Northeast/Mid-Atlantic ASHP and VRF Market Transformation Progress Report (August 2021)

In June 2021, following the Q2 Air Source Heat Pump (ASHP) working group meeting of the Heating Electrification 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 and Variable Refrigerant Flow (VRF) Market Strategies Report. The purpose of this survey was threefold:

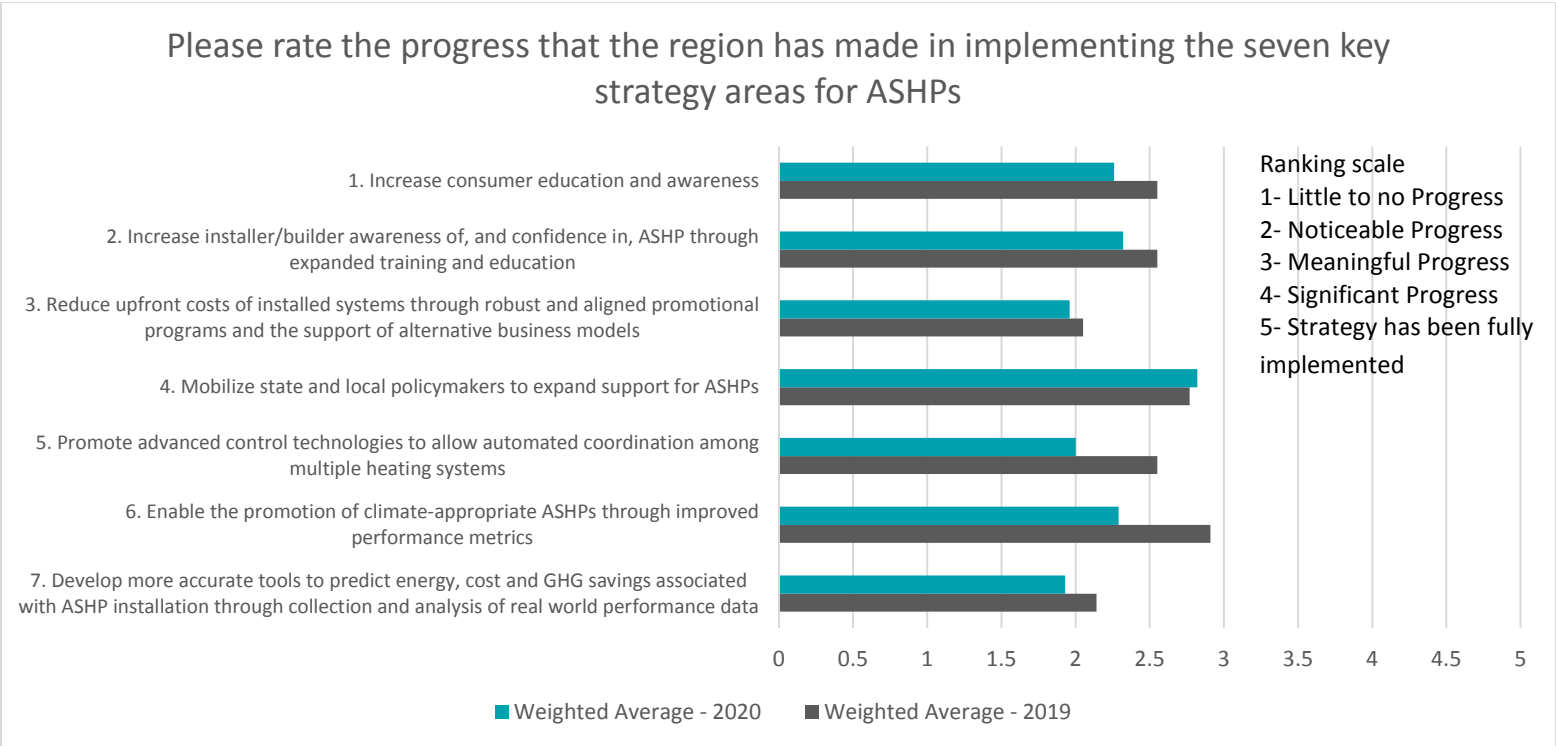
1. To measure implementation progress by market strategy area, including specific activities driving progress or requiring more attention;
2. To understand impacts of the ongoing COVID-19 health crisis on the ASHP market, and any initiatives pertaining to advancing Diversity, Equity, Inclusion, and Justice (DEIJ); and
3. To obtain input on the evolution of the ASHP and VRF strategies, including priorities for expanded heat pump technologies to fold into the Heating Electrification Initiative.

As NEEP plans for 2022 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.

Fifty-one members of the ASHP working group and 13 members of the VRF working group, who represent state policymakers, program administrator, manufacturers, service providers, installer/distributors, and advocates, responded to the survey. The following report goes into detail on results from each section:

1. 2020 Implementation Progress

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



Graph 1: Rated Progress by Market Transformation Strategy Area, 2019 & 2020 Weighted Averages

The results show an overall decrease in perceived progress made in 2020, compared to 2019. As captured in the graph above, "noticeable progress" or higher was reported in 2019 across all strategy areas, but in 2020 some strategy areas fell slightly short of the noticeable progress and some were rated as making little to no progress. In comparing 2019 to 2020, the only gain in progress reported was mobilizing state and local policymaker to expand support for ASHPs, while the most notable loss in progress was enabling the promotion of climate-appropriate ASHPs through improved performance metrics.

The loss in perceived progress is difficult to attach to any one cause, but could be attributed to the impacts of COVID-19. In addition to disrupting the market and slowing adoption of air source heat pumps, COVID-19 derailed stakeholders from other market strategy areas that required attention, such as advancing consumer education and awareness and conducting evaluations to predict energy, cost, and GHG savings associates with ASHPs. In 2022 when this market transformation progress survey is recirculated to capture 2021 implementation progress, a clearer picture of the impacts of COVID-19 will be available.

In addition to capturing rated progress, section one of the survey asked respondents to report specific activities driving or holding back implementation progress. To maximize stakeholder participation, respondents were asked to speak more broadly about the activities they rated as making meaningful progress or greater, while also commenting on where to prioritize attention in order to achieve better progress for strategy areas that were perceived as making less progress:

Activities reported by stakeholders as responsible for driving progress included:

1) *Policy Leadership*

Newly developed electrification policies were reported as driving forces in heat pump adoption in 2020. Specific examples cited by respondents were the NYS Climate Leader and Communities Protection Act, MA 2050 Decarbonization Roadmap, and the 2030 Clean Energy and Climate Plan (CECP). The Baker Administration in Massachusetts, through the office of DOER, was applauded for a more concerted push for strategic electrification and decarbonization. The general sentiment of stakeholders was that different state climate goals have necessitated major heat pump commitments based on the math of carbon emissions. These comprehensive, policy-driven plans to decarbonize the built environment and address climate change were seen as fundamental starting points for much market activity around heat pumps. Furthermore, heat pump targets set by states helped to set an ambitious timeline in which states would ramp up their adoption numbers, in large part due to policy leadership. Survey respondents also cited that increased collaboration among the entire stakeholder community and especially state energy offices and policymakers has facilitated the strong policy leadership displayed in 2020.

2) *Incentive Programs and Qualified Products Lists (QPLs)*

Regulatory-mandated statewide incentive programs focused on heat pumps that also marketed the benefits and advantages of the technology were reported as particularly effective in driving heat pump adoption. Rebates of $1,000-2,000 for residential projects through local utilities, NYSERDA (sponsor of the NYS Clean Heat Program), Mass Save, Efficiency Vermont, and other Northeast/Mid-Atlantic programs helped to reduce upfront costs of heat pump systems while also pushing messaging around the technology as an effective alternative to fossil fuel systems. Within this category are more robust metrics and specifications that set the bar for performance of cold-climate systems, which are helping the marketplace understand the efficiency standards needed for heat pumps in many scenarios, whether for partial or full replacement of an incumbent heating system. Development of specifications and qualified product lists (QPLs), like the NEEP ccASHP List and Mass Save's QPL, also serve as a repository for high-performance systems which get the market to focus in on the highest performing equipment by tying incentive dollars to performance and capacity.

3) Robust Specifications

The NEEP ccASHP Specification, as well as ENERGY STAR V6.0 and Mass Save's QPL, were reported as market leaders for specifications and product lists of high-performance heat pumps. These specifications dictate the minimum performance of heat pump systems and encourage HVAC manufacturers to design their systems to perform beyond the specification to ensure performance and satisfaction under certain conditions. Incentive programs are able to function effectively when they adopt a reliable specification for their qualifying equipment, to ensure savings and satisfaction for customers. Adoption of the NEEP ccASHP Specification into the Midwest was cited as a strong indicator of efficacy of the cold-climate performance metrics contained within the specification, and further alignment to a cold-climate specification like the NEEP Spec was reported by stakeholders to be an asset to further adoption.

4) Marketplace Messaging

Another important function of statewide incentive programs and clean energy organizations is their role in marketplace messaging, according to survey respondents. As programs come out with more strategic and thorough marketing materials, such as the MassCEC Clean Energy Lives Here campaign, consumer confidence in the technology grows. As program support for cold-climate heat pumps becomes more consistent, demand for the technology will continue to shift the market. One respondent notes that as messaging in the marketplace about heat pumps and rebates drives consumer demand, contractors will respond by shifting resources and staff to heat pumps over other HVAC equipment.

5) Integrated Controls

Survey respondents cited that the marketplace is in a good place when it comes to integrated controls. Particularly, Mass Save has maintained an integrated controls qualified products list that some other states and utilities are leveraging. Some respondents applauded the requirement of integrated controls for fuel switching measures as supportive of a phased market transformation in favor of heat pumps.

Activities reported by stakeholders as requiring more attention in order to drive more significant progress included:

1) Misalignment of Incentive Programs and Requirements

In order to make more thorough steps in reducing average costs of heat pumps, respondents stated more attention is needed to align the incentive programs across the region and country. Depending on goals, different programs have different requirements for their programs and offer different incentive amounts. Respondents reported that having certain metrics, such as EER from AHRI 210/240, is less important while coefficient of performance (COP) is a better indicator of efficiency, particularly at low temperatures. Others highlighted other program requirements that burdened the contractor and customer, affecting adoption rates. The lack of consistency and simplicity across programs, particularly those led by utilities, was reported to cause marketplace confusion and decreased program participation.

2) Heating Metrics

In supplement to responses about varying program goals and requirements, survey respondents stated the issue of multiple metrics used for heating efficiency and the need for market alignment on adequate space heating metrics. Some programs require a maintenance capacity ratio, others reference the COP at 5°F, and others leverage ratings publicly available from the AHRI Directory. Stakeholders reported optimism in the development and implementation of ENERGY STAR V6.0 as a new, national standard for cold-climate heat pump performance. Others cited the potential of EXP-07 as a load-based rating procedures to better standardize the metrics.

3) Contractor Training and Availability

Multiple survey respondents still recognize the need for installer education and standardized heat pump installation practices across the market. NYSERDA's training requirement was cited as a positive and replicable step, but the lack of common and required training across the market has impeded the rate of proper installations. Ways to better standardize the content and delivery of installation training, in addition to workforce development opportunities for both existing and potential workers in the clean energy workforce, were reported as prerequisites for heat pumps to become the preferred HVAC option in many scenarios. Some

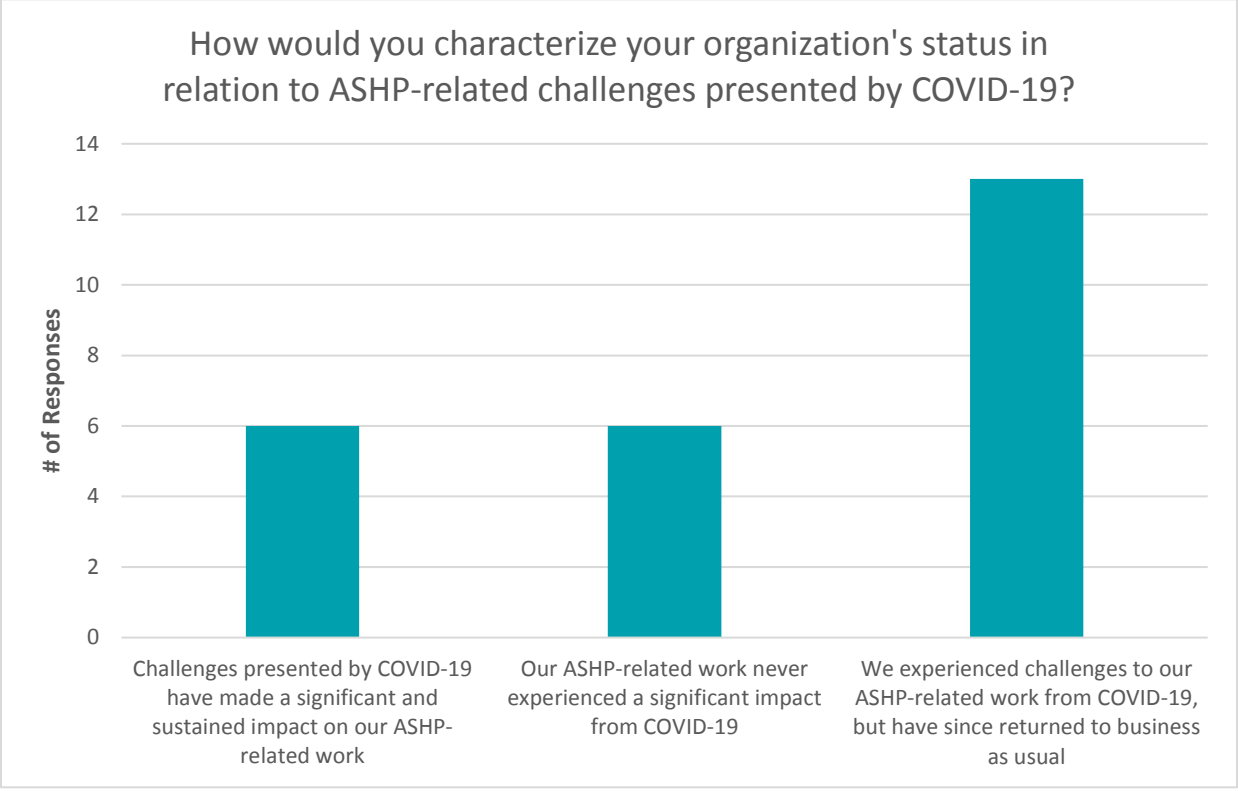
respondents reported they have had little to no uptake in the training programs they offer contractors. There is also currently not enough incentive for many HVAC contractors to transition their business model from traditional heating and cooling systems to heat pumps, according to survey respondents.

4) *Consumer Education*

Consumer education was reported as one of the largest opportunities to drive demand and stimulate the heat pump market. Aligning customer needs and scenarios with heat pump applications is necessary to allow customers to better understand how a heat pump might work for them, rather than a contractor telling them the best system for the home. Resources like NYSERDA's Heat Pump Planner and NEEP's Air Source Heat Pump Buying Guide have made progress in this space, but better consumer comprehension of heat pump technology across the market will push consumers to prefer a heat pump when their existing system is near or at its replacement cycle.

2. COVID-19 Impacts & DEIJ

Part two of the market transformation survey collected challenges and opportunities in the ASHP industry as related to the ongoing COVID-19 public health crisis, building off a similar set of questions asked in 2020 at the beginning of pandemic. Survey respondents were first asked in this section to indicate their status with challenges presented by COVID-19:



Graph 2: Organizational status around challenges presented by COVID-19, by no. of responses

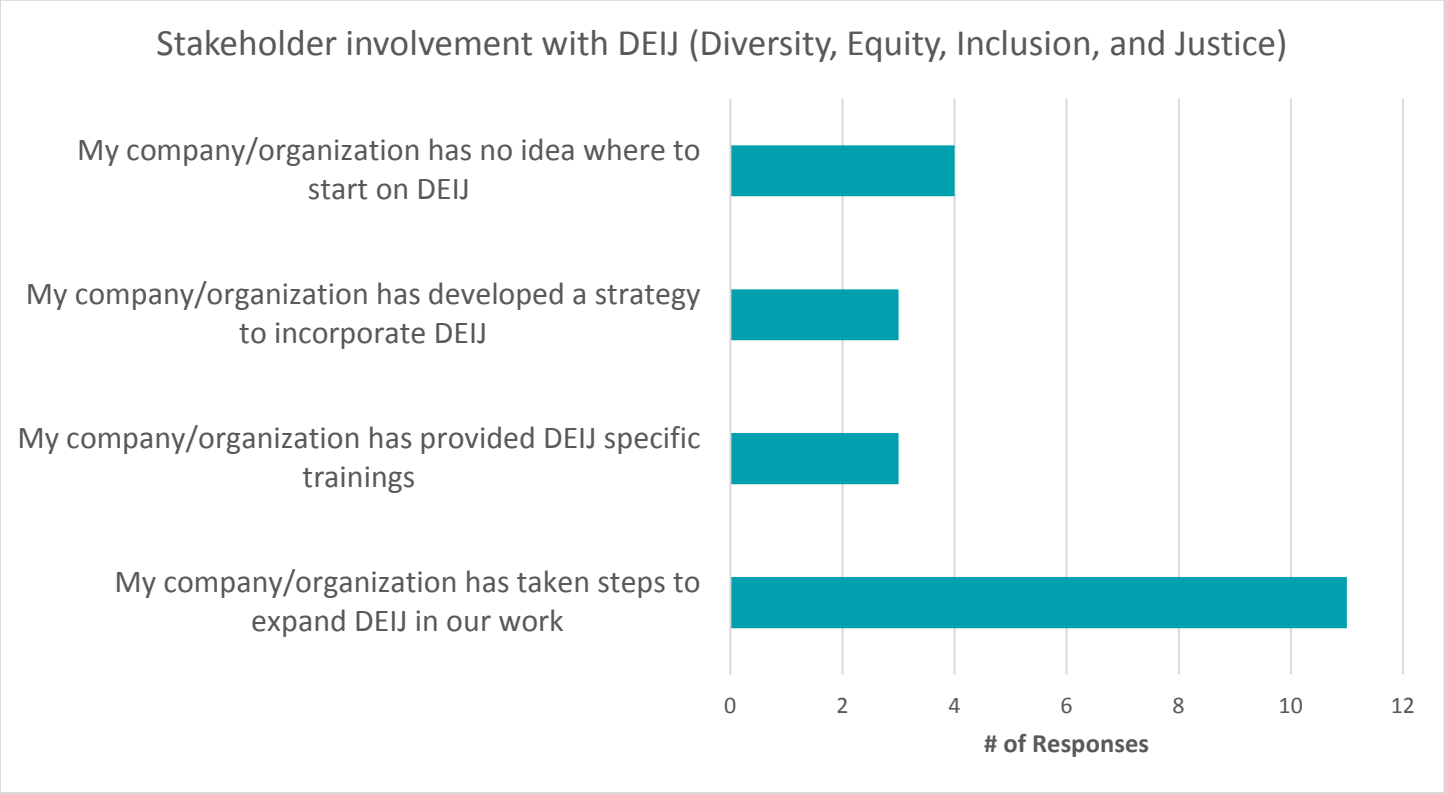
For respondents reporting that COVID-19 challenges have made significant and sustained impact, they were asked to report the specific challenges. Some reported challenges include:

- Many people have not returned to face-to-face business;
- Supply chain disruptions have impacted available inventory;
- Overseas manufacturing production pending on labor, material, and shipping – raising cost of systems; and

- Customer acceptance of home visits for heat pump installations.

Other responses around impacts of COVID-19 cited an early impact of heat pump sales and adoption rates in March and April of 2020, but then a quick rebound to strong sales numbers throughout the rest of the pandemic. This was supported by another respondent, who cited that with homeowners spending more time indoors due to restrictions imposed by COVID were inclined to value comfort and be mindful of their fuel usage, which led them to pursue heat pumps as an upgrade system or alternative to their failing fossil system or air conditioner. The last impact outside of the options above was that the pandemic forced many organizations to move to virtual platforms for events and networking, which allowed them to maintain business as usual for the most part but prevented them from including certain stakeholder types in their regular programming, including heat pump installers.

Additionally, part two of the survey asked stakeholders to provide the status of their current, if any, work with diversity, equity, inclusion, and justice (DEIJ), and to suggest ideas for how to incorporate DEIJ principles into the Heating Electrification Initiative.



Graph 3: Stakeholder involvement with DEIJ, by no. of responses

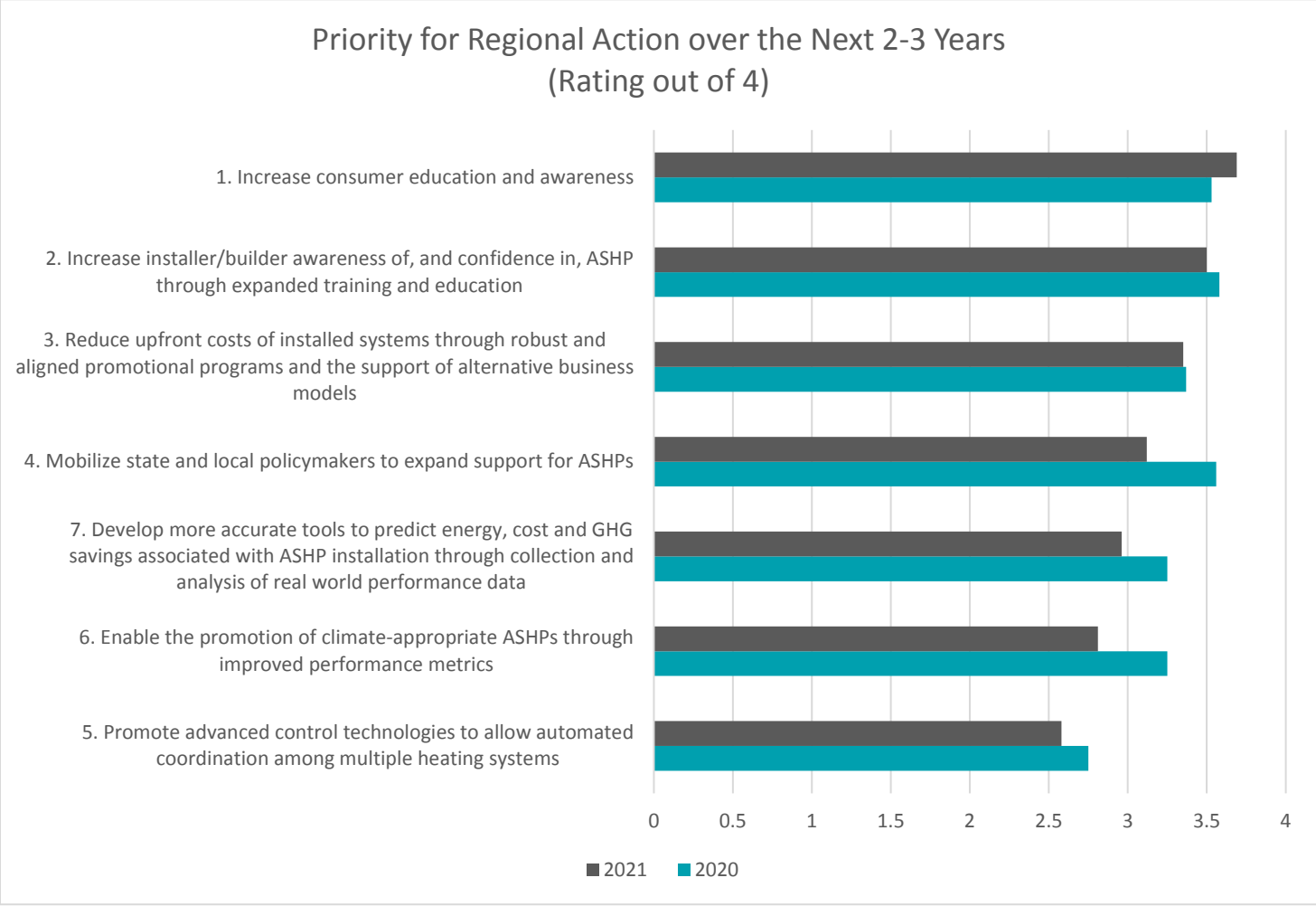
Suggestions from the working group to better tie in principles of diversity, equity, inclusion, and justice into Heating Electrification included:

- Engaging more diverse and minority individuals and groups through invitations to attend working group meetings and events.
- Understanding more around the challenges of air source heat pumps for historically marginalized communities;
- Communicating workforce opportunities to various market actors, particularly in disadvantaged communities;
- Establish a mutual working group to convene and discuss challenges and opportunities around DEIJ;
- Advance best practices in state and local policy to change how incentive programs are funded, and what can be done to compensate financially-stressed individuals or find alternative avenues for up-front payment;

- Meet with affordable housing entities to identify best buildings/residencies for heat pumps; and
- Advocate for lower electric rates on households, particularly in disadvantaged communities, with heat pumps.

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 on a scale of 1-4 with four presenting "highest priority" for regional action over the next 2-3 years. The graph below shows the results:



Graph 4: 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, even in comparison to priority results from 2020. The three highest ranked strategies were increasing consumer education and awareness, increasing installer/builder awareness and confidence in ASHP technology, and reduce upfront costs of installed systems through robust and aligned promotional programs and the support of alternative business models. 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, particularly around promoting advanced control technologies, 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.

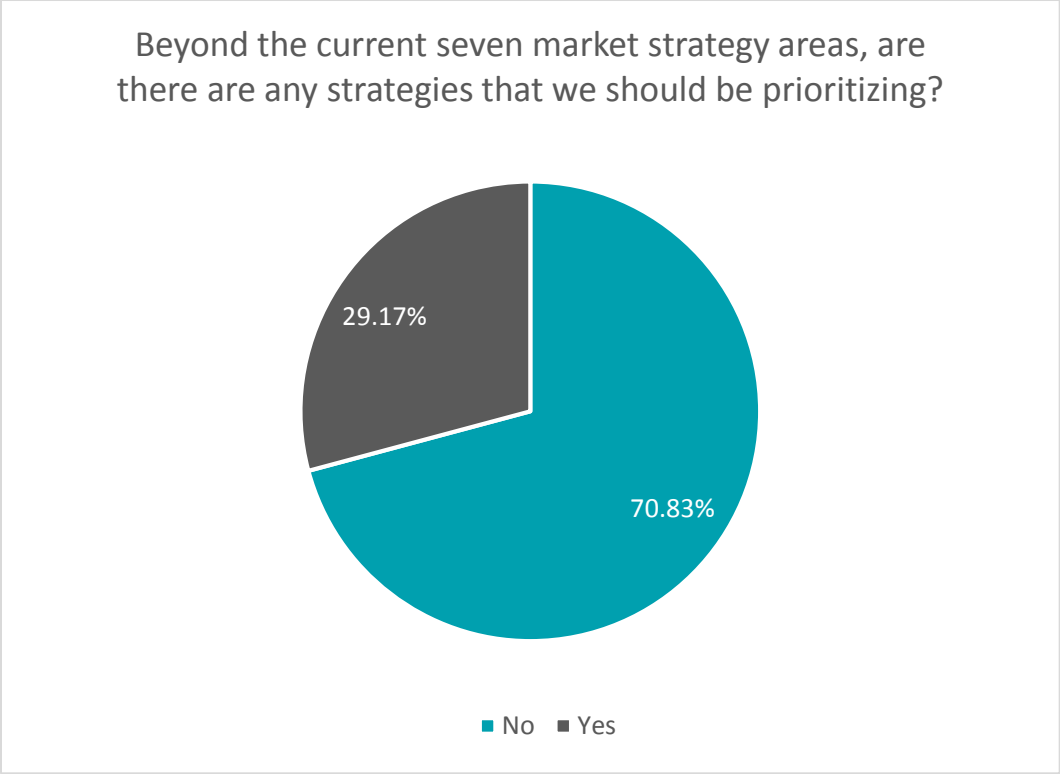
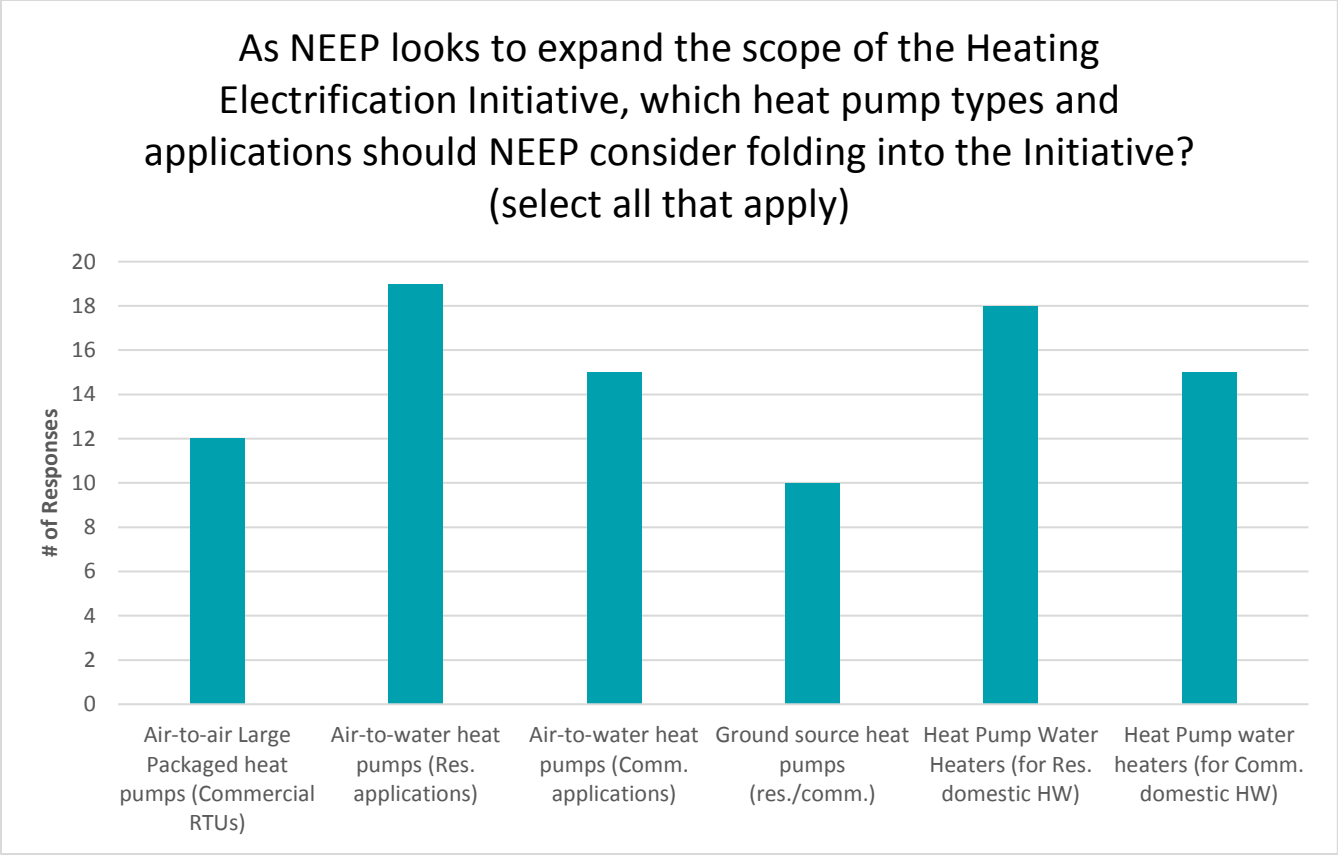


Chart 1: General perception of current market strategy relevance, by percent responded

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, but the suggestions reported are captured below:

- More holistic approach to cost compression across the entire supply chain, to reduce equipment costs and promote more system design options;
- Workforce development, not just to provide training, but to actively bring new members into the clean heating and cooling workforce;
- Methods to intercede with a heat pump on all HVAC projects, and aligning on more whole-home heat pump strategies and programs;
- Coordinating programs and advocacy across utilities and states to maximize education efforts and spend resources in the most pragmatic way possible.

The last question of the survey asked stakeholders to provide input on expanded heat pump types and applications as NEEP expands the scope of the Heating Electrification Initiative. The interest in specific heat pump types is captured in the graph below:



Graph 5: Stakeholder interest in expanded heat pump types for 2022 and beyond, by no. of responses

Respondents have demonstrated an interest in expanding the scope of the Heating Electrification Initiative to domestic and commercial water heating, with some but less interest in including ground source heat pumps and air-to-air large packaged heat pumps (commercial RTUs).

Based on results and input in our own assessment, NEEP is committed to advancing these seven strategy areas moving into 2022 as there was a demonstrated loss in rated progress reported by stakeholders. 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 strategy areas pertinent to air source heat pumps is needed. NEEP's market transformation mission is to drive 'significant progress' in all of these strategy areas, before substantially refining the strategic direction of the Initiative.

Appendix: Raw Survey Responses

Q1. Please select the stakeholder category that best describes you

Answer Choices	Responses	
State Policymaker	10.42%	5
Program Administrator	12.50%	6
Manufacturer	50.00%	24
Service Provider (i.e. program consultant/implementer)	10.42%	5
Installer/Distributor	6.25%	3
Advocacy	10.42%	5
Other (please specify)		3

Utility
Marketing strategy partner
Regional Energy Efficiency Organization

Q3. Below are the seven market strategy areas contained in NEEP's Northeast/Mid-Atlantic Air-Source Heat Pump Market Strategies Report. Please rate the progress that the region has made in implementing the seven key strategy areas for ASHPs (consider Q1 2020 - Q1 2021 as a baseline)

	Little to no Progress		Noticeable Progress		Meaningful Progress		Significant Progress		Strategy has been fully implemented. Additional Activity not necessary		Total	Weighted Average
1. Increase consumer education and awareness	22.22%	6	40.74%	11	25.93%	7	11.11%	3	0.00%	0	27	2.26
2. Increase installer/builder awareness of, and confidence in, ASHP through expanded training and education	14.29%	4	50.00%	14	25.00%	7	10.71%	3	0.00%	0	28	2.32
3. Reduce upfront costs of installed systems through robust and aligned promotional programs and the support of alternative business models	39.29%	11	32.14%	9	21.43%	6	7.14%	2	0.00%	0	28	1.96
4. Mobilize state and local policymakers to	7.14%	2	28.57%	8	39.29%	11	25.00%	7	0.00%	0	28	2.82

expand support for ASHPs												
5. Promote advanced control technologies to allow automated coordination among multiple heating systems	35.71%	10	35.71%	10	21.43%	6	7.14%	2	0.00%	0	28	2
6. Enable the promotion of climate-appropriate ASHPs through improved performance metrics	21.43%	6	42.86%	12	21.43%	6	14.29%	4	0.00%	0	28	2.29
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	35.71%	10	42.86%	12	14.29%	4	7.14%	2	0.00%	0	28	1.93

Q4. For the market strategy areas that you rated as making meaningful progress or greater (using Q1 2020 - Q1 2021 as a baseline), what activities or policies were most attributable to driving progress? Please be as specific as possible for activities and your perception of implementation progress.

Rebates through local Utilities and NYSERDA
The greater incentives offered by the Northeast utilities to delivered fuel customers made the greatest difference and provided the right incentive amounts to offset the cost compared to traditional unitary systems. In program research incentives as great as $1,000 per ton were provided. This needs to continue and be extended to those that also have natural gas. Low incentive amounts for those with Natural Gas do not provide value to the end consumer and it signals that a ductless heat pump is not a worthwhile investment.
Outreach to entire stakeholder community especially state energy offices and rating agencies
More adoption of NEEP cold climate specification across the Midwest.
New York State Climate Leadership and Communities Protection Act
NYSERDA
Low income 100% incentive programs
Release of territorial climate strategy that includes a target of heat pump installations to be achieved by 2030.
I believe that state's climate goals have necessitated major heat pump commitments based on the math of carbon emissions.

-Requiring Integrated controls for fuel switching measures -Pushing capacity ratio higher on the MassSave QPL
Baker Administration, through office of DOER, to push for strategic electrification and decarbonization.
Launch of regulatory mandated statewide incentive program focused on heat pumps combined with a statewide heat pump marketing campaign.
MA maintaining an integrated controls qualified products lists and other states and utilities leveraging it.
Nova Scotia Green Fund-18 million dollars $5.5 million over two years for the Solar Homes program, which offers rebates to homeowners installing solar panels $6.7 million over three years for the Affordable Multi-Family Housing program, which provides incentives for energy efficiency upgrades in affordable housing projects $3.5 million over three years for the Small Business and Not-For-Profit Energy Solutions program, which offers incentives for energy efficiency upgrades for small businesses and not-for-profits $2 million over five years for the Clean Leadership program, to allow youth interns to work on climate change projects across the province We are implementing a new software system that allows for real time data capture of installations, costs and energy savings.
ccASHP list, Electrification Workshop
Messaging in the marketplace about heat pumps & rebates are driving consumer demand, and contractors are responding by shifting resources and staff to more heat pumps than other HVAC equipment.

Q5. For the market strategy areas that you rated as making noticeable progress or less (using Q1 2020 - Q1 2021 as a baseline), what activities or policies need to be prioritized to drive progress? Please be as specific as possible for activities and your perception of implementation shortcomings.

Specific heating performance values
NYSERTA efforts to promote and well as NYC office of Sustainability have been very active.
Utility programs are not working closely enough with distributors and manufacturers in states like MA and RI. Utilities that offer rebates on heat pumps should be at the applications trainings held by distributors. So far upfront costs have only been truly reduced for delivered fuel customers although this does seem to be changing in Maine and New York. As for progress performance data this has been extremely slow with CSA standard constantly being pushed back into 2023 now. As for controls that's been very difficult for manufacturers to communicate. They have often over looked informing contractors of relays that would need to be installed in order for their control examples to work.
1. Always need more consumer education but progress is being made. 3. Costs must come down-very hard to change this reality and perception. Thus consumer financing is required and viable market players. 5. Control technologies add complexity and cost and require education also. Integrated solutions are best.

6. This area is a big win for ASHPs, and promotion should be emphasized. 7. Commission as many studies and pilots as possible to review savings and report as widely as possible.
Tools to quantify GHG savings, this is tough based on source but maybe reference other studies and build upon.
There is a tremendous amount of work to be done to build awareness and confidence in cold climate heat pumps. We are just getting started on that. Whole home equipment is still prohibitively expensive compared to fossil fuel alternatives. We have raised the flag in the need for better controls but there is little progress from the manufacturers. Same for performance metrics. We are making some headway, but it is slow going. We are making progress on better tools to model impacts and expect to see that speed up in the coming year.
1. More community-based outreach by community members, including websites and events. 2. Promote/duplicate NYSERDA-like installer training programs throughout the region. 4. Mass Save may need assistance/support launching the next round of incentives consistent with the MA Climate Roadmap legislation.
Full load programs
Lack of standardized pilot to determine real applicability of controls theories
Contractor interest, availability and technical improvements. It's challenging to find a contractor to complete the install well.
1. More marketing. Case studies, testimonials that shows where we need to get. 2. I think NYSERDA's training requirement is a positive step. I'm still interested in some kind of heat pump design credential. 3. I think fixing workforce shortages would help with costs in MA. 5. I think Mass Save's incentive has spurred a lot of progress in this area. Now we just need to make sure we know what works well and refine. 6. Energy Star Cold Climate seems like a great step. I'm curious to see where EXP-07 goes. 7. This one is really tricky. CESA has built a calculator that will come out soon, but it is still a high level estimate.
-Better marketing, consumer education, and testimonials -A true cost to cost comparison tool for different heating fuels and equipment -There is a lack of consistency as to how each MA PA understands HPs. Some are all in while others are hesitant.
Increased training and education for the workforce and increased education for the clientele.
Launch of resources currently in development.
Increase consumer awareness with targeted outreach to those buildings/residences that can benefit the most from HP adoption. Contractors need to have heat pumps installed in their house, and they need to be incentivized to lead with heat pump as a solution for most homes. Need better aligned programs in the Northeast. Still too many programs require EER and do not use NEEP

specification. Variable capacity equipment is still not well understood by utilities, and contractors. Explore hybrid heat pump as an on-ramp to broader full electrification in the future.
Our online training/ education sessions have seen little to no participants. Need to wait until it is safe to gather again.
Drive programs to utilities. Attempt to have common qualification across utilities and states
Current program metrics are not effective at indicating which units perform well at cold temperatures. Determining actual energy savings requires looking at pre and post energy usage, a difficult process and one that is often skipped and exchanged for tracking of hours of operation and ambient temperature which is not particularly helpful in determining actual savings or results.

Q6. How would you characterize your organization's status in relation to ASHP-related challenges presented by the COVID-19 situation?

Our ASHP-related work never experienced a significant impact from COVID-19	24.00%	6
We experienced challenges to our ASHP-related work from COVID-19, but have since returned to business as usual	52.00%	13
Challenges presented by COVID-19 have made a significant and sustained impact on our ASHP-related work	24.00%	6
Other (please specify)		3
The way we conduct business has been impacted but sales have been strong throughout COVID with the exception of March & April 2020		
Adoption of mini splits heat pumps increased greatly during the pandemic as we had summer seasonal residents stay at there vacation homes into winter and did not realize how expensive their electric heating systems were.		
Covid forced us to hold virtual events, rather than in-person. Covid still impacts us, and we are not sure how soon we can hold large in-person events. While that made some things easier, we were not able to include installers in our events, so we made fewer customer-installer connections.		

Q7. If you indicated that your ASHP-related work continues to be impacted by COVID-19, what specific challenges are you facing?

Many people have not returned to face to face business
Supply chain challenges have impacted available inventory but that has mostly been resolved. There are still port challenges but we are finding ways to address that.
We are facing equipment shortages of mini splits this year.

Oversea manufacturing production pending on labor , material and shipping raising cost of goods.
Workforce capacity is limited and people aren't coming back to work fast enough. Also, supply chain disruptions across all kinds of materials and components are increasing costs and creating delays in production/installation cycle times.
See explanation above.
Client acceptance for home visits; not widespread but an issue
supply chain management
Industry delays, supply chain interruptions, high demand, low supply.
none
The supply chain remains challenging for moving materials around the globe, and in the US.

Q8. How would you characterize your organization's involvement with DEIJ (Diversity, Equity, Inclusion, and Justice)?

My company/organization has taken steps to expand DEIJ in our work	52.38%	11
My company/organization has provided DEIJ specific trainings	14.29%	3
My company/organization has developed a strategy to incorporate DEIJ	14.29%	3
My company/organization has no idea where to start on DEIJ	19.05%	4
Other (please specify)		3
We recognize a significant need in this market segment and are very active in educating our distributor and contractor network of the need and opporutnity.		
We have a healthy culture today and I suspect they continue to adjust meet these principles		
Organization is starting to strategize now about DEIJ		

Q9. Do you have any ideas for how NEEP could more effectively address or connect DEIJ within the Heating Electrification Initiative?

Establish a mutual working group
Knowing this is a focus area for states, cities and DEIJ focus organizations is a start. Previous experience for distributors and contractors has left them feeling this work is not great for their business. They are flush with opportunities in traditional markets so they need to know they can participate and make money participating in this market segment. Finding ways to communicate this broadly to various market actors would be helpful.
The Co-Op has help with the contracting community.
Training and scholarships at inner city or rural high schools for more young men and women to become HVAC techs, pipefitters and mechanical contractors to ensure that that we have enough people in the trades. Many high schools have vocational auto shop classes why not HVAC.

Following State and Federal guidelines? I'm sure you are already doing and promoting those.
Need more practicing contractors or companies engaged and ready to support and preferably lead.
Bring in more diverse and minority voices to the table and listen. Learn more about the challenges they face as individuals and in their communities and listen to their ideas.
The key is to change how incentive programs are funded, or somehow compensate financially stressed individuals to offset their expenditures on incentive programs. This must be done at the state policy level.
Workforce initiatives.
Perhaps there are ways to incentivize and/or facilitate training workers from more diverse backgrounds and also to retrain workers that currently work in other mechanical fields like conventional fossil fuel systems, especially OBTs.
Leverage work being undertaken by members.
Identify areas where the value chain can be taught. Work with public housing.
Advocate for lower electric rates on households that heat with a heat pump.

Q10. Rate the following market strategy by priority for action over the next 2-3 years: Increase Consumer Education and Awareness

Low priority		2		3		High priority		Total	Weighted Average
0.00%	0	7.69%	2	15.38%	4	76.92%	20	26	3.69

Q11. Rate the following market strategy by priority for 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	15.38%	4	19.23%	5	65.38 %	17	26	3.5

Q12. Rate the following market strategy by priority for 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
3.85%	1	3.85%	1	46.15 %	12	46.15 %	12	26	3.35

Q13. Rate the following market strategy by priority for action over the next 2-3 years: Mobilize State and Local Policymakers to expand support for ASHPs

Low priority	2	3	High priority	Total

4.00%	1	20.00%	5	36.00%	9	40.00%	10	25

Q14. Rate the following market strategy by priority for 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 Average
0.00%	0	50.00%	13	42.31%	11	7.69%	2	26	2.58

Q15. Rate the following market strategy by priority for 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	42.31%	11	34.62%	9	23.08%	6	26	2.81

Q16. Rate the following market strategy by priority for 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
11.54%	3	15.38%	4	38.46%	10	34.62%	9	26	2.96

Q17. Beyond the current seven market strategy areas, are there strategies that we should be prioritizing?

Yes	29.17%	7
No	70.83%	17

Q18. If you have any suggestions for how the market strategies should evolve going forward, please write them here:

Quality control of Installations.
We need to see a federal energy efficiency standard that stickily prohibits denying incentives based on fuel switching. To meet climate goals we all must shift to heating at least partially with electricity compared to fossil fuels.
work to streamline the purchase, rebate and incentive cash flows to make the buying decision easier to understand and accomplish
How can a multizone deliver more savings by reducing space being conditioned. Also, focus on all methods to intercede with a heat pump installation on all HVAC projects, either displacing home heating fuel, eliminating CAC rebates to force to heat pump retrofit. Need to get customer adoption and familiarity with heat pumps without losing the sale for another 20 yrs.
A more holistic approach to cost compression is needed across the entire supply chain. Program incentives alone will not be enough. We need less costly equipment and system design options.

Blended systems with controls is confusing for consumers. Employing the whole house appproach should be a priority.
Workforce development. Not just training, but bringing new entrants into the workforce.
Continue to seek uniformity of programs and advocacy across utilities and states.

Q19. As NEEP looks to expand the scope of the Heating Electrification Initiative, which heat pump types and applications should NEEP consider folding into the Initiative? (select all that apply)

Air-to-air Large Packaged heat pumps (Commercial RTUs)	48.00%	12
Air-to-water heat pumps (Res. applications)	76.00%	19
Air-to-water heat pumps (Comm. applications)	60.00%	15
Ground source heat pumps (res./comm.)	40.00%	10
Heat Pump Water Heaters (for Res. domestic HW)	72.00%	18
Heat Pump water heaters (for Comm. domestic HW)	60.00%	15
Other (please specify) All heat pumps of all types and variety need to be encouraged if we are to meet 2030 or 2050 climate goals. This is the current problem is that every building is unique and therefore we must incentivize the heat pump that is best for the application. However most program design is pigeon holing customers into only a few heat pump options. Heat pump water heaters seem to be doing pretty well and a generally home owner installed so I would not utilize as many resources on water heating.		1