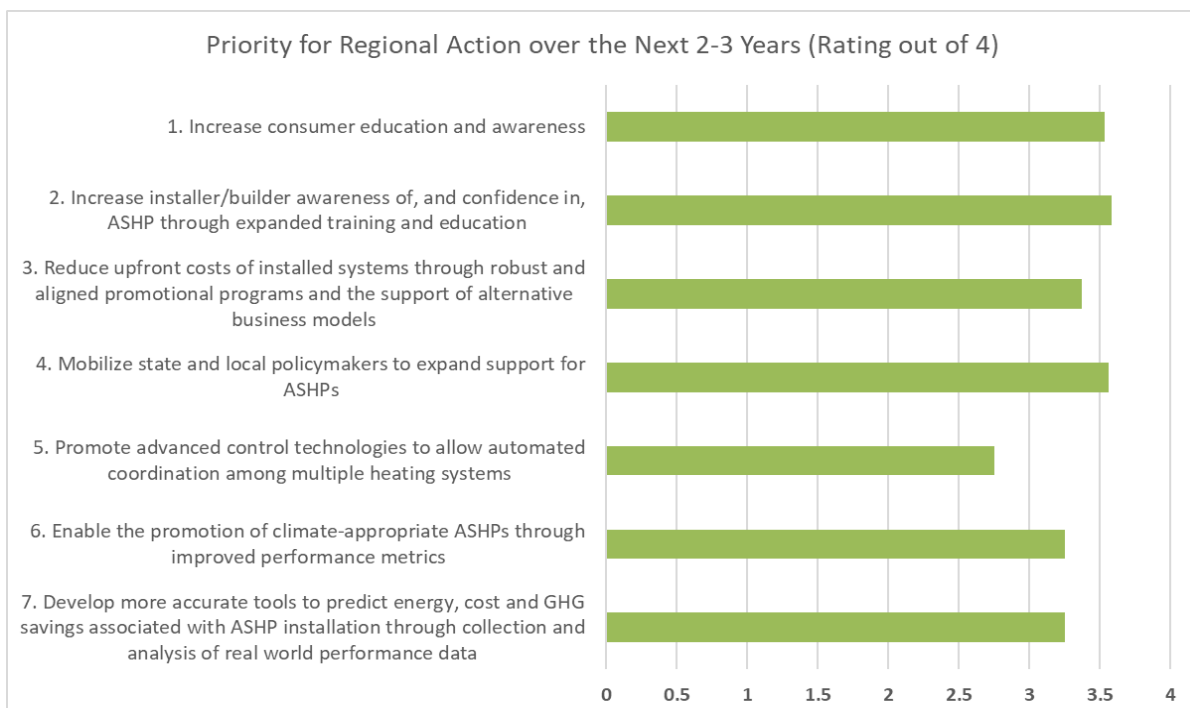
- Online engagement and training during downtime
- Virtual sales calls and virtualizing the ASHP purchasing experience
- Increasing outreach
- Leveraging the increased interest for indoor air quality to sell consumers on ASHPs
- The potential to increase capacity in the ASHP workforce from mass layoffs in vastly different employment sectors.

For NEEP’s role in addressing these opportunities and challenges regionally, suggestions from the working group include:

- More coordinated efforts for consumer education campaigns
- Assistance with development of online training or guidance for virtual sales calls and safety best practices for programs
- One-page informational materials for contractors and program administrators to offer consumers regarding safe installation practices and other benefits of ASHPs.

3. Evolution of the ASHP Market Strategy Areas

In the last section of the survey, stakeholders were asked to rate each of the seven key market strategy areas out of four to gauge priority for regional action over the next 2-3 years, with four representing “highest priority.” The graph below shows the results:



Graph 2: Ranked Priorities for Regional Action by Strategy Area over the next 2-3 years

All market strategy areas were ranked as relatively high priority for action over the next 2-3 years. The three highest ranked strategies were increasing consumer education and awareness, increasing installer/builder awareness and confidence in ASHP technology, and mobilization of state and local policymakers to expand support for ASHPs. These are less technical, more top-down strategy areas that will gain traction through more holistic attention and market penetration of heat pumps. The working group’s slightly lower ranking of technical strategy areas is a reassuring sign that much progress has already been made in these areas.

The question following ranked priorities asked respondents if the above market strategy areas are, in general, still the most relevant/top priority avenues for ASHP adoption in the region and larger industry. With “Yes”, “No” and “Kind of” as the options, the chart below displays the results:

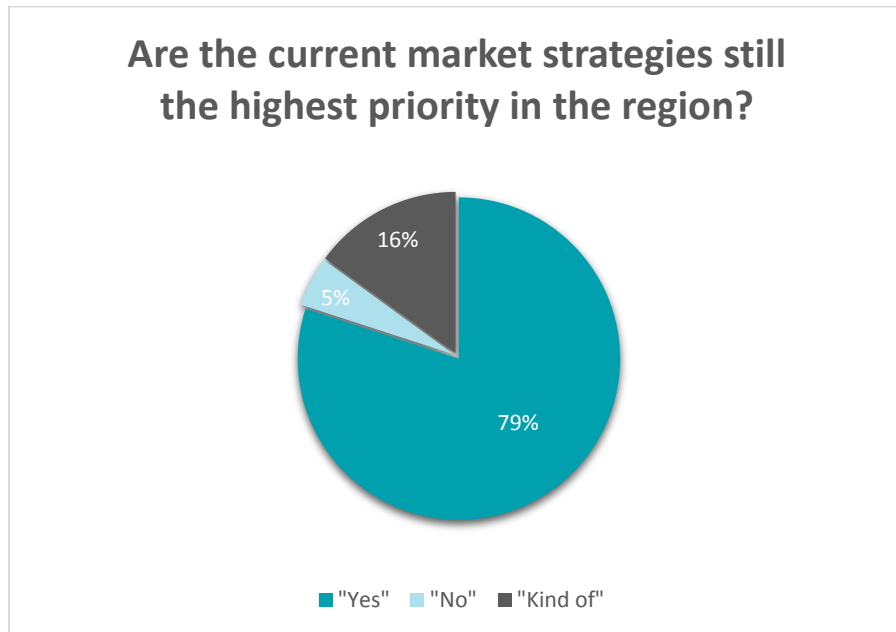


Chart 1: General perception of current market strategy relevance, by percent responded

The last question of the survey, requesting input or suggestions for how the ASHP market strategies should evolve going forward, was skipped by the majority of the respondents. One respondent couldn’t speak to a proposed shifting of priorities as a stakeholder in a region outside the Northeast. The four other pieces of input recommended a continued focus on driving awareness of ASHPs, a more coordinated industry/multi-stakeholder council on how to better align the market, more resources promoting best practices for working in homes, and a shifted focus on newly-introduced refrigerants such as R32.

Based on results and input in our own assessment, NEEP is committed to advancing these seven strategy areas moving into 2021. NEEP will begin exploring an expanded scope of heat pumps and assessing the needs and opportunities of those emerging technologies, but survey results indicate further attention and coordination in these strategy areas is needed. NEEP seeks to report “significant progress” or higher in all of these strategy areas upon completion of the next market transformation progress survey in 2021 before substantially refining the strategic direction of the Initiative.



Appendix: Raw Survey Responses

Q1. Please rate the progress that the region has made in implementing the seven key strategy areas for ASHPs (consider Q1 2019 - Q1 2020)

	Little to no Progress		Noticeable Progress		Meaningful Progress		Significant Progress		Strategy has been fully implemented. Additional Activity not necessary	
	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count
1. Increase consumer education and awareness	9.09%	2	40.91%	9	36.36%	8	13.64%	3	0.00%	0
2. Increase installer/builder awareness of, and confidence in, ASHP through expanded training and education	0.00%	0	54.55%	12	40.91%	9	0.00%	0	4.55%	1
3. Reduce upfront costs of installed systems through robust and aligned promotional programs and the support of alternative business models	36.36%	8	36.36%	8	13.64%	3	13.64%	3	0.00%	0
4. Mobilize state and local policymakers to expand support for ASHPs	4.55%	1	40.91%	9	31.82%	7	18.18%	4	4.55%	1
5. Promote advanced control technologies to allow automated coordination among multiple heating systems	18.18%	4	36.36%	8	22.73%	5	18.18%	4	4.55%	1
6. Enable the promotion of climate-appropriate ASHPs through improved performance metrics	4.55%	1	31.82%	7	36.36%	8	22.73%	5	4.55%	1
7. Develop more accurate tools to predict energy, cost and GHG savings associated with ASHP installation through collection and analysis of real world	18.18%	4	54.55%	12	22.73%	5	4.55%	1	0.00%	0



performance data

Q2. Strategy Area 1- Increase consumer education and awareness. If you consider meaningful progress (or higher) has been made towards this strategy, please identify specific programs/activities that you believe have been particularly effective in achieving progress. If you consider only noticeable progress (or lower) has been made towards this strategy, please suggest key implementation activities that should be prioritized regionally.

From my perspective, utility promotion of the technology is the most effective way to increase consumer awareness. Utility communication is a trusted third party source of information and brings credible information on energy and cost savings.

Word of mouth is the other channel that I think is most effective for this market. If it's not direct word of mouth, than testimonials and case studies help show the value of the technology.

Would love to see a regional marketing/education campaign (in addition to the state-specific or program specific efforts that are happening now)

Govt/utility rebate programs eliminated after Provincial/regional government change. That reversed/slowed adoption. And while the new gov released a climate action plan that supports heat pumps, no firm programming details have been sorted out to date. Our organization is overcoming barriers by demonstrating the technical and financial case for heat pump retrofits through actual retrofits. Multiple stakeholders have said at early scale up, real world case studies would help increase interest through better understanding of business case, in addition to attractive financing, and/or substantial rebates. Then once adoption is accelerated, we think momentum would pave way to lowered perceptions of risk, contractor competition, economies of scale, greater industry technical capacity etc. and reduce need for rebates to make the business case.

utility invoice stuffers should be used along with cable ads

People will become educated about beneficial electrification as they know people who have electrified. We just need more financial support for heat pump installations coupled with enforceable statewide targets.

More community outreach campaigns, and advertising from manufacturers, distributors and contractors.

Education and awareness is largely driven by HVAC contractors. The focus should be on developing an effective salesforce.

This seems to vary between states. Where natural gas is still readily available it still seems to be the consumer preference. There still needs to be more education done with getting contractors to recommend ASHPs over replacing existing/failed propane and oil systems as well as the environmental benefits of ASHP over natural gas.

Heat pumps are being promoted by most all regional utility programs. Marketing and education of programs plus contractor marketing on heat pumps has generated a more significant level of awareness in the region.

COVID-19 has distracted everything

On a commercial note, property mgr's ,owners and developers need to be targets of education

CHCCs in NYS. Heat Pump marketing kicking off in MA.

Guides and videos are excellent tools but NEEP website remains very difficult to navigate. Should be more user friendly for homeowners and contractors alike.

Public Service Announcements by the State, Cities, Towns.

Success stories on the news. A few years ago, the Governor of Maine installed heat pumps in the Governors Mansion. That story made the news and significantly raised awareness. Big audacious goals announced by the Governor. Once again, the Governor of Maine recently announced a goal of 100,000 heat pumps by 2025. Made the news and raised awareness.

plenty of utility rebates with huge amount\$

Utility Marketing & messaging



I would suggest a regionally coordinated public awareness campaign with support of public entities and industry.

Q3. Strategy Area 2- Increase installer/builder awareness of, and confidence in, ASHP through expanded training and education. If you consider meaningful progress (or higher) has been made towards this strategy, please identify specific programs/activities that you believe have been particularly effective in achieving progress. If you consider only noticeable progress (or lower) has been made towards this strategy, please suggest key implementation activities that should be prioritized regionally.

Robust tools, resources, and approaches to business case evaluation and sales proposals (including better understanding and communicating to customers of monetary non-energy benefits and holistic business case - e.g., NPV, IRR - going beyond simple payback), reduced perceptions of risk through education around newer better performing technologies, incentives to make contractors forgo standard/conventional sales approach (e.g., low hanging fruit, that's-the-way-we've-always-done-it technology recommendations, increased interest to sell something that has a smaller profit margin early on because of low demand)

install training has been very helpful but to educate these same people on the merits and reasons for ashp would also help in consumer awareness when contractors are giving their customers choices on system types

What I'm hearing from contractors about electrification is mostly negative except for a few companies who focus specifically on green building. I think this is partially the result of an HVACR industry workforce retention problem. I've heard anecdotally that a lot of HVACR professionals are aging out of the profession and not being replaced with younger workers. I am not an expert on this. I think making quality heat pump installation more worth their while with some type of carrot is the first step here. Programs offer education now, but I don't think they reward contractors for QI.

There has been a lot more training available to contractors from manufacturers and state agencies

Participating contractors are not the largest contractors in a particular region. We need to engage our largest HVAC contractors.

There still seems to be a lack of knowledge of how low ASHPs can efficiently operate and the need to pair ASHPs with proper weatherization and insulation. Furthermore, while there seems to be a lot of movement in the contractor realm as money see this is where things are shifting, there will potentially always be the old school contractors who lack any desire to change.

Electrification policies and utility programs supporting heat pumps have expanded awareness. Zero Energy Homes and awards recognition of leading builders has increased awareness.

NEEP installer materials.

Creation and use of NEEP QPL has increased awareness of ccASHP

The only builders that are involved with heat pumps are already drinking the Kool-Aid. We need more builders. Perhaps we start with webinars in towns that are considering gas moratoriums, then move out from there.

especially builders are getting used to specing in mini split heat pumps into apartment

This is a hard one! Continue to focus on bringing in young talent to the workforce and providing good training at vocational schools and training programs. Also continue to develop training resources for the existing workforce in collaboration with manufacturers.

Q4. Strategy Area 3- Reduce upfront costs of installed systems through robust and aligned promotional programs and the support of alternative business models. If you consider meaningful progress (or higher) has been made towards this strategy, please identify specific programs/activities that you believe have been particularly effective in achieving progress. If you consider only noticeable progress (or lower) has been made towards this strategy, please suggest key implementation activities that should be prioritized regionally.

Innovation through design is a key approach. Right now so few property owners are retrofitting with heat pumps.



And therefore, hvac contractors and engineers, while theoretically certified/qualified lack the hands on experience to know how they can drive costs down at the quoting stage. Need those real world examples to learn from so that the industry can find innovative ways to be more attractive to owners by meeting are coming below their financial return threshold. We are doing a lot of work with MURBs and so most want to see well below 10 year payback to keep conversation alive. And what we're seeing is that contractors put in a large contingency fee because of the design risk, which limits the number of properties interested in making the investment in heat pumps. We saw that with many energy efficiency measures that have now become common practice (e.g., lighting, thermal envelope improvements, efficient motors).

costs have increased

it seems that the need is increasing for ASHP's but the state and utilities promotions are decreasing sending the wrong message

According to MassCEC, multi-head ASHP installations cost more than \$4,000 per ton. You'd need an incentive of \$2,000 per ton to even begin to cover the incremental cost between a heat pump system and a BAU boiler or furnace. I don't believe we'll be prepared to scale up electrification until we have a framework in place that provides this kind of value to building owners in exchange for making the decision to electrify. Mass Save offers a max of \$1,250 per ton, but gas homes aren't eligible and you also need to install controls, which raises the total cost.

More robust incentives from state agencies and utilities

Costs will follow adoption, see next comment.

Mass Save has offered significant rebates but I think they still need to be even more robust and less confusing for consumers to navigate.

Contractor competition in markets with robust programs have driven down prices (e.g., Maine, Vermont). Larger incentives for heat pumps have provided a significant contribution towards installed price reductions.

labor costs of heat pump is still higher here than other international markets. heat pumps need to become the defacto proposed system, rather than the more expensive more complex option only proposed to the right customer.

Unsure as to what is meant by "robust and aligned promotional programs"

As long as programs continue to raise the specification requirements, then manufacturers have to invest in R&D. They have to pass those dollars on to the consumer in the form of increased prices. NEEP is considering breaking product into two tiers, or some other form of separation. This will once again require R&D, and increased prices.

Prices haven't gone down, but that's because of some real challenges. I think expanding the workforce will help with this. In the meantime, some states are offering robust incentives, especially for some customers.

Q5. Strategy Area 4- Mobilize state and local policymakers to expand support for ASHPs. If you consider meaningful progress (or higher) has been made towards this strategy, please identify specific programs/activities that you believe have been particularly effective in achieving progress. If you consider only noticeable progress (or lower) has been made towards this strategy, please suggest key implementation activities that should be prioritized regionally.

Ideally heat pumps are defined as energy efficiency measures to build upon existing EE/DR programs. Policy makers need assistance making this logical connection; specific policy/statutory language would be helpful.

Actual data on cost and performance from building type sub-segment retrofits so that prescriptive rebates can be extended with confidence.

Champions exist in every legislature. Maine has a target, New York has a target. The movement is there. Many legislators and policymakers are still on the "heat pumps just don't work" train, and the challenge in the next couple years will be to convince them otherwise.

NEEP has done a great job in making policy recommendations and collaborating with policy makers

Significant progress has been made with New York State but the next step should be some form of regional alignment to achieve critical mass.



We are getting there but we need to stop offering rebates on all oil, propane and natural gas equipment and require new construction to not utilize any of that equipment. I think MA DOER is going to head in that direction.

Most every state in our region has some sort of electrification policy. Heat pumps are the solution for this strategy. Only RI seems to have slipped backwards while the rest of our NE states are all committing to electrification and heat pumps.

Commercial, more incentive to use ASHP

To meet state GHG emission goals, they need to see high levels of heat pumps installed. Access to gas continues to be plentiful and cheap. States or the region need to take a stand on gas infrastructure, and provide more support (Could be incentives, could be rate design, etc.) to support the economics of heat pumps.

Evident by the adoption of QPL

Strategic Electrification is driving a lot of change in MA, RI, CT and NY. The biggest weakness is that some states prohibit fuel switching, or have very large gas rebates. As long as we are continuing to install gas, it will be difficult for States to achieve their goals. Especially commercially. If a new building is going up in Boston or NYC with fossil fuel, that building is lost to de-carbonization for 30 years, at a minimum, which gets you to 2050.

the fact that utilities are increasing the amount of rebates\$\$

There is a real buy-in that heat pumps will be part of a decarbonization solution, but I think policymakers are still grappling with the implications of that conclusion for policy.

Q6. Strategy Area 5- Promote advanced control technologies to allow automated coordination among multiple heating systems. If you consider meaningful progress (or higher) has been made towards this strategy, please identify specific programs/activities that you believe have been particularly effective in achieving progress. If you consider only noticeable progress (or lower) has been made towards this strategy, please suggest key implementation activities that should be prioritized regionally.

We are currently completing research on advanced controls strategies and are on our way to defining and creating market-ready recommendations.

Easy integration, robust manufacturer testing in real world conditions to avoid deployment issues in the field, manufacturers don't let contractors sell and deploy if they haven't physically installed/operated/troubleshoot (finding that some manufacturer training, while a proxy for certification, can undermine scale up potential from future issues because the contractors went through training but haven't had a real world experience - same goes for heat pumps), clear/easy/concise troubleshooting guides when issues do creep up, application flexibility as each retrofit will be context specific, low cost enough so that controls aren't the reason for a poor business case - controls should be a net benefit - savings from control features should be value add

need smaller heads - 500-2000 btus per room.

this needs to have a very understandable promotion so typical people can understand

Mass Save is promoting these controls, but uptake has been slow. Lots of work still to do. Additionally, we need to start doing more whole-building electrification projects if we're going to meet climate targets, so I'm not particularly concerned or enthusiastic about controls that prolong the use of a fuel-fired heating system.

A lot of work still needs to be done to promote and gain great deployment of advanced control technologies

We need a common standard not reliant on proprietary technology.

Major progress has been made in two years. There is a robust listing of potential control systems.

Driven primary by Massachusetts' rich incentives for integrated controls, then followed by RI and CT, manufacturers have stepped up with a number of integrated controls options.

requirements by incentive programs like in MA or adder incentives such as those in NY.

Part of ongoing conversation

IC rebates are really the only reason that they are being installed. Massachusetts is the only state that requires this, and is the only state where IC are being installed.



I think that meaningful progress has been made in this areas thanks to the leadership of Mass Save.

Q7. Strategy Area 6- Enable the promotion of climate-appropriate ASHPs through improved performance metrics. If you consider meaningful progress (or higher) has been made towards this strategy, please identify specific programs/activities that you believe have been particularly effective in achieving progress. If you consider only noticeable progress (or lower) has been made towards this strategy, please suggest key implementation activities that should be prioritized regionally.

Getting there. We are pointing to NEEP stuff when asking contractors to size, design,install, as were HRAI and IESO. Manufacturers aren't comparing apples to apples as you well know. But things like the CSA testing procedure can also be helpful. But people still seem confused by COP, SEER, HSPF. These are alien concepts to home owners and building owner/operators. They're like the Scoville scale. Unless you're in the industry or a well versed stakeholder people still ask "so what's the best heat pump?" . "What do you mean it's dependent on the outdoor temp, and the performance curves are different and relative?". "what is cop, hspf, seer mean in terms of money i will save or heat i will feel?" "do i need back up heating?" Wonder if there's a more intuitive rating system for laymen that is a super simple colour or text system, drawn from the COPs and HSPFs.

PAs need to be rewarded for GHG reduction, not just electric displacement. Fuel switching adds electric load, not reduces electric load. Oil and propane market is tapable, but not without GHG incentives instead of electric reduction incentives.

with the movement of electrification and de-carbonization increasing the requirements of higher efficiency is impeding the growth

NEEP's QPL is a great resource.

NEEP's focus on cold climate ASHP's has been very helpful

We need objective performance standards at low temperatures and can not be reliant on self reported data.

I think the technology is there it is just a matter of educating consumers that they will work even at subzero.

The NEEP cold climate spec has continued to be a national reference point.

Bigger push on carbon reduction with ASHP for heating and hot water on larger volumes

If asked this a few months ago, my answer would've been meaningful or higher. However, MA has abandoned NEEP's ccASHP. CT multiamily program is now using MA's QPL. I believe NH and the rest of CT programs will follow suit. Those QPLs are poorly designed. Additionally, I am concerned about Energy Star's cc spec, it doesn't get heat pumps (e.g., it includes an EER requirement). Still more work to do on this front.

Increased use of QPL

The term ccASHP is a little misleading. To an uneducated customer, a ccASHP should work when it is cold. The definition of work is in the eyes of the beholder. For example, a customer thinks that it should heat their home when it is -10F. But if the house needs 60,000 BTU's at -10F and they only installed a heat pump that provides 30,000 BTU's at -10F, then it will not work to their satisfaction. It doesn't mean the heat pump isn't working, it means that the wrong heat pump was installed.

eliminating the Energy star is increasing heat pump availability

Some progress has been made with the CSA and the new Energy Star standard, but I don't think that's trickled out into the field yet. I would say NEEP should continue the work it is already doing in this arena.

Q8. Strategy Area 7- Develop more accurate tools to predict energy, cost and GHG savings associated with ASHP installation through collection and analysis of real world performance data. If you consider meaningful progress (or higher) has been made towards this strategy, please identify specific programs/activities that you believe have been particularly effective in achieving progress. If you consider only noticeable progress (or lower) has been made towards this strategy, please suggest key implementation activities that should be prioritized regionally.



Tools are being developed but they aren't widely available yet and they are not yet optimized for those who will use them to make decisions about buying a new heating/cooling system. Market research needs to be done with people looking to change their HVAC systems. The tools need to be optimized to help with that decision/that audience

Lots of players in this space trying to do this. Need to get away from rules of thumb. Promote ACCA Manual J for sizing to ensure not over/under sizing. And M&V appropriate is all going to come down to context. Are you retrofitting a whole house? Then IPMVP Option C is fine. Are you retrofitting on turn over? Well then you might need to do something like IPMVP Option A, with a few wireless CTs and voltage transducers or a hardwired data logger in the suite electrical panel. But for sure it's got to be streamlined, easy, and simple to align well with local incentive programs - dont want people avoiding heat pump retrofits because the M&V for a rebate program was too complicated. So maybe some of these M&V service providers need to have local tech service hubs that can go to site and deploy equipment. We have worked with many, including but not limited to a Utah and Toronto service provider and both only offered phone or email tech support. And we had to take electricians at their word that devices were installed correctly. And a home owner or small apartment landlord isn't going to want to buy something and then hire an electrician every time it's not working. One master electrician said he was qualified to deploy a meter and blew the thing up. We have since had to increase our in-house capacity to be able to go to field and verify that these field M&V devices are deployed correctly.

At his point, there is lot of real world data available through the utilities, but challenging to use because of privacy issues.

need requirements that the utility collect data on ashp's

I'm not a pro at this, but metering of energy consumption has been a challenge for EE programs for some time. In Massachusetts, there still isn't much AMI - that type of grid infrastructure to enable time varying rates etc. just needs a regulatory requirement to spur investment.

We need better tools to get real world performance data.

Manufacturers should should incorporate monitoring into all ASHP's

Standardized estimation methods must be grounded in primary research of program administrators.

There have been many studies but everyone I see seems to come to slightly different conclusions when boiled down to cost per mmBTU.

Unfortunately, the fuel choice calculator that VEIC developed has still not been launched and seems to have been "dumbed down" from what I hear. Consumers need a tool that considers installed and operating cost by utility territory to compare against their current system to determine cost-effectiveness.

needs to be done-not enough data

Have state pay for metering on 5 of each style buildings redid and commercial

Not enough done here. Need more data from recent systems. MA is designing their programs from systems installed in 2012-2014. VT's latest ccASHP evaluation was for systems installed in 2016. Products, systems, controls have evolved a lot since then. We need better performance data, in volume, for a variety of locations and market verticals.

I am not aware of related ASHP tools

I haven't seen any tools, so I can't really comment here. I think that an easy tool should be developed, that could possibly be used on a phone, in the form of an application.

Q9. What new challenges has the COVID-19 situation presented to your ASHP-related work?

We are unable to engage face to face with contractors, distributors and manufacturers. Also, there is less disposable income for home upgrades.

getting into customer's homes

Cannot get into houses. Nearly impossible to complete work without entering homes.



We are an advocacy group, so it hasn't affected what we do quite as much as it has affected installers etc.
Factory closure and inventory delay
Consumer willingness to have contractors in their homes
Consumers are more reticent to spend money on improvements.
Contractors not being able to enter homes.
It has stopped or at least slowed down program support and contractor installation of all in-home services, including heat pumps.
access to homes and distraction to programs
Sales have been significantly impacted and we are not sure how much will be recaptured.
HVAC industry sales will be impacted by COVID. It will be more challenging for people to upgrade their system, Efficiency, heat pump, inverters become less important. Maintaining a working system will be more important.
Access to homes.
Severe reduction in completed projects
Most homeowners are not comfortable letting people into their homes. Until we help to increase this comfort, things will be very difficult.
manufactures need to cut investment
We were hoping to expand our budget to maximize our impact in the coming years, but I think that will be delayed.

Q10. What new opportunities has the COVID-19 situation presented to your ASHP-related work?

Online engagement and training.
Touting the operational cost savings of the technology and finding financing opportunities.
none
See above
Talk about ASHP with IAQ technology
Promote health benefits of ASHP's with improved indoor air quality
As those with jobs are working from home the need for comfort is more apparent.
None that I am aware of.
There is more opportunity to train the work force since they aren't in homes installing.
none
None
Unsure there are many positives. I am hopeful some workers from industries slow to recover may, could transition to HVAC and be retrained. This could ultimately help overcome HVAC workforce shortages, if states put in the right workforce development policies and programs.
Increased outreach during period of lock down allows for more engagement
Providing training to contractors, who now have more time available
Virtual training, that's about it.
more IAQ awareness
We are exploring opportunities for online training and virtual sales calls.

Q11. Are there near term activities/resources that NEEP should prioritize to address these new challenges /opportunities?

Construction in generally needs to be boosted by a state best practices protocol. NEEP could develop.



Possibly a NEEP guideline for contractors to enter customer's homes with a one page handout for contractor to explain to customer what safety precautions they will be taking.

Code enforcement training.

More consumer education campaigns about the benefits of ASHP.

Heat pump training across the board. Let's try to embed heat pump contractors in WAP weatherization teams and other situations. Provide training to get more technicians ready to specify and/or install heat pumps.

Virtual visits to provide a lead qualification. Increased economic recovery for the entire value chain.

unsure

A guide to how to safely do an installation to reduce the spread of COVID-19. Perhaps even a certification like restaurants use with ServSafe.

focus into new refrigerant such as R32 which increases heating capacity and more focus on IAQ options

We'd welcome any help with online training or guidance on virtual sales calls. Also coordinating safety best practices.

Q12. Rate the following market strategy by priority for regional action over the next 2-3 years: Increase Consumer Education and Awareness

Low priority		2		3		High priority		Total	Weighted Average
5.26%	1	10.53%	2	10.53%	2	73.68%	14	19	3.53

Q13. Rate the following market strategy by priority for regional action over the next 2-3 years: Increase Installer/Builder Awareness of, and Confidence in, ASHP through expanded training and education

Low priority		2		3		High priority		Total	Weighted Average
0.00%	0	0.00%	0	42.11%	8	57.89%	11	19	3.58

Q14. Rate the following market strategy by priority for regional action over the next 2-3 years: Reduce Upfront Costs of installed systems through robust and aligned promotional programs and the support of alternative business models

Low priority		2		3		High priority		Total	Weighted Average
0.00%	0	15.79%	3	31.58%	6	52.63%	10	19	3.37

Q15. Rate the following market strategy by priority for regional action over the next 2-3 years: Mobilize State and Local Policymakers to expand support for ASHPs

Low priority		2		3		High priority		Total	Weighted Average
0.00%	0	11.11%	2	22.22%	4	66.67%	12	18	3.56

Q16. Rate the following market strategy by priority for regional action over the next 2-3 years: Promote Advanced Control technologies to allow automated coordination among multiple heating systems

Low priority		2		3		High priority		Total	Weighted
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										Average
5.00%	1	40.00%	8	30.00%	6	25.00%	5	20	2.75	

Q17. Rate the following market strategy by priority for regional action over the next 2-3 years: Enable the promotion of climate-appropriate ASHPs through Improved Performance Metrics

Low priority	2	3	High priority	Total	Weighted Average				
0.00%	0	20.00%	4	35.00%	7	45.00%	9	20	3.25

Q18. Rate the following market strategy by priority for regional action over the next 2-3 years: Develop more accurate tools to predict energy, cost and GHG savings associated with ASHP installation through collection and analysis of Real World Performance Data

Low priority	2	3	High priority	Total	Weighted Average				
0.00%	0	25.00%	5	25.00%	5	50.00%	10	20	3.25

Q19. Do you think the Initiative's 7 Market Strategies are still the top priority in the current state of the ASHP industry?

Yes	78.95%	15
No	5.26%	1
Kind of	15.79%	3

Q20. If you have any suggestions for how the market strategies should evolve going forward, please write them here:

Because I am not in NEEP's territory, I couldn't speak to many of these priorities.
Develop best practices protocol for working in homes.
Encourage development of manufacturer council
Don't require manufacturers to continually increase metrics. Work on awareness. Awareness drives sales. Help create a referral program.
need to shift focus to new refrigerant such as R32