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2019 Manufactured Homes Program Assessment

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1 Table of Contents

| | | |
|---|---|----|
| 2 | Executive Summary..... | 2 |
| 3 | Background | 4 |
| | 3.1 Program History | 4 |
| | 3.2 Market Overview | 5 |
| | 3.3 Research Objectives..... | 5 |
| | 3.4 Approach..... | 6 |
| | 3.4.1 Program Documentation Review..... | 6 |
| | 3.4.2 Program and Market Data Analysis | 6 |
| | 3.4.3 Stakeholder Interviews | 6 |
| 4 | Results..... | 9 |
| | 4.1 Manufactured Homes Program Status | 9 |
| | 4.2 Program Theory and Logic Model..... | 10 |
| | 4.3 Low Consumer Demand..... | 11 |
| | 4.4 Importance of Key Retailer Support | 16 |
| | 4.5 Specification Re-Alignment with Consumer Preferences..... | 19 |
| | 4.6 Promotional Auto-Upgrade Results..... | 21 |
| | 4.7 Additional Retailer and Utility Support Needed | 24 |
| | 4.8 Market Relevance | 26 |
| 5 | Conclusion..... | 28 |
| 6 | References | 30 |
| 7 | Appendix A – Interview Guides..... | 31 |
| 8 | Appendix B – Interview Responses..... | 52 |

2 Executive Summary

This report summarizes an assessment conducted by Energy 350 of Northwest Energy Efficiency Alliance's (NEEA) Manufactured Homes Program (the Program). For the purpose of this report, the Program consists of the efforts that have taken place since 2016 to develop an above code specification (NEEM+), provide upstream incentives to manufacturers building NEEM+ homes, provide retailer and utility support, and develop marketing materials. The NEEM+ Program builds on decades of effort to improve manufactured housing efficiency throughout the region.

Energy 350's objective is to provide a third-party point of view in assessing the Program's theory, structure and effectiveness to date and to help NEEA determine next steps. We used a multi-faceted approach to evaluate of the Program and the state of the manufactured homes market. This included reviewing program documents, analyzing program and market data, and interviewing a variety of the Program's stakeholders.

Energy 350 found that while NEEM+ uptake has not been as high as was forecasted, the Program is currently gaining momentum and market awareness. We found that, with continued support and a few key additional strategic market interventions, the Program is poised for increased sales of NEEM+ homes. This is evidenced by strong manufacturer awareness and growing adoption: two manufacturers are currently building NEEM+ homes, a third manufacturer is poised to introduce a NEEM+ offering, and a fourth is considering shifting their entire production line to NEEM+. We also found broad awareness of NEEM+ among utilities and varied awareness among retailers.

Key findings and recommendations from our assessment include:

- Low consumer demand and an unclear value proposition for consumers are key barriers to NEEM+. Manufacturer interviews revealed that low consumer demand has stunted manufacturer participation in NEEM+.
 - We recommend increased distribution of marketing materials and utility program materials, as well as working with the region's utilities and Bonneville Power Administration (BPA) to create more differentiation between Energy Star and NEEM+ incentives that are available for consumers and retailers.

There is also an opportunity to increase consumer demand for NEEM+ and improve the value proposition by aligning the NEEM+ specification with consumers' preference for space cooling. While there are barriers that will need to be addressed, we recommend NEEA further explore ways to work with industry stakeholders to integrate ductless heat pumps into the NEEM+ specification.

- Retailers have varied awareness of NEEM+, even among retailers who sell homes built by NEEM+ manufacturers. Several retailers who offer NEEM+ felt they did not have the knowledge or tools to sell NEEM+. Additionally, a small number of retailers who already sell homes built by NEEM+ manufacturers represent a disproportionately large number of manufactured homes sales in the region. Therefore, engaging key retailers could significantly increase the market penetration of NEEM+ homes.
 - We recommend NEEA focus on key retailer outreach to ensure that retailers with large NEEM+ sales potential are equipped with the tools and knowledge necessary to confidently sell NEEM+.
- An Auto-Upgrade Promotion at the end of 2018 that saw 44 homes upgraded from Energy Star to NEEM+ was effective at increasing NEEM+ sales and manufacturer/retailer investment in NEEM+. Prior to this promotion, only one home had been certified as NEEM+. However, as of Q2 2019, an additional 16 NEEM+ homes have been certified since the Auto-Upgrade Promotion ended.
 - We recommend NEEA continue to consider auto-upgrade promotions as means to spur investment in NEEM+ for targeted manufacturers and retailers.
- There is an information gap between utilities and retailers, both of whom need more information on available NEEM+ programs, marketing materials, and awareness of the other's NEEM+ activities.
 - We recommend NEEA act as a conduit to connect both groups and ensure they have the necessary program information.
- A deferment of the HUD code update and increased demand for manufactured homes stunted manufacturer buy-in. While these market conditions likely slowed NEEM+ market penetration rates, NEEA responded appropriately to the changes by increasing their focus on developing marketing materials to engage downstream market actors and build consumer demand.
 - We recommend NEEA continues to monitor market conditions that impact assumptions in the program theory and Logic Model and adjust their market intervention strategies accordingly.

3 Background

The Northwest Energy Efficiency Alliance (NEEA) has been working in partnership with the existing and industry-supported Northwest Energy Efficiency Manufactured Homes Program (NEEM) to develop and introduce an above code specification for manufactured homes, NEEM+ (aka NEEM 2.0). The goal of NEEA's Manufactured Homes Program (the Program) is to increase industry acceptance and homebuyer demand of homes built to the NEEM+ specification. In support of creating the specification, NEEA has provided upstream incentives to manufacturers building NEEM+ homes, provided retailer support, and developed marketing materials. NEEA is also working with the region's utilities to offer downstream and midstream NEEM+ incentives in addition to the existing Energy Star (aka NEEM 1.1) incentives. The following report presents a qualitative evaluation conducted by Energy 350 of the Program and presents program improvement recommendations.

3.1 Program History

Efforts to improve the efficiency of manufactured homes in the region began in the early 1990's, when Bonneville Power Administration (BPA) and its partner utilities funded programs to increase efficiency beyond the Housing and Urban Development (HUD) minimum federal standard. The outgrowth of these early programs was the NEEM program, an industry-supported, third-party-verified program administered by Northwest Energy Works (NEW). The NEEM energy efficiency standards have evolved over time and are the basis of today's Energy Star standards (Dymond et al, 2016).

In early 2016, NEEA saw an opportunity to further improve the efficiency of manufactured homes: a HUD code update was underway for the first time in 30 years which was expected to be as stringent as the Energy Star (NEEM 1.1) specification. The new standard was due to be finalized within the year and to take effect in three years. At the time, Energy Star homes represented 50% of manufactured homes sold in the Northwest. This created a short-term opportunity for an increase in the voluntary specification's stringency. This, combined with work that had already been undertaken to develop a High Performance Manufactured Home (HPMH) specification, excess capacity at manufactured home factories post-recession, and an overall desire to do more outreach to rural and low-income customers, were key factors in the original program Logic Model that led to the development of the NEEM+ Program.

The original impetus for the Program shifted because the HUD code update was not completed (due to the new administration's deprioritizing of regulation). NEEA decided to continue forward with the NEEM+ Program as a second efficiency tier beyond the Energy Star (NEEM 1.1) levels. As of Q3 2019, the Program consists of the NEEM+ specification, a

\$1,000 per home incentive to manufacturers for each NEEM+ home built, marketing materials, and retailer and utility support.

3.2 Market Overview

Manufactured Homes are typically sold to consumers by retailers. While there were more than 200 retailers who sold manufactured homes sited in the region between 2015 and 2019, there were only approximately 80 active retailers located in the region.¹ Sales of manufactured homes during this period were somewhat concentrated amongst high-volume retailers, with the top ten retailers accounting for over 35% of the regional market.

While there were over 200 retailers who sold homes into the region between 2015 and 2019, those homes were produced by only 34 manufacturers. Of the 34 manufacturers, 94% of all sales were from just ten manufacturers. Additionally, the top three manufacturers (Fleetwood, Marlette, and Karsten (aka Clayton)) comprised more than 50% of the regional market². Therefore, sales are also more concentrated within the top-tier of manufacturers than they are for retailers.

Other key market actors influencing the energy performance of the region's manufactured homes market include NEEA, NEW (the Program Implementer for NEEM+), and a host of utility partners. We designed this qualitative assessment of the Manufactured Homes Program to include input from various stakeholders to promote a balanced review of the market and the effectiveness of NEEA's Manufactured Homes Program.

3.3 Research Objectives

Energy 350's role is to provide a third-party point of view in assessing NEEA's Manufactured Homes Program and to help NEEA determine next steps. Our primary objectives include evaluating the following aspects of the Manufactured Homes Program:

- Market transformation theory
- Logic Model
- State of the manufactured homes market
- Effectiveness of key program activities

¹ Active retailers are defined as having five or more sales based on regional data provided by Sawtooth Research

² Sawtooth Research Group – Manufactured Homes Reports: Washington (Q2 2017 – Q1 2019); Idaho (Q1 2017 – Q1 2019); Oregon (Q1 2015 - Q4 2016); Montana (Q1 2014 - Q4 2015).

3.4 Approach

We used a multi-faceted approach to evaluate the effectiveness of the Program and state of the manufactured homes market. This included the following:

- Reviewing Program documents including marketing materials, the Logic Model, the Initiative Lifecycle Milestone Document, NEEM+ specification, Regional Technical Forum (RTF) documentation, market research, and NEEA forecast documents.
- Analyzing available program and market data including Energy Star and NEEM+ certification data and total manufactured home sales data.
- Interviewing stakeholders including relevant NEEA staff, the Program Implementer, participating and non-participating utilities, manufactured home retailers, and manufactured home manufacturers.

3.4.1 Program Documentation Review

We collected Program documents from various sources including NEEA staff, Conduit's Manufactured Homes Interest Group's webpage, and the RTF website. This review, in addition to a pre-kick-off and kick-off meetings, provided our team with a foundational understanding of the completed program activities and assumptions used as the Program was developed and deployed. While this review was important for us to learn the history of the Program and assumptions used during its development, it also played a critical role in furthering our understanding of the manufactured homes market which primed us for further investigation during market data analyses and stakeholder interviews.

3.4.2 Program and Market Data Analysis

We used two primary data sources for the Program and market data analyses. These included Manufactured Homes Sales Reports from Sawtooth Research and a report from Northwest Energy Works (NEW) detailing the certifications of Energy Star and NEEM+ homes. We also used NEEA's Manufactured Homes forecast data and the RTF's manufactured homes savings analyses to supplement the two primary data sources.

We used the collected data to characterize the state of the manufactured homes industry, evaluate trends in NEEM+ certifications, and investigate the influence of available utility incentives on NEEM+.

3.4.3 Stakeholder Interviews

Conducting stakeholder interviews enabled us to investigate how various market actors perceived the Program. We developed interview guides and sampling plans prior to conducting interviews. Due to there being large populations in our target groups, we only

interviewed a sample of relevant retailers, utilities, and manufacturers. Table 1 provides information regarding population and sample sizes for our target groups.³ Interviews with NEEA staff were conducted in person and all other interviews were conducted by phone. We conducted outreach via email and phone calls and made multiple attempts to reach each interviewee when necessary. Some identified interviewees were unable to be reached or declined to be interviewed, leading to the difference in target and achieved sample sizes.

Table 1: Interview Target Group Details

| | Population | Target Sample Size | Achieved Sample Size |
|--|--|---------------------------|-----------------------------|
| NEEA – Manufactured Homes Team Members | 4 – Program Manager, Product Manager, Marketing Manager, Sector Lead | 4 | 4 |
| Program Implementer | 1 – Principal | 1 | 1 |
| Utilities | ~150 – Considering all utilities in the region | 9 | 6 |
| Manufacturers | 9 – Considering only manufacturers located in the region | 6 | 5 |
| Retailers | ~175 – Considering active retailers in the region | 14 | 10 |

The interview guides, which are shown in Appendix A and were based on the Workplan, established the following as themes to further investigate during stakeholder interviews:

- Perceived effectiveness of NEEA’s Manufactured Homes Program in increasing adoption of the NEEM+ specification to the market
- Effectiveness of downstream utility incentives, including both consumer and retailer incentives
- Market influence of the NEEM+ standard
- Success of the NEEM+ specification, measured by adoption by manufacturers and alignment with consumer preferences

³ Note that our sampling plans did not follow formal sampling protocols and, therefore our results should be considered qualitative in nature.

- Barriers to designing, constructing, promoting, and selling NEEM+ (e.g. manufacturer interest, consumer interest, high incremental cost, etc.)
- Perceived awareness of the NEEM+ standard amongst manufacturers, retailers, and consumers
- Recommendations to address barriers and increase adoption of NEEM+ homes
- Success in leveraging the existing NEEM program to introduce the NEEM+ specification
- Market trends and consumer preferences in the manufactured homes industry

4 Results

This Results section contains high-level information on the most important findings from our assessment and corresponding recommendations, where applicable. Additional details pertaining to these findings and supporting data can be found in Appendix B.

4.1 Manufactured Homes Program Status

NEEA's Manufactured Homes Program has begun to make inroads with industry stakeholders including manufacturers, retailers, and utilities. While only two of the region's nine manufacturers have built non-demo NEEM+ homes, we discovered that one new manufacturer is ready to offer NEEM+ as an option, and one other manufacturer who does not currently build NEEM+ homes, but is actively considering switching their entire product line to NEEM+.

Our retailer interviews uncovered an even split between being 'very familiar' and 'moderately familiar' with NEEM+, with only one retailer categorized as 'slightly familiar'. Utility representatives seemed similarly informed with two-thirds of respondents both demonstrating awareness of NEEM+ and currently offering incentives for NEEM+. While the interview responses from utility representatives suggested widespread awareness of the NEEM+ program, our market data analysis revealed that only 25 of the region's approximately 150 utilities offer NEEM+ incentives in excess of the incentives available for Energy Star manufactured homes.

While our market data analyses and interviews revealed a lack of consumer demand for NEEM+, as described in Section 4.3, it also revealed significant market demand for Energy Star homes. We cross referenced the available Sawtooth Research data with NEEM certification data from Northwest Energy Works and found that approximately 71% of manufactured homes sold in the region in 2018 were Energy Star certified.

This high market penetration rate was corroborated through conversations with manufacturers, where we were told that anywhere between 50% and 100% of each manufacturer's homes produced in the region were Energy Star certified. While most homes sold in the region are Energy Star certified, NEEM+ market penetration is low at two percent of annual sales. It is worth noting that this two percent market penetration includes NEEM+ homes impacted by NEEA's Auto-Upgrade Promotion. Through this promotion, NEEA worked with a single manufacturer to automatically upgrade 44 Energy Star homes in their build queue to NEEM+. NEEA provided additional manufacturer incentives to fully offset the incremental costs to end-use customers for the upgrade. The market penetration rate excluding homes impacted by the Auto-Upgrade Promotion is under one percent.

There are several likely culprits for the large difference in market penetration rates between Energy Star and NEEM+; most notably, differences in the maturity of each of the specifications. The Energy Star Manufactured Homes Program was launched in 1997, while the first NEEM+ home was not certified until 2018. The maturity of the NEEM+ specification is a likely factor for several of the barriers shown in Figure 1 and Figure 2, most of which can be remedied through targeted market interventions and time.

Additionally, the Program experienced several key changes to assumptions in its original Logic Model that have led to slower uptake of NEEM+ than originally anticipated. These include the lack of an updated HUD standard and an uptick in the demand for manufactured homes. When the Program first started in 2016, the intent was that NEEM+ would take the place of Energy Star once the HUD standard was updated. According to interviews with NEEA and NEW, when this updated HUD standard was deferred, manufacturers did not have as strong of interest in a beyond Energy Star specification. This was combined with an uptick in manufacturer business that made it challenging for manufacturers to introduce new products and processes into their production lines. Interviews with NEW and manufacturers indicated that manufacturers cut many staff in the recession and have had challenges staffing back up to meet the recent rise in demand. This combination of factors made it more challenging to motivate manufacturers to build NEEM+ homes. Additionally, these changes appear to have stunted manufacturer buy-in and likely contributed to the lower than expected market penetration of NEEM+.

Despite current low market penetration of NEEM+, the Program appears to be gaining momentum. With a few strategic interventions, which are described below, it is poised to increase its market penetration rate as it continues to help underserved markets access energy efficiency.

4.2 Program Theory and Logic Model

Our review of the Logic Model revealed a sound method for transforming the manufactured homes market to one where manufactured homes retailers successfully convince 30% of homebuyers to purchase NEEM+ homes.⁴ The Logic Model proposes a mix of legislative rulemaking, incentives, training, specification development, and marketing to navigate barriers to transforming the market, while leveraging the existing NEEM program infrastructure.

As was mentioned in section 4.1, two of the key opportunities identified in the original logic model did not materialize due to changes in market conditions; specifically, the deferment of the HUD code update and an increase in the demand for manufactured homes. These

⁴ The desired impact shown in the Logic Model is that “Manufactured Homes retailers now successfully convince 30+% of their homebuyers to NEEM 2.0 specification homes”

changes have decreased manufacturer buy-in and forced NEEA to pivot and focus on marketing and building consumer demand, leading to lower overall uptake of NEEM+. While these changes in market conditions likely slowed the penetration rate of NEEM+ and forced NEEA to deviate slightly from activities outlined in the Logic Model, most of the assumptions in the Logic Model remain valid. In total, three of the five medium term outcomes have been achieved. Of the two not achieved, one was the updated HUD standard, which was out of NEEA's control, and the other was homebuyers being provided with clear information on the NEEM+ value proposition, which is addressed below.

While most of the assumptions in the Logic Model regarding market conditions and the market's response to NEEA's interventions proved accurate, there are a couple of assumptions in the Logic Model that are inconsistent with the findings of this assessment. The Logic Model assumes that a long-term market response to elevated marketing and regional upstream incentives would be increased consumer demand. While we agree with this assumption, the Logic Model does not acknowledge the importance of consumer demand in gaining manufacturer buy-in to produce NEEM+ homes. As is discussed in section 4.3, low consumer demand remains a key barrier to engaging additional manufacturers and furthering the adoption of NEEM+ throughout the region.

The other discrepancy between the Logic Model and our observations is that an anticipated short-term outcome from NEEA's marketing efforts was an expectation that homebuyers would be provided with clear information on the value and opportunity related to NEEM+. Our assessment found that many retailers do not understand, nor feel confident communicating, the value proposition of NEEM+ to consumers. This may be due to the timing of marketing efforts compared to the other program efforts. Based on interviews with NEEA staff, the original short timeline of the HUD standard update combined with limited NEEA resources drove an initial focus on specification development, manufacturer outreach, and incentives. The heavy marketing effort came as a secondary push, once the HUD opportunity failed to materialize.

- **Recommendation:** Given the delayed implementation of the marketing effort and lack of retailer understanding of NEEM+, we recommend continued support and outreach to retailers.⁵

4.3 Low Consumer Demand

While the original Logic Model relied on a theory that manufacturers would be interested in NEEM+ due to the upcoming HUD code change and because of their relatively low production rates, this interest lagged when the HUD code change went away and demand for all manufactured homes significantly increased. Consequently, as the program was

⁵ This finding is covered in detail in section 4.7

being introduced to the market, the Manufactured Homes Program encountered a predicament: in order to sell NEEM+ homes, retailers needed to have NEEM+ products available from their manufacturers, but manufacturers wanted to observe significant consumer demand prior to investing in building NEEM+ homes.⁶ To remedy this situation, the Program utilized the influence of the Program Implementer, Brady Peeks from Northwest Energy Works, combined with manufacturer incentives to convince manufacturers to build demo NEEM+ homes. Two of the five manufactures interviewed cited Brady's influence as the primary reason they built an initial NEEM+ home.⁷ While this strategy was successful in getting a few manufacturers to build NEEM+ homes without strong consumer demand, we found that a lack of consumer demand remains a significant barrier toward getting further manufacturer investment in NEEM+.

Our finding is supported by interview data, where four out of five manufacturers noted that a lack of consumer demand is a significant barrier to selling more NEEM+ homes. As shown in Figure 1, manufacturers cited a lack of consumer demand and high first cost most frequently when referencing barriers to selling more NEEM+ homes.

⁶ According to retailer interviews, manufacturers learn about consumer preferences in a variety of ways, including customer purchasing decisions, requests from retailers, and independent consultants.

⁷ The other reasons for building NEEM+ cited by manufacturers included: presence of incentive, easy transition from current building practices, customers care about energy efficiency, wanting to be a leader in the market, and site-built code equivalency requirements in Washington.

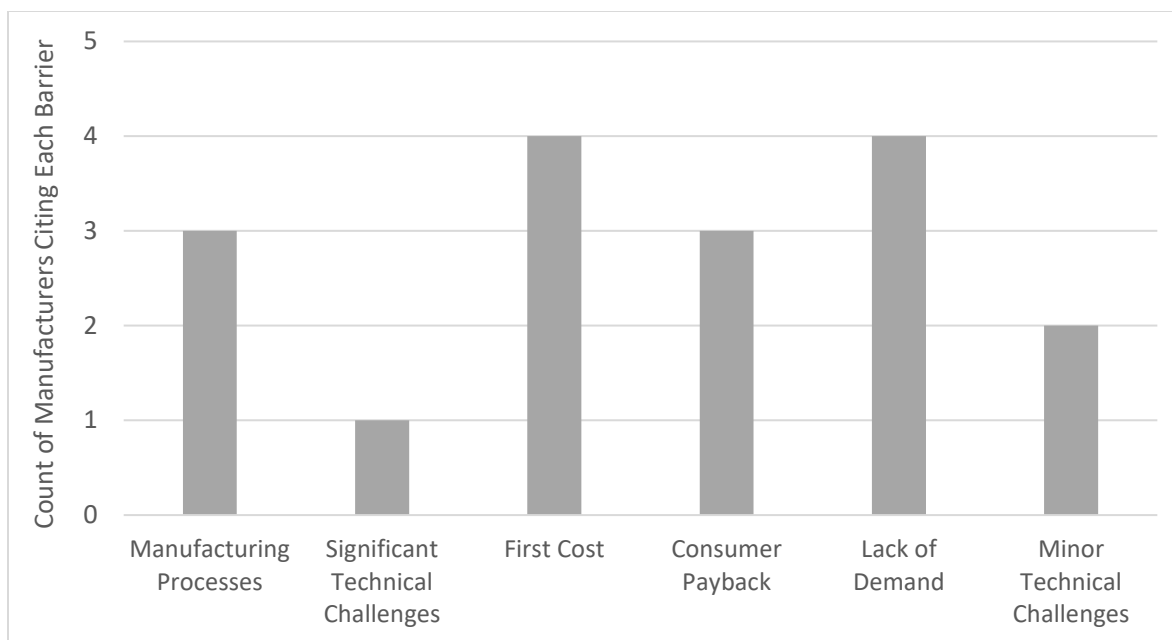


Figure 1: Primary Barriers to Selling More NEEM+ Homes Based on Manufacturer Interviews

This lack of consumer demand was further highlighted when two manufacturers who do not currently build NEEM+ homes, but previously built NEEM+ demo homes noted that they would both build NEEM+ if their customers asked for it.

While talking with manufacturers about barriers to selling more NEEM+ homes, several manufacturers expanded on why they felt there was a lack of consumer demand. They told us that they felt the cost was too high relative to the benefit to the consumer, further echoing the results shown in Figure 1. They also frequently noted that the benefits to the consumer were not ‘visible’ enough, in that the efficiency improvements are hidden behind walls; this concern was also raised during interviews with NEEA and NEW. To counteract this concern, NEEA added a smart thermostat to the NEEM+ specification. Surprisingly, no retailers mentioned this lack of upgrade visibility as a barrier to selling NEEM+ and a few of them emphasized that their customers mainly care about the improved insulation, comfort, and construction integrity that comes with NEEM+.

While the specific comments differed, retailers echoed a key theme that the unclear value proposition made it challenging to sell NEEM+ to customers, which is a likely source of low consumer demand. While retailers said their customers considered energy efficiency as somewhat to highly important (an average ranking of 3.4 out of 4.0), they said that their customers are highly cost constrained and energy efficiency upgrades are often replaced by items that are more aligned with other consumer desires, such as additional site work or luxury upgrades like improved showers. As shown in Figure 2, 9 out of 10 retailers cited

cost when referencing barriers to selling NEEM+ homes. These retailers noted that consumers are especially sensitive to incremental cost associated with NEEM+ because many consumers have strict budgets to due financing limitations and many consumers underestimate the cost of site work. Therefore, discretionary dollars can be very limited with multiple upgrades competing for them.

Five retailers also cited the value proposition, referring to what the customer gets for the incremental cost as a primary barrier to selling more NEEM+. What was especially interesting is that an unclear value proposition is not just present at the consumer level but also with retailers. Several retailers noted that they don't promote NEEM+ because they don't understand its value proposition. This coupled with their experience of a generally cost-conscious customer base makes retailers more resistant to promoting NEEM+.

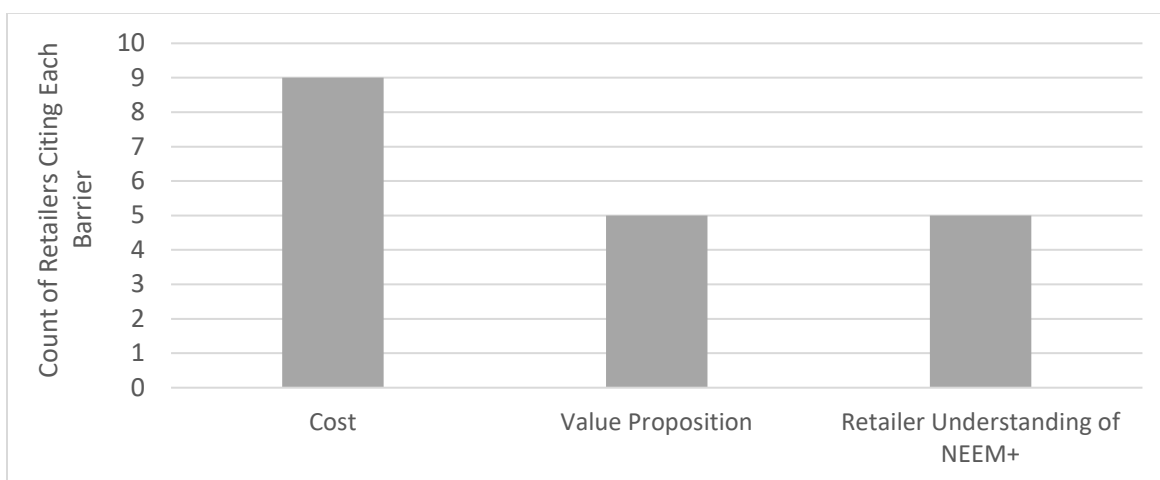


Figure 2: Primary Barriers to Selling More NEEM+ Homes Based on Retailer Interviews

A common mechanism to increase consumer demand and mitigate first cost barriers are to employ downstream and/or midstream incentives. These strategies are currently used by utilities throughout the region for both Energy Star and NEEM+ homes. We evaluated data from the 46 NEEM+ homes sold to date with provided site location information to assess the influence these incentives are likely to have on consumer behavior. We found the following from these NEEM+ homes:

- 53% were likely eligible for salesperson incentive funds (SPIFs)
- 70% were likely eligible for downstream customer incentives
- 76% were likely eligible for either a SPIF or a downstream incentive

Therefore, it is likely that consumers buying, and retailers selling, NEEM+ homes have access to incentives. However, Figure 3 illustrates that while the total utility incentives for Energy Star and NEEM+ are substantial, the incremental incentives to motivate consumers to purchase, and retailers to sell, NEEM+ instead of Energy Star are insignificant.

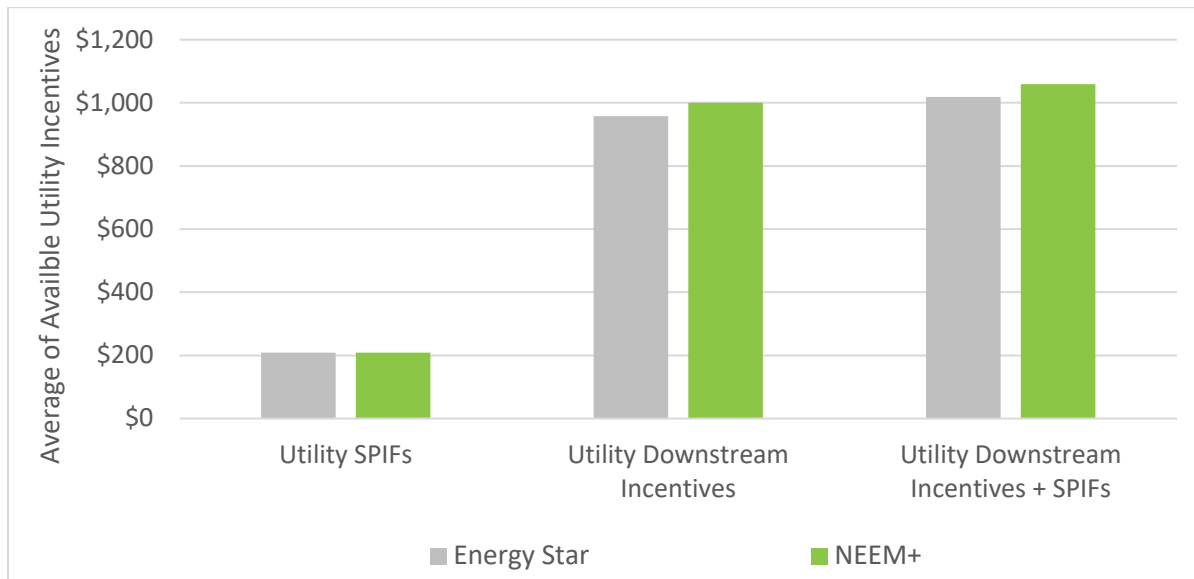


Figure 3: Average of Available Utility Incentives based on Data for NEEM+ Home Sales

The difference between the available incentives for Energy Star and NEEM+ is small in large part because many utilities offer the same downstream and midstream incentives for NEEM+ as they do for Energy Star manufactured homes. Additionally, the NEEM+ payment from Bonneville Power Administration (BPA) to participating utilities is only \$200 more than it is for Energy Star. With over 130 partner utilities in the region, BPA's incentive design has a large influence on the average incentives available throughout the region.

We also heard anecdotes from NEEA staff that the existing downstream and midstream incentives for manufactured homes are perceived as ineffective. While we did not collect quantitative data to further investigate this hypothesis, we did ask retailers how effective incentives were in their sales process. This resulted in a wide range of answers. On average, retailers ranked customer incentives as moderately effective, with several retailers saying they were a key sales tool. We heard from other stakeholders that even though incentives may not be utilized, they are likely still a strong motivating factor. NEEA's Manufactured Homes Program Implementer, Brady Peeks from Northwest Energy Works, mentioned that finalizing the sale of a manufactured home involves a complicated signing process. He theorized that retailers and consumers are likely motivated by the incentives but may just overlook them during signing; thinking that they completed them along with the bevy of

other forms. This suggests that the presence of the incentives is impactful in increasing consumer demand, but the mechanism for their execution may need refinement.

We also heard evidence in interviews that one type midstream incentives, SPIFs can help overcome this issue, but overall the opinion of SPIFs was quite mixed. Only one utility interviewed offers SPIF incentives and found them highly ineffective as they hadn't paid out a single SPIF. On the other hand, four of the retailers interviewed said SPIFs are highly effective and help encourage them to submit customer incentive paperwork.

- **Recommendation:** Evaluate methods to increase the effectiveness of downstream and midstream incentives including better retailer education and a larger differential between NEEM+ and Energy Star incentive levels.

4.4 Importance of Key Retailer Support

When we began this assessment, there were only two manufacturers producing NEEM+ homes: Kit Custom Homebuilders and Palm Harbor Homes.⁸ However, during our manufacturer interviews we learned that Skyline Homes had built a demo home and was ready to begin wider rollout of their NEEM+ offering. With only three NEEM+ manufacturers, there are nearly 100 regional retailers that have access to NEEM+ homes. However, 88% of all non-Auto-Upgrade Promotion NEEM+ homes have gone through a single retailer. This demonstrates a couple of key points:

- NEEA's Manufactured Homes Program is capable of profoundly shifting retailer behavior. In 2019, 45% of the total homes ordered by one retailer were NEEM+.⁹
- NEEA may be able to significantly increase NEEM+ sales by getting a few additional key retailers engaged.

In the figures below, we charted the distribution of sales from NEEM+ manufacturers based on retailer rank to demonstrate the impact that engaging a few key retailers could have in transforming the market.

⁸ Two other retailers, Fleetwood and Marlette, have also built demo homes but decided not to pursue NEEM+ at this time.

⁹ NEEA's Auto-Upgrade Promotion ended in the fourth quarter of 2018 and therefore did not directly impact the 2019 rate of NEEM+ homes sales.

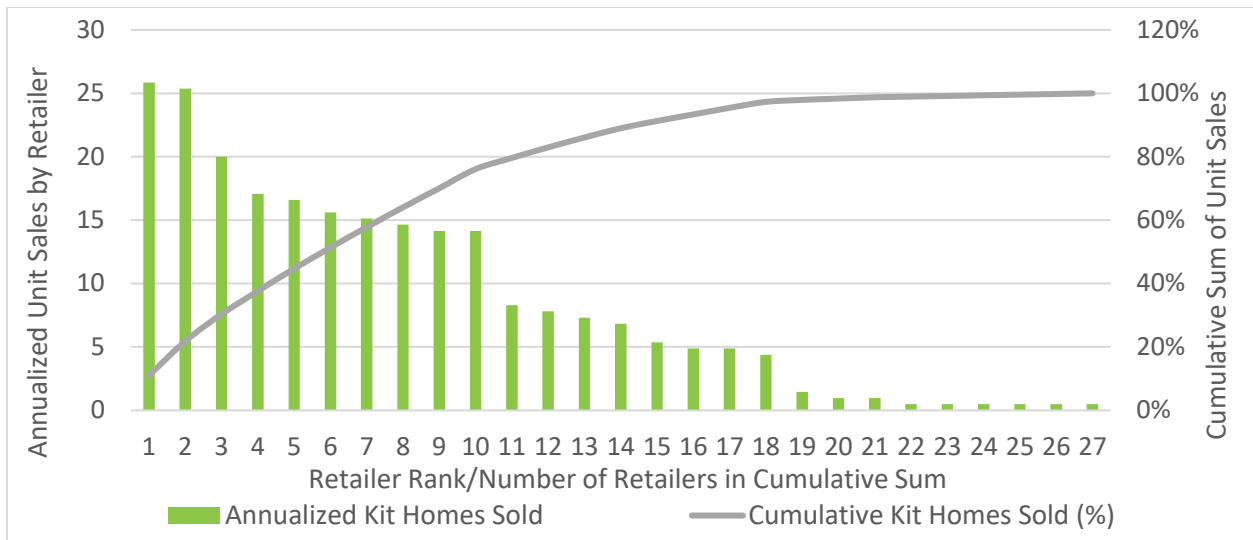


Figure 4: Distribution of Kit Homes by Regional Retailers

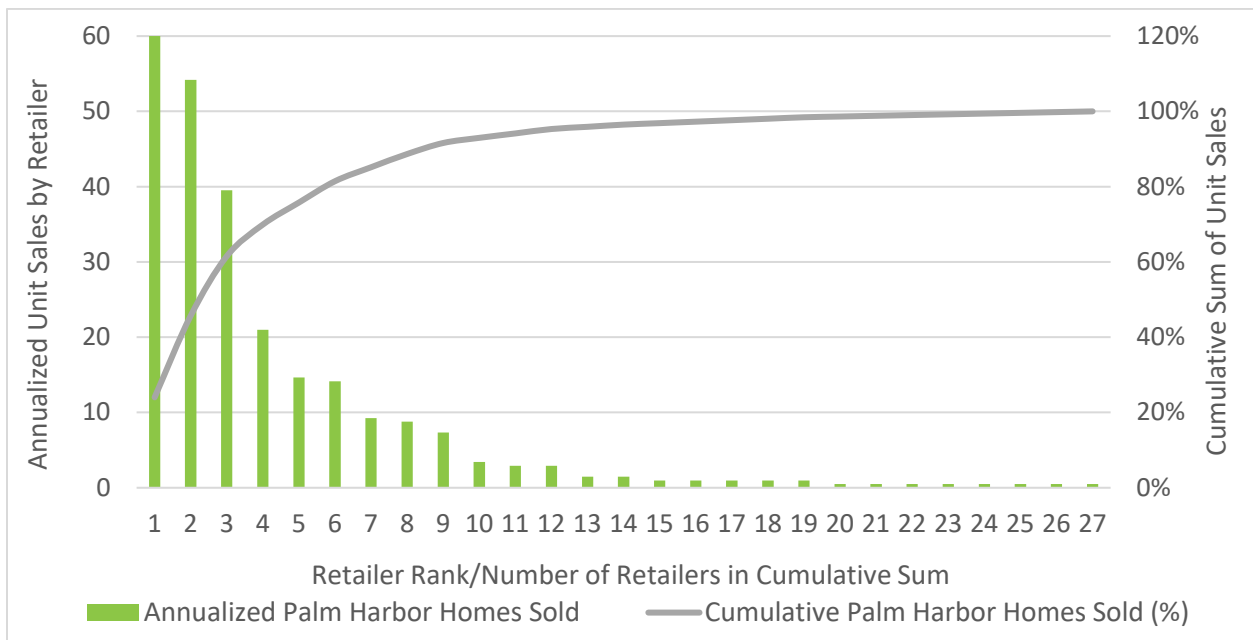


Figure 5: Distribution of Palm Harbor Homes by Regional Retailers

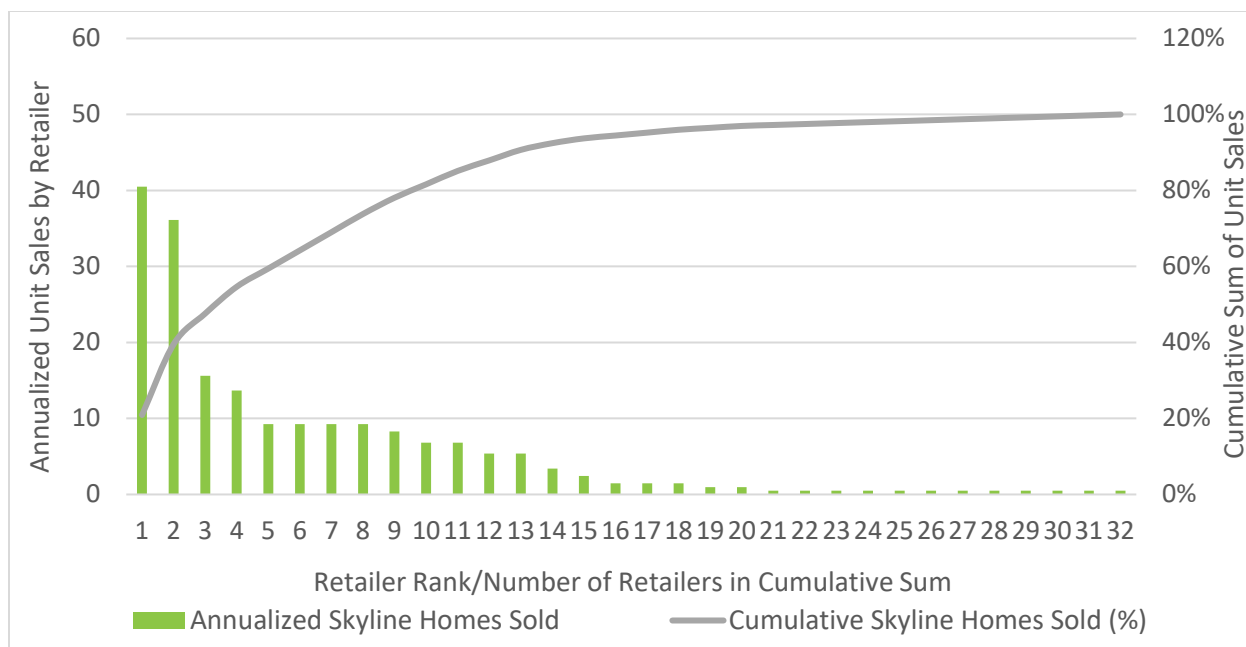


Figure 6: Distribution of Skyline Homes by Regional Retailers

Notice that Kit Custom Homebuilders sales are spread most broadly amongst retailers. Palm Harbor Homes is the opposite in that over 60% of their sales are through their top three retailers, and Skyline Homes falls in the middle. Therefore, transforming Palm Harbor Homes' top three retailers into strong NEEM+ advocates would substantially impact Palm Harbor's overall production and significantly increase the region's total NEEM+ sales. Transforming Palm Harbor Homes' top three retailers to operate similarly to the current top selling NEEM+ retailer with 45% of their annual sales being NEEM+ would increase NEEM+'s annual market penetration by a factor of five.

Sales from the three NEEM+ manufacturers represent approximately 24% of the region's manufactured home sales, yet the market penetration of NEEM+ homes is under one percent.¹⁰ While NEEA's efforts could be spent convincing more manufacturers to offer NEEM+, we caution that as a primary strategy. We interviewed two manufacturers who produced NEEM+ demo homes but chose not to move forward with NEEM+ because the effort required to implement NEEM+ was too high relative to the demand they have perceived for NEEM+. However, both manufacturers said that if their retailers and consumers regularly asked for NEEM+, then they would produce NEEM+ homes. One manufacturer with large production related barriers who does not currently intend on building to NEEM+ noted that if his company gets six customer requests for NEEM+ homes

¹⁰ Excluding homes impacted by NEEA's Auto-Upgrade Promotion

in a week, that he would fully support building to NEEM+. Another manufacturer said that if retailers were requesting NEEM+ they would do it “in a heartbeat.”

- **Recommendation:** We recommend focusing more efforts on changing the behaviors of high-volume retailers that already have access to NEEM+ homes.

Manufacturers with larger production barriers are likely to eventually adopt NEEM+. However, more consumer demand is needed and gaining the support of key retailers who already have access to NEEM+ homes can be used as a tactic to spur additional consumer demand within the industry. As discussed in more detail in Section 4.7, focused retailer education may be useful to encourage this behavior change. Specifically, 5 of the 10 retailers interviewed have NEEM+ available but are not actively selling it because they don’t understand it well enough or need more information.

Our assessment also uncovered a unique situation that has the potential to significantly increase NEEM+ market penetration. A Washington based organization is considering switching their entire product line over to NEEM+. They noted that changing production practices is expensive, but they prefer switching all their homes to NEEM+ instead of offering NEEM+ as an option because it provides better economies of scale. This manufacturer noted that NEEA’s upstream incentive extending to 2020 will be critical for them to make the switch to all NEEM+ because it will help offset the costs related to re-designing their processes. This poses an interesting opportunity for NEEA’s Manufactured Homes Program because of this organization’s all-or-nothing mentality when it comes to NEEM+. If this organization were to switch all their production to NEEM+, it would amount to approximately 135 more NEEM+ homes per year, which would be an eight-fold increase in the NEEM+ market penetration rate.

- **Recommendation:** We recommend continuing the manufacturer incentive through 2020 to support manufactures already building NEEM+ homes and to help shift one organization’s entire production line over to NEEM+.

4.5 Specification Re-Alignment with Consumer Preferences

One of the first activities the Energy 350 team undertook in completing this assessment was to review the available Program documents. This included a review of the differences between the NEEM+, Energy Star, and HUD code specifications. We found that Energy Star and NEEM+ each required incremental upgrades to the building envelope, appliances, and other lesser energy using systems. However, our team was surprised to see no differences between Energy Star and NEEM+ for two primary energy using systems: water heating and space heating. Further investigation and conversation revealed that significant water heating and space heating upgrades have been previously trialed in manufactured homes (Dymond et al, 2016). Those trials showcased the large savings potential resulting from the

installation of ductless heat pumps and heat pump water heaters, but also highlighted significant technical barriers.

While both the water heating and space heating upgrades yielded significant energy savings, the space heating upgrade, which saw a ductless heat pump plus zonal electric resistance heat replacing a forced-air electric furnace, saved more energy and provided a critical non-energy benefit: adding a clear value for the incremental cost by enabling space cooling. The ability to provide space cooling in addition to energy efficient heating is what elevates the upgrade's prominence and aligns it with consumers' desires.

We first heard of the significant demand for cooling in the manufactured homes industry from NEEA staff during the kickoff meeting for this assessment. During that meeting we learned of prior research (Hadley, 2017) that concluded the following:

- 40% of new electrically heated Energy Star homes add a heat pump within two years
- 10% of new electrically heated non-Energy Star homes add a heat pump within two years
- 25% of all new electrically heated manufactured homes have heat pumps installed within two years

This data shows that there is meaningful demand for heat pumps in manufactured homes throughout the region, and that this demand is concentrated amongst consumers who invest in energy efficiency by purchasing Energy Star homes.¹¹ This demand for heat pumps was echoed in retailer interviews who estimated that an average of 70% of their customers were adding AC and/or heat pumps to their homes. This begs the question, what percent of electrically heated NEEM+ homes have heat pumps installed within the first year?

While this data is interesting at face value, it is more striking when considering that virtually no manufactured homes leave the factory with a heat pump installed. Of the five manufacturers we interviewed, we learned of only one manufacturer who offered factory installed ductless heat pumps. This manufacturer previously partnered with an HVAC installation company to factory install ductless heat pumps on a mix of traditional manufactured homes and park homes.¹² This partnership has since ended but while active

¹¹ This research was conducted before the introduction of the NEEM+ specification.

¹² A park home is a trailer-type RV that is designed to provide temporary accommodation for recreation, camping, or seasonal use. They are built on a single chassis, mounted on wheels, and have a gross trailer area not exceeding 400 square feet when set-up.

resulted in the factory installation of approximately 100 ductless heat pumps. We learned of another manufacturer who currently offers factory installed zonal electric resistance heat and pre-wires the home for a ductless heat pump so that the installation can be quickly finished in the field by an HVAC contractor whom they partner with. We spoke with one of this manufacturer's retailers, who noted that they were selling many manufactured homes under this arrangement.

These partnerships demonstrate how the manufactured homes industry has begun to organically develop solutions to meet their customers' desires to add space cooling. However, the vast majority of manufactured homes ship with forced air electric furnaces, and when consumers elect to add cooling, they are typically doing so by adding a cooling coil and outdoor unit to the existing ducted system. Our retailer interviews revealed that the outdoor unit is not always a heat pump and therefore, under the current paradigm, there is a contingent of consumers paying to retrofit their HVAC systems to add cooling but still relying on electric resistance heat. Additionally, our conversations uncovered that when a heat pump is installed, it is commonly a packaged heat pump. Therefore, ductless heat pumps with supplemental zonal electric resistance heat, the most energy efficient HVAC design discussed in this assessment, constitutes only a small minority of HVAC designs in new manufactured homes.

We acknowledge the technical barriers associated with factory installing heat pumps in manufactured homes. However, those purchasing manufactured homes, especially those also investing in energy efficiency, have demonstrated a preference for space cooling. Our conversations with retailers and manufacturers revealed that there is a myriad of upgrades competing for consumers' discretionary dollars throughout the home buying process. To increase the likelihood that consumers will spend their discretionary dollars on energy efficiency requires that we tap into their other desires, such as the preference for space cooling.

- **Recommendation:** We recommend NEEA continue conversations with manufactured homes industry stakeholders to develop a strategy to transform the manufactured homes market towards one where heat pumps become the primary heating and cooling source. To maximize efficiency, we recommend pursuing ductless heat pumps with supplemental electric resistance heat.

4.6 Promotional Auto-Upgrade Results

During the third and fourth quarter of 2018, NEEA worked with a single manufacturer to automatically upgrade 44 Energy Star homes in their build queue to NEEM+. NEEA provided additional manufacturer incentives so that there were no incremental costs to the end-use customer for the upgrade. As shown in Figure 7 below, the rate of traditional NEEM+ certifications increased significantly following the Auto-Upgrade Promotion.

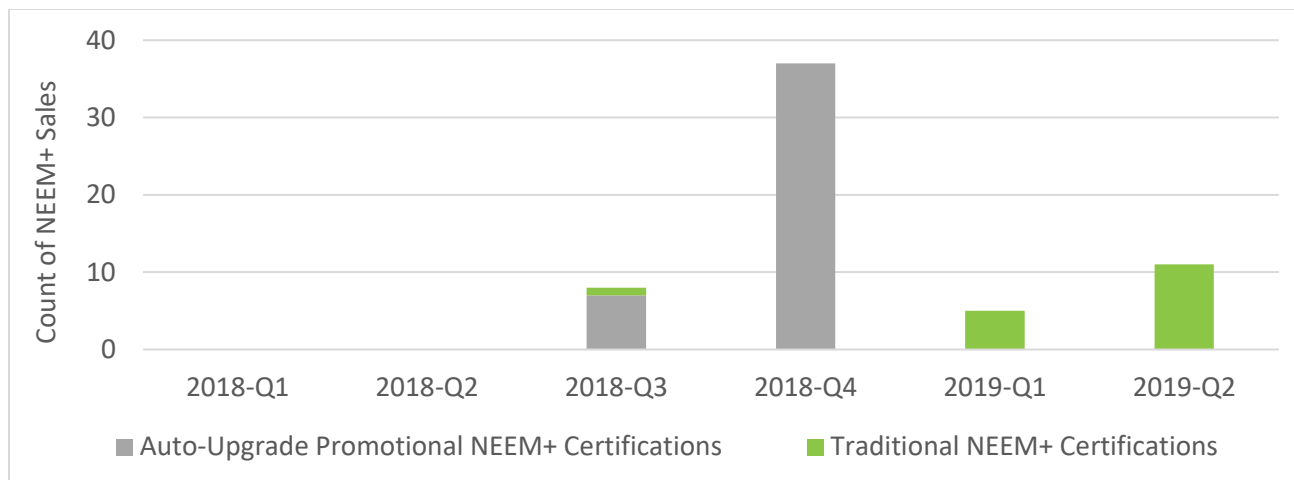


Figure 7: Auto-Upgrade NEEM+ Certifications vs Traditional NEEM+ Certifications

Traditional NEEM+ certifications increased 400% from the quarter prior to the Auto-Upgrade Promotion (n=1) to the quarter after the Auto-Upgrade Promotion (n=5). Additionally, NEEM+ certification growth has continued with 54% more NEEM+ homes certified the second quarter of 2019 than the first.

While the Auto-Upgrade Promotion significantly increased total NEEM+ certifications, it did not yield regionally equitable results. The largest discrepancy is on the manufacturer side, with 100% of the auto-upgrade incentive going to a single manufacturing facility. However, there are also inequities in retailers and consumers as shown in Figure 8.

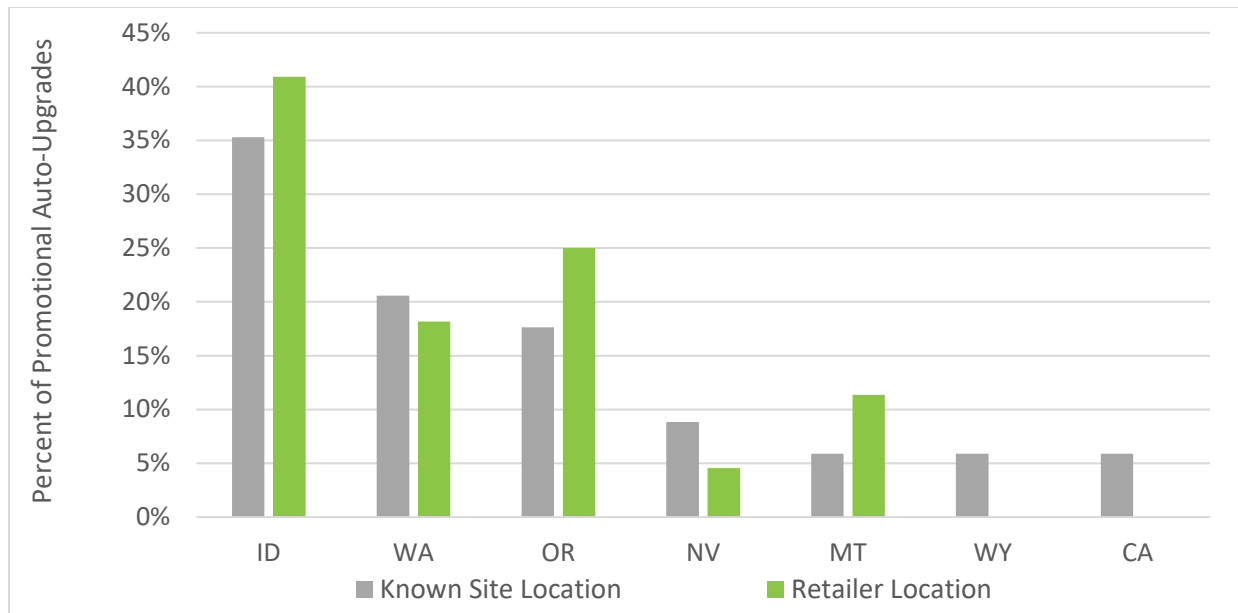


Figure 8: NEEM+ Auto-Upgrade Certifications by Known Retailer and Site Location

While the distribution of NEEM+ homes in the Auto-Upgrade Promotion seems somewhat equitable, we must consider that Idaho accounts for less than ten percent of all manufactured home sales in the region. Additionally, NEEM+ sales have become more skewed since the completion of the Auto-Upgrade Promotion, with:

- 88% being made by the manufacturer included in the Auto-Upgrade Promotion
- 88% being sold through Idaho based retailers
- 92% of known site locations being in Idaho

During our interviews, the manufacturer and retailer who were most impacted by the Auto-Upgrade Promotion noted that it was highly effective in getting them more bought into NEEM+. Coming out of the Auto-Upgrade Promotion, an Idaho based retailer who had ten of their homes auto-upgraded to NEEM+ began including NEEM+ in their base pricing. After making this change, this retailer accounted for more than 80% of all NEEM+ sales. However, this retailer later found that their base price was being undercut by web-based companies, so they have since removed NEEM+ from their base pricing and now rely on their sales staff to upsell to NEEM+. We do not have data showing the impact this recent removal of NEEM+ from the base pricing has had on NEEM+ sales at this retailer.

4.7 Additional Retailer and Utility Support Needed

Key themes that emerged from the retailer and utility interviews is a need for additional Program information, support and connections. Specifically, the following are key takeaways from the interviews:

- Retailers need better information on available utility incentives
- Retailers need additional information and training on NEEM+ in order to sell it to their customers
- There is a need for better distribution of existing marketing and program materials to both utilities and retailers

The conversations with both retailers and utilities indicated that information about Energy Star and NEEM+ incentives is not always reaching customers. From the utility perspective, four out of the six utilities interviewed cited lack of consumer awareness as a key barrier to increased Energy Star and NEEM+ manufactured home sales.¹³ Specific concerns raised by utilities included not knowing which customers to target with their marketing, not knowing where their customers would purchase homes (as purchases occurred outside the utility territory), and not knowing which retailers were still in operation.¹⁴

In general, utilities viewed customer incentives as not at all effective to somewhat ineffective (an average ranking of 1.5 out of 4.0) and with no utilities ranking them as somewhat effective or highly effective. This is likely due at least in part to the disconnect in customers getting information about the incentives. Retailers are a potential conduit for this information, but utilities expressed having a limited budget to conduct outreach to retailers and a barrier of not knowing which retailers would sell to their customers.

Conversely, some utilities and retailers mentioned that the incentives were most effective for heat pump installations, where they know which consumers to target. This supports the theory that information about utility incentives for Energy Star and NEEM+ homes is, at this early stage in the program's lifecycle, not effectively reaching customers¹⁵. As described in more detail below, there is a potential role for NEEA in helping bridge this gap between utilities and retailers so that customers receive information about incentives.

Just as utilities don't know where their customers go to purchase homes, retailers often sell to customers in a wide range of utility service areas and therefore don't know which incentives are available for their customer. Overall, retailers had mixed opinions on the effectiveness of utility incentives. Seven of the ten interviewed ranked them as either somewhat or highly effective. Several respondents said that they are not using the incentives to sell homes, but others indicated that they were a critical part of their sales

¹³ The other two utilities cited the fact that they do not have many manufactured homes in their territory as the primary barrier to NEEM+.

¹⁴ One utility indicated that the list of retailers on the NEEM page is no longer up to date.

¹⁵ NEEA phases in program activities over time based on the organization's Program Life-cycle. Concerted efforts to reach consumers happen late in the lifecycle. Manufactured Homes had not yet reached that phase at the time of this research.

process.¹⁶ Cost was cited by 8 out of 9 retailers as the primary barrier to NEEM+, which is due both to customers being cost constrained overall and energy efficiency being outcompeted by other features in the home for the limited discretionary dollars. Several retailers noted that incentives were very valuable to overcoming this cost barrier.

Another key theme in retailer interviews was lack of specific knowledge about NEEM+ and therefore a hesitation to actively sell it. Four out of the five retailers interviewed that have access to NEEM+ but don't actively sell it cited a lack of knowledge to make the sale. As one retailer put it, "I don't want to upsell it and then not be able to explain it." This is related to the cost barrier in that five retailers cited a lack in a value proposition for NEEM+ as a key barrier to NEEM+, as was shown in Figure 2. While some retailers had NEEM+ materials available or remembered receiving a presentation from the program implementer, the need for more training was a common interview theme. Specific requests made during the retailer interviews included:

- Training on how to sell NEEM+
- Simple literature and bullet points on NEEM+, including cost savings
- A side by side comparison of NEEM+ with Energy Star
- A list of incentives available by utility
- More banners, pins ("Ask me about NEEM+"), brochures on site to help start the conversation

Retailers ranked the materials they currently have as being somewhat ineffective to somewhat effective (average ranking of 2.2 out of 4.0). This seems to be both due to a lack of distribution of materials to retailers and a lack of clear, concise marketing materials demonstrating the value of NEEM+ compared to Energy Star.¹⁷

The lack of consistent retailer knowledge of NEEM+ is likely due to the overall number of retailers and comparatively closer relationship between NEW and the manufacturers compared to retailers. Since NEW certifies homes directly for manufacturers, and there are fewer manufacturers overall, the relationships between NEW and the region's manufacturers appear very strong. Comparatively, NEW's relationships with retailers do not seem to be as strong. While both retailers and manufacturers had praise for NEW's work, the level of outreach to retailers seems to have been more limited, which may explain the variances in retailer knowledge of NEEM+.

¹⁶ Many interviewees were Kit dealers and therefore aren't upselling to Energy Star because it comes standard in Kit homes

¹⁷ Multiple retailers mentioned the NEEM rug as the only marketing item they have

In addition to better distributing marketing materials to retailers, the utility interviews indicated that more could be done to distribute existing program materials to utilities. Specifically, the two utilities who do not currently offer NEEM+ programs said that they would offer programs if they had the information and marketing materials.

- **Recommendation:** NEEA has the opportunity to serve as a conduit between retailers and utilities to make sure both are aware of others' NEEM+ activities. We recommend NEEA continues to provide both groups with program and marketing materials and to promote collaboration and knowledge sharing between the two groups.

4.8 Market Relevance

When NEEA initially began building stakeholder awareness and interest in their Manufactured Homes Program, many of the region's manufactured homes manufacturers were operating at reduced capacity due to low demand. However, demand has since recovered, and the region's manufactured homes market has seen significant growth in recent years. Demand for manufactured homes has increased so significantly that our interviews revealed that most manufacturers are now operating near or at capacity.

This increase in market demand was also shown in our analysis of available market data, where we found that the manufactured homes market is growing 24% faster than NEEA's forecast. This equates to approximately 2,900 manufactured homes sales in 2018. This analysis, shown in Figure 9, relied on market data from different years, and therefore is based on a composite year using data from 2015 through 2018.

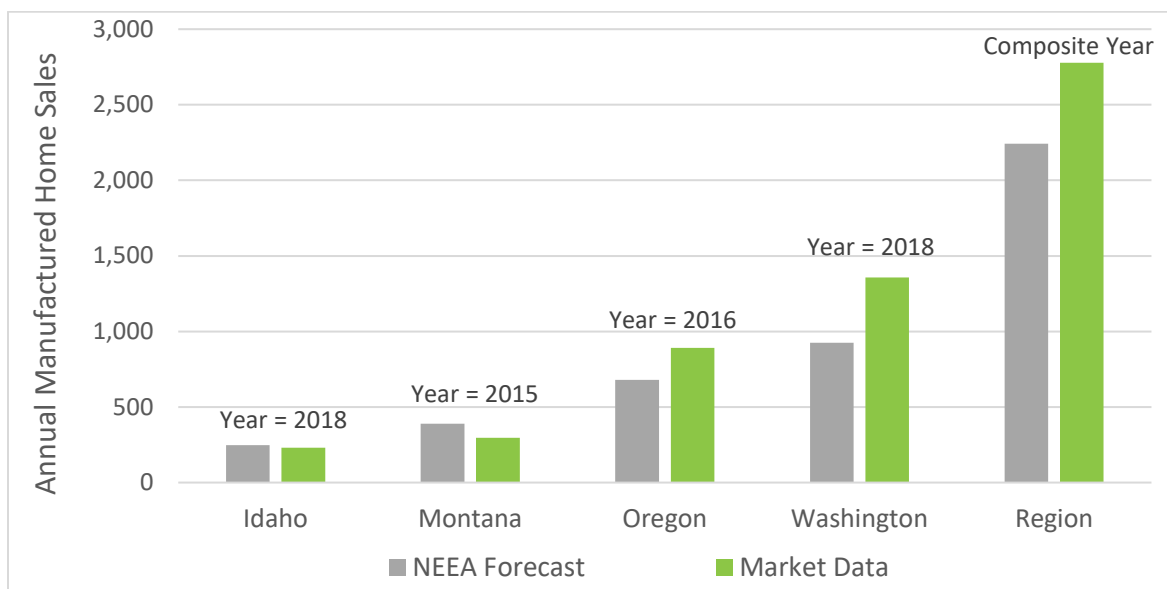


Figure 9: Comparison of NEEA Forecast Data with Market Data

While this increase in demand means that there is larger savings potential from NEEM+, our interviews with manufacturers and other industry stakeholders revealed a variety of ways in which this market growth negatively impacted the Program. These included the challenges of training and retaining good production line staff, difficulty keeping up existing orders, and a push to streamline manufacturing processes and products.

We acknowledge that the increase in the manufactured homes market means there is more savings potential. However, we heard from multiple NEEA staff members and utility representatives that NEEA's Manufactured Homes Program provides more value than is conveyed through the energy savings alone. We heard from several NEEA staff members and half of the utility representatives that this program is also valued because it serves historically underserved, low-income, and rural populations. Additionally, NEEA staff noted that the regional inequities that are emerging from this program may not be negative because they may balance out inequities in other NEEA programs where the eastern portion of the region is under-represented.

5 Conclusion

Our review of the Logic Model revealed a sound method for transforming the manufactured homes market. While there were changes in market conditions that have invalidated some of NEEA's initial assumptions (e.g. the lack of a new HUD code update and a more rapid sales recovery than anticipated), we found that NEEA responded appropriately to those unforeseen changes. In addition to changes in market conditions, we found a few discrepancies between the expected market responses contained in the Logic Model and the actual market responses. These discrepancies are likely contributors to NEEM+ market penetration rates being lower than was forecasted. While we have recommended areas for improvement, we believe that the Logic Model and program theory set NEEA's Manufactured Homes Program on a good path for meeting its market transformation goals.

Through an analysis of available program data and interviews with industry stakeholders, our assessment uncovered several key findings, including:

- Low consumer demand and an unclear value proposition for consumers are key barriers to NEEM+. Manufacturer interviews revealed that low consumer demand has stunted manufacturer participation in NEEM+.
- The NEEM+ specification is misaligned with consumer preferences for space cooling.
- Engaging key retailers could significantly increase sales of NEEM+ homes
- There is an information gap between utilities and retailers, both of whom need more information on available NEEM+ programs, marketing materials, and awareness of the other's NEEM+ activities.
- NEEA's Auto-Upgrade Promotion spurred lasting investments from impacted retailers and manufacturers.

While NEEA's Manufactured Homes Program has established enough market relevance to impact the behavior of some retailers and manufacturers, market penetration rates are lower than NEEA's forecasts. We believe NEEA has set the Program on a good path to transform the market but feel that continued support of the Program through upstream incentives and additional marketing/outreach is still needed. We have made several additional recommendations to increase the effectiveness of the Program, including that NEEA:

- Work with the region's utilities and Bonneville Power Administration (BPA) to create more differentiation between Energy Star and NEEM+ incentives that are available for consumers and retailers.
- Further explore ways to work with industry stakeholders to integrate ductless heat pumps into the NEEM+ specification.
- Focus on key retailer outreach to ensure that retailers with large NEEM+ sales potential are equipped with the tools and knowledge necessary to confidently sell NEEM+.
- Act as a conduit to connect retailers with utilities to help them support one another and provide both groups with the necessary program information so they can effectively promote NEEM+.
- Consider additional auto-upgrade promotions as means to spur investment in NEEM+ for targeted manufacturers and retailers.

Our recommendation of further investment in, and refinement of, NEEA's Manufactured Homes Program is based on over-arching themes uncovered throughout this assessment. We found an industry ripe with savings potential and an opportunity for NEEA to serve largely underserved populations. However, the manufactured homes industry has yet to fully embrace NEEM+ and therefore NEEM+ is not yet embedded into the core business models of many organizations. However, with continued support and refinement, we believe that NEEM+ could become a self-sustaining and integral component of the manufactured homes industry throughout the region.

6 References

Dymond et al, “High Performance Manufactured Homes: Field and Factory Results from 8 Demo Homes Built in 6 Factories”, ACEEE Summer Study on Energy Efficiency in Buildings, 2016

Hadley, Adam. “New Manufactured Homs UES Measures: Energy Star, EcoRated, and NEM2.0.” RTF Presentation, 2017

Sawtooth Research Group – Manufactured Homes Reports: Washington (Q4 2018 - Q3 2019); Idaho (Q4 2018 - Q3 2019); Oregon (Q4 2016); Montana (Q4 2015).

7 Appendix A – Interview Guides

NEEA Manufactured Homes Program Evaluation Interview Guide – Program Implementer

1. *INSTRUMENT INFORMATION*

1.1 Overview of Data Collection Activity

| Descriptor | Population |
|-----------------------------|--|
| Instrument Type | In-depth Interview Guide – Program Implementer |
| Collection Method | Phone/In-person Interview |
| Estimated Time to Complete | One hour |
| Population Description | Single program implementer for NEEM+ program: Northwest Energy Works |
| Sampling Strata Definitions | N/A |
| Population Size | 1 |
| Completion Goal | 1 |
| Researching Firm | Energy 350 |

1.2 Research Objectives and Associated Questions

| Research Objectives | Associated Questions |
|---|----------------------|
| Determine perceived effectiveness of NEEA’s Manufactured Homes program in increasing adoption of the NEEM+ specification to the market. | 1, 5, 8, 9 |
| Determine effectiveness of downstream utility incentives, including both consumer and retailer incentives. | 12, 13, 14, 15, 16 |
| Determine market influence of the NEEM+ standard. | 2, 3 |
| Determine successfulness of the NEEM+ specification, measured by adoption by manufacturers and alignment with consumer preferences. | 2, 5 |
| Determine the barriers to designing, constructing, promoting, and selling NEEM+. | 5, 6 |
| Assess perceived awareness of the NEEM+ standard amongst manufacturers, retailers, and consumers. | 3, 7 |
| Gather information on implementer’s experience engaging manufacturers to pursue upstream incentives for NEEM+ homes. | 5, 6, 11, 16 |
| Gather recommendations to address barriers and increase adoption of NEEM+ homes. | 17, 18, 19, 20 |

| | |
|---|-------|
| Determine whether the existing NEEM program was leveraged effectively to introduce the NEEM+ specification. | 1, 10 |
| Determine market trends and consumer preferences in manufactured homes industry. | 2, 4 |

1.3 Interviewer Information

Interviewer instructions are in *italics*.

2. Interview Guide

| | |
|--------------|--|
| Interviewee | |
| Company | |
| Position | |
| Phone Number | |
| Interviewer | |
| Date & Time | |

2.1 Introduction

Thank you for taking the time to talk to me today. As you know, Energy 350 is conducting an evaluation of the Northwest Energy Efficiency Alliance's manufactured housing program. The purpose of this evaluation is to provide feedback on the effectiveness of the program to date and to provide recommendations for modifications going forward. We very much appreciate the input you've already given us to date and appreciate you taking the time for this interview today.

Before we get started, would you mind if I recorded our interview to facilitate my notetaking? And do you have any questions for me before we get started?

2.2 Background and Market Overview

1. Can you start by describing Northwest Energy Work's role in administering the Energy Star certification program and what your role has been with the introduction of the Energy Star with NEEM+ certification?
2. How would you describe the current state of the market for Energy Star with NEEM+ homes?
3. For each market segment, please tell me the percent that is aware of Energy Star with NEEM+... Let's start with Consumers. How about Retailers? And how about Manufacturers?
 - a. Are influential retailers and manufacturers aware of NEEM+?
4. Overall what do you see as the market trends in the manufactured homes industry? Market growth (are manufactured homes seen as more viable substitute for site built homes)? Consumer types? Consumer preferences?
 - a. Is there any evidence that manufacturers are changing their view of how manufactured homes fit into the marketplace? For example, are manufacturers focusing more on quality or other features to attract different consumers?

2.3 Barriers to NEEM+

5. Can you please describe your role in developing the NEEM+ Specification?

- a. How did you engage manufacturers, retailers, and consumers during the development of the NEEM+ Specification? *Probe to see how consumer preferences were included in the specification development.*
 - b. Are there aspects of the NEEM+ specification that manufacturers were more resistant to? If so, which aspects?
 - c. Do you feel the NEEM+ Specification lacks any key features or requirements? If so, what? *Probe about ductless heat pumps.*
6. What was your experience with getting manufacturers to build Energy Star with NEEM+ homes?
 - a. What do you see as the biggest barriers for manufacturers?
 - b. What do you see as the biggest upsides for manufacturers?
7. What was your experience with getting retailers interested in selling Energy Star with NEEM+ homes?
 - a. What do you see as the biggest barriers for retailers?
 - b. What do you see as the biggest upsides for retailers?

2.4 Program Effectiveness

8. On a scale of 1-4, 1 being not at all effective, 2 being somewhat ineffective, 3 being somewhat effective, and 4 being highly effective, how effective would you rate NEEA's approach overall to increase the number of Energy Star with NEEM + homes in the marketplace? *Probe as to why the respondent made their choice. We want to understand what the respondent thinks and why.*
9. What elements of the NEEA program (marketing, specification development, upstream incentives, manufacturer and retailer outreach) had the biggest influence on the program's effectiveness?
 - a. What elements of the NEEA program were the least effective?
 - b. Was NEEA's overall approach appropriate given the market situation?
10. Have you been able to leverage the existing Energy Star infrastructure with the introduction of Energy Star with NEEM+? If so, how?
11. On a scale of 1-4, 1 being not at all effective, 2 being somewhat ineffective, 3 being somewhat effective, and 4 being highly effective, how effective were NEEA upstream incentives in influencing manufacturer decisions to build Energy Star with NEEM+ homes? *Probe as to why the respondent made their choice. We want to understand what the respondent thinks and why.*
12. On that same scale of 1-4, how effective have downstream incentives been at influencing consumer behavior to buy Energy Star and Energy Star with NEEM+ homes? *Probe as to why the respondent made their choice. We want to understand what the respondent thinks and why.*

13. On that same scale of 1-4, how effective have downstream incentives been at influencing retailer behavior to sell Energy Star and Energy Star with NEEM+ homes? *Probe as to why the respondent made their choice. We want to understand what the respondent thinks and why.*
14. On that same scale of 1-4, how effective have SPIFF incentives been at influencing retailer behavior to sell Energy Star and Energy Star with NEEM+ homes? *Probe as to why the respondent made their choice. We want to understand what the respondent thinks and why.*
15. On that same scale of 1-4, how effective have SPIFF incentives been at influencing retailers to confirm incentive paperwork be submitted for Energy Star and Energy Star with NEEM+ homes? *Probe as to why the respondent made their choice. We want to understand what the respondent thinks and why.*
16. Which point in the supply chain do you think incentives are most effective to increase the adoption of Energy Star with NEEM+ Homes?

2.5 Program recommendations

17. What recommendations do you have to increase the uptake of Energy Star with NEEM+ homes?
18. Is additional marketing needed? If so, what?
19. Are additional incentives needed? If so, what?
20. Are any changes to the specification needed? If so, what?
21. Is there anything else that you'd like me to know that we haven't discussed?

NEEA Manufactured Homes Program Evaluation Interview Guide – NEEA

3. *INSTRUMENT INFORMATION*

3.1 Overview of Data Collection Activity

| Descriptor | Population |
|-----------------------------|-------------------------------------|
| Instrument Type | In-depth Interview Guide – NEEA |
| Collection Method | In-person Interview |
| Estimated Time to Complete | 45 minutes |
| Population Description | NEEA Manufactured Home Team Members |
| Sampling Strata Definitions | N/A |
| Population Size | 4 |
| Completion Goal | 4 |
| Researching Firm | Energy 350 |

3.2 Research Objectives and Associated Questions

| Research Objectives | Associated Questions |
|---|----------------------|
| Determine perceived effectiveness of NEEA's Manufactured Homes program in increasing adoption of the NEEM+ specification to the market. | 1, 2, 3 |
| Determine effectiveness of downstream utility incentives, including both consumer and retailer incentives. | 12 |
| Determine market influence of the NEEM+ standard. | 2, 7 |
| Determine successfulness of the NEEM+ specification, measured by adoption by manufacturers and alignment with consumer preferences. | 2, 3, 7 |
| Determine the barriers to designing, constructing, promoting, and selling NEEM+. | 4, 5, 8 |
| Assess perceived awareness of the NEEM+ standard amongst manufacturers, retailers, and consumers. | 7 |
| Gather information on NEEA's experience engaging manufacturers to pursue upstream incentives for NEEM+ homes. | 8, 9, 10, 11 |
| Gather recommendations to address barriers and increase adoption of NEEM+ homes. | 14, 16 |
| Determine whether the existing NEEM program was leveraged effectively to introduce the NEEM+ specification. | 2, 3, 6 |
| Determine market trends and consumer preferences in manufactured homes industry. | 13 |

3.3 Interviewer Information

Interviewer instructions are in *italics*.

4. Interview Guide

| | |
|--------------|--|
| Interviewee | |
| Company | |
| Position | |
| Phone Number | |
| Interviewer | |
| Date & Time | |

4.1 Introduction

Thank you for taking the time to talk to me today. As you know, Energy 350 is conducting an evaluation of the NEEA's manufactured homes program. The purpose of this evaluation is to provide feedback on the effectiveness of the program to date and to provide recommendations for modifications going forward.

Before we get started, would you mind if I recorded our interview to facilitate my notetaking? And do you have any questions for me before we get started?

4.2 Background and Overall Assessment

1. Could you please start by telling me how long you've been involved with the manufactured homes program and what your role has been?
 - a. What has been your specific involvement with NEEA's Energy Star with NEEM+ efforts?
2. In your view, have NEEA's Energy Star with NEEM+ efforts been successful?
 - a. Which aspects have been the most successful? Which one aspect was the most important
 - b. Which aspects have been the least successful?
 - c. Which one aspect most significantly slowed the program's progress? (if it makes sense) Why did this happen?
3. On a scale of 1-4, 1 being not at all effective, 2 being somewhat ineffective, 3 being somewhat effective, and 4 being highly effective, how effective would you rate NEEA's efforts to increase the number of Energy Star with NEEM + homes in the marketplace?
4. What do you see as the major barriers to further increase the market share of Energy Star with NEEM+ homes? *Be listening for and ready to probe about barriers from the Logic Model including limited product availability, high first cost, manufacturer know-how, and an unclear value proposition. Also listen for variations of existing barriers or new barriers.*

5. On a scale of 1-4, 1 being not at all concerning, 2 somewhat unconcerning, 3 being somewhat concerning, and 4 being highly concerning, how concerning do you find the first cost of NEEM+ homes? *Probe to see why first cost is or is not of concern.*
6. How has existing Energy Star/NEEM program infrastructure been utilized for the introduction of Energy Star with NEEM+?
 - a. How could the existing infrastructure have been better utilized?
7. On a scale of 1-4, 1 being not at all aware, 2 being somewhat unaware, 3 being somewhat aware, and 4 being highly aware, how aware do you think Northwest manufacturers, retailers, and consumers are of Energy Star with NEEM+? *Seek answers for each sector type.*
8. Can you please describe your role in developing the NEEM+ Specification?
 - a. How did you engage manufacturers, retailers, and consumers during the development of the NEEM+ Specification? *Probe to see how consumer preferences were included in the specification development*
 - b. Are there aspects of the NEEM+ specification that manufacturers were more resistant to? If so, which aspects?
 - c. Do you feel the NEEM+ Specification lacks any key features or requirements? If so, what? *Probe about ductless heat pumps.*

4.3 Incentive Effectiveness

9. On a scale of 1-4, 1 being not at all effective, 2 being somewhat ineffective, 3 being somewhat effective, and 4 being highly effective, how effective were NEEA upstream incentives when trying to convince manufacturers to build Energy Star with NEEM+ homes?
10. What motivated NEEA's decision to pursue upstream incentives as a primary market intervention strategy?
11. How did NEEA arrive at a decision to set the upstream incentive at \$1,000/home?
12. What motivated NEEA's decision not to pursue midstream or downstream incentives for Energy Star with NEEM+ homes?

4.4 Industry Future and Program Recommendations

13. What trends have you observed in the manufactured homes industry?
14. What intervention strategy do you think would be the most effective in further increasing adoption of Energy Star with NEEM+ homes?
15. Do you have any recommendations for additional marketing materials that would enhance adoption of Energy Star with NEEM+?
16. Is there anything else you'd like me to know that we haven't discussed?

NEEA Manufactured Homes Program Evaluation Interview Guide – Manufacturer

5. INSTRUMENT INFORMATION

5.1 Overview of Data Collection Activity

| Descriptor | Population |
|-----------------------------|--|
| Instrument Type | In-depth Interview Guide – Manufacturer |
| Collection Method | Phone |
| Estimated Time to Complete | 20 minutes, with 10 minutes additional questions for manufacturers who have more time |
| Population Description | Manufacturers of manufactured homes in the NW with exposure to and experience with the Energy Star with NEEM + specification |
| Sampling Strata Definitions | N/A |
| Population Size | 9 |
| Completion Goal | 6 |
| Researching Firm | Energy 350 |

5.2 Research Objectives and Associated Questions

| Research Objectives | Associated Questions |
|---|----------------------|
| Determine perceived effectiveness of NEEA’s Manufactured Homes program in increasing adoption of the NEEM+ specification to the market. | 7, 14 |
| Determine market influence of the NEEM+ standard. | 3, 8 |
| Determine successfulness of the NEEM+ specification, measured by adoption by manufacturers and alignment with consumer preferences. | 3, 6, 8 |
| Determine the barriers to designing, constructing, promoting, and selling NEEM+. | 4, 5, 12, 13 |
| Assess perceived awareness of the NEEM+ standard amongst manufacturers. | 3, 7 |
| Gather recommendations to address barriers and increase adoption of NEEM+ homes. | 9, 7 |
| Determine whether the existing NEEM program was leveraged effectively to introduce the NEEM+ specification. | 7, 14 |
| Determine market trends and consumer preferences in manufactured homes industry. | 1, 2, 3, 10, 11 |

5.3 Interviewer Information

Interviewer instructions are in *italics*.

6. Interview Guide

| | |
|--------------|--|
| Interviewee | |
| Company | |
| Position | |
| Phone Number | |
| Interviewer | |
| Date & Time | |

6.1 Introduction

Thank you for taking the time to talk to me today. For background, Energy 350 is conducting an evaluation of the Northwest Energy Efficiency Alliance's (aka NEEA) manufactured housing program. In case you aren't familiar with the Northwest Energy Efficiency Alliance, they are a non-profit group funded by BPA and other utilities to promote energy efficiency throughout the Pacific Northwest. They develop programs such as the Energy Star with NEEM+ program for manufactured homes. The purpose of this conversation is to collect feedback on the effectiveness of NEEA's efforts to date and to provide recommendations for the future of the Energy Star with NEEM+ manufactured homes program.

Before we get started, would you mind if I recorded our interview to facilitate my notetaking? And do you have any questions for me before we get started?

6.2 Interview questions

1. Can you start off by describing the various types or lines of homes you build? *Probe to see what differentiates these lines. Is it price, features, size, or something else?*
 - a. What portion of the manufactured home market do you target? *Try to see if they are going after the higher-end, mid-range, or most cost-conscious customers.*
2. How often do you change the features in your homes?
 - a. How often do you introduce entirely new lines of homes?
3. Have you built or considered building homes to the Energy Star with NEEM+ specification? *Read each respondent to ensure they seem to understand what NEEM+ is and understand the difference between NEEM and NEEM+. If necessary, give them a quick refresher on the difference.*
 - a. What factors influenced your decision to build or not build an Energy Star with NEEM+ demo home?
 - b. What factors influenced your decision to continue to produce or stop producing Energy Star with NEEM+ homes?
 - c. Compared to other new homes you have added to your lines, how challenging was adding NEEM+ ?

4. What are the greatest barriers to building homes to Energy Star with NEEM+? *Probe to understand if barriers are technical, market, lack of awareness, cost, etc*
5. Are there portions of the Energy Star with NEEM+ specification that add significant incremental cost or pose other significant barriers?
6. What benefits do you see in building Energy Star with NEEM+ homes? *Probe to understand why the mentioned benefits are important to them?*
7. Are you aware of NEEA's manufacturer incentives for Energy Star NEEM+ homes?
 - a. *If yes, On a scale of 1-4, 1 being not at all influential, 2 being somewhat uninfluential, 3 being somewhat influential, and 4 being highly influential, how influential was the presence of the incentives in your decision to try producing Energy Star with NEEM+ homes?*
 - b. What incentive type (manufacturer, retailer, consumer) do you think is most effective in increasing the number of Energy Star with NEEM+ homes sold?
8. How likely are you to build homes to Energy Star with NEEM+ in the future?
9. What key factors would influence you to produce Energy Star with NEEM+ homes?
 - a. Increased incentives?
 - b. Increased consumer demand?
 - c. Specification changes?

6.3 Additional questions as time permits

10. Where do you see the industry going?
11. Do you see any changes in the consumer market or trends in what consumers are looking for?
 - a. Are consumers putting more emphasis on energy efficiency?
12. *For manufactures who have utilized NEEM+ incentives*, do you think the Energy Star with NEEM+ incentive provided to manufacturers is resulting in reduced costs for retailers and consumers?
13. What is the price premium for building a NEEM+ home compared to Energy Star and a HUD Code home?
14. *For Kit Homebuilders West*, how did the automatic upgrade of the Energy Star homes to Energy Star with NEEM+ impact your ability to build to the Energy Star with NEEM+ specification? Did that experience impact how you price Energy Star with NEEM+ homes?
15. Is there anything else that you'd like me to know that we haven't discussed?

NEEA Manufactured Homes Program Evaluation Interview Guide – Retailer

7. INSTRUMENT INFORMATION

7.1 Overview of Data Collection Activity

| Descriptor | Population |
|-----------------------------|---|
| Instrument Type | In-depth Interview Guide – Retailer |
| Collection Method | Phone |
| Estimated Time to Complete | 15 minutes, with 10 minutes of additional questions for retailers with more time |
| Population Description | Retailers who sell manufactured homes, including those who sell NEEM/NEEM+ and those who do not |
| Sampling Strata Definitions | Low, medium, and high sales volume |
| Population Size | 60 |
| Completion Goal | 14 |
| Researching Firm | Energy 350 |

7.2 Research Objectives and Associated Questions

| Research Objectives | Associated Questions |
|---|----------------------|
| Determine perceived effectiveness of NEEA's Manufactured Homes program in increasing adoption of the NEEM+ specification to the market. | 5, 6 |
| Determine effectiveness of downstream utility incentives, including both consumer and retailer incentives. | 7, 8, 9, 11, 12 |
| Determine market influence of the NEEM+ standard. | 3, 4, 13 |
| Determine successfulness of the NEEM+ specification relative to its alignment with consumer preferences. | 1, 5 |
| Determine the barriers to promoting and selling NEEM+. | 11, 13 |
| Assess perceived awareness of the NEEM+ standard amongst retailers and consumers. | 3, 4, 13, 15, 16 |
| Gather recommendations to address barriers and increase adoption of NEEM+ homes. | 12, 14 |
| Determine whether the existing NEEM program was leveraged effectively to introduce the NEEM+ specification. | 5, 6 |
| Determine market trends and consumer preferences in manufactured homes industry. | 1, 2, 17, 19 |

7.3 Interviewer Information

Interviewer instructions are in *italics*.

8. Interview Guide

| | |
|--------------|--|
| Interviewee | |
| Company | |
| Position | |
| Phone Number | |
| Interviewer | |
| Date & Time | |

8.1 Introduction

Thank you for taking the time to talk to me today. For background, Energy 350 is conducting an evaluation of the Northwest Energy Efficiency Alliance's (aka NEEA) manufactured housing program. In case you aren't familiar with the Northwest Energy Efficiency Alliance, they are a non-profit group funded by BPA and other utilities to promote energy efficiency throughout the Pacific Northwest. The purpose of this conversation is to collect feedback on the effectiveness of NEEA's manufactured homes efforts to date and to provide recommendations for the future of their manufactured homes program.

Before we get started, would you mind if I recorded our interview to facilitate my notetaking? And do you have any questions for me before we get started?

8.2 Background knowledge

1. What energy efficiency options do you currently offer for the homes you sell?
 - a. *Probe if something different than Energy Star/Energy Star with NEEM+ and confirm terminology. E.g Do you offer Energy Star certified by Northwest Energy Works homes?*
2. On a scale of 1-4, 1 being not at all important, 2 being somewhat unimportant, 3 being somewhat important, and 4 being highly important, how important is energy efficiency to your average customer?
3. What key features are your customers looking for? What percentage of customers are interested in heat pumps and cooling in their home?
4. Are you familiar with the Energy Star with NEEM+ program?
 - a. *If yes, can you tell me what your experience has been with Energy Star with NEEM+?*
 - b. *If yes, have you considered selling homes that meet Energy Star with NEEM+? What factors would you say have affected this decision? Are there any aspects of the Energy Star with NEEM+ homes that particularly drives*

your interest in selling them? Do you have any major concerns about selling Energy Star with NEEM+?

- c. *If no*, the Energy Star with NEEM+ is a third-party certification program for manufactured homes that maximizes energy efficiency, quality, and comfort through the use of advanced technologies like LED lighting, ENERGY STAR appliances, high performance insulation, and smart thermostats.

8.3 For retailers that sell Energy Star and/or Energy Star with NEEM+

- 5. *For retailers who have already sold NEEM+ homes:*
 - a. What has been your experience selling Energy Star with NEEM+? *Probe further into the what made it easy or hard to sell Energy Star with NEEM+ homes.*
 - b. How would you describe the transition from Energy Star to Energy Star with NEEM+?
- 6. Do you use any of the NEEM marketing materials for selling Energy Star/Energy Star with NEEM+ homes? *Ask Energy Star for retailers that sell only Energy Star, NEEM+ for retailers that sell NEEM+*
 - a. *If yes*, On a scale of 1-4, 1 being not at all effective, 2 being somewhat ineffective, 3 being somewhat effective, and 4 being highly effective, how effective would you rate these materials?
 - b. *If yes*, what changes could be made to these materials to make them more effective?
 - c. *If no*, Why not? What marketing materials would be useful to help sell these homes?
- 7. On a scale of 1-4, 1 being not at all effective, 2 being somewhat ineffective, 3 being somewhat effective, and 4 being highly effective, how effective are the customer rebates provided by utilities in increasing the number of Energy Star/Energy Star with NEEM+ homes sold? *Ask Energy Star for retailers that sell only Energy Star, NEEM+ for retailers that sell NEEM+.*
- 8. Have you received a salesperson incentive fund (aka SPIF) for selling Energy Star/Energy Star with NEEM+ homes? *Ask Energy Star for retailers that sell only Energy Star, NEEM+ for retailers that sell NEEM+.*
 - a. *If yes*, how did that impact your approach to sales? Did it change what you emphasize with customers?
- 9. On that same scale of 1-4, how effective are SPIFs in increasing the number of Energy Star and Energy Star with NEEM+ homes sold?
- 10. On that same scale of 1-4, how effective are SPIF incentives in ensuring utility incentive paperwork is completed for Energy Star and Energy Star with NEEM+ homes sold?
- 11. What do you see as the barriers to selling Energy Star with NEEM+ homes?

- a. What NEEA support (Energy Star with NEEM+ marketing materials, outreach, incentives) are work working well to remove barriers?
 - b. What additional NEEA support is needed to navigate the barriers to selling NEEM+ homes?
- 12. Overall, what would help you start selling or sell more Energy Star with NEEM+ homes?
 - a. Are further incentives needed?
- 13. What direction do you see the manufactured housing market heading?
 - a. Have you noticed any recent trends in consumer preferences such as an increased focus on quality, timely delivery, resale value, energy efficiency?

8.3.1 For retailers that don't sell Energy Star homes

- 14. Have you considered selling Energy Star homes?
 - a. *If yes*, what's kept you from selling them? What would be needed for you to sell Energy Star homes? Do you sell any other energy efficiency type of manufactured homes?
 - b. *If no*, why not? What would need to change for you to sell Energy Star homes?
- 15. What do you see as the barriers to selling Energy Star homes? *Probe to see if this is related to items such as too little interest / awareness from consumers, limited or undependable supply from manufacturers, creates too many additional product options, too high of cost?*
- 16. Are you aware of the available utility incentives for Energy Star homes?
- 17. On a scale of 1-4, 1 being not at all effective, 2 being somewhat ineffective, 3 being somewhat effective, and 4 being highly effective, how effective are the customer rebates provided by utilities at driving customer demand for Energy Star homes? *If not effective, probe why.*
- 18. What direction do you see the manufactured housing market heading?
 - a. Have you noticed any recent trends in consumer preferences such as an increased focus on quality, timely delivery, resale value, energy efficiency?

8.3.2 Questions to ask if time permits

- 1. How do you typically communicate customer preferences to manufacturers? How do manufacturers learn what customers are looking for?
- 2. What influence do you have on what your customers ultimately purchase? Is it typically driven by the customer or are you suggesting features to add?
- 3. What percentage of your customers are aware of Energy Star? What about Energy Star with NEEM+?
- 4. Are manufacturer incentives being passed through to consumers?

5. Is there anything else that you'd like me to know that we haven't discussed?
6. Can you describe the different groups of customers you attract? What distinguishes one group from another in terms of what they are attracted to?

NEEA Manufactured Homes Program Evaluation Interview Guide – Utilities

9. INSTRUMENT INFORMATION

9.1 Overview of Data Collection Activity

| Descriptor | Population |
|-----------------------------|---|
| Instrument Type | In-depth Interview Guide – Utilities |
| Collection Method | Phone/In-person depending on location |
| Estimated Time to Complete | 30 minutes |
| Population Description | Utilities that offer incentive programs for Energy Star and/or Energy Star with NEEM+ homes |
| Sampling Strata Definitions | N/A |
| Population Size | 20+ |
| Completion Goal | 9 |
| Researching Firm | Energy 350 |

9.2 Research Objectives and Associated Questions

| Research Objectives | Associated Questions |
|---|----------------------|
| Determine perceived effectiveness of NEEA's Manufactured Homes program in increasing adoption of the NEEM+ specification to the market. | 3, 6, 7, 10 |
| Determine effectiveness of downstream utility incentives, including both consumer and retailer incentives. | 1, 8, 9, 11 |
| Determine market influence of the NEEM+ standard. | 2, 5, 6, 7 |
| Assess perceived awareness of the NEEM+ standard amongst manufacturers, retailers, and consumers. | 5, 12 |
| Gather recommendations to address barriers and increase adoption of NEEM+ homes. | 13, 14 |
| Determine whether the existing NEEM program was leveraged effectively to introduce the NEEM+ specification. | 1, 3, 6, 7 |
| Determine market trends and consumer preferences in manufactured homes industry. | 4 |

9.3 Interviewer Information

Interviewer instructions are in *italics*.

10. Interview Guide

| | |
|--------------|--|
| Interviewee | |
| Company | |
| Position | |
| Phone Number | |
| Interviewer | |
| Date & Time | |

10.1 Introduction

Thank you for taking the time to talk to me today. For background, Energy 350 is conducting an evaluation of the Northwest Energy Efficiency Alliance's manufactured housing program. This program includes the development of a MH specification that is more

energy efficient than the current Energy Star specification, manufacturer incentives, technical training, and marketing materials. We're specifically focused on how effective the program has been over the last ~3 year. The purpose of this evaluation is to provide feedback on the effectiveness of the program to date and to provide recommendations for modifications going forward.

Before we get started, would you mind if I recorded our interview to facilitate my notetaking? And do you have any questions for me before we get started?

10.2 Background

1. Could you please describe your utility's experience offering incentives for manufactured homes over the last 5 years?
2. What is the value that a manufactured homes program brings to your utility? Is it the energy savings? Or a means to serve hard to reach markets? ***Make sure to probe to see if it is about providing incentive options for underserved customers.***
3. What elements of NEEA's program did you rely on in implementing your program? *Marketing materials, specification, technical assistance from Northwest Energy Works, etc*

10.3 Key market drivers and trends

4. What do you see as the market trends in the manufactured home industry? Market growth? Consumer type? Consumer preferences?

10.4 Experience with NEEM+

5. Are you aware of the Energy Star with NEEM+ certification?
 - a. Do you participate in the Energy Star with NEEM+ program in any way?
 - b. Do you offer incentives for Energy Star with NEEM+ homes?

- c. What, if any, concerns do you have the Energy Star with NEEM+ homes program?
- 6. *For utilities offering NEEM+ incentives, how difficult was it to transition from Energy Star to also offering incentives for Energy Star with NEEM+? You may need to let interviewees know that our reference to Energy Star is synonymous with NEEM 1.1. Also, our reference to Energy Star with NEEM+ is synonymous to NEEM 2.0*
 - a. What made that transition difficult or easy?
 - b. Were you able to leverage existing Energy Star incentive infrastructure to introduce NEEM+ incentives?
- 7. *For utilities offering only Energy Star incentives, have you considered introducing NEEM+ incentives?*
 - a. Why haven't you introduced incentives for Energy Star with NEEM+?
 - b. How has existing program infrastructure affected this consideration?

10.5 Effectiveness of Energy Star with NEEM+ demand side management programs

- 8. On a scale of 1-4, 1 being not at all effective, 2 being somewhat ineffective, 3 being somewhat effective, and 4 being highly effective, how effective have downstream incentives been at influencing consumer behavior?
- 9. On a scale of 1-4, 1 being not at all effective, 2 being somewhat ineffective, 3 being somewhat effective, and 4 being highly effective, how effective have downstream incentives been at influencing retailer behavior?
- 10. On that same scale of 1 - 4, how effective would you rate NEEA's efforts overall (which include marketing, upstream incentives, and support from Northwest Energy Works) to increase the number of Energy Star with NEEM + homes in the marketplace?
- 11. *For utilities with SPIF incentives, how effective have the sales person incentive fund (SPIF) incentives been at encouraging sales of NEEM+ homes? Can you describe your experience offering this incentive type?*
- 12. On a scale of 1-4, 1 being not at all aware, 2 being somewhat unaware, 3 being somewhat aware, and 4 being highly aware, how aware are retailers and consumers of available incentives for NEEM+? *Must rate each separately.*

10.6 Barriers and recommendations

- 13. What do you see as the barriers to increasing market adoption of NEEM+ homes?
- 14. What recommendations do you have to increase the uptake of NEEM+ homes?
- 15. Is there anything else you'd like me to know that we haven't discussed?

10.7 Questions for non-participating Utilities

- 16. Could you please describe your experience offering incentives for manufactured housing over the last 5 years?

17. Why hasn't your utility participated or had better incentive uptake?
 - a. Lack of manufactured homes in territory?
 - b. Lack of marketing materials?
 - c. Other barriers?
18. Are you aware of the NEEM+ specification?
19. What would be needed for your utility to offer MH incentives?
 - a. Marketing materials?
 - b. Program infrastructure?
 - c. Other?

10.8 Added Questions from NEEA

20. Do you perceive Manufactured Homes as an underserved market when it comes to energy efficiency programs?
21. Do you feel NEEA is supporting your utility by assisting with the Manufactured Homes program?
22. How well has NEEA done overall with meeting your utility's needs?

8 Appendix B - Interview Responses

| # | Market Niche | How often are new features added? | Build or sell NEEM+? | Details of NEEM+ Experience | Why NEEM+ | | | Will you continue to produce NEEM+? | Challenging to build to spec? | Greatest barriers to building | | | Portions of the spec that increase cost or pose significant barriers | Benefits of NEEM+ | | Incentive Effectiveness Rank | Most effective incentive type | What would influence you to produce more NEEM+? | Industry Trends | Other comments |
|-----|--------------|---|----------------------|--------------------------------|--|---|---|-------------------------------------|-------------------------------|---|---|---|---|---|---|------------------------------|--|---|--|---|
| | | | | | 1 | 2 | 3 | | | 1 | 2 | 3 | | Customer | Company | | | | | |
| M 1 | High | -New features every year - Don't add new lines often | Yes | Has built multiple NEEM+ homes | Were given the incentives to upgrade their homes | Was easy and low cost since they already build all homes to Energy Star | | Yes | No | Savings don't justify incremental cost | Customers don't see the benefits (all invisible) | Small technical challenge: Sealing around windows/ doors, insulation on headers | Everything adds cost, windows are biggest cost. Floor insulation adds labor | Benefit is to the customer that gets a more efficient home. | No direct benefit to them as a company. | 4 | Sales person incentive. Need to get customer excited and a good sales person can do this. | Committed to the program at this point. Presence of NEEA incentive will affect their pricing and consequently the number of homes sold. | - Higher quality, larger homes, dealer doing more add on activities (e.g. garages) | - Only selling NEEM+ in 3 NEEA states, not the other 7 states the operate in. Pass on savings from incentive at least partially to consumers - Brady has been a great resource |
| M 2 | Middle | (Didn't ask due to time constraints) | Yes | Built demo home(s) | Market ability: gives something new to advertise | PNW consumers care about energy efficiency | | Yes | No | Incremental cost and whether it pays back | Initial challenge with window cost and supply chain, but this issue is resolved | Consumer demand | Windows, but have this resolved now. No remaining technical barriers. | Lower bills, more comfortable | Want to be known as the best, differentiate their products from others. | 4 | Customer incentives through utilities. Retailer needs to be involved and know the programs | Manufacturer incentives, customer demand | Overall housing shortage, embracing MH as an option. Stigma fading, moving toward the smart home of the millennial that looks like a stick built home. | They need to do more as an industry to expose product to the public, reduce stigma. Efficiency is a step in the right direction. Should have a MH display home in every Home Depot lot. |

| | | | | | | | | | | | | | | | | | | | | |
|-----|-------------------------------|---|-----|--|--|--|--|----|-----|--|-------------------------|--|--|--|--|---------------|--|--|--|---|
| M 3 | Middle / High-middle | - Make ongoing tweaks - Big changes every 18-24 months | Yes | Built demo home(s) but decided not to pursue NEEM+ | Because Brady asked them to and was convincing | | | No | Yes | Effect on their plant processes. Trying to reduce customization, not increase it | Cost | Lack of consumer demand | - Floor insulation required them to change their floor framing technique. - Increased heel heights on roof structure - Needed customized materials. Windows were a particular challenge. | Consumers get lower energy bills. Challenge is in getting hard numbers to present ROI to consumers | | 4 | Customer incentives are most effective. Retailer incentives don't make it to customer. Manufacturer incentives are also nice. | - Customer demand - If they could put a package together that didn't affect their production line (no specialty products) | People are looking for energy efficiency, want things like Energy Star. Also water efficiency. | They care about energy efficiency and are willing to try things, but can't do it if the market isn't there. |
| M 4 | Entry level up to high middle | - Minor features are changed regularly, monthly. - New line every 2 years, depending on market | Yes | Built demo home(s), decided not to pursue NEEM+ | As a favor to Brady | | | No | No | Incremental cost (they have a low end product primarily). | Lack of consumer demand | Turnover in plant. Having trouble keeping staff. Don't want to do anything to screw up production line | - Increased insulation in attic - Windows (3-4 week lead time) - No specific pain points, but not worth the changes if volume is not there - Production line complications: "if you build 1 a month or 1 every two months, it's nothing but a giant headache" | - Didn't ask as negative on NEEM+ overall | | Didn't answer | - The incentives were a sticking point for them: it was clear that they were supposed to pass the incentive through. That's not really an incentive. Incentives are important to them, but they need volume to make it work. | - Education of the consumer. - If the consumer asks for it, they will build it. | - Industry pretty steady | - "If we had retailers in here saying we had to have this option to compete, we would do it in a heartbeat. No one is calling asking for it" - Did used to ship DHPs with homes, but shipping was too costly. Now ship 5-15% of HUD homes wired for DHPs. - Energy Star has strong market brand, hard to sell above that. |

| | | | | | | | | | | | | | | | | | | | | | |
|--------|-------|---|-----|--------------------------------|---|--|--|-----|----------|----------------------------|--|--|--|--|--|--|---|---|---|--------------------------------------|--|
| M 5 | Whole | - Quarterly small changes - Rarely add new product line (every few years). More common is a new package of features, e.g. "Farmhouse Style" that can be added to any home | Yes | Has built multiple NEEM+ homes | Being able to enter WA market places that require site built code equivalency | Being innovative, being able to have the latest energy technology in their homes | Brand and reputation is as a leader in building technologies and design. | Yes | Modestly | Effect on plant processes. | | | | -Windows and flashing were the two biggest technical and cost issues - Smart thermostat | Lower cost of ownership, more affordable to buy and own than equivalent site built home. | | 3 | Needs to be a combination. Manufacturer incentives help offset cost and increase their ability to sell the upgrade to the customer. Sales person incentives were very effective, but new retailer structures may not allow this to work anymore. Customer incentives from utilities are very effective. | They were given complementary smart thermostats previously. If a vendor partnered with NEEA to supply these again that would help | (Didn't ask due to time constraints) | |
|--------|-------|---|-----|--------------------------------|---|--|--|-----|----------|----------------------------|--|--|--|--|--|--|---|---|---|--------------------------------------|--|

Figure 10: Manufacturer Interview Responses

| # | Has effort been successful? | Most successful aspects | Least successful aspects | Barriers to NEEM+ | Leveraging Existing Program Infrastructure | Upstream Incentive Effectiveness | Downstream Incentive Effectiveness | Specification development process | Spec missing features? | Recommendations for improvement | Market Trends | NEEA Effectiveness Ranking | How concerning is first cost? | Awareness | | | Manufacturer Incentive effectiveness |
|----|--|--|--|--|---|--|---|---|------------------------|--|--|----------------------------|-------------------------------|-----------|-----------|---------------|--------------------------------------|
| | | | | | | | | | | | | | | Consumers | Retailers | Manufacturers | |
| N1 | Too soon to say. In some areas, yes, but not yet as a whole program. | - Spec development effort - Early testing and demo projects | - Timing of effort was out of sequence. Focused too much on manufactures, not enough on consumer demand. - Manufacturer incentives didn't have market influence they had thought. | - Consumer awareness and demand - First cost for consumers - Manufacturer's busyness | - Fully leveraged existing program structure - Everything is through Brady and Brady does great work, but is only a single person. Could another third party of helped and given an objective point of view? | - NEEA focuses upstream, thought incremental cost was the biggest barrier. Hoped cost savings would trickle down | - Have considered retailer incentives, but not sure SPIF incentives are effective with current retailer structure - Doesn't think utility incentives have been effective, low uptake | - Technical work between Christopher and Brady, informed by BPA high performance spec - Consumers not considered in spec development | Ductless heat pumps | - Plan for 2019/2020 is to work jointly with a retailer and manufacturer to get them both on board. - Think each is waiting for the other to take the first step. - Additional marketing could help (planning to do customer testimonials) | - Affordable, high quality housing option. - High sales volume - Potential future HUD change | 2 | 3 | 1.5 | 2 | 3 | 2 |
| N2 | Still early in program life, feels good about what they've done. | - Others think timing was slow to start, but it was what the program needed. - Have marketing materials, spec in place now so that they can seize opportunities - Campaign response has been good (people are starting to ask for NEEM+) | - Pending HUD change made them move fast at first and then pivot | - Incremental cost. Windows are big cost element/barrier. - Consumer awareness of NEEM+ and its value - NEEM+ is invisible | - Seems like the program is identical. - It would be helpful to have more Bradys | - The upstream incentive is not the only driver for manufacturers, evidenced by low uptake | - Currently looking at targeting retailers. Can NEEA do something (other than SPIFs) to motivate individual sales people? | N/A | Ductless heat pumps | - Top thing: motivating sales people with SPIF or other incentives - Continue increasing consumer demand - Wish list: video testimonials, PR (earned media, influencer marketing), event bringing manufacture and retailer together | - Manufacturers are busy - Manufacturers looking for ways to differentiate themselves amongst competitors | 3 | 3 | 2 | 3 | 3 | |

| | | | | | | | | | | | | | | | | | |
|----|---------|---|---|--|---|---|---|--|---|--|--|---|---|-----------------|-----------------|-----------------|---|
| N3 | Yes | <ul style="list-style-type: none"> - Good job framing up opportunities, not a huge amount of savings in this program. - Good use of existing infrastructure - Engagement with manufacturers - Good job of moving fast out of the gate and then maintaining manufacturer attention when HUD code shift went away | <ul style="list-style-type: none"> - Internal NEEA capacity - HUD code shift (although thinks long-term effectiveness will still be the same) | <ul style="list-style-type: none"> - Awareness and value proposition to manufacturers - Consumers need to demand it | <ul style="list-style-type: none"> - Existing infrastructure leveraged well, already have relationships through NEW, Energy Star brand recognition | <ul style="list-style-type: none"> - Product needs to exist for someone to buy it, they were trying to reach cost parity for builder, take away risk | <ul style="list-style-type: none"> - Downstream incentives should be left to utilities, could maybe do a co-branded effort in one territory - Could do a retailer incentive | N/A | <ul style="list-style-type: none"> - 4 to 5 year window before next HUD code change presents opportunity to evolve spec. Including HVAC/water heating, controls, triple pane windows would increase savings a lot. | <ul style="list-style-type: none"> - Replace Energy Star with NEEM+ going forward (may be sooner opportunity than HUD code update) - Update NEEM+ Spec - Leverage Energy Star Most Efficient - Have new third tier ready when everything ratchets down | <ul style="list-style-type: none"> - Market has been in recovery, economy good. Will this persist? Continue growing or taper off? - More retirees buying homes | 3 | 2 | (didn't answer) | (didn't answer) | (didn't answer) | 3 |
| N4 | Not yet | <ul style="list-style-type: none"> - Collaboration with NEW, industry. Standard is carried by the industry and NEEA is just fueling it, rather than being the face of the effort | <ul style="list-style-type: none"> - Timeline has been slow. Not a high priority at NEEA, manufacturers can tell that NEEA is not really committed | <ul style="list-style-type: none"> - Need more marketing. Simple clean marketing. Need dealer, manufacturer interest. The technical details are worked out and first cost is not a barrier. | <ul style="list-style-type: none"> - Program entirely based on existing infrastructure. Could not have done it without existing infrastructure. | | | <ul style="list-style-type: none"> - Worked with manufacturers but limited industry outreach beyond that, no consumer outreach - Born out of BPA high performance home spec development. Took that experience and translated to a viable spec that was easy to build, had minimal incremental cost. Took out pain point features: HPWH, rigid exterior insulation - When they pivoted the program, suggested going to ductless HPs. Funders requested that this not be done, so stuck with spec as is | <ul style="list-style-type: none"> HPs, but these are a doubled edged sword because they swamp the energy savings from NEEM+ | | | 2 | 2 | 1 | 3 | 4 | |

Figure 11: NEEA Interview Responses

| # | Experience offering incentives | Awareness of NEEM+ | Value of manufactured housing program | Use of NEEA resources | Transition to NEEM+ | Market Trends | Customer incentive effectiveness | Downstream incentive effectiveness on retailer behavior | SPIF effectiveness | Barriers to Energy Star and/or NEEM+ | Why don't they offer or see more uptake of incentives | Other Comments/ Recommendations | What they need from NEEA | Means to reach hard to serve markets? | Is NEEA supporting your utility through MH program? | Overall NEEA effectiveness? |
|----|--|--|---|---|---------------------|---|---|---|--|---|--|---|--|---|---|---|
| U1 | - Have had 1 manufactured home incentive in last 7 years - Don't actively advertise program | Familiar with NEEM+ (recently transferred from a different utility where they did 10 incentives/year) | N/A since no program | N/A | N/A | Didn't ask | - Didn't rank but thinks it is more effective to give customers incentives than retailers | | - Thinks it's better to give customers incentive directly, SPIF will go to retailers pocket. | - Hasn't seen the marketing materials. - Don't advertise the program because they don't have marketing materials, if they had these, they would put the program on their website | - Don't have manufactured homes in their territory - This is unlikely to change - Mostly site built, newer homes | Thinks that the program needs to start at the dealership, that customers only come to the utility after the fact. | | Added these questions after this interview occurred | Added these questions after this interview occurred | Added these questions after this interview occurred |
| U2 | - Offer incentives but have minimal uptake, processed 2 in the last 4 years | Minimally aware, has heard of it, but doesn't seem to know distinction or if they offer NEEM+ incentives | None right now, since no incentives, but see potential in program. But could be a potential source of savings. Lighting program going away, so looking for savings in new places. May start pushing more on this program. | Haven't used NEEA materials, forget that they exist, but would like to. | N/A | - Seeing more double wides, fewer single wides, energy star appliances in homes | 1 - don't see them working | 1 - really hard to pinpoint where people will actually go. So close to Canada some consumer go there. | Haven't done SPIFs | Hard to pin point where their customers will buy NEEM+ homes, better to reach out to the consumers themselves | - They are in very rural area, most manufactured homes are bought at other end of the state or in Canada, the retailers don't know about their incentives. Customers only learn if they ask someone. | Since the lighting program is changing, they are going to start advertising this program more. Going to do more advertising in local paper, Facebook, in office advertising, send incentives through the mail | Advertising, pamphlets on why Energy Star manufactured homes are better. Knowing what to look for when you're looking for a home. Colder climate, 80% residential, high bills from heat use. | Added these questions after this interview occurred | Added these questions after this interview occurred | Added these questions after this interview occurred |

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| U3 | <ul style="list-style-type: none"> - Offer several different incentives for manufactured homes, targeting both new and existing homes - Have had Energy Star new home program for a while, offer NEEM+ as well - Have seen modest uptake of new homes program - Do straight pass through of BPA incentive - Recently shifted to online process from paper process - Also have a HP/ductless HP program that is their most active MH program. This program applies to both new homes and retrofits. | Aware of NEEM+, offers NEEM+ incentives | <ul style="list-style-type: none"> - Want to provide equitable programs that reach all members - Energy savings are great too | Certification processes, technical resources. Rely heavily on BPA, NEEA. This adds credibility to the program to have something come from the regional level. And it makes it easier for them to implement. | Pretty streamlined. When they rolled out NEEM+ they also rolled out their new online submission process. Now all their programs are able to be submitted online. | Seeing a significant increase in cold climate ducted and ductless heat pumps across manufactured and site built. Heating dominated climate in central Oregon. Seeing a major trend towards cold climate products. | Not sure, not sure if retailers are conveying information to customers. Do see incentives being effective for HP/ductless HPs | Same as customer | Don't offer | <ul style="list-style-type: none"> - Cost is the biggest barrier, but also need more information and education. - Don't have the ear of the retailer, how much are they conveying the neem and NEEM+ offering | | | | Not really, MH eligible for every residential program they offer | Absolutely. Without organizations like NEEA, they are so limited as a small utility, limited in what they do -- to be able to capitalize on regional efforts makes sense. | Doing good, no constructive feedback |
| U4 | Have incentives, don't do a ton. Runs about 1 a month. Offer \$1200 for NEEM, \$1400 NEEM+ | Aware of NEEM+, offers NEEM+ incentives | Just one of the programs that they offer their customers. Offer pretty much every residential programs that BPA offers. | Doesn't think they use any | It was really easy. Just started offering it. On the other side, not aware of any dealer outreach. There aren't any dealers in their territory. Think customers are learning about incentive from retailers. They do general marketing, but haven't been specifically advertising manufactured homes | Not many new home starts generally in their territory. Population growth extremely slow. | Not sure | Same as customer | Don't offer | | <ul style="list-style-type: none"> - Don't see a lot of new home starts generally in their territory - Thinks there is still stigma of manufactured homes compared to site built. - Harsh coast climate worsens this, MH don't hold up like site built. | Best to move incentives into upstream -- any time customer doesn't have to apply, wait for a check. Thinks upstream programs are very beneficial and ultimately help get more units sold. | | Not an underserved market | NEEA is effective, market transformation, getting word out to consumers. Across the board has done a pretty good job at that. | They've done well. Don't use their materials directly but their regional efforts affect their ability to operate programs. |

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| U5 | <p>- Had a program for new manufactured homes ended prior to 2016. Recently relaunched the program in 2018: \$1000 for Energy Star, \$1500 for NEEM+</p> <p>- Have an initiative reaching out to retailers in the region. Are promoting SPIFs. Relatively lean program, not a ton of marketing. Do know that there are a lot of Energy Star home sales in their region, so trying to figure out how to capitalize on that. But hard because they don't really know who customers are. Focus on top 5-10 retailers.</p> | Aware of NEEM+, offers NEEM+ incentives | A means to reach hard to reach markets | <p>Coordinate with NEW/Brady, he has been a valuable resource in choosing which retailers to target and is there go to resource for any questions. They have aligned with NEEA and RTF on definitions and qualifications, take advantage of marketing materials. Hoping to work with a vendor who will do more retailer engagement for them.</p> | <p>- Seamless transition. Launched simultaneously knowing that NEEM+ wasn't really ready for prime time, but hoping that it would be soon.</p> <p>- Concerns: branding and naming might be confusing to customers. Some folks thought they were qualified for Energy Star NEEM 1.1 -- "it says NEEM" -- have had to pay out a higher incentive to make a customer go away.</p> | Cadmus recently did an assessment for them. Have about 65,000 manufactured homes in their area | 1-2 | 1-2 | <p>Very ineffective -- haven't paid out a single SPIF in a year and a half. Need to remind retailers of opportunity, visit quarterly. Given that it's on the margin of cost-effectiveness, don't have a ton of resources to throw at program</p> | <p>Cost, awareness, education (both consumer and retailer). Utility incentives might not be high enough to offset incremental cost.</p> | <p>Takes a bit to ramp up and get things going in the market place. Hurt themselves by shutting down the program. Have had 16 Energy Star homes this year. Behind their target by 20%.</p> | <p>Doing more market analysis on what market types, retailers, consumers to market to. Banner ads.</p> | Yes | <p>Not too much, NEW is really their primary resource, NEEA contributes, so indirectly, but behind the scenes from his perspective.</p> | <p>Depends on which sector, pretty good from his perspective</p> |
| U6 | <p>Just started offering a few months ago. Already have done a couple of Energy Star rebates. Both for Energy Star and NEEM+. Started offering because it's a good opportunity to their customers to encourage them to step up to more energy efficient home. If they can cover the incremental cost for customers that's great. The rebates they processed so far were before they were doing marketing.</p> | Aware of NEEM+, offers NEEM+ incentives | <p>Definitely the energy savings. Having a lot of people moving into their region due to affordability issues in other areas in the region. Seeing an uptick of new homes going on to property and a lot of these are manufactured homes. If they can capture the energy savings in these new homes they will.</p> | <p>Relied heavily on energy savings calculation to get it approved. Using spec. Worked with Josh and Brady to make branded marketing materials. Using the NEEA video, branded with their utility, on their website. Putting out branded trifold brochures.</p> | <p>Not applicable, because they just started program</p> | <p>Don't really track trends, but work with a lot of people building new homes</p> | 2 | 2-3 | <p>Don't offer</p> | <p>Consumer awareness</p> | <p>Work needs to be done to identify active retailers, list on NEEM home page is not correct, some are no longer in business</p> | Yes | Yes | <p>Tough question, hard to quantify, doesn't have an answer</p> | |

Figure 12: Utility Interview Responses

| Interviewee | Awareness | | | Market trends | Spec Development | Spec lacking features | Barriers | Experiencing engaging retailers | NEEA overall effectiveness | Effectiveness of NEEA's effort | Existing program infrastructure | Upstream incentive effectiveness | SPIFF effectiveness | What type of incentive is most effective? | What's needed? |
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| | Consumers | Retailers | Manufacturers | | | | | | | | | | | | |
| Brady Peeks | 15-25%? | 50% have a passing awareness | 100% minimally aware, 4-5 highly aware | - production flattening out - boomers retiring and millennials, modern design that looks more like site built | - Mostly coordinated with manufacturers - Did some outreach to industry groups, and retailers | - Ductless HP is Holy Grail. Hard to ship HP. AC plus electric furnace much cheaper. - HPWH, were expensive at the time but costs have gone down. | - Market growth - HUD code process shift - Lack of "wow factor" to NEEM+, can't see it - Complicates production lines | - Retailers not that interested. Added smart thermostat to package as something you could point to. - Retailer in Idaho that sells all NEEM+, Kit had particularly long backlog, wanted to have something no one else had. - Other retailers liked the "good, better, best" framework - WA state energy code motivated some | 3 | - Incentive incredibly effective - Did well with resources they had -- not much NEEA staff time, Brady technically not scoped to lead | Completely utilized | - Without incentive, they would have nothing, but needed marketing in conjunction with it, didn't pivot quickly enough. | 3.5 | - Manufacturer incentives are important at first - Home buyer incentive very important, thinks people don't realize there is separate paper work - SPIF helps motivate sales person | - Manufacturing incentive into next year - could pay to upgrade windows on all homes |

Figure 13: Program Implementer (Northwest Energy Works) Interview Responses

| # | Sells | Current EE Options | | Importance of EE to customers? | Key Features | % adding AC/HP | Familiarity w/NEEM+ and Experience selling NEEM+ | Marketing materials | Effectiveness of Customer Incentives | Effectiveness of SPIF Incentives | Barriers | Barriers cited | | | Consumer Trends | What they need | How do manufacturers learn what consumers want? | Influence on customers | % of customers aware of Energy Star | Type of consumers | Premium for NEEM+ |
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| | | Description | NEEM+ | | | | | | | | | Cost | Value Proposition | Retailer Understanding of NEEM+ | | | | | | | |
| R1 | Marlette, Golden West | - Go from standard home to Energy Star - 40% of the homes they sell are Energy Star | Do not offer | 3 | Biggest thing on customers mind is floor plan of the house. The rest of the things come up during the process. Not too often that they have some one come in and ask if all homes are energy efficient. That's not where the conversation starts. | | Someone had come in a year ago and described it, but isn't very familiar with NEEM+. | N/A | - 3, but need to do a better job of getting information out there. Sales people are not using customer incentives to sell Energy Star. It's only something they mention if their customer brings up Energy Star. Not actively trying to sell Energy Star. Customers often ask about rebate after the fact | - Didn't rank. Sales people like getting SPIFs, but it's not producing the amount of activity NEEA wants it to. SPIFs are going directly to sales people, but it's not motivating them to bring up Energy Star unless the customer brings it up. There's so much else going on with the site work, financing, this is a pretty small piece in the big picture of the sale, isn't really their focus. | Cost is barrier to selling energy star home. Factories are charging \$1500-2K more on Energy Star, if they have the choice between choosing energy star or choosing the fancy shower, they choose the fancy shower. It's more tangible, most of their buyers on a budget imposed by financing. | x | x | | (Didn't ask due to time constraints) | Not sure what could help them sell more homes. They could probably use the tools we've already developed better. Know there was some sort of energy savings sheet they were given before, probably his guys couldn't even find if they wanted it. Their guys don't know what NEEM+ is and he doesn't really know what it is. If they had something to put in their houses, that would tell a story, it would force them to talk about it. | (Didn't ask due to time constraints) | (Didn't ask due to time constraints) | (Didn't ask due to time constraints) | They target the whole market 1st time homebuyers, people that already own property and going to retire on it (cash), doing a few in parks, but mostly out in the outskirts of populated areas, out in the sticks, just not cost effective to build. Maybe 5% going to parks from this store. | Added this question after this interview was conducted. |

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| R2 | Valley Quality | - They are both dealer and manufacturer - 100% Energy Star, not yet built any NEEM+ | Do not offer | 4 | - Quality of construction, floor plans, design details, warranties. -90% will have AC or HP installed. Maybe even higher. They contract with a heating and cooling provider, integrate into financing. Every home ships with a furnace -- either add an AC or HP. Thinks AC is being chosen more often, but close split. | 90% | - Very familiar with NEEM+, actively considering switching over their whole product line - Currently looking at cost of switching over their whole product line, changes are hard and costly for them -- they make money by doing the same thing over and over - so deciding if it's worth it. - Incentive will be critical to this decision. | They have them, sit out in their facility but don't really use them. They are different in that they walk the customer through the home individually and educate them about what they are looking for in a home. Don't see any brochure as being a substitute in that process. Also since they build | Don't know if customer incentives are effective. They're out there, but not sure whether customers are claiming them. Doesn't really come into the conversation since they are not upselling Energy Star. | Didn't rank. They are taking advantage of the dealer and manufacturer incentives, whatever is available and these are important to them. | - Cost is the biggest factor; component costs are easy but changing their techniques is harder, and harder to price - Transitioning their production line while continuing to build what they're contracted for. - Any change costs them money as they are built on economies of scale, repetition - NEEM+ is subtle change -- is it worth the effort? | x | x | | Maybe going to smaller, higher quality home, people wanting luxury small homes | - Extending the \$1000 incentive to 2020 would be critical for them to do NEEM+. - We're asking them to switch what they're doing and there has to be a reason why they want to. It's certainly not being driven by the consumer. They care about energy efficiency, but no one is asking for that small differential in energy efficiency. Needs to be something in it for them. | (Didn't ask due to time constraints) | (Didn't ask due to time constraints) | (Didn't ask due to time constraints) | (Didn't ask due to time constraints) | Added this question after this interview was conducted. |
| R3 | Kit | Sell only Kit homes. Were selling NEEM+ as default, but just switched so that it is an option. Everyone of their electric customers has gone NEEM+ to date. | Actively selling | 3.5 - most are a 4 but some are more cost consciou s | (Didn't ask due to time constraints) | | Very familiar. NEEM+ separates them from the competition. Everyone of their customers so far has chosen NEEM+. Someone comes in, they don't know anything about the NEEM+ package. They're upselling it as one of the key things they can offer. | Yes using these materials, rate them as a 4. | Idaho Power offers \$1000 on every electric home sold and the retailer gets a \$200 incentive. They send the paper work in and their customers get the incentives. Would rate as 4. | 4, drives them to submit the paperwork | - Competition is low-balling them on cost in the online market. Removing NEEM+ from their base pricing and going to upsell in store. | x | | | Consumers are doing a lot more homework. Everyone's comparison shopping online, even though it's not apples to apples. It is an internet war out there with the pricing between dealers and different manufacturers. | Manufacturers get information from what customers are spec'ing out, pricing out in homes | (Didn't ask due to time constraints) | 80% or more, they definitely do their homework before coming in. NEEM+ is just starting, customers starting to be aware of it. | Get more of the high end customers. \$210 - 270K are the range of homes they have on the lot currently. | Added this question after this interview was conducted. | |

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| R4 | Kit | -Sell only Kit homes. Energy Star is standard on homes they sell - looking at NEEM+ | Available, but not actively selling | 3-3.5 | - Open floor plans, materials, price/value, higher end amenities - 90% are adding cooling after the fact. Depends if they are gas or electric whether it's heat pump or just ac. 1/3 or 1/4 homes sold are gas. | 90% | Familiar with NEEM+ but could use more detailed education on what it includes, what the value is to the customer. - Has sold 1 NEEM+ home, but not talking about NEEM+ because price is high, not sure that he can demonstrate the value | - 2-2.5. Uses Energy Star trifold. Had NEEM+ brochures but ran out. - Brochures help but customer testimonials are better - Need customer specific energy savings numbers | 3.5-4 (but all their homes are Energy Star) | One utility in their area that has a SPIF -- if there was a SPIF in every region they would upsell NEEM+ a lot more | - NEEM+ is most expensive option - Don't want to try to upsell and then not know what they're talking about. | x | | x | Trend towards site built-like homes | - Training on NEEM+ and how to present/sell it to the customer - Clarity on utility rebate landscape -- confusing because they sell to customers in lots of areas. | Feel like the manufacturers really don't listen to them. They hire consultants and have brainstorming meetings. Sometimes specific floor plan comments | Sometimes you'll have a buyer that knows exactly what they want, they've done research, and know as much as you. But most of the time, we build rapport/trust, it's an overwhelming decision and the sales person has a lot of impact. | 1 in 3 or 4 customers are aware of Energy Star. | Higher end of market. Retired people buying with cash | 2000 sq ft, \$2390 price premium compared to Energy Star |
| R5 | Palm Harbor, Skyline | Have standard insulation (only one model), then Energy Star, then NEEM+. Both of their two suppliers have capabilities to build NEEM+. | Actively selling | 4 | Putting heat pumps on 75% of their homes. Most are ducted (95%) | 75% | Familiar with NEEM+. Rebate helps make the case that much easier. But customers are seeing the value, pay off, it's just a bit more money and then they'll see savings. | Didn't rank. Has the NEEM entry rug, Puget Sound Energy application pamphlet. More materials to help educate customer, sales people, would be useful. | 3-4 | There are SPIFs in there area -- these encouraged them to recently go back through 6 months of customers and help them process their rebates. Customers don't even realize that they have to do something else. They get caught up moving in and completely forget that there's the rebate they have to apply to. | - Increase in monthly payment for customer's financing | x | | | Trend towards site built-like homes | A banner would help to start the conversation | That's the million dollar question -- not had any manufacturers have a dealer council meeting for years (where we could tell them what customers want). They're busy maybe, don't have time to take feedback into account right now. | They influence the customer quite a bit | Everyone aware of Energy Star by end of sales pitch. Not many know about NEEM+ coming in | Retired, all cash customers. Also have a manufactured home 55+ community in Lacey that they advertise. | \$2,500 |

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| R6 | Kit, Skyline | - Sell HUD, HUD+HP, Energy Star, NEEM+ - Went back and forth over course of interview: on one hand said they always try to sell EE upgrades but that it is a battle for cost-effectiveness. On the other said that most every home they sell is Energy Star | Available, but not actively selling | Ranked himself as a 4 but wouldn't rank customers. Said customers don't want to spend more money and energy efficiency is the first thing to be taken out of the package. | Luxury items, nice exteriors, vinyl floors. 30-40% adding ducted HPs, 75-80% are setting up as heat pump adaptable | 35% | Basic familiarity with NEEM+. Actively selling Energy Star, letting people know NEEM+ is available, but not actively selling it. | Has the throw rug. 2 - slightly effective. | Wouldn't rank because he doesn't think customers know about the incentives, don't hear about them until after the fact | No SPIF incentives recently. Doesn't encourage rebating salesman, doesn't think it's effective. Salespeople lose track of the goal -- to be knowledgeable, to honestly feel that's the direction to go. Instead SPIFs are greed based. | - Cost. But otherwise doesn't know much about it. Are there additional inspections? Additional on-site inspections would cause a problem. - Concerned about ventilation: customers worry about sick building due to increased air tightness. Make sure they have the information to provide information so they can inform their customers. | x | | x | Trend towards site built-like homes. Think they are the exception -- others still building thin cheap boxes. | - Better advertisement of utility incentives. Put banner in retail location, list of PUDs and rebates available. - Marketing materials to get the conversations started (banner, tablet, button "ask me about NEEM+"). If the consumer asks about it then you have an opportunity, but it has to come from the customer - Neither one of his builders offer ductless heat pumps, this should be an option that they offer. Should also offer HPWH. | | Buyers are extremely knowledgeable, done their homework, have shopped around. The more they look, the better we look. 90% of what they sell are custom, don't sell off the lot. | 1/3 aware of Energy Star before they come in, but we make them aware. No customers aware of NEEM+ | Educated, older, not first time home buyer. | |
| R7 | Kit | - Energy Star is standard. Don't push efficiency options beyond this. Offer NEEM+ if customers want it. | Available, but not actively selling | 2-3 | Construction integrity, customers care a lot about insulation, comfort (they have extreme seasons). Don't care about LED lights, thermostats. But they're getting most of this with Energy Star. 95% are doing AC, 80% are HPs, adding on to existing ducted systems. | 95% | Needed NEEM+ to be able to sell in WA jurisdiction (code equivalency requirement). He says that's what got Kit to first make NEEM+. | Aren't using the materials, might have some in the office for people to look at. He's not a pushy retailer, not a high pressure dealer. Would only use sales literature if someone came in and asked. | 1 -- they're not trying to upsell the energy star because Kit standard is energy star. Rebate doesn't really come into effect. A lot of people don't even know about it until the end. Are happy to get a rebate. | No SPIF incentives in their region | - Whether people want to spend the money on it - Don't get people asking for LED bulbs, fancy thermometer --> not sure customers want these and want to pay for these. | x | x | | Market is strong, people are spending a lot of money on them. Nicer houses. Glad that they added NEEM+ --> bet more cities will follow suit and require code equivalent. | - Thinks they should up the rebate of NEEM+ compared to Energy Star. If the rebate basically covers the incremental cost that will help. But don't want regular Energy Star rebate to go away | Sometimes communicate. Kit does a lot of custom homes, so dealers aren't afraid to ask for something if a customer wants it. Learn this way. | Not real salesy, don't push their customers | All customers learn about Energy Star because it's standard | Retired people buying fancy houses. | Incremental cost \$1200 up to \$2200 on a triple wide |

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| R8 | Skyline, Fleetwood, Palm Harbor | HUD minimum, Energy Miser, Energy Star/NEEM, and then NEEM+ | Available, but not actively selling | 4 if you ask them. If they're actually willing to spend the money - 2.5 | Top 2 when it comes to energy efficiency is the insulation in the walls and the windows. More broadly than energy efficiency: structure, well built home. 2/3 are interested in HPs/Cooling, 50% are adding them, ones that don't are cost constrained. 2/3 of HP they provide are ductless, their numbers are higher than others. Installing these on site. 75% are built without ductwork/furnace -- Palm Harbor just installing wall heaters, and will prep electrical for DHP. | 50% | Not actively selling NEEM+, doesn't understand NEEM+ enough to speak effectively. Energy Star he could sell all day long. He needs more education to be able to sell NEEM+. | Have marketing materials, would rank as 1. Materials need to make people look forward, ask what NEEM+ is. Brochures aren't effective at getting people to ask. Brochures that raise questions, get people to look into what NEEM+ means. | 4 -- your talking money, they tap into that. They are actively using these to sell Energy Star and ductless heat pumps. | No SPIFs, doesn't think you need to incentivize sales staff, but they do need to be knowledgeable of utility incentives. | - Cost is the biggest barrier to buyers on a budget. He's not knowledgeable enough to be able to justify this incremental cost, or coach his sales staff. Until people selling the product believe in the value of it, it's going nowhere. - NEEM+ means nothing to people until we can justify the added expense. What is the benefit to the consumer? - Need to help staff understand available incentives, rebate process, how do you acquire them, etc. | x | x | x | | Simple literature, bullet points, for him and sales staff on selling NEEM+ would be really helpful | | Depends on the customer. Doesn't push people, but there's a lot of gentle nudging and pulling. | The majority are aware of Energy Star. Some people still ask about Super Good Sense, no one has asked about NEEM+. | Retirement aged buyers, upped quality of what they display. Have gotten bigger and nicer. Economy allows that. | Doesn't know pricing yet |
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| R9 | Kit | Energy Star, NEEM+ is an option but haven't sold any yet. | Available, but not actively selling | 4 - highly important. People see the Energy Star tag and that's what they know, don't really know the difference between NEEM and NEEM+. | Kit builds nice homes, their customers tend to be high end. Price tag reflects that. People care about kitchens. 100% of people want cooling and are adding HPs. A few people are doing ductless, but installing them after the fact is a big pain. Gave one example of someone who did this and it was a lot of work going through concrete walls with conduit, line sets. Thinks it would be better if they could be done in the factory but seems the HUD code as a barrier. | 100% | Knows what it is but doesn't really know what it entails, how to sell it. | They have a little bit of information but need more: Side by side comparison to energy star. A visual they could set in the house. A brochure in the house that helps them have a conversation. How much they will the customer save? He doesn't really have this information now. Need something more. Why NEEM+ vs Energy Star. More education about what it's about. Is it more than just the thermostat. | Utility incentives are very important, key to helping them sell the home. | SPIFs are also important, help encourage the sales person | - Need to better educate sales people, understand what you are getting for that incremental price, currently don't know enough to sell it. | | x | x | | | | They don't markup upgrades, pass them straight through. They facilitate every aspect of the building process, they are a GC, do the financing, that's a big part of what they offer. People like not having to think about all that. | | | \$2390 for 1800+ sf home for NEEM+. They get a thermostat and a freezer and it's \$2390 more?! Has to be a value to it in his opinion. Understands there needs to be a margin --> doesn't see why it costs so much more for what it is. |
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| R10 | Kit, Skyline, Fleetwood | 70% of homes sold are Energy Star, NEEM+ is an option but haven't sold any yet. | Available, but not actively selling | Didn't rank. People care about energy efficiency, but it falls out when everything else is more expensive than they think it should be. | Don't need AC in the NW. 15-20% of homes getting heat pumps. Some going ductless | 18% | Knows about NEEM+ but not actively selling, figuring out how to market. | Didn't ask due to time limitations. | Utility incentives have a significant impact. Especially for HPWH and heat pumps. They are filling out paper work for the customer. | Didn't ask due to time constraints. | - Lack of training for the sales staff. His staff are focused on financing, completing permit development, there are so many complicated things that his sales people need to know. They also need to know multiple manufacturers. Efficiency and learning the new NEEM+ system is at the bottom of this. - When do they have the conversation and sell EE? They feel out the customer - if the customers asks about efficiency, then they will start the conversation. - But the number one thing his customers care about is price. He has 14 email leads this morning -- everything is about price. His customers are very price sensitive. | x | | x | | | | (Didn't ask due to time constraints) | (Didn't ask due to time constraints) | (Didn't ask due to time constraints) | Sells to whole range of customers. Many already own manufactured homes. May not be in good financial shape. Might be retired. Gainfully employed, average joes. | (Didn't ask due to time constraints) |
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Figure 14: Retailer Interview Responses