



Regional
Technical Forum

Regional Technical Forum 2020-2024 Business Plan

Updated for the 2022 Work Plan
Proposed Draft August 31, 2021

Introduction

The Regional Technical Forum (RTF) is an advisory committee to the Northwest Power and Conservation Council (Council). The RTF meets monthly to review analysis and make decisions on methodologies for estimating energy efficiency savings and demand response impacts. The RTF is supported by Council staff and outside contractors that manage the workflow and conduct technical analysis. This document describes the RTF's role, funding, operations and staffing, and planned activities for the 2020-2024 period. It has been updated to reflect refinement in the business plan based on the work completed in 2020-2021 and the anticipated needs for 2022.

Role of the RTF

The RTF was formed in 1999 as an advisory committee to the Council in response to a directive from Congress (1996) and the 1996 Comprehensive Review of the Northwest Energy System. The primary roles of the RTF have been, and continue to be:

- Developing and maintaining a readily accessible list of eligible conservation resources, the estimated lifetime costs and savings associated with those resources, and the estimated regional power system value associated with those savings;
- Establishing a process for updating the list of eligible conservation resources as technology and standard practices change, and an appeals process through which utilities, trade allies, and customers can demonstrate that different savings and value estimates should apply;
- Developing a set of protocols by which the savings and system value of conservation resources should be estimated with a process for applying the protocols to existing or new measures;
- Assisting the Council in assessing: 1) the current performance, costs and availability of new conservation technologies and measures; 2) technology development trends; and 3) the effect of these trends on the future performance, cost and availability of new conservation resources;
- Tracking regional progress toward the achievement of the region's conservation targets by collecting and reporting on regional research findings and energy savings annually.

For the 2020-2024 funding cycle, the RTF will expand upon its core mission to include:

- Developing and maintaining a list of natural gas and dual fuel energy efficiency resources, including methodologies for estimating lifetime energy savings and costs associated with those resources, and a process for updating those estimates as technology and standard practices change
- Conducting technical analysis on technologies that provide both energy efficiency and demand response potential to assist the Council in assessing the technical potential of the technologies



Funding

The RTF is funded by Bonneville, the Energy Trust of Oregon, investor owned utilities, and large generating public utilities in the region. The RTF Policy Advisory Committee (RTF PAC) established funding levels for 2020-2024 based on the planned activities described below in more detail. The proposed funding level for the five-year period is \$9,461,300, starting out at \$1.8 million in 2020 and increasing annually at 2.5% to account for inflation. The five-year funding period provides a level of consistency to ensure long-term goals of the RTF are sufficiently supported, while providing flexibility to meet regional needs on an annual basis.

The RTF PAC agreed to use the allocation method developed by the Northwest Energy Efficiency Alliance (NEEA) for funding. The RTF PAC further agreed to the following methodology for sharing costs across the electric and gas utility funds:

- Electric ratepayer dollars are allocated to work that is intended to solely support electric demand side management programs (ex: electric-only energy efficiency measures and demand response)
- Gas ratepayer dollars are allocated to work that is intended to solely support natural gas programs (ex: gas-only efficiency measures)
- Costs will be shared for work that is intended to support all ratepayers (ex: dual fuel measures, tool development, and overhead) with 75 percent allocated to electric ratepayer dollars and 25 percent to gas ratepayer dollars

The resulting funding shares are as follows:

Table 1: Funding Shares and Five-Year Contribution

Organization	Proposed Funding Share	Total 5-Year Contribution
Bonneville Power Administration	30.03%	\$2,841,100
Energy Trust of Oregon	22.54%	\$2,132,800
Puget Sound Energy	18.99%	\$1,796,500
Idaho Power Company	7.54%	\$713,300
Avista Corporation, Inc	6.78%	\$641,400
PacifiCorp (Washington)	2.08%	\$197,200
PacifiCorp (Idaho)	1.78%	\$168,200
NorthWestern Energy*	1.70%	\$161,000
Seattle City Light	2.86%	\$270,800
PUD No 1 of Clark County	1.02%	\$96,800
Tacoma Power	0.77%	\$73,200
Snohomish County PUD	0.54%	\$51,400
Eugene Water and Electric	0.17%	\$16,500
Chelan County	0.81%	\$76,700
PUD No 1 of Cowlitz County	0.15%	\$14,500
Cascade Natural Gas	1.66%	\$157,000



NW Natural	0.56%	\$52,900
Total	100.00%	\$9,461,300

*NorthWestern Energy share adjusted to 52% of NEEA allocation share.

The RTF PAC agreed to manage the funding as a five-year budget, by applying any unspent and unallocated funds from previous years to later years. At the end of the five-year period, any unspent funds will be credited back to the funders.

In addition to the agreed to funding for this work plan cycle, the RTF PAC considered how best to apply funds that were not spent or returned from the early years of the RTF prior to the implementation of formal funding agreements. The carryover funding from previous cycles totals \$167,732. The RTF PAC agreed to apply these funds to additional work in this 2020-2024 Business Plan cycle for a total five-year budget of \$9,629,032.

Operations and Staffing

The RTF is an advisory committee consisting of 20-30 voluntary members. The Council appoints the membership to ensure a fair balance in technical expertise for successful completion of the work plan. The RTF as a body meets approximately once a month for a full-day meeting at the Council's main office in Portland, OR.

To reduce the burden placed on the voluntary members, the RTF budget supports funding for one full-time manager and contracted technical support. The RTF Manager is a Council employee whose responsibility is to oversee day to day operation of the RTF. This includes developing and managing work plans, managing contracts, developing quarterly and annual reports, and interfacing with the Council. Approximately 10 percent of the RTF budget goes to this function.

The largest portion of the budget (around 60 percent in 2022) supports a team of dedicated contract analysts that conduct the bulk of technical analysis on behalf of the RTF. The RTF transitioned to this team approach from one-off contracts as a way of ensuring greater consistency in analysis across work products and providing flexibility in workflow for achieving annual work plan goals. The 2020-2024 funding levels are sufficient to support up to six contract analysts annually.

The remaining 20 percent of the budget is set aside for specific contracts in support of work plan goals. This work generally falls into one of the following categories: 1) contracting with a firm to act as a third party for quality control review, 2) supporting members attendance at meetings, and 3) expanding the technical capabilities of the team for specific projects or tool development.

Council Contribution

In addition to the funding described above, the Council contributes staff time and office and meeting space to the RTF. From a staffing perspective, the Council contributes a full time RTF assistant who provides day to day support of the operations, as well as a portion of others' time to support technical analysis, contracting and legal assistance, and other administrative tasks. These staff contributions are estimated in the table below. The exact estimates will be updated annually to reflect prior year rollover of funds, application of carryover from previous cycles, and any shifts across categories.



Table 2: Annual Funding Levels

	2020	2021	2022	2023	2024
Contract RFP	\$433,000	\$431,400	\$412,900	\$440,400	\$436,000
Contract Analyst Team	\$1,193,000	\$1,235,200	\$1,295,400	\$1,310,600	\$1,358,700
RTF Manager	\$174,000	\$178,400	\$182,800	\$187,400	\$192,100
Annual Funding	\$1,800,000	\$1,845,000	\$1,891,100	\$1,938,400	\$1,986,800
Council Staff Contribution	\$185,600	\$190,300	\$195,000	\$199,900	\$204,900

Activities and Budget

The specific tasks contained in this business plan are driven by existing measure work, anticipated growth for new measure requests, and expectations for future analysis tied to regional research or planning efforts. The specific work in any calendar year is largely driven by the existing measure needs and any requests received from parties within the region, primarily utilities, Bonneville, the Energy Trust of Oregon, NEEA, and Council staff. The RTF solicits topics from stakeholders through an annual request as part of the work planning and through an online form for proposing new measures. Each year, the RTF typically adjusts the allocation of resources among the categories in its work plan based on requests received, proposals, and the pace of multi-year projects. The RTF notifies the Council and its funders of all significant reallocation of resources or priorities. Table 3 provides an overview of the anticipated allocation of work for the 2020-2024 business plan cycle, and Table 4 provides a detailed breakdown of activities for 2022. Annual changes in Table 3 budgets represent anticipated shifts in work between measure analysis and other analytical support through tools and regional coordination. More details on those shifts are provided below.

Table 3: Strategic Plan Funding, by high level category, excluding Council contribution

Subtotal Funders	2020	2021	2022	2023	2024
Measure Analysis	\$971,000	\$916,300	\$883,500	\$928,400	\$1,029,900
Tools and Regional Coordination	\$275,000	\$360,800	\$425,600	\$413,500	\$345,400
Demand Response	\$50,000	\$51,200	\$52,500	\$53,800	\$55,200
RTF Management/Administration	\$504,000	\$516,700	\$529,500	\$542,700	\$556,300
Total	\$1,800,000	\$1,845,000	\$1,891,100	\$1,938,400	\$1,986,800



Table 4: Proposed 2022 Budget Levels

Category	Contract RFP	Contract Analyst Team and Manager	Total Funder Contribution	Council Contribution	% of total
Existing Measure Maintenance	\$69,000	\$237,000	\$306,000	\$11,250	15%
New Measure Development	\$46,000	\$350,200	\$396,200	\$8,250	19%
Standardization of Technical Analysis	\$25,000	\$165,500	\$190,500	\$0	9%
Tool Development	\$144,500	\$73,500	\$218,000	\$10,500	10%
Regional Coordination	\$283,200	\$130,300	\$413,500	\$22,000	20%
Demand Response	\$24,500	\$36,500	\$61,000	\$10,000	3%
Regional Conservation Progress	\$57,400	\$0	\$57,400	\$45,000	3%
RTF Meeting Support	\$156,000	\$98,500	\$254,500	\$10,000	12%
RTF Management	\$4,000	\$187,000	\$191,000	\$66,500	9%
Total	\$809,600	\$1,278,500	\$2,088,100	\$183,500	100%

As of August 31, 2021, staff estimates between \$225k and \$250k of unspent/unallocated funds from 2020-2021. Additionally, \$167,732 of carryover funds (all electric) from early years of the RTF remain unspent. The primary drivers for unspent funds are:

- Reduction in meeting costs in 2020 due to Covid-19
- Reduction in contract analyst team workflow in 2020 as the team adjusted to Covid-19 impacts
- One contract analyst leaving the RTF mid-year in 2021, resulting in roughly 45 percent of the contract unspent
- Decision not to pursue project on savings shape development in 2021 (\$100k), as it relies heavily on the regional end use load metering and would benefit from a longer metering period to better account for post-Covid-19 “normal”

Included in Table 4, is an increase to the original agreed to amount. This reflects the application of \$197,000 in rollover funds (\$169,875 electric, \$27,125 gas) to work planned for 2022. The additional funds are specifically tagged for contract RFP work and identified in more detail below.

Measure Analysis

Approximately 50 percent of the five-year budget is anticipated to directly support measure analysis. This includes maintenance of the existing measure library, the addition of new measures, and activities associated with ensuring consistency in analysis approach across the entire measure suite.

Existing Measure Maintenance

One half of the measure analysis work is focused on the maintenance of existing measures. The pace of existing measure review and update is driven by the sunset dates of measures.



The RTF assigns sunset dates that range from one to five years based on the specific circumstances of a measure. For example, the RTF typically applies shorter sunset dates for measures in markets that are changing rapidly to keep pace with that change, whereas it applies longer sunset dates to more stable markets and measures. Other factors that will impact sunset dates are anticipated updates to Federal or state codes and standards, updates to ENERGY STAR specifications, or anticipation of new data. The number of anticipated measures sunset or otherwise requiring review in any given year of the funding cycle ranges between 16 and 26 measures. This assumption is in line with the 2015 to 2018 funding cycle, during which time the number of existing measures considered in any year ranged from 15 to 30.

The 2022 work plan assumes updates to 15 of its existing measures. This is driven by the sunset dates of 10 electric measures, four dual fuel measures, and adding gas to one existing dual fuel measure. The work includes measure review and update by the contract analyst team and quality control/quality assurance review by an outside contractor. For 2022, as part of the planned update to air source heat pump measures, the RTF will also conduct a small exploration into why savings estimates for heating measures (electric and gas) do not vary across climate zones.

New Measure Development

The RTF is continually seeking ways to provide value to the region's utilities. As efficiency programs are successful in transforming markets, emerging technologies are going to be important for meeting future efficiency goals. To support this need, the RTF is allocating approximately 15 percent of its five-year budget to assessing new measure opportunities. The estimate of new measure work varies each year, with the anticipation of between six and nine new measures annually. The exact number of measures in any given year is highly uncertain, as it is driven primarily by utilities' needs. For reference, the RTF developed between two and nine new measures in any given year of the 2015 to 2019 funding cycle.

The 2022 work plan assumes development of eleven new measures. There are several potential new measures in the RTF queue, and prioritizing funding on development of these measures will help to expand the RTF library in support of regional efficiency program needs. This assumes six new electric, two new dual fuel, and two new gas measures. This also assumes that the RTF will continue to focus some effort on providing guidance for reliable savings estimation of complex programs.

Standardization of Technical Analysis

The RTF has made attempts over the last several years to improve the consistency of its analysis across measures. Key to this was the development of Operative Guidelines and the establishment of a dedicated contract analyst team to perform the majority of the technical analysis. As part of the 2020 to 2024 funding cycle, the RTF is allocating approximately 15 percent of its five-year budget to ensuring thorough and consistent analysis across all its categories.

The largest portion of this work is to support coordination and review across the contract analyst team. This work primarily takes place in the weekly contract analyst team meeting, during which the team reviews each other's analysis, develops recommendations to the RTF for consideration, and explores new analytical techniques.



Another piece of this work is the maintenance of the RTF Operative Guidelines and its Standard Information Workbook. Due to recent updates to the Guidelines, the RTF is not anticipating additional updates in 2022. There are plans to revisit this document again in 2023. The Standard Information Workbook includes assumptions that are used across efficiency measures, including some assumptions around measure costs. As part of increasing the rigor on RTF measure cost analysis, in 2022 the RTF will pursue a review of all measure costs for consistency and potential updates.

Support of Small and Rural Utilities

The RTF allocates a small portion of its new measure development (\$40,000 annually, plus inflation) to support the needs of region's small and rural utilities. For 2022, this effort will be fully supported through one contract analyst's time. The work includes supporting a standing subcommittee that discusses the applicability of existing RTF measures to small and rural utilities and explores potential refinements to measures to better meet their specific needs. This work also includes the development of new measures of specific interest to small and rural utilities that might not otherwise get developed for the RTF.

Tool Development

The RTF maintains a handful of tools to support measure development, including its cost-effectiveness tool (ProCost) and building simulation models to estimate energy savings. For the 2020 to 2024 funding cycle, the RTF is allocating approximately 7 percent of its five-year budget to this function. The annual funding level varies, as much of the work is tied to other regional efforts. Additionally, the RTF will spend more time on tool development when there are fewer measures requiring update or development.

ProCost

The RTF uses and maintains the Council's cost-effectiveness tool. Given this, the ProCost development work is closely tied to the Council's regional planning cycles. In 2021, the RTF pursued significant updates to ProCost that streamlined code, increased transparency, and improved functionality. The timing was to align with the Council's 2021 Power Plan. With the ProCost updates complete, and the anticipated completion of the 2021 Power Plan in early 2022, the RTF will need to run all measures through ProCost to report out changes in regional cost-effectiveness relative to plan findings. The 2022 work plan assumes a portion of this work will be contracted out to support workbook conversion to new templates. This work will also leverage \$50,000 in rollover funds to support development of a master measure file and process for streamlined updates, which will make it easier for users to find high-level measure information.



Building Simulation Models

The RTF uses building simulation models for estimating energy savings in residential and commercial buildings. Currently, the RTF uses SEEM¹ for modeling residential single family, manufactured homes, and low-rise multifamily buildings and uses EnergyPlus² to model commercial buildings. Much of the efforts in 2020 through 2024 are focused on ensuring that these models are well calibrated to the region’s building stock.

In 2020-2021, the RTF focused on enhancing its commercial EnergyPlus models, leveraging the latest NEEA Commercial Building Stock Assessment for calibration and enabling more robust modeling of building energy. The RTF started using these models for measure analysis in 2021 and plans to continue this work going forward. Use of these models might identify opportunities for additional enhancements in later years, but no focused model enhancement is planned in 2022.

In 2020, the explored alternative modeling tools or enhancements to improve its residential model for energy efficiency and demand response analysis. The outcome was a recommendation to pursue EnergyPlus for at least a portion of the residential work. A primary driver for this recommendation was the capabilities for enhanced demand response modeling and better interactive modeling between energy efficiency and demand response opportunities. In 2021, the RTF contracted with a firm to explore front-end options for EnergyPlus that would best meet RTF requirements. In 2022, the RTF plans to move forward with those recommendations to build out the residential EnergyPlus model to start supporting energy efficiency and demand response work. This includes \$17,000 of applied rollover funds to accelerate this effort (50 percent funded by energy efficiency dollars; 50 percent by demand response).

Another component of building simulation is using weather files to represent weather sensitive loads. For its 2021 Power Plan, the Council updated existing weather files to better reflect future weather resulting from climate change. In 2022, the RTF will explore the differences between these future weather files and current weather file options to inform on potential use in RTF analysis. The RTF also plans to apply \$50,000 in rollover funds to a project that explores the impacts of measure savings and load shapes for weather sensitive measures under current weather, future weather, extreme weather events.

Regional Coordination

The RTF does not have funding for the primary research required to inform its savings analysis. Rather, the RTF relies on Bonneville, NEEA, the Energy Trust, the region’s utilities, and others to conduct this primary research. The RTF has allocated approximately 9 percent of its five-year budget to coordinating with those regional entities to help inform research, identify opportunities

¹ The Simplified Energy Enthalpy Model (SEEM) is developed and maintained by Ecotope. More information, and the latest version of SEEM, can be found on the RTF’s website: <https://rtf.nwcouncil.org/simplified-energy-enthalpy-model-seem>.

² EnergyPlus is a whole building energy simulation program developed by the Department of Energy. The RTF uses and adapts the building prototype models to better reflect buildings in the Pacific Northwest, based on regional data from NEEA’s Commercial Building Stock Assessment.



to leverage that research for RTF analysis, and connect RTF analysis to regional efforts. As with its tool development efforts, the annual workflow varies to better coordinate with regional efforts, while also providing a balance in the RTF workload when there are fewer measures requiring updates or development.

Research Coordination

The RTF’s contract analysts are expected to coordinate with regional entities to help inform regional research. This includes working with specific utilities on defining upcoming research needs that might support RTF measure development and discussing the outcomes of the research to inform measure analysis. As directed by interested research funders, the contract analysts can support coordination of joint research projects funded by utilities in support of RTF analysis.

The RTF also allocates a portion of contract analyst time to help inform regional studies, such as the NEEA stock assessments. The RTF supports contract analyst time for engagement in the Residential Building Stock Assessment work group, which provides guidance throughout the design and implementation of the study.

Market Analysis Review

The RTF, Council, and efficiency programs rely on market intelligence to inform baselines and program design. Over the last several years, Bonneville and NEEA have dedicated more resources to studying markets. During the 2020 through 2024 business cycle, the RTF will allocate resources to engagement in this research. The goal of this effort is to understand available data, provide recommendations on data analysis, weigh in on uncertainty around market factors, and support estimation of total market consumption.

In addition, a portion of the budget in 2022 is allocated to understanding and supporting sub-regional market data analysis, exploring potential data sources and considerations for use in RTF measure analysis. This work started in 2021 with a project exploring the considerations around the secondary market and the potential impact on measure baselines. For 2022, the RTF plans to explore the consideration around varying baselines across the region and potential implementation in RTF measure. Due to the policy questions around these efforts, the RTF staff will seek RTF Policy Advisory Committee feedback on potential implementation of these various baselines.

Savings Shape Development

Over the last few years, the region has increased its focus on understanding when energy efficiency measures save energy to inform how energy efficiency can provide capacity benefits. The RTF reviewed its existing load profiles to understand the relative quality of profiles and where better data are needed to improve our understanding of the timing of savings. The region has also launched residential and commercial end use metering studies to collect more data on energy use. In this business plan, the RTF has allocated resources to using the results of the end use metering studies (and other data sources as available) to develop end use load profiles and measure savings shapes. The bulk of this work is anticipated to occur in the latter half of the funding cycle, as the data come in and in preparation for the Council’s ninth power plan.



In 2022, the RTF is allocating \$50,800 to focus on the development savings shapes. This work will prioritize developing commercial savings shapes, using the commercial EnergyPlus building simulation models. This work will be first piece in enhancing our commercial measure load shape library, which will be expanded in 2023 and 2024 with results from the commercial end use metering work. In 2022, the RTF will also explore potential residential measure shapes that might be updated with available data and tools. The residential work will also continue in 2023, leveraging the home energy use metering.

Council Plan and Other Regional Support

Being an advisory committee to the Council, one of the roles of the RTF is to provide technical support and analysis on energy efficiency measures. Most of this work is directly tied to the Council's power planning efforts. The Council's 2021 Power Plan is anticipated to be completed in early 2022. To that end, the bulk of the analytical work on energy efficiency was complete by the start of 2020. The RTF allocated some time in 2020 to support any additional analytical work required as the Council finishes the development of energy efficiency supply curves. Direct Council planning support then tapers off in 2021 and 2022, ramping up again towards the last two years of the funding cycle as the Council starts preparing for its ninth power plan.

In addition to supporting power planning analysis, the RTF has often been called upon to conduct technical studies on energy efficiency. For the 2020 to 2024 funding cycle, the RTF has allocated funding to support such a study. Staff anticipates that the 2021 Power Plan will call for the RTF to support the valuation of resiliency and flexibility, which will be used in future planning analysis. The plan is to start this work in 2022 with a separate study to focus on each metric.

Additionally, \$80,000 of rollover funds has been included in the 2022 work plan to support a study around refrigerants used in compressor-based equipment. Specifically, this study will have two components (1) understand the implications of recent legislation and provide recommendations of how to include the greenhouse gas impacts in measure cost analysis and (2) explore the efficiency implications of the various refrigerant options.

Demand Response

The RTF has allocated 3 percent of its budget annually to support technical analysis on demand response technologies. The RTF will specifically look at technologies that provide both energy efficiency and demand response opportunities, as a way of leveraging the RTF's existing knowledge and thinking about these opportunities holistically. The RTF analysis will focus on technical considerations of the technologies, estimating the technical, per unit demand impact potential for technologies, absent any specific product design considerations. The purpose of this work is to be one input, of many, into Council and utility demand response supply curves.

The work in the 2020 to 2024 funding cycle builds upon the RTF's scoping effort in 2019. In 2020 and 2021, the focus of the work is on enhancing the RTF's analytical capabilities, including exploring enhancements to existing building simulation models or alternative modeling approaches. As described above, the work in 2022 focuses on building out the residential EnergyPlus model to support enhanced demand response analysis. With this in place, the final two years will be focused on updating its assessment of different technologies.



RTF Management

The final 28 percent of the budget is allocated to management of the RTF, including support for RTF meetings and the RTF Manager. This also includes management of the Council's Regional Conservation Progress survey.

Regional Conservation Progress Report

Per its charter, one of the roles of the RTF is to track the region's progress against the Council's power plan targets for energy efficiency. This is done through the annual Regional Conservation Progress (RCP) survey and report. Every year, the RTF collects data from Bonneville, Energy Trust, NEEA, and the region's utilities on the energy efficiency savings and expenditures from the previous year. The 2020 to 2024 funding cycle allocates \$50,000 annually, plus inflation, to contract out the data collection and analysis. This budget assumes that the RTF Manager, in coordination with the RTF Assistant and other Council staff, will be responsible for compiling the results into a final report for the Council.

Meeting and Member Support

The RTF meets approximately monthly for a one-day meeting. It is at these meetings where the formative work of the RTF occurs. Given the importance of these meetings, the RTF allocates approximately 15 percent of its budget to supporting this function. The most significant portion of this budget is ensuring that all the members and contract analysts are able to attend and participate in the monthly meetings in person. As noted above, the RTF members serve in a voluntary capacity. To ensure that all members can attend the meeting in person, the RTF supports travel costs and participation for some of the members. Additionally, several of the contract analysts have traditionally lived outside of Portland. Part of contract costs for these analysts includes the travel and time for attending the RTF meetings.

The RTF also allocates a small portion of the budget to contract out for meeting minute services, as well as phone lines and web conferencing. Each of these components is important to ensuring that the RTF meetings are publicly available, including to those that are unable to travel or attend a specific meeting.

The 2022 budget assumes that RTF meetings will be a mix of virtual and in person meetings.

Management and Administration

The final 10 percent of the RTF annual budget goes to support RTF management and administration. This is primarily the support of the RTF Manager, who provides the day to day management of the RTF.

