

Renewable Energy Advisory Council Meeting Notes

Wednesday, February 27, 2019

Attending from the council

Josh Halley, Portland General Electric
Michael O'Brien, Renewable Northwest
Dick Wanderscheid, Bonneville Environmental Foundation
Erik Anderson, Pacific Power
Alexia Kelly, Electric Capital Management (Phone)
Susanne Leta, SunPower (Phone)
Andria Jacob, City of Portland (Phone)
April Snell, Oregon Water Resources Congress (Phone)
Frank Vignola, University of Oregon (Phone)
Jaimes Valdez, Spark Northwest (Phone)
Anna Kim, Oregon Public Utility Commission (Phone)
Rebecca Smith, Oregon Department of Energy (Phone)

Attending from Energy Trust

Betsy Kauffman	Julianne Thacher
Dave McClelland	Jay Ward
Jed Jorgensen	Samuel Girma
Zach Sippel	Matt Getchell
Lizzie Rubado	Mike Colgrove
Jeni Hall	Mana Haeri
Dave Moldal (Phone)	Tom Beverly
Peter West	Mark Wyman

Others attending

Angela Crowley-Koch, Oregon Solar Energy Industries Association
Kate Hawley, TRC
Don MacOdrum, TRC
Moriah Johnson, Portland State University
Jasper Song, Portland State University

Executive Summary:

1. Solar has developed a program refresh following the Residential Energy Tax Credit Sunset
 - o Focus will be on high-value solar, meaning more advanced solar technologies and targeted solar deployment.
 - o This will mean a shift away from conventional solar in terms of staff time and program resources. The program will first focus on simplifying and streamlining applications and quality management to allow more time to then focus on new areas of interest.
 - o Advanced solar will focus on supporting customers and trade allies in integrating solar with new control systems, battery storage and flexible loads.

- Targeted solar will focus on equitable access to solar and areas where the grid can benefit from solar.
- The Solar team needs feedback about the approach.
- 2. Energy Trust met or exceeded goals in 2018, based on preliminary numbers.
 - We exceeded our renewable energy generation goals, achieving 95 percent of the electric efficiency goal and exceeding gas goals.
 - Solar led the way for renewables, with a very large volume of applications early in 2018 due to the Residential Energy Tax Credit sunset.
- 3. Mark Wyman (Residential) and Jeni Hall (Solar) delivered a presentation that reviewed program concepts and different approaches to net zero in the residential sector. See the residential net zero specification attachment below for more information.
 - We are looking for feedback on approaches from renewable energy advisory council members and others.
 - This will help prepare the market for solar ready and zero energy ready requirements in the coming residential building code cycles, which were included in Executive Order 17-20.
 - Differing approaches were discussed, as detailed in the presentations.
 - This topic will return to the advisory council as part of the annual budget review.

1. Welcome, Introductions, Announcements

Jed Jorgensen called the meeting to order at 9:30 a.m. The agenda, notes and presentation materials are available on Energy Trust's website at: <https://www.energytrust.org/about/public-meetings/renewable-energy-advisory-council-meetings/>. The meeting was recorded on Go To Meeting. If you'd like to refer to the meeting recording for further detail on any of these topics, email info@energytrust.org.

Jed opened with brief notes and updates for the group:

- Energy Trust has a new conference room A/V system. We are recording today's renewable energy advisory council meeting for two reasons: we're testing the new system, and we're sending the recordings for audio transcription. We want to see if we can reduce staff time needed for renewable energy advisory council and conservation advisory council meeting notes.
- Diversity, equity and inclusion update: at the last meeting there were questions about the baseline data related to Energy Trust's diversity, equity and inclusion planning. Our plan is to bring a presentation to the next renewable energy advisory council meeting in April.
- We are launching a diversity advisory council. This was part of our diversity, equity and inclusion policy, and was recommended by many people, including staff. We're working with advisors who have experience in diversity efforts to help us draft a diversity advisory council charter by next month. The purpose is to guide our efforts and help us measure success.
 - As the diversity advisory council is formed, it may require us to look at how the conservation and renewable energy advisory councils operate and how we are structured.

2. Solar program strategies to support high-value installations

Dave McClelland presented on high-value solar.

Dave: The Solar team has been working on program planning in parallel with the organization's strategic planning process. We want feedback from the renewable energy advisory council members about how our plan resonates with your organizations and if you see potential areas where things could go wrong.

We've seen many years of success in the Solar program, and we have a long track record of scaling up while still supporting high quality systems. 2018 was a challenging year, though, due to the Residential Energy Tax Credit sunset. Our incentive budget is about \$6 million/year, while the Residential Energy Tax Credit spending was around \$12 million/year. We leveraged a lot of outside funding from the tax credit to help our program work. In the second half of the year as activity slowed, we took some time to think more about the future of our program in a changing policy environment.

Based on guidance from the Oregon Public Utility Commission in their 2016 report to the legislature on solar programs, we reflected on how we could better support "high-value applications" of solar. Better technology and better deployment are both higher-value. Sometimes they appear to be in opposition to each other: for example, newer technologies are more expensive, but we're also trying to keep costs down for lower income customers. We also realized through our planning work, that better technology and better deployment can overlap when we target advanced technologies to support specific locations on the grid or to improve community resilience.

Starting with better technology, we're interested in focusing on "advanced solar." This is developing technology that pairs onsite solar generation with controls and storage or other flexible resources. Some key points are:

- About 5 percent of our applications come in with storage included.
- We can have systems that are better customers for the grid—more harmonized with the grid.
- There's a potential challenge with net-zero homes feeding into the grid and pulling from it at certain times of the day.
- We have existing relationships with trade allies to help ready those resources for the market.

Michael O'Brien: Can you tell us more about dispatch-ready solar?

David McClelland: What I see as the potential would be systems that have controls in place. When the communication protocols and controls are ready, there are then opportunities for the utilities to shift and shape that resource. We could also have systems that are independently shaping themselves based on local controls or price signals. For example, systems that are pre-programmed to optimize on-site generation. Once the technology is in place, the next step would be for the utility to provide info to the customer or direct the customer regarding the grid's needs.

Jaimes Valdez: Does this framework envision the potential for microgrids and the opportunity for islanding – like for safety measures in situations like the California wildfires? Does it treat the customer as the definer of the high value and opportunity?

David McClelland: Resilience is part of our interest here. When we add advanced controls and storage, there are potential benefits for both customers and utilities. We need to learn how to balance these over the next several years. Rates and compensation are out of our hands, but

we can help customers and trade allies understand the technology and we can help rationalize the market.

Jaimes Valdez: Can you talk about how the benefits and technology are being considered for a community that's harder to serve?

David McClelland: We're calling better deployment "targeted solar". In other words, we can better support customers and locations on the grid that would see the most benefit from solar. We have work underway in this area already: our focus on equitable access to solar and our low- and moderate-income solar working group and strategies. On the grid side, we're working with Pacific Power on targeted load management efforts to help address capacity concerns in specific locations and with PGE to support their smart-grid test beds around the Portland Metro area.

There's a longstanding docket at the Oregon Public Utility Commission about the resource value of solar. We're not looking to duplicate that work to quantify value. Instead we're looking in a directional way at what will be the next technology or next higher value that currently is difficult to quantify. As the docket wraps up, we can incorporate its findings.

We believe we have to shift the program as the market shifts. However, unlike the energy efficiency budget, the Solar program has a fixed budget, along with other constraints. We'll have to shrink part of what we do as we shift the program. Over the next two years, we propose to refresh the program by streamlining our conventional solar work to allow staff resources to shift toward higher value focus areas—advanced and targeted solar—and to better integrate solar with energy efficiency and external utility storage and demand response offerings.

Streamlining doesn't mean we're shifting all our incentive funds to advanced technologies or targeted deployment, but we need to refocus staff time and be efficient on conventional projects. Trade ally ratings are helping us shift more responsibility for quality to trade allies.

Angela Crowley-Koch: When you say 'shift quality to trade allies', what does that look like?

David McClelland: It means trusting the trade allies who have proven themselves. Making it simpler and easier to prove they've done great work. We have Samuel and Josh in-house doing involved technical reviews. They look closely at voltage drops, shading and other factors. We want to push more of this out to trade allies. Give them tools to submit a design that's already been pre-screened. We also have a remote verification tool that allows trade allies to take photos for review and remote verification. It's a bit challenging, because it's more work for the contractors, but it also has given managers at trade ally businesses a better look at what's going on in the field. It reduces the time spent with on-site verifications. As we push some work out to trade allies, we need to streamline our requirements, move projects along faster and find ways to remove other tasks from trade allies' plates, so the tradeoffs are worthwhile.

To shift deployment, we're using the work Energy Trust has already done on mapping equity opportunities, plus working with Kevala to map grid opportunities. As utilities shift to a distribution model, there will be better ways to target places where solar fits grid needs.

Michael O'Brien: Are the utilities sharing info with Kevala? How is that working out?

Jeni Hall: Kevala uses publicly available data collected from a variety of resources: data warehouses, Google Earth, etc. They can also include data from utilities. It can go both ways.

David McClelland: We have nine innovation grants underway to build capacity with the idea of supporting community-based organizations in developing their own approaches for providing low- and moderate-income access. There's a kickoff with Pacific Power next week on targeted load management. We're also working closely with PGE on smart grid test beds.

Alexia Kelly: This is a great presentation on strategy. Is there room or interest in using a community or two as guinea pigs on the targeted offerings? I serve on the council with the Hood River area looking at targeted deployment of resilience, storage, and electric vehicle integration. We would love to work with you on how to leverage this and look at opportunities to put together a working group to share on these objectives.

David McClelland: To be successful, we will need to support existing efforts to build resilience in communities. We have things underway, but we aren't there yet. We should continue discussing it.

One of the early concrete things to watch for is a differentiated incentive for moderate income customers: Solar Within Reach, similar to Savings Within Reach.

Andria Jacob: This definitely resonates with me as a customer. With the City of Portland trying to do advanced solar plus storage, it will be important to look at what's reasonable and to measure milestones. We have been way off in some ways. Integrating solar, storage, and the downtown grid with PGE's technology has made this a hard case. We should walk before we run. We've learned a lot and will be willing to share that experience. As a customer, the experience has been pretty bad. The market isn't ready yet, and this is a hi-tech controls and software project. It's on a different level than we've done before, and it needs to be factored into the projects we consider.

David McClelland: Your experience highlights the need for us to be able to better support customers.

Angela Crowley-Koch: This definitely resonates with us. I'm interested in how the streamlining process gives ways to add work along with reducing work in other areas. I'm hoping it will balance out.

David McClelland: We will continue to think about this and engage with trade allies.

Josh: What about consumer protection toward trade allies and how you handle that?

David McClelland: There are concerns to consider, however we can't hand-hold all contractors completely. We do need to move more responsibility to the industry. For both targeted and advanced approaches, we're not talking about a hands-off approach. For the simplest systems, can we make it easier and faster so then we can focus our efforts on more complex and risky projects.

Andria Jacob: The framework you laid out makes sense.

Frank Vignola: These really are applied research projects and should have utility monitoring and testing.

David Moldal: Given the current penetrations of residential and commercial solar, how much has distributed solar impacted the utilities?

Erik Anderson: The impact of solar is not concentrated, there are lots of places where it hasn't had an impact, like standalone systems on a circuit. There are many places where lots of solar was installed and caused the needs for system upgrades, which can be unpleasant for the people impacted. We're supportive but we need to find ways to narrow the focus by looking for places where it can help. It doesn't solve distribution problems in all places. We need to find the right locations and direct Energy Trust programs to focus on them. At the state level, we have found places where it will help. As technology improves, we will have ways to solve certain problems. We're consciously working on the baby steps. Solar has had inconsistent impacts so far.

Josh: In general, I would support what Erik said. We have areas with impact from concentrated facilities. I'll give it more thought.

Rebecca Smith: For those not aware, the Oregon Public Utility Commission released a staff white paper on distribution system planning and a meeting/workshop on Friday.

Alexia Kelly: As someone who has worked on these issues internationally, the US is behind on many of these things. Europe and Africa have distributed microgrids forming the backbone to meet needs. This work is very valuable as we continue building out that innovation and working through the hardest parts. We support you and appreciate the forward thinking.

Jaimes Valdez: I think we support this approach and thank you for the presentation. It's important for you to have a strong consumer protection element. We've seen problems elsewhere. Lower income and less savvy customers will need that help. How will the info be shared with historically less-engaged communities?

David McClelland: This is the first public presentation of this plan. It's our first opportunity to engage with stakeholders, today. Who else should hear about it, and how? We want to hear from you.

Dick Wanderscheidt: You are thinking about the right things. Energy Trust is in a unique place in Oregon, you have conflicting interests from trade allies, utilities, customers and the Oregon Public Utility Commission. They will need to work together to move forward. We are ahead and should continue forward.

Erik Anderson: You play a fundamental role in protection, particularly with contractors. People come in from other states with different standards than we're used to in Oregon. Established contractors can do more on their own. New contractors may need a staged approach. There are odd actors in other markets.

Michael O'Brien: I encourage you to fully engage in the Oregon Public Utility Commission process. Energy Trust has always been about transformation. Conventional solar was a big deal a few years ago. If we can do things together, we can move more quickly.

Anna Kim: Thank you for plugging the workshop on Friday. This is an exploratory introduction as we start to learn what people are interested in and what we're looking at. We are working with Energy Trust on a variety of collaborative projects with the utilities. We're looking at distribution planning opportunities. Energy Trust will play a role.

David McClelland: We'll continue to talk about this, so we would love your comments and feedback. I'm happy to meet or discuss with folks individually, also.

Jed Jorgensen: We need to share this feedback with the board. We need to be sure you're aware of it. What I'm hearing is: the renewable energy advisory council is generally supportive of the approach with people flagging things as they think it through. It will impact contractors, customers and the utility system as a whole.

3. Preliminary year-end results

Jed Jorgensen: Data in the presentation is preliminary, and not yet official. These are a shared success due to our program management contractors and network of 2,400 other trade allies and organizations. Thank you to all of you for contributing.

We exceeded our renewable energy generation goals, hit 95 percent of electric efficiency goal and exceeded gas goals. The Solar program completed more systems in 2018 than expected, as a result of the Residential Energy Tax Credit sunset. Solar was over in both electric utilities, primarily due to residential projects. There were 500 more projects than we forecasted in the budget. We received 300 applications in the first week of 2018 due to the Residential Energy Tax Credit deadline. We were about on target in commercial. We still saw customer interest in 2018 following the tax credit expiration. We passed on a large volume of leads to trade allies, but there was a 50 percent reduction in residential applications after tax credit ended.

We didn't expect non-solar projects to complete in 2018, but we had one small hydropower project complete early at the Three Sisters Irrigation District. Other renewables dedicated funds for four biopower and hydro project installations in future years and we also provided significant project development assistance incentives. We had a number of irrigation modernization projects that moved past the planning and development phases, so they dropped off our list in terms of the numbers of projects we funded, but we expect them to pop back up as they begin work. We wouldn't have had the biopower projects that we dedicated funds to without Dave Moldal's work over the past several years. There were significant irrigation modernization achievements in 2018. There is \$75 million from the USDA to begin piping in the Deschutes Basin. Tumalo Irrigation District installed 8,500 feet of seven-foot diameter pipe last year. They are planning to do another 16 miles in 2019. We will do a joint ribbon cutting for Tumalo Irrigation District and Three Sisters Irrigation District on March 19, 2019.

Betsy Kauffman: It was a big year with a lot of things happening, starting with the Residential Energy Tax Credit sunset. We also finished planning the Solar refresh. People worked very hard this year.

Michael O'Brien: How much water is saved by the irrigation district projects?

Jed Jorgensen: I can give you information after the meeting. It's going to be very significant.

4. Residential net-zero specification

Jeni and Mark discussed net zero specifications. See the residential net zero specification attachment below for more information.

Mark Wyman: We've given a lot of thought about how to coordinate our efforts. Early engagement is better, as we've learned. We need feedback on what we've considered so far and a common baseline for what we're discussing. Fuel neutrality is very important and our

programs aren't intending to induce fuel-switching. Net zero includes onsite generation and offsite renewables are not part of the discussion.

We normally come out with new initiatives at the same time as our budget, but this time we're trying to engage earlier to learn from everyone and challenge our own assumptions. We presume a strong value proposition, but this is a chance to challenge that also. If we move forward, this will come back for additional discussion first.

(Slides show an introduction to EPS™ New Construction and Solar programs.)

Solar has seen an increase in market share in new homes, both installed and solar ready. Out of all EPS New Homes, we've seen about 650 install solar later in the process. There's no such thing as an actual zero kilowatt-hour bill, but costs are offset through solar. There will still be fixed costs.

The governor issued Executive Order 1720 at the end of 2017, addressing climate change by looking at the built environment. Sections 4a and 4c direct the building code division to require all new construction to be solar ready by 2020 and create a standard that's equivalent to USDOE's net-zero standard. Oregon has a statewide building code, so this means every new home in Oregon must meet this code.

Alexia Kelly: Is there any meaningful deployment of solar plus battery storage?

Jeni Hall: We've seen an increase in the number of solar plus storage projects and we'll be able to share more detailed information as part of our annual reporting. For solar plus storage installations, some of the solar that would typically go back to the grid is stored in batteries onsite instead.

Mark Wyman: This code sets minimum values for components like R-value and U-value, along with efficiency values for mechanical systems. It sets a target that's about 20 percent more efficient than current code. It references net-zero energy and it appears we're moving toward this concept. We need to think about our role after this is met and what value will we provide? We are considering net zero as a dedicated program track. We have about 3,000 homes in our program and net zero may help us ramp up. There's no uniform definition of net zero but there is awareness of the concept. How do we market to the homebuyer? There's a marketing and consumer confidence piece, so we're trying to decide if we can or should provide some uniformity. It's defined differently depending on where you go.

We are considering questions like: what is the value to the stakeholders, ratepayers, contractors, homebuyer and state? And who are the actors that would come together to make this happen?

All of our options are fuel neutral and would allow mixed fuel homes to participate. Think about how a net-zero home interacts with the grid—it's important to remember that most homes participating in the program are mixed fuel.

Mark Wyman: The first scenario is 'zeroing all energy usage' or converting all energy usage to British thermal units and then offsetting all of that use with solar power. In Oregon, a homebuyer would not receive the full benefit of the solar installed under this structure due to our net metering rules. From the research we've seen, most buyers consider this to be 'net-zero'.

Jeni Hall: Another option is 'zero all electric usage', zeroing out only the electric usage with solar is another option for either a mixed-fuel or all-electric home. The homebuyer would receive the full benefit of their investment under this scenario and, like the 'zero all energy' scenario, they would still have a gas bill if they are mixed fuel.

Mark Wyman: The third option is 'zero-sum usage' which is a version of the approach that California developed as part of their recent code, an approach that is ready-made. It may not be what people think of as a net-zero home. This is starting with a voluntary above-code program. What we're exempting wouldn't be a significant part of the home's load under the current program.

We really need to decide if we should come together on one definition and whether we should help drive that. Do any of the options appeal to people here? The volume of homes meeting this specification will grow based on our efforts. It has impacts on sections of the grid if all homes are generating in a specific area.

Smart-grid-responsive homes may create opportunity for a menu of more smart-grid-responsive options that can be activated at some future time. Building-in flexible resources is something we've heard as part of our research.

Angela Crowley-Koch: Transportation fuel doesn't seem to be included in the calculations for electric vehicles. Did you look at it?

Mark Wyman: Because code is silent on it, it would be in the base or approved case. It would be something in the approved code; and could be an opportunity for efficiency. That load would be in the code or approved home. The load would be there in either case, so we're focused on reducing the load above what's required by code. Net zero hones-in on not just the difference, but modeling things beyond just the base case.

Jeni Hall: Electric vehicles show up right now in South Hillsboro development as an 'electric vehicle-ready' requirement that we are working with developers and PGE to define.

Mark: Do you anticipate there will be charging? Should we include it or not?

Angela: It should include transportation if it's truly going to include everything in net-zero.

Frank Vignola: Smart grid responsive homes should be one aspect of the net-zero home and storage is very important as it makes the home more grid-neutral.

Alexia Kelly: Is the idea to develop an integrated incentive package to help people prepare for code, or help buildings build to a future code?

Mark Wyman: It's on a scale for increasingly high levels of performance. We try to hover near the next code cycle and move the market to where they already meet code. Net-zero goes beyond that.

Jeni Hall: It's also about brand awareness and coordination. There are many definitions so there's value in defining net-zero.

Mark Wyman: The stakeholder perspective is that the homebuyer and builder are getting the full package. Do this and you'll get financial and technical help. Rather than having two parallel

tracks and payments, we are considering bringing this together as one spec and one offering for customers.

Michael O'Brien: The smart grid responsive home is an overlay—it's not mutually exclusive.

Mark Wyman: We don't know which is the best path is to follow. We need to anticipate how the homes interact with the grid – that overlay. It's less expensive to do that when the home is built, instead of later on.

Michael O'Brien: On the first two flavors, the first may be difficult for the customer. They may not differentiate between the two because excess kilowatt hours don't offset gas BTUs.

Jeni Hall: The first scenario may be a more expensive system. The overproduction would be donated to the low-income fund.

Michael O'Brien: That's a troubling concept, because customers don't think of it that way. They don't typically hand out electricity.

Andria Jacob: Cities are thinking of net-zero carbon buildings, but I understand why Energy Trust thinks of it in terms of energy.

Mark Wyman: Is there a role for us to play? We would provide structure to the concept, but it would be on the customer side of the meter and may not align with municipal offerings. We don't want it to be disruptive for our partners. This is an opportunity early on to consider whether or not we need to be involved.

Jeni Hall: It's not necessarily contrary to municipal carbon neutrality goals. The Energy Trust offer could be complementary by not encouraging one fuel over another. There are opportunities to connect builders and solar trade allies to work together to meet municipal and state goals.

Mike Colgrove: How is your thinking aligning with the commercial Path to Net-Zero offering?

Jeni Hall: That program is fuel-neutral, and we've kept in contact with them as we work on this concept. The path to net zero doesn't define net zero for customers and lets them identify their goals and find ways to get there. We want to align the residential offer with the commercial program and we appear to be on that path.

Alexia Kelly: This will be a policy decision that someone makes; maybe in California. It will be important to align our definitions and efforts to get builders on board.

Frank Vignola: It may be possible to manage loads in Northwest multifamily properties.

Mark Wyman: This is with some perspective of the homebuyer in the mind. EPS was a tool we gave the builders to sell efficiency to buyers. They say we need to do something more, better or different to sell energy efficiency and sustainability to customers. We are focused on residential and builders to help them sell the benefits of solar and energy efficiency to buyers.

Jeni Hall: Multifamily has access to Path to Net-Zero for new construction.

Hannah Cruz: This seems to be about on-site solar only. Is there potential to expand that?

Jeni Hall: We are thinking of something that can be deployed in 2020, so we don't currently have space for renewable offsets. That may be something in the conversation as we move forward.

Mark Wyman: We are into market transformation and have collected a lot of data which is used by policy makers and researchers currently. It's about providing value to stakeholders, plus leading the market regarding future codes. Code is focused on the structure, not what's happening around it. Energy Trust's focus is also on the physical structure.

Susan Badger-Jones: 25 percent of Oregon customers aren't in Energy Trust territory. On the new construction side, cooperation with BPA hasn't been very successful. Will there be any work to make this feasible in those territories?

Mark Wyman: The design of the new construction program got a head start on that. The NEEA and Energy Trust design has made its way into the BPA manual. We keep the design consistent, so the workflow is the same for all electric utilities. Every utility basically chooses their own adventure, and we support the market by exchanging data with NEEA. With net-zero, we would share our practices and systems, then adapt based on feedback we get to make it regionally adoptable.

Jeni Hall: On the market side of that, trade allies work around the state, as do builders. This framework has the ability to go outside our territory. Some solar leads go outside PGE and Pacific Power territory, but annualized retail rate net-metering is only within their territories. Other utilities provide net-metering, but customers may not benefit from the excess solar generated month to month. There are opportunities for customers outside of the territory to benefit from a net zero specification and lessons learned by trade allies.

5. Public comment

There was no other public comment.

6. Adjourn

The meeting adjourned at 12:05 p.m. The next council meeting will be held on April 10, 2019 from 9:30 a.m. – 12:00 p.m.

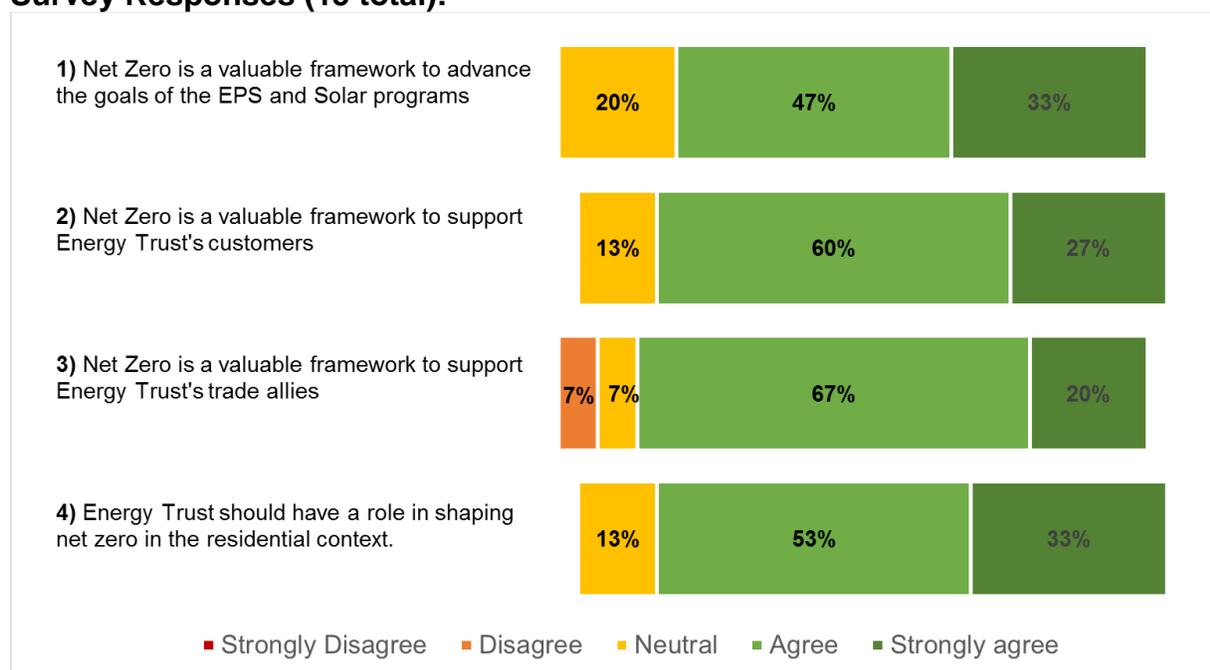
Attachment 1: Residential Net Zero Specification

Compiled survey responses and highlights from the discussion at the conservation advisory council and renewable energy advisory council on February 27, 2019.

Key points that should be considered in program design:

- How and whether to incorporate EV adoption and usage
- How the program would interact with carbon programs at the city, county and state level
- Creating a net zero specification that works for both home buyers and builders
- The importance of branding/marketing/communicating the concept to home buyers
- Coordination with other groups in Oregon and Washington defining net zero

Survey Responses (15 total):



Highlights from the discussion at both the renewable energy advisory council and conservation advisory council for each of the net zero concepts discussed

Zero all energy usage

- I would be concerned the homeowner might use more energy because they are overproducing and not getting the benefit.
- If you are encouraging a home buyer to build out a solar system that is larger and more expensive, does it tacitly encourage fuel switching?
- At scale, does this produce grid management issues? That could drive utility cost up.
- The potential for oversized solar to accommodate gas load could exacerbate issues with grid constraints.
- I am concerned that there could be some perverse incentives (or disincentives) under the [zero] all energy [usage] (gas + electric) definition of net-zero.
- It could work if our net metering policy is changed.

Zero all electricity usage

- Would an [zero all] electric energy only approach drive more all electric new construction vs gas?
- Cost to customer is something to consider whether the market will adopt. Zero all electric use or some would probably increase participation.
- Considering challenges with the other two methods this zero all electric usage seems most viable.
- Options 1 (zero all energy usage) or 2 (zero all electric usage) offer the most understandable process. We think option 2 (zero all electric usage) has more integrity than option 3 (zero some energy usage).

Zero some energy usage

- You will struggle with communication/marketing this to home buyers.
- Eliminating the space and water heating load is not the way to go.
- Cost to customer is something to consider whether the market will adopt. Zero all electric use or some [energy usage] would probably increase participation.

Grid Responsive

- Smart homes should be an aspect of net zero homes. Storage is very important. Makes more grid neutral, if can be integrated, multitude of benefits.
- I think the smart grid responsive homes should definitely be overlaid on whatever "net zero" definition is chosen. Far less expensive to integrate when home is built than to add distributed energy resources later.

General

- Make sure to coordinate with Washington as I understand they are fairly far down this road.
- Energy Trust's skillset is in providing training and standardization to the community and trade allies. Seems like there is value to the state of Energy Trust developing a "standard program".