Joint Conservation Advisory Council and Renewable Energy Advisory Council Meeting Agenda

Friday, February 1, 2019
Special joint CAC and RAC meeting from 1 – 4 p.m.
421 SW Oak St., #300, Portland, OR 97204

1:00 Welcome and Short Takes
Introductions
Agenda review
Approve November meeting minutes from RAC and CAC
Review 2019 meeting dates

1:10 Guest Speaker: Northwest Power and Conservation Council (*information)*
Senior Power Systems Analyst John Fazio and Power System Analyst Dan Hua will present forecasted temperature trends and extreme weather events. We will discuss the feasibility of using this information to assess the potential impacts of climate change-driven weather forecasts on the future value of energy savings and future measure development at Energy Trust. The presentation materials will be provided at the meeting, and made available online after the meeting.

2:00 Diversity, Equity and Inclusion Operations Plan (*information)*
Staff will provide an update on progress made in 2018 to the organization's Diversity, Equity and Inclusion initiative. CAC and RAC members will receive a presentation on Energy Trust's DEI goals, including goals related to increasing participation in programs, and increasing trade ally participation and completed projects.

2:50 Break

3:00 Strategic Planning Development *(discussion)*
An interactive discussion about the development of the 2020-2024 Strategic Plan. Discussion will center on a list of future opportunities the organization could pursue and how they could require a modification to Energy Trust's unique role of value in the market.

4:00 Public Comment

4:15 Adjourn

Meeting materials (agendas, presentations and notes) are available online here for CAC and here for RAC.

Next RAC meeting: Wednesday, Feb. 27 at 9:30 a.m.
Next CAC meeting: Wednesday, Feb. 27 at 1:30 p.m.

Conservation Advisory Council Meeting Notes

November 30, 2018

Attending from the council:

Holly Braun, NW Natural
Kari Greer, Pacific Power
Tina Jayaweera on behalf of Charlie Grist, Northwest Power and Conservation Council
Anna Kim, Oregon Public Utility Commission
Lisa McGarity, Avista
Dave Moody, Bonneville Power Administration
Tim Hendricks, Building Owners and Managers Association
Julia Harper, NW Energy Efficiency Alliance
Kerry Meade, NW Energy Efficiency Council
Warren Cook, Oregon Department of Energy
Jason Salmi Klotz, PGE
Danny Grady, City of Portland Bureau of Planning and Sustainability

Attending from Energy Trust:

Mike Bailey
Tom Beverly
Cameron Starr
Mike Colgrove
Hannah Cruz
Alex Novie
Fred Gordon
Thad Roth
Peter West
Amber Cole
Spencer Moersfelder
Peter Schaffer
Julianne Thacher
Kenji Spielman
Steve Lacey
Jeni Hall

Others attending:

Ryan Hughes
Michael Freels
Nick Dreves, ICF
Shelley Beaulieu, TRC Solutions
Lonnie Peet, Nexant
Karla Hendrickson, ICF
Elee Jen, Energy Trust board
John Molnar, Rogers Machinery Company
Henry Lorenzen, Energy Trust board
Nicole Hillis, CLEAResult

Executive Summary

1. Changes to Draft 2019 Budget
    - Director of Energy Programs Peter West presented modifications made to the draft 2019 budget and action plan based on public feedback and internal quality control.
2. Findings from the 2018 Trade Ally Network Survey
    - Senior Customer Service Strategy Manager Cameron Starr presented findings from a survey of Energy Trust's Trade Ally Network.
3. Guest Speaker: PGE Smart Grid Test Bed
    - PGE's Emerging Technology Manager Jason Klotz presented on the utility's proposed Smart Grid Test Bed.

1. Welcome, Old Business and Short Takes

Hannah Cruz convened the meeting at 1:46 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/.

Hannah introduced the agenda and a new CAC member, Tim Hendricks from the Building Owners and Managers Association. Tim spoke briefly about his 12 years working with the Bill Naito Co. and his professional experience, most notably his work with Montgomery Park in Portland—a project which received significant recognition for efficiency.

Holly Braun: It's good to have a CAC member who is close to programs and has hands-on experience.
Tim Hendricks: Yes, that's the reason BOMA asked me to participate.

Hannah handed out 2019 meeting dates that are being finalized, requesting members advise her of any significant conflicts.

There were no changes to the Conservation Advisory Council notes.

2. Changes to Draft 2019 Budget

Director of Energy Programs Peter West presented on modifications made to the draft 2019 budget and action plan based on public feedback and internal QC. The final proposed budget will be available online on December 7 and presented to the board on December 14.

Peter West reviewed highlights from the 2019 draft budget and presented a summary of public comments. One of the recommendations was ensuring coordination with City of Portland on efforts such as the city's Home Energy Score program.

Holly Braun: If a customer made improvements as a result of their energy score, can they receive a new score at no cost?
Danny Grady: For commercial projects, they don't need to pay because they're able to self-report. However, if they want ENERGY STAR® certification, they would need a professional engineer to sign off.
Peter West: We will follow up with you on our approach for residential. On the commercial side, we remain in an advice role with the City of Portland. For example, by sponsoring trainings with PGE on ENERGY STAR portfolio manager. BOMA is a great partner of ours in deciding where our services can provide benefit.

Peter West continued reviewing public comments. A common theme among some comments was dissatisfaction with progress toward diversity, equity and inclusion goals. Peter provided some additional context around this, highlighting a recent open house event that engaged community-based organizations.

Kari Greer: Do we have any indicator of the group's feedback, and what their benchmark of success is? What actions specifically do they want to see sped up?
Peter West: Mainly the rollout of the actions, which some felt should have begun sooner. There isn't disagreement with the goals themselves, but the theme is expecting quicker implementation.
Hannah Cruz: To provide more context, we first brought early data analysis to CAC in September. Internally, we have draft goals such as increasing staff diversity or the diversity of our Trade Ally Network. That is what is going to the board in December. Next, we'll bring program goals to CAC and RAC in January. The goals are meant to be a baseline to track over the next two to three years. There's frustration with not being active more quickly. Education is happening on both sides. We're still learning.

Peter finished reviewing public comments and began covering changes underway to the draft budget. The NW Natural budget increased slightly due to a new offering for boilers planned for 2019.

Holly Braun: We don't know for sure the boiler program is happening, but we're expecting it to result in enhanced incentives. That is why they're budgeting more, but it's still in process.

Lisa McGarity: You mentioned increasing outreach in Pacific Power in Southern Oregon, is that for multifamily?
Peter West: No, that's staying the same. This is for the Production Efficiency program and will touch mainly Pacific Power and Cascade Natural Gas customers, but not as many Avista customers.

Peter West finished reviewing the changes from draft to final proposed budget and summarized key takeaways. Hannah Cruz asked the CAC members if they had any feedback on the new process where the draft budget was presented at a board workshop to which advisory council members were invited. CAC members in attendance were Al Spector, Anna Kim and Brendan McCarthy for PGE. In the past, the draft budget was presented in a regular CAC meeting. Specifically, Hannah asked if the right level of detail was provided with the new process.

Lisa McGarity: I think this level of detail is perfect.
Holly Braun: It felt smoother than other years, but I thought you were going to revise the whole process.
Hannah Cruz: We interviewed CAC in summer 2017 with other stakeholders. Out of that feedback we implemented this year's process that introduced the budget workshop. We also accelerated the utility meetings and a shorter forecast to get numbers out sooner to utilities for funding discussions. We're planning to keep doing that in future years. The project you're referring to is a bigger concept. Instead of annual updates, we are proposing a large-scale action planning strategy and organizational goals at a less frequent pace. Budget financials would still be annual, but strategy would be thought out broadly. The plan for that is being scheduled by a consultant and we're awaiting their report. There will be more information to come.
Holly Braun: Would that take effect for the 2020 budget?
Hannah Cruz: This would be done in 2020 and implemented in the 2021 budget. It marks a significant change in stakeholder engagement, so want to roll it out with everyone on board
Peter West: This will also require a change in software. We need to build something to evaluate scenarios quickly and the current software can't do that.
Lisa McGarity: My only feedback is that for utilities to get comments back this year was pretty tight between the second funding meeting in late October and the comments deadline of October 31.
Holly Braun: I liked this level of detail for the CAC process.

3. Findings from the 2018 Trade Ally Network Survey

Senior Customer Service Strategy Manager Cameron Starr presented findings from the 2018 Trade Ally Network survey, which will inform 2019 network strategy and activities. The last survey was done in 2013 and redesigned with significant changes this year.

Cameron Starr: Many trade allies reported serving market segments for which they were not listed as an ally.
Hannah Cruz: What's the value of knowing enrollment type?
Cameron Starr: They can get benefits and take advantage of offers that aren't open to them if they're not enrolled in a segment that they are already serving.

Cameron reviewed presentation slides covering response results and trends. One slide showed that the respondents self-reported a much higher rate of being owned by women, veterans or minorities than the rate determined by comparing COBID certification and self-reported data from the trade ally survey to the network as a whole.

Anna Kim: Can you explain that more?
Cameron Starr: Out of the entire network as a whole—around 2,100—1 percent are minority owned according to COBID certification and self-reporting, and 0.6 percent are women owned. However, this slide is saying that out of specifically the group surveyed—180—they self-reported much higher results.
Anna Kim: Were their answers inconsistent with information you found elsewhere?
Cameron Starr: We did have a couple contractors who were COBID certified and self-reported as such. More self-reported who weren't COBID certified.
Kerry Meade: Is this suggesting that respondents skewed toward these ownership types?
Cameron Starr: They could have been. But we didn't specifically target those.
Anna Kim: Is COBID a bad measure of business diversity?
Holly Braun: Is it hard to get that certification?
Cameron Starr: There are a lot of requirements and documentation that need to be submitted. Certification is used for public procurement so if businesses are not engaged in public projects they may not see a benefit in applying to be certified. It's a time investment on the owner's part.
Anna Kim: Is it possible that 12 percent actually are women-owned but we can't verify that?
Cameron Starr: It's possible.
Kari Greer: How representative is that of the universe of contractors? Does 12 percent still hold true of all contractors?
Cameron Starr: We haven't been able to verify that, but it's been asked.
Hannah Cruz: Is this part of your DEI goal?
Cameron Starr: If we can get down to that level of detail.
Kari Greer: It could be that the contractor universe is only 10 percent women-owned and you're already doing better.
Anna Kim: When you sign them up, you aren't using COBID to check?
Cameron Starr: We decided to allow both COBID and self-reporting. There's a risk associated with both approaches, but it's probably unlikely that someone would falsely self-report based on the benefits we offer.

Cameron continued with results about different languages supported by the contractors surveyed.

Lisa McGarity: Is information on your website available to help customers select a contractor based on supported languages?
Cameron Starr: It's not currently on our website, but that is a good suggestion for our Find A Contractor tool.
Hannah Cruz: We did some outreach to create an upcoming micro-site that includes a selection of Spanish-speaking contractors.

Cameron reviewed contractor responses regarding experience using Energy Trust incentive applications and suggestions for improvement.

Danny Grady: Regarding concerns from the contractors, are there big swings depending on the type of application?
Cameron Starr: Some applications are for incentives that are paid to the contractor, so they are more motivated to complete those in order to receive their payment. It also depends on the size

of the business. If you're a small shop, it's a cost you may not be able to bear. Some contractors have specific administrative staff to do this, typically larger firms.

Cameron continued reviewing the results of questions asking about subcontracting practices and the diversity of subcontractors utilized. Most contractors selected that either none or less than 25 percent of their subcontractors were minority, veteran or women-owned, or that they did not know.

Holly Braun: Do you have any more granularity on that? Less than 25 percent is such a big swath.
Cameron Starr: We don't. We integrated "other" free-text questions to try to tease out more information, but not on that question.
Holly Braun: I would expect all of them to be less than 25 percent based on the other responses.
Danny Grady: Do you have requirements around subcontracting?
Cameron Starr: Not currently. A lot of times subcontractors are not captured in our system because they aren't the general contractor and therefore don't appear on the customer's invoice.

Cameron discussed solar trade ally results, which showed that for most businesses, the state Residential Energy Tax Credit sunset negatively affected their project pipelines and overall business strategies.

Hannah Cruz: When were you in the market with this survey?
Cameron Starr: July through August of this year.

Cameron finished reviewing the remainder of the responses, overall conclusions and next steps to take based on the learnings.

Lisa McGarity: Did any responses come from Southern Oregon? It wasn't called out.
Cameron Starr: Yes, and also many from Eastern Oregon.

4. Guest Speaker: PGE Smart Grid Test Bed

CAC member and PGE's Emerging Technologies Project Manager Jason Klotz presented 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.

Fred Gordon provided background on why the presentation was included for the CAC audience and how the project intersects with Energy Trust's work. Jason Klotz explained the primary objectives of the study, the value of a flexible load resource in the decarbonization plan and funding for the project.

Holly Braun: Who are you asking for the funding?
Jason Klotz: The Oregon Public Utility Commission.

Jason Klotz continued stating that one strategy to be deployed in the test bed is an opt-out peak time rebate that aims to achieve well beyond typical participation rates.

Julia Harper: Are participants auto-enrolled?
Jason Klotz: Yes. They would have to call PGE to opt out.

Kari Greer: So you haven't rolled it out yet?
Jason Klotz: No, the current program, FLEX is opt-in. This would be opt-out.
Fred Gordon: They are enrolled to receive participation requests and can opt-out of the requests, but no one interrupts their power.
Jason Klotz: We communicate events, which are individual time-based opportunities to participate. If they choose to participate, customers are paid $1 per kWh they save. If they opt out, their rate does not change. Participation provides a benefit, but you may have to change your usage to achieve that benefit, such as adjusting the time you do laundry. Our strategy is to migrate them from a peak time rebate to a load control program.

Jason continued describing the demand response strategy, noting that all the incentive programs are cost-effective.

Hannah Cruz: Does cost-effectiveness for demand response use a different set of criteria than for energy efficiency?
Jason Klotz: Yes, the methodology is different. Energy efficiency is on all the time, but demand response is time-based. There are different avoided costs. You can see the application of the methodology in the plan.

Tim Hendricks: Will residential and commercial customers be included?
Jason Klotz: Yes, this will include residential, commercial and industrial customers. Residential customers will be on the opt-out, but commercial and industrial stay on their current rates and we'll use a different strategy with them. Small commercial customers are the most difficult type to engage. We want to increase our understanding of the customer value proposition through the test bed. Our proposal asks for commercial engagement personnel to help us learn customer value and retain customers.

Jason continued that a primary objective is pilot-to-program acceleration through learnings from the test bed.

Hannah Cruz: Are you deploying several different pilots with the same customers?
Jason Klotz: Yes, we need to understand the interactive effects. We need to know how big this resource really is and how it behaves with other resources.

Jason continued that the project looks to coordinate with Energy Trust to achieve maximum benefit. He emphasized the importance of partnering with customers to create flexible end-use demand throughout the day, not just at peak.

Holly Braun: What's the value in curtailing use outside peak?
Jason Klotz: Moving load around enables us to match load with generation. Moving away from carbon toward renewables, those resource operations are not as controllable. The ability to move load around is important.

Jason moved on to describe the test bed locations and substations, and the unique aspects of each. Two locations will get electric avenues with EV quick chargers. Jason concluded with the demand response review committee, milestone dates and timelines for phase one of the project.

Lisa McGarity: Are demand response events planned?
Jason Klotz: They're informed by resource availability, market prices and other factors.
Lisa McGarity: Are they determined in real-time?
Jason Klotz: Participants are notified day-ahead but they're market-driven, not planned by calendar date.

Holly Braun: If it's a day ahead, is it because you know it's going to be windy or not? How do you determine the need for an event?
Jason Klotz: Currently it's to resolve peak issues. You're raising something that needs research, which is how we can move to flexible load to balance wind resources. With this piece we want to learn the customer value proposition, not how to address the inclusion of renewables. That would be a second phase.

Holly Braun: What would an example of an event be currently?
Jason Klotz: It's summer, expected to be 96 and the previous day was 93. We expect we may be close to capacity, so we would call an event. This is about using current demand response programs to address peak. In the next phase, we would move into flexible load, with technologies like smart thermostats or water heating where we can move load around sub-hourly without customers noticing. We're starting that with the multifamily water heater program, and we want to learn more from single-family water heater programs. Batteries can also be moved around on sub-hourly basis. We'll move out current demand response programs where they can iterate in the test bed.

Holly Braun: Are you trying to find out how much customers like this?
Jason Klotz: That's part of this, but we want to know the reasons why they would participate.
Holly Braun: Do I have to opt in to participate in an event?
Jason Klotz: Yes. You opt in to the rate, then have to decide whether to participate in each event. Engagement is cultivated through the opt-out rate, but participation is another piece. For some, it's not about the payment, it's about being green or community. We're assuming there are other reasons.

Kerry Meade: This is interesting. So many things are happening. We've been tracking PG&E in California with pay-for-performance and customer motivation on that side. Third parties are enabled to make promises and make it happen. I'm glad to hear you're coordinating with Energy Trust. California stepped into mixing things up, but here there's more separation.
Jason Klotz: I made sure utilities were offering demand response and energy efficiency at the same time.

Julia Harper: Can you offer an option to auto-participate in events?
Jason Klotz: We know from the smart meter. For the peak time rebate, they have to decide about behavior change. They do that themselves. I would like to be able to automate it through water heaters and thermostats. We would still let them know, but the device would handle the adjustment. When you opt-in to the incentive for water heating or smart thermostat, it's taken care of for you. If you have special circumstances such as having company, you can opt out of an event.

Anna Kim: In this test bed, the idea is to test methods. The basic one is being on a peak-time rebate rate. The underlying portion is not going to have technologies connected to it. Other things they want to test connect technologies.

Kerry Meade: What about transactive grid and peer-to-peer?
Jason Klotz: Having been around for the first development, I don't know if the transactive control is a good idea for any utility. It requires a market based rate structure, and I'm not sure if anyone is ready for that. There's not enough devices or regulatory control. Several years out, maybe in a phase three it could be possible. For phase one, it's about the customer first.
Kerry Meade: But you might be able to use microgrids to test how that would work?

Jason Klotz: If there's room in the budget, maybe in a phase two. That's further than where we're at now.

5. Public Comment
There was no additional public comment.

6. Meeting Adjournment
The meeting adjourned at 4:16 p.m. The next Conservation Advisory Council meeting is tentatively scheduled for Wednesday, January 30, 2019.

Renewable Energy Advisory Council Meeting Notes

Friday, November 30, 2018

Attending from the council

Bruce Barney, Portland General Electric
Frank Vignola, University of Oregon
Les Perkins, Farmers Irrigation District
Kendra Hubbard, Solar Energy Industries Association
Jaimes Valdez, Spark Northwest
Anna Kim, Oregon Public Utility Commission
Oriana Magnera, NW Energy Coalition
Adam Schultz, Oregon Department of Energy
Michael O'Brien, Renewable Northwest
Dick Wanderscheid, Bonneville Environmental Foundation
Susanne Leta, SunPower (by phone)
Alexia Kelly, Electric Capital Management

Attending from Energy Trust

Betsy Kauffman
Dave McClelland
Jed Jorgensen
Zach Sippel
Lizzie Rubado
Jeni Hall
Dave Moldal (by phone)
Peter West
Thad Roth
Julianne Thacher
Jay Ward
Hannah Cruz
Sue Fletcher
Kate Hanson
Samuel Girma
Matt Getchell
Lily Xu
Fred Gordon
Cameron Starr
Amanda Potter

Others attending

Henry Lorenzen, Energy Trust Board of Directors
Roland Risser, Energy Trust Board of Directors
Kate Hawley, TRC
Kari Greer, Pacific Power
Rebecca Smith, Oregon Department of Energy
Rich Kessler, University of Oregon
Ryan Cruz, member of the public

Executive Summary:

1. 2019 Budget Update
    - Staff provided an update on Energy Trust's 2019 budget, identifying anticipated generation and project completions, the retirement of the Residential Energy Tax Credit and the subsequent changes in incentives.
2. Three Sisters Irrigation District McKenzie Hydropower Project Update
    - Staff provided an update on key challenges and solutions to the irrigation modernization project in the Three Sisters Irrigation District.

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/.
Jed announced this meeting as the final meeting for 2018.

Adam Schultz announced that this meeting would be his last Renewable Energy Advisory Council meeting, as part of the council. Rebecca Smith will be replacing his position on the council, pending board policy committee approval.

Betsy Kauffman announced that, as a result of earlier Renewable Energy Advisory Council discussions regarding renewable energy certificate policies, the Oregon Public Utility Commission has decided to support a change to Energy Trust's REC policy. Energy Trust is proposing to stop taking contractual ownership to RECs for all net-metered and on-site energy use projects under a specific size (360 kilowatt alternating current or 500 kW direct current). This will streamline the process and enable Energy Trust to provide incentives to projects under that size cap participating in the state's community solar program. The proposed change will go to the board in December.

Michael O'Brien: Would this apply to new RECs only or also past projects?
Dave McClelland: This would not impact current contracts. Energy Trust currently has 14,000 projects operating, which makes it difficult to retroactively adjust REC allocation. This new approach, if approved, would not be rolled-out immediately and would require changes to incentive agreements and discussion with stakeholders.

2. 2019 Budget
Jed presented updates on Energy Trust's 2019 budget.

Dick Wanderscheid: If the overall budget has gone up, then why has the renewables budget gone down?
Jed Jorgensen: Energy Trust has multiple funding sources. The renewable energy programs are funded through SB 1149, which is a static funding source (set at a specific percentage of public purpose funding) and cannot shift. However, Energy Trust's efficiency programs are funded by an additional source, through SB 838, which can fluctuate based on available cost-effective energy efficiency. The overall budget can therefore move around depending on the need, but the renewable energy budget remains around $14.5 million in revenue each year, plus some carryover from year-to-year.

Bruce Barney: What is the $2.4 million for Other Renewables?
Jed Jorgensen: Those are funds for project development assistance and a pool of competitive funds.

Rebecca Smith: Have you considered how a high or low resource value of solar (RVOS) will impact solar incentives?
Dave McClelland: It's not clear yet how the RVOS might change net-metering.

Les Perkins: Can you explain what RVOS is?
Dave McClelland: RVOS stands for "resource value of solar." It has been an ongoing docket at the OPUC, intended to help determine the net value of costs and benefits of solar to the utility system. We don't expect immediate changes once the RVOS docket is complete. We expect that there would be an additional stakeholder process before there were any changes to net metering.

Jaimes Valdez: How will the passage of the Portland Clean Energy Fund impact the incentive levels, and what consideration is Energy Trust making?
Dave McClelland: The Portland Clean Energy Fund had not yet passed when Energy Trust's budget was being developed. Energy Trust will have to determine how the fund will interact

with our renewables programs. The challenge is that PCEF is localized to Portland, and Energy Trust is a nearly statewide organization.
Jaimes Valdez: Some customers who may access the fund might not be able to leverage other benefits, like the Investment Tax Credit. Considering this, I would caution against an incentive reduction for projects using those funds.
Betsy: It is still too early to know how Energy Trust will be impacted by the fund. These type of strategic decisions will come to the Renewable Energy Advisory Council for discussion.

Dave McClelland: Energy Trust would like to provide more targeted incentives for low- and moderate-income customers such as a Solar Within Reach offering—higher incentives for moderate income homeowners. We anticipate that some additional projects will come out of our low- and moderate-income solar innovation grants. These are capacity building grants that will help community organizations develop a program model to bring solar benefits to low- and moderate-income customers. Results are expected next year along with opportunities for new projects.

Les Perkins: Is there funding through Energy Trust for training for diversity, equity and inclusion efforts?
Betsy Kauffman: The purpose of the solar innovation grant opportunity is to help community groups figure out how to deploy solar to benefit low- and moderate-income families. The grants are between $5,000-10,000. If groups come to Energy Trust to deploy solar in a way that required staff training, then we might be able deploy the funds that way. However, it is not purely a training grant.

Betsy Kauffman: Energy Trust received several comments on the original draft budget. The full budget document will be published online on December 7, 2018.

Hannah Cruz: There will be another joint meeting with Renewable Energy Advisory Council and Conservation Advisory Council in January 2019, where Energy Trust will bring diversity, equity and inclusion program goals to both groups and explain what Energy Trust is planning to do in the next few years.

3. Oregon Department of Energy Biennial Energy Report

Adam Schultz delivered a presentation on the Oregon Department of Energy Biennial Energy Report. Adam announced that Governor Kate Brown published a budget proposal stating she plans to grow and expand Oregon Department of Energy into the Oregon Climate Authority. It would be the first state-agency dedicated to climate and would absorb Oregon Department of Energy. It would also manage carbon cap and trade if that passes out of the legislature.

Adam talked through the key highlights of the biennial report using the interactive web page.

Adam summarized key takeaways, including:

- Oregon's population and gross domestic products have gone up while energy use has continued to decrease, due to energy efficiency measures.
- Wind energy has increased 741 percent from 2004-2016.
- Transportation is the dominant source of greenhouse gas emissions within the state. There is a goal to have 50,000 electric vehicles in Oregon by 2020, with currently only 14,000. Oregonians currently spent $5.6 billion annually on transportation fuels. Most of these funds go out of state or country.

- The report considers the drivers of renewable energy development and consumption in Oregon and how the drivers are beginning to shift.

Anna Kim: What does “out of state" mean?
Adam Schultz: This refers to fuel manufacturing originating and coming from other states or countries.
Anna Kim: Are you suggesting transportation fuels should be regulated?
Adam Schultz: As the transportation sector electrifies, the fuel will be regulated. There are benefits associated with this regulation.
Betsy Kauffman: What kind of benefits?
Adam Schultz: For example, consumer protection and the cost of fuel can be regulated.

Jaimie Valdez: How will the report be used or presented to the legislature?
Adam Schultz: This has yet to be determined.

Alexia Kelly: Is there a separate report covering future energy trends?
Adam Schultz: Not yet. The specific scope of this report was to assess Oregon’s energy landscape and not to forecast.
Alexia Kelly: It is difficult to talk about resilience if we are not looking forward.
Adam Schultz: Oregon Department of Energy does look at future risks at a high-level. However, we do not have demand forecasts or prices.

4. Three Sisters Irrigation District McKenzie Hydropower project update

Jed presented on the Three Sisters Irrigation District McKenzie Hydropower project. The presentation was also delivered to Energy Trust’s board of directors earlier this month. Energy Trust typically brings projects to the advisory council prior to seeking approval from the board of directors, however in the case of the McKenzie project, the developer required a quicker timeframe and so Energy Trust went directly to the board for approval.

Jed summarized project highlights, including:

- Irrigation modernization is changing how we manage and move water across the western U.S. For example, old infrastructure results in 5 to 60 percent loss of water from seepage and evaporation. Introducing piped systems eliminates these losses and can result in local energy savings and generation through pressurized systems.
- Water quality is hard to maintain in open systems, resulting in E. coli and other harmful qualities for farmers and crops, typically from septic systems or runoff. However, once you close the system, that challenge goes away.
- Energy Trust has 20 irrigation districts currently participating in the modernization program and expects another five to seven more in the next few months. The potential for large energy savings serves as an enormous economic driver in the Three Sisters Irrigation District.
- Challenges and delays with the project stem from issues with wheeling, moving power from one service territory to another, and scheduling. Scheduling is delivering a set amount of power at a given time.
- Energy Trust proposed that the board of directors revise the incentive offered to the McKenzie project due to the successful track record and long-term leadership of the Three Sisters Irrigation District throughout the state to keep the project financially viable.

Michael O'Brian: Will these issues be considered upfront now?
Jed Jorgensen: The general theme is to learn as we go.
Lizzie Rubado: Energy Trust plans to input lessons learned into its 2020-2024 Strategic Plan.

5. Public comment
There was no public comment.

6. Adjourn
The meeting adjourned at 11:52 a.m. The next scheduled meeting of the Renewable Energy Advisory Council will be Wednesday, January 30, 2019.

Northwest Temperatures Under Climate Change in the 2030's *(2020 – 2049)*

Feb 1, 2019

Energy Trust of Oregon

Outline

- Climate Data: Source and Calculation
- 2030's Temperatures under Ten General Circulation Models (GCMs)
  - ❖ Comparisons of GCMs between 2030s and Historic Period:
    - Over *NW regional* in *annual & seasonal time* scales
    - Over *Portland and Boise* in *daily time* scale
- 2030's Temperatures under One GCM
  - ❖ Comparison of Portland and Boise Temperature Distributions between 2030's and Historic Period
  - ❖ Comparison of 2030's Regional Load Forecasts

Climate Data Work Group

- Funded by the River Management Joint Operating Committee (RMJOC):

- Research performed by RMJOC staff and scientists at

RMJOC Data and Report

- The RMJOC Downscaled Climate Data* *(streamflow)* became available in October 2017

  http://hydro.washington.edu/CRCC/

- The 1st RMJOC Report on Data Analysis published in June 2018

  https://www.bpa.gov/p/Generation/Hydro/hydro/cc/RMJOC-II-Report-Part-I.pdf

Climate Data Source

- The Intergovernmental Panel on Climate Change (IPCC) published the Fifth Assessment Report on Climate Change in 2013

- Also published are 56 GCMs from the Coupled Model Intercomparison Project Phase 5 (CMIP 5)

- OSU scientists chose 10 GCMs that could best replicate historical northwest temperature and precipitation patterns for further analysis

GCMs

- The 10 best GCMs

1	*CanESM2*	*(CAN)*	6	*HadGEM2-CC*	*(UK)*
2	*CCSM4*	*(US)*	7	*HadGEM2-ES*	*(UK)*
3	*CNRM-CM5*	*(FR)*	8	*inmcm4*	*(RUS)*
4	*CSIRO-Mk3-6-0*	*(AUS)*	9	*IPSL-CM5-MR*	*(FR)*
5	*GFDL-ESM2M*	*(US)*	10	*MIROC5*	*(JP)*

- Spatial Scales of CMIP5 GCMs over northwest: 46 miles - 186 miles

- RMJOC Statistical Downscaled GCM distances (*BCSD*, *MACA*) : ~ 5 miles (hydrological modeling)

Emission Scenarios Considered

- RMJOC Considers two Emission Scenarios or Representative Concentration Pathways (RCPs) for year 2100:

- RCP4.5

  with efforts to reduce emission

- RCP8.5

  "business as usual," increase emission

  **presentation today*

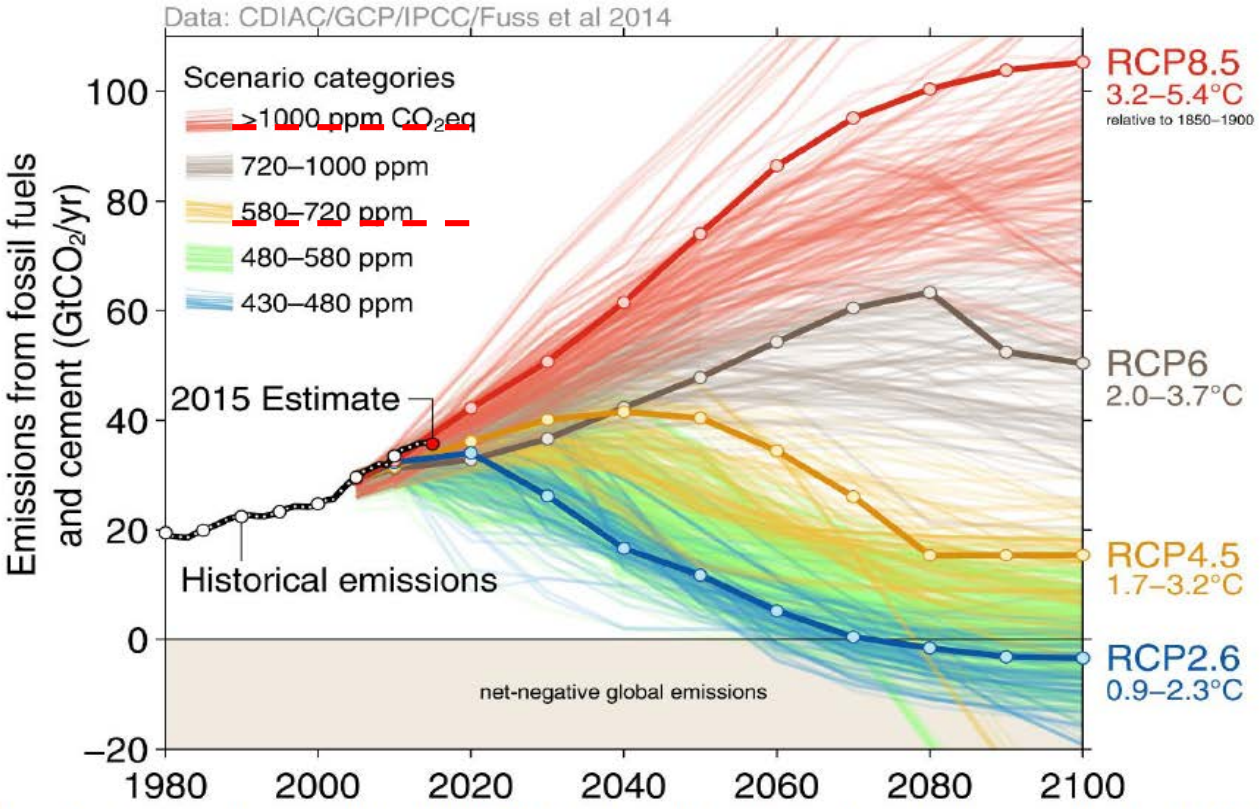
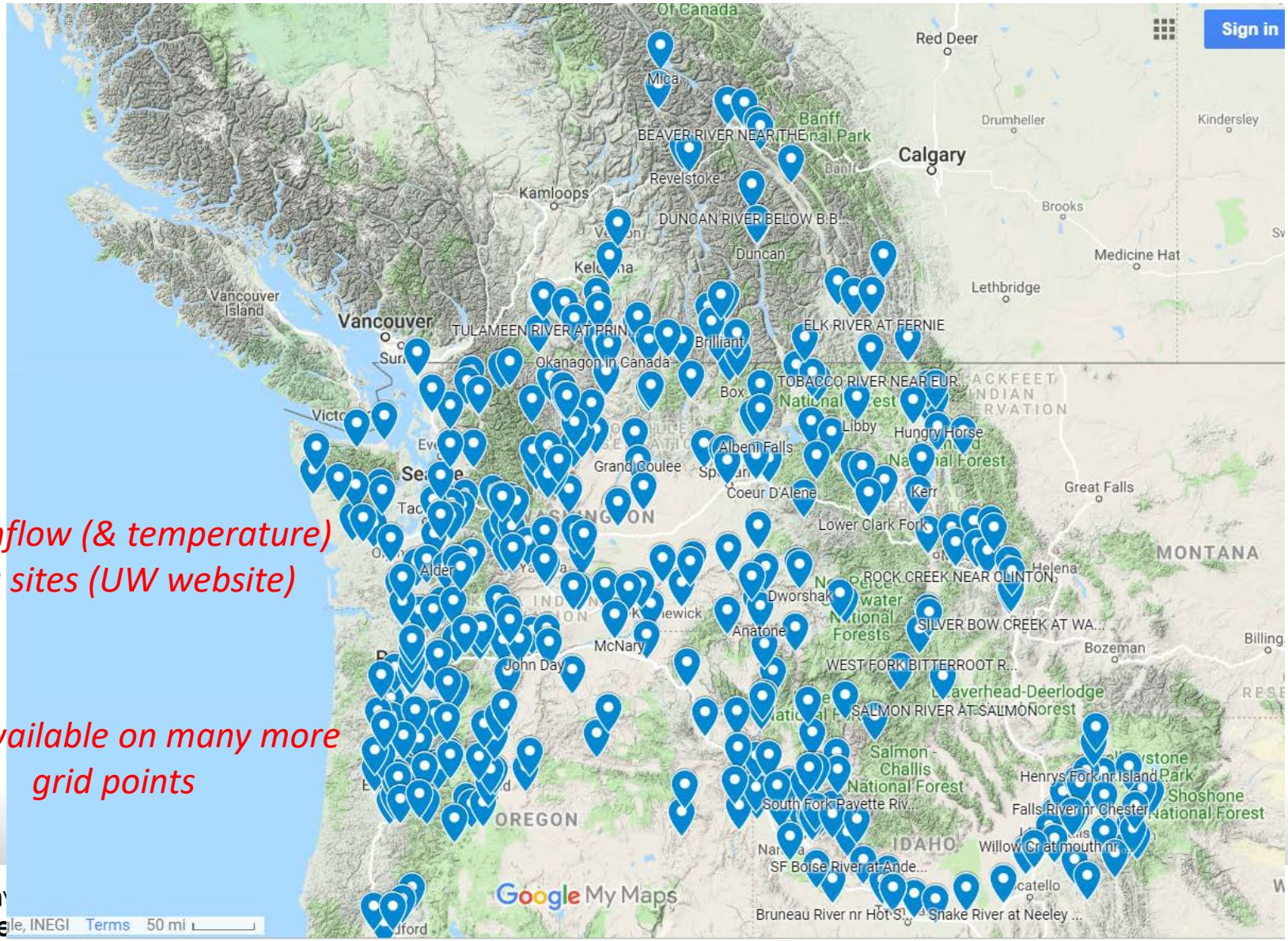


Figure 16: Emissions pathways used for the IPCC AR-5 climate modeling effort, and recent emissions trends through 2015. From Fuss et al, 2014.

The Columbia River Basin (CRB)

Northwest **Power** and **Conservation** Council

Climate Data on CRB

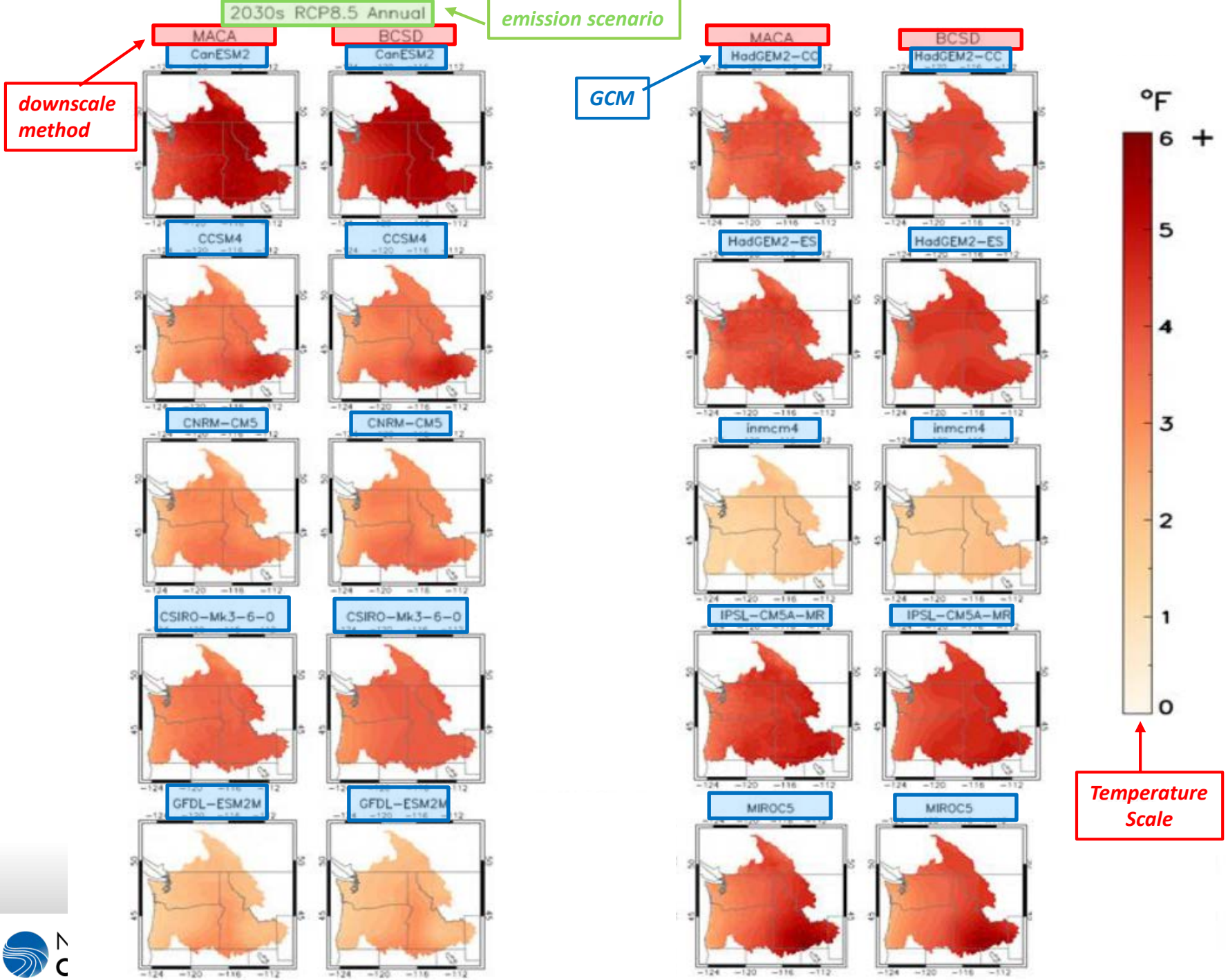


Streamflow (& temperature) data sites (UW website)

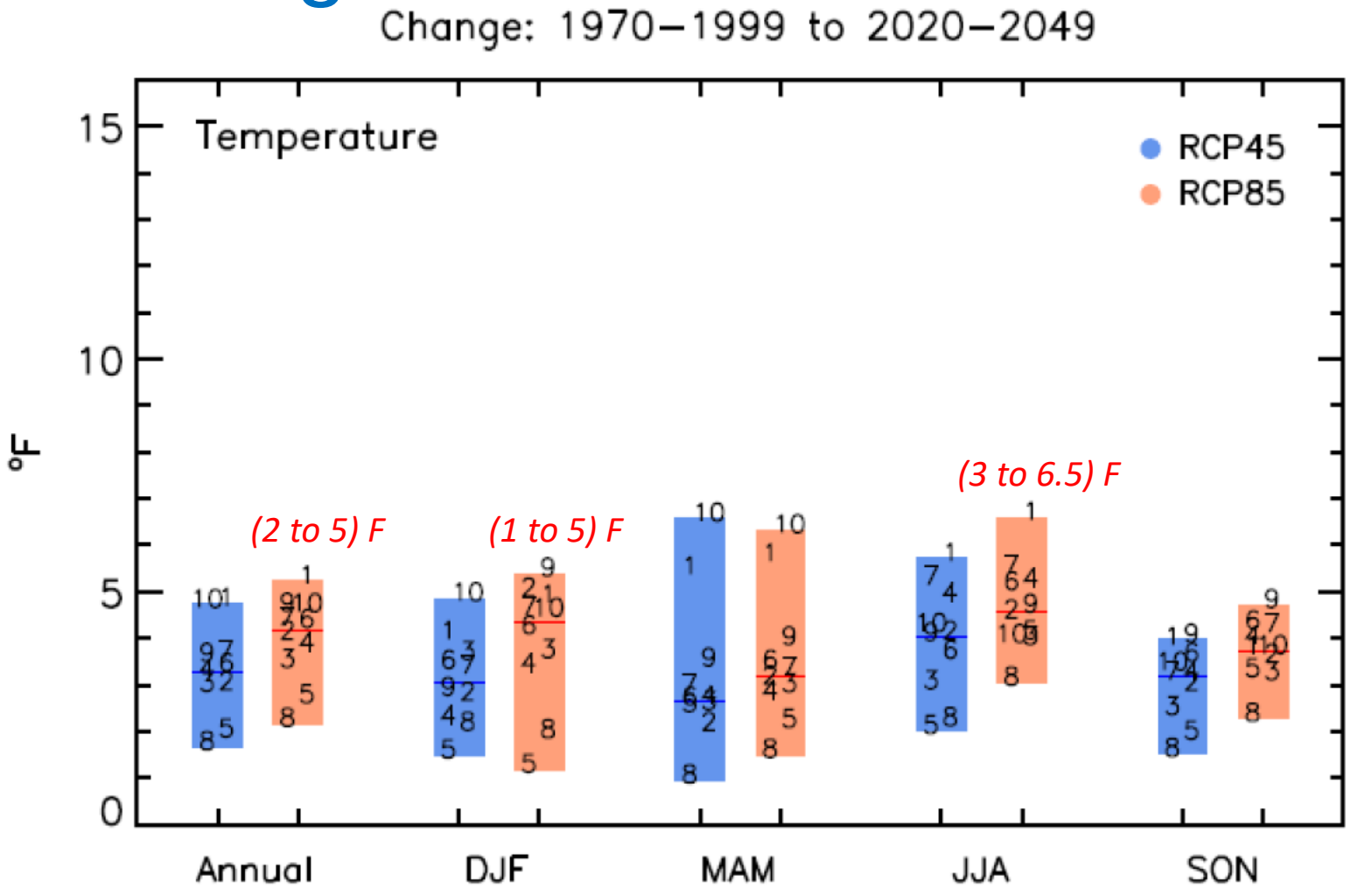
Data available on many more grid points

Comparison of 2030's GCM Temperature Data over NW Regions

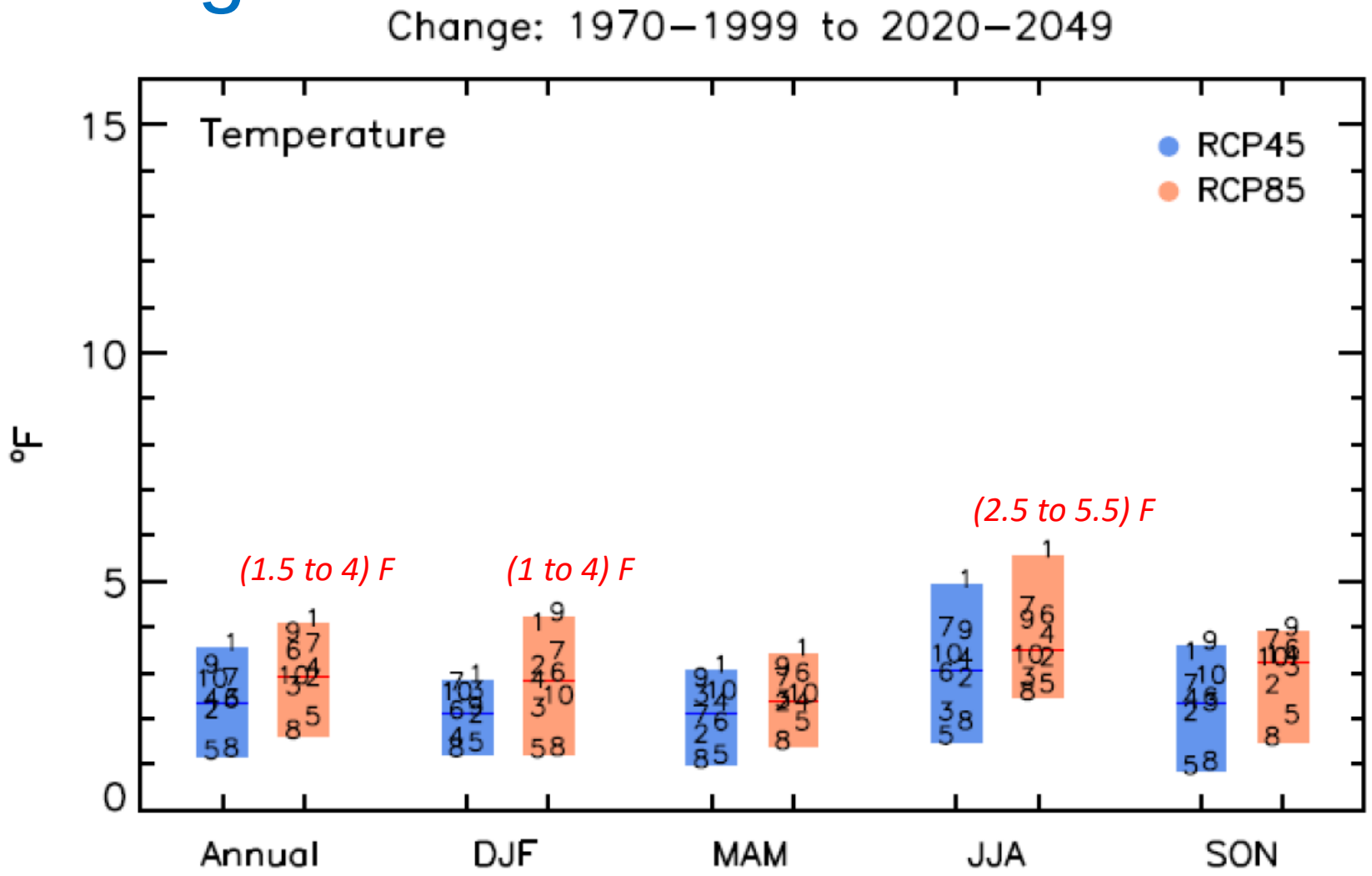
(excerpts from the RMJOC report)


2030s RCP8.5 Annual
emission scenario
downscale method
GCM
MACA
BCSD
CanESM2
CCSM4
CNRM-CM5
CSIRO-Mk3-6-0
GFDL-ESM2M
HadGEM2-CC
HadGEM2-ES
inmcm4
IPSL-CM5A-MR
MIROC5
°F
6 +
5
4
3
2
1
0
Temperature Scale

Annual and Seasonal Temperatures Changes at Snake River Basin



Annual and Seasonal Temperature Changes at Willamette River Basin



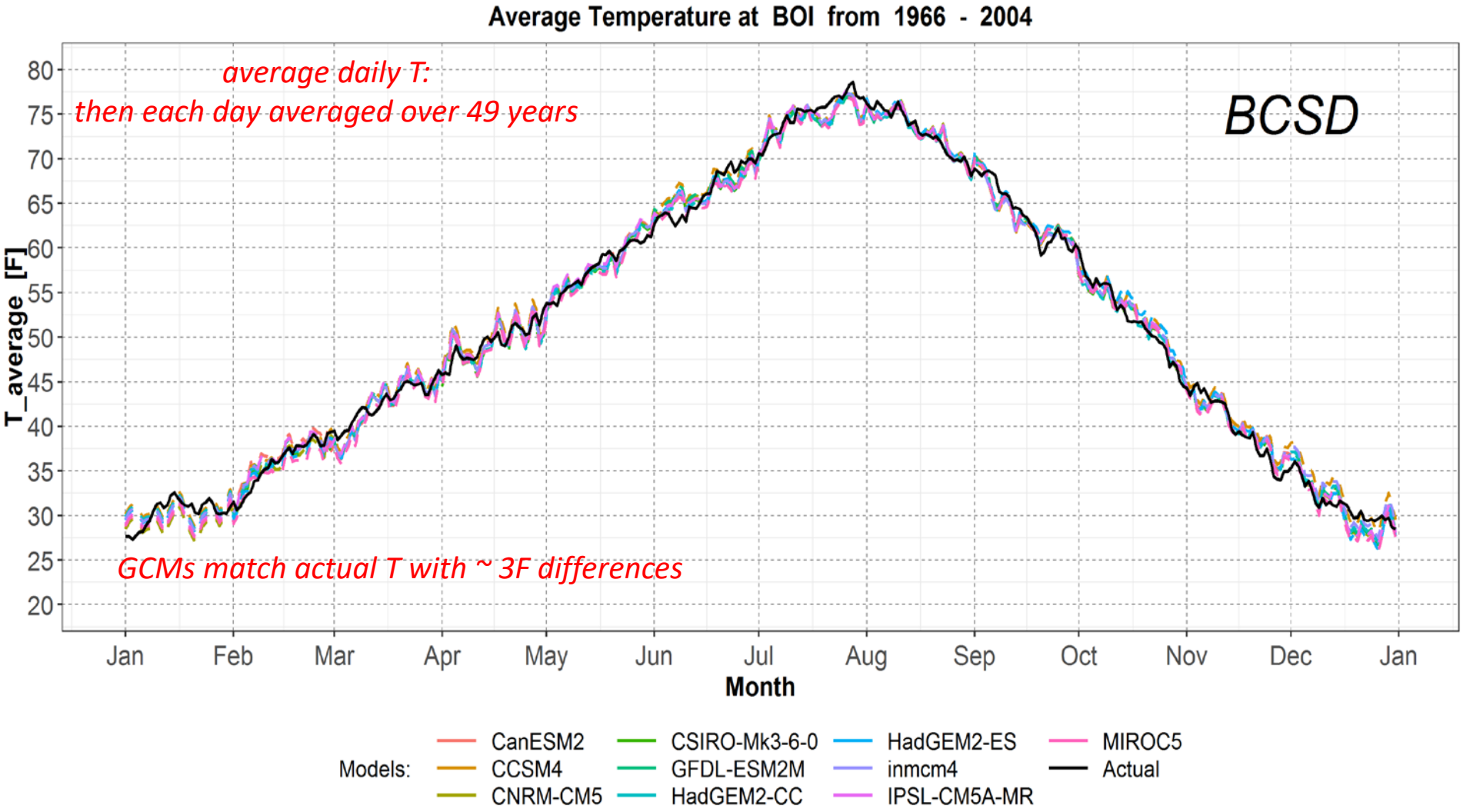
RMJOC Report Summary

- Temperature warmed by 1.5F since 1970s
- Expected to further increase by 1F to 4F by 2030s
- Warming is likely to be greatest in the interior
- Greater range of possible outcomes and less pronounced warming near the coast

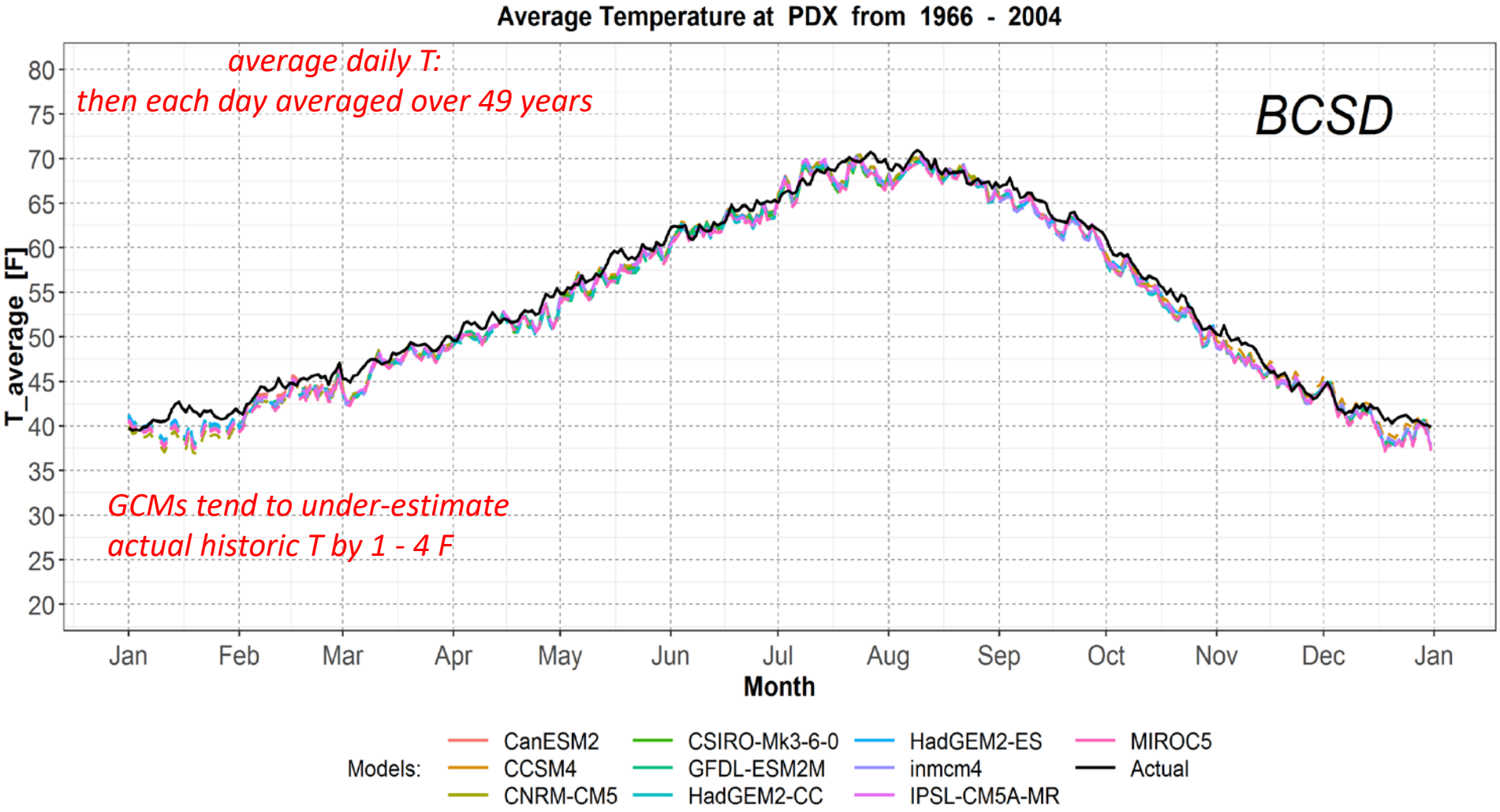
Calibration of GCM Historic and *Actual Historic* Period-Average Daily[+] Temperatures at Portland and Boise

[+] *For GCM,* $T_d = (T_{max} + T_{min})/2$

Boise Historic Average Daily T

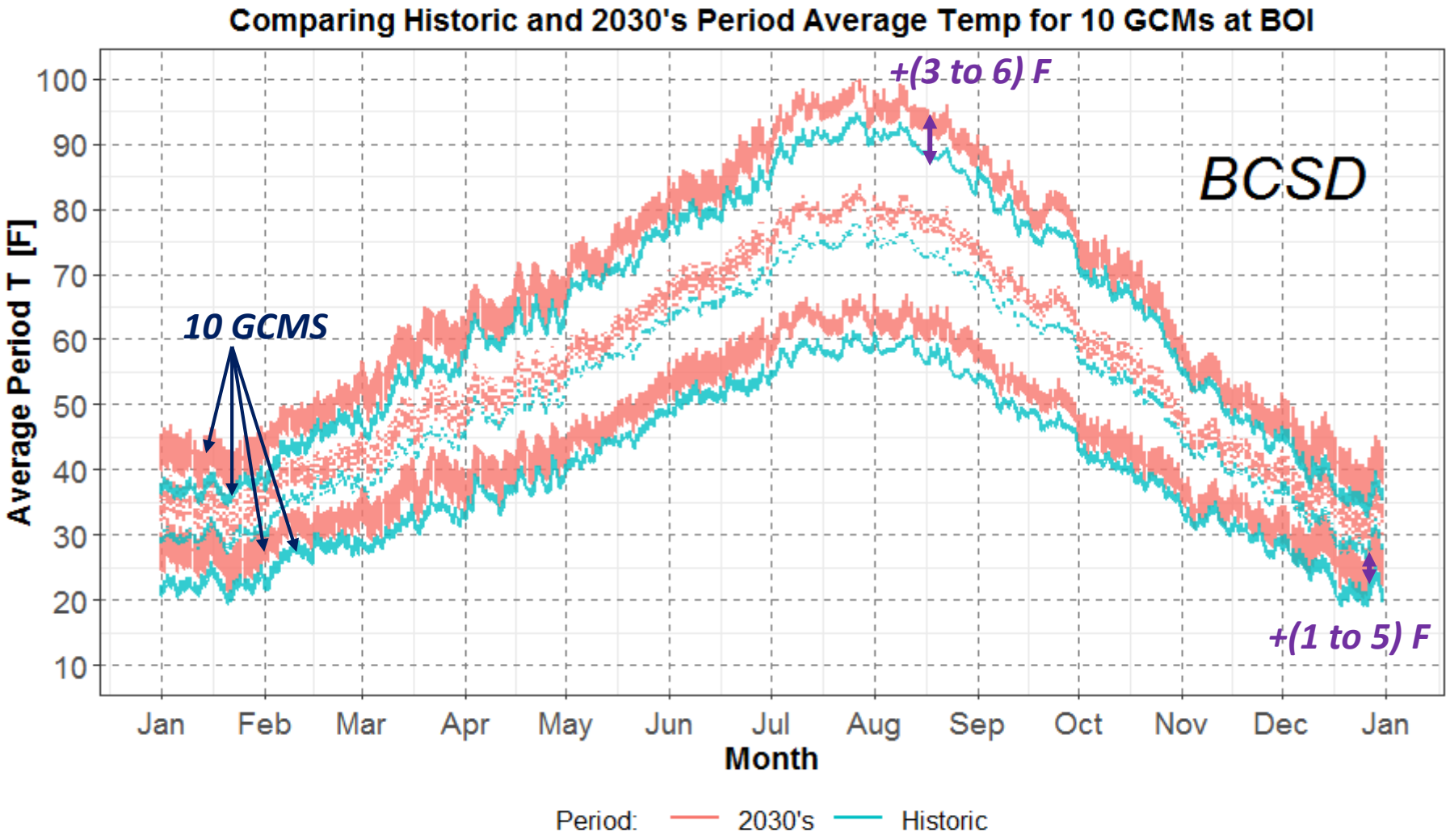


Portland Historic Average Daily T

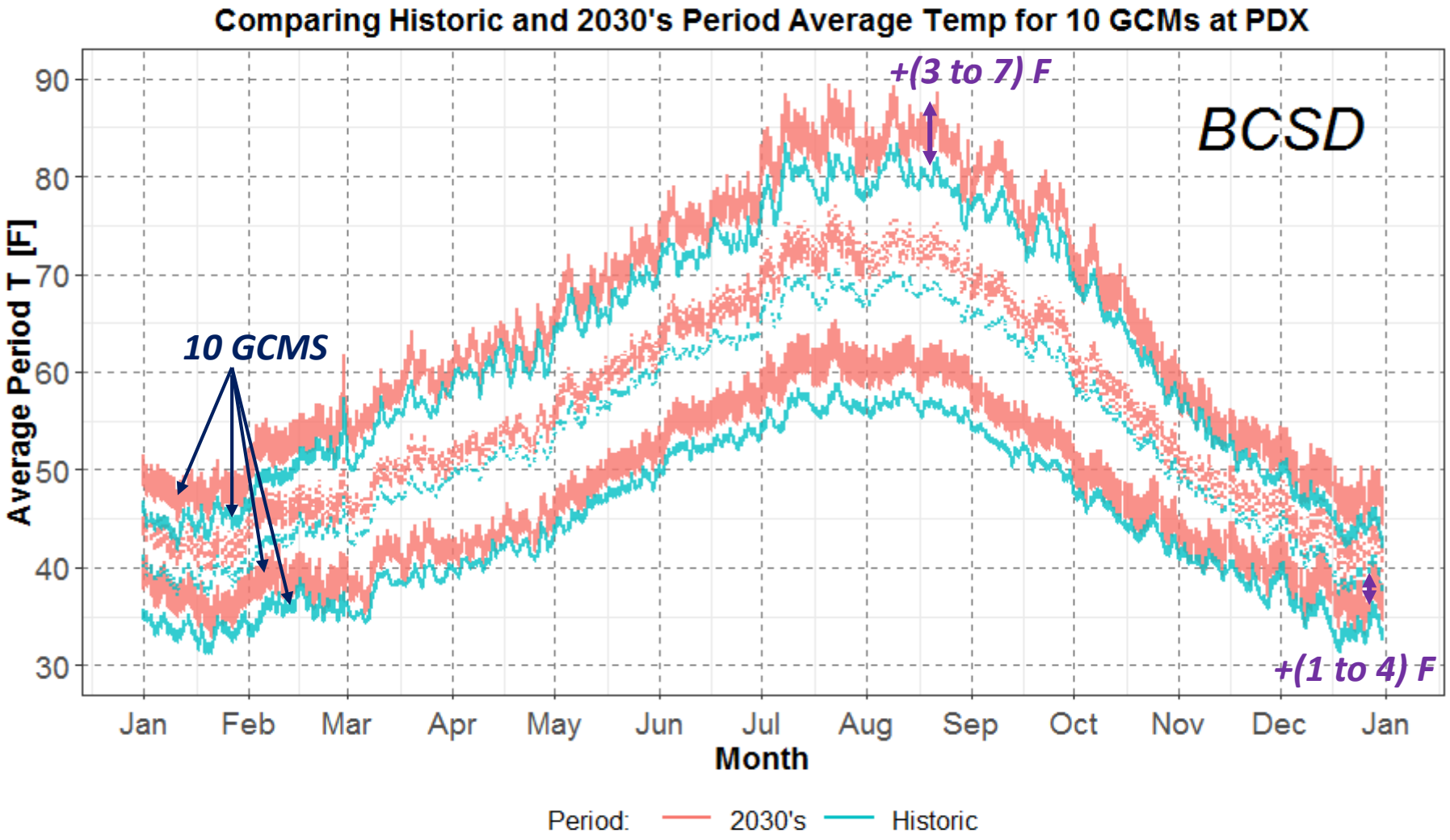


Comparison of GCM-2030's and GCM-Historic* Period-Average Daily Temperatures

Boise Average Daily Temp

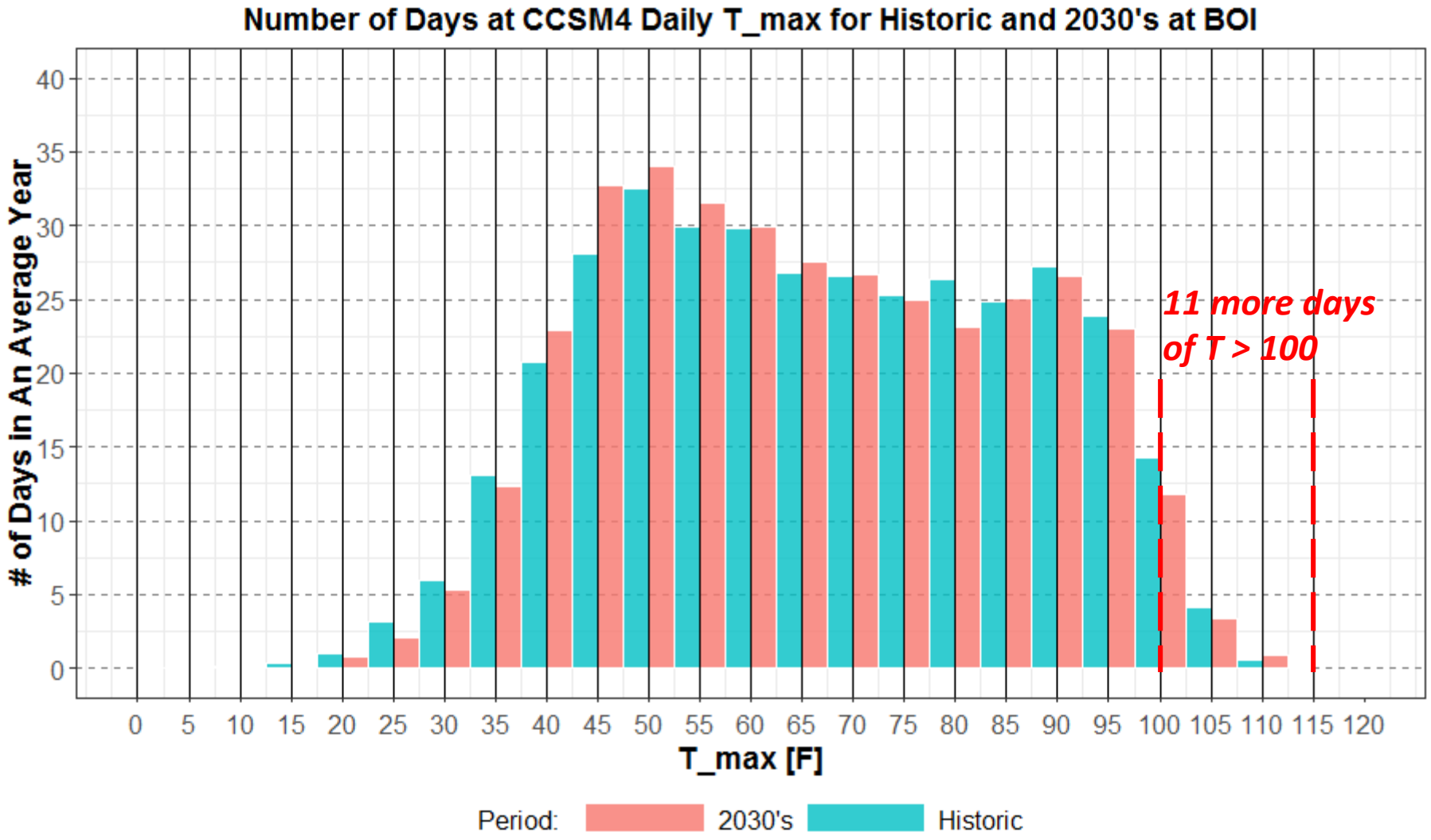


Portland Average Daily Temp

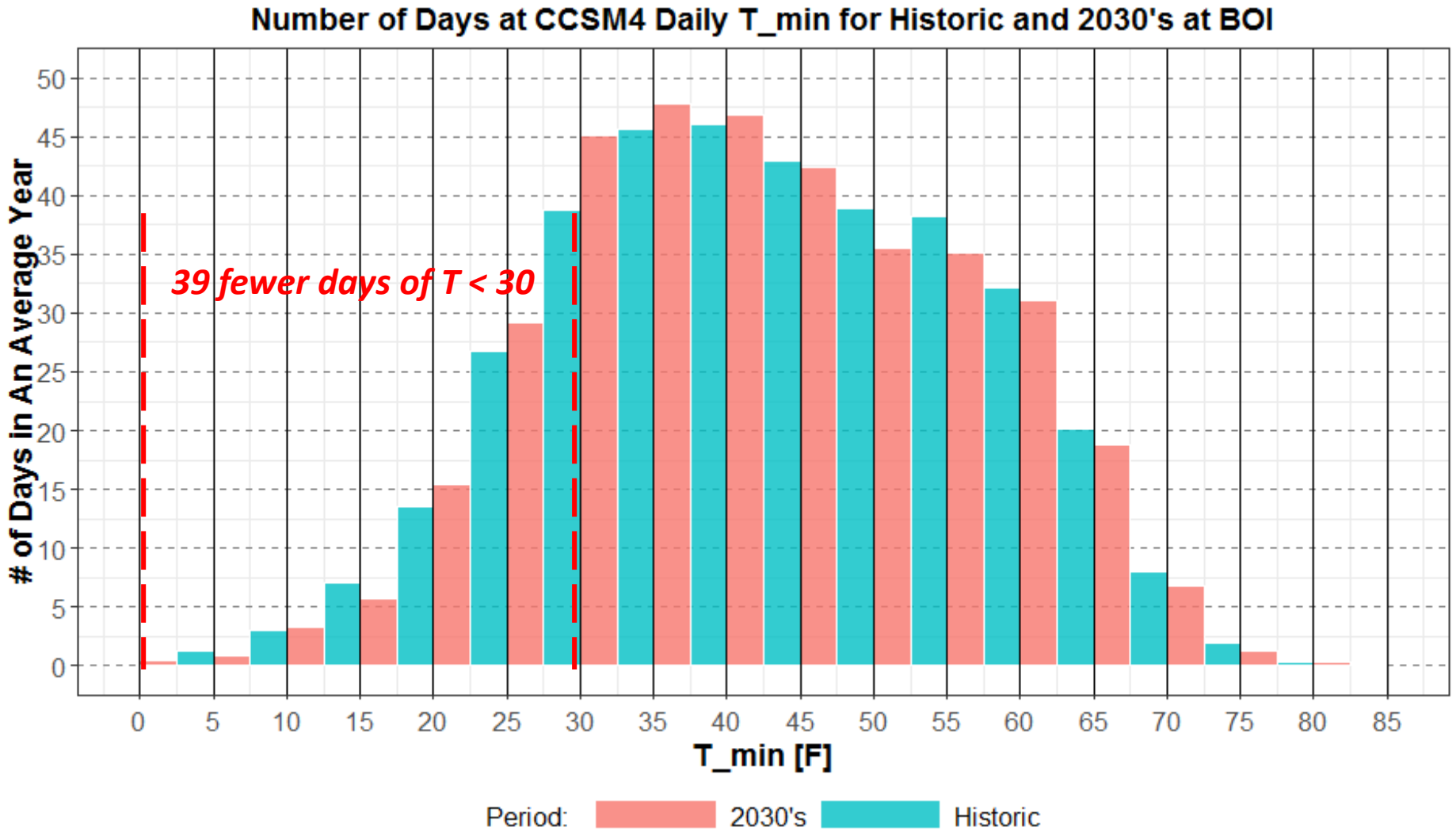


Comparison of CCSM4-2030's and CCSM4-Historic* Daily Maximum and Minimum Temperature Distribution

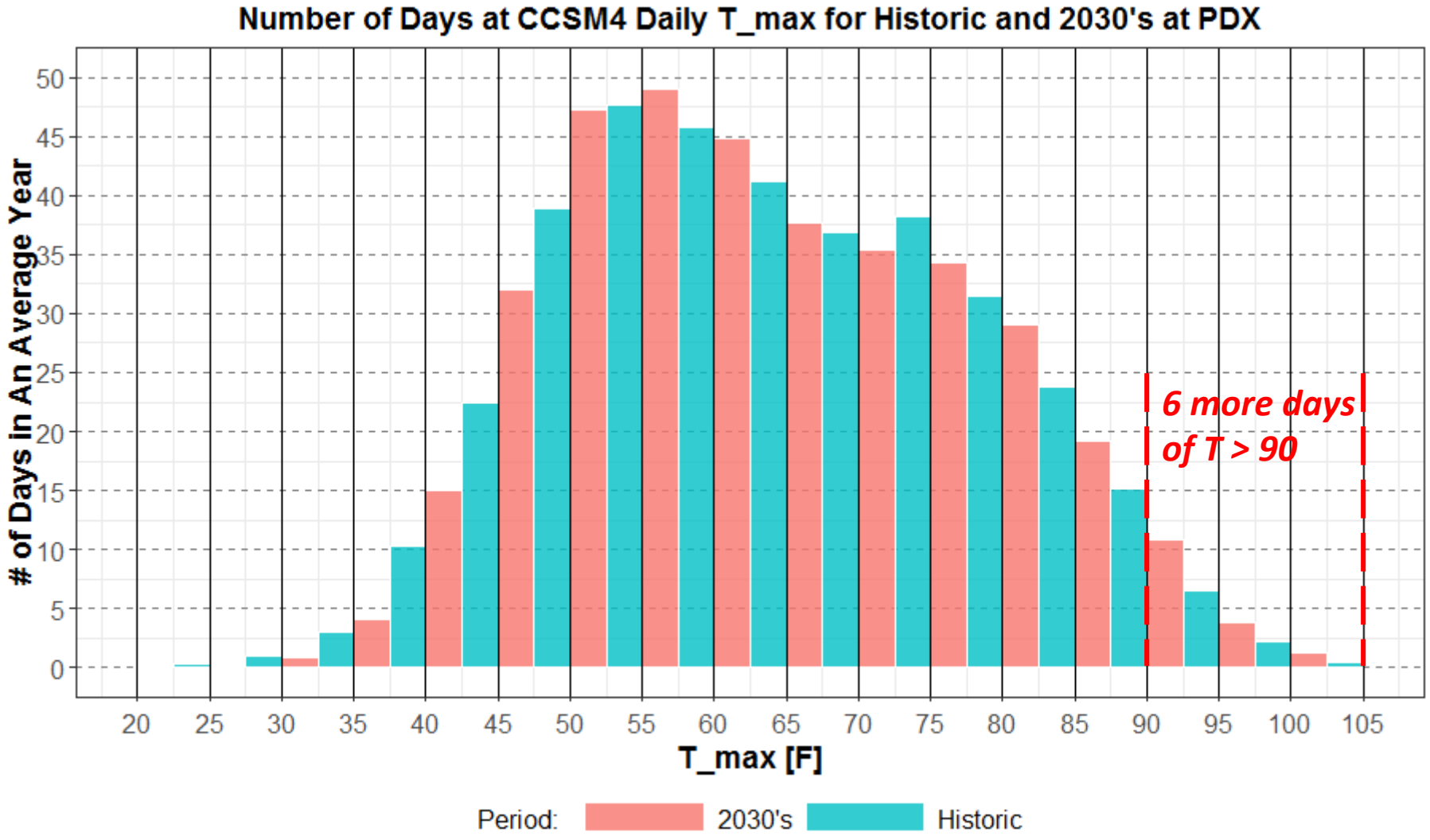
Daily T_max Distribution at BOI



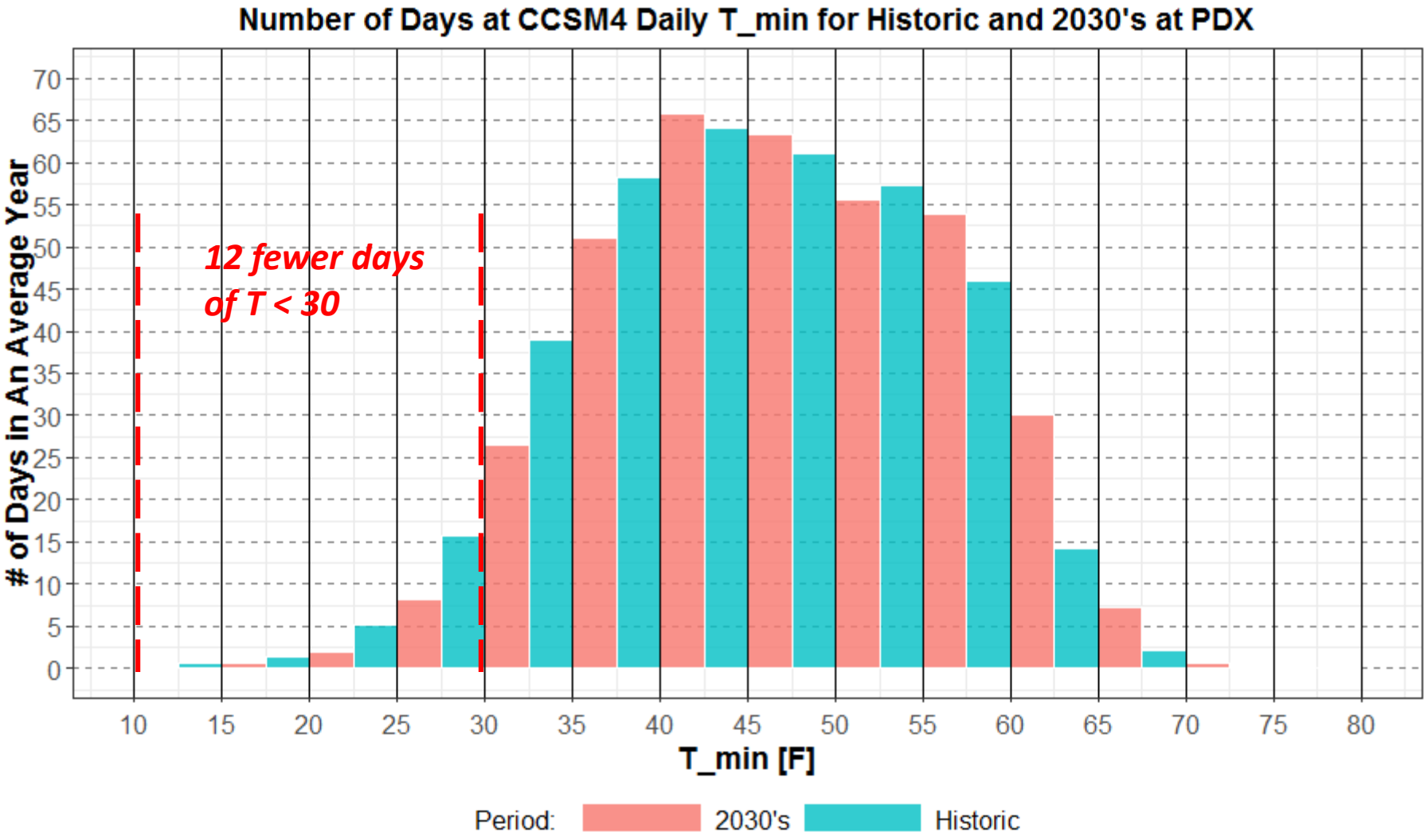
Daily T_min Distribution at BOI



Daily T_max Distribution at PDX



Daily T_min Distribution at PDX



Comparison of 2035 Load Forecasts between (Without-Climate-Change) and CCSM4 GCM

Energy Load Forecasting Models

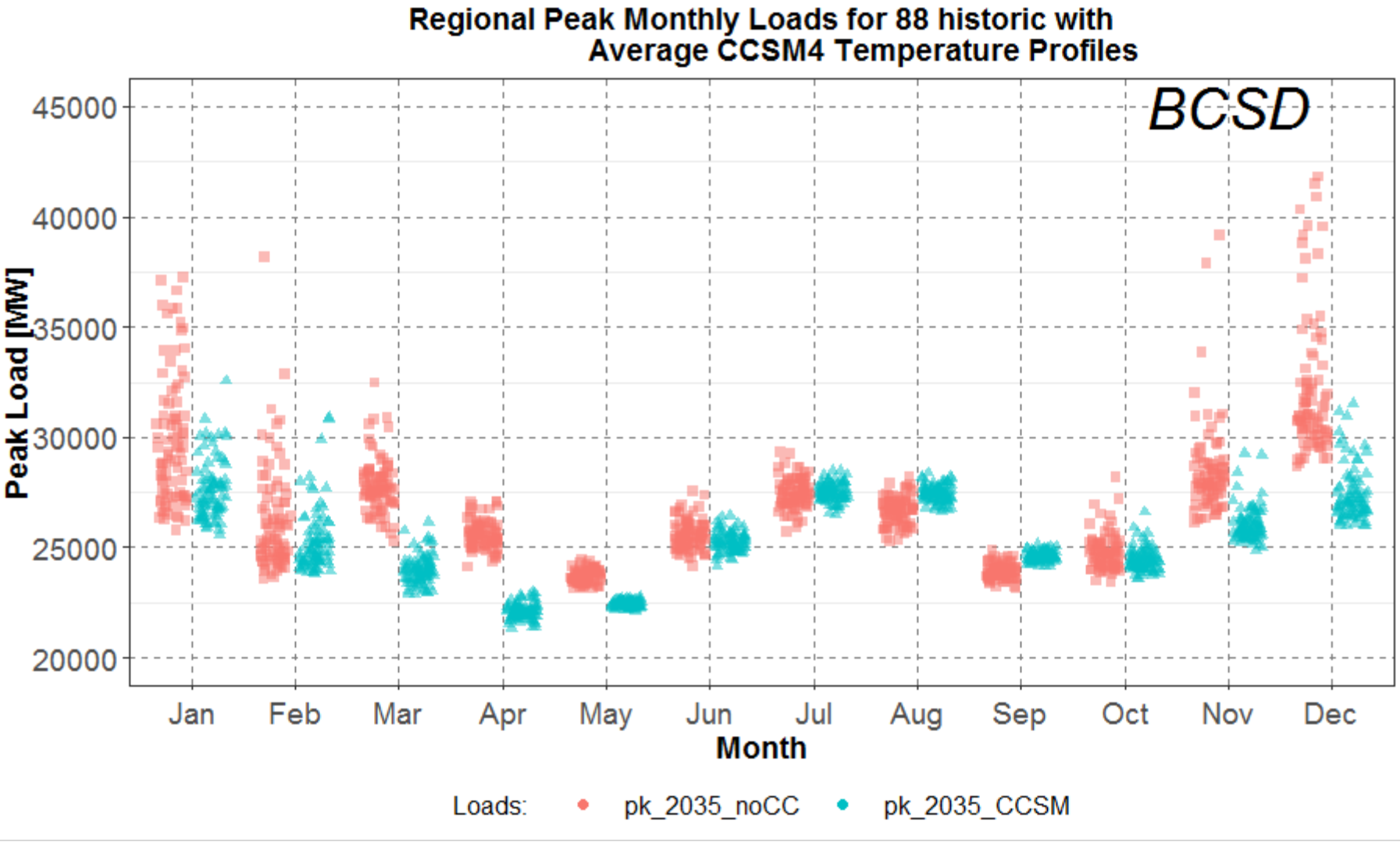
- Econometric load forecasting model uses past (observed) loads to project future loads
- Key parameters: season, day of week, holidays, employment, population, conservation targets, and *daily temperature deviations from average**
- The model produces 88 sets of 8,760 temperature-sensitive hourly loads based on 88 years of historical daily temperature deviations (1929-2016) of the weighted averaged temperatures at SEA, PDX, SPK, and BOI

2035 Load Forecasts

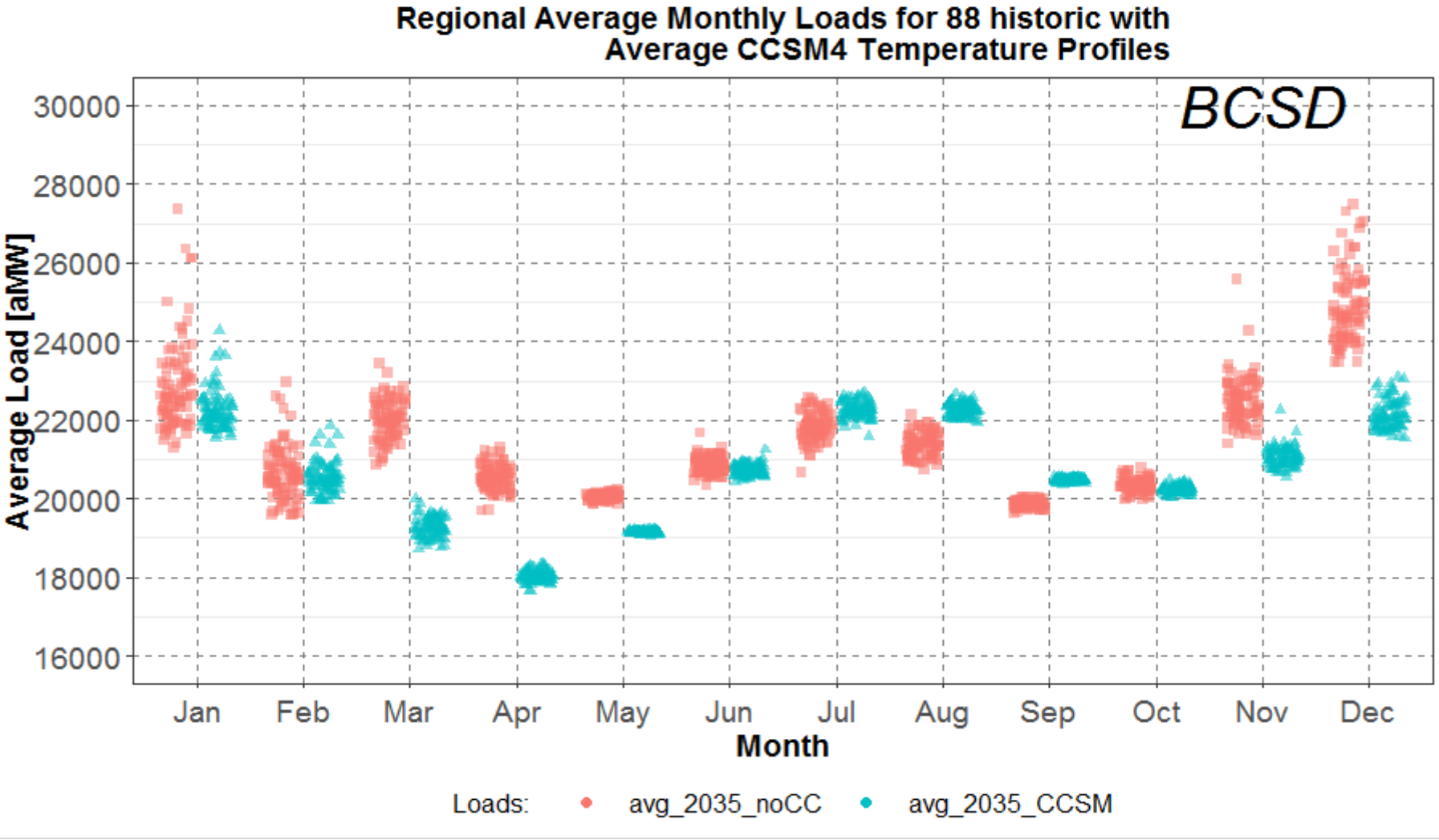
- The 2035 no-climate change loads derived by applying 88-year historical temperature deviations to the projected weather-normalized 2035 loads

- The 2035 climate change loads derived by applying 88-year historical temperature deviations *and adding the CCSM4 GCM 2030s-averaged daily temperature deviations* to the projected weather-normalized 2035 loads

Comparison of 2035 Regional Peak Loads



Comparison of 2035 Regional Average Loads



Summary

Summary of Ten GCMS

- All ten models reproduce historical temperature patterns
- Temperature changes depend on emission scenarios
  - By 2030's, difference of between RCP8.5 and RCP4.5: ~ 1F to 1.5F higher
- For 2030's, significant seasonal differences in temperature range among the ten GCMs
  - About 1F to 5F warmer in winter
  - About 2F to 6.5F warmer in summer
- Temperature impacts vary by geography
  - More pronounced change in Boise than PDX
  - Changes higher & have wider range for most models for Boise

Summary of One GCM: CCSM4

- Distribution of extreme temperatures between 2030s and historic period
  - More frequent extreme summer temps (2x count very hot days)
  - Extreme high temperatures are higher (design temps)
  - Less frequent sub-freezing cold days (about half as many)
  - Extreme low temperatures not much change

- Regional Peak & Energy load impacts – (after conservation)
  - Significantly lower extreme winter peaks – slightly higher summer peaks
  - Average energy loads lower – lower winter and slightly higher summer

- For robust analysis, analyze temperature and load impacts for all ten GCMs

Implications for Energy Trust

- Temperature changes will impact measure savings for temperature dependent measures

- Temperature changes will impact value of savings for utilities

EXTRA

Background on RCPs

- Natural Greenhouse Effect: ~150 W/m^2 (varies significantly) keeps average temperature on Earth around 59F
- Without Natural Greenhouse Effect: average temperature on Earth ~ 0F
- Relative to pre-industrial period (1750 – 1850), RCP8.5 GCMs for year 2100 would have additional + 8.5W/m^2 greenhouse effect

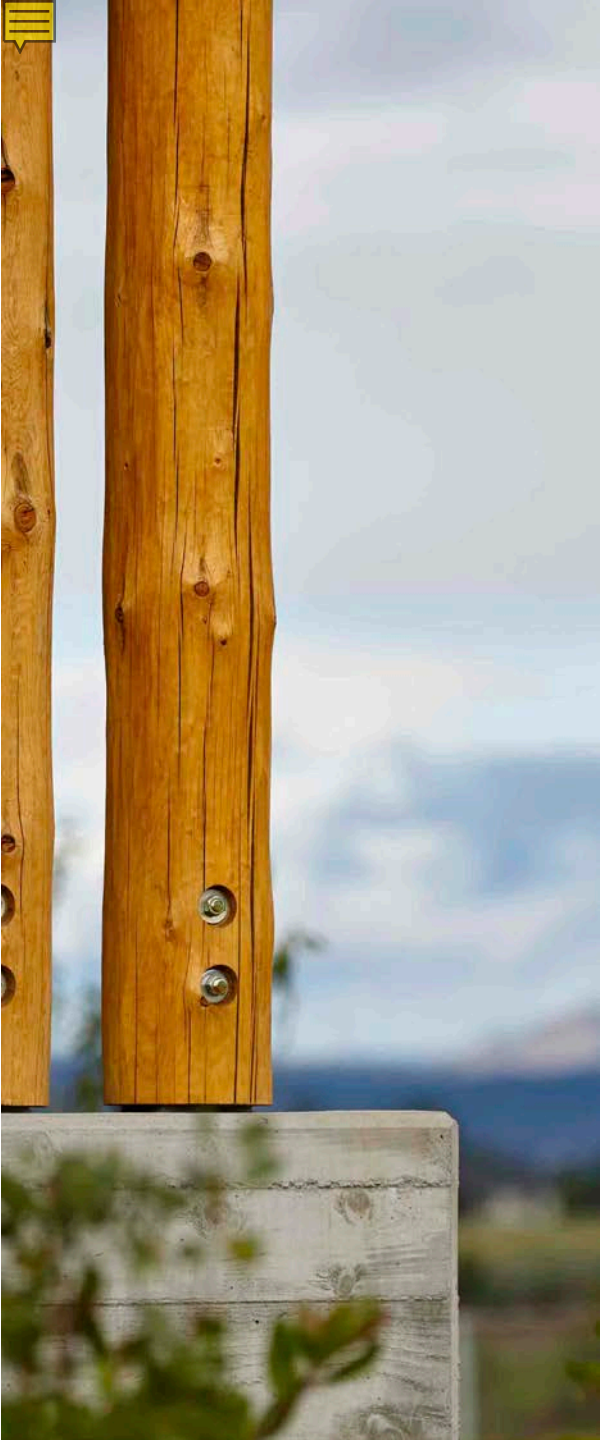
Physical Meaning of RCPs

- $1 W/m^2$ is equivalent to ~ 500 TW over entire Earth
- By comparison, for 2010 total world electricity consumption was ~ 15 TW
- By comparison, for 2016, total US summer generation capacity was ~ 1.0 TW

Diversity, Equity and Inclusion Update

February 1, 2019

Energy Trust of Oregon



Diversity, Equity and Inclusion Progress

- Cross-organizational team
- Board policy
- Diversity Advisory Council
- Operations plan, including 10 goals


DEI Goal 6
Relationships
DEI Goal 7
Diverse
Staff
DEI Goal 3
Diverse
Trade Allies
DEI Goal 9
Culturally
Responsive
Staff
DEI Goals 1 and 2
Program
Participation
DEI Goal 4
Trade Ally
Projects
DEI Goal 10
Reporting
DEI Goal 5
Diverse
Suppliers
DEI Goal 8
Data and Analysis

Goal 1A: Increase Residential Customer Participation

Goal 1A

- Increase residential participation rate by 20% in communities of color by the end of 2020.

Baseline

- 24% participation (50,000 participants)

Activities

- Target fixed-price promotions
- Partner with community-based organizations
- Target marketing and outreach
- Expand and promote Savings Within Reach
- Tailor strategies to more effectively reach diverse and rural communities

What success looks like

- 29% participation (60,000 participants)

Goal 1B: Increase Commercial Customer Participation

Goal 1B

- **Small and medium businesses**: Increase participation in Existing Buildings program for small/medium business customers by 20% by 2020
- **Rural businesses**: Increase participation in Existing Buildings program for business customers in rural areas by 20% by 2020

Baseline

- **Small/medium businesses**: 1.2% annual participation
- **Very rural businesses**: 2.6% annual participation

Activities

- Focus on smaller office, retail and restaurants
- Collaborate with industrial sector
- Engage culturally-specific business organizations
- Test additional delivery strategies

What success looks like

- **2019**: Leverage current delivery channels to achieve 2019 goals; test strategies to inform 2020 designs
- **2020**: Implement new strategies, designs, measures

Goal 1C: Increase Industrial Customer Participation

Goal 1C	• Increase customer participation in Production Efficiency for small and medium businesses in rural territories by 20% by the end of 2020.
Baseline	• 5% Participation (413 sites)
Activities	• Focus cost-effective efforts on specific locations and/or industry type and test customer outreach methods • Collaborate efforts with commercial outreach activities • Collaborate efforts with trade ally goals to increase diverse trade allies in focus areas
What success looks like	• Achieve cost-effective customer outreach for small and medium rural customers • Exceed goal

Goal 2: Increase Customer Participation in Renewable Energy

Goal 2	• Increase solar projects in low-income, rural and racially diverse communities by 20% by the end of 2020
Baseline	• 32% of 2017 solar projects sited in low-income, rural and racially diverse communities
Activities	• Fund 10 solar innovation grants • Develop new rooftop solar offering for moderate-income homeowners • Continue low- and moderate-income solar workgroup • Work with community-based organizations and trade allies on targeted delivery
What success looks like	• Meet or exceed goal of 38% of 2020 solar projects sited in in low-income, rural and racially diverse communities • Increased awareness of solar by customers in low-income, rural and racially diverse communities, as reported by community-based organizations

Goal 3: Increase Trade Ally Participation

Goal 3

- Increase participation in the Trade Ally Network by minority-owned and women-owned businesses by 50% each by the end of 2020

Baseline

- Minority-owned business total: 27
- Women-owned business total: 15

Activities

- Work with trade and culturally-specific organizations to help build relationships with local businesses
- Increase sponsorships of applicable events
- Hold small outreach and networking events throughout the state

What success looks like

- More minority- and women-owned businesses in Energy Trust's Trade Ally Network
- Mutually beneficial relationships with minority-owned and women-owned contractors

Goal 4: Increase Trade Ally Projects Completed

Goal 4

- Increase the number of projects completed by minority-owned and women-owned trade allies by 15% by the end of 2020

Baseline

- Reviewed 2017 project submittal data for minority-owned and women-owned enrolled contractors
- 775 projects for minority-owned businesses
- 375 projects for women-owned businesses

Activities

- Leverage campaign ally offering to provide targeted incentive throughout service territory
- Collaborate with program field staff
- Re-engage existing allies with low activity

What success looks like

- Increased customer participation in areas that have been underserved
- Mutually beneficial relationships with minority-owned and women-owned contractors

Questions?

What are points of intersection with your organization?

Suggestions for how to achieve goals?

EnergyTrust of Oregon

Backup Slides

Goal 6: Increase Market Awareness

Goal 6

- Increase market awareness by developing and deepening relationships with up to 50 organizations by the end of 2020.

Baseline

- 80 existing relationships with organizations

Activities

- Map relationships
- Meet with organizations
- Seek opportunities to learn and work together
- Develop internal systems to coordinate and support relationship building

What success looks like

- 25 new relationships and 25 deeper relationships with organizations

Goal 8: Collect, Track and Analyze Demographic Information

Goal 8

- Develop systems and support needed to collect, track, analyze and report demographic information related to program participation, program delivery and trade ally network members by end of 2018

Activities

- Develop methodology and select data Census data source for data analysis in 2018
- Overlay with program participation
- Summarize analysis and opportunities in 2018 data, baseline, participation analysis report
- Explore alternative data sources and collection strategies in 2019 and 2020

What success looks like

- Data, baseline and participation analysis is used to refine DEI goals and track and report progress to achieving those goals

Goal 5: Increase Contracts

Goal 5	• Increase contracts with minority-owned and women-owned business by 15% by the end of 2020
Baseline	• 48 contracts with contractors identified as diverse in our contract system from 2016-2018
Activities	• Identify minority-owned and women-owned providers of services and supplies • Focus on catering and professional services first • Build central reporting resource to enhance access and visibility of active diverse contractors
What success looks like	• Contract with 56 new diverse contractors by the end of 2020 • Increase engagement with minority-owned and women-owned business to increase service and supply connection with a wider community

Goal 7: Increase Recruitment and Hiring

Goal 7

- Increase the diversity of applicant pool and hires by 25%

Baseline

- 8/107 or 7.5% of staff identify as people of color

Activities

- Partner with staffing agencies that emphasize diversity
- Build partnerships with community-based organizations
- Partner with diversity, equity and inclusion focused consultants

What success look like

- Increase diversity of staff and applicants to be more reflective of Portland demographics (28% of Portlanders identify as non-white)
- Increase the diversity of hires by at least 25%; build a pipeline for continued increased staff diversity

Goal 9: Increase Organizational Cultural Responsiveness

Goal 9

- Increase organizational cultural responsiveness by the end of 2020

Baseline

- **Results of** Intercultural Effectiveness Scale **survey in 2015**

Activities

- **Implement recommendations from 2015** Intercultural Effectiveness Scale **survey**
- **Re-administer the survey**
- **Offer cultural responsiveness trainings**
- **Host book club and article/film discussions**
- **Host learning opportunities such as the Fair Housing Council of Oregon Bus Tour**

What success looks like

- Energy Trust has improved employee retention
- Energy Trust is more culturally responsive
- Energy Trust is more inclusive

Goal 10: Increase Transparency

Goal 10

- Provide information about goals and progress to achieve them in 2019 and 2020

Activities

- Report on goals and progress in quarterly and annual reports to the OPUC
- Create website content, print materials, reports and presentations
- Ensure regular and consistent communication to internal and external stakeholders
- Help staff track on progress
- Explore other mechanisms for reporting

What success looks like

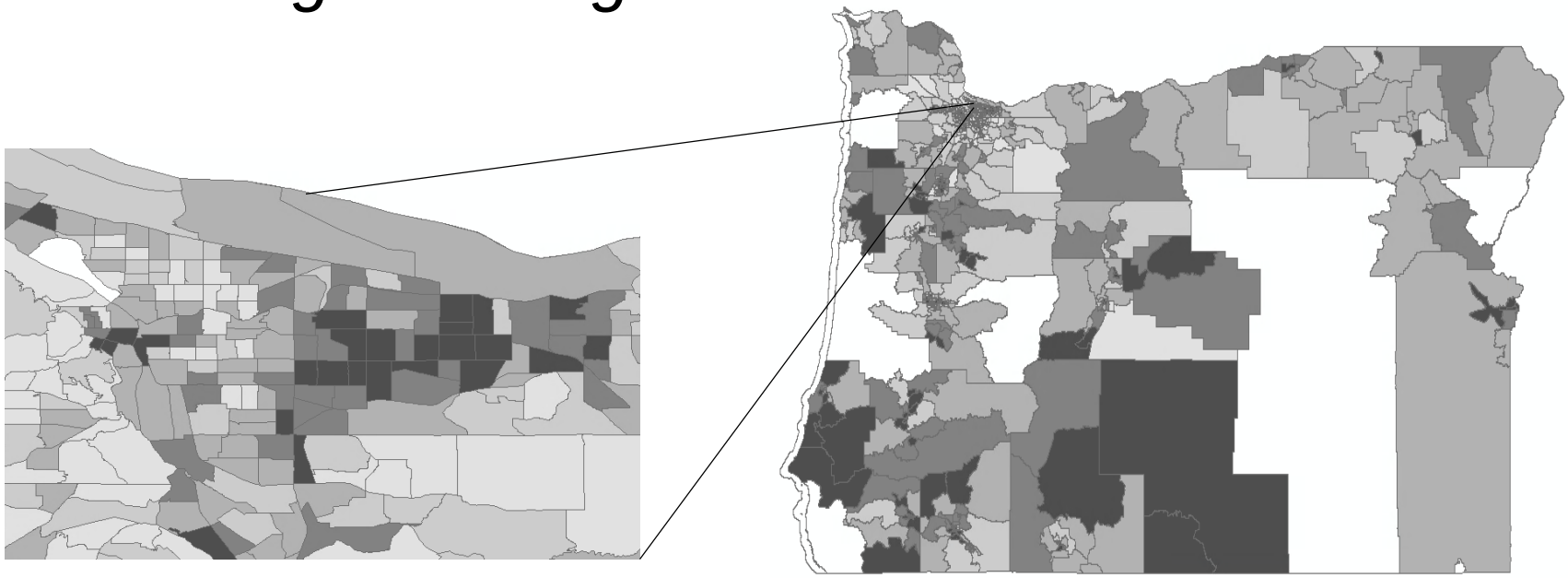
- Internal and external stakeholders are aware of and informed of Energy Trust's diversity, equity and inclusion activities, goals and progress to goals

The Income Index

1 = most affluent areas (light gray)

5 = least affluent areas (dark gray)

Based on *adjusted median income* and *average housing cost burden*

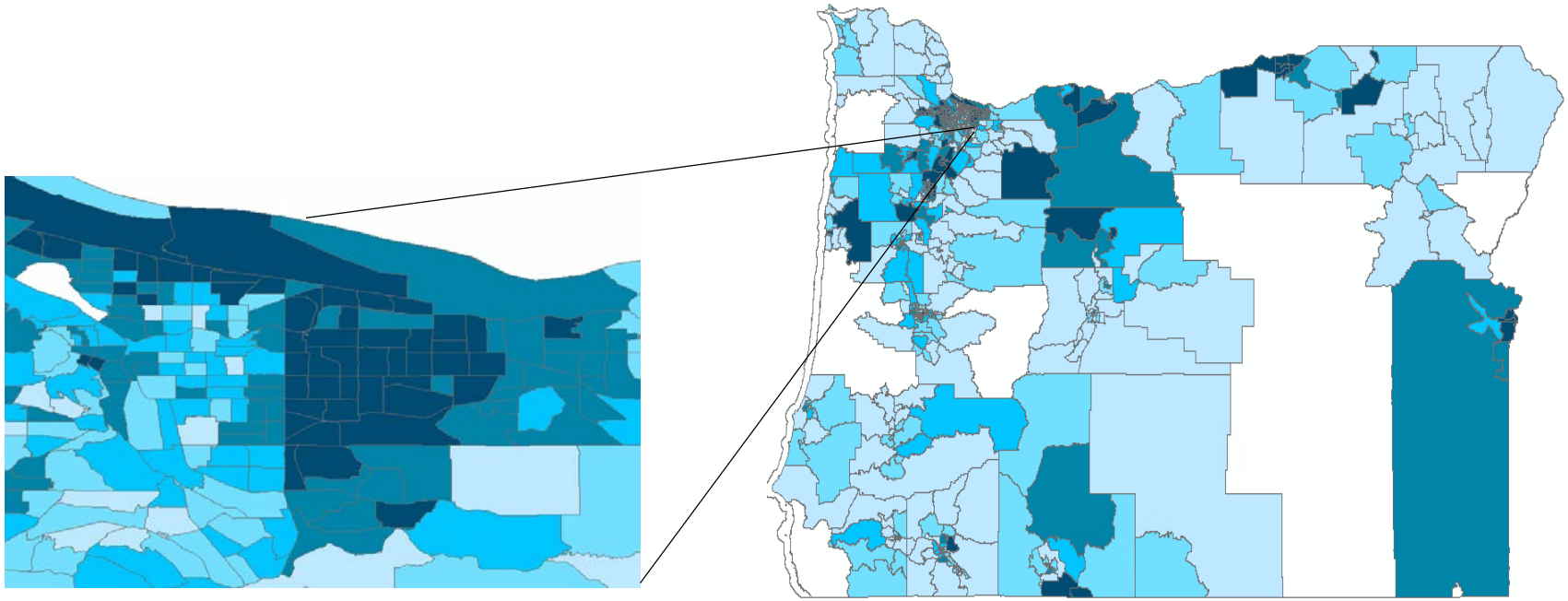


The Racial and Ethnic Diversity Index

1 = least racially diverse areas (light blue)

5 = most racially diverse areas (dark blue)

Based on percent of residents identifying as *people of color*

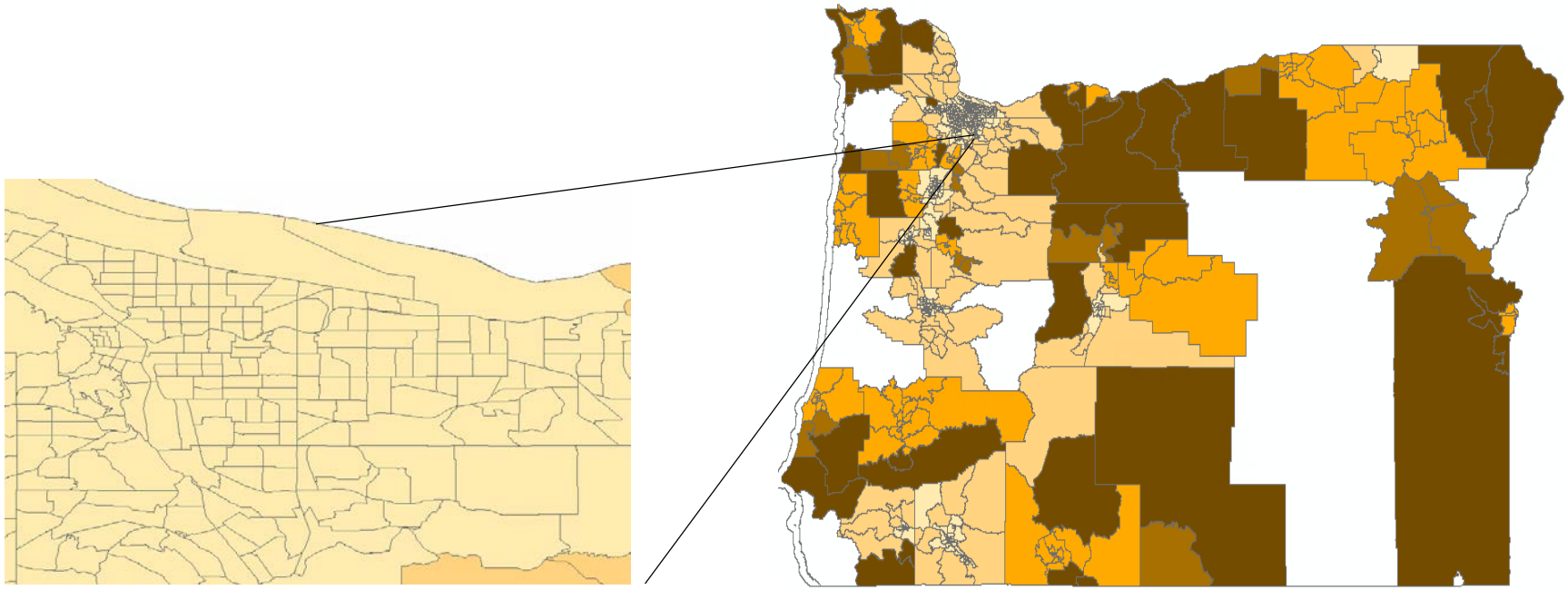


The Urban Rural Index

1 = most urban areas (yellow)

5 = most rural areas (brown)

Based on USDA's *Rural-Urban Commuting Area code* classification

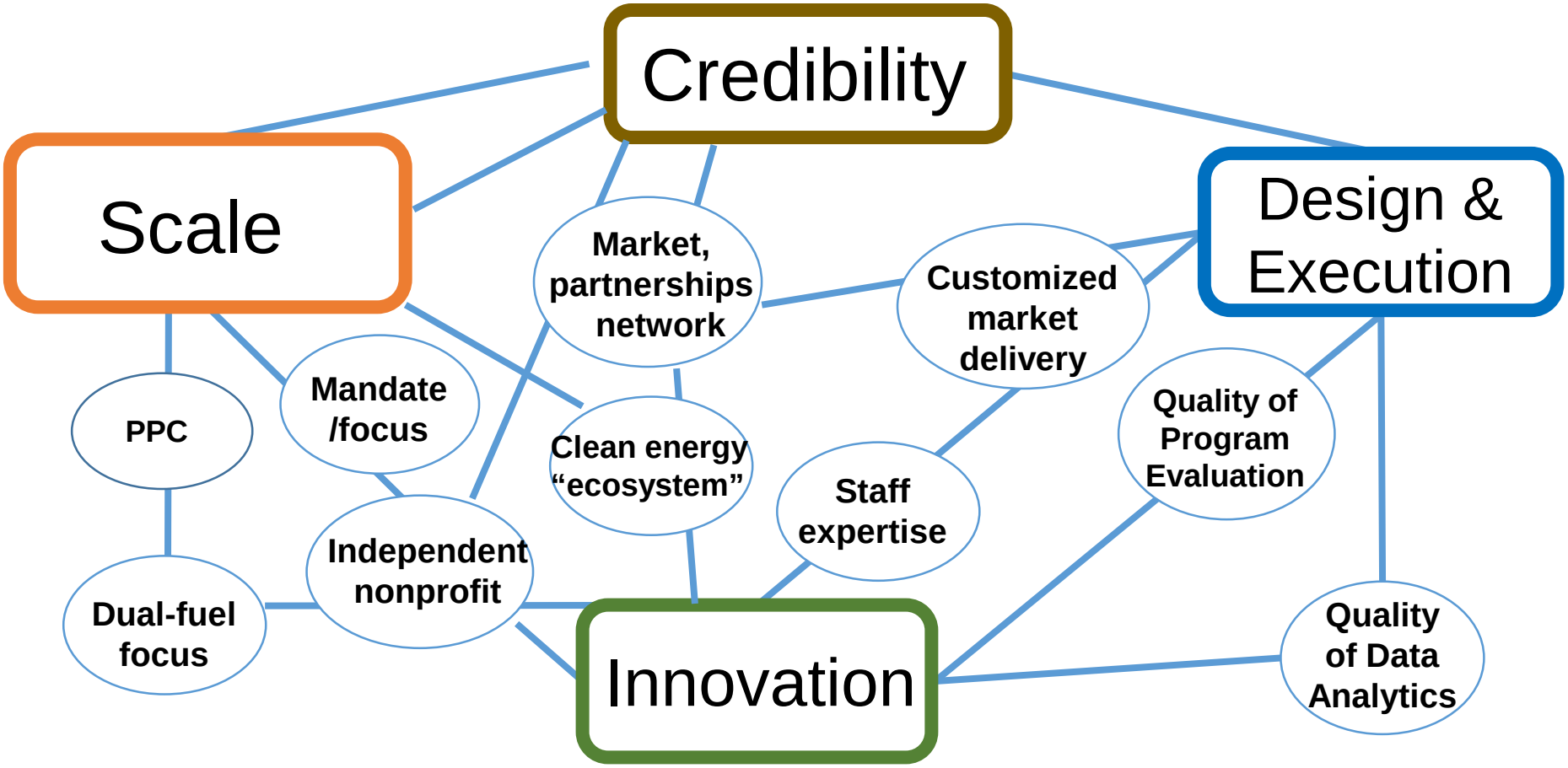


2020-2024 Strategic Plan Development

CAC & RAC, February 1, 2019

Energy Trust of Oregon

Strengths and Capabilities Map

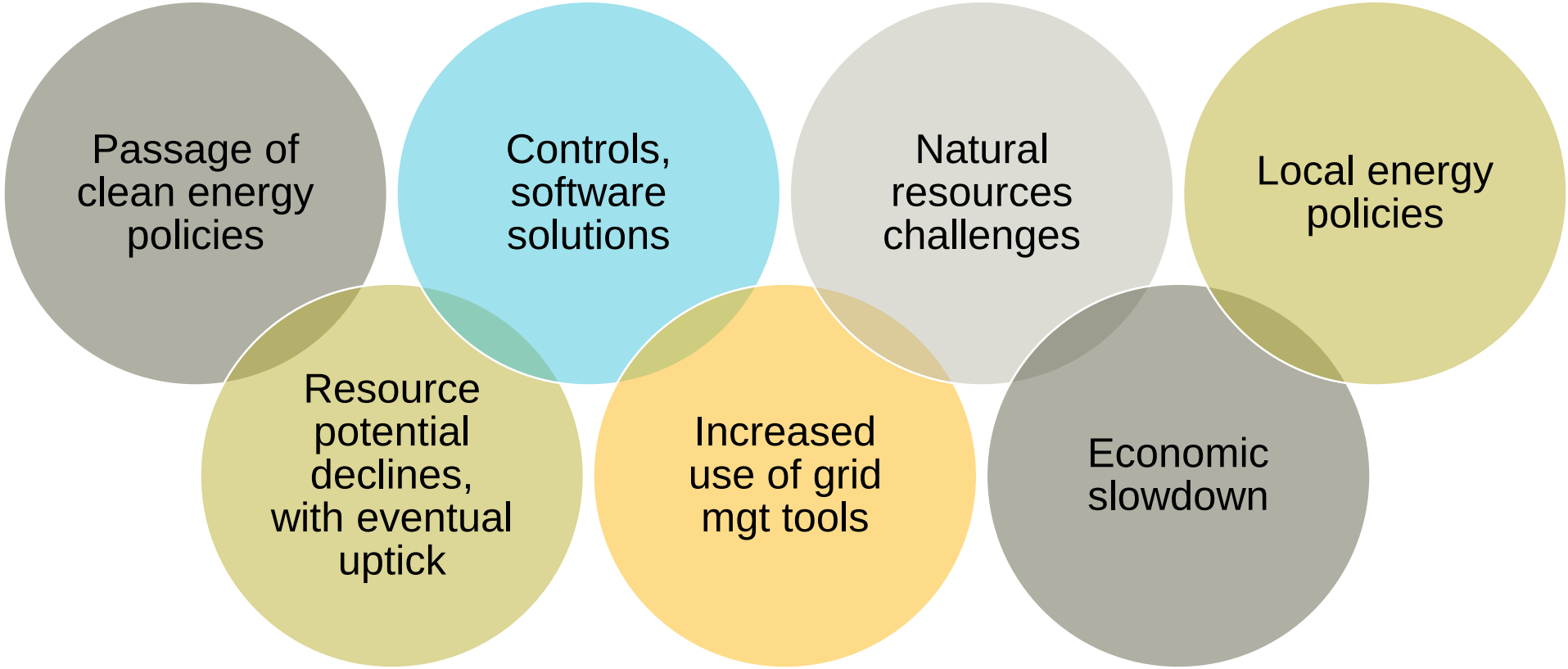


Current Unique Role of Value

As principal administrator of public-purpose funds for investor-owned utility ratepayers in Oregon, Energy Trust provides innovative, comprehensive clean energy solutions that provide proven value to ratepayers, utility systems, the economy and the environment.

Energy Trust's expertise is in integrating private and public efforts to achieve clean energy goals.

Selected Scenario for 2020-2024: Incremental Evolution



Opportunities Discussion

Potential Energy Trust Roles

- Renewable natural gas
- Distributed energy resources
- Projects with non-energy benefits
- Modified cost-effectiveness test
- Transportation electrification

Does Energy Trust currently have the strengths and capabilities needed to fulfill this role successfully?

Is Energy Trust uniquely positioned to fill this role?

How supportive is your organization of Energy Trust in pursuing this role?

Next Steps

Next Steps

Approve Draft Plan

- ❑ Strategic Planning Workshop 5/16-17
- ❑ Strategic Planning Committee Meetings 4/1 and 4/22
- ❑ Board Meeting 2/20
- ❑ Plan Drafting Begins 2/4

Draft Plan

- Future Unique Role of Value

Building Blocks

- Opportunities
- Scenarios
- Key Drivers
- Current Unique Role of Value
- Strengths & Capabilities

Thank You

Internal Staff Strategic Planning Team:

- Michael Colgrove
- Hannah Cruz
- Cheryle Easton
- Fred Gordon
- Debbie Menashe
- Spencer Moersfelder
- Lizzie Rubado
- John Volkman

Energy Trust of Oregon

Feedback on potential Energy Trust roles 2020-2024

Your name: _____

Your organization: _____

A number of energy-related opportunities were identified from the 2020-2024 scenario by RAC and CAC, the Board strategic planning committee and Energy Trust staff. At meetings in December and January, Energy Trust's Board of Directors considered these opportunities and the possible roles the organization might play, in addition to our core public-purpose mission work.

We are seeking your input on several of the expanded roles Energy Trust might consider in the coming years. To that end, we'd like your feedback on several questions.

For each role, we want to understand how qualified and uniquely positioned you think Energy Trust is to fill the role. We also want to understand the degree to which your organization supports or opposes Energy Trust pursuing the role.

To help us focus and prioritize, we would also like to know which three out of the five roles you would choose Energy Trust to pursue.

Feedback on new/expanded roles

A. If our natural gas utilities get involved in production and purchase of renewable natural gas (RNG), Energy Trust could use its existing expertise and relationships from renewable biogas electricity development to cultivate local sources of RNG at customer sites processing organic materials.

   For this role, how much do you agree with the following statements?

   Energy Trust currently has the strengths and capabilities needed to fill this role successfully.

   Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

   Energy Trust is uniquely positioned to fill this role.

   Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

   How supportive is your organization of Energy Trust pursuing this role in the future?

   Opposed Unsupportive Neutral Supportive Very supportive

B. Energy Trust could add more distributed energy resource (DER) technologies to our existing RE and EE program offerings to provide more comprehensive benefits to the energy system and customers. This might include adding storage to the standard solar program, paying more for capacity for EE or RE in capacity constrained areas, and/or additional funding for demand response-enabled products that also deliver EE savings -- like some types of smart thermostats.

(Energy Trust's focus would be on-site load management and flexibility without a system-wide deployment component – i.e., we help deploy demand response technology in the market but don't call the event.)

For this role, how much do you agree with the following statements?

Energy Trust currently has the strengths and capabilities needed to fill this role successfully.

Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

Energy Trust is uniquely positioned to fill this role.

Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

How supportive is your organization of Energy Trust pursuing this role in the future?

Opposed Unsupportive Neutral Supportive Very supportive

C1. In order to enable and support projects that may not be cost-effective, Energy Trust could quantify the economic value of non-energy benefits (like conserving water and other resources, improving health, better agricultural outcomes, and mitigating carbon and other environmental risks on energy-burdened populations) and use this to bring additional funding sources to the table.

For this role, how much do you agree with the following statements?

Energy Trust currently has the strengths and capabilities needed to fill this role successfully.

Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

Energy Trust is uniquely positioned to fill this role.

Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

How supportive is your organization of Energy Trust pursuing this role in the future?

Opposed Unsupportive Neutral Supportive Very supportive

C2. In order to enable and support projects that may not be cost-effective, Energy Trust could quantify the economic value of non-energy benefits (like conserving water and other resources, improving health, better agricultural outcomes, and mitigating carbon and other environmental risks on energy-burdened populations) and add these as new value streams to the Total Resource Cost test.

For this role, how much do you agree with the following statements?

Energy Trust currently has the strengths and capabilities needed to fill this role successfully.

Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

Energy Trust is uniquely positioned to fill this role.

Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

How supportive is your organization of Energy Trust pursuing this role in the future?

Opposed Unsupportive Neutral Supportive Very supportive

D. Using a similar structure to our EE/RE market transformation programs, Energy Trust could play a role in administering funds to promote the purchase of electric vehicles and chargers, or to encourage the adoption of more efficient or demand response-enabled options of these technologies (to support charging during off-peak times to support grid flexibility objectives).

For this role, how much do you agree with the following statements?

Energy Trust currently has the strengths and capabilities needed to fill this role successfully.

Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

Energy Trust is uniquely positioned to fill this role.

Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

How supportive is your organization of Energy Trust pursuing this role in the future?

Opposed Unsupportive Neutral Supportive Very supportive

Role priorities

Circle the top three roles that you would like to see Energy Trust pursue.

A. Renewable natural gas

B. Advance Distributed Energy Resources

C1. Quantify non-energy benefits for funders

C2. Quantify non-energy benefits for TRC

D. Support electric vehicle adoption