

Conservation Advisory Council Agenda

Friday, November 30, 2018

Special joint CAC and RAC lunch from 12:00 – 1:30 p.m.

Regular CAC meeting from 1:45 p.m. – 4:15 p.m.

421 SW Oak St., #300, Portland, OR 97204

12:00 Strategic Planning Development *(discussion)*

A joint CAC and RAC interactive discussion about development of the 2020-2024 Strategic Plan. Discussion will center on the scenario developed using input received in October from RAC and CAC, the opportunities that exist within the selected scenario, and what Energy Trust's unique role of value could be in that future. **Please read the draft scenario in the packet prior to the meeting.** *Lunch will be provided for CAC and RAC members*

1:30 Break

1:45 Welcome, Old Business and Short Takes *(information)*

Introductions, agenda review and approve October meeting minutes
Review 2019 meeting dates
Welcome new member Tim Hendricks, BOMA representative

1:55 Changes to Draft 2019 Budget *(information)*

Director of Energy Programs Peter West will present on modifications made to the draft 2019 budget and action plan based on public feedback and internal QC. The final proposed budget will be presented to the board on December 14. Presentation slides will be shared at the meeting; in the meantime, this [handout](#) provides a good primer on the original draft budget, with the complete draft budget and action plan available [online](#).

2:35 Findings from the 2018 Trade Ally Network Survey *(information)*

Sr. Customer Service Strategy Manager Cameron Starr will present findings from the 2018 survey, which will inform 2019 network strategy and activities.

3:15 Break

3:25 Guest Speaker: PGE Smart Grid Test Bed *(information)*

PGE's Emerging Technologies Project Manager Jason Klotz will present on the utility's proposed [Smart Grid Test Bed](#), which will explore methods for getting high penetration of demand response technologies, and explore the degree to which coordinated product development, deployment and marketing with efficiency affects customer participation in demand response.

4:10 Public Comment

4:15 Adjourn

Meeting materials (agendas, presentations and notes) are available [online](#).

Next CAC Meeting: Wednesday, January 30, 2019.

Conservation Advisory Council Meeting Notes

October 12, 2018

Attending from the council:

Holly Braun, NW Natural
Tom Elliot, Oregon Department of Energy
Will Gehrke, Citizens' Utility Board of Oregon
Kari Greer, Pacific Power
Charlie Grist, Northwest Power and Conservation Council

Anna Kim, Oregon Public Utility Commission
Lisa McGarity, Avista
Jeff Mitchell, Northwest Energy Efficiency Alliance
Dave Moody, Bonneville Power Administration

Attending from Energy Trust:

Mike Bailey
Adam Bartini
Tom Beverly
Mike Colgrove
Hannah Cruz
Andy Eiden
Fred Gordon
Jackie Goss
Mana Haeri
Kate Hanson

Andy Hudson
Marshall Johnson
Jessica Kramer
Steve Lacey
Spencer Moersfelder
Amanda Potter
Thad Roth
Zach Sippel
Peter West
Mark Wyman

Others attending:

Lisa Wood, ICF
Mike Christianson, Energy350
Rick Hodges, NW Natural
Mark Kendall, Energy Trust board
Angela Long, Pacific Power
Alan Meyer, Energy Trust board
John Molnar, Rogers Machinery

Elaine Prause, Oregon Public Utility Commission
Colin Podelnyk, ICF
Dan Reese, CLEAResult
Chris Smith, Energy350
Josh Weissert, Energy350

Executive Summary

1. Draft 2019 action plans for Planning and Evaluation and Northwest Energy Efficiency Alliance
 - Staff provided an overview of activities planned for 2019.
2. Targeted Load Management Pilot Findings
 - Staff described results of the Energy Trust and Pacific Power targeted load management pilot in the North Santiam Canyon area.
3. Development of Energy Trust 2020-2024 Strategic Plan
 - Staff led a discussion of likely market scenarios in the next five years. Scenarios will inform strategies for 2020-2024.

1. Welcome, Old Business and Short Takes

Hannah Cruz convened the meeting at 1:35 p.m. The agenda, notes and presentation materials are available on Energy Trust's website at www.energytrust.org/about/public-meetings/conservation-advisory-council-meetings/.

There were no changes to the September Conservation Advisory Council notes.

2. Draft Planning and Evaluation 2019 Action Plan

Hannah Cruz reminded members that the 2019 action plans will be presented in a board workshop next Wednesday, October 17 from 1:00 pm to 4:00 pm. Conservation Advisory Council members are encouraged to attend. One piece of feedback from last year's budget process was the need for more interactivity. This is an opportunity to interact with staff regarding the budget.

Spencer Moersfelder summarized the Planning and Evaluation action plan and context. In 2019, Energy Trust will likely change reporting methods from net savings to gross savings. We don't foresee roadblocks preventing this change.

The region is in a more capacity-constrained environment than ever before. This will factor into planning and will require a framework for how energy efficiency and demand response factor into energy savings and utility demand management.

Planning works extensively with program staff to update and develop new measures using measure approval documents. There will be significant measure change work related to new codes in 2019. Existing Buildings measures are expected to be impacted.

Holly Braun: What's the typical duration for measures?

Spencer Moersfelder: They normally expire in three years, unless the measures change more rapidly.

Will Gehrke: What measures are included in the expiring measure approval documents?

Jackie Goss: Expiring measure approval documents include measures that programs no longer use or are no longer cost-effective.

Fred Gordon: Mike Bailey presented information on expiring measure approval documents a few meetings ago, so information is available in Conservation Advisory Council meeting notes.

Peter West: Keep in mind that there's a whole family of measures within one measure approval document. Didn't we review about half of our measures in these measure approval documents?

Jackie Goss: Yes, I believe we reviewed about half of our measures, or roughly 1,000 to 1,500 measures.

Spencer Moersfelder continued that that the market is buying more efficient equipment, meaning Energy Trust can claim fewer savings. This is most dramatic in electric savings for the Residential program due to reductions in lighting and water saving devices.

Angela Long, Pacific Power: In looking at energy efficiency and demand response in cost-benefit analysis, are you talking about adding benefits or also costs? Will you talk to the utilities?

Spencer Moersfelder: This will be a collective discussion with the utilities.

Spencer Moersfelder continued that there are a few major process evaluations in 2019, along with impact evaluations. There will also be market research efforts and pilots.

Dave Moody: You're looking at a process evaluation for the entire Residential program. Will you do customer surveys? What other methods will be included?

Phil Degens: We haven't determined the full slate of methods we'll use.

Dave Moody: It does seem like a substantial effort.

Tom Elliot: Are you considering energy imbalance balance markets to address peak load?

Angela Long: That would probably come from electric utilities. There are tons of ancillary services provided and we would normally include that information in avoided costs that we give to Energy Trust for analysis.

Tom Elliott: Are you asking if there are ways to encourage it in other contexts?

Angela Long: Energy storage value is something we're actively looking at. I don't know if it's utility specific.

Andy Eiden: It would be at the utilities' behest to do that, but a storage water heater, for example, could be valued very differently depending on market rates.

Fred Gordon: We're working with PGE to better understand how storage with solar integrates with the grid. How do we understand values across multiple power markets? Defining this across markets is our strength.

3. Targeted Load Management Pilot Findings

Andy Eiden, planning project manager, described results of the Energy Trust and Pacific Power targeted load management pilot in the North Santiam Canyon area.

We began working with Pacific Power in fall 2016 by looking at its load planning and Energy Trust's projects in the pipeline. The North Santiam Canyon area is about 20 miles southeast of Salem with about 2,500 people. It's a small area, but it is similar to other rural territories on Pacific Power's grid. It has a flat load profile over summer and winter, and a lengthy peak time. It has a mix of residential and commercial customers with a couple of very large industrial plants. The pilot goal was to reduce demand during specific time periods.

This was a new effort for Energy Trust and Pacific Power that crossed functional areas and required coordination between Pacific Power and Energy Trust staff. As part of this pilot, we did not change or create new measures. We focused on targeted marketing and program delivery tactics to this geographic area.

We offered solar incentives, but they didn't exactly match the load shape of the area, so we did not include them in targeted efforts.

We offered a new measure for heat pumps in manufactured homes, which had not yet been screened for cost-effectiveness. Since there were manufactured home parks in the area, we decided to deploy it.

Hannah Cruz: How did you identify projects that were influenced by the targeted load management pilot efforts?

Andy Eiden: Results were based on projects that came in after the effort. We didn't survey customers directly, but we can in the future. We saw an increase in participation. Direct installation of lighting got people to participate right away. There was an increase in winter kilowatts above baseline. We offer a lot of heating measures. There was a project with a large process load that helped reduce energy use in summer and winter.

Charlie Grist: On the 22 percent participation increase, that's over how many quarters?

Andy Eiden: About a year.

Charlie Grist: Compared to the average over a three-year period?

Andy Eiden: The point of comparison is a 12-month average over a three-year period. It's scaled over a year, not seasonally distorted. This was a learning pilot to see what we can further hone in on in the future.

Tom Elliott: Did you pull out the few large customers that made up the bulk of the energy saving? Everyone that's left might help you tease out the effects.

Andy Eiden: Commercial projects increased from one to 14. Residential is harder to sort out because we have limited data. Once you isolate large industrial customers, savings are not enough to be meaningful for load planners. We did observe a large project in 2016 at the end of the baseline period.

Alan Meyer: Industrial businesses normally can't make upgrades within one year.

Andy Eiden: We'll close the pilot at the end of this year and reflect on how that integrates into planning next time around.

Charlie Grist: How many commercial customers are there? Projects per customer will help determine that.

Andy Eiden: There were 100 to 300 commercial customers.

Lisa McGarrity: Can you give an example of what caused the decline in summer energy use?

Andy Eiden: That was dependent on large industrial projects and the load shape of savings.

Chris Smith, Energy350: There was a large heater project that had zero summer load, as an example.

Andy Eiden: Energy350 has kept up with different plants in the area, which helped.

Chris Smith: We have a lot of projects from now through early next year. There's a time lag and we'll see results later.

Dave Moody: What's the cost compared to traditional transmission and distribution efforts?

Andy Eiden: We need to take a close look at the numbers before we can speak to it.

Charlie Grist: You took your program savings by measure. The green is lighting. It's a nice depiction. Everything contributes. It doesn't have to be a peaky resource to contribute.

Andy Eiden: Pacific Power's engineers were able to conceptualize what contributed. They could see what lighting changes would contribute, for example.

Andy Eiden continued in the future, we need to plan and coordinate communications more completely and further in advance. We also need to distill what we want to answer with the next pilot. We are working with Pacific Power to design the next pilot. We may use bonus incentives that would allow us to keep current measures. We also want to select a location that allows us to integrate rooftop solar.

Charlie Grist: There's a lot of lumber and wood processing in North Santiam. The shape for that depends on whether they run one, two or three shifts. It depends on wood being available and demand for wood products. You need to look more specifically at the plants. If they are one-shift plants, the savings would just happen anyway.

Andy Eiden: These analyses are dialed in to plant specifics, using a mix of stock load shapes.

Charlie Grist: What's driving the problem, and what's addressing it? You'd want to pick up differences in shifts between summer and winter.

Fred Gordon: What's important is different from one distribution point to the next, and you have to collect information quickly to understand it. How do you get information and proceed quickly?

Lisa McGarrity: Is this an electric-only area? How do you account for that in your analysis? You'll have effects from lighting on gas.

Andy Eiden: We haven't accounted for it, but we can in the future. We're working with NW Natural now.

Lisa McGarrity: What uptake did you have on the gas side?

Andy Eiden: We haven't evaluated gas results yet.

Steve Lacey: We need to see if there was an increase in gas savings due to marketing for electric upgrades.

Andy Eiden: If we can start answering research questions to help understand load in an area, we should include them. Summer load changes lead to questions about heat pump impact on summer load.

Charlie Grist: It's diversified: Not every house heats their water at the same time.

Andy Eiden: We are looking into how to use prescriptive measures to treat diverse households.

Holly Braun: There's an idea of having constraints that drive targeted efforts. There are also communities that have action plans and they look to the utilities to help. This is similar to targeted efforts. So many communities may want targeted efforts, and this may be replicable.

Angela Long: There's a transmission and distribution planning process before any of our projects. Cost isn't how we look at this. We have upgrades we're required to do. Through a capital projects process, we narrow it down to projects that would be competitive in cost. We vet the communities and give that list to Energy Trust for further refinement. Andy has done a great job at the front end of the process. Now we are working on the back end. This pilot was focused on rapid deployment.

Andy Eiden: There are obvious overlaps with our diversity, equity and inclusion efforts.

Holly Braun: You had to create support, but if you have a community doing that on your behalf, awesome!

Andy Eiden: We saw that with the Bend Energy Challenge, for example.

Alan Meyer: Have we proven that this works?

Andy Eiden: No, not yet. Right now we're using power council load shapes. Power council load shapes may not always align with the actual load shape of the area due to factors like plant closures. There are things we need to understand better. We didn't do a full impact evaluation, like billing analysis or customer interviews.

Hannah Cruz: Having a local champion who really knows the customers was helpful, like Alan Meyer Jr., and the OPUC.

Angela Long: Alan has been promoted, but there are other people who can help. It will depend on the situation in the community and who is there with connections.

Charlie Grist: This is really great. It seems like there are secondary findings on scaling up and increasing pace. In the hard-to-reach market report we did last time, the annual touch in most segments is 0.5 percent. Commercial could be 14 percent, but there's a big cost. The findings will be helpful.

Fred Gordon: While the PGE demand response testbed is focused on system peak versus local peak and has not yet been approved by the OPUC, it has ambitious goals and commensurate costs. If you want to achieve 16 percent market share in two years, that's difficult. Maybe you will be successful if you pay most of the cost of equipment. Targeted efforts are built around intensive marketing of off-the-shelf technologies.

Kari Greer: Is this waiting for OPUC approval?

Fred Gordon: I don't think they've seen the final proposal yet.

Charlie Grist: I'm happy to see your extreme weather comment. All of our shapes look at normal weather.

Andy Eiden: We need to partner with other groups to make sure the research is thought out.

Hannah Cruz: I included more resources about this in our packet, including activities in other states and other organizations.

4. Draft Northwest Energy Efficiency Alliance 2019 Action Plan

Jeff Mitchell summarized NEEA's 2019 action plan. On the residential side, we will still focus on heat pump water heaters. It's an important measure to the region, and sales have continued to grow from less than 1,000 to over 13,000 units. We will transition out of the ductless heat pump market, which we've been in since 2008 and market infrastructure is strong. Next Step Homes will be NEEA's first dual-fuel program in 2019. We've historically focused on electric.

On the commercial side, we will move out of the low watt T8 program, which impacts commercial maintenance. We've done exciting work, but the impact was less than we expected. We're working on a very high-efficiency, dedicated outside air program. Case studies on these pilots will be available soon.

Our commercial building stock assessment is in development, and we hope to wrap up the field work by Q4.

There are a number of efforts going on in natural gas, including a gas heat pump water heater. We are working on how to bring a market rate product in next year.

Alan Meyer: What is a gas heat pump water heater?

Jeff Mitchell: It's driven by a gas engine instead of an electric motor. There's a coefficient of performance above one on a heat pump. A gas heat pump can give between 1.2 and 1.4 COP.

Holly Braun: Now that there will be new homes through NEEA and Energy Trust, we want to understand who is doing what and what savings come from NEEA versus Energy Trust.

Peter West: This is part of our conversations with NEEA and the utilities.

Jeff Mitchell: In 2018, we did a lot of work to define gas savings and understand opportunities.

Holly Braun: Deployment wouldn't happen in 2019?

Jeff Mitchell: It would be the following year, most likely.

5. Development of Energy Trust 2020-2024 Strategic Plan

Lizzie Rubado led an exercise to develop future scenarios that can be used to test potential strategic plan strategies. What will be the key drivers in scenarios? What is a plausible future?

Anna Kim: How will these be used in the planning process?

Lizzie Rubado: The scenarios give us context as we think about the future, along with boundaries for our five-year strategic plan. The scenarios provide context and help us think through whether our strategies will be effective in that context.

Conservation Advisory Council members believed that carbon policy or carbon pricing, a greater focus on utility peak, and an increasing focus on equity in energy policy will have a large impact in the future.

Lizzie Rubado led the group in a discussion about the policy outlook and market potential for the next five years, and asked attendees to share opinions about whether the outlook five years from now is better, worse or similar to today. Participants were given time to consider their responses independently on worksheets, then shared their thinking with the group.

In this discussion, Conservation Advisory Council members speculated that the outlook for distributed renewables will improve in the next five years, driven by carbon policy, customer concerns and interest in resilience, consumer and local government interest in climate planning and goals, and evolution of utility rate structures and business models that will benefit distributed resources.

Conservation Advisory Council members had mixed opinions about the outlook for energy efficiency, with many members speculating that the market potential will not change much from today. Some members thought the outlook will improve slightly, impacted by carbon policy, increased avoided costs and technology will bring more opportunity than expected. Other members thought that the outlook will worsen, speculating that carbon policy will not have any impact on the economics of energy efficiency within five years, avoided costs will continue to decline and the market is already saturated with lower-cost technologies.

6. Public Comment

There was no additional public comment.

7. Meeting Adjournment

The meeting adjourned at 4:30 p.m. The next Conservation Advisory Council meeting will be held on Friday, November 30, 2018.

Draft Scenario for 2020-2024 Strategic Plan Development

Consumer and community interest results in **policies that are favorable for clean energy**, including adoption of a statewide carbon policy, higher efficiency standards in codes, prioritization of equity, and better support for distribution-level planning and solutions. However, these **policy changes unfold slowly. Carbon policy, in particular, takes several years to implement and, in the meantime, has little impact on the market for energy conservation and renewable energy.**

In the early years of the planning period, the economic value of savings and generation remains the same or, possibly, declines as avoided costs and rates for renewables continue on a downward trend. **Annual efficiency savings decreases** as the forecasts of the Integrated Resource Plans prove out and cost-effective resources, as traditionally defined, decline. Growing **interest in energy resilience lessens the rate at which annual efficiency savings decline**, but without major new technical opportunities, this does not reverse or cancel the trend. **Towards the end of the five-year period, however, the economic value proposition of efficiency and distributed renewables begins to improve.** By 2024, the **new policies produce an expansion of cost-effective energy efficiency and renewable resource valuation.**

There aren't any revolutionary advances in efficiency and renewable technology that radically disrupt the market. However, **innovations in process controls, communications and solutions like software as a service** begin to change the clean energy product landscape, creating some new savings and opportunities for advanced solar. Some previously emerging efficiency equipment and other distributed resources like solar, EVs and battery storage decline in price, though these decreases are mostly offset by the phase out of financial incentives and government subsidies for these technologies.

Oregon finds itself dealing with **more frequent and intense weather and climate events.** Most summers feel a bit hotter than the one before, wildfires are bigger and more frequent and low snowpack and dwindling glaciers lead to less water for rivers and farmers. Water becomes a bigger issue throughout the region. Some **rural and coastal communities that are most directly and deeply impacted take an action-focused view toward resilience** and, in some cases, more deeply support climate-motivated energy policies. For them, there is a **much higher sense of urgency** that is driven by immediate concerns for personal safety, protecting property and economic difficulty, compounded by broader fears about what the future holds. This kindles more interest in localized energy resilience solutions, like microgrids, irrigation modernization and renewables paired with storage. These communities look for help to implement their own resilience solutions despite the lack of funding for mitigation or adaptation activities.

Utilities continue to test new rates and models through pilots, and **their business model begins to shift** in some areas. EV adoption is growing and electrification and deep decarbonization are being discussed by stakeholders and policy makers but emerging policies will take time to sort into actionable implementation structures. **Managing for peak** is a focus in the near term, but does not remain critical in the longer term. Solving for **resource and load flexibility** will be necessary to achieve the region's goals around carbon and resilience. But most new things remain limited to **small pockets of customers or limited test areas** and, as a result, don't impact the market broadly.

Housing affordability continues to be a challenge throughout Oregon, as people continue to move to Oregon from other states and the strong economy and high employment rates of the past few years spur people and families to leave shared housing and set up their own households. The pace of new housing construction increases, particularly multifamily housing. Affordable housing, in particular, is the focus of high levels of energy efficiency and some solar.

The economy slows down as the nation enters a recession. The slowdown is felt more acutely in rural communities, **emphasizing rural-urban disparities in the state, including in energy issues**. The racial and economic diversity of Oregon's population continues to grow. **Overall, disparities in income and energy burden become greater for disadvantaged communities**. These drivers stimulate the growing environmental justice movement that pushes to **prioritize equity in state and local energy policies**.

Some cities and communities forge ahead with their own, more aggressive policies. And while this creates pockets of opportunity and funding, it accentuates the differences in energy opportunity between communities throughout the state. The momentum generated to push for new policies **engages a lot of community-based organizations and customers that have not been particularly involved** in energy in the past. This creates new interest, demand and **new market potential**.



Update on 2019 Budget & 2019-20 Action Plan

November 30, 2018



Agenda

- Excerpts from draft 2019 budget
- Comments received
- Adjustments underway
- Summary

Excerpts from Draft Budget



2019 Annual Goals

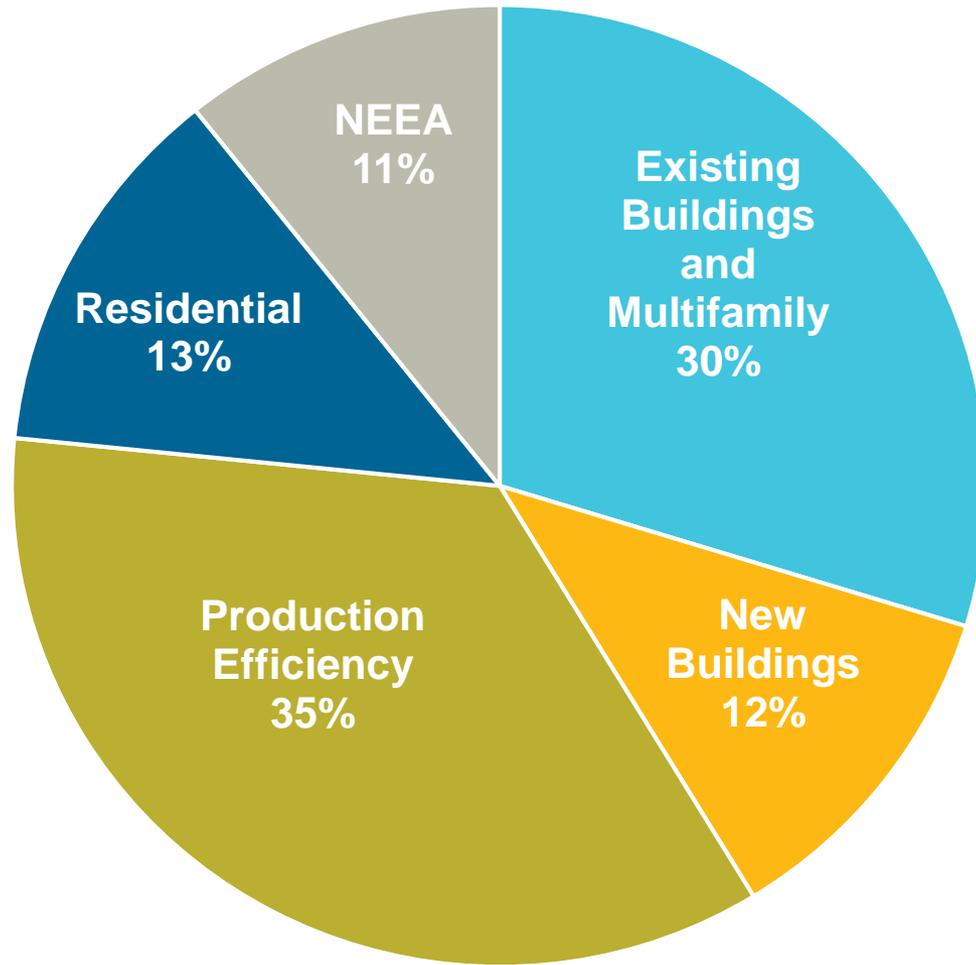
- 1 Improve Program Performance & Viability
- 2 Increase Customer Participation & Awareness
- 3 Establish 2020-2024 Strategic Direction
- 4 Improve Productivity & Efficiency
- 5 Increase Flexibility & Adaptability
- 6 Manage Organization Effectively



Draft 2019 Budget Summary

- Investing \$201 million
 - Revenue up slightly; use of reserves
- Overall spending up 1.1%
 - Increased volume of smaller projects, outreach and technical services
- Incentives are 54.2% of total planned expenditures
- Expanding outreach and services
- Creating operational efficiencies
- Preparing for the future

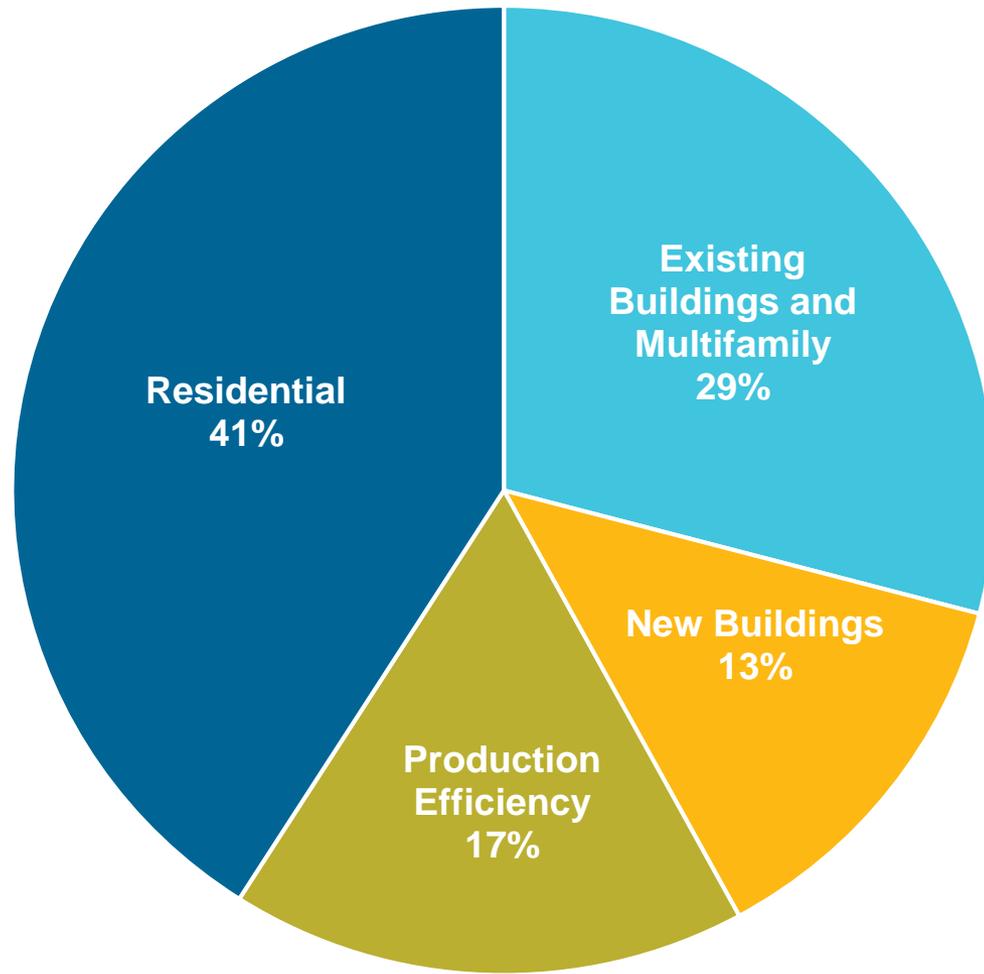
Draft 2019 Electric Savings by Program



53.1 aMW savings
3.14 cents/kWh



Draft 2019 Natural Gas Savings by Program



6.5 MMTh savings
39.97 cents/therm

Summary of Comments Received



Stakeholder, Public Comments Regarding Energy Efficiency Activities

- Clarify how efficiency and renewables are integrated in program planning and market delivery
- Detail low-income outreach plans to ensure no overlap with other programs
- Utilize data and information resulting from City of Portland-led clean energy programs to ensure follow-on energy upgrades
- More support for residential solar and weatherization in gas-heated homes
- Develop a Spanish-version of the EPS Field Guide



Summary of Stakeholder, Public Concerns

- Concerns with decreasing electric and gas savings, increasing levelized costs and cost-effectiveness challenges
- Concerns with increasing administrative and staffing costs
 - Desire to understand “growing resource demands on the organization” and what is driving administrative cost increases
 - Question whether some activities in action plans will lead to energy acquisition
- Dissatisfaction with organization’s progress on diversity, equity and inclusion



Summary of OPUC Comments

- Reduce detail in 2020 Action Plans and add longer-range renewables forecast
- Maintain flexibility, manage delivery costs and plan for future years with potentially lower revenues
- Prioritize residential and multifamily programs
- Continue to report on DEI initiative progress
- Review services provided to commission and utilities to assess for value
- Ensure public purpose funds are not impacted by the Community Solar subcontract

Adjustments to Draft Budget



Changes Underway to Draft Budget

- Revenue updated to reflect funding agreements
- Efficiency programs making minor adjustments and corrections
 - Savings and expenditures shift +/- 0-3% based on program and utility territory
 - Action plan modifications to clarify activities based on comments
- Small adjustments made to staffing budget
- Increased estimated budget for organizational development projects
 - Budget Review implementation
 - Organization Review implementation

Draft to Final Proposed Savings Changes

	2019 Draft Savings	2019 Final Proposed Savings	Total Change	% Change
PGE (aMW)	33.45	33.48	0.03	0.10%
Pacific Power (aMW)	19.64	19.72	0.08	0.38%
NW Natural Oregon (MMTh)	5.20	5.17	-0.03	-0.66%
NW Natural Washington (MMTh)	0.39	0.37	-0.02	-4.30%
Cascade Natural Gas (MMTh)	0.50	0.51	0.01	2.84%
Avista (Th)	0.36	0.36	0.00	-0.42%
Total Electric Savings (aMW)	53.09	53.20	0.11	0.2%
Total Gas Savings (MMTh)	6.45	6.41	-0.04	-0.59%

Columns may not total due to rounding

aMW: average megawatts
MMTh: million annual therms

Draft to Final Proposed Expenditures Changes

	2019 Draft Expenses (\$ Million)	2019 Final Proposed Expenses (\$ Million)	Total Change (\$ Million)	% Change
PGE (efficiency)	\$96.33	\$96.12	-\$0.21	-0.21%
Pacific Power (efficiency)	\$57.84	\$58.32	\$0.48	0.82%
NW Natural Oregon	\$26.66	\$26.05	-\$0.60	-2.26%
NW Natural Washington	\$2.56	\$2.43	-\$0.13	-5.00%
Cascade Natural Gas	\$2.72	\$2.74	\$0.02	0.76%
Avista	\$1.92	\$1.87	-\$0.05	-2.66%
Total Electric Efficiency	\$154.18	\$154.44	\$0.27	0.17%
Total Gas Efficiency	\$33.85	\$33.09	-\$0.76	-2.25%

Columns may not total due to rounding

Highlights of Changes to Draft Budget

	Draft Budget	Final Proposed Budget	Change	% Change
Revenues	\$193.1 million	\$184 million	-9.2 million	-4.8%
Expenditures	\$201 million	\$201.7 million	0.67 million	0.3%
Gas Savings	6.45 MMTh	6.41 MMTh	-0.04 MMTh	-0.6%
Electric Savings	53.1 aMW	53.2 aMW	0.11 aMW	0.2%
Gas Levelized Costs	39.97 cents/Th	39.37 cents/Th	-0.6 cents/Th	-1.5%
Electric Levelized Costs	3.14 cents/kWh	3.11 cents/kWh	-0.03 cents/kWh	-0.9%
Generation	2.1 aMW	2.25 aMW	0.19 aMW	9.3%
Staffing Costs	\$14.7 million	\$14.5 million	-0.21 million	-1.4%
Administrative and Program Support Costs	\$13.57 million	\$13.55 million	-0.02 million	-0.1%

aMW: average megawatts
MMTh: million annual therms
Th: annual therms

Summary



Key Takeaways

1. Underserved markets a strong focus moving forward
2. Increasing cost per unit of savings from smaller projects
3. Residential lighting transition will complete in 2020
4. Despite high volumes of projects and customer transactions, seeing declining savings
5. Solar market in transition; challenging renewable project economics
6. Resource demands on organization continue growing
7. Investing in key internal projects to enhance adaptability and operational efficiency

Final Proposed 2019 Summary by Utility

	2018 Budget Savings & Generation (Net) aMW or MMTh	2018 Budget (\$ Million)	2019 Budget Savings & Generation (Net) aMW or MMTh	2019 IRP Target* (Net) aMW or MMTh	2019 Budget (\$ Million)	2019 Budget Levelized Cost per kWh or therm
PGE (Efficiency)	36.4	\$96.67	33.5	34.5	\$96.12	3.0¢
Pacific Power (Efficiency)	20.2	\$57.85	19.7	20.2	\$57.32	3.3¢
NW Natural (OR)	5.66	\$24.79	5.17	5.19	\$26.05	38.6¢
NW Natural (WA)	0.36	\$2.37	0.37	0.37	\$2.43	49.2¢
Cascade Natural Gas	0.55	\$2.72	0.51	0.58	\$2.74	41.4¢
Avista	0.35	\$1.14	0.36	0.29	\$1.87	37.5¢
PGE (Renewable)	1.08	\$6.81	1.22	N/A	\$6.63	N/A
Pacific Power (Renewable)	0.82	\$6.52	1.03	N/A	\$7.48	N/A

MMTh: million annual therms
aMW: average megawatts
Net savings

* IRP targets reflected in net savings using 2019 Energy Trust net-to-gross ratios. These net targets align with the energy efficiency potential incorporated in current utility IRP filings.



Discussion and Feedback

- What questions do you have?
- What information needs more clarification?
- Other feedback?

Final proposed budget will be posted online December 7



Thank You

www.energytrust.org/budget

1.866.368.7878



2018 Trade Ally Survey

November 30, 2018



Background

- Annual trade ally survey through 2013
 - Took a break to refocus efforts
- Questions focus on trade ally businesses and various types of support we offer
 - This report provides high-level results
 - Next step is to combine with information on each responding firm to reach deeper insights

Methods

- Invitations to currently enrolled trade allies who had completed at least one project in 2017 or 2018
 - All sectors and regions
- Web-based survey
 - About 20 minutes long
 - Incentive for completing the survey
 - Made reminder calls to non-respondents
- 180 respondents
 - 23% response rate





Population and respondents

	Total	Respondents
“Active”: 10 or more projects in 2017-2018	317	81
“Inactive”: 1-9 projects in 2017-2018	475	99
Not surveyed <ul style="list-style-type: none">• No completed projects in 2017-2018• Selected to receive an interview invitation for the Existing Buildings Process Evaluation	692	0
Total trade allies (as of June 2018)	1,484	180



Respondents and firm size

Respondent's role	Percent	Total employees	Percent
Owner / Principal	48%	Fewer than 5	39%
Administrative / Office Staff	31%	5 to 19	40%
Project Manager / Estimator	11%	20 to 49	13%
Technician / Installer	3%	50 to 99	3%
Other	7%	100 or more	3%
Total	100%	Total	100%

Sectors and segments

	% reporting serving	% of enrollments	Market segments
	78%	73%	<ul style="list-style-type: none">• 75% serve rentals, 66% serve manufactured homes
	49%	27%	<ul style="list-style-type: none">• >80% serve individual units and condos, 69% serve affordable housing• Only a third report serving market rate MF
	53%	37%	<ul style="list-style-type: none">• 60% serve large commercial, 50% serve grocery
	25%	13%	<ul style="list-style-type: none">• Frequently serve manufacturing, cannabis, refrigerated warehouses
	17%	16%	<ul style="list-style-type: none">• Most serve residential and small commercial• Only about half serve large commercial



Responding firms

- Two thirds report more than 5 years as a trade ally
- Just over half of respondents serve the Portland & Gorge region and/or Willamette Valley
 - About 18% serve Eastern Oregon and 14% serve SW Washington
- Not surprisingly, I&A respondents report traveling farthest to customers on a typical job
 - At least 40% of single-family and multifamily respondents are willing to travel more than 75 miles for a project

2017 revenue from Energy Trust projects

	Single-family Homes	Multifamily	Commercial	Industry & Ag	Solar	Total
0%	4%	3%	2%	2%	0%	4%
1% to 24%	40%	38%	46%	45%	32%	41%
25% to 49%	18%	21%	20%	23%	14%	16%
50% to 74%	14%	14%	12%	9%	18%	14%
75% to 99%	14%	11%	8%	11%	25%	14%
100%	1%	1%	0%	0%	0%	2%
Don't know	8%	11%	12%	9%	11%	8%

- Most expect no change or an increase for next year, about 20% expect a decrease
 - Exception is Solar where 40% expect a decrease



Business ownership

	Total
Women-owned	12%
Veteran-owned	9%
Minority-owned	6%

- With the exception of solar, sectors give similar responses
- Much higher rates than expected based on our existing data

Customer languages supported

	Single-family Homes	Multi-family	Commercial	Industry & Ag	Solar	Total
Spanish	25%	24%	24%	9%	14%	23%
Chinese	0%	0%	3%	5%	4%	2%
Vietnamese	1%	1%	2%	2%	4%	2%
Russian	1%	0%	1%	2%	4%	1%
Other languages	4%	6%	7%	5%	7%	4%
Any non-English language	28%	28%	29%	14%	25%	27%

- Generally, less than a quarter of sales are from non-native English speakers



Paperwork / Applications

- About half of trade allies complete applications for all customers
 - Another 20% complete them most of the time
- Most common reasons for not completing the app:
 - Customer preference
 - Can't access necessary information
 - Amount of paperwork is excessive
- Owners are often completing applications, along with administrative staff
- Average time to complete an application is less than one hour for most respondents, except solar

Average time to complete application

	Single-family Homes	Multi-family	Commercial	Industry & Ag	Solar	Total
It is very reasonable	24%	23%	24%	18%	18%	22%
It is reasonable	47%	49%	40%	46%	18%	46%
It is slightly unreasonable	11%	14%	14%	18%	45%	15%
It is very unreasonable	6%	8%	10%	10%	14%	6%
I don't know	9%	5%	6%	8%	5%	9%
Other (please specify)	2%	3%	6%	0%	0%	3%



Subcontracting

- Two thirds said less than a quarter of their jobs used subcontractors
 - 12% said 100% of jobs use subs
- Electrical work was the most common type of work to be subcontracted, plumbing was a distant second
- A lot (40%) were unsure whether their subs were women-, veteran- or minority-owned
 - Most of the rest were split between answers of none or less than 25%



Solar

- Two thirds of respondents have changed their business approach since RETC ended
- A third of solar respondents reported >75% of revenue in 2017 from non-solar projects
- Almost all report a decrease in inquiries this year

Solar Pipeline Status	Residential	Commercial
Have no projects currently planned	35%	38%
Have projects to cover work for next month	55%	29%
Have projects to cover work for next 3 months	5%	19%
Have projects to cover work for next 6 months	0%	0%
Have projects to cover work beyond the next 6 months	0%	5%
Don't know	5%	10%



Satisfaction with Energy Trust

	Total
Interactions with program staff	81%
Response time to requests for information or assistance	78%
Quality assurance / quality control process	73%
Incentive payment processing time	50%
Overall	76%



Change in relationship with Energy Trust

- A quarter said their relationship has improved in the last year, 65% say it has stayed the same
 - Comments about improvement center around experiences with staff
- Only 8% said the relationship deteriorated
 - Not dominated by any single reason, though a couple were related to incentive changes



Interest in Energy Trust support

- Many already familiar with, and interested in, trainings and business development funds
- 59% are interested in travel reimbursement for conferences and training
- Variety of training topics appeal to about half of respondents
 - Savings calculation tools
 - Code changes
 - Selling the value of energy efficiency to customers
 - Program requirements and paperwork

Forums and trainings

- About half have not attended or it's been more than 2 years
 - About a quarter attended in Spring 2018
 - Location is a factor for some

	Single-family Homes	Multi-family	Commercial	Industry & Ag	Solar	Total
Because of my location, I have never been able to attend	3%	3%	3%	0%	5%	2%
My location makes it very difficult, but not impossible, to attend	15%	11%	14%	19%	5%	15%
My location makes it inconvenient, but not overly difficult to attend	25%	27%	27%	25%	32%	24%
My location does not prevent me from attending	51%	51%	47%	50%	53%	52%
Other (please specify)	7%	8%	9%	6%	5%	7%

Forums and trainings, continued

	Single-family Homes	Multi-family	Commercial	Industry & Ag	Solar	Total
How informative were forums or trainings?						
Very informative	25%	29%	29%	28%	0%	25%
Somewhat informative	68%	65%	68%	66%	92%	68%
Not informative	7%	6%	4%	7%	8%	6%
How important are Continuing Education Credits for forums or trainings?						
Very important	19%	20%	22%	31%	37%	21%
Somewhat important	43%	39%	41%	28%	47%	43%
Not important	37%	41%	37%	42%	16%	36%

Communications

- Most preferred channels are email (84%), *Insider* (65%), website (59%)
- Two thirds visit our website 1-3 times a month
 - 20% never visit the website
- Pages most often visited:
 - Program incentives
 - General program information
 - Program forms
- Navigation is easy for 60%; 37% rate it as neutral
- Three quarters had no interaction or issues with Paladin Risk Management (insurance verifier)

Insider newsletter

Readership	Single-family Homes	Multi-family	Commercial	Industry & Ag	Solar	Total
Always	27%	30%	31%	31%	21%	27%
Sometimes	58%	57%	51%	50%	68%	56%
Never	7%	7%	5%	3%	5%	7%
Unfamiliar with Insider	8%	7%	13%	17%	5%	10%

- What trade allies would like to see in *Insider*:
 - Program updates and how to work with Energy Trust
 - Technical articles and industry news
 - Common problems and solutions
 - Emerging tech

Internship interest

- SummerWorks: internships for diverse young adults in Portland Metro area

	Single-family Homes	Multi-family	Commercial	Industry & Ag	Solar	Total
Very interested	24%	29%	31%	20%	14%	24%
Somewhat interested	37%	40%	40%	45%	29%	37%
Not interested	27%	22%	24%	30%	43%	27%
I don't know	12%	9%	5%	5%	14%	12%

- Most interested in candidates that are 18-21 years old

Star rating system

- Relevant only for Single-family and Solar allies
- Three quarters familiar with the rating system
 - Half of those feel the system is clear, 43% said “somewhat clear”
 - About 60% said it is fair, 21% said “slightly unfair”
 - Have a harder time rating usefulness to customers, but more likely to say useful than not useful

Would you support a shift to a system based only on ratings of customers?	Single-family Homes (n=89)	Solar (n=16)	Total (n=94)
I support this change	40%	44%	41%
I do not support this change	17%	13%	16%
I don't have an opinion	26%	25%	26%
Don't know	17%	19%	17%

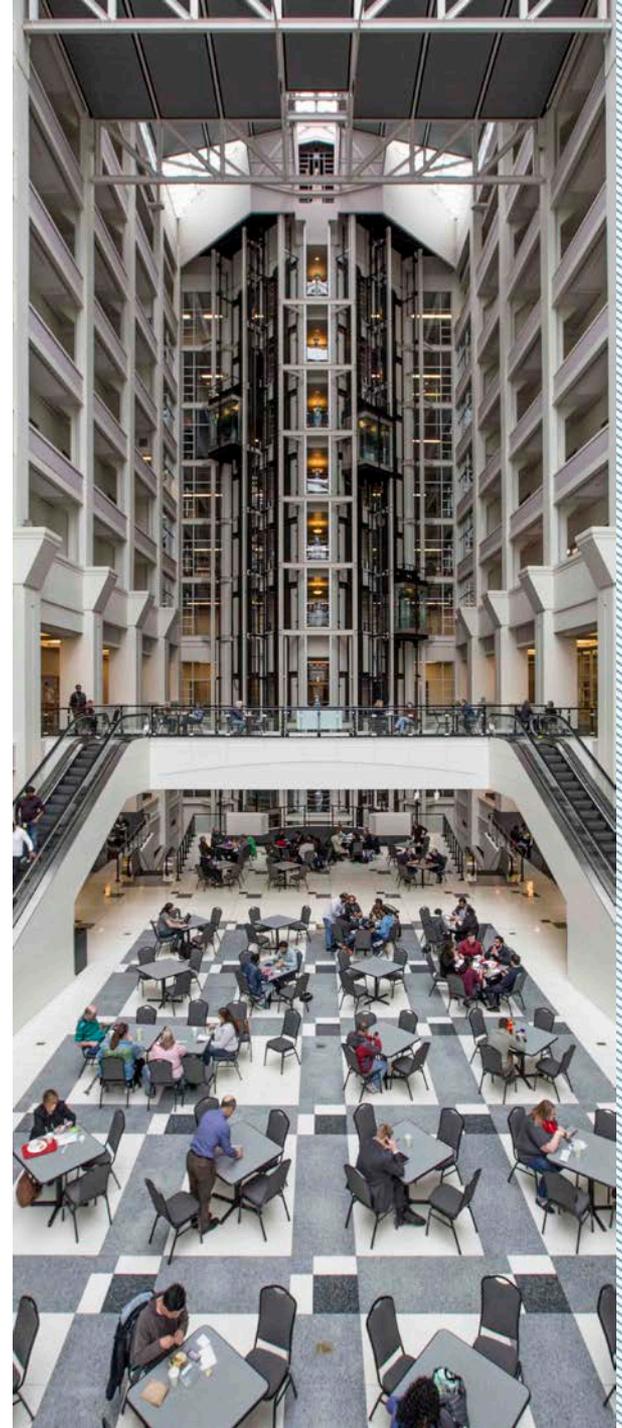


Conclusions

- Forums and trainings are valuable
 - Opportunity to increase attendance through location choice or travel reimbursement along with local content
- Many are reading *Insider* and using our website
- High awareness of some types of trade ally support
 - Can work to increase others, especially travel reimbursement
- Star rating system working ok, trade allies are open to changes
- Applications appear to be burdensome for some trade allies

Next steps

- Shift approach to forums
 - Travel reimbursement launch for 2019
- Focus on incentive processing and electronic payment
- Additional analysis needed of raw data
- *Insider* redesign
- Star-rating review in 2019
- Work to identify participation barriers as part of diversity, equity and inclusion effort





Thank you

Cameron Starr

Sr. Customer Service Strategy
Manager

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PGE Testbed

Jason Klotz, Emerging Technologies

November 30, 2018

Energy Trust of Oregon



**“People say we’re running out of energy. That’s only true if we stick to these old 19th century technologies.”
-Raymond Kurzweil**



Smart Grid Testbed Video





The Testbed began with the Commission and PGE's identified need for 2021 Capacity

Executive Summary

Background

- Commission Order 17-386 directed PGE to present multiple Testbed sites to a new stakeholder group entitled the Demand Response Review Committee (DRRC) and by July 2019 establish a Testbed.
- The Commission directed development of a Testbed to accelerate the development of demand response.
- PGE Staff established the DRRC in February of 2018. The Committee includes (Energy Trust, NEEA, PNNL, NWPCC, CUB, NWEA, AWEA (formally ICNU), Commission Staff and Oregon DOE. The Committee has met 5 times including a Rocky Mountain E-Lab Accelerator week long intensive engagement.
- A draft of the project application was shared with the DRRC in September. Their comments informed revisions for the final submittal.

Executive Summary

Project

- The PGE Testbed will be established using three substations: The Island Substation serving the downtown portions of Milwaukie, the Delaware substation serving the Overlook area of Portland including the University of Portland and the North Interstate campus of Kaiser Permanente, the Roseway Substation serving the South Hillsboro area where new residential, municipal and commercial construction is underway.
- The project proposal requests 10 quarters of funding or 2.5 years, and \$5.9M. The proposal contemplates at least two phases of development but only requests funding for Phase One. 22,000 customers are involved. The project seeks to obtain 66% participation.
- Phase One activity is focused on accelerating the development of demand response. This includes current demand response programs, anticipated modifications of these programs, and several new programs such as PGE residential energy storage program and upcoming smart electric vehicle charging.

Project Details



- 2.5 years of work or 10Qs (start date depends on OPUC approval).
- \$5.9M ask. Money is chiefly spent on research and evaluation (\$2.6M), additional money for costs to run current DR program (\$3.3) inside the Testbed.
- 22K customers across 3 sites (Milwaukie, Hillsboro, and Portland). Includes Residential, Commercial and Industrial.

Project Details Continued



Utilizes an opt-out peak time rebate to establish customer engagement and drive participation thereby accelerate the capture of program objectives

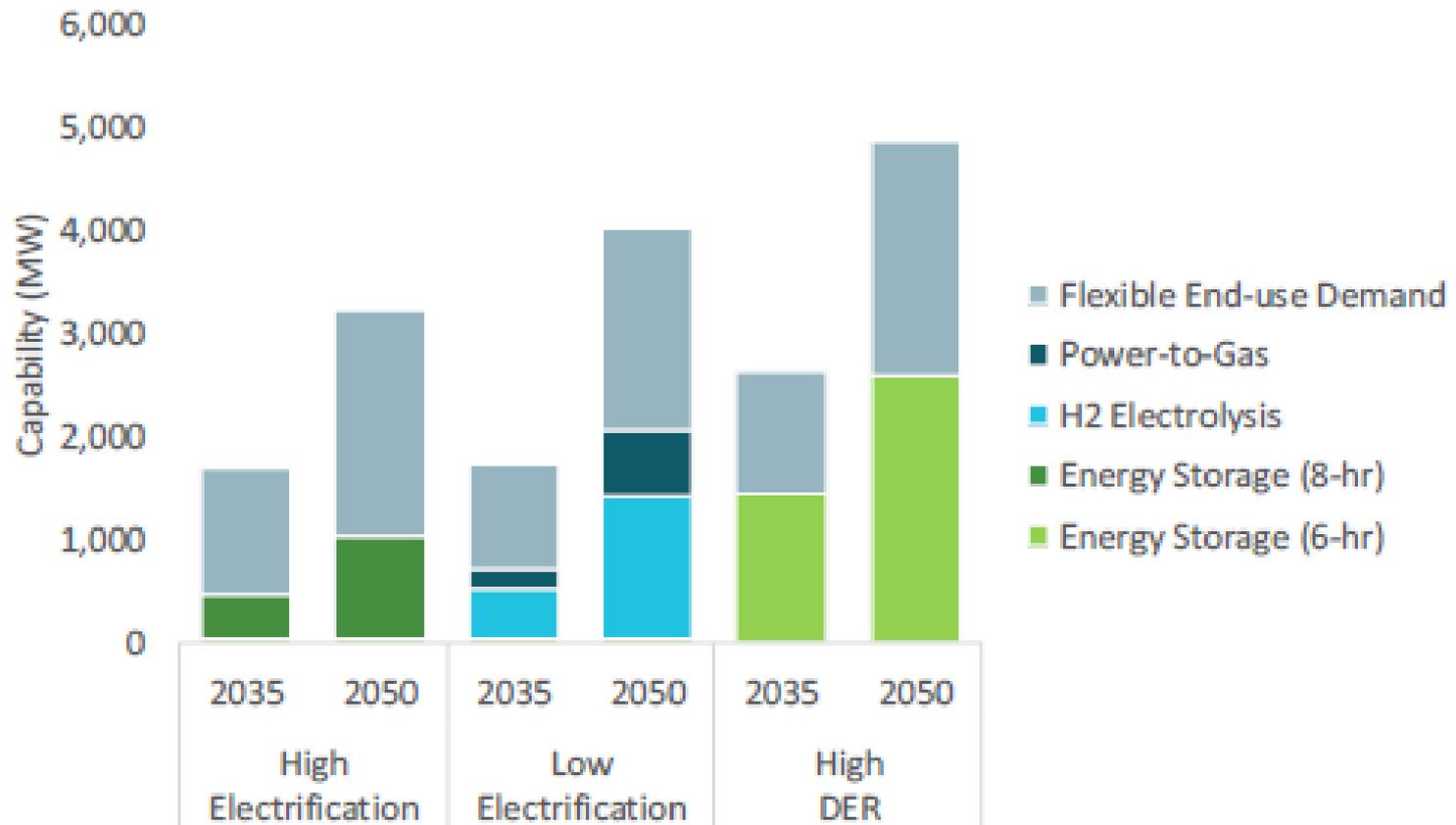
Strategy seeks to migrate customers from rate driven (non-firm) demand response programs to direct load control (firm) flexible load programs such as t-stats, water heaters, batteries and EV chargers.



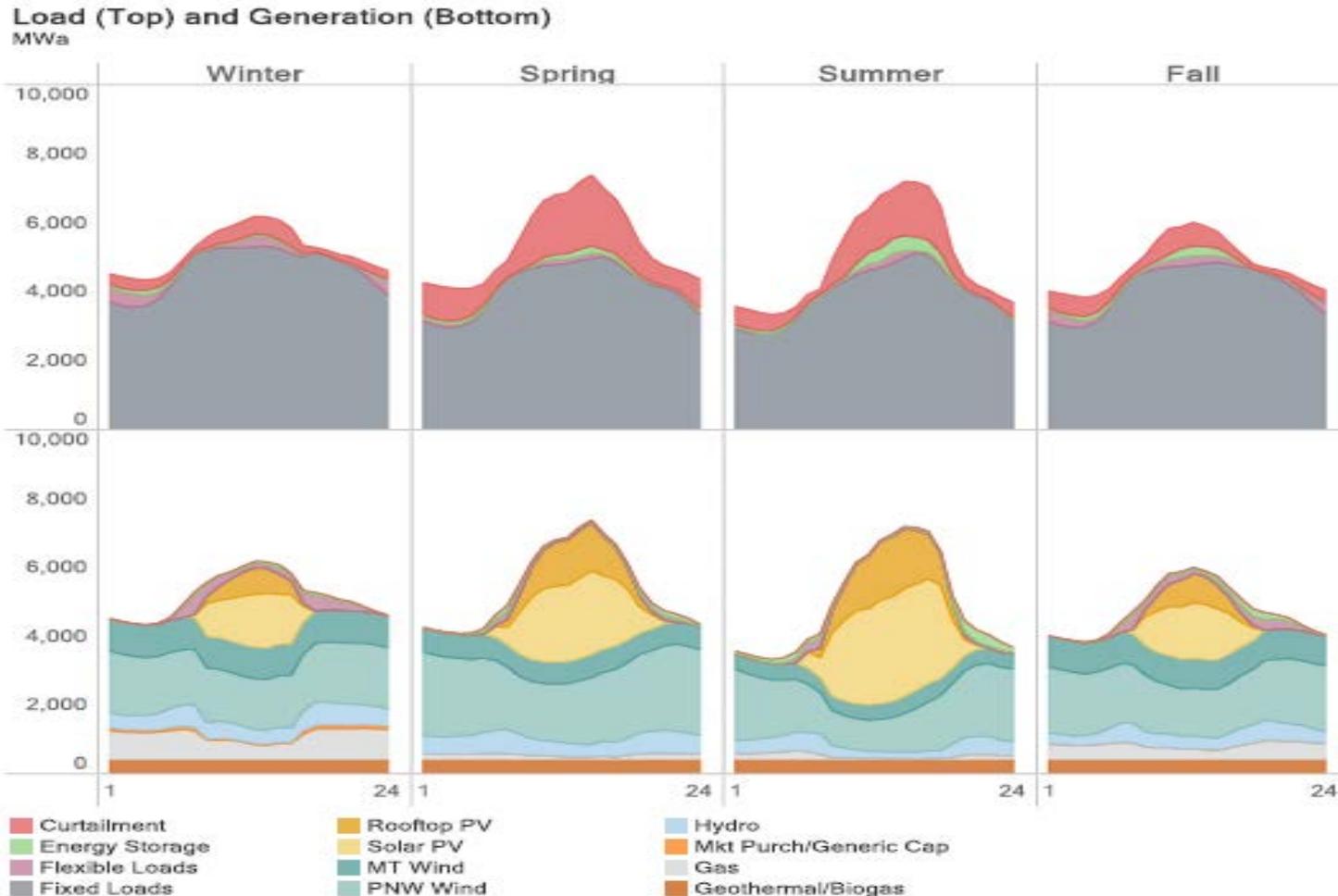
Primary Objectives

- Identify the acceptable and sustainable customer value proposition for DR/DER
- Gather learnings and insight to accelerate the pilot to program cycle for DR/DER
- Gather learnings and insight to accelerate the development of DR/DER resources
- Identify EE/DR coordination opportunities
- Gather learnings and insight to incorporate the grid edge into PGE's integrated grid vision and operations

PGE's Decarbonization Study Identified Flexible Load a Major System Resource



Flexible Load is available for multiple hours of the day



Substations



Delaware

- Planned for reconstruction by end of 2019
- Modern SCADA and DA scheme in development
- University of Portland Solar + Storage
- Kaiser Interstate Campus



Roseway

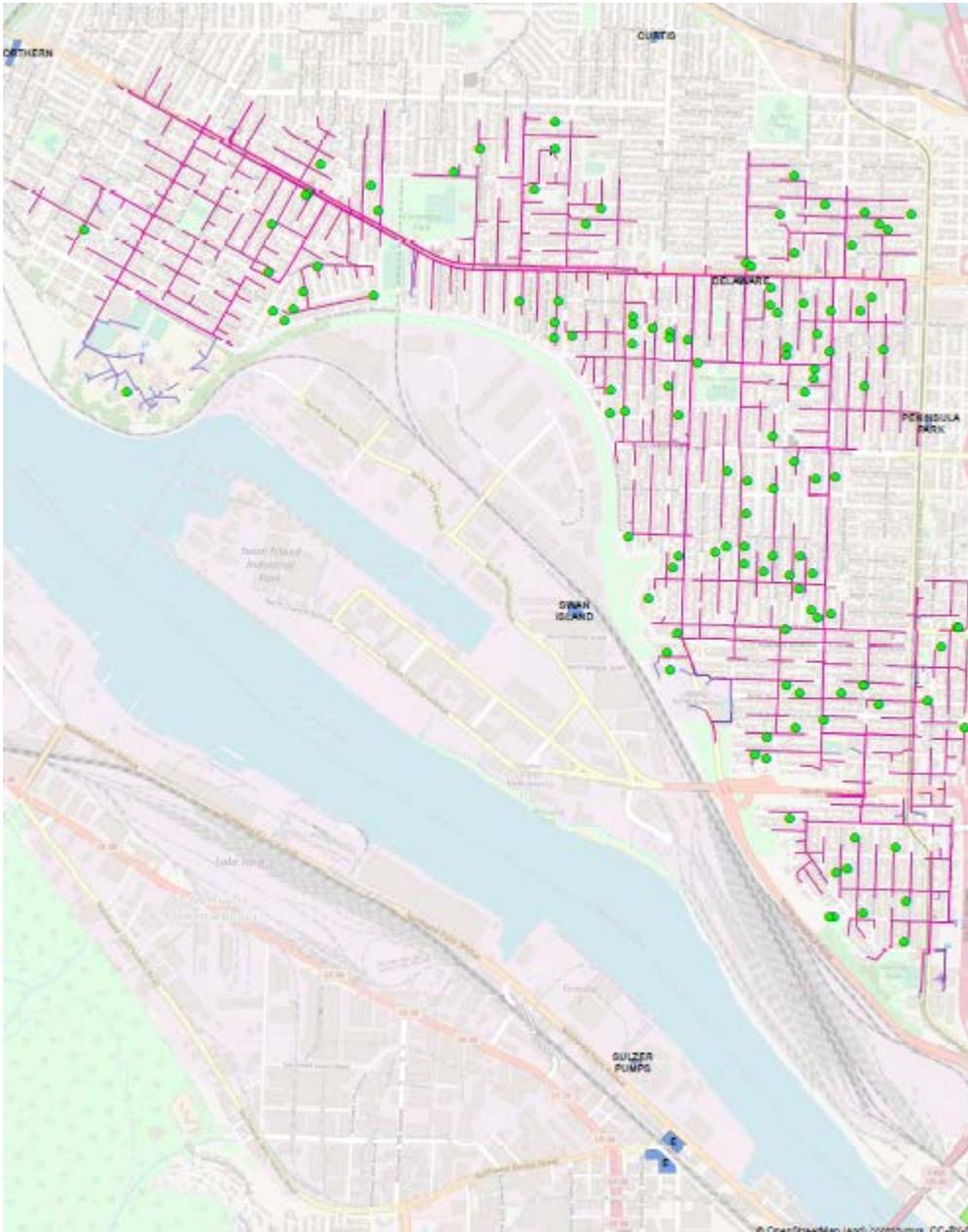
- New Construction
- Planned for future reconstruction
 - Communication
 - Visualization
 - Remote operation
- Customer mix includes residential subsets



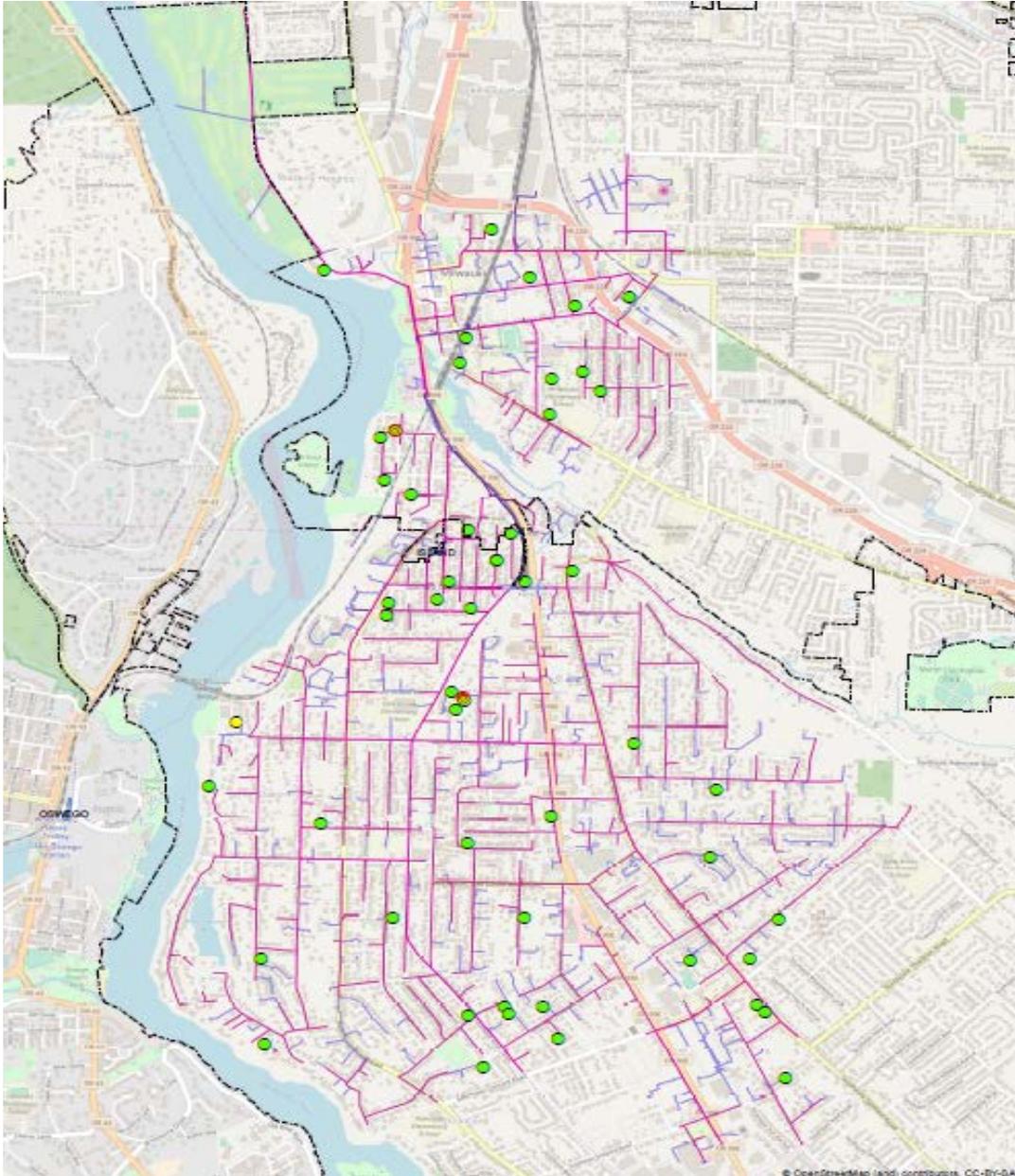
Island

- Multifamily and high concentration of commercial business
- High number of electrically heated homes
- Challenging recruitment
- High profile site for the City

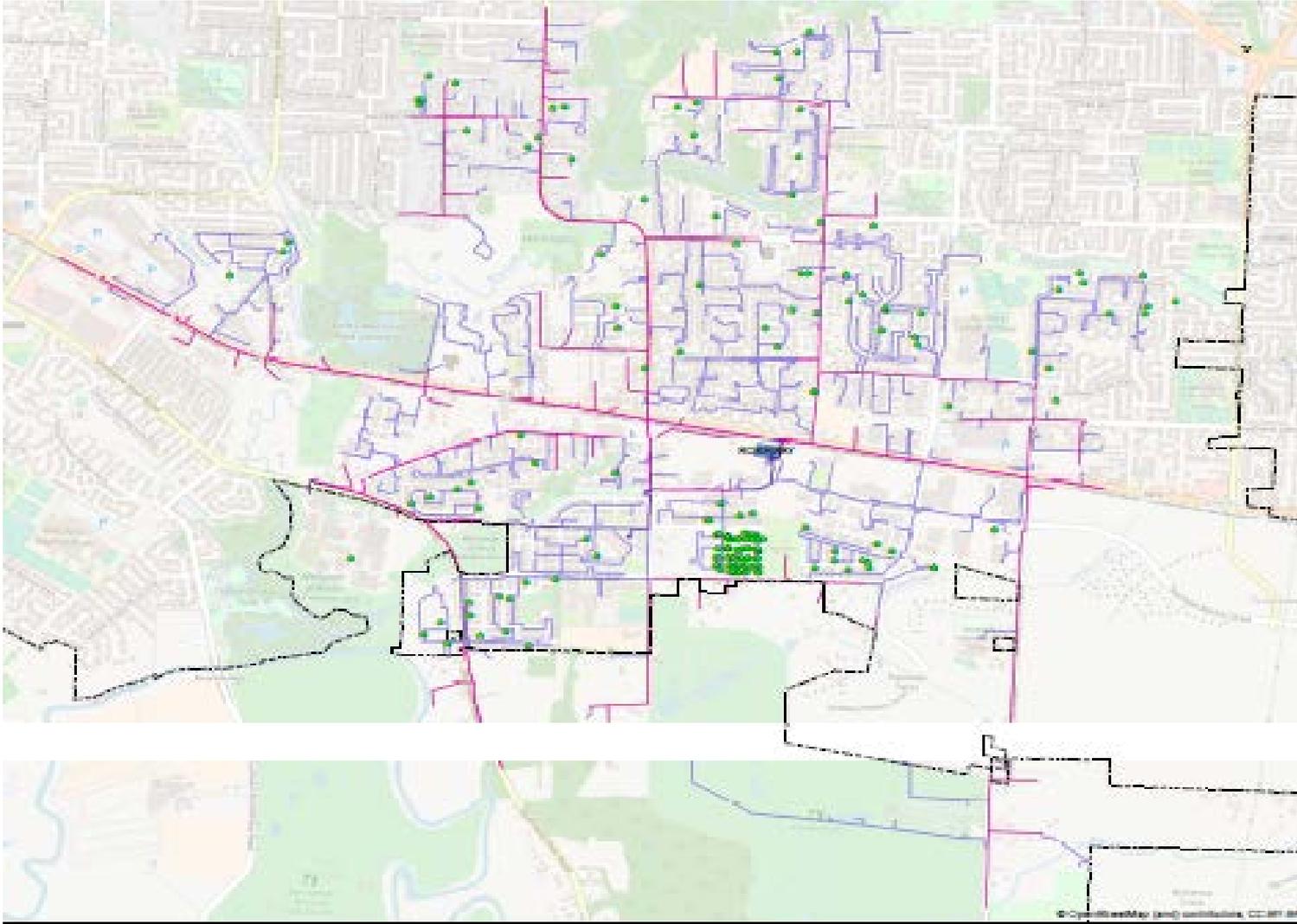
Delaware Substation North Portland Overlook Area



Island Substation Milwaukie Downtown Area



Roseway Substation South Hillsboro Area



Demand Response Review Committee

Order 17-386 required creation of a subject matter expert stakeholder group to inform the Test Bed development

We are leveraging this group for tacit pre-approval, Commission Staff and stakeholder support for the project and continued funding

Rocky Mountain E-Lab Accelerator Team



Jason Salmi Klotz
Portland General Electric
Champion



Elaine Prause
Oregon PUC



Fred Gordon
Energy Trust of Oregon
(present Tues-Wed)



Jeff Harris
NEEA *(present Weds-Thurs)*



Margaret McCall
RMI
Facilitator



Jon Wellinghoff
Booster Club



Josh Keeling
Portland General Electric



Peter Brandom
City of Hillsboro



Peter Passarelli
City of Milwaukie



Robert Pratt
Pacific Northwest
National Lab

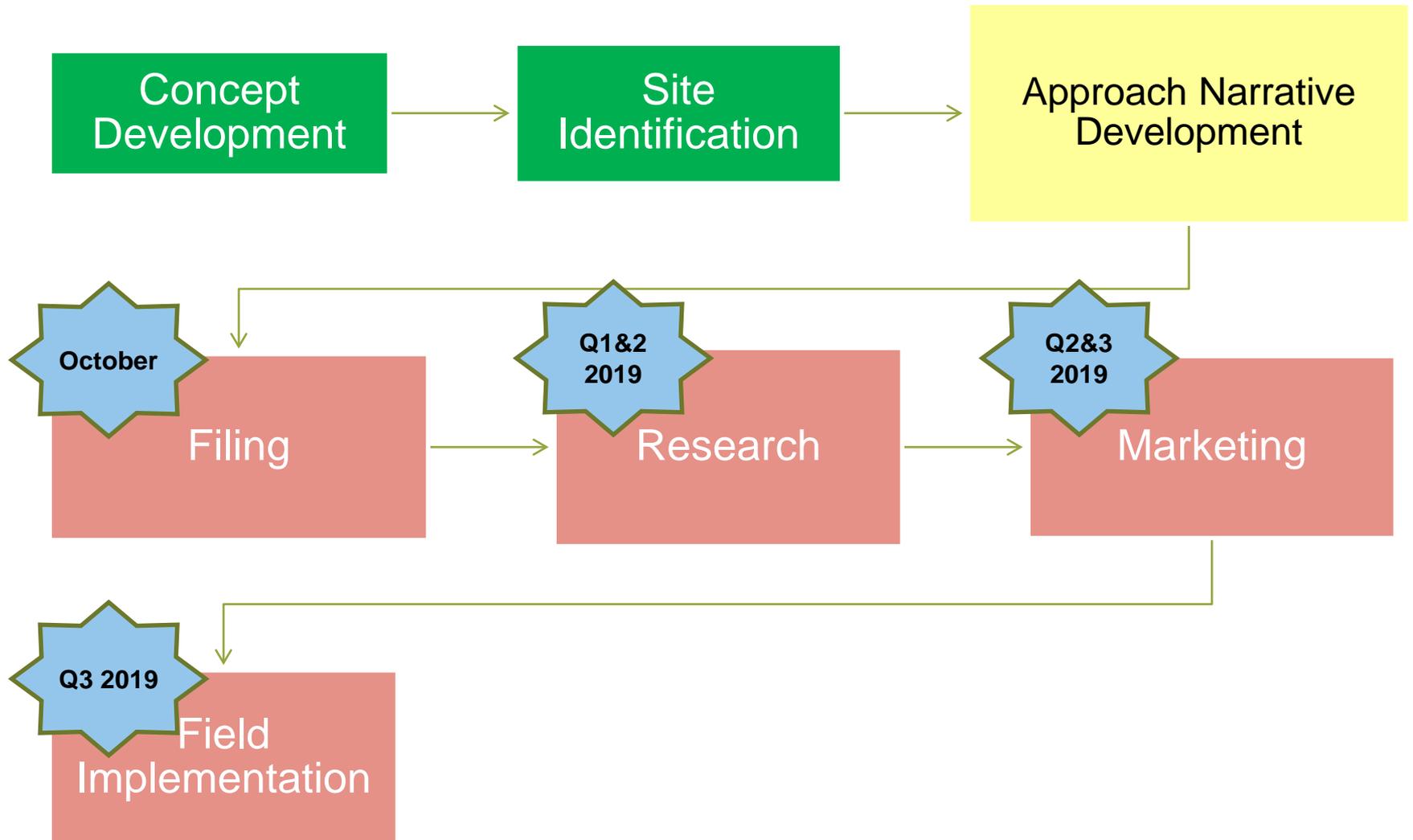
2018 Milestone Dates

Funding by stage gates

1. **Concept and team contract development (This winter)**
2. **Implementation budget 2yrs plus evaluation (This Spring)**
3. **Project Evaluation (2021)**

Milestone Dates	Activity
2/23/2018	DCC Kick-off Meeting
4/6/2018	DRRC Review of Proposed Progress Report
Q2 2018	Regular Public Meeting – Progress Report to Commission
Late Q2 2018	Propose Final Site Selection to DRRC
Q4 2018	File Funding Proposal Phase 1
Q4 2018	Regular Public Meeting – Commission Update
Q1 2019	Target for Commission Order
Late Q1 2019	Public Announcement
Q3 2019	Field Activity Begins - Evaluations

Phase 1 Work Streams



FERC Order 719

- First of the major FERC Orders requiring wholesale markets change market operations to include a new form of energy resource, demand response.
- Here the FERC in large part found that wholesale energy markets cannot produce just and reasonable rates unless demand can bid into the market to in part demonstrate response or pricing flexibility at times of high prices or system capacity and energy constraints.

FERC Order 745

- Order 745 followed and was meant to address the market barriers and the unique operating capabilities of demand response to assure that the markets, ratepayers and demand response receive the greatest benefit from the resources participation.
- This Order was granted certiorari by the US Supreme Court in 2015 and was found to be within the power of the FERC. Since then FERC has issued two Orders to incorporate energy storage in the wholesale energy and ancillary service market.
- This Order and the S. Ct. ruling raises concerns about the common and long held jurisdiction lines between state and federal regulation.

FERC Order 755 and Order 841

- FERC Order 755 outlined how energy storage should be compensated for its dispatch response and performance accuracy.
- FERC Order 841 similarly advanced rules for electric storage participation in wholesale markets.
- During the Notice of Proposed Rule process for FERC Order 841 the Commission and FERC Staff contemplated creating similar rules for distributed energy resources to participate in wholesale markets.
- The FERC opened a docket in 2017 to review this proposal in advance of a notice of proposed rule and held a technical conference requesting comment in Docket AD18-10-000.