



Oregon

Tina Kotek, Governor



Department of Consumer
and Business Services

Construction Industry Energy Board Meeting agenda

Meeting date: April 10, 2024

Time: 9:30 a.m.

In-person attendance: Building Codes Division Salem office in Conference Room A

Virtual connection and online streaming: View the live meeting or access the connection

Information for the Zoom meeting at: [Oregon.gov/bcd/Pages/bcd-video.aspx](https://oregon.gov/bcd/Pages/bcd-video.aspx)

I. Board business

- A. Call to order
- B. Roll call
- C. Approval of agenda and order of business
- D. Approval of the draft board meeting minutes of [Oct.17, 2023](#)
- E. Date of the next scheduled meeting: June. 11, 2024
- F. Welcome new member from the State Plumbing Board
- G. Welcome new member from Residential & Manufactured Structures Board

II. Public comment

The board will hear public testimony, including testimony from individuals who have signed up in advance.

III. Reports and updates

- A. Energy program update

IV. Communications

- A. 2023 Oregon Residential Reach Code ([ORRSC](#))
- B. Interpretation [23-02](#)
- C. SAM [24-01](#)
- D. Northwest Power and Conservation Council [power plan](#) preparation document
- E. Energy strategy and planning

V. Appeals

There are no appeals for this meeting.

VI. Unfinished business

There is no unfinished business for this meeting.

VII. New business

There is no new business for this meeting.

VIII. Announcements

The Board Chair or board members can make announcements during this time.

IX. Adjournment

Board meetings are generally adjourned by the Board Chair.

Interpreter services or auxiliary aids for persons with disabilities are available upon advanced request. For assistance, please contact [Kaydi Milton](#) at 503-428-4169.



**Construction Industry Energy Board
October 17, 2023**

Members present: Jay Hansen, Chair, Mechanical Board
Thomas Kyle, Vice-chair, Electrical and Elevator Board
Gary Heikkinen, Building Codes Structures Board
Ryan Richards, Electrical and Elevator Board
Blake Shelide, Oregon Department of Energy
Walter Caudle, Mechanical Board
John Chmelir, Residential and Manufactured Structures Board
Matthew Lutter, Residential and Manufactured Structures Board

Members Absent: Matthew Rozzell, State Plumbing Board

Staff present: Alana Cox, building codes division administrator
Todd Smith, policy & technical services manager
Richard Rogers, chief building official
Mark Heizer, mechanical and energy systems engineer, PTS
Richard Donovan, senior policy advisor, PTS
Andy Boulton, senior policy advisor, PTS
Pierre Sabagh, policy analyst, PTS
Debi Barnes-Woods, board administrator/coordinator, PTS
Nathan Kramer, policy development coordinator, PTS

Public present: Tom Young, NW Masonry
Don Mac O'drum, Self
Ty Jennings, Self

I. Board business

A. Call to order

The hybrid Construction Industry Energy Board meeting of Oct.17, 2023, was called to order at 9:31 a.m. by Chair Jay Hansen.

B. Roll call

Vice Chair Thomas Kyle was present in the room. Chair Jay Hansen, and all board members were connected virtually.

The Construction Industry Energy Board is an eleven-member board. Six members make a quorum. Currently, there are two vacant positions. One from the State Plumbing Board and the other from the Building Codes Structures Board.

C. Approval of the amended agenda and order of business

Chair Hansen ruled the amended agenda and order of business approved.

D. Approval of the draft board meeting minutes

Chair Hansen ruled the draft meeting minutes of June. 13, 2023, final.

E. Date of the next regularly scheduled meeting: Feb. 6, 2024

F. Welcoming newest member to the board

The board welcomed the newest member from the Residential and Manufactured Structures Board, Matthew Lutter, to the Construction Industry Energy Board. He was recently voted in by his peers at the last Residential and Manufactured Structures Board meeting on October 4 to represent that board. Matthew Lutter is a utility representative for the residential and manufactured structures board. He has worked fourteen years at Eugene Water and Electric Board, as a public utility serving Eugene and the McKenzie River community. In his role as a public utility, he helps customers save energy in their homes and businesses and helps manage a program that encourages efficient new construction homes and businesses which has given him insight into energy codes in Oregon. He looks forward to using his utility experience, engineering skill set, and energy knowledge to help the building codes division advance codes in Oregon.

II. Public comment

Policy Analyst, Pierre Sabagh addressed the virtual and the in-person audience if anyone would like to speak about public comment. No public comment was given.

III. Reports and updates

A. Energy Program update

Chief Heizer, wanted to introduce Richard Donovan as the division's new senior policy advisor.

The team is working with the American Society of Heating, Refrigerating, and Air- Conditioning Engineers (ASHRAE) organization and International Energy Conservation Code (IECC) and other states to get some national funding for training for energy codes. Pacific Northwest National Laboratory will be doing some parallel training, this is to try and get better training for building officials on code training.

Updating the residential code: the University of Oregon finished their study on the 2023 residential code energy provisions. Based on their study the required items in executive order through the year 2023 have been completed. The division has sent our federal certification letter to the US Department of Energy noting that we are equivalent or better than the current required National Model code; the 2021 IECC Residential Provisions. The division is working on other pieces to send to the US Department of Energy to get our state information updated. Also, the legislative report to the governor's office required under executive order 20-04 has been posted. You can find a link to it on the division's energy program page, [executive order](#). The division has a requirement to present an updated version of this report to the legislature in December. BCD is continuing to be on track to meet the 2030 energy code targets. BCD will also begin the adoption of the next version of ASHRAE 90.1 for the commercial energy code. During the last

residential board meeting BCD presented information on home size. This has been a consideration on their agenda for whether we should have a method to adjust and provide a scale for how much energy efficiency should be applied to dwelling units based on their size. The division is looking into how to continue to maintain affordable housing for low- and middle-income families.

B. Legislative Update

Andy Boulton, senior policy advisor, policy and technical Services, wanted to give an update on what came out of this year's legislative session that impacts the division. There is a [full summary](#) in the board packet that goes into depth on the bills that impact the division and the division's plan for implementing those requirements. [House Bill 3409](#) is the climate and greenhouse gas emissions bill, this was the only bill this session that had a significant intersection with this board. If you would like more details on this bill, you can go to Oregon Legislative Information System also known as ([OLIS](#)). This bill combined 15 different other bills but the division wanted to highlight it in terms of what impacts the division specifically. This bill adds consideration of greenhouse gas emissions to the list of priorities the division must consider when executing agency actions, and the division is directed to consult with the environmental justice council when evaluating priorities that the division sets and actions the division takes to adapt and mitigate the impacts of climate change. The division is currently exploring the best way to implement this consultation, but it will likely involve a regular check-in with the council on pending agency action in that area. The bill places into the statute the reporting requirements that had previously existed in executive order (EO) 20-04. The division will continue to fulfill these requirements as it has since the EO was put in place in 2020. The division is directed to study the use of lower carbon building materials in the building code and to this end the legislature funded additional positions with the division. The division also anticipates contracting with a third party to assist with the study. The bill directs the division to adopt the reach codes through rulemaking process and there will be an item later in this agenda where the board will be looking at the division's proposed rulemaking process for adopting the commercial and residential reach codes. The Oregon Department of Energy was directed to develop energy performance standards for covered commercial buildings and the division will consult with the Department of Energy on these standards.

Vice Chair, Thomas Kyle, asked if there is a certification program for electricians for installing EVs and says we must report up to 500. What happens after the 500, do we keep reporting after that?

Mr. Boulton, senior policy advisor, policy and technical Services, stated the bill SB 582 has certain requirements around a new training program for electricians to be certified and installing EV charging infrastructure and there's some specific triggers around what is required on certain projects. He believes that it is a state construction project and that triggers a certain percentage of the electricians to be certified with that new education program after there are 500 certified in the state.

After those additional requirements there are no requirements in the bill to continue tracking and continue reporting on how many are certified after that point.

Board member, John Chmelir, asked if there has been any studies on the projected change to heat pumps from gas heat and the addition of all the charging stations, and the anticipated use of the charging stations distributed around the state. He asked if there have there been any studies as to where the power is going to come from and how it's going to get transported to all these different places and whether our current infrastructure is adequate to meet those needs? If not, why not?

Mr. Boulton, senior policy advisor, policy and technical Services, stated those types of studies would be outside the scope of the division. We haven't done them and are not aware if they've been done by another agency.

Board member, Mr. Chmelir, stated it would be useful for the board, who are voting on these things, to know what the back end of the planning is, and if it accommodates theoretical and general anticipatory needs. Is the state prepared to deal with the result of what happens? I think the division and the energy board ought to at least know that if we're voting for things that are going to add requirements for electricity generation and distribution, we ought to know that it's going to be available or not.

Chair Jay Hansen, stated that this is just part of the legislation, and we are not voting on this. He was on the task force and there were a few people on the task force that asked these same questions, before we demand this, can we look at what the impact is going to be on our infrastructure, can we deliver the increased load that the state will require?

Board member, Mr. Chmelir, added that it's incumbent on the state to develop those facts and that the state should develop those facts otherwise it's just virtue signaling as much as what we see today and don't think it's right. It's important for the board to know what this legislation is and if there's some reason for us to know this legislation then there ought to be a reason for us to know engineering facts and would like the board to come up with some answers to these questions.

Chair Mr. Hansen, asked Mr. Boulton, is it possible for this board to ask questions back to the legislature and ask for some answers to these things so that we can act on them and if that is appropriate to do so.

Mr. Boulton, senior policy advisor, policy and technical Services, stated he wasn't aware what the path would be to deliver the questions to the legislature but he can find out.

Board member, Mr. Chmelir, stated that he is a builder and engineer and that holds him to very specific rules and he would like the building codes division to come up with specific answers to his question. The division representing our board should ask the legislature the questions that the board members are asking.

Vice Chair, Mr. Kyle, commented that as an electrical contractor, he has done hundreds of projects and some pretty good size infrastructure projects that involved a lot of power coming in and the worst case he'd had is the power company would say it'll take six months to get a transformer but they could put something temporary in, if we build it they've supplied power to it. He is not that concerned about it, it's beyond our scope, it's up to the power companies and the distribution to make that happen and is sure they are on top of it. This was his experience.

Board member, Blake Shelide, added that if there's an opportunity to reach out to our colleagues over at the Oregon Public Utility Commission (OPUC). He knows there is a lot of work that's done with electricity planning that integrates resource plans and knows they're looking hard at what our future electrical infrastructure looks like and each utility's integrated resource plan considers all different options and different scenarios of future electrification and where the extra loads going to be in the future. He said he thinks some of these answers are available with the OPUC with our electric utilities and wonders if that's an opportunity to reach out and get some information from them.

IV. Communications

Proposed Rulemaking Timeline for the 2023 Oregon Residential Reach Code (No board action required)

Pierre Sabagh, policy analyst, policy and technical services, stated this is informational for the board and the division is requesting that the board reviews the division's proposed process and timeline for developing and adopting the 2023 Oregon Residential Reach Code (ORRC). The division previously discussed this timeline with the residential board a couple of weeks ago. The 2023 ORRC is an optional set of standards designed to increase energy efficiency. All municipalities must accept the reach code and it provides additional efficiency compliance paths. The reach code must be technically feasible and must be more efficient than the building code. The division's goal here is to have the 2023 ORRC in place by July 1, 2024, the division's timeline for this is in today's [board packet](#).

V. Appeals – None

VI. Unfinished business – None

VII. New business

A. Review and approval of proposed changes to the Reach Code Adoption Process (A motion is required)

Pierre Sabagh, policy analyst, stated that the division is requesting the board's

review and approval of the division's proposed reach code adoption process and rulemaking timeline. During the 2023 legislative session the legislature passed HB 3409 which includes a requirement that the reach code be adopted by rule with the approval of the appropriate advisory boards. Previously for reach codes, the division had worked with stakeholders and boards to adopt these proposed rules and adoption process changes which are intended to create a predictable process by which the division, with board approval, can adopt future versions of the reach code. The division recently took this to the residential board as well who also approved the process. This proposal for adopting the reach code includes a process that will slightly differ from the base code adoption process that's normally outlined under OAR 918-008-0020. The full language of this proposed rule is going to be captured in the amended OAR 918-465-0040.

Motion by Vice-chair Thomas Kyle to approve the division's proposed reach code adoption process and proposed timeline.

Roll call vote taken:

Yea – John Chmelir, Matthew Lutter, Walter Caudle, Blake Shelide, Gary Heikkinen, Ryan Richards, Vice Chair Thomas Kyle, Chair Jay Hansen

Nay – None

Motion carried unanimously.

VII. New business

B. Review and approval of the 2024 Oregon Energy Efficiency Specialty Code *(A motion is required)*

Pierre Sabagh, policy analyst, said the division is requesting the board review and approve the 2024 Oregon Energy Efficiency Specialty Code (OEESC) and recommend the code to the administrator to proceed with rulemaking. Some background we've talked about with this at these meetings was OAR 918-008-0200 which was adopted and became effective on January 1, 2023. The purpose of this rule was to have a predictable and consistent OEESC adoption process to meet the Energy Efficiency goals of the state based on a thoroughly vetted federally recognized national model energy standard. This code is based on the latest ASHRAE 90.1 standard with necessary Oregon amendments. At the board meeting held on March 14, 2023, the division gave the board an informal notice regarding the latest ASHRAE 90.1 publication. At the board meeting on June 13, 2023, the division gave the board an official notice regarding the publication which satisfies the new adoption process rule. The division is requesting the board review and approval of this proposed 2024 OEESC which is based on the ASHRAE publication with necessary Oregon amendments. A copy of this draft is in the [board packet](#) with the adjusted amendment to the EC table and R1 credit. A public hearing will take place for this proposed 2024 OEESC in November, the anticipated adoptive date is January 1, 2024, with a six-month phase period ending June 30, 2024. This agenda item will require a motion, approval must be with the finding that the added cost, if any, is necessary to the health and safety of the occupancy or the public or necessary to conserve scarce resources.

Mr. Heizer, mechanical and energy systems engineer, stated that the [summary of major changes](#) that are in the standard 90.1-2022 as well as a second heading area of modifications that are done each year to the OEESC document. That document shows the updated version of adoption this year, that is intended to provide that link between standard 90.1 to make the administrated provisions and limited local changes that are necessary to align with other boards.

[Section 11: Additional Efficiency Requirements](#); Item one is the biggest change for 90.1 for 2022. The same application happened in the IECC commercially and this reflects and follows with what Oregon created which is additional measures or optional paths for getting additional efficiency. They have created a minimum number of additional credits. The additional credits were developed by Pacific Northwest National Laboratory in consultation with the 90.1 committee and with the IECC committee. There have been some articles that were published in ASHRAE 90.1 that go over all the changes, these go into deep detail. Reference [Table 11.5.1-1](#)

Chair Jay Hansen asked if you need those credits to proceed, and to show that you have those credits before you even apply for a permit and present a report showing your path for those credits.

Mr. Heizer, mechanical and energy systems engineer, stated COMcheck has a simpler version for the IECC and does a lot of the calculations for you within the program. Some may be based on square footage or other applications are made simple. This is one thing where we are following closely on the promised delivery date for COMcheck because this will be important for us to have this working before, we begin the program, and it is supposed to be up and running by the end of the year, but it may be as late as March 2024.

Item two for summary of changes is roof replacement insulation, they have come up with good language to work out how to show that you might make up for the reduction in insulation in one area and work it out with other parts of the roof. They will be working through an approval process with your local building official to allow this to happen.

Item three for summary of changes is thermal bridging, they now have better ways to show calculations and what the actual U-factor is.

Item four for summary of changes is off-hours control, trigger for requiring off-hours control of HVAC systems reduced from fifteen thousand btu to seven thousand btu with expanded exception for residential spaces.

Item five for summary of changes is stair and elevator shaft dampers, this is a clarification of operation of vent openings in shafts.

Item six for summary of changes is garage ventilation, they have new language

about having separate ventilation systems or control of separate ventilation systems when the garage is divided up.

Item seven for summary of changes is hotel guest room controls, the change is card key capture systems controls are removed as a control option.

Item eight for summary of changes is low power fan efficiency; establishes minimum fan efficiency requirements for small ventilation fans. Aligns with energy star fan specifications and Oregon minimum appliance efficiency standards.

Item nine for summary of changes is expansion of tables; new product types covered. Tables combined, added, and deleted to align with latest federal regulations. Efficiency for specialty equipment clearly delineated, eliminating confusion from previous editions.

Item ten for summary of changes is simplified building compliance; reduced lighting allowances to align with lighting allowance reductions under prescriptive path. Aligns with HVAC simplified path.

Item ten Tables 9.5.1 and 9.6.1 for summary changes is lighting power allowance: lowered power allowances for many building types (Building Area) and Space Types (Space-by-Space Method). Updated to align with current LED lighting efficiencies.

Item eleven sections 7.4.3; 6.3.8 for summary of changes is pipe insulation; new table for potable water system pipe insulation created in Section 7, plumbing. No change in requirements.

Item eleven sections 9.4.1.1 for summary of changes is daylight control; trigger for daylight control zones has reduced by half. Now 75 watts of connected fixtures versus 150 watts in the primary daylight zone. 150 watts versus 300 watts in the secondary daylight zone.

Item twelve for summary of changes is Horticulture Lighting; sets minimum efficiency for fixtures/bulbs used for horticulture in regulated structures. Does not apply to ag-exempt structures.

Review of OEESC amendments proposed:

Mr. Heizer, mechanical and energy systems engineer, continued to the new [Oregon-specific amendments proposed](#) portion of the document.

Scope: Clarification that the scope of the OEESC, as applied using Standard 90.1, is solely applied to regulated buildings and regulated features that are fed from the building (site lighting) or feed services to the building (chillers, cooling towers).

This maintains the current scope of the OSSC and OEESC.

Alterations: Section 4.1.2.3 is adopted, which then applies to the alteration subsection of each major section. All of Section 9.1.1.3 for lighting alterations is replaced with language aligned with Section E103.3.2 relative to limit of the scope of an alteration.

Historic Buildings: we had a clarification to align with old language and others to look at efficiency. The exception is for systems or portions of the building that are critical to the historic designation.

Data Centers: we have changed the definition of what a data center is to any computer room or series of computer rooms with a connected load greater than one hundred kilowatts, this is increased from the basic of ten kilowatts. This better aligns with where the cooling would be following the 90.4 path. It's optional for small computer rooms under ten kilowatts to use the 90.4 path but larger than one hundred kilowatts of connected load, you would need to use the 90.4 path.

Ventilation Standards: References to Standards 62.1 and 62.2 in Standard 90.1 shall be applied as references to the Mechanical Code Section E301.3(c) modifies Section 6.5.3.9 relative to ventilation stand-by controls: Under the Mechanical Code, occupied stand-by ventilation must maintain a minimum flow; for designers wishing to use Standard 62.1, the zone ventilation may be set to zero.

Non-transient dwelling unit exhaust ventilation recovery: this is an area where at standard 90.1 they are trying to correct this. Mr. Heizer is personally involved with helping rewrite this because they're coming up with enforceable standards for the efficiency of the ventilating units and redefining them to tie them into outdoor air and not just an exhaust ventilation system. On the 90.1 committee they are addressing new questions about which exhaust stream they have to deal with. We looked at a fix for this code cycle to really address dealing with energy recovery ventilation unit triggers for individual dwelling units versus multi-family dwelling units.

Door Switches: two additional exceptions are added to Section 6.5.10. Low-rise dwellings regulated under the authority of RMSB do not require door switches on doors opening to the exterior. In addition, a clarifying exception is added for doors not using a building entry where *approved* by the building official.

Voltage drop: Section 8.4.1 is not adopted. This is regulated under the Oregon Electrical Specialty Code under the authority of the Electrical Board.

Controlled receptacle compliance option: Alternate to mandatory controlled receptacles under Section 8.4.2 is for structures to provide five additional energy efficiency credits under new Section 11. This new exception replaces three

possible alternative efficiency improvements.

Electrical energy monitoring: Alternate compliance path for energy monitoring under Sections 8.4.3 and 10.4.7. Added exceptions when two additional energy efficiency credits are achieved under new Section 11. The number of additional credits aligns with Section 11 tables, where credits for monitoring can be achieved for buildings not required to monitor under the mandatory compliance path.

Compressed air systems: Section 10.4.6 is not adopted. It is relative to process loads regulated under the Oregon Boiler and Pressure Vessel Specialty Code.

Renewable energy resources: Sections 10.5.1 and 10.5.2 for mandatory minimum on-site renewable energy systems are not adopted. Section 11.5.1, the calculation of the required minimum additional efficiency credits is adjusted for buildings without on-site renewable sources. Section 11.5.1(e), an adjustment for partial application of renewable sources is not adopted.

Board member, Matthew Lutter, asked does the 2024 OEESC apply to low-rise residential or not.

Mr. Heizer, mechanical and energy systems engineer, stated it applies to the change in scope is to all buildings constructed under the Oregon Structural Specialty Code so this would include certain low-rise residential.

Tom Young, NW Masonry asked about Table 11.5.1-1, the energy credit table, the changes or adjustments that have been made in this document, were they solely based on that renewable energy issue or was there some other rationale behind those adjusted numbers.

Mr. Heizer, mechanical and energy systems engineer, responded that it is based solely on renewable energy. There is a separate table 11.5.1-2 which contains the adjustment for on-site renewable, we use those figures straight from that table to save time. You manually would have to make the adjustments, but with this table you don't have to.

Motion by board member, Gary Heikkinen to approve the proposed code language and forward to the administrator for rulemaking and subsequent adoption, with the finding that that added cost, if any, is necessary to the health and safety of the occupants or the public or necessary to conserve scarce resources.

Roll call vote taken:

Yea – Matthew Lutter; Walter Caudle; Blake Shelide; Gary Heikkinen; Ryan Richards; Vice Chair Thomas Kyle; and Chair Jay Hansen

Nay – None.

Motion carried unanimously.

VIII. Announcements - None

IX. Adjournment

Chair, Jay Hansen adjourned the meeting at 10:52 a.m.

Respectfully submitted and transcribed by Kaydi Milton, policy development coordinator

Oregon Residential Reach Code

2023 edition

For the draft version of this document formatting denotes the following:

Blue/underline / ~~Red/strikethrough~~ = New proposed reach provisions added/deleted language (Base code = 2023 ORSC)

Shaded = New 2023 Oregon Residential Specialty Code provisions

Under Oregon Revised Statute (ORS) 455.500, the division, with approval from the appropriate advisory board, shall adopt a Reach Code. The Oregon Residential Reach Code is an optional set of standards providing a choice for builders, consumers, contractors, and others. Customers can choose to build to the Oregon Residential Specialty Code (ORSC) or to this code.

The provisions of this code replace Chapter 11 of the 2023 ORSC.

SECTION N1101 SCOPE AND APPLICATION

N1101.1 General. The provisions of this reach code replace Chapter 11 of the 2023 *Oregon Residential Specialty Code* and regulate the exterior envelope, as well as the design, construction and selection of heating, ventilating and air-conditioning systems, piping insulation, lighting and power required for the purpose of effective conservation of energy within a building or structure governed by this code.

N1101.1.1 ORSC minimum requirements. In addition to the selected reach code compliance path in N1101.2, the following sections from the ORSC shall be met as applicable: N1104.2 Insulation materials, N1104.9 Moisture control, N1105.4.1.2 Smart thermostat, and N1106.3 Protection of piping insulation.

N1101.2 Compliance paths. New dwellings shall meet the requirements of one of the following compliance paths:

1. EPA ENERGY STAR, Single-Family New Homes, National Program Version 3.2 (Rev. 13) (ENERGY STAR SFNH National v3.2 Rev 13), in accordance with Section N1102.
2. U.S. Department of Energy (USDOE), Zero Energy Ready Home (ZERH) Single Family Homes National Program Requirements Version 2 (Rev. 1) (ZERH SFHN v2 (Rev 1)) in accordance with Section N1103.
3. National Phius (Passive House US) 2021 Single Family Certification version 4.2.1, in accordance with Section N1104.

The use of the *Water Efficiency and Sanitation Standard for the Built Environment* (2020 WEstand), in accordance with Section N1105, is permitted under any compliance path.

N1101.4 Information on plans and specifications. Plans and specifications shall show in sufficient detail all pertinent data and features of the building and the equipment and systems as herein governed, including, but not limited to: exterior envelope component materials; R-values of insulating materials; fenestration U-factors and SHGC value; HVAC equipment

efficiency performance and system controls; ductwork location; lighting; and the other pertinent data to indicate compliance with the requirements of the chapter.

Plans shall indicate the reach code compliance path selected. All compliance paths require ENERGY STAR compliance. An Energy Rating Index (ERI) Target score, or equivalent, per ANSI / RESNET / ICC Standard 301 shall be submitted with the construction documents. Plans and specifications shall reflect the assumptions used for the design ERI.

N1101.5 Final certification. The certified rater shall make final certification results and the certification compliance report available for review by the building official. An Energy Rating Index (ERI) Actual score, or equivalent, per ANSI / RESNET / ICC Standard 301 equal to or lower than the Energy Rating Index (ERI) Target score shall be submitted.

N1101.5.1 Reach Code Non-Attainment. If the selected reach code compliance path in N1101.2 is not attained, the building official may issue a certificate of occupancy, per R110.3, or temporary certificate of occupancy, in accordance with Section R110.4, if the building or structure complies with Chapter 11 of the 2023 Oregon Residential Specialty Code.

SECTION N1102 EPA ENERGY STAR COMPLIANCE

N1102.1 Scope. This section establishes criteria for compliance using the EPA ENERGY STAR SFNH National v3.2 Rev 13.

N1102.2 ENERGY STAR compliance. Compliance based on the ENERGY STAR SFNH National v3.2 Rev 13 including but not limited to energy modeling to demonstrate compliance with ENERGY STAR program energy performance metrics and on-site verification of all critical project energy features by a Certified Rater or Approved Inspector. All documentation and verification shall be in accordance with the National Program Version 3.2 (Rev. 13).

N1102.3 Verification by approved agency. Verification of compliance with Section N1102.2 shall be completed by a Certified Rater or Approved Inspector, as defined by ANSI / RESNET / ICC Standard 301, or an equivalent designation as determined by a Home Certification Organization (HCO) under the ENERGY STAR program.

SECTION N1103 **U.S. DOE ZERO ENERGY READY HOME (ZERH)** **COMPLIANCE**

N1103.1 Scope. This section establishes criteria for compliance using the ZERH SFHN v2 (Rev 1).

N1103.2 ZERH compliance. Compliance based on the ZERH SFHN V2 (Rev. 1) process including but not limited to: energy modeling to demonstrate compliance with ZERH program energy performance metrics and on-site verification of all critical project energy features by a Certified Rater, or Approved Inspector, certified by a qualifying USDOE Home Certification Organization for Zero Energy Ready Home (HCO for ZERH).

N1103.3 Verification by approved agency. Verification of compliance with Section N1103.2 shall be completed by a Certified Rater or an Approved Inspector under the HCO for ZERH certification system.

SECTION N1104 **NATIONAL PHIUS 2021 SINGLE FAMILY** **CERTIFICATION VERSION 4.2.1**

N1104.1 Scope. This section establishes criteria for compliance using the national Phius 2021 single family certification version 4.2.1.

N1104.2 PHIUS compliance. Compliance based on the Phius Certification process for single family projects includes energy modeling, or use of prescriptive measures, and design consulting performed by a Certified Passive House Consultant (CPHC) to demonstrate compliance with Phius program energy performance metrics, as well as on-site verification of all critical project energy features by a Phius Certified Rater. Additionally, all projects must meet the mandatory criteria and be certified under the EPA ENERGY STAR Single-Family New Homes (ESTAR), U.S. Department Of Energy (USDOE), Zero Energy Ready Homes (ZERH), and EPA Indoor airPLUS (IAP) programs. Compliance shall be in accordance with Section N1104.2.1 or Section N1104.2.2.

N1104.2.1 Prescriptive path. Compliance based on the use of prescriptive measures shall be conducted in accordance with Section N-7, of Appendix N, of the Phius Certification Guidebook version 3.2.

N1104.2.2 Performance path. Compliance based on the use of the Phius Performance Path shall be conducted in accordance with Phius Certification Guidebook version 3.2.

N1104.3 Verification by approved agency. Verification of compliance with Section N1104.1 as outlined in Section N1104.1 shall be completed by a Phius Certified Rater at the authority having jurisdiction or an *approved* third-party inspection agency in accordance with Section R109.2.

N1104.3.1 Verification requirements. The Phius Certified Rater will document compliance in accordance with Section N1104.1.

N111.4 Documentation. Documentation of the software used to determine compliance with Section N1104.2.2 and the parameters for the *residential building* shall be in accordance with Sections N1104.4.1 through N1104.4.2. Documentation used to determine compliance with Section N1104.2.1 and the parameters for the *residential building* shall be in accordance with Section N1104.4.3.

N1104.4.1 Compliance software tools. Software tools used for determining compliance in accordance with Section N1104.2.2 shall be WUFI Passive: 3.2.1 or WUFI Passive Free: 3.2.1 or newer.

N1104.4.2 Compliance report. Compliance software tools shall generate a report that documents that the home complies with Section N1104.1. Compliance documentation shall be created for the proposed design and shall be submitted with the application for the building *permit*. Confirmed compliance documents of the built *dwelling unit* shall be created and submitted to the *building official* for review before a certificate of occupancy is issued. Compliance reports shall include information in accordance with Sections N1104.4.2.1 and N1104.4.2.2.

N1104.4.2.1 Proposed compliance report for permit application. Compliance reports submitted with the application for a building *permit* shall include the following:

1. Building street address, or other *building site* identification.
2. Declare Phius Performance Path certification on title page and building plans.
3. The name of the individual performing the analysis and generating the compliance report.
4. The name and version of the compliance software tool.
5. Documentation of all inputs entered into the software used to produce the results for the certified home.
6. A certificate indicating that the proposed *design* of the built home complies with Section N1104.1. The certificate shall document the building component energy specifications that are included in the calculation, including: component-level insulation *R*-values or *U*-factors; results from any required duct system and building envelope air leakage testing; and the type and rated efficiencies of the heating, cooling, mechanical ventilation, and service water- heating equipment installed. Where on-site renewable energy systems have been installed on or in the home, the certificate shall report the type and production size of the installed system.

N1104.4.2.2 Confirmed compliance report for a certificate of occupancy. A confirmed compliance report submitted for obtaining the certificate of occupancy shall be made site and address specific and include the following:

1. Building street address, or other building site identification.
2. Declare Phius Performance Path certification on title page and building plans.
3. The name of the individual performing the analysis and generating the compliance report.
4. The name and version of the compliance soft-ware tool.
5. Documentation of all inputs entered into the software used to produce the results for the certified home.
6. A final confirmed certificate indicating that the confirmed *rated design* of the built home complies with Section N1104.1. The certificate shall report the energy features that were confirmed to be in the home, including: component-level insulation *R*-values or *U*-factors; results from any required duct system and building envelope air leakage testing; and the type and rated efficiencies of the heating, cooling, mechanical ventilation, and service water-heating equipment installed. Where on-site renewable energy systems have been installed on or in the home, the certificate shall report the type and production size of the installed system.

N1104.4.3 Compliance report. A Certified Phius Rater shall generate a report that documents that the home complies with Section N1104.1. Compliance documentation shall be created for the proposed design and shall be submitted with the application for the building *permit*. Confirmed compliance documents of the built *dwelling unit* shall be created and submitted to the *building official* for review before a certificate of occupancy is issued. Compliance reports shall include information in accordance with Sections N1104.4.3.1 and N1104.4.3.2.

N1111.4.3.1 Proposed compliance report for permit application. Compliance reports submitted with the application for a building *permit* shall include the following:

1. Building street address, or other building site identification.
2. Declare Phius Prescriptive Path certification on title page and building plans.
3. The name of the individual performing the analysis and generating the compliance report.
4. A certificate indicating that the proposed *design* of the built home complies with Section N1104.1. The certificate shall document the building component energy specifications that are included in the calculation, including: component-level insulation *R*-values or *U*-factors; results from any required duct system and building envelope air leakage testing; and the type and rated efficiencies of the

heating, cooling, mechanical ventilation, and service water-heating equipment installed. Where on-site renewable energy systems have been installed on or in the home, the certificate shall report the type and production size of the installed system.

N1111.4.3.2 Confirmed compliance report for a certificate of occupancy. A confirmed compliance report submitted for obtaining the certificate of occupancy shall be made site and address specific and include the following:

1. Building street address, or other building site identification.
2. Declare Phius Prescriptive path certification on title page and building plans.
3. The name of the individual performing the analysis and generating the compliance report.
4. A final confirmed certificate indicating that the confirmed construction of the built home complies with Section N1104.1. The certificate shall report the energy features that were confirmed to be in the home, including: component-level insulation *R*-values or *U*-factors; results from any required duct system and building envelope air leakage testing; and the type and rated efficiencies of the heating, cooling, mechanical ventilation, and service water-heating equipment installed. Where on-site renewable energy systems have been installed on or in the home, the certificate shall report the type and production size of the installed system.

SECTION N1105 PLUMBING FIXTURE EFFICIENCY

N1108.1 General. This section shall apply to plumbing fixture efficiency.

N1108.1.1 Fixture efficiency. Fixture efficiency shall be per the *Plumbing Code*.

N1108.2 Application of WEStand. Those portions of the 2020 WEStand, *Water Efficiency and Sanitation Standard for the Built Environment*, as published by International Association of Plumbing and Mechanical Officials (IAPMO) shall apply, where applicable to the building or *dwelling unit*.

Condensate Drainage from a Heat Pump Water Heater

In accordance with OAR 918-008-0110, the information contained in this statewide code interpretation is legally binding on any party involved in activities regulated by applicable Oregon law, applicable Oregon regulations or the state building code. If the information contained in this statewide code interpretation is cited as a basis for a civil infraction, a representative of the jurisdiction must cite the interpretation number found in this document.

Code reference: 2023 Oregon Residential Specialty Code (ORSC)—Section M1307.1
2022 Oregon Mechanical Specialty Code (OMSC)—Section 304.1

Date: Dec. 21, 2023

Subject: Condensate drainage from a heat pump water heater

Questions:

1. Is condensate drainage from a heat pump water heater covered in the OMSC and ORSC?
2. If the condensate drain terminates outdoors or is routed through a space subject to freezing, does the drain pipe require heat tracing?
3. Where the manufacturer's installation instructions include special requirements for "cold climates," such as specifying that the condensate drain termination be located in an area not subject to freezing (indoors or within conditioned space). What constitutes a "cold climate?"

Answers:

1. **Yes.** OMSC Section 304.1 requires condensate drainage to be installed in accordance with the manufacturer's installation instructions. ORSC Section M1307.1, applicable to HVAC equipment, does not address condensate drains from a heat pump water heater. However, ORSC Section M1301 indicates that installations of mechanical *appliances, equipment* and systems not addressed by the ORSC shall comply with the applicable provisions of the OMSC. Therefore, OMSC Sections 307.2.1 and 307.2.2 apply, which prescribes that condensate from an evaporator be routed to an indirect drain, grade or other *approved* location.
2. **Yes.** The majority of manufacturer's installation instructions require piping to be heat traced when it is exposed to freezing conditions. Drain pipe exposed in a vented crawlspace or attic shall be considered as locations exposed to freezing conditions; drain pipe exposed in a garage, such as for the installation of a heat pump water heater, is not a location considered as being subject to freezing. The drain termination point, if the drain terminates outdoors, shall be considered as a location exposed to freezing conditions and must be heat traced; the heat trace begins at the interior face of the wall or floor being penetrated before terminating outdoors.
3. A "cold climate" includes building sites where the 99% HVAC heating design temperature is 32°F or lower. Locations in Oregon with design temperatures above 32°F are limited to coastal municipalities. The condensate drain from a heat pump water heater is coming from an evaporator (cold) coil and is at temperatures commonly below 50 - 55°F during water heating in winter. The flow of condensate drainage is closer to freezing temperature in winter than the discharge from a condensing combustion process (such as a furnace).

Contact: Visit the division website to [contact a building code specialist](#).

**STATEWIDE ALTERNATE METHOD
NO. 24-01**

**2021 International Energy Conservation Code
Residential Provisions**

Statewide Alternate Methods are approved by the division administrator in consultation with the appropriate advisory board. The advisory board's review includes technical and scientific facts of the proposed alternate method. In addition:

- Building officials shall approve the use of any material, design or method of construction addressed in a statewide alternate method;*
- The decision to use a statewide alternate method is at the discretion of the applicant; and*
- Statewide alternate methods do not limit the authority of the building official to consider other proposed alternate methods encompassing the same subject matter.*

Code reference: 2023 Oregon Residential Specialty Code (ORSC) – Chapter 11
2021 International Energy Conservation Code (IECC) – Residential Provisions

Date: January 2024

Subject: Use of the 2021 International Energy Conservation Code (IECC) – Residential Provisions
as an alternative to Chapter 11 of the 2023 Oregon Residential Specialty Code (ORSC).

Overview:

Chapter 11 of the 2023 ORSC, based on Oregon-developed energy code provisions, is the adopted energy code of the State of Oregon. This alternate method will allow designers to voluntarily use the 2021 IECC as an additional design choice. The US Department of Energy has determined that the 2021 IECC is currently the most advanced model energy code for residential structures and is the target code for all states to achieve.

Conclusion:

The 2021 IECC – Residential Provisions serves as an acceptable alternative to the Chapter 11 provisions of the 2023 ORSC.

The technical and scientific facts for the statewide alternate method are approved.

Signature on file

1/30/2024

**Alana Cox, Administrator
Building Codes Division**

Date

Contact:

Visit the division website to [contact a building code specialist](#).

Preparing for the Council's Ninth Power Plan

March 2024



Northwest **Power** and
Conservation Council

Overview

The Northwest Power and Conservation Council (the Council) is responsible for developing a regional electric power and conservation plan. This plan provides recommendations to the Bonneville Power Administration and the region at large on the acquisition of new energy resources. The Council adopted its current power plan, the 2021 Power Plan, in February 2022. It is now starting to prepare for the next plan, which will be the ninth power plan. The Council will officially kick off the power plan review in early 2025, after the start of the Council's Fish and Wildlife Program Amendment process. The Council is striving to complete the power plan by the end of 2026 or early 2027.

Between now and the official kickoff next year, the Council's power planning division is scoping out the potential questions to be explored preparing methodologies, draft inputs, and models. This early scoping and preparation will streamline the power plan development process. The Council is seeking stakeholder comment for an approximately 45-day period (ending on April 26, 2024) on the concepts outlined in this paper.

The Council is specifically seeking comments on the proposed scenarios to understand the region's priorities. Scenario modeling will seek to explore areas of risk and uncertainty in the future power system. The Council is currently considering the following scenarios:

- **Resource and Transmission Risk:** Exploring how changing resource costs and availability, including that of emerging resources and changing transmission options, will impact resource decisions. Because it will not be possible to explore every possible iteration of risk and uncertainty, the Council is interested in comments on priority questions to be explored.
- **West-Wide Decarbonization Policy:** Exploring potential implications for Northwest resource decisions should there be wide-scale policies or drivers towards decarbonization that significantly increase loads and require carbon-free resources. The Council is specifically interested in comments on priorities to help scope this potential scenario.
- **Operational Flexibility:** Exploring resource decisions after leveraging or limiting various resources' ability to support operational flexibility to integrate renewables. This may include exploring the trade-offs and limitations of flexibility with the

hydro system, existing thermal resources, and new resources, such as storage. The Council welcomes feedback on priority questions to be explored.

- **Extreme Weather Stress Testing:** Exploring the impacts of extreme weather events. The Council will be using climate change informed data for loads and resources, which will already reflect extreme weather in the modeling of other scenarios. This potential scenario would further stress test the system under more frequent extreme weather events.

The Council is interested in comments on each of these proposed scenarios, as well as other potential risks and uncertainties that may be a priority for the region. The Council will consider comments received as it refines the plan scope and continues to prepare models and data. This early scoping will support the Council in meeting its timeline goals, although the Council recognizes that it will need to remain flexible throughout the process to address important changes and questions that arise.

Background

Since its inception in 1980, the Council has developed eight power plans and is now starting to prepare for its ninth. This section provides background on the Council's power planning responsibilities as defined by the Northwest Power Act. It also outlines the general analytical approach to power planning.

Northwest Power Act

The Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act) of 1980 authorized the states of Washington, Oregon, Idaho, and Montana to form an interstate compact agency—the Council—and directed it to prepare a regional power plan, prepare and periodically amend a fish and wildlife program prior to each power plan, and develop both products in a highly public process. In doing this work, the Northwest Power Act establishes a clear set of purposes for the Council:

- Encourage conservation and the development of renewable resources¹
- Ensure an adequate, efficient, economical, and reliable power supply²

¹ Northwest Power Act, Section 2(1).

² Ibid, Section 2(2).

- Provide for the participation of states, local governments, consumers, utilities, fish and wildlife agencies, Tribes, and the public³
- Protect, mitigate, and enhance fish and wildlife resources.⁴

In developing a power plan, the Council should give priority to cost-effective resources, with conservation given the highest priority, followed by renewables, then generating resources utilizing waste heat or with high efficiency, finally followed by all other resources.⁵ With these priorities in mind the Council's plan should include a "scheme for implementing conservation measures and developing resources [pursuant to Section 6 of the Act] ... to reduce or meet the Administrator's [Bonneville's] obligations." This scheme must be developed with "due consideration for" environmental quality, compatibility with the existing power system, fish and wildlife protection and mitigation, and other criteria set forth in the plan.⁶

Section 4(e)(3) of the Northwest Power Act outlines specific elements that should be included in the Council's power plan, including:

- Council's Fish and Wildlife Program
- Energy conservation program and model conservation standards
- Demand forecast of at least 20 years
- Forecast of power resources estimated to meet Bonneville's obligation
- Analysis of reserve and reliability requirements, including cost-effective methods for providing reserves to ensure adequacy
- Methodology for determining quantifiable environmental costs and benefits
- Recommendations for research and development
- Methodology for calculating a surcharge (as related to the model conservation standards).

The Council's power plan is focused on guiding the acquisition of new resources to meet the region's energy needs. The only legal requirement connected to resource

³ Ibid, Section 2(3).

⁴ Ibid, Section 2(3)(a) and Section 2(6).

⁵ Ibid, Section 4(e)(1). Cost-effective is defined in the Act in Section 3(4)(A), and a resource is cost-effective if it has an "estimated incremental system cost no greater than that of the least-cost similarly reliable and available alternative measure or resource, or any combination thereof." Therefore, cost-effectiveness is a comparative exercise of resources.

⁶ Ibid, Section 4(e)(2).

acquisition is with Bonneville. Sections 4(d)(2) and 6(a), 6(b), and 6(c), of the Northwest Power Act require Bonneville's implementation of conservation and acquisition of new resources to be consistent with the Council's power plan, with certain narrow exceptions. In addition, the State of Washington's Energy Independence Act tied Washington utilities' conservation potential directly to the Council's methodology for conservation. The Council's power plan is also an influential resource for other entities making resource decisions, including legislators, regulators, and state energy offices around the region. The Council's power plan continues to be an important means for examining the potential implications of policy decisions on the regional system, and how to plan and manage this system in the face of uncertainty.

Developing a Power Plan

One of the primary objectives of the Council's power planning analysis is to identify recommendations for new, cost-effective resources that will best meet future electricity needs while integrating those into the existing system. Figure 1 outlines the general power plan analytical process.

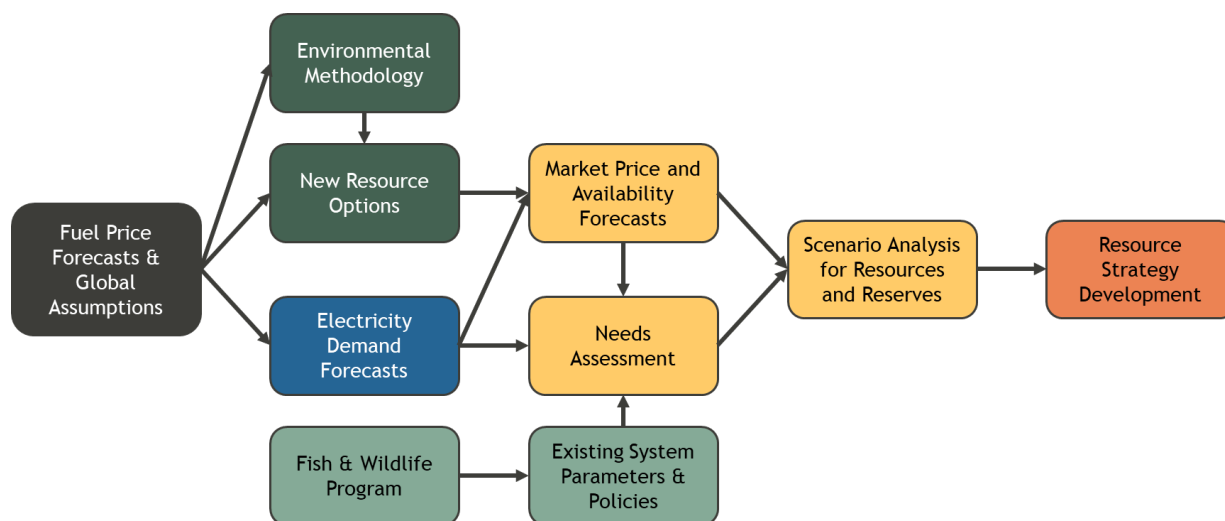


Figure 1: Power Plan Development Process

One of the first steps in this process is defining the capabilities of the existing system. This includes capturing any expected changes that may be forthcoming, based on announcements from plant owners or policy requirements. It also factors in any changes to river operations in the Columbia River Basin to account for fish and wildlife requirements defined in the Council's Fish and Wildlife Program.

The next element is to forecast future electric loads. To best capture different load trajectories as well as uncertainty regarding the pace of load growth, the Council typically develops multiple load forecast ranges. After completing a forecast of existing system capabilities and the future load projections, the Council can then determine how to meet future electricity needs with new resources.

The Council develops a suite of new resource options, including a mix of supply and demand side resources. This mix of reference plants and supply curves capture important attributes to the resources, including energy amount, timing, and costs. As part of this, the Council must develop a methodology for determining quantifiable costs and benefits for resources. When applying this methodology, the Council seeks to ensure symmetry across measures and resources to avoid biasing a specific resource.

Once the Council has defined the existing system, forecasted loads, and developed a set of new resource option inputs, scenario modeling can begin. The Council will develop a forecast of WECC-wide market availability and prices and assess needs as defined by the Council's adequacy metrics. This information, along with the inputs, will then inform the scenario analysis that explores a range of potential future risks and policy questions.

Planning Under Uncertainty

Uncertainty is inherent to the Council's power planning process. Every step in the analytical process carries unknowns. New policies, different decisions by resource owners, or new or amended requirements in future Fish and Wildlife programs could result in significant changes to the capabilities of the region's existing power system. This uncertainty also extends to future load forecasts, whose trajectories can shift due to changing policies, economic conditions, or other factors. The cost of new resource options can fluctuate, particularly for those just emerging on the market. The availability and rollout of these resources can be vastly different than anticipated today. To explore and address these uncertainties as best as possible, the Council uses scenario analysis. When taken collectively, the scenarios inform a robust set of recommendations that will guide planning decisions in the face of ambiguity and rapid change that's occurring in the power system.

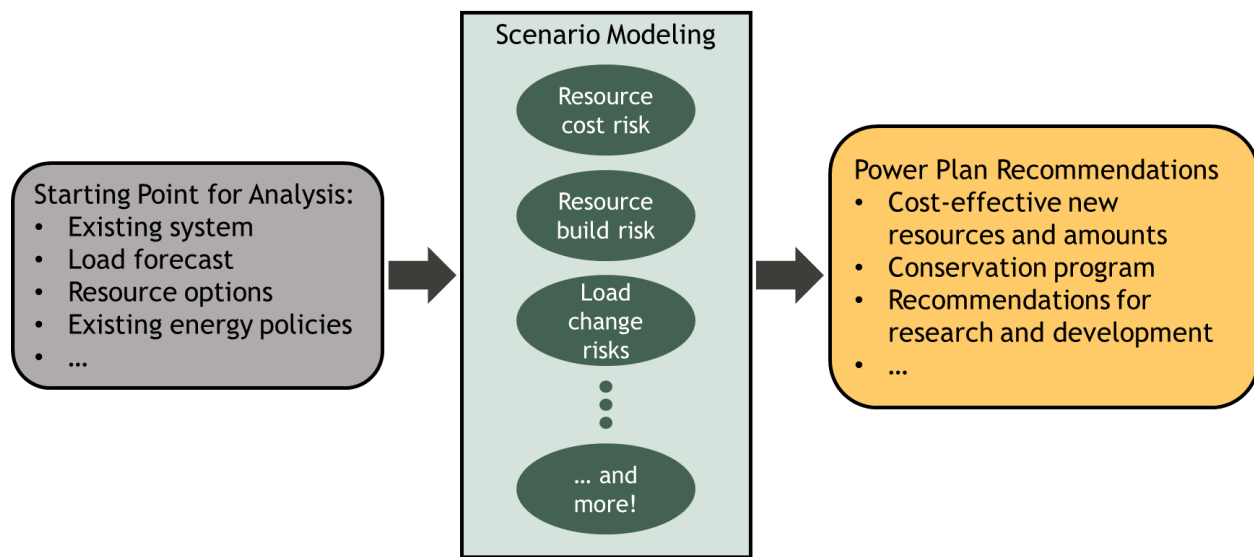


Figure 2: Scenario Modeling Approach

Before scenario modeling can begin, the Council must develop a common set of assumptions and inputs from which it can test different risks and uncertainties. For the ninth plan, the Council is using the frame of a “starting point”. The starting point will represent the Council’s understanding of the existing system and resource options based on the best available data at the time of modeling.⁷ The Council will then use scenario analysis to adjust these assumptions as a means of exploring uncertainty and testing risks. The goal will be to develop a robust, yet well-defined, suite of scenarios that focus on the most critical risks and uncertainties facing the power system ahead. Once the scenario analysis is complete, the Council will consider all the modeling results, as well as any other related studies, to develop a set of recommendations and resource strategy. No one scenario or modeling result will form the basis of this strategy. Rather, the Council will use the collective insights gleaned from all the analysis to develop its final recommendations.

⁷ The Council’s starting point is explicitly not intended to reflect an expected case or reference case from which to compare all other results. It is simply a means of aligning assumptions based on known factors in order to explore the risks from the unknown factors through the scenario modeling.

Proposed Focus of the Council's Ninth Power Plan

The following section outlines the Council's early thinking on potential scope for its ninth power plan. The Council is seeking broad regional input on this proposed framing, which the Council will use to refine the scope.

Timeline

The Northwest Power Act requires that each power plan be reviewed by the Council at least every five years.⁸ It further requires the Council to call for recommendations to amend the Fish and Wildlife Program⁹ prior to the review of the plan, and for the Fish and Wildlife Program Amendment to be completed and adopted prior to the power plan.¹⁰ The Fish and Wildlife Program Amendment is included in the subsequent power plan.

The Council is planning to start its review of the plan in early 2025 with a goal of final adoption by the end of 2026 or early 2027. This timeframe is well within the five-year review cycle and aligns nicely with the Council's Fish and Wildlife Program Amendment process, which is anticipated to start at the beginning of 2025 and is projected to conclude in spring or early summer of 2026.

For the remainder of 2024, the Council's power division is preparing for the plan review process. In addition to scoping out modeling questions and related methodologies, staff will start preparing plan inputs. This includes starting to prepare the load forecasts that will be used in modeling, as well as new resource options. The power division aims to have a draft set of resource options prepared by late 2024, which will be used to support testing and refinement of the modeling tools. The division will also be working on its proposed environmental methodology, an important early input to developing the resource supply curves and reference plants.

⁸ Northwest Power Act, Section 4(d)(1).

⁹ Ibid, Section 4(h)(2).

¹⁰ Ibid, Section 4(e)(3)(F).

In 2025, the Council will officially start the review of the power plan. At this point, the power division will finalize inputs and transition to modeling electricity market prices and conducting a needs assessment. These will feed into the scenario modeling, which the Council anticipates starting in mid-2025 and concluding in early 2026. The scenario modeling results, along with other analysis developed throughout the planning process, will be considered as the Council develops the draft power plan. Currently, the Council is targeting to release a draft of the power plan in mid-2026. This will provide sufficient time for a public comment process and to target completion of the final power plan by the end of 2026 or early 2027.

The Northwest Power Act outlines a clear role for broad public engagement in the Council's power planning and fish and wildlife efforts. To achieve this, advisory committees and regional engagement will be critical through the power plan preparation and review process. Their expertise and guidance will help shape the scope of scenario modeling and inform both draft and final inputs. Engagement in scenario modeling will also be necessary to guide the Council's recommendations. Finally, as the Council works to finalize the plan, it will have a public comment period and hold public hearings in each state to solicit important feedback in shaping the final plan.

Modeling Enhancements

The 2021 Power Plan calls on the Council and the region to revisit models and analytical approaches used in power planning. Tools that were designed to model the power systems in the past are not necessarily the right tools to address questions facing the power system that will be serving the region in the future. To ensure that it's using the best available tools, the Council has been enhancing its modeling suite for the past several years. This started with the Council's hydro operations and adequacy model, GENESYS, which was redeveloped for the 2021 Power Plan and has since been further enhanced and refined. The Council has also identified two new tools to support its load forecasting and regional capital expansion and portfolio optimization modeling. These enhancements will allow the Council to better understand the existing power system dynamics and provide to the region the most robust and useful recommendations as possible.

Load Forecasting

Demand for electricity is rapidly changing across the Northwest. End-uses are electrifying, as more consumers swap out their gasoline-powered cars for electric

vehicles and residences and businesses turn to highly efficient heat pumps for heating and cooling. Large technology corporations have identified the Northwest as an attractive region to locate massive new data centers. To address these dynamic changes, a new tool was needed for end-use load forecasting. After exploring multiple options, the Council selected the Statistically Adjusted End Use (SAE) Forecasting Framework by Itron. The Council is in the process of developing this model, with expected completion in April of 2024. The Council will use this tool, and lessons learned through development, to support the creation of load forecasts for the next plan.

The Itron SAE tool will enhance the Council's ability to study and forecast load on a more granular level. The Council is working with Itron to develop a model that will produce load forecasts at the balancing authority level. This will be informative for evaluating load growth unique to specific geographic areas. The new model will also have an enhanced ability to study the impact of weather conditions, such as temperature and solar conditions on an hourly basis. Another advantage of this new model is the ability to analyze the effect of end-use demand profiles from load sources, such as heat pumps and electric vehicle charging, and their impact on the power system at critical peak times.

Hydro Modeling and Regional Capital Expansion

The Council's GENESYS model evaluates hourly power system operation in the region and is used to assess system adequacy. This model was redeveloped for the 2021 Power Plan and has since been further enhanced and refined. GENESYS is tuned to be a middle ground between an operations and planning tool, providing a detailed understanding of hydropower system operation while utilizing publicly available planning level assumptions. Since the 2021 Power Plan, power division staff has continued to ensure that the model is effectively capturing and prioritizing the many hourly and monthly constraints on the system and have worked with plant operators and planners to assess and refine the model's ability to capture operations at each project. The power division staff has also worked on other enhancements to modeling, including improving the representation of resources outside the region and broadening the risk treatment of resources and loads across the Western Electricity Coordinating Council (WECC) footprint.

In addition to including hourly dispatch of the individual hydro projects, GENESYS currently models 17 zones within the region and 17 that are outside the region with interconnected transmission. This allows the Council to identify and better understand more localized impacts on resource adequacy and system operation, including

transmission constraints. The model also has an understanding of market fundamentals (hourly supply and demand), which allows for a more nuanced assessment of the implications of market reliance by incorporating not only a strict limit on net regional imports, but also allowing for the model to be further constrained when the market is tight.

For the ninth power plan, the Council has added a new tool to its suite called OptGen. This is another product from PSR, the developer of GENESYS. Like GENESYS, OptGen has a more detailed zonal topology. This will allow the Council to understand the locational value of resources and explore trade-offs between transmission development timelines and new resource options. OptGen is an improvement over the Council's previous tool (called the Regional Portfolio Model) due to many modeling enhancements, including OptGen's ability to conduct dynamic reserves accounting as well as represent the costs and risks of proposed portfolios' hourly operational implications.

Throughout 2024, the Council will continue developing and testing the capabilities of these new models. This will allow the Council to refine analytical questions explored through scenario modeling. Collectively, these model enhancements will better position the Council to analyze the dynamic changes in the power system and provide a more robust set of recommendations.

Proposed Ninth Plan Starting Point

The power plan starting point is a common set of assumptions from which the Council can explore various uncertainties. The Council is proposing that the starting point reflect the known elements of the existing system and resource options using the best available data at the start of analysis.

Existing System

For the starting point, the Council needs to establish the capabilities of the existing electricity system. This includes:

- Generating resources known to be in operation or under construction at the start of the plan period
- Owner-announced retirements or conversions of existing generating resources
- Existing transmission

- Planned transmission that has a high likelihood of getting completed in the Council's planning timeframe (e.g. Boardman-to-Hemingway and Gateway West)
- Existing demand-side resources and trajectories, as captured in the Council's frozen efficiency load forecast
- Current hydropower operations, including agreements spelled out in the December 2023 U.S. Government commitments and any updates to operations required by the Fish and Wildlife Program and the Biological Opinion
- Existing market(s) at time of modeling and any similar group (e.g. Western Resource Adequacy Program, balancing reserves groups)

The Council does not plan to include any proposed resources that are not under construction or not committed at the time of finalizing the inputs, or proposed transmission projects that do not appear on track for completion. The Council also does not plan to include any unplanned or unannounced resource retirements or conversion or proposed changes to hydro operations. Any risks or uncertainty around existing system capability may be explored through scenario analysis.

Policies and Regulation

For the starting point, the Council plans to include any existing policies or regulations impacting the power system that it can model. This will include state regulations, existing utility programs and goals (e.g. Idaho Power's clean goals), as well as existing county and city goals in the region. The Council will also include existing federal regulations pertaining to the environmental methodology or informing the costs of resources (e.g. through incentives). The Council will strive to include any out of region existing state, utility, or local policies, programs, regulations, and goals, although this will be done in less detail.

The Council plans to include all policies reflected in the 2021 Power Plan¹¹ (that remain in effect today) and any new policies that have been enacted since the completion of the previous plan. These new policies include:

- Washington Climate Commitment Act
- Washington Clean Fuels Standard

¹¹ The 2021 Power Plan Supporting Materials provides a detailed description of the policies included that will also be factored into the starting point for the ninth power plan: https://www.nwcouncil.org/2021powerplan_existing-policies/.

- Washington Zero Emissions Vehicle Standard
- Washington State Energy Strategy
- Oregon Clean Energy Target Bill
- Oregon Climate Action Program
- Oregon Zero Emissions Vehicle Bill
- Inflation Reduction Act
- Bipartisan Infrastructure Law
- Creating Helpful Incentives to Produce Semiconductors (CHIPS) Act

In the 2021 Power Plan, the Council did not include any announced corporate goals in its analysis, such as those from Meta and Google. The Council is still considering whether and how to treat these types of corporate goals in the upcoming power plan and would welcome stakeholder comments on this specific topic.

The Council does not plan to include any proposed state or federal regulation, or other proposed goals in the starting point. These may be explored through scenario analysis.

New Resource Options

The Northwest Power Act requires that the Council give priority to cost-effective resources. To be considered cost-effective under the Power Act, the resource must be “reliable and available within the time it is needed.”¹² Therefore, the Council plans to focus on commercially available resources and resource conversions, as well as emerging resources reasonably assumed to be available within the power planning horizon. The Council is proposing a robust scenario to explore resource options and risk, described below. This scenario will be the place for the Council to explore the potential role that emerging resources might play in the future power system.

The new modeling tools and capabilities will allow the Council to explore opportunities and trade-offs with transmission build-out. Therefore, the Council is considering how to best analyze and evaluate this in the plan. One option is to include new transmission options, akin to new resource options, that can be selected in the model as part of portfolio optimization. Another option is to use scenario analysis to explore the implications of new resource development, after factoring in these proposed

¹² Northwest Power Act, Section 3(4)(A)(i).

transmission options at specific and different points in the future. The Council is currently exploring modeling capabilities to define a preferred path being mindful of modeling and staff time. The Council welcomes comments on the proposed options.

Weather and Climate Data

In the 2021 Power Plan, the Council used climate change data to inform its load forecasts, hydro operations, wind profiles, and energy efficiency and demand response potential. The Council plans to continue to use this climate change-informed data to model loads and resource options in the plan. The goal is to expand this analysis to address all resources options, including solar profiles, batteries, and natural gas generation, prioritizing those updates that will have the most meaningful impact.

In preparation for the ninth power plan, the power division staff is exploring how well the existing climate change data capture extreme events. This will help inform both the selection of climate change data for the starting point and potential scenario modeling needs. More discussion on the potential scenario analysis is described below.

Proposed Scenario Analysis

Scenario modeling provides the opportunity to explore the uncertainties and risk areas facing the power system. The Council has identified a few potential scenarios. The Council is seeking regional comment on these proposed scenarios, as well as other ideas, to understand regional priorities and align or adjust scenario scoping as needed to best meet those priorities. This early scoping will support modeling and data preparation, and it is expected to ultimately streamline analysis during the power plan review in 2025 and 2026.

Resource and Transmission Risk

One of the most significant areas of risk and uncertainty is around future resource and transmission cost and availability. In previous power plans, the Council explored how resource decisions shift with changes in the availability (or pace) of energy efficiency acquisition. For this upcoming plan, the Council is proposing to expand that to include other demand-side resources, generating resources, and transmission. This will also be an opportunity to explore the impact of changing costs on potential resource selection.

The Council proposes to address the following questions in this scenario:

- How do changing resource costs (increasing or decreasing) and availability of commercially available resources impact the new resource selection?
- For emerging resources, how might different timelines for availability or costs impact the overall resource selection? At what point do certain emerging resources become a viable option?
- How might the timing of different transmission projects impact the resource selection?
- What happens if supply chain constraints continue, transmission projects are delayed, and new emerging resources do not become available within the plan time horizon? How does this impact resource adequacy and the overall cost of compliance with meeting existing carbon policies?

The Council will not have the time to explore every possible iteration of cost and availability changes under this scenario. Rather, the Council proposes defining a set of uncertainties and risks to explore that will provide the most insightful and helpful information. The Council is seeking regional comments on any priority questions to be explored under this scenario.

West-Wide Decarbonization Policy

The proposed starting point described above includes all the existing clean and decarbonization goals and policies, both in-region and across the WECC. While these policies and goals cover a significant portion of the region's population, they vary in their scope and timing. Therefore, the Council is proposing a scenario that will explore the implications of a WECC-wide decarbonization policy. The purpose of this scenario would be to understand potential implications for Northwest resource decisions should there be wide-scale policies or drivers towards decarbonization that significantly increase loads and require carbon-free resources WECC-wide.

The Council must determine the best scope for this potential scenario, including whether it should focus on the power sector or be an economy-wide policy. If the Council pursues exploring an economy-wide decarbonization policy, it will seek to prioritize evaluation and analysis of elements that will have the largest impact on the power sector. The Council welcomes regional comments on potential scoping and priorities for this scenario.

Operational Flexibility

The Council's 2021 Power Plan identified the need for power system flexibility to support the integration of renewables. As renewable energy build-out increases, operational flexibility will continue to be a priority for power system planning. To better understand the potential implications for new resource development, the Council is proposing a potential scenario exploring this flexibility.

The Council expects one key focus of this scenario will be to explore trade-offs with hydropower flexibility. The 2021 Power Plan identified the potential for flexibility in the hydro system to support the daily ramping of renewables. While valuable for integrating renewables, this daily flexing may have negative impacts on fish and wildlife. This scenario could explore the trade-offs between leveraging and limiting the daily flexibility of the hydropower system.

The 2021 Power Plan also identified other system challenges during ramp hours. As resources tend to be uneconomical if only used for short stints of time, the Council's modeling found that there were times during adequacy events when these resources (mostly thermals) were sitting unused on the system. This scenario could explore the overall impact on new resource decisions if a set of resources (either existing or new) are designated to be used to specifically support renewable integration. The Council welcomes feedback on potential questions to be explored in an operational flexibility scenario.

Extreme Weather Stress Testing

By leveraging climate change data to inform loads and resources, the Council will capture many extreme events in its modeling. The power division staff is currently exploring how well the existing set of climate change data captures recent extreme events. Early indications are that many of the recent events experienced in the Northwest are captured within the existing climate change data, including the 2021 summer heat dome and the January 2024 winter event. Once the staff's analysis is complete, the Council will determine how to select climate change data to inform the starting point that ensures extreme events are appropriately captured in the modeling. The Council is also exploring methods for testing wildfire impacts on transmission availability as part of its analysis.

Once the data for the starting point are defined, the Council will determine whether any additional scenario modeling on extreme weather testing is required. Should additional

risk analysis be warranted, the Council is considering a couple of potential approaches. The first would be a scenario that increases the frequency of sampling extreme years as a stress test on the system. A second approach is to use the modeling runs from other scenarios and analysis and conduct a deep dive into how the system performed during specific extreme events. The Council welcomes regional comments on these or other approaches for exploring the risks of extreme weather.

Developing Recommendations to Bonneville

Under the Northwest Power Act, the Council's power plan has a direct connection to the Bonneville Power Administration in guiding its acquisition of new resources. In the 2021 Power Plan, the Council developed a scenario to specifically explore changes to Bonneville's obligation and implications for resource acquisition. For the next power plan, the Council proposes moving away from the approach of a single Bonneville scenario. Rather, the Council will leverage the insights it can draw from its modeling, which will now be able to glean greater insights at the balancing authority level, to inform recommendations relevant to Bonneville. For example, the Council's enhanced load forecasting capabilities will provide the ability to forecast different load trajectories for Bonneville's balancing area, as well as its customer utility balancing areas. These insights, coupled with the information gathered through the scenario modeling, are expected to provide sufficient information for the Council to develop recommendations to Bonneville.

Call for Comments

The Council is releasing this issue paper to stakeholder comment on the Council's early scoping for its next power plan. The Council will consider all comments received to refine the proposed scenario scoping. Throughout 2024, the Council will work to refine the potential scope of the next power plan to support model and data preparation in advance of official review. Stakeholder engagement throughout power plan preparation and development is critical. In addition to encouraging comments during this period, the Council welcomes involvement throughout the planning process. The Council will leverage its existing Advisory Committee structure to solicit regional expertise and perspective and use its public meetings to discuss and refine the analytical questions and inputs.