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Energy Trust of Oregon

Manufactured Home Replacement Pilot Evaluation

August 12, 2020

Opinion Dynamics

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1.1 Overview and Methods

Energy Trust of Oregon's (Energy Trust) Manufactured Home Replacement Pilot began in June of 2017 and is a collaborative effort among several stakeholders. The Pilot offers financial and other support to replace pre-1994, inefficient manufactured homes with new, energy-efficient manufactured homes. The Pilot began targeting replacements in three Oregon manufactured housing parks and has since expanded to offer the opportunity to manufactured housing homeowners on private land. The Pilot staff and partners include:

- Energy Trust: Conducts outreach, coordinates stakeholders, supports households in the replacement process, and provides a financial incentive for qualifying replacements.
- CLEAResult: Acting as an implementer for the Pilot, conducts outreach and supports households in the replacement process.
- Craft3: Offers a low-interest loan for households who do not own their land. They conduct outreach, provide financial counseling, and support participants.
- Community and Shelter Assistance Corp. (CASA) of Oregon: CASA arranges financing and provides support to purchase manufactured home parks and establish them as cooperatives. CASA recruits new participants and provides support to homeowners.
- Earth Advantage: Conducts pre-inspections of manufactured homes to determine eligibility and support an energy savings impact analysis.
- NeighborWorks Umpqua: Purchases manufactured home parks and operates them as a nonprofit. Residents own their homes and lease the land. NeighborWorks helps homeowners in their park navigate the replacement process.
- The United Community Action Network (UCAN): UCAN is a Community Action (CAP) agency that offers funds in the form of a subsidy to qualifying households to facilitate their home replacement.

Opinion Dynamics conducted a three-year, real-time embedded process evaluation of the Pilot. The evaluation objectives were to better understand energy and non-energy impacts, project costs, barriers to participation, and key elements of a successful program design. The evaluation team used information from Pilot documents, Pilot team meetings, home inspection results, and interviews with six stakeholders and 29 manufactured home residents or homeowners (referred to as participants).[1]

1.2 Key Findings

Key findings from the evaluation include:

- **Existing, pre-1994 manufactured homes are generally in poor condition and in need of major repairs.** Issues related to the foundation, floor, roof, walls, plumbing, and HVAC systems. Mold and pests, as well as air and water leaks, were common.
- **Participants actively worried about their home.** Participants were stressed about affording rent and their utility bills and faced evictions or shutoffs. Many participants reported being uncomfortable in

[1] Earth Advantage representatives were not interviewed, while a representative of Saint Vincent de Paul of Lane County, a park operator, was interviewed.

their homes and feared it would burn down due to electrical issues and poor wiring. Close to half of the existing manufactured home residents (11 of 25) mentioned new health conditions occurring or prior health conditions worsening as a result of the problematic home conditions. Residents frequently mentioned itchy or watery eyes and coughs.

- **Participants learned about the Pilot through Pilot staff, their park operator, or through a manufactured home retailer.** The majority of participants (72%) were excited to learn about the Pilot, though 28% were unsure or skeptical if the opportunity was a good fit for them. Low-income households tend to be conservative with new financial endeavors and are cautious about taking on new debt; for these reasons, some lost interest after learning more about the financial commitment required from them.
- **Some homeowners who have pursued home replacement through the Pilot have been unable to piece together sufficient funding (incentives and subsidies) to make a loan financially viable for them.** No participant has yet qualified for the United States Department of Agriculture (USDA) Rural Housing Service Section 502 low-interest loan or Craft3's loan. One participant has thus far qualified for UCAN's weatherization subsidy. Most homeowners on private land (3 of 4) were able to leverage the equity in another piece of property (home or land) to get cash for a down payment on their new mobile home.
- **Oregon Housing and Community Services (OHCS) weatherization funds funneled through Community Action Agencies are an important subsidy that reduces the amount of money the homeowner will need to borrow on the loan, but are limited in their availability.** Currently, each CAP agency chooses whether they will request permission to allocate weatherization funds to manufactured home replacement and one has agreed to support the Pilot. This means additional work for Pilot staff to engage each agency and limited availability of these funds for participants.
- **Project costs can vary and are hard to predict** but have so far ranged between $75,000 to $123,000 for single wide replacements. If asbestos is found in the existing home, it can add up to $10,000 to the decommissioning costs. The site preparation phase can incur additional costs if the ground needs to be leveled and reinforced. If the new home does not come with gutters, those must be hung along with adding stairs or a ramp to the front door. Difficulty estimating project costs increases the difficulty for a participant to convey to a lender what they need to borrow.
- **There were some challenges with selecting a new manufactured home that will fit on the existing property.** Newer homes tend to be larger than older homes, which can make it difficult to comply with setback requirements when siting a home in the same lot. Park operator participants visited multiple retailers to find appropriately-sized homes.
- **Our assessment to date indicates that participants realize substantial non-energy benefits after moving from a pre-1994 manufactured home to a new, efficient one.** The biggest difference noted by participants was improved thermal comfort. They no longer needed extra blankets and jackets to stay warm. Most reported health improvements due to improved air quality in the new home. They also worried less about things in the new home, and one felt much safer in their new home and had an easier time getting around in their wheelchair and walker.
- **The Energy Trust incentive influenced park operators to replace their old inefficient manufactured homes and eased the process for private land homeowners.** For one park operator, the incentive allowed them to replace more homes than they would have otherwise. Two private land homeowners felt more comfortable in their decision to buy the home, knowing that they had additional funds to help with removing the old home and preparing the site.
- **Additional resources and partnerships should allow the Pilot to expand to other areas of Oregon.** Energy Trust has been working with OHCS to increase the availability of funding for home replacement throughout the State of Oregon. The 2019 passage of Oregon House Bill 2896 will allocate funds for

decommissioning of old homes and for loans to households to buy new manufactured homes. Interviewed Pilot partners and park operators all want to pursue replacements in other parks they manage in Oregon.

1.3 Conclusions and Recommendations

We offer the following conclusions and recommendations.

Conclusion 1: There is a considerable need to replace pre-1994 manufactured homes in Oregon. Many of these homes are in disrepair. Roof leaks, cracks in the walls, holes in the floor, mold, and pests make the homes uncomfortable, worrisome, and potentially unhealthy to live in.

Conclusion 2: The Pilot is sufficiently resourced, attractive, and flexible enough to encourage manufactured home replacements inside and outside of the park context. Pilot staff have engaged stakeholders to facilitate replacements for residents in parks indiscriminate of whether the participants own the home, land, or neither. Pilot partners support homeowners who do and do not own their land and also engage park operators for replacements where tenants occupy the homes.

Conclusion 3: Each replacement project is unique due to the household's financial situation and the land plot the home is sited on. Each homeowner considers their assets and whether a loan is in their best interest. At the same time, loan decisions are complicated when project costs are hard to estimate. The cost to replace a single wide manufactured home can vary considerably, and some of the costs are hard to predict. Individualized attention is necessary when home replacement projects occur on a case by case basis.

> **Recommendation:** Pilot staff should ensure continued or reinvigorated discussions with interested partner organizations and initiate discussions with other potential organizations to secure funding for a participant liaison role that can provide individualized support and be a point of contact to shepherd the participant.

Conclusion 4: The Pilot brings together a variety of financial support, including incentives, subsidies, grants, and low-interest loans, but most participants cannot qualify for all of them, and some have had difficulty qualifying for any. Most of the Pilot's financial support is available in geographically restricted areas, and only one of the state's 15 CAP agencies contributes weatherization funds to the Pilot. Soon, Oregon House Bill 2896 will provide additional funds for manufactured home replacement, which can potentially be used to supplement Pilot support.

> **Recommendation:** Pilot staff should investigate ways to make best use of the HB2896 funds and determine opportunities for combining them with Pilot funds to further reduce the cost of home replacements for participants. Pilot staff should also pursue the possibility of OHCS approving all of Oregon's CAP agencies to assign a portion of weatherization funds to manufactured home replacement.

Conclusion 5: Early post-occupancy findings point to substantial non-energy benefits for people who move from a pre-1994 manufactured home to a new, energy-efficient one. Thermal comfort was markedly improved, health conditions improved, and residents reported reduced stress and worry in the new homes. Some experienced pride in the new home and increased feelings of safety as well.

> **Recommendation:** Subsequent evaluations should include efforts to measure self-reported non-energy benefits.

Memo

To: Board of Directors

From: Phil Degens, Evaluation Manager
Mark Wyman, Sr. Program Manager -- Residential Portfolio

Date: September 16, 2020

The pilot has successfully achieved many of its stated goals. The pilot diligently documented the process of replacing an existing manufactured home. The steps needed as well as the cost and time requirements or each step were also gathered. This information is now available to better plan additional engagements and inform current and future partnering organizations and participants. The many non-energy benefits that come as a result of home replacement have also been reported on. These additional benefits show that the pilot does much more than just save energy and are an important factor in gaining support for this type of offering.
In May of 2020 the PUC authorizing additional expenditures to support the ongoing research objectives of the Manufactured Home Replacement Pilot. This also marked the pilot's transition to focus on serving owner-occupied replacement projects. The successful completions during this first phase were exclusively homes purchased by park operators for use as rental housing. We expect significant differences in the financial models and requirements as well as the home occupant experience with the shift from park operator and tenant to owner occupants.

Energy Trust's program team have worked with SVDP to address work quality issues identified in this report. Pilot site inspection information is passed on to facilitate any repair work needed from the manufacturer. Additionally, our partners at Multnomah County's Weatherization Assistance Program identified an issue with the ventilation strategy that has since been remediated.

The forthcoming OHCS program authorized under HB2896 represents an opportunity to address many of the barriers that remain for owner-occupied replacement projects sited in parks. The additional grants and enhanced financing terms expected from the HB2896 program will make home replacement feasible for many more households. Staff are working to support OHCS, sharing the successes of and challenges to our efforts to date, many of which have been documented in this report. Staff are also working with stakeholders to anticipate remaining gaps in the program model.

During the pilot Energy Trust and our partners have managed to provide personalized engagement and support to participants. There is general agreement that when the pilot is scaled up to a larger program is a dedicated team of program liaisons will be required. A scaled up Manufactured Home Replacement (MHR) program has the potential to achieve substantial energy savings among rural, low income and/or minority households. MHR's value to ratepayers and alignment with Energy Trust's mission provides grounds to consider Energy Trust funding of a "navigator" service as an integrated component of our broader program infrastructure and expanding work with community-based organizations throughout Oregon.

We need to acknowledge that the recent natural disasters that have hit Oregon in the form of flooding and wildfires have had a significant impact on many manufactured home communities. The disasters' impacts have increased interest in tapping into the pilot's services and learnings. The most recent news indicates that the impacted communities' needs far exceed the pilot's current resources and

many of these needs go far beyond the scope of the pilot research objectives. Many of the learnings and experiences gained from this pilot will support any future initiatives that target the impacted communities

2. Introduction and Methods

This document presents findings from a three-year real-time embedded evaluation of Energy Trust of Oregon's (Energy Trust) Manufactured Home Replacement Pilot. The Pilot seeks to retire aging manufactured homes and replace them with new, energy-efficient manufactured homes that exceed code minimum. This chapter introduces the context of manufactured homes in Oregon, the Manufactured Home Replacement Pilot, and the evaluation activities.

2.1 Introduction to Manufactured Homes in Oregon

Manufactured homes are an affordable housing option for low- and moderate-income households. Oregon has over 170,000 manufactured homes, which represents about 11% percent of its total housing stock. About half of those predate 1976, when the first Housing and Urban Development (HUD) code established minimum energy efficiency requirements for manufactured homes.[2,3] The energy efficiency elements of the HUD code were last updated in 1994; the first update since its inception.[4] Manufactured homes constructed prior to 1994 tend to have been built with poor quality construction materials.[5] They have less insulation in the walls, ceiling, and floors, with air leakage around doors and windows, and inefficient heating systems. The energy costs per square foot in these older manufactured homes are nearly twice that for residents in similarly aged site-built homes.[6]

Performing energy efficiency retrofits on older manufactured homes is not always feasible or practical. It is difficult to increase insulation levels due to lack of space in the narrow walls, crawl spaces, and attics. Some manufactured home conditions are so poor, they cannot be air sealed properly. And, in some cases, the cost of weatherizing and retrofitting a manufactured home exceeds the value of the home. Further, given the limited funds available for weatherization services, the waiting lists for services that can be years-long.

These limitations of efficiency retrofits, combined with deteriorating and potentially unsafe home conditions, make home replacement an attractive path. In addition to improved energy value, home replacement also enables the homeowner to build their assets because the new manufactured home has a higher value than the older manufactured homes.[7] The manufactured home replacement may also help with park revitalization and park preservation, which contributes to housing stability for low-income families.

[2] Oregon Housing and Community Services. 2017. "Manufactured Housing: Challenges and Opportunities." Presentation to the Oregon Housing Stability Council by Dan Elliot on March 3. https://www.oregon.gov/ohcs/OSHC/docs/HSC-2017/1%20-%20Jan%2C%20Feb%2C%20Mar/030317_HSC_Manufactured-Housing.pdf

[3] Talbot, Jacob. 2012. "Mobilizing Energy Efficiency in the Manufactured Housing Sector." *American Council for an Energy Efficient Economy*. Report Number A124. https://www.aceee.org/sites/default/files/publications/researchreports/a124.pdf

[4] Talbot, Jacob. 2012. "Mobilizing Energy Efficiency in the Manufactured Housing Sector." *American Council for an Energy Efficient Economy*. Report Number A124. https://www.aceee.org/sites/default/files/publications/researchreports/a124.pdf

[5] Furman, Matthew. 2014. "Eradicating Substandard Manufactured Homes: Replacement Programs as a Strategy. *Joint Center for Housing Studies of Harvard University*. https://www.jchs.harvard.edu//research-areas/working-papers/eradicating-substandard-manufactured-homes-replacement-programs

[6] US Energy Information Administration. 2008. "2005 residential Energy Consumption Survey." Washington, D.C. US Department of Energy. http://www.eia.doe.gov/emeu/recs/contents.html

[7] Furman, Matthew. 2014. "Eradicating Substandard Manufactured Homes: Replacement Programs as a Strategy. *Joint Center for Housing Studies of Harvard University*. https://www.jchs.harvard.edu//research-areas/working-papers/eradicating-substandard-manufactured-homes-replacement-programs

2.2 Pilot Overview

Energy Trust's Manufactured Home Replacement Pilot began in June of 2017. The goals of the Pilot are to:

- refine understanding of savings and costs,
- document non-energy benefits, and
- establish a replicable partnership model between ratepayer-funded programs, housing organizations, and funders.

Staff from partner organizations noted their reasons for participating in the Pilot were primarily to improve the quality of life among the residents that they work with and as one partner noted: "to build a replicable, scalable model that will set an example for the City of Portland and other manufactured home parks."

2.2.1 Pilot Management and Partnerships

Given the complexity of manufactured home replacement, the Manufactured Home Replacement Pilot is a collaborative effort among Energy Trust and several Pilot partners or stakeholders. We refer to Energy Trust and CLEAResult as the Pilot staff because they coordinate the other stakeholders, conduct outreach at parks, facilitate the replacement process, and one of the two communicates with every Pilot participant. The other stakeholders in the Pilot include:

- Earth Advantage is a partner that conducts home pre-inspections to determine Pilot eligibility regardless of their location.
- Craft3 is a lending partner that created a loan offering for low-income households who do not own their land to use in the Pilot. They conduct outreach in tandem with Energy Trust, provide financial counseling, and support the participants.
- UCAN is another partner, offering funds to qualifying households as a subsidy and has thus far interacted with a subset of Pilot participants.
- CASA of Oregon: Arranges financing and provides support to purchase manufactured home parks and establish them as cooperatives in which individual residents own their homes and the residents collectively own the land on which the homes are sited. CASA recruits new participants and provides one on one coordination and support to homeowners in the cooperatively owned parks they have supported throughout Oregon.
- NeighborWorks Umpqua: Purchases manufactured home parks and operates them as a nonprofit. Residents own their homes and pay rent to NeighborWorks to lease the land on which they are sited. They have a Homeownership Center that is transitioning into a broader Financial Opportunity Center that will help participants navigate the home replacement process.

CASA and NeighborWorks Umpqua will serve as project managers for replacement projects in their parks, coordinating funds from different sources and supporting participants throughout the replacement process. They also oversee infrastructure improvements in the parks they purchase and provide homeownership counseling services for the residents.

2.2.2 Incentives and Subsidies

A key goal of the Pilot is to understand the savings and costs of replacing manufactured homes. Initial research by Energy Trust determined the likely energy savings estimates. The estimated savings justified incentives in

the range of $7,500 to $15,000 depending on characteristics of the home being replaced and the new, efficient home being installed. Throughout the Pilot, Earth Advantage conducts energy audits of homes prior to replacement, and Energy Trust will use this information along with a billing analysis to estimate energy savings resulting from home replacement.

In addition to Energy Trust's incentives, the Pilot leverages subsidies from a Community Action Agency working in Douglas County: UCAN. UCAN provides weatherization services to low-income households and petitioned OHCS to use a portion of their weatherization funds to support up to five manufactured home replacements. In October 2018, OHCS approved UCAN to provide up to $20,000 as a subsidy to reduce the amount of principal the homeowner needs to borrow on their loan. According to one Pilot staff member, "We wanted to stack the energy savings subsidy with other types of subsidies. The thinking is that you could compress several years of critical interventions… and offer a grant that, paired with a loan, could make this an affordable option."

Program partners described Energy Trust incentives as "one tool in the toolbox" among the many for replacing aging manufactured homes, including grants, financing, and social services. Nonetheless, partners stressed that the incentives are critical tool. One interviewed Pilot partner stated that "Those subsidies are going to make it possible. I cannot express how important that is. I think it is what is going to be the turning point so that people are going to say, 'I can actually do this.'" Partner organization staff reported that Energy Trust incentives not only reduce the cost of replacement for manufactured home residents, but also make replacements more attractive to potential lenders.

2.2.3 Financing

While the Pilot seeks to reduce the cost of manufactured home replacement with Energy Trust incentives and other subsidies, the remaining up-front cost is likely to be substantial. For example, a new ENERGY STAR® single-wide manufactured home costs a minimum of $50,000, though often more, and retailers reportedly require 50% at the time of purchase. After accounting for the incentive, the homeowner will need to borrow at least $20,000 for the home itself. This upfront cost can be difficult for predominantly low- and moderate-income residents of manufactured home parks. To address this, the Pilot also includes financing options to cover the upfront cost and allow repayment over time.

Pilot staff engaged Craft3, a community development financial institution (CDFI), to develop a loan product to support manufactured home replacements. Craft3 leaned on its experience working with low-income households and designed a product that would yield a monthly payment potentially acceptable to a homeowner earning 50% of the area median income. Craft3 commented that they sought to design a loan that is fair, equitable, and "a stabilizing force for the communities we're trying to serve."

Another loan option available to Pilot participants is the USDA Section 502 Direct Loan Program, which offers income-qualified residents of rural areas loans with payment assistance subsidies that can reduce interest rates to as low as 1%. Other jurisdictions have used these types of loans to support manufactured home purchases in cooperatively owned parks, and Pilot staff and partners expect nonprofit-owned parks to be eligible.

2.2.4 Participants

Pilot participants' homes are located in one of three settings:

1. A non-profit park operator owns the land and purchases homes for use as rentals. An example is the Oakleaf Park owned by Saint Vincent de Paul (see below for more information). We refer to the households in this setting as "residents" because they do not own the land or home.

2. A resident-owned park (also called a cooperative) where residents own their home and lease the land. An example is the Umpqua Ranch park, supported by CASA. We refer to these households as homeowners in a park.
3. An individual manufactured homeowner on private land (outside a park). We refer to these households as homeowners on private land.

Energy Trust's lending partners will issue loans to qualified households seeking to purchase a manufactured home (setting 2 and 3) and to not-for-profit park owners to purchase homes for use as an affordable housing rental (setting 1). Most of the manufactured homes replaced through the Pilot so far have been purchased by park operators (setting 1).

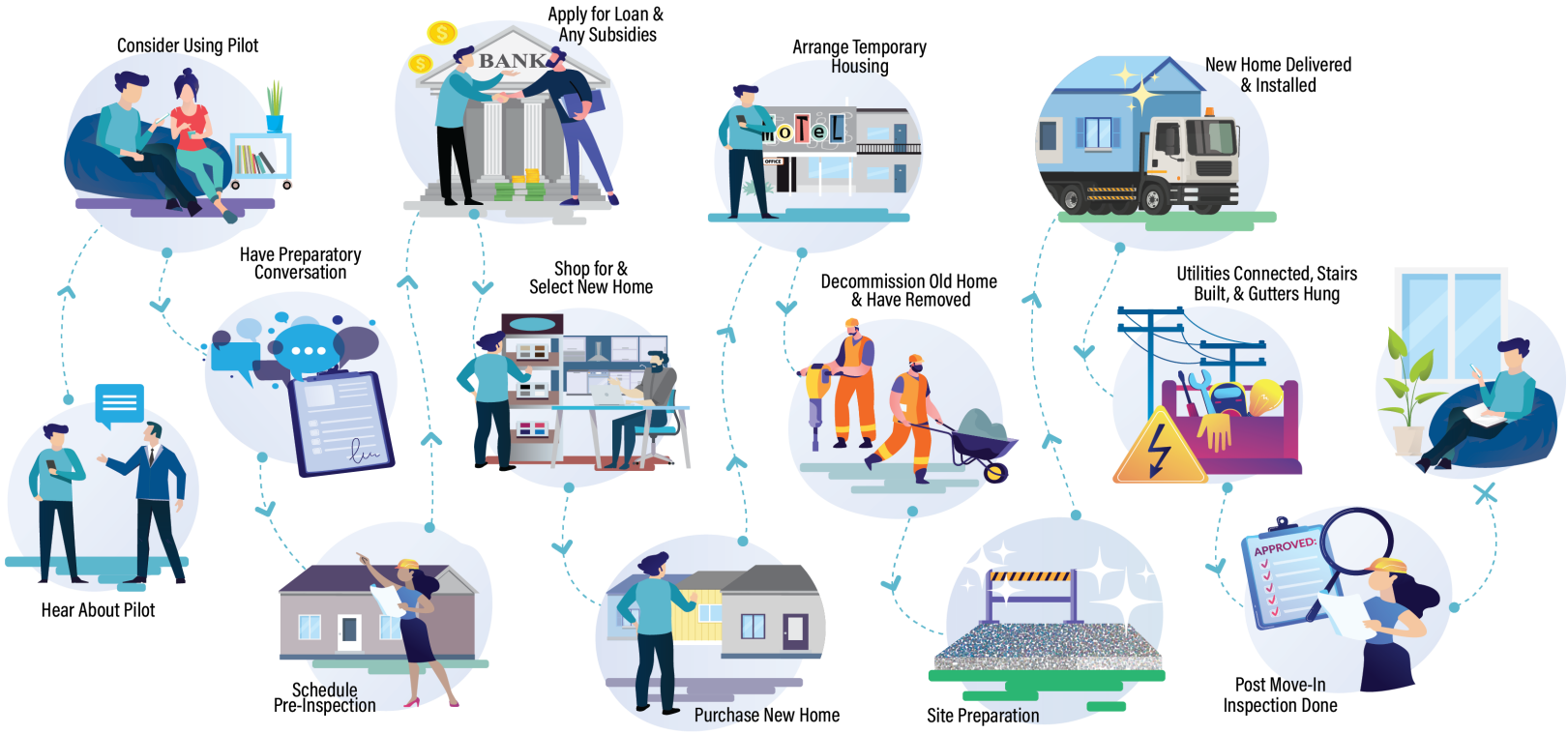
Saint Vincent de Paul of Lane County acquired a distressed park in Portland in 2017. The park was in danger of being sold to a redeveloper, in which case residents would be displaced. The park itself needed to be redeveloped, and the park's manufactured homes were in poor condition. The incentives available through the Energy Trust's Manufactured Home Replacement Pilot made it feasible for Saint Vincent de Paul to plan its redevelopment project and replace the pre-1994 manufactured homes.

Park operators that replace inefficient manufactured homes are making positive impacts by retiring old inefficient homes, but the Pilot's intended primary audience is households interested in replacing their inefficient manufactured home who live in non-profit-owned or cooperatively owned parks. Energy Trust staff noted concern that owners of for-profit, investor-owned parks could sell the land or take advantage of the improved conditions resulting from the Pilot to raise rents, potentially displacing residents who had replaced their homes. Nonpark, private land settings were not initially targeted for the Pilot. Still, staff expanded participation to households interested in replacing their manufactured who live on their own land outside a park.

The home replacement process involves several steps and can take multiple years (Figure 1). After learning about the replacement opportunity and the financial requirements, they need to consider if it is a good fit for them. If they determine it is, they schedule a home pre-inspection to see if their existing home qualifies. They apply for a combination of incentive, subsidy, and/or loan. If they acquire enough funds to make the home replacement feasible, they move forward with the purchase of a new qualifying manufactured home, find temporary housing (with assistance from the Pilot), have their existing home decommissioned, have the site prepped for the new home, and have the new home installed. After moving into the new home, they have another inspection, and then receive their incentive funds.

Figure 1 presents the key steps a participating household takes through the Pilot to replace their home.

Figure 1. Participant Journey



The participant journey begins by hearing about the Pilot and considering whether to participate. Then, the household has a "preparatory conversation" with a Pilot representative or Craft3 to assess whether the opportunity is right for that household. They may determine it is not the right time and can go back to considering whether to use the program. If the outcome of the conversation is such that they proceed, they then schedule a home pre-inspection to see if they qualify for the Energy Trust incentive. If they are ineligible, they cannot participate in the Pilot. If they are eligible, they proceed by applying for a loan or any other subsidies available. They shop for and select the new, efficient manufactured home. They purchase the new home and arrange for temporary housing while the home is replaced. The old home is decommissioned and removed. The site is prepared for the new home, which may involve leveling the land and pouring a new concrete foundation. Once the site is ready, the new home is delivered and installed. Installation involves connecting the utilities and adding stairs and gutters. The participant can move into their new home now. A Pilot representative conducts a post-move-in inspection, and the customer journey is complete.

2.3 Evaluation Methods

The objectives of the embedded process evaluation are to better understand:

- Energy impacts and quality of life improvements,
- project costs,
- barriers to participation, and
- key elements of a successful program design.

To meet the objectives, this evaluation draws from a variety of informational sources, including:

- A review of Pilot documents
- A review of home pre-inspection results
- Notes from Pilot team meetings
- In-depth interviews with Pilot stakeholders (staff and partners)
- Interviews with park operators that replaced homes and residents living at those parks
- Interviews with households who moved into new homes replaced through the Pilot
- Interviews with individuals on private land pursuing Pilot participation

Members of the evaluation team attended Pilot team meetings from 2017 through mid-2019. After mid-2019, evaluation staff checked in with Pilot staff on an as-needed basis.

Evaluation staff interviewed key Pilot stakeholders at two junctures. The first juncture was early in the Pilot period and covered topics such as the goals of the Pilot and anticipated challenges and opportunities. The second set of interviews covered how the Pilot implementation had gone so far; any challenges with recruitment, financing, or replacements; lessons learned; and stakeholder's plans concerning the future of manufactured home replacement in Oregon.

Interviews with potential Pilot participants also occurred at two key junctures: the first occurred soon after the candidate household learned about the Pilot and covered topics such as their reaction to hearing about the opportunity, any concerns they had about the process of replacing their home, and their existing home conditions. We refer to these interviews as "intake interviews" in Table 1. Four of the 29 intake interviews were with homeowners living on privately-owned land, one of whom had already purchased their newly manufactured home. The rest were residents or homeowners in parks. After their intake interview, some of the homeowners decided not to move forward with participation. Therefore, the data from the intake interviews characterizes the situations of households in manufactured homes, which represents participants and nonparticipants.

The second participant interview occurred after they moved into a new manufactured home purchased with support from the Pilot. We refer to these as "post-move in" interviews. All five post-move in interviews were conducted with residents living in homes purchased by park operators because no homeowner participant had yet completed a manufactured home replacement at the time of the post-move in interviews.

Evaluation team members conducted the first intake interviews early in the Pilot in-person at Saint Vincent de Paul's Oakleaf park and Pilot partner staff interviewed potential participants in-person at the CASA-owned Umpqua Ranch park. Evaluation team members conducted the 2019 and 2020 intake and post-move in

interviews over the phone. Five of the Oakleaf residents participated in both an intake and post-move-in interview, for a total of 29 participant interviews.

Table 1. Evaluation Interviews

Type of Interviewee	Timeframe	Number Completed
Participant intake interview	2017 or 2018	24
Participant intake interview	2019 or 2020	5
Participant post-move in interview	2019 or 2020	5
Pilot staff or partner (stakeholder)	2017	4
Pilot staff or partner (stakeholder)	2020	6

Interview instruments for these groups may be found in Appendix C.

3. Findings

This chapter presents the evaluation findings beginning with a description of the manufactured homes that participants (residents in parks and homeowners in parks and on private land) occupied along with their worries in those homes. Then we discuss outreach, considerations for participation, and the Pilot's financial support. Section 3.4 reviews the steps in the replacement process, the replacements to date, and the Pilot's influence on the replacements. Next, we present findings from residents who moved into a new manufactured home incented through the Pilot. We end the chapter with a review of stakeholder collaboration and the future for manufactured home replacement in Oregon.

Demographic data for the interviewed homeowner participants and park residents is in Appendix B.

3.1 Existing Home and Health Conditions

3.1.1 Prior Home Conditions

Interviewed residents at the Oakleaf and Umpqua Ranch parks described their existing manufactured homes as being in a livable condition at best, with many rating them as less than comfortable. Half of them describe the overall condition of their home as "fair" or "livable," while the other half said their home is in a "bad" or "poor" condition (Figure 2). Other ways they described their home included, cold, drafty, small, and horrible (Figure 3). One participant on private land described their house this way:

> *It's a 1971 home. There's no insulation in that thing. It's horrible. It's so cold and everything leaks. Around the windows it leaks. So, the cost to keep it warm during the winter and cool in the summer is substantial.*

Figure 2. Description of Current Home (n=29)

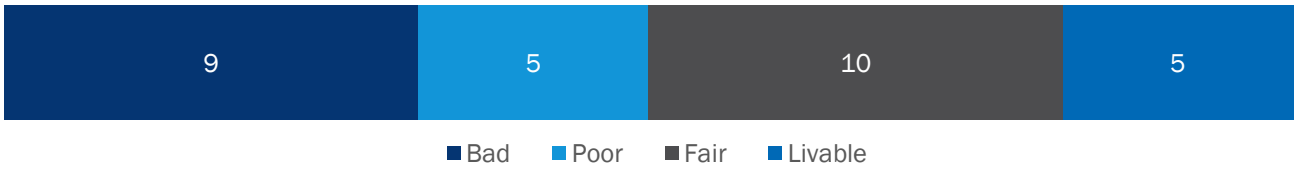


Figure 3. Participant Words Used to Describe Current Home Condition (n=29) [a]

[a] Multiple responses allowed.

All of the homes were in need of repairs with most households (83%) reporting they needed two or more repairs.[8] Two respondents stated their home was in horrible shape and should be torn down completely. The most common repairs they needed related to their foundation, roof, or windows (19 of 25; Table 2). Respondents described structural problems and said their homes were off-balance, tilting, or sliding. Others said there were holes in their floor and that soft spots or creaking floors let them know it was compromised. One person shared that they commonly have mushroom growth in floor cracks, and another said their child treated the mice as "pets."

Envelope concerns were also common (22 of 29), which included window or roof leaks, lack of insulation, and drafts. Some cracks in the walls around doors were so large you could see through them. More than half of respondents (16 of 28) also reported that their home is leaky when it rains. Many households are dealing with harsh consequences from water intrusion, including but not limited to mildew and mold growth, and rotting walls and floors. One resident had "buckets all over the place" to catch incoming rainwater, and another reported large areas of their homes overtaken by black mold. Plumbing concerns related to leaking pipes, and one woman said her piping was so "broken up" that she used a hose to meet her water needs. One respondent noted their problem with mice is so severe they are unable to put anything in cupboards unless it is sealed in plastic containers.

Table 2. Needed Home Repairs (n=25) [a]

Needed Home Repairs	Number of Respondents
Foundation	10
Roof	10
Doors or windows	10
Plumbing	6
Insulation	6
HVAC	4
Mold or pests (e.g., mice)	3

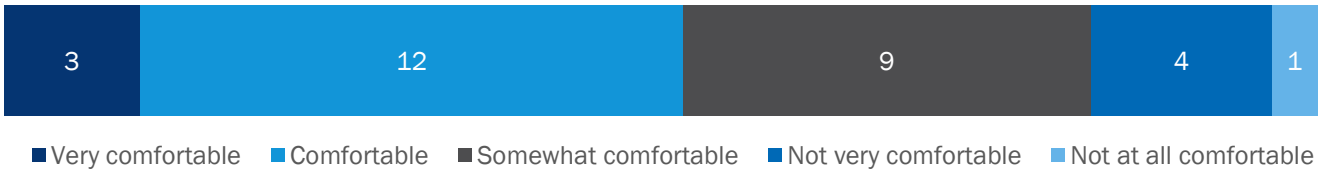
[8] All but one (24 of 25) participant reported their home needs some type of repair with the last participant mentioning they had just completed major repairs.

Needed Home Repairs	Number of Respondents
Electrical (e.g., wiring)	2
Other	7

[a] Multiple responses allowed.

Nearly half (14 of 29) also reported being less than comfortable in their home (Figure 4). More than half used electric space heaters as supplementary heating (16 of 27; 59%) to stay warm. Of those, about half (7 of 13) said they used them all the time when it is cool out. One mentioned they leave the oven on and open for additional heat. Wood stoves were another heating method interviewed households used; 6 of the 11 Umpqua Ranch residents had wood stoves, and so did two of the residents on private land. Homeowners and residents also found their homes uncomfortable in the summer, with it being humid inside. A participant on private land said their existing home "had such outdated heating equipment, you had to leave it on all day, almost 24 hours because it was such an old trailer." Some Oakleaf residents reported being "freezing" in the winter, with one stating they paid $300 per month for their electric bill, and they were "barely" kept warm. Many of the Umpqua Ranch homeowners (6 of 9) reported paying more than $200 for their monthly electric bills in the winter; two of these said they paid up to $350 per month in the winter.

Figure 4. Comfort of Home (n=29) [a]



[a] Multiple responses allowed.

More than two-thirds of interviewed households (17 of 25; 68%) said they felt unsafe in their home. Most respondents reported feeling unsafe due to electrical or mold issues (Table 3). Eight respondents expressed fear due to their electrical condition or fire safety in their home. One mentioned using extension cords because many outlets do not work and the age of the electric panel worries them. Another stated, "I'm afraid the thing is going to burn down. I'm constantly worried about it." Respondents who said they felt unsafe due to reported mold growth in various areas, including bathrooms, bedroom closets, ceilings, and windows throughout the home. Both respondents who said they feel unsafe because of security issues in their home stated that their door either was hard to lock or would not properly lock at all. Other reasons respondents said they felt unsafe in their home included the stability of their home during windstorms, water pressure issues, and issues with their heating system or flooring; one household mentioned an area in their home where there is no floor.

Table 3. Reasons Participants Feel Unsafe in Home (n=25) [a]

Reasons for Feeling Unsafe in Home	Number of Respondents
Electrical and fire safety (outlets, wiring)	8
Mold	6
Security (door lock issues)	2
Other	5

[a] Multiple responses allowed.

Earth Advantage staff took pictures of the homes during their pre-inspection audits. Figure 5 shows a hole in the ceiling of one home and mold growth in another.

Figure 5. Poor Conditions in Participant Homes

The main reason preventing more than half of households (13 of 18) from completing repairs in their home is the cost. Other factors preventing repairs include time constraints, foundation issues (e.g., home located on sliding hill), and choosing to not repair because the home will be decommissioned and replaced soon as part of a park redevelopment project.

Interviewed households actively worried about their home, particularly its poor condition and affordability (Table 4). Their financial concerns were about affording rent, paying non-utility bills, and their or family member's employment status. Respondents also worried about their home conditions. For two respondents, their biggest worry in their home involved the roof. One shared that his roof is currently sagging, and "when the wind blows, we're afraid that something may come down on us." Many also worried about energy-related concerns, which involved staying warm enough, paying energy bills, and fear of utilities being shut off. A few noted that they had worried about family issues such as divorce or custody of children. Nearly a third of Oakleaf and Umpqua Ranch households also reported the current park-led replacement project as a worry for them in the last 30 days.

Table 4. Issues Creating Worry or Stress for Participants in Last 30 Days (n=26) [a]

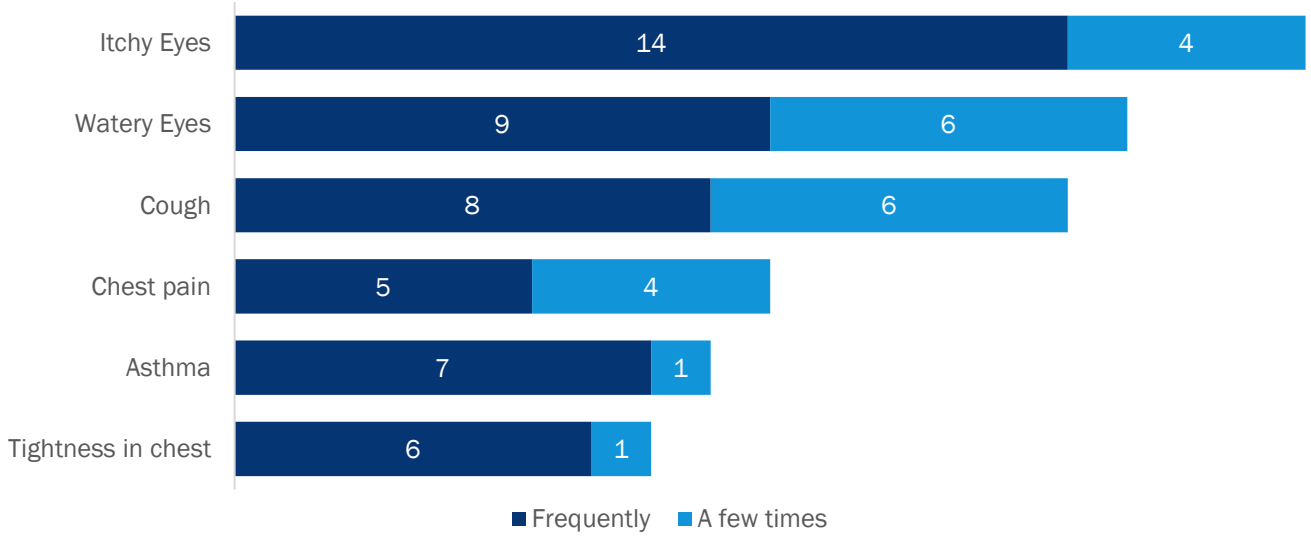
Participant Worries	Number of Respondents
Financial (eviction, employment status)	9
Home conditions	8
Park revitalization project	8
Energy-related (energy bills, utilities being shut off)	5
Family issues	3
Health due to home conditions (mold, pests)	3

[a] Multiple responses allowed.

3.1.2 Prior Health Conditions

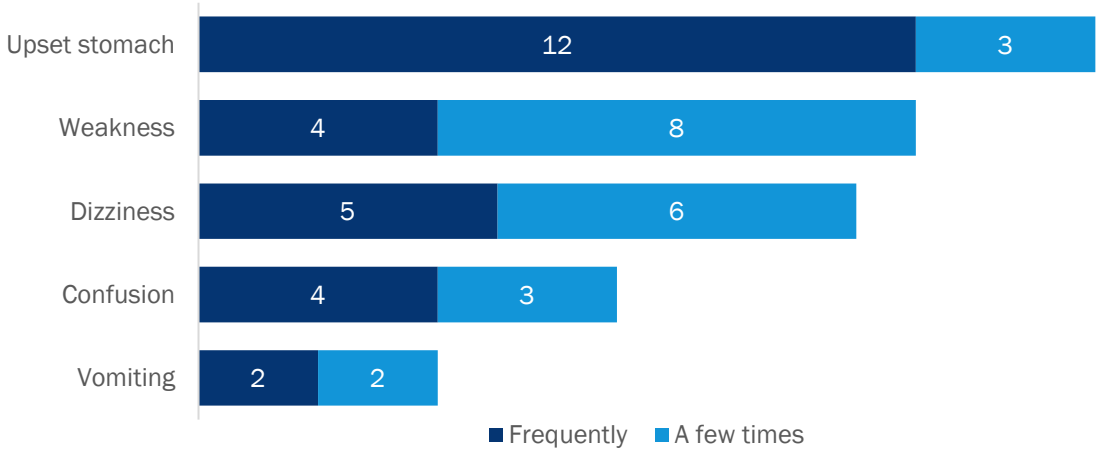
Interviewed Oakleaf and Umpqua Ranch residents commonly reported that they or someone in their household experienced health conditions related to the air quality in their house (Figure 6). Itchy and watery eyes were common, along with cough. Nearly half of the households interviewed (11 of 25) mentioned new health conditions occurring or prior conditions worsening because of the home conditions described earlier. Respondents reported that their asthma, bronchitis, or allergies were exacerbated in the homes. One respondent who had itchy, watery, and burning eyes all the time said that when their furnace comes on, they have a sneezing spell. One attributed their pneumonia to their leaky home and mold. Another said that their wife's breathing and heart condition were worse due to the mold and mice because she works from home and is home all day.

Figure 6. Health Conditions in Households Related to Air Quality (n=25)



About half of the respondents also reported experiencing upset stomachs frequently with nausea and diarrhea (Figure 7). Others mentioned headaches and lethargy.

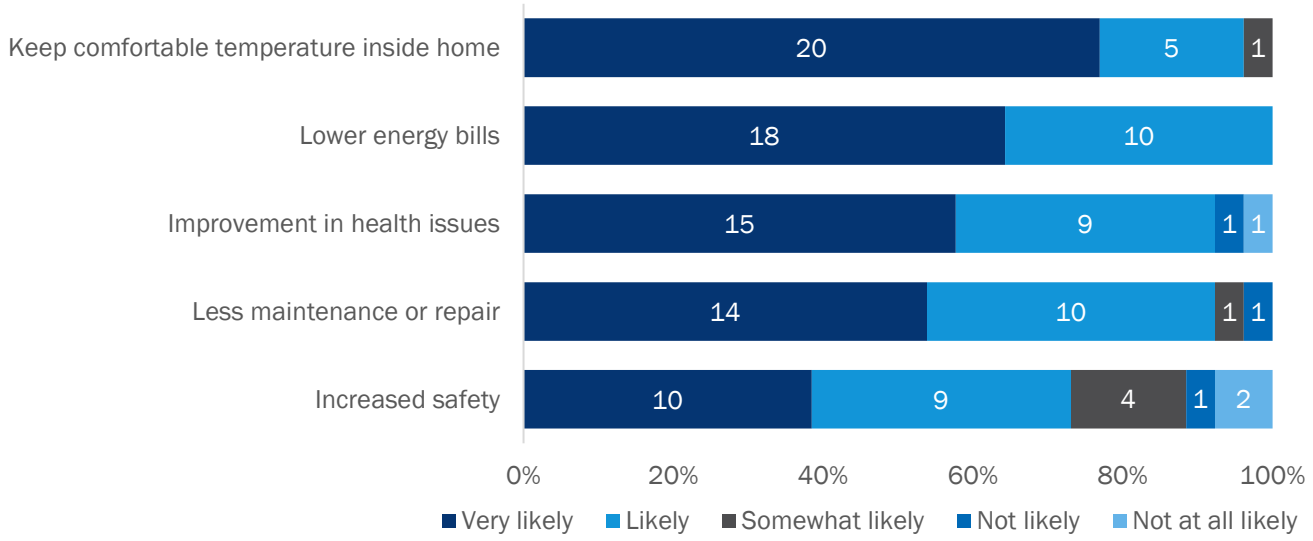
Figure 7. Other Health Conditions in Household (n=25)



3.1.3 Benefits Expected

Potential participants expected improved thermal comfort and energy savings to be the most likely benefits of replacing their homes (Figure 8). Respondents could easily envision how a new home would be warmer in the winter and cooler in the summer and how they could save on energy bills. Nearly all participants (24 of 26) said health improvements would be likely as well. While participants rated safety improvements to be the least likely benefit, still, nearly three-fourths (73%) said improvements in safety would be likely if they moved from an older manufactured home to a new one.

Figure 8. Expected Likelihood of Benefits from New Manufactured Home (n=29)



3.2 Participant Outreach

3.2.1 Stakeholder Outreach at Parks

Pilot staff conduct outreach in two primary ways depending on the park's ownership structure. At parks where a non-profit organization owns the land, Pilot staff approach and engage the non-profit group. Examples of this method include Saint Vincent de Paul at the Oakleaf park and NeighborWorks Umpqua at the Newton Creek park. In these parks, the non-profits coordinate the home inspections, acquire funding and financing, select new homes, support residents with temporary housing if needed, and oversee the site decommissioning, preparation, and installation.

The Pilot's second outreach method is to identify a cooperatively owned park that would be a good fit for the Pilot and engage the residents there. The Pilot partner, CASA, is often a conduit between Energy Trust and these types of parks. The Pilot staff present the opportunity to all interested individuals at the park. Those who want to learn more and pursue replacement hold conversations with Pilot staff or partners. These conversations, which an interviewed Pilot partner referred to as "preparatory conversations," are an important part of the Pilot's education and outreach strategy. In these conversations, the potential participant learns about the Pilot support available to them – financial and otherwise – and learns the commitment required from them to participate. Craft3 reported having held about 25 of these preparatory conversations by May of 2020.

These conversations embody responsible lending and help fulfill the Pilot's goal that participation leads to improved quality of life for participants. The Pilot staff help the potential participant think through what their budget is, what their expenses are, and how they would feel about paying the monthly loan amount. The Craft3 representative explained that they discuss topics other lenders may not ask about and that they hold these conversations before the homeowner fills out an application (whereas a traditional lender would require an application and fees beforehand). If the homeowner feels they are not ready to move forward with a loan, Craft3 or Pilot staff will connect the homeowner with the right resources to prepare them to acquire new debt and be in a position to afford the additional monthly payment.

3.2.2 Home Manufacturer Outreach

In 2018, Pilot staff approached some retailers to learn about key aspects of manufactured home replacement. They asked about typical deposit requirements, timelines for backorders, how transport is handled, available grants, and working with third-party lenders. Engaging retailers was not intended to be a primary outreach approach for the Pilot. Between participants and Pilot staff visiting manufactured home retailers in Oregon, the following retailers learned about Energy Trust's Pilot: Cascade Factory Homes, Clayton Homes, Crown Manufactured Homes, Factory Expo Home Centers, J&M Homes, Palm Harbor Mobile Homes, and Willamette Homes.

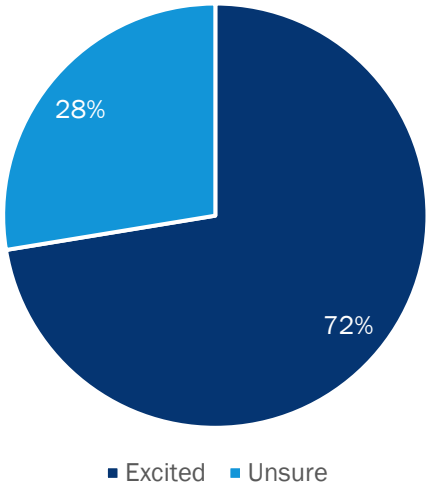
Four participants seeking to replace their manufactured homes on privately owned land first learned about the Pilot through a home retailer/manufacturer. These participants visited a J&M Homes showroom to shop for a new manufactured home, and a sales representative told them about the Energy Trust incentive. Two voluntarily reported that the salesperson was very helpful with information.

Many ratepayer-funded, residential energy efficiency programs benefit from midstream retailer-level engagement to spread program awareness. The Manufactured Home Replacement Pilot could similarly benefit from engaging manufactured home salespersons to inform potential homebuyers about the incentive and encourage them to purchase a qualifying, efficient home model.

3.2.3 Participant Considerations for Participation

Interviewees had positive expectations and the majority were excited to hear about the Pilot opportunity, though some were unsure or skeptical (Figure 9). Those who were excited were looking forward to participating because they had older homes in need of repairs, and it appeared to them that the program would resolve those needs. Some respondents said the program would open possibilities for them, and one said it "would make my dream come true" to have a new home and not need to perform maintenance regularly. Those who were unsure or skeptical questioned the impetus behind the Pilot, wondered if they could afford to participate, or were just unsure about whether the Pilot support would come to fruition.

Figure 9. Reactions Upon Hearing about Pilot (n=29)



Interviewed stakeholders described similar reactions from potential participants upon hearing about the Pilot. They characterized three types of participant reactions:

1. Those that feel the opportunity is achievable within their means and are excited to make it happen.
2. Those that are excited, but wary and want to see a successful example before doing it themselves.
3. Those that do not feel they would qualify for a loan or do not want to take on additional monthly payments.

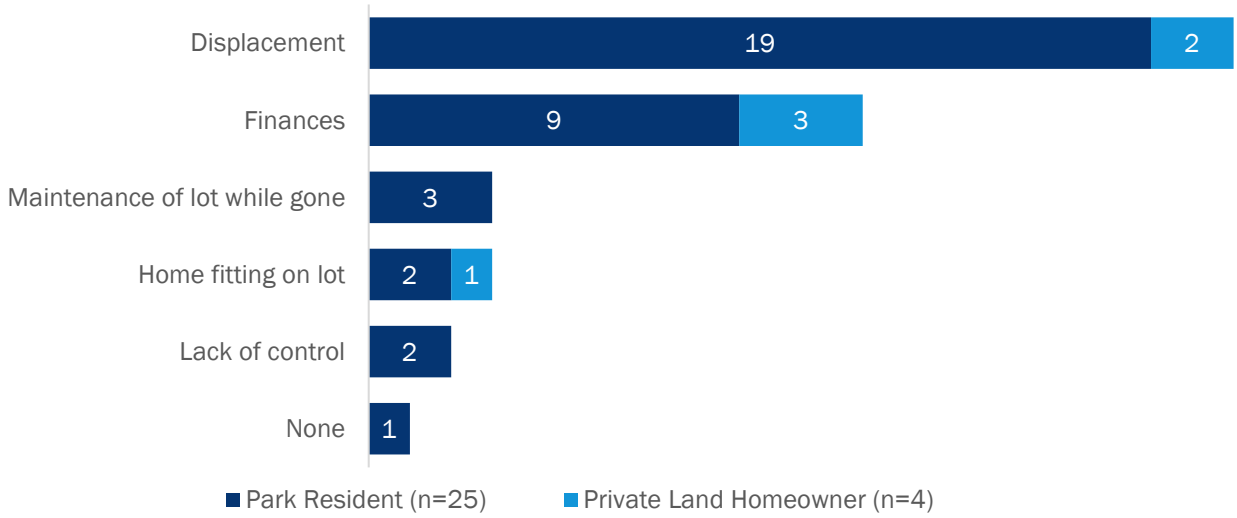
Some low-income persons are averse to debt or mistrust people offering free or cheap money. Stakeholders reflected on their early conversations with households and said a lesson they learned was that "free money" was not as attractive as it seemed on paper. After having preparatory conversations and the potential participants learned that they would pay for the home over time via a debt, many reportedly lost interest. Some were retired folks uninterested in taking on debt at their age. Others seemed to mistrust or be skeptical of the opportunity. Low-income populations are targets for predatory lending, and they have learned to be suspicious of deals offering free or cheap money. They tend to be cautious, act conservatively, and think carefully before moving forward with large financial decisions. As the CASA representative explained, "They may feel they're not in a good financial position to move forward, despite what project partners say, so they will hesitate." Stakeholders sensed that their mindset might change after they see someone like them successfully take advantage of the Pilot offer.

Both park residents and private land homeowners had concerns about the process of replacing their current home, which for both largely included being displaced and financial costs (Figure 7). Most interviewees (21 of 29) expressed concern over being displaced, including having to pack all their belongings, finding a place to store them while they waited for the new home, and then fitting their items into the new space. Many also expressed concern over having to find and live in interim housing while they wait for their new home to be ready, and the amount of time it would take, which they noted would be about three months. Two interviewees specifically identified their concern over finding suitable and safe interim housing for their children and pets. Park residents and homeowners (12) were also concerned about finances, including costs associated with the move itself, getting rid of the old home, and inspections. One interviewee also noted they were concerned about the potential impact on their credit.

Interviewed participants also noted additional concerns such as the home fitting on the smaller size of the lot (3) and the extent to which the lot, including their plants and landscaping, would be maintained while they

were gone (3). Two other interviewees noted that the biggest difficulty to the move would be the lack of control over the process. One interviewee (out of 29) indicated they had no concerns with home replacement.

Figure 10. Concerns with Home Replacement (n=29)



In their intake interviews, two homeowner households mentioned they considered moving to a site-built single-family home instead of replacing their manufactured home. One said that the lowest cost for a site-built house was $125,000, which was unaffordable for them. The other lived in a park where she rented the land plot but owned the house. She said that the increasing rental prices at the park combined with a mortgage on a manufactured home were similar enough to the costs of a site-built house that she chose to sell her manufactured home and purchase a single-family home. She reported, "the last time we were down looking at it, we were talking about all the numbers and stuff with the dealer, and on the way home, I was like uh, what? $725 dollars a month lot rent, plus the mortgage on that; that's enough for the mortgage on the new house where we own the property too. So, that made more sense to me."

Increasing interest after the first replacement seems to be just what happened at the participating parks. As soon as the four new units were delivered and while they were being installed at Newton Creek, the NeighborWorks Umpqua management received phone calls from residents asking how they could also get a new unit. Similarly, word about the replacement support spread from Saint Vincent de Pauls' Oakleaf tenants to their Arbor Mobile Home Park residents. The Arbor Mobile Home Park residents contacted Pilot staff, who then began developing an outreach plan for that site. Energy Trust introduced the Pilot opportunity to Arbor residents in collaboration with Living Cully and Multnomah County in late 2019.

3.3 Financial Support

This section reviews the Pilot's financial support available to homeowner participants and challenges participants have had qualifying for them. It ends with a brief review of the funding and financing that park operators received to replace homes through the Pilot.

3.3.1 Financial Support for Homeowner Participants

One of the Pilot's defining features is the package of financial support it can offer potential participants (Table 5). Energy Trust's incentive and the UCAN's subsidy can be used to reduce the amount of principal a homeowner needs to borrow on their loan, thus reducing the monthly payment to a point where it is affordable.

Table 5. Financial Support Available through the Pilot to Homeowners

Organizational Source	Form of Funds	Maximum Amount
Energy Trust	Incentive	$15,000 [a]
UCAN	Subsidy	$20,000
Craft3	Loan	Project-specific
USDA Rural Housing Service	Loan	Project-specific

[a] This incentive amount is for pre-1976, single-wide, electrically heated homes east of the cascades. See Appendix A for Energy Trust incentives for homes built after 1976, double-wide, and gas-heated homes.

The qualification parameters differ for each source of funds, and each has its own terms and conditions. We describe each source of funds in detail:

- **Energy Trust incentive**: Energy Trust has two forms the participant must complete, one each for pre- and post-replacement stages. The potential participant must live in Energy Trust territory and schedule a home pre-inspection to determine eligibility and potential incentive amount. The incentive varies depending on whether the home is heated by natural gas or electricity, whether it was built before or after 1976, and whether the home is east or west of the Cascade mountains (See Appendix A). The participant completes the incentive reservation form to reserve their incentive. Eight incentives had been reserved as of September 2019. Upon completing the home replacement, Pilot partner staff perform a post-siting inspection to ensure Pilot requirements have been met. The participant completes the second Energy Trust incentive form to receive their incentive payment. Energy Trust is looking into whether they can provide the incentive at the time of home purchase so that the homeowner does not need to borrow that amount on the loan and pay interest on it. Having the incentive available at the time of purchase will better serve the needs of the homeowners.
- **CAP agency, weatherization fund subsidy**: Each of Oregon's 15 Community Action agencies can decide whether they want to support the Pilot and allocate a portion of their weatherization funds to manufactured home replacements. Pilot staff have so far engaged UCAN of Douglas County for this role. To qualify for this subsidy, a participant must live in the CAP agency territory, have an annual income below 200% of the Federal Poverty Level, and their home must be electrically heated. If the participant qualifies, UCAN writes a letter committing the funds. The letter demonstrates assets for the participant, which allows them to reduce the amount of loan they need to borrow. At the time of the interviews in Spring 2020, UCAN had completed one commitment letter.
  - The evaluation findings suggest that the CAP agencies' goals and processes might limit their commitment to the Pilot. One potential reason may be due to the fact that these agencies have a two- to three-year waiting list for weatherization services (according to interview data) and they receive no additional funding to cover costs they incur supporting the Pilot. The interviewed CAP agency representative said the amount of weatherization funds they receive is declining each year and wants to limit the amount of funds going to home replacement so they can still provide their regular weatherization services. Staff at CAP agencies may feel pressured to allocate their modest weatherization funds to families that have been waiting years for their standard services rather than provide substantial funds to one family that has not been waiting.

  - At the same time, UCAN has shown a commitment to collaboration in support of the Pilot. UCAN normally has their staff conduct pre-inspection audits to determine eligibility, but UCAN agreed to accept the audit conducted by Pilot staff. Without this arrangement, the participant would need to schedule two pre-inspection audits: one to qualify for the UCAN subsidy and one to qualify for the Energy Trust incentive. This collaboration helps streamline and simplify the participant journey.

- **USDA Section 502 Direct Loan Program**: Income-eligible potential participants in rural areas living in cooperatively owned parks can qualify for this loan with interest rates as low as 1% for 30 years. This low-interest loan offers favorable terms that are not offered by most private lenders. Pilot staff and partners noted that, while the USDA loan product is attractive, the program requirements and process of receiving a loan can be time-consuming and can delay progress. For example, in one participating park, upgrades to the system providing fresh well water were necessary before residents could move ahead with USDA 502 loans. No participants had received one of these Section 502 loans at the times of the interviews in 2020.
  - Interviewed stakeholders also described the program as bureaucratically opaque in its qualification criteria. Pilot staff reportedly directed a handful of residents to apply for the loan, and none of them qualified due to inadequate credit scores. Pilot staff described it as a "defeating moment" for the household when they learned they could not qualify for the low-interest loan—not having the loan terms effectively closed off their path forward to home replacement. The USDA direct loan program does not publish its underwriting criteria, so it is hard to know why the potential participants did not qualify. It appeared to Pilot stakeholders that the qualification criteria are more stringent than the Craft3 loan.
- **Craft3 Loan**: For potential participants outside of rural areas, the Craft3 product is their best option for a low-interest loan. Craft3 has been flexible with their loan offering and adapted it over the course of the Pilot. One advantage is that they do not require a social security number, so they can work with people who have varying immigration statuses if they have an Individual Tax Identification Number. Craft3 also made their loan available to residents in privately-owned parks, whereas previously, it was limited to residents in cooperatively owned parks. As of July 2020, no potential participants had yet completed an application for a Craft3 loan.

Securing sufficient funding and financing has been one of the larger challenges for interested participants. It has not been easy for participants to acquire the CAP agency subsidy, and without it, they must borrow even more funds. One participant who did not qualify for the CAP agency subsidy needed an $80,000 loan to cover projects costs, an amount Craft3 did not feel comfortable lending. Participants with fluctuating incomes or "under the table" incomes found it challenging to fill our loan applications and demonstrate credit worthiness.[9] Others had inadequate credit scores, making them ineligible for a loan. One potential participant in conversations with Craft3 was stymied when they could not reasonably estimate the project costs and determine the loan amount they would need (see Section 3.4.1 for more on unpredictable project costs).

The four homeowners on private land who have gotten close to replacing their homes were all able to leverage other equity they had as collateral for financing. Two of them had other homes they owned outright and are taking a mortgage on that home so they have cash for the down payment on the new manufactured home. Another is using the equity from their property as a down payment on the manufactured home, and the fourth received approval for up to $100,000 for a construction loan.

[9] Fluctuating income refers to income that is unpredictable or tends to start and stop.

The multilayered financial support in the Pilot is largely viable as is, according to stakeholders, though they reported a few concerns with it.

- **A low-income participant needs to patch together funding and financing, but someone poor enough to qualify for the CAP agency funding might be too poor to qualify for a loan.** To be eligible for CAP agency weatherization funds, a participant must have an income below 200% of the Federal Poverty Level. At that income level, few people would be willing or able to accommodate an extra monthly payment following replacement.
- **Some funding and financing is available in geographically-limited areas**. The weatherization funds available through UCAN are only available in Douglas County, and the USDA Section 502 loans are only available in rural areas.
- **The timing of the incentive and subsidy require the homeowner to cover the down payment at the time of home purchase.** Manufactured home retailers require the customer to pay 50% of the home's cost upfront. But a Pilot participant would not receive the Energy Trust incentive or CAP agency grant until after the home has been sited and inspected. This can be a challenge for the homeowner to cover the upfront cost and pay interest on their loan while they wait for the incentive and subsidy. As one interviewed stakeholder described: "So many different funding sources are needed to make the projects pencil out, and each funding source has its own timeline, budget issues, and process steps. It's a real Herculean feat to make the stars line up at once for one of these projects."
- **Project costs are hard to predict.** Pilot stakeholders reported a lesson learned was that the estimated project cost was a lot higher than they expected, and it is hard to predict on a case-by-case basis. The loan amount is determined before the existing home has been decommissioned, and the new home sited. However, unexpected project costs arise during the decommissioning and site-preparation phases (see Section 3.4.1 for more). A labor shortage and legislation that changed hazardous materials charges increased project costs from what stakeholders had originally estimated.

3.3.2 Financial Support Received by Park Operators for Replacements

The park operators also put together multiple layers of funding to replace older manufactured homes in their parks. Saint Vincent de Paul received a small grant and a Community Development Block Grant (CBDG) loan from the Portland Housing Bureau to finance the park acquisition and improvement project. They used a combination of a bridge loan from a CDFI and a permanent loan to purchase the new units and complete the park project. They used the Energy Trust incentives to pay down the balance of the loan and converted what was remaining into a permanent loan with the bank. NeighborWorks Umpqua self-financed their project through their line of credit at the Oregon Community Foundation's Oregon Impact Fund and through support from the Network for Oregon Affordable Housing (NOAH). NeighborWorks Umpqua needed $400,000 upfront to cover the costs to purchase the homes, have them delivered, and installed. They reported their overall project costs were about $600,000.

3.4 Home Replacements

This section reviews the stages of replacing a manufactured home through the Pilot and the home replacements that have occurred to date.

3.4.1 Home Replacement Process

Replacing the manufactured home occurs in four stages: 1) selecting the new manufactured home; 2) decommissioning of the old home; 3) preparing the site for the new home; 4) and installing the new home. There are variable costs at each stage, which can make the prediction of overall project costs difficult. Total project costs for single-wide home replacements in the Pilot ranged from $75,000 to $123,000.

New Home Selection

Pilot participants have flexibility to choose an efficient home that works best for them. Pilot staff encourage participants to talk to more than one retailer and developed a list of retailers that participants can visit to shop for qualified homes. With participants buying homes from a variety of manufacturers, Pilot staff wanted to ensure that they would not have to request numerous customizations to meet the Pilot and other funders' requirements. For example, there was a minor issue when Pilot stakeholders learned that some new homes did not initially meet an ASHRAE 62.2 air ventilation standard that was required to use the CAP agency weatherization funds. Stakeholders were able to have a modified fan control installed in the home later so that it met ASHRAE's continuous ventilation requirements instead of the participant needing to have the factory modify it.

Pilot stakeholders decided to keep the home requirements simple for Pilot participation. The home must meet the minimum requirements of the Northwest Energy Efficient Manufactured Homes (NEEM) certification. Other than the efficiency requirement, participants can select the home and features that work for them and their plot of land. That freedom to choose can add complexity to the decision, though. An interviewed park operator likened picking out a new manufactured home to picking out a car. As he described:

> *"There are umpteen different models, floor plans, and upgrade options. Do I want the bronzed nickel finish? All these choices you're having to make can be overwhelming and costly."*

One interviewed participant who lives on private land and had purchased her new manufactured home at the time of the interview enjoyed having the options and modified a floor plan to suit her needs. She reported that the J&M sales representative was very helpful and ensured she got what she wanted. The participant selected a three-bedroom floor plan and altered it to be a two-bedroom, two-bathroom home.

Plot size constraints arose as a major challenge most participants encountered when picking out their new home, whether in parks or not. In parks, it can be a challenge to find a new home that will fit the existing lot dimensions and meet set-back code requirements. Many older parks drew their lot lines to densely pack in older, smaller homes and have not updated their plot sizes. As the industry has grown and regulatory codes have been updated, the newer manufactured homes are built larger. Even new or redesigned parks must strike a balance between maximizing the number of units in the park to allow for more residents versus having larger lot sizes for larger homes (and fewer residents). Siting the new, larger homes has created challenges to conform with set-back requirements. One participant with an older double-wide trailer from 1990 has had difficulty finding a new double-wide trailer that will fit in their space and comply with code.

An interviewed park operator reported needing to purchase homes from two different manufacturers to find the right sizes to fit on their plots. They also mentioned that figuring out the lot dimensions and the setbacks was not easy to understand. They needed to "measure the size of our lots multiple times because it was pretty confusing to try to figure out what would fit on what spots." At one plot, they needed to relocate the utility connections, so they were compatible with where the connections were in the new home.

This park operator noted that Pilot partners will need to provide technical assistance to the homeowners to ensure they measure dimensions correctly, understand the implications of utility connection locations, and communicate everything accurately to the retailer. They added that these technical activities were "not a big deal for them, but for an individual homeowner, that's a lot to deal with."

The individual homeowners we interviewed who had made it to this step were managing to address these technical requirements. One homeowner had to buy a smaller home than she initially desired to meet the county setback requirements on her land. The retailer gave her the specifications of where the utilities were in the new unit, and if the connections at the site are within 10 feet, the retailer can connect them. Her husband will do the measuring and may have to move some piping. She said that between her husband and herself, "I think we can measure things out and get it pretty close."

Pilot stakeholders noted that "dealers are notoriously opaque on the cost" because it is not always clear if the unit cost includes delivery and installation. It will be important for Pilot staff and stakeholders to educate potential participants to clarify with sales staff if delivery and installation are additional costs that will need to be paid later. The homeowner who purchased her home was savvy and communicated with the retailer about delivery and what that included.

After selecting a new home, it can take the manufacturer 14 weeks to build the home. However, the manufacturers have limited space for home construction and may not be able to construct 20 homes at once for park operators that want to order a batch. This is particularly an issue for park operators with multiple replacements. Delivery of 20 homes at once could cause issues for a park operator, because it could potentially take weeks to install 20 homes. Smaller batches of two to three homes at a time is more feasible for a manufacturer to construct and for the park operators to install. In fact, this is how replacements were handled at the Oakleaf park; the homes came in batches. Staging of replacements would also minimize the number of temporarily displaced residents at the same time and could allow for rotational temporary housing.

Arrange Temporary Housing

Park operators assist their park participants with arranging temporary housing, while some on private land owned a travel trailer they could stay in. Saint Vincent de Paul arranged temporary housing for each of the Oakleaf park residents. They expected to place everyone at a hotel, but some residents had unfavorable opinions about the hotel. Only one participant we spoke with went to the hotel, though he stated, "a lot of us were there." The others each went to a duplex, an apartment, a single-family home, and the nearby Arbor Mobile Home Park. Oakleaf residents' housing costs were equal to their original rental prices and Saint Vincent de Paul paid any additional costs. Saint Vincent de Paul also arranged portable storage units for residents to store items they did not take with them to the temporary housing.

Two participants on private land reported they had a travel trailer they could stay in on their property while the manufactured home was being replaced. Another was debating whether to stay with family or friends or instead fix up their RV and stay in that, while showering at family and friends' homes. The fourth was still figuring this out at the time of the interview but reported that the length of time would influence them. If it will just be a couple weeks, they will make due in their garage on their property, but if it is longer than that, then they will likely do a short-term rental.

Decommissioning

The costs associated with decommissioning the site can be difficult to predict. The old unit must be demolished following environmental laws, which means it needs to be inspected to determine if there are hazardous materials present such as lead-based paint, sewage, drug paraphernalia, or asbestos. If hazardous

materials are found, a hazardous materials charge must be paid in addition to the inspection fee. An interviewed participant reported the hazardous materials inspection cost $400 and would have to pay the extra charge if asbestos was found. He said his septic tank also required inspection as part of this process.

After any necessary abatement, the unit is demolished and removed from the site. Two park operators reported decommissioning costs of $10,000 per unit before any hazardous-materials charges. During the Pilot period, a labor shortage and legislation that increased hazardous materials charges increased project costs from what stakeholders had originally estimated. There are permits associated with this step, and those costs vary by county. Stakeholders reported that the expensive and somewhat unpredictable decommissioning costs have been a challenge to financing the projects.

Site Preparation

The main activity at this stage is to prepare the site to level the ground and pour a concrete pad. Stormwater drainage is also assessed and, if deemed inadequate, additional costs are incurred to rectify it. One homeowner on private land was thankful for her Energy Trust incentive because it would ensure she could cover this phase of her project because she must do some ground leveling and install a foundation.

One park operator experienced unexpected costs at this stage when they found black mud. They had to bring in material to stabilize the ground prior to pouring the concrete. There are also options to decide among at this stage. NeighborWorks Umpqua chose some options that would increase the homes' durability, such as including rebar in the concrete pad.

The other park operator reported scheduling challenges related to the site preparation. There is a narrow window of time to place the house on the concrete pad while it is curing. They reportedly had communication challenges with their retailer which made it difficult to ensure the homes would be delivered at the time appropriate for the concrete pad. The interviewed representative said a lesson they learned is to place a higher priority on customer service by the retailer. Future retailers they work with will need to demonstrate excellent customer service and communication to ensure there are no hiccups with the timing of delivery.

New Home Installation

Once the site is ready and the home is delivered, it is ready to be installed. Installation involves attaching it to the foundation, skirting it, adding accessibility measures, and connecting its utilities. This needs to be done prior to the resident moving into the home. Pilot stakeholders and partners were again met with some unexpected costs at this stage. The new homes reportedly do not come with gutters or downspouts, which the park operators arranged to have installed to ensure rainwater goes where it should. One of them described this as "one of the more expensive post-construction elements." They also both reported needing to provide accessibility to the unit and build stairs up to the front door. One park operator considered deck covers for units with decks. At the Oakleaf park, a disabled resident needed a long ramp installed to his door and other adjustments inside. The staff needed extra time to build the ramp and make adjustments, which meant this resident was moved in last, though he said the new home was worth the wait.

The new mobile home also needs to be skirted at this time. Skirting is the material that goes from the base of the home to the ground. The contractors delivering the units are responsible for connecting the water and electricity hookups. Someone also goes inside the home and ensure everything is working properly, such as the toilets, showers, sinks, lights, locks, and HVAC system.

3.4.2 Replacements to Date and Upcoming Replacements

As of June 2020, park operators have completed replacements through the Pilot. Saint Vincent de Paul replaced 21 homes, and Pilot partner, NeighborWorks Umpqua, replaced four manufactured homes at their Newton Creek Manor park using the Energy Trust incentive (Table 6). As of July 2020, a homeowner on private land also completed a replacement.

Table 6. Completed Replacements by Park Operators to Date

Park	Organization	Location	Number of Incented Replacements
Oakleaf	Saint Vincent de Paul	Portland, OR	21
Newton Creek Manor	NeighborWorks Umpqua	Roseburg, OR	4
		Total	**25**

Figure 11. Replacement Manufactured Homes at the Oakleaf Park

Photo courtesy of Energy Trust of Oregon.

The Pilot has a robust pipeline of projects. As of July 2020, 11 homes were scheduled for a pre-inspection and another 10 homes recently had their pre-inspection completed. These 21 homes were a mix of residents and homeowners in parks and include one homeowner on private land. Another nine homeowners on private land have had the pre-inspection results reviewed; Energy Trust has confirmed they are eligible and reserved an incentive for them. If all of the projects in the pipeline are completed, the Energy Trust Pilot will have supported the replacement of 65 manufactured homes.

3.4.3 Pilot Influence

The Energy Trust incentive influenced park operators to replace their old inefficient manufactured homes and eased the process for private land homeowners. For Saint Vincent de Paul, knowing the Energy Trust incentives would be available was "really important" when planning their park revitalization project. The interviewed representative reported that the incentive made it possible for them "to replace 100% of the units on the site with brand new, energy-efficient housing." They also described the incentive as having been "really critical for us" and "very effective" in reducing the barriers to replacing inefficient manufactured homes. They compared

their Oakleaf experience to their stalled efforts to replace homes in parks outside of Energy Trust territory, saying the lack of financial support in the form of incentives is a main barrier.

NeighborWorks Umpqua, which received a reduced incentive for their gas-heated homes, reports they likely would have gone through with the replacements without the Energy Trust incentive. They noted that the incentive they received was still "a meaningful amount" and "really helped" their motivation to replace the homes. They added that, without those funds, they would have had to borrow the money and pay interest on it, so it benefitted their organization not to have to come up with or borrow those funds.

The participant households on private land who are moving forward with replacement reported less Pilot influence. All four said that in the absence of the Pilot, they most likely would have moved to a new manufactured home in the next 12 months but reported that the incentive will help them to do so or encouraged them to go through with it. The one who has purchased a new home reported that the availability of the incentive "was a big plus of wanting to go ahead and go through with it. It will help a lot" and made her feel like "I should do it now" after having considered replacement for the last three years.

Two of the other homeowners viewed the Energy Trust incentive as helping them offset the total project cost and not just the cost of the new home. Both noted significant costs associated with site preparation and felt more comfortable in their decision to buy the home, knowing that they had some funds to help with removing the old home and preparing the site. One of these had been considering replacing their home for three years, but only now is financially able to do so with the incentive contributing to that ability. Three of the private land participants had not yet purchased their home and could not speak to the selection of appliances and envelope features. They all reported they would buy a qualifying home with ENERGY STAR-rated features.

Nearly all (20 of 24) of the low-income residents at the Oakleaf and Umpqua Ranch parks reported that, absent the program, they would most likely stay in their manufactured home in the next 12 months. Three were unsure what they would do, and one was looking at new manufactured home floor plans hoping to move, but still figuring out financing. The last interviewed participant sold her manufactured home and purchased a single-family home (see Section 3.3.1).

We calculated an influence score, similar to a net-to-gross score, of .82, which indicates the majority of participants were unlikely to complete a replacement in the absence of the Pilot. The score takes into account the program's influence on the household's decision. Our calculation methods are as follows: First, we calculated a score based on answers about what the respondent would likely do in the next 12 months absent the program. If they would continue living in their current home or move to another older manufactured home, they were given a score of 0. If they would move to a new manufactured home or a site-built house or apartment building, they were given a score of 1. Those who reported they "did not know" what they would do (3 of 29) were assigned the mean score from the first 26 participants. The mean score was calculated for all 29 participants and then subtracted from 1, equaling .82.

The 29 respondents who make up this cohort and provided answers for this calculation are not likely to be representative of the cohort participating after new funds for manufactured home replacement become available (see last part of Section 3.6). The new funds will help reduce the upfront cost barrier and should allow some owner-occupied households in parks to participate that have not been able to previously. One would expect the influence score to be closer to 1.0 with the new cohort of participants.

3.5 Participant Experience in New Homes

We spoke with five residents who lived in the Oakleaf park before and after Saint Vincent de Paul's revitalization project to hear about their experience in the new homes and how it compared to their old homes.

Three of the five were largely satisfied, while the fourth was overjoyed. The last resident preferred his original home that he had recently repaired to the Pilot-replaced home and reported his health was worse off in the new home. This respondent reported he suffered from "confusion" and that even his doctors could not confirm the veracity of his illness. We caution the reader when interpreting his answers because they are inconsistent with most participants' experience in the new homes.

3.5.1 New Home Conditions

Residents were mostly pleased with the new homes, but noted they were smaller than their old homes. Interviewed Oakleaf residents liked that everything was new, and they were the first to use appliances and fixtures in the kitchen and bathroom. One resident particularly appreciated the insulated walls and double pane windows because it made it comfortable and quiet inside. They also noted the whole house exhaust fan should prevent mold growing as it had at his old home. Knowing mold will not be an issue in this home makes him "feel a lot better," he said. For another resident, his new floor was his favorite thing because he could get around more easily in his walker and wheelchair. He described the new home as being like a "palace." He compared the new home to his old one:

> *I didn't realize it would be this awesome. It's really wonderful. It's not even a comparison to what I was living in before. This place has taken a complete 180-degree turn to what it is now.*

The residents' most common criticism was that the new home was smaller than their old one, which meant they could not fit all of their belongings in the new home as easily.[10] To accommodate, the residents were selling or donating items, though one rented a storage unit. Residents reported that two people could live comfortably in the new homes but that they were not suitable for families of three or more people. Some of the residents downsized from a double-wide to a single-wide manufactured home and that is the reason for reduced square footage.

Some repairs have been needed in the new homes, even after only a few months. While three of the five interviewed residents said nothing in their new homes needed repairs or maintenance, two mentioned multiple improvements they needed. One of these mentioned issues related to their sinks. The caulking around the kitchen and bathroom sink was reportedly "crumbling" after one month and the kitchen sink's spray hose needed to be tightened, but it has since started leaking again. The other resident had to fix loose cabinet doors and said his home settled oddly, so it developed some cracks.

3.5.2 Non-Energy Impacts

The non-energy benefits reported by residents in the new homes were significant, even with a small sample size and with the residents having lived in the homes fewer than six months.

Most residents experienced substantially improved thermal comfort in the new homes (4 of 5). The Oakleaf residents reported being much more comfortable temperature-wise in their new homes, with three of four rating it "a lot" better and the fourth saying it was "a little" better than their old home.[11] They noticed the heaters did not run as long when they came on and that the new homes retain the heat better. They also remarked on the absence of drafts in their homes.

[10] One resident estimated the new home was 30 square feet smaller and another estimated it was 170 square feet smaller.
[11] The fifth resident was the resident with confusion. He had rated the old home as warm, dry, and comfortable and did not offer information about the comfort level of his new home. One would presume it is similarly warm, dry, and comfortable.

As a result, the participants reported improvements in their day-to-day lives. They no longer needed to wear jackets and sweaters in the house to stay warm. Another reported they sleep better at night because they do not need so many blankets on the bed. As an example, one resident said:

> *Back at the old trailer, there were times I had to wear a really huge sweater just to keep warm in winter because there were times when things weren't being done correctly; the machinery was just shot. Where I'm at now, I don't have to worry about those things.*

Most participants reported their physical health improved a good amount after moving into the new home (4 of 5). Of the four with improved health, two said it was "a lot better" and two said it was "moderately better." We list the health improvements by household below:

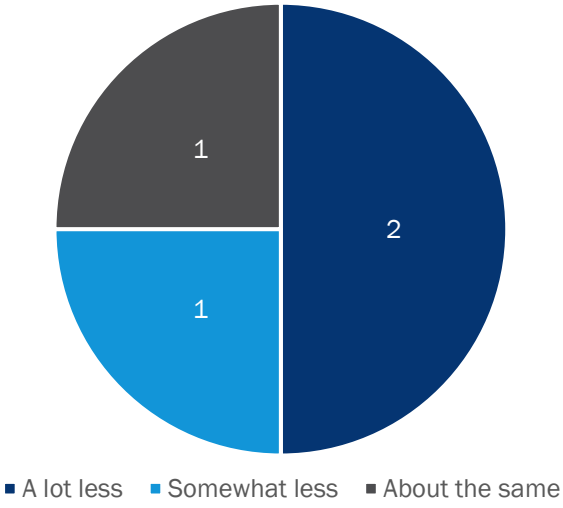
- For one household, their granddaughter's asthma had reportedly improved. The itchy and watery eyes the respondent and his wife frequently experienced in the old home had lessened in the new home.
- Another reported that he no longer experienced the upset stomach previously experienced frequently, and the vomiting previously experienced sometimes in the old home.[12]
- Another resident no longer experienced itchy and watery eyes. His cough that was persistent in the old home has gotten a lot better, and he only coughs once in a while now. His upset stomach that bothered him frequently before was gone, too. He reported still experiencing some dizziness and weakness but attributed that to a chronic health condition.
- The last resident with health improvements reported that he still experiences chest pain and weakness occasionally, but that his health had improved "60%" in the new home.

Though difficult to measure, residents' mental health also showed improvements after home replacement because they had less to worry about (3 of 4). The interviewer asked about the home issues the respondent reported worrying about in their intake interviews and whether they now worry less often, the same, or more often about these things in the new home. Generally, the respondents reported worrying less (Figure 12). For those who said they worry a lot less about things in their home, one reported their stress level and blood pressure had decreased as a result. The other commented on how much less he worries about his home by saying, "This home, it's like night and day difference. I feel comfortable [now]."

The person who worries somewhat less gave that answer because they did not know if home issues might arise after living in the house longer, but had reported no needed maintenance or repairs in the new home so far. Finally, the respondent who worries about the same, previously only worried about their home being cramped and cluttered, which they still contend within the smaller home.

[12] This respondent attributed the health improvements to taking care of himself and seeing his doctor, and not the home.

Figure 12. Level of Worry in New Home Compared to Old Home (n=4)



One resident elaborated on other non-energy benefits experienced, including pride and safety. This resident invites people over with more frequency in the new home compared to the old home because he is no longer "ashamed or uncomfortable about people coming in." His answers suggested the new home was a point of pride and reported he was taking care to "keep this place looking nice" for the next resident. This same resident reported that he also feels "a lot safer" in the new home because the old home had broken windows, and now his windows are secure. He added that the park installed a tall fence around the perimeter with a code-based lock, which also improved sense of safety. The other interviewed residents all reported their sense of safety was about the same from the old home to the new home and invited guests over about the same amount.

3.5.3 Energy Bills

We interviewed the Oakleaf residents with electrically heated homes in the winter and they reflected upon their most recent bills. They did not perceive their recent electric bills to be a big savings over the electric bills they remembered from their previous manufactured homes. Due to the small sample of post-occupancy interviews and the short amount of time that residents were living in their homes before the interview, it is best to wait for information from the impact evaluation to judge the Pilot's energy impacts.

3.6 Stakeholder Coordination and Collaboration

Many stakeholder organizations came together to create the Manufactured Home Replacement Pilot. They recognized the intersecting health, financial, and security needs in these communities and understood how home replacements could contribute to improved quality of life. Yet, without a program model to follow, they had to work together and develop a playbook to make it happen.[13]

Without Energy Trust's leadership, this Pilot would not have been possible, agreed the interviewed stakeholders. Energy Trust brought together the coalition of stakeholders to fulfill the many roles needed. They recruited NOAH to help park operators finance replacements and worked with CASA to engage residents at cooperatively owned parks. They also engaged Craft3 to create a loan product appropriate for communities

[13] Pilot staff are not making a real, actual, tangible playbook. We are using the term as a metaphor/analogy.

where the household owns the structure but not the land. Stakeholders from these organizations were highly satisfied with the support that Energy Trust has provided so far, and with their interactions and communications with Energy Trust staff. As one interviewed stakeholder put it from their perspective:

> *[The team] from Energy Trust have been so phenomenal to work with. When we have gotten distracted, they get us back on track. They're smart, they're easy to talk to, and they're clear in what they ask for. We wouldn't be where we are without them. The organizational spearheading has been integral in pushing this forward.*

Energy Trust supported the partner organizations by sharing research and data; bringing attention to the need for manufactured home replacement; and being a collaborative partner. One stakeholder said that Energy Trust's leadership and financial support "…is heartwarming and affirms that this is the right thing to do. The research that Energy Trust has done, the resources provided to reduce the cost, someone to throw ideas off of that knows what you're talking about are all really valuable things for us."

Though the Pilot's progress may appear slow given the number of completed replacements, the stakeholders have made substantial headway in writing their playbook. Pilot staff have had had to learn the hard way about the nuances and regulatory guidelines in several domains, each of which can quickly become complicated. As examples:

- Energy efficiency programs' cost-effectiveness criteria: how do we account for non-energy benefits?
- Local zoning and setback requirements: how does being in a flood plain affect the site, and how does that vary by county?
- Each funding source's eligibility criteria: how do we ensure the new homes meet the more stringent ASHRAE ventilation standard required to use weatherization funds?
- Responsible lending practices: how do we maximize the loan amount while minimizing any financial hardship for a low-income household?

Some successes from the Pilot are apparent; one of them is the attention this Pilot has drawn from other regions. Puget Sound Energy in Washington state reached out to Pilot staff to learn from them with a goal of replicating the Pilot for their manufactured housing communities. Craft3 reported that "people are coming to us from all over to learn from us or do this in their area." Other Pilot accomplishments include the robust and diverse network of partners that have come together to support the Pilot goals and the increasing interest among homeowners interested in using the Pilot.

Another indicator of the Pilot's success so far was the passing of House Bill 2896, which allocated $2.5 million to, among other things, provide loans to individuals to replace their old, inefficient manufactured homes and to support "safely decommissioning and disposing of a manufactured dwelling."[14] The Oregon legislature passed the bill in summer 2019 with unanimous support from both Republicans and Democrats. The promising results from the Pilot thus far, plus the potential to learn more about the non-energy benefits from households who complete replacement, were reasons policymakers gave for extending support. That state legislature support adds to the growing chorus that manufactured home replacement is a worthy endeavor for households, communities, and the grid. A Pilot staff member summarized the perspective on this Pilot:

[14] House Bill 2869: https://olis.leg.state.or.us/liz/2019R1/Downloads/MeasureDocument/HB2896/Enrolled

When you look at the landscape of opportunity for a programmatic entity to support these types of homeowners to achieve better, safer, more affordable, and more efficient housing, there's few options beyond this one.

Indeed, this Pilot has gotten the farthest in writing the playbook for manufactured home replacement.

3.7 The Future for Manufactured Home Replacement in Oregon

3.7.1 Expansion Plans

In their recurring meetings in 2018, stakeholders discussed whether to expand Pilot opportunity beyond the three initial parks and how best to do so given the Pilot goals. Factors they considered include the utility territories the park is sited in (if it is dual-fuel or not), its ownership structure, threat of park closure, local zoning laws, and the organizations that could serve as potential partners for those parks. They decided it would be worthwhile to expand their outreach.

Pilot stakeholders discussed the home replacement opportunity with the following groups to gauge their interest in the Pilot:

- Hood River Energy Plan's Energy Burden Committee for Hood River County
- Saint Vincent de Paul's Arbor Mobile Home Park in Portland
- South Central Oregon Economic Development District for Klamath Falls
- West-Side Pines Cooperative park in Bend
- Confederated Tribes of the Umatilla Indian Reservation Lucky 7 Trailer Court
- Park owners of gas-heated homes in Washington County

NeighborWorks Umpqua had also been looking for additional park preservation projects in which they could use the Pilot incentive. But they have been competing with well-heeled investors who can close on a park quickly. They gave an example of when they called an agent of a park up for sale. The agent had already received five offers over asking price and were going with an offer that could close in two weeks. As a nonprofit, NeighborWorks Umpqua cannot pay over the valued amount and their administrative processes take more than two weeks. Parks that investors are not making offers on are small, remote, and have lots of infrastructure issues; not a viable opportunity for NeighborWorks.

Saint Vincent de Paul has also looked into replacements in their other parks. However, they are outside Energy Trust territory and the absence of the Energy Trust incentive has made it difficult for them to move forward replacing old, inefficient homes at their parks in Lane County. Energy Trust has been working with OHCS and the Bonneville Power Administration (BPA) to allocate funds for home replacements outside of Energy Trust territory. BPA provides funds for home replacements through local utilities, but at $2,000, are much smaller than those available through Energy Trust.

CASA has six parks in Oregon other than Umpqua Ranch and is looking to make the Pilot offer available to those additional sites.

3.7.2 Future Program Needs or Possible Changes

Pilot stakeholders reported their coalition might benefit from one additional type of partner; a single point of contact that can shepherd the participant from beginning to end. None of the existing Pilot stakeholders are in a position where this role would fall naturally to them. This role of keeping track of where a participant is in the replacement process has been being performed jointly between Energy Trust, CLEAResult, CASA, and Craft3. Stakeholders were quick to add that if a new formal role were to be created, they did not want the participant to absorb the cost of providing it through increased home costs or decreased incentive costs. Pilot stakeholders will look into whether funds through a source like OHCS or Meyer Memorial Foundation can support such a service.

The state of Oregon and its state-level agencies may have a larger role to play in manufactured home replacement. Pilot stakeholders are eager to expand the manufactured home replacement support throughout Oregon, but most of the key financial support are not available everywhere in the state.

The weatherization funds are funneled from OHCS to the CAP agencies that provide the funds to eligible households in their service territories. When the decision to contribute the weatherization dollars is left to each CAP agency, Pilot staff must invest effort to recruit each one. A solution would be to bypass the CAP agencies and allow OHCS to allocate weatherization funds to home replacement at the state level. The Multifamily Energy Program shows a precedent for the state performing this role. Alternatively, the state could actively encourage all of Oregon's CAP agencies to promote the idea of replacement, so they become another outreach channel for the Pilot.

The $2,000 BPA incentive for manufactured home replacement available outside of Energy Trust service territory has appeared inadequate in stimulating interest. The USDA rural development loan offers attractive rates but is available only in rural areas and Pilot participants have yet to qualify for it. The additional funds coming from the state in HB2896 will be very useful in filling the gap that these funds leave behind.

More completed projects will allow the stakeholders to better estimate project costs. There is a $50,000 range between the least cost and highest cost replacements through the Pilot thus far (Table 7). As more homeowners participate in the Pilot and complete replacements, Pilot staff will be able to refine their project cost estimates, which will allow them to assign Pilot funds more accurately and have more focused preparatory conversations about project costs with potential participants.

Table 7. Range of Project Costs

Project Aspect	Lower End	Higher End
New manufactured home	$52,000	$83,000
Site decommissioning (testing, demolition, removal)	$15,000	$21,000
Site preparation (concrete, gravel, leveling)	$3,000	$9,000
Installation (stairs, gutters, skirting)	$5,000	$10,000
Total	**$75,000**	**$123,000**

4. Conclusions and Recommendations

We offer the following conclusions and recommendations:

Conclusion 1: There is a considerable need to replace pre-1994 manufactured homes in Oregon. Many of these homes are in disrepair. Roof leaks, cracks in the walls, holes in the floor, mold, and pests make the homes uncomfortable, worrisome, and potentially unhealthy to live in.

Conclusion 2: The Pilot is sufficiently resourced, attractive, and flexible enough to encourage manufactured home replacements inside and outside of the park context. Pilot staff have engaged stakeholders to facilitate replacements for residents in parks indiscriminate of whether the participants own the home, land, or neither. Pilot partners support homeowners who do and do not own their land and also engage park operators for replacements where tenants occupy the homes.

Conclusion 3: Each replacement project is unique due to the household's financial situation and the land plot the home is sited on. Each homeowner considers their assets and whether a loan is in their best interest. At the same time, loan decisions are complicated when project costs are hard to estimate. The cost to replace a single wide manufactured home can vary considerably and some of the costs are hard to predict. Individualized attention is necessary when home replacement projects occur on a case by case basis.

> **Recommendation:** Pilot staff should ensure continued or reinvigorated discussions with interested partner organizations and initiate discussions with other potential organizations to secure funding for a participant liaison role that can provide individualized support and be a point of contact to shepherd the participant.

Conclusion 4: The Pilot brings together a variety of financial support, including incentives, subsidies, grants, and low-interest loans, but most participants cannot qualify for all of them and some have had difficulty qualifying for any. Most of the Pilot's financial support is available in geographically restricted areas and only one of the state's 15 CAP agencies contributes weatherization funds to the Pilot. Soon, Oregon House Bill 2896 will provide additional funds for manufactured home replacement, which can potentially be used to supplement Pilot support.

> **Recommendation:** Pilot staff should investigate ways to make best use of the HB2896 funds and determine opportunities for combining them with Pilot funds to further reduce the cost of home replacements for participants. Pilot staff should also pursue the possibility of OHCS approving all of Oregon's CAP agencies to assign a portion of weatherization funds to manufactured home replacement.

Conclusion 5: Early post-occupancy findings point to substantial non-energy benefits for people who move from a pre-1994 manufactured home to a new, energy-efficient one. Thermal comfort was markedly improved, health conditions improved, and residents reported reduced stress and worry in the new homes. Some experienced pride in the new home and increased feelings of safety as well.

> **Recommendation:** Subsequent evaluations should include efforts to measure self-reported non-energy benefits.

Appendix A. Energy Trust of Oregon Incentives

Table 8. Pilot Incentive Amounts by Home Type

Home Type	Year Built	Climate Zone	Incentive for Electrically Heated Homes [a]	Incentive for Gas Heated Homes [a]
Single-wide	Pre-1976	West of Cascades	$10,000	$4,000
		East of Cascades	$15,000	$7,500
	1976-1994	West of Cascades	$7,500	$3,000
		East of Cascades	$9,000	$9,000
Double-wide	Pre-1976	West of Cascades	$15,000	$7,500
		East of Cascades	$17,500	$13,000
	1976-1994	West of Cascades	$12,500	$6,000
		East of Cascades	$15,000	$15,000

[a] Incentive levels reflect conversion to like-sized home. Adjusted incentives are available for single to double-wide conversions.

Appendix B. Participant and Resident Demographic Data

This appendix presents demographic data about the interviewed Oakleaf and Umpqua Ranch residents along with the five participants on private land.

About half the sample had lived in their home five years or less, while about half lived in their home six years or more (Table 8).

Table 9. Number of Years Lived in Current Home (n=29)

Years Lived in Current Home	Number of Respondents
Under 2 years	7
2-5 years	8
6-10 years	5
11-20 years	6
More than 20 years	3

Participants commonly lived in one- or two-person households (Table 9). Eight households had children under 18 living there (8 of 29; 28%). A minority of households had a senior over 65 living there (5 of 28; 18%). Four households had veterans.

Table 10. Number of People in Household (n=29)

Number of People in Household	Number of Respondents
1	8
2	11
3	4
4	4
5+	2

Most Oakleaf and Umpqua Ranch participants could get around freely in their home (21 of 25; 84%). One mentioned that their overweight wife “has trouble getting around.” The others did not elaborate on mobility issues.

The residents in the Oakleaf and Umpqua Ranch parks had lower annual incomes than those on private land. While everyone in the parks reported pre-tax annual household income of under $50,000, three participants on private land reported incomes over $50,000 with one exceeding $100,000. Nearly half of the park participants (11 of 25; 44%) reported receiving Supplemental Security Income (SSI) or Social Security Disability (SSD) income.

Table 10 includes the income answers of 26 participants. An additional two park participants specified they earned less than $50,000 in the prior year but declined to provide a more detailed income answer. They are not reflected in Table 10. One other participant declined to answer.

Table 11. Household Income (n=26)

Household Income	Number of Respondents
Less than $15,000	10
$15,000 to $24,999	5

Household Income	Number of Respondents
$25,000 to $34,999	5
$35,000 to $49,999	3
$50,000 to $59,999	1
$60,000 to $74,999	0
$75,000 to $100,000	1
More than $100,000	1

Most interviewed participants identified as White (Table 11), two were Native American and one was African American. Five people voluntarily mentioned that another person in their household was nonwhite. These included one Filipino wife, one Hispanic wife, one Hispanic grandchild, a mixed-race son (half-Black), and another Native American (relationship unstated).

Table 12. Participant Race (n=28)

Race	Number of Respondents
White or Caucasian	25
Native American	2
African American	1

Appendix C. Instruments

Participant Intake Interview Guide

Introduction

The Manufactured Home Placement/Replacement Program is available through [ORGANIZATION] and the Energy Trust of Oregon, with the mission to replace the homes of residents living and working in Oregon. The purpose of this survey is to understand which parts of this program are most important to residents of your community. We also want residents to know and understand the benefits and priorities of the program, which are the health and safety of you and your fellow residents, and to hear your thoughts about those benefits and priorities.

I have about 15 minutes worth of questions about your perspective on the program. Is this a good time to talk? Everything you say to me is confidential. We will combine your responses with those of other respondents, and we will not report anything in a way that would identify any individual respondent.

Motivation for Participation [ASK ALL]

Q1. [*Skip if this is the first the respondent is hearing about the program*:] What was your reaction when you first heard about this program to help people replace their manufactured homes? [*If needed*:] Were you excited? Were you skeptical?

1. Why was that?

Q2. I'm going to read a list of ways someone might benefit from replacing an older manufactured home with a new one. For each one, please tell me how likely you think it is that someone replacing their home would experience that benefit in a meaningful way. Please answer on a scale from one to five where one is not at all likely, and five is very likely.

1. You can keep the temperature more comfortable inside your home
2. Lower energy bills
3. Less need for maintenance and repair
4. Increased safety
5. Improvement in health issues like allergies and asthma
6. Having a brand new home where everything is up-to-date

Concerns/Barriers to Participation [ASK ALL]

Q3. What do you think will be the most difficult part of replacing your current home with a new manufactured home?

Q4. What concerns do you have, if any, about the process of replacing your home?

1. [*If not addressed*:] Are the upfront costs of replacing your home manageable?

Q5. What concerns do you have, if any, about living in the new home after replacement?

1. [*If not addressed*:] Is the increase in your monthly housing costs – like loan payments or rent – reasonable?

Q6. [*If respondent has decided not to move forward with home replacement or has not yet decided to move forward*] What are the most important things that caused you/might cause you to decide not to replace your home?

[*Allow the respondent to give an open-ended answer. For any items not addressed, ask*:] What about:

1. The upfront cost of replacing your home
2. The increased monthly housing costs
3. The need to move out during the replacement process
4. Uncertainty about how long you will continue living in your home
5. The potential that the replacement home would not be the same size or layout as your current home
6. The potential that the replacement home would change the amount of usable space available on your lot

Program Influence [ASK ALL]

Q7. If this program to help people replace older manufactured homes was not available, which of these things best describes what you would do in the next 12 months? Would you…

1. Continue living in your current home
2. Move to another older manufactured home
3. Move to a new manufactured home
4. Move to a site-built house or apartment building
96. Other, please specify:
98. Don't know

Q8. [*If respondent would continue living in their current home or move to another older manufactured home (skip for SVDP Parks):*] The program offers different types of support in helping people replace their older manufactured homes. We'd like to know how important each one is in your decision to replace your home. On a scale of one to five, with one meaning not at all important and five meaning very important, how important is…

1. The grants that are available to reduce the overall cost of replacing your home
2. The availability of a loan to help repay the costs not covered by grants
3. Help with the process of replacing your home

Q9. [*Skip for SVDP parks*:] What else, if anything, does the program offer that was important in your decision to replace your home?

Pre-Replacement Housing Conditions [ASK ALL]

Thanks for your responses so far. Now I have a few questions about your current home. This program to help people replace their manufactured homes is new, and these questions will help us understand all the ways people benefit from moving into a new home.

Q10. How long have you lived in your current home?

1. [*If less than 5 years*:] Before you moved into your current home, did you live in another manufactured home, or in some other type of housing?

Q11. What do you like most about your current home?

Q12. How would you describe the condition of your current home?

Q13. [*If not addressed*:] Do you feel that your home needs repairs?

1. What needs to be done?
2. What, if anything, is preventing you from getting your home repairs done?

Q14. How comfortable would you rate your current home?

1. What are the main issues that make your home uncomfortable?

Q15. How do you heat your home?

Q16. Do you use plug-in space heaters?

1. How many do you have?
2. What type of plug-in heaters do you use?
3. How often do you use plug-in heaters during the winter?

Q17. Do you use a wood stove or fireplace to heat your home?

1. How often do you heat your home with wood?

Q18. Is your home drafty in the winter?

Q19. Is your home leaky when it rains?

Q20. Is there anything about your home that makes you feel unsafe? [PROBE: uneven floors, fear of tripping, mold, etc.]

Q21. Since moving into your current home, have you or anyone else in your household experienced any health conditions that the condition of your home has either caused or made worse?

1. [If yes:] What were they?
2. [If yes:] What about your home caused the condition or made it worse?

Q22. In some cases, living in a new home can help improve people's health. We want to understand if this is one of the ways people benefit from this program to help people replace their manufactured homes. I'm going to read a list of health issues that can be affected by housing conditions. For each one, please tell me whether you or someone else in your household have experienced it frequently, a few times, or not at all in the past 30 days [*Acknowledge any conditions mentioned in Q21*]:

Condition	Experienced Frequently		Experienced a Few Times		Did Not Experience	
	Respondent	Someone else in Household	Respondent	Someone else in household	Respondent	Someone else in household
1. Asthma						
2. Watery eyes						
3. Itchy eyes						
4. Persistent cough						
5. Tightness in chest						
6. Chest pain						
7. Upset stomach						
8. Vomiting						
9. Dizziness						
10. Weakness						
11. Confusion						
12. Anything else?						

Q23. Do you, or does anyone else in your household, smoke tobacco?

Q24. What, if anything, are the most important issues that have been creating worry or stress for you in the past 30 days?

Q25. [*Ask about any not addressed in Q23*:] In the last 30 days, have any of these issues created worry or stress for you?

1. The condition of your home
2. Paying your bills
3. The possibility of having your utilities shut off
4. Your health
5. The health of someone who lives with you
6. Having enough to eat

Q26. Is there anything else you would like to tell me about the condition of your home?

Demographics/Firmographics [ASK ALL]

Q27. How many people live in your home?

1. Including yourself, can everyone in your home get around freely, without the help of others?
2. Including yourself, how many people who live in your home are age 65 and older?
3. How many people who live in your home are 18 and younger?
4. Including yourself, how many people who live in your home are veterans?

Q28. Are you, or is anyone else in your household, a veteran?

1. I am a veteran
2. Someone else in my household is a veteran
3. No one in my household is a veteran
98. Don't know

99. Refused

Q29. Do you, or does anyone else in your household, receive Supplemental Security Income (SSI) or Social Security Disability (SSD) income?

1. Yes
2. No
98. Don't know
99. Refused

Q30. Which of the following ranges describes your 2016 total household income before taxes? Was it…

1. Less than $50,000
2. $50,000 to under $100,000
3. $100,000 or more
98. [*Do not read*] Don't know
99. [*Do not read*] Refused

Q31. [*If Q28=1*] Is it:

1. Less than $15,000
2. $15,000 to under $20,000
3. $20,000 to under $25,000
4. $25,000 to under $30,000
5. $30,000 to under $35,000
6. $35,000 to under $40,000
7. $40,000 to under $45,000
8. $45,000 to under $50,000
98. [*Do not read*] Don't know
99. [*Do not read*] Refused

Q32. [*If Q28=2*] Is it:

1. $50,000 to under $60,000
2. $60,000 to under $75,000
3. $75,000 to under $100,000
98. [*Do not read*] Don't know
99. [*Do not read*] Refused

Q33. [*If Q24=3*] Is it:

1. $100,000 to under $150,000
2. $150,000 to under $200,000
3. Over $200,000
98. [*Do not read*] Don't know
99. [*Do not read*] Refused

Q34. With which of the following racial or ethnic groups do you identify? Do you consider yourself… [*Respondent can choose multiple options*]

1. White or Caucasian
2. Black or African American

3. Latino, Hispanic, or Mexican
4. Asian or Pacific Islander
5. Native American
6. Middle Eastern or North African
96. [*Do not read*] Other, please specify:
99. [*Do not read*] Refused

Participant Post-Move In Interview Guide

Introduction

Hi. My name is _____, and I'm calling on behalf of Energy Trust of Oregon regarding the home replacement program.

[If needed] The Manufactured Home Placement/Replacement Program is available through [PARK ORGANIZATION] and the Energy Trust of Oregon, with the mission to replace the homes of residents living and working in Oregon.

Now that you have gone through the process of replacing your home, we wanted to speak with you so we can understand which parts of the program are working well for participants and which parts could work better. We also want to hear your thoughts about benefits. As one of the first participants in this new program, your feedback is very valuable to us.

I have about 25 minutes worth of questions. Is this a good time to talk? Everything you say to me is confidential. We will combine yours with those of other respondents, and we will not report anything in a way that would identify any individual respondent.

Replacement Process [ASK ALL]

Thank you for talking with us in [year] about why you were interested in the program. My first questions today are about the replacement process.

Q1. How long did it take between when you moved out of your old home and when you moved into your new one?

1. Where did you go?
2. Where did you put your things?
3. How difficult was it for you to find a place to stay during that time?
4. How disruptive was that temporary displacement in your day-to-day life? [Probe for challenges related to pets or children's school districts]

Q2. [SKIP TO Q4 FOR OAKLEAF] Now I have some questions about getting a loan for the new home. What, if anything was difficult about applying for the loan to replace your home?

1. What concerns, if any, did you have about applying for the loan?
2. What help, if any, did you receive in applying for the loan(s)? [If any] How useful was that help in applying for the loan?
3. How long did it take to receive the loan(s) you applied for? Did this cause any delays in your home replacement project?

Q3. [If not mentioned in Q2_2] Did you get credit counseling or homeowner counseling through the program?

1. [IF YES] How helpful was that support? Why?

Q4. Have your monthly housing-related payments gone up or gone down since moving into your new home?

1. [IF YES] Was this change expected?
2. [IF YES AND WENT UP] How challenging has it been to make these increased payments?

Q5. Thinking broadly now, what about the process of replacing your home went well?

Q6. What was the most difficult part of replacing your home?

Replacement Benefits [ASK ALL]

Now I have some questions for you about your experience living in your new manufactured home.

Q7. So far, has your new home met your expectations?

1. Why/Why not?

Q8. [*INTERVIEWER: Check prior interview for concerns/worries they had*] Now thinking about things like [INSERT: for example, sagging roofs or roof leaks or pests] do you feel like you worry less often, worry about the same, or worry more often in your new home?

1. How has that [lower/higher] level of worry affected your day-to-day life? [IF NEEDED: MORE: Perhaps you're apprehensive over the new items and don't want them to get broken. FEWER: Perhaps you have the freedom to use your whole home or are less anxious about how things are affecting your health.]
2. Now I'd like to know how much [more/less] you worry. Would you say you worry a lot [more/less], somewhat [more/less] or just a little [more/less]?

Q9. How does your new home feel temperature-wise compared to your old home? [If needed, is it more or less comfortable?]

1. [IF YES] What have you noticed? [Probe on fewer drafts?]
2. How has that affected your day-to-day life? I'm thinking of things maybe like not having to wear a jacket indoors during winter; not needing to get wood for a wood-fired stove.
3. Now I'd like to know how much [more/less] comfortable you are in your new home. Would you say you're a lot [more/less] comfortable, somewhat [more/less] comfortable, or just a little bit [more/less comfortable]?

Q10. [*Interviewer – prior to interview, input answers into this chart from prior interview and ask specifically about issues they mentioned before*.]

Condition	Respondent or someone in household	Frequency

Last time you mentioned to our team that you or someone in hour household experienced [INSERT ITEM & FREQUENCY FOR EACH CONDITION LISTED ABOVE]. For each, I'd like to know if you still experience that the same amount, if you still experience it but less often, or if you don't experience it at all anymore. Let's start with…

Condition	Still Experience Frequently		Still Experience Some		Do Not Experience Anymore	
	Respondent	Someone else in Household	Respondent	Someone else in household	Respondent	Someone else in household
1. Asthma						
2. Watery eyes						
3. Itchy eyes						
4. Persistent cough						
5. Tightness in chest						
6. Chest pain						
7. Upset stomach						
8. Vomiting						
9. Dizziness						
10. Weakness						
11. Confusion						
12. Anything else?						

1. [ASK IF NOT IMPROVED] Okay, it sounds like not much has gotten better in the new home. Is that right?
2. [ASK IF IMPROVED] How have these health improvements affected your day-to-day life, if at all? [IF NEEDED: Perhaps you don't restrict activity as much you used to, or you don't need to buy medicine as often?]
3. [ASK IF IMPROVED] Please tell me whether your health or the health of someone living with you has improved a little, somewhat, or a lot.

Q11. Would you say you or any of your family members have changed in how often you invite guests to your home? Why is that?

1. [IF UNCLEAR] Would you say that's been a positive change in your life?
2. [If YES TO Q11_1] To what extent has that improved your life- a little, somewhat, or a lot?

Q12. How do your energy bills compare to the energy bills you received at your old home?

1. Why do you think that is?
2. [IF LOWER] What have you been able to use the extra money on? [Probes: more food, enjoyable activities, transportation, other bills or debts, etc.]
3. [IF LOWER] To what extent would you say this has improved your life – a little, somewhat, or a lot?
4. [IF HIGHER] To what extent have the increased bills negatively affected your life – a little, somewhat, or a lot?

Q13. How would you say your feelings of safety in your new home compare to your old home? [If needed: If your old home had doors or windows that didn't lock well, do you feel more secure in your new home, like it'd be harder for someone to break in?]

1. [IF SAFER] Would you say you feel a little safer, somewhat safer, or a lot safer?
2. [IF LESS SAFE] Would you say you feel a little less safe, somewhat less safe, or a lot less safe?

Q14. Since moving into your new home, have you had to do any maintenance or have anything repaired?

1. [IF YES] What needed repair or maintenance?
2. [IF UNCLEAR] Why did it need repair or maintenance?

Q15. We're almost done with the interview. Just a few more questions. What are your favorite things about your new home?

Q16. Is there anything you don't like about your new home? [PROBE: uneven floors, leaks, mold, mice, cockroaches, etc.]

Closing [ASK ALL]

Q17. Now that you have replaced your home, what advice would you give to someone who was just starting to consider whether they should do the same thing?

Q18. What advice would you give the people running this program to make it go more smoothly for the residents or to otherwise improve it? [*Interviewer: if they mention specific people, try to find out which organization the person works at; for example, a WAP program, a bank/loan organization, CLEAResult, Energy Trust. Respondent may not know*.]

Q19. Those are all the questions I had prepared. Is there anything else you think is important for me to know about the process of replacing your manufactured home or about any benefits or concerns with your replacement?

Pilot Staff or Partner Interview Guide 2017

Introduction

Thank you for talking with us today. As we mentioned in our email, Research Into Action was hired by the Energy Trust of Oregon to evaluate the manufactured home replacement program. As a part of that evaluation we are talking with organizations that Energy Trust has partnered with to deliver the program. We will be talking with these partners about every six months. The goal of this initial interview is to get a better understanding of the pilot, your goals and objectives for participation, and anticipated challenges and opportunities.

The interview should take about 30 minutes, is now still a good time?

Great, and do you mind if I record the call? [IF NEEDED] this is just for my note-taking purposes. We will not identify you in our reporting of our findings.

Instrument

Q1. How long has Energy Trust been working on the manufactured home replacement program?

1. How did your involvement come about?

Q2. When you first heard about the manufactured home replacement program, what was your reaction?

1. What was attractive about the idea?
2. What, if anything, were you skeptical about?

Q3. Please walk me through how the manufactured home replacement program will work in the communities your organization supports.

1. How will you identify potential homes for replacement, and how will you approach the owners/residents about the opportunity?
2. What challenges, if any, have you/do you expect to encounter with recruitment?
3. What, if anything, have you done/do you expect to do to overcome these challenges?
4. What type of support will you offer to residents/participants through the home replacement process?

Q4. What are your organization's goals for the manufactured home replacement program? [*Probe on goals during the pilot and goals after the pilot*]

1. How well do you anticipate the program's offerings will fit with the other types of support you provide?

Q5. From your perspective, what type of support does Energy Trust need to bring to the program for it to be successful? [*If needed, probe on funding, expertise, partnerships with other organizations, etc.*]

1. So far, has Energy Trust provided the support needed for the program to be successful?

Q6. Are you partnering with, or receiving support from, organizations other than Energy Trust? If so, what type of support do these organizations need to bring to the program for it to be successful? [*If needed, probe on funding, expertise, partnerships with other organizations, etc.*]

1. So far, have your additional partners provided the support needed for the program to be successful?

Q7. How has your experience working with Energy Trust been?

1. How frequently are you in contact with Energy Trust?
2. What challenges, if any, have you faced in your interactions or communications with Energy Trust?
3. How, if at all, have those challenges been resolved?
4. [*If working with other partners*:] How has coordination between Energy Trust and your other partners gone?

Q8. What do you anticipate will be the most important ways people will benefit from replacing their older manufactured homes?

Q9. Who do you see as an ideal candidate to replace their manufactured home through this program? Why do you say that?

1. Do you anticipate that the people who would benefit most from replacing their homes will participate in this program? Why or why not?
2. What types of manufactured home residents do you anticipate will be most likely to participate?

Q10. What do you see as the most important barriers that prevent people from replacing older manufactured homes with new, energy efficient ones?

1. Which of those barriers do you think the program will effectively address?
2. What barriers does the program not address? [*If needed: What might prevent someone from taking the pilot's offer to replace their home*?]
3. What would it take for the program to address those remaining barriers?

Q11. Are there any particular groups or types of people that you anticipate will face greater barriers to replacing their manufactured homes?

1. Are there any particular groups that will face fewer barriers?

In closing, we'd like to ask some broad questions about the manufactured home replacement program.

Q12. From your perspective, what would a successful program look like?

1. How would you measure that success?

Q13. What are the greatest challenges in terms of reaching this audience or implementing this program?

Q14. Those are all the questions I had prepared, is there anything else you think I should know as we work with Energy Trust to identify ways to refine the pilot?

Pilot Staff or Partner Interview Guide 2020

Introduction

Thank you for making the time to talk with us today. As mentioned in the email, I am working with the Energy Trust of Oregon to evaluate the manufactured home replacement pilot program. As a part of that evaluation we are talking with organizations that Energy Trust has partnered with to deliver the program. The goal of this interview is to get an understanding of how everything has gone so far, hear about any challenges you may have encountered with recruitment or financing, lessons you've learned, and the future for manufactured home replacement.

The interview should take about 45 minutes. Do you have any questions for me?

Great, and do you mind if I record the call? [IF NEEDED] this is just for my note-taking purposes. We will not identify you in our reporting of our findings.

Recruitment [ASK STAKEHOLDERS 1, 2, 3, & 4]

Let's start with recruiting residents.

Q1. How do you identify good candidate households for participation?

Q2. How have residents, both participating and not, responded to the program?

1. [If unclear] What differences did you notice between those who participated and those who didn't?
2. Was the number of participants more or less or about the same as you expected?

Q3. What types of manufactured home residents decided to participate?

1. Are they different from the types you expected or that would benefit most from this program?

Q4. What challenges have you faced with recruitment?

1. How, if at all, have you been able to overcome these challenges?

Q5. What do you know now about the recruitment process that you wish you would have known at the beginning?

Q6. Did you have any challenges associated with finding new manufactured homes that suited the residents in terms of size or layout? If yes, what were they?

Q7. [Skip for stakeholder 4] How did your organization support participants with transitional housing, if at all? [If needed: did you help find them options for temporary housing? Find services for moving or storing their things?]

1. How did that whole process go? [Of the participants getting temporary housing]

Q8. [*Skip for stakeholders 2*] How has your organization informed and supported candidate households as they explore home replacement? [*For stakeholder 4 – phrasing could be: How does Neighborworks intend on informing and supporting Newton Creek residents interested in replacing their owned homes*?]

Replacement Process [ASK STAKEHOLDERS 1, 2 & 3]

Q9. Please summarize for me what stage your organization is at in the process of replacing homes?

1. [*If park representative*] How many people at your site decided to participate?
2. [*If park representative*] And, about how many expressed interest in having their home replaced at some point?

Q10. Please describe for me the coordination and effort it took on your organization's part to facilitate the removal of the old homes and the arrival of the new ones?

1. Is that about what you were expecting?
2. How did that affect the pilot's timeline? [*If needed, how did it affect the pilot's momentum or progress*?]

Q11. What did you learn from the replacement process that you wish you would have known at the start?

Financing [ASK STAKEHOLDERS 2 & 4]

Let's switch gears a little bit. My next questions relate to financing.

Q12. Tell me how it went for your organization as you secured financing to purchase the units.

1. [*If unclear*] How easy or hard was that?
2. [*If unclear*] Was it a lengthy process or did it go pretty quickly?
3. [*If unclear*] Where did you get financing from (what organizations)?

Q13. How many new homes were you able to buy?

Q14. If you were not involved in the Energy Trust home replacement pilot, how likely do you think your organization would have been to obtain financing to replace these older manufactured homes? Why do you say that?

Financing [ASK STAKEHOLDERS 1, 3, 5, 6, & 7]

Let's switch gears a little bit. My next questions relate to financial support available through the pilot.

Q15. How has your organization been involved in securing funding and financing opportunities to offer potential participants (loans and grants)?

Q16. [*Ask stakeholder 5 only*] What did you consider when developing the financing package for pilot participants? [*If needed: Expected amount of down payment, appropriate loan term length; homeowner ability to pay off loan*]

Q17. What financial characteristics make a household a good candidate for participation?

Q18. How has your organization supported candidate households as they pursue grants or financing options?

Q19. What types of grants or financing have participants been able to obtain?

Q20. Why has it been difficult for potential participants to acquire financing?

1. Why was that the case/Why do you say that?
2. [*If unclear*] How much support did they need to follow the financing process?

Q21. Do you know about what proportion of potential participants dropped out because they had trouble with financing or for other financial reasons?

1. What percent dropped out for other reasons?

Q22. [*Ask stakeholder 6 only*] How do homeowners qualify for grants through your organization?

Q23. [*Ask stakeholder 6 only*] How many of the people who applied for your grants to use with this pilot qualified for them?

Q24. [*Ask stakeholder 6 only*] How has the process gone of your organization delivering funding commitment letters to homeowners who qualify for funding prior to financing?

Q25. I know the pilot brings together funding and financing from different agencies. What's the viability of the current financial support the pilot is providing; are they key changes that you think need to be made or is it viable as it is?

1. [*If not clear*] Is the financial support sustainable or will it go away?

Q26. What type of financial support would be required for the majority of homeowners who did not qualify to be able to replace their homes?

1. [*If yes*] What are they?
2. [*If no*] Why do you say that?

Q27. What do you know now about financing in a pilot program like this that you wish you would have known at the beginning?

Working with Pilot Partners & the Future of the Pilot [ASK ALL]

We're close to the end of the interview. My last questions are about working with pilot partners and what you anticipate will make a manufactured home replacement program work well in the future.

Q28. How has your experience working with the other pilot partners been?

1. What challenges, if any, have you faced in your interactions or communications with your partners?
2. How, if at all, have those challenges been resolved?

Q29. Are there any new types of partners you think need to be brought in to support the pilot as it becomes a program?

1. [*If unclear*] What would those partners provide that isn't being done currently?

Q30. How will your organization continue to be involved in a manufactured home replacement program, if at all?

Q31. What sorts of benefits do you think this program will have for the residents who moved into new manufactured homes?

Q32. In your opinion, does the Energy Trust pilot effectively address barriers to replacing manufactured homes? Why do you say that?

1. What barriers does the program not address? [*If needed: What might prevent someone from taking the pilot's offer to replace their home*?]
2. What would it take for the program to address those remaining barriers?

Q33. What is the one biggest change that you think would help improve the program? [*If needed: help residents with financing more; help residents with finding a temporary home more; identify more models of homes to be offered, etc.*]

Closing [ASK ALL]

Q34. Those are all the questions I had prepared, is there anything else you think is important for me to know as we work with Energy Trust to identify ways to refine the pilot?

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