Richard Devlin
Chair
Oregon

Chuck Sams
Oregon

Mike Milburn
Montana

Doug Grob
Montana

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

Guy Norman
Vice Chair
Washington

Patrick Oshie
Washington

Jim Yost
Idaho

Jeffery C. Allen
Idaho

June 2, 2021

MEMORANDUM

TO: **Council Members**

FROM: **Jennifer Light**

SUBJECT: **Regional Technical Forum 2020 Annual Report**

BACKGROUND:

Presenters: Jennifer Light, RTF Manager, and Annika Roberts, RTF Assistant

Summary: The Regional Technical Forum (RTF) submits its 2020 Annual Report to the Council. This report is intended to inform the Council and stakeholders about the RTF's activities in the previous year and to provide a brief preview of the ongoing work in the current calendar year.

2020 marked the first year of a new five-year funding commitment. In this latest cycle of funding, the RTF is continuing to focus on its core efforts of developing consistent and reliable energy savings estimates and methodologies. This work included updating and expanding its efficiency measure library to ensure that it keeps pace with efficiency opportunities across the region. In addition, 2020 marked the expansion of the RTF's work into natural gas energy efficiency measures and demand response activities. This work initially focused on enhancing existing RTF tools to support natural gas measure analysis. The RTF also started an exploration into tools that would enable more robust analysis of demand response technologies in the future.

As with all Council work, the RTF successfully adjusted to an entirely remote workflow. While this created some unique challenges for engaging the 30 person committee in considering the proposed analysis and coming

851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204-1348
www.nwcouncil.org

Bill Edmonds
Executive Director

503-222-5161
800-452-5161
Fax: 503-820-2370

to decisions, the body worked extremely well together making it a successful year. At this meeting, staff will present to the Council on the highlights from 2020 as captured in the Annual Report.

Relevance: The RTF is an advisory committee to the Council. It is funded by Bonneville, Energy Trust of Oregon, and regional utilities. The Council also contributes to the RTF through staff and office and meeting space.

Workplan: B.1.3 Continue to lead the Regional Technical Forum and engage in the development and approval of measure savings estimates and protocols.

Background: Per its charter, the RTF is required to publish an Annual Report by mid-year. The 2020 Annual Report provides work highlights and financials for the 2020 calendar year. It also provides a preview of progress made to date in 2021.

RTF 2020 Annual Report

Jennifer Light and Annika Roberts

June 9, 2021 Council Meeting

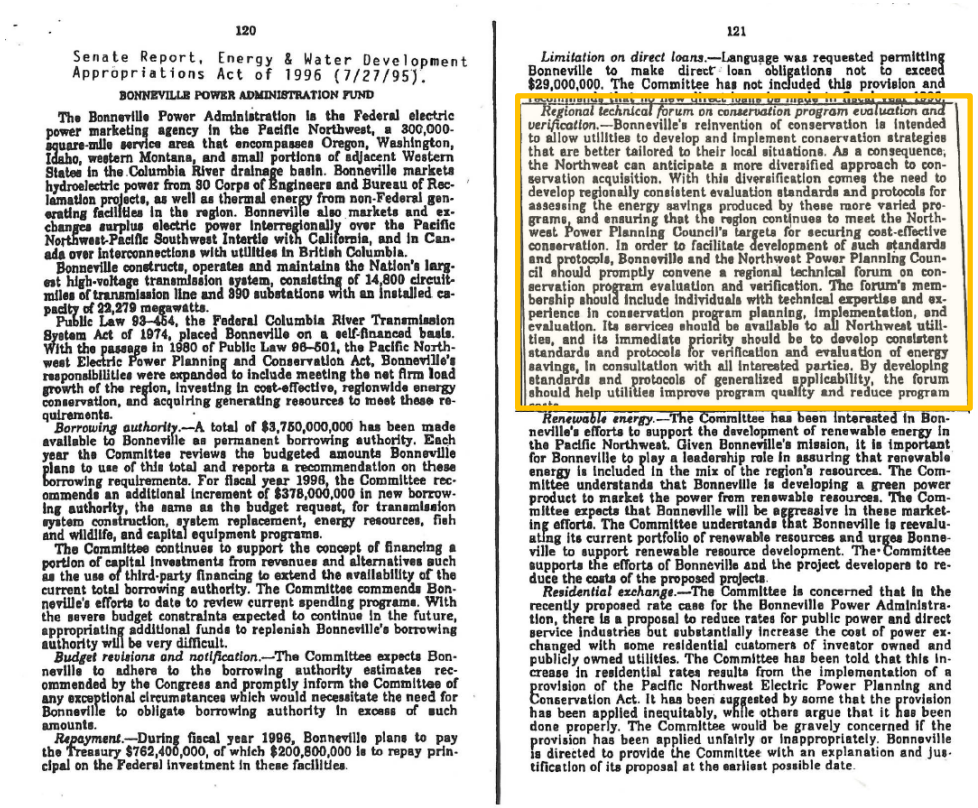
Presentation Overview

- Background on the RTF
- 2020 Highlights
  - Expanded measure library
  - Kicked off natural gas work
  - Provided technical support for the 2021 Power Plan
  - Continued to explore ways to expand value
- 2020 Financials

ABOUT THE RTF

Formation of the RTF

- 1995: BPA shifted responsibility for acquisition of conservation to its utility customers
- 1996: Congress directed Bonneville and Council to convene a Regional Technical Forum* to:
  - Develop standardized protocols for verifying and evaluating conservation savings
  - Ensure region meets Council's conservation targets
  - Include individuals with appropriate technical expertise
  - Ensure services are available to all NW utilities
- 1998: Northwest Governor's Comprehensive Review expanded the mission
- 1999: Council formed the Regional Technical Forum as an advisory committee to the Council



120

Senate Report, Energy & Water Development Appropriations Act of 1996 (7/27/95).

BONNEVILLE POWER ADMINISTRATION FUND

The Bonneville Power Administration is the Federal electric power marketing agency in the Pacific Northwest, a 300,000-square-mile service area that encompasses Oregon, Washington, Idaho, western Montana, and small portions of adjacent Western States in the Columbia River drainage basin. Bonneville markets hydroelectric power from 30 Corps of Engineers and Bureau of Reclamation projects, as well as thermal energy from non-Federal generating facilities in the region. Bonneville also markets and exchanges surplus electric power interregionally over the Pacific Northwest-Pacific Southwest Intertie with California, and in Canada over interconnections with utilities in British Columbia.

Bonneville constructs, operates and maintains the Nation's largest high-voltage transmission system, consisting of 14,800 circuit-miles of transmission line and 390 substations with an installed capacity of 22,279 megawatts.

Public Law 93–454, the Federal Columbia River Transmission System Act of 1974, placed Bonneville on a self-financed basis. With the passage in 1980 of Public Law 96–501, the Pacific Northwest Electric Power Planning and Conservation Act, Bonneville's responsibilities were expanded to include meeting the net firm load growth of the region, investing in cost-effective, regionwide energy conservation, and acquiring generating resources to meet these requirements.

Borrowing authority.—A total of $3,750,000,000 has been made available to Bonneville as permanent borrowing authority. Each year the Committee reviews the budgeted amounts Bonneville plans to use of this total and reports a recommendation on these borrowing requirements. For fiscal year 1996, the Committee recommends an additional increment of $378,000,000 in new borrowing authority, the same as the budget request, for transmission system construction, system replacement, energy resources, fish and wildlife, and capital equipment programs.

The Committee continues to support the concept of financing a portion of capital investments from revenues and alternatives such as the use of third-party financing to extend the availability of the current total borrowing authority. The Committee commends Bonneville's efforts to date to review current spending programs. With the severe budget constraints expected to continue in the future, appropriating additional funds to replenish Bonneville's borrowing authority will be very difficult.

Budget revisions and notification.—The Committee expects Bonneville to adhere to the borrowing authority estimates recommended by the Congress and promptly inform the Committee of any exceptional circumstances which would necessitate the need for Bonneville to obligate borrowing authority in excess of such amounts.

Repayment.—During fiscal year 1996, Bonneville plans to pay the Treasury $762,400,000, of which $200,800,000 is to repay principal on the Federal investment in these facilities.

121

Limitation on direct loans.—Language was requested permitting Bonneville to make direct loan obligations not to exceed $29,000,000. The Committee has not included this provision and

Regional technical forum on conservation program evaluation and verification.—Bonneville's reinvention of conservation is intended to allow utilities to develop and implement conservation strategies that are better tailored to their local situations. As a consequence, the Northwest can anticipate a more diversified approach to conservation acquisition. With this diversification comes the need to develop regionally consistent evaluation standards and protocols for assessing the energy savings produced by these more varied programs, and ensuring that the region continues to meet the Northwest Power Planning Council's targets for securing cost-effective conservation. In order to facilitate development of such standards and protocols, Bonneville and the Northwest Power Planning Council should promptly convene a regional technical forum on conservation program evaluation and verification. The forum's membership should include individuals with technical expertise and experience in conservation program planning, implementation, and evaluation. Its services should be available to all Northwest utilities, and its immediate priority should be to develop consistent standards and protocols for verification and evaluation of energy savings, in consultation with all interested parties. By developing standards and protocols of generalized applicability, the forum should help utilities improve program quality and reduce program

Renewable energy.—The Committee has been interested in Bonneville's efforts to support the development of renewable energy in the Pacific Northwest. Given Bonneville's mission, it is important for Bonneville to play a leadership role in assuring that renewable energy is included in the mix of the region's resources. The Committee understands that Bonneville is developing a green power product to market the power from renewable resources. The Committee expects that Bonneville will be aggressive in these marketing efforts. The Committee understands that Bonneville is reevaluating its current portfolio of renewable resources and urges Bonneville to support renewable resource development. The Committee supports the efforts of Bonneville and the project developers to reduce the costs of the proposed projects.

Residential exchange.—The Committee is concerned that in the recently proposed rate case for the Bonneville Power Administration, there is a proposal to reduce rates for public power and direct service industries but substantially increase the cost of power exchanged with some residential customers of investor owned and publicly owned utilities. The Committee has been told that this increase in residential rates results from the implementation of a provision of the Pacific Northwest Electric Power Planning and Conservation Act. It has been suggested by some that the provision has been applied inequitably, while others argue that it has been done properly. The Committee would be gravely concerned if the provision has been applied unfairly or inappropriately. Bonneville is directed to provide the Committee with an explanation and justification of its proposal at the earliest possible date.

*Senate Report 104-120 – Energy and Water Development Appropriations Bill, 1996

Who Actually is the RTF?

- RTF consists of 20-30 individuals representing a range of technical expertise and perspectives
  - Engineers, evaluation experts, program implementers, etc.
  - Public utility, IOUs, national labs, etc.
- Meet monthly to consider analysts' recommendations and make decisions
- Do not represent their organization, but rather individual expertise
- Appointed by the Council every three years

Who Supports the RTF?

Council Staff


- Manage the day to day of the RTF
- Provide a connecting role between the Council, RTF, and RTF PAC
- Chair the committee
- Provide contracts, administration, finance, and other technical support

Contract Analyst Team



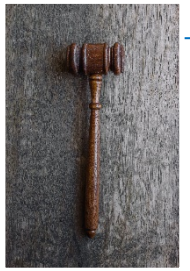




- Competitively bid contract positions
- Provide analytical support, work with subcommittees, and develop recommendations for RTF consideration

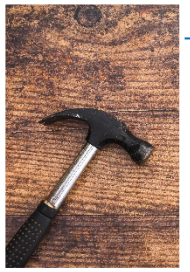
What Does the RTF Do?

Develops and maintains measure library with savings, lifetime costs, and estimated value to power system



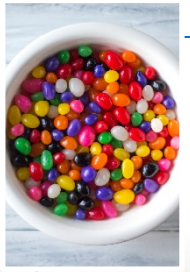
Has an established process for updating measures and an appeals process for demonstration of different values

Analyzes the demand response potential of technologies that also provide energy efficiency



Maintains tools that support analysis of EE and DR opportunities for RTF/Council work, as well as utility programs and NEEA

Provides analytical support to the Council in assessing EE measures, DR technologies, technology trends, etc.



Conducts the annual Regional Conservation Progress survey on behalf of the Council to track regional progress against Council goals

Who Uses the RTF Work?

RTF work is publicly available for use by all stakeholders in the NW (and nationally)

- Utility programs use the data to support planning, implementation and evaluators
- Regulators value the wide review and unbiased perspective, and often encourage use of RTF measures where practical
- Evaluators reference RTF measures for understanding analysis assumptions and methods for savings

Open and transparent

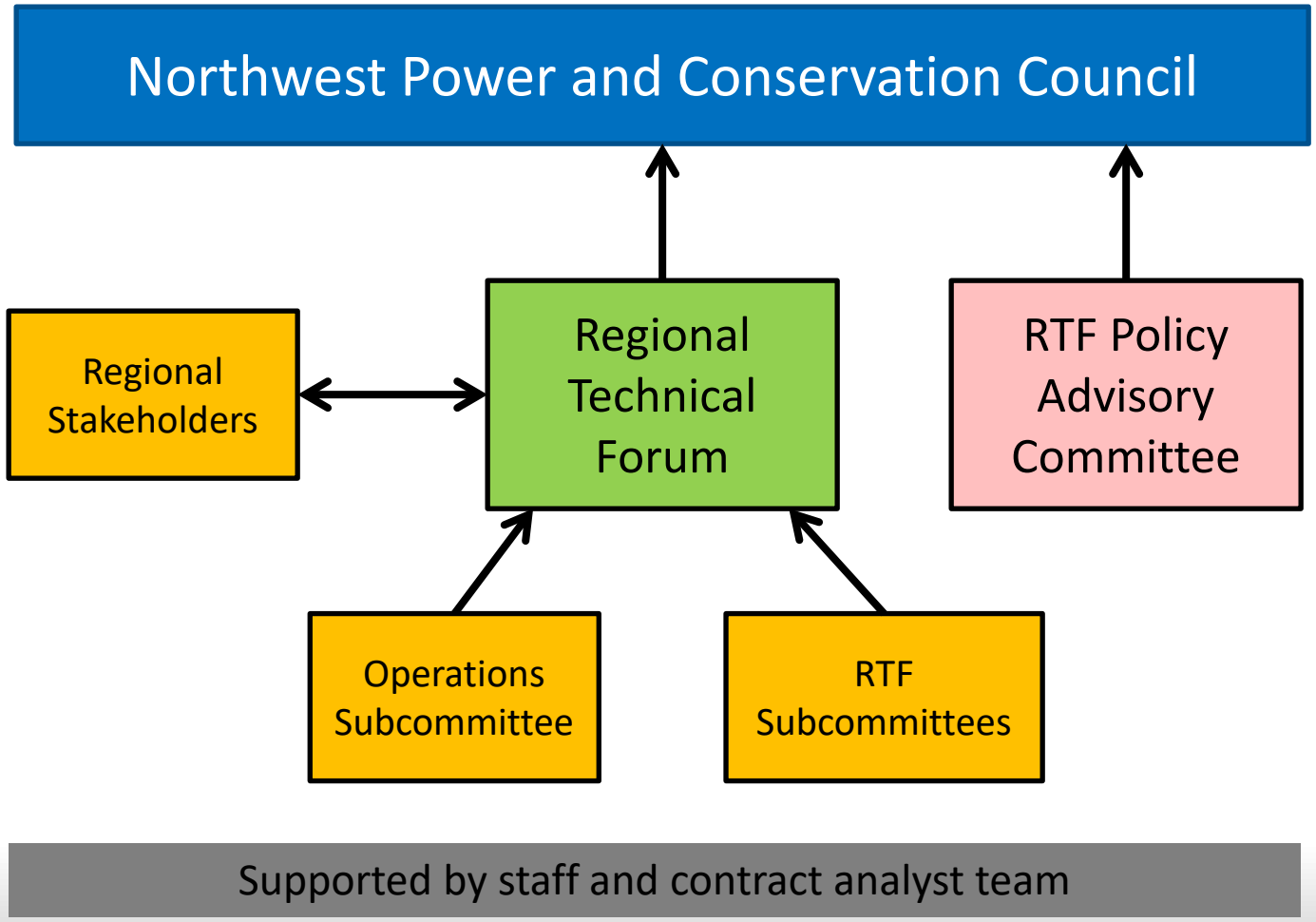
Developed through peer review

Leverages economies of scale

Where Does the Funding Come From?

- RTF is funded by BPA, Energy Trust of Oregon, and regional utilities
  - Council also supports RTF through staff, office/meeting space, etc.
- RTF Policy Advisory Committee consists of funders and other key organizations to advise the Council on policy and scope considerations around the RTF
- Committee also is responsible for securing funding for RTF

Organization of RTF and RTF PAC



HIGHLIGHTS FROM 2020

Expanding the RTF Measure Library

- Pumps and Fans System Improvements
  - Many of these measures are being picked up in the baseline conditions of the plan as relatively low cost EE
  - New data from NEEA's extended motor products initiative improved RTF analysis
- Residential Air Conditioning
  - First measure focused on residential cooling
  - Cooling has been an important measure for summer peaking utilities, but a warming climate has the rest of the region seeing increased demand for this equipment as well

Launching Natural Gas Work

- Launched natural gas analysis work in 2020
  - RTF has included natural gas savings estimates in many existing measures
  - Expanded scope allows for RTF to provide the same level of rigor to natural gas estimates as electric
- Enhanced existing modeling infrastructure to better accommodate gas analysis
- Engaged new Natural Gas Subcommittee to prioritize gas work

Supporting the 2021 Plan Development and Future Implementation

- RTF provides an important role in supporting power plan analysis around EE and DR
  - EE measures and technical analysis on DR fed into supply curve development
  - Analysts supported staff in developing efficiency inputs beyond those readily available at RTF
  - RTF provided feedback on technical questions around the efficiency analysis
- Staff anticipates several action items directed to the RTF to support implementation of the plan

Continuing to Provide Regional Value

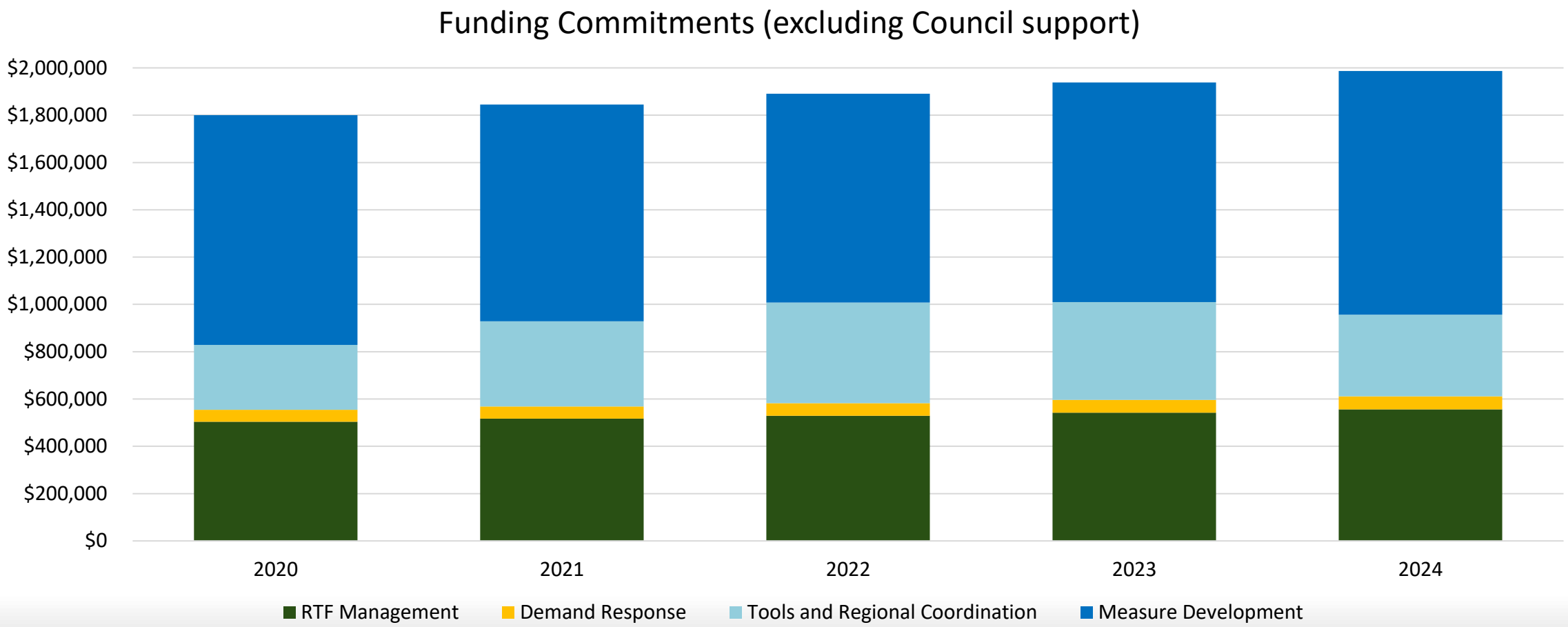
- Historic role of the RTF to develop measures where savings are consistent across applications
  - Ex. Lightbulbs, refrigerators etc.
- Less of these low-hanging, easy measures are available to the region as we achieve more EE and markets get transformed
- As the world of EE gets more complicated, the RTF will have to adapt and look to more targeted, custom or site-specific opportunities

2020 FINANCIALS

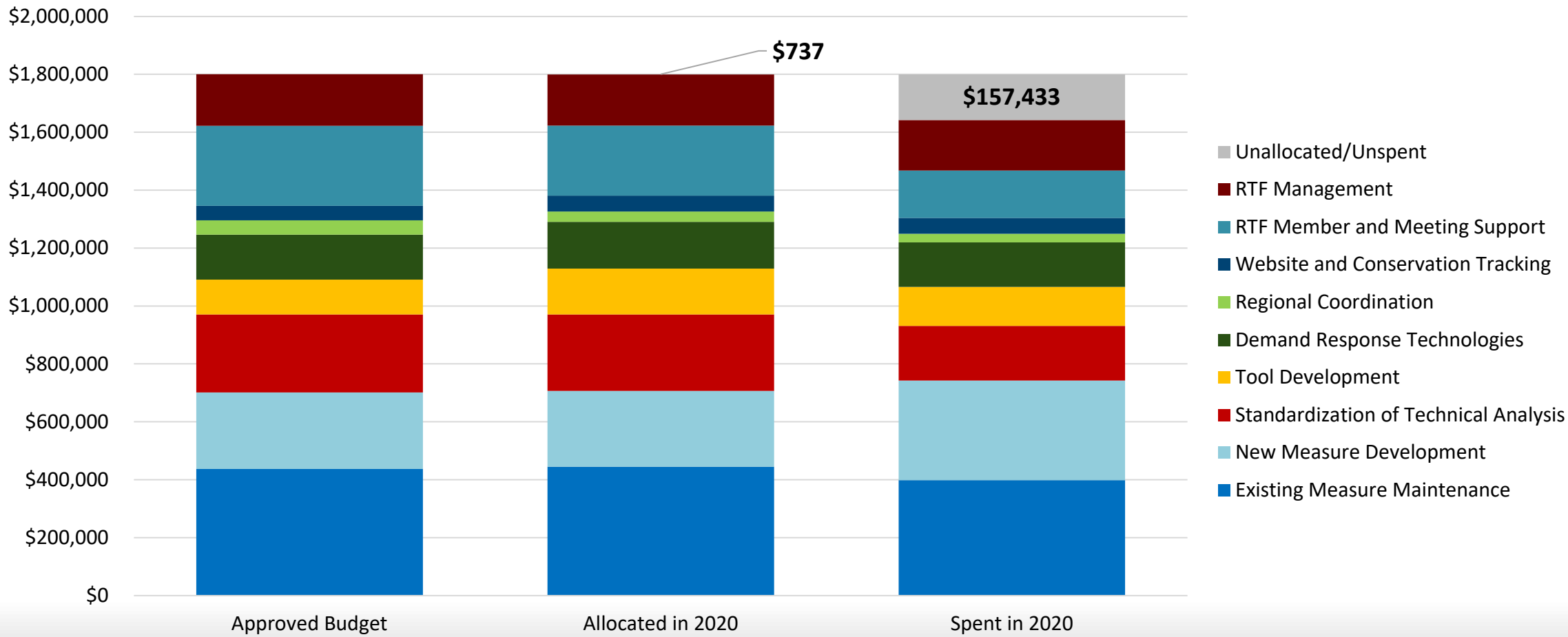
Current Funding for the RTF

- In 2019, the RTF Policy Advisory Committee secured new five-year funding commitments for the RTF
- Added new funding sources:
  - Two new electric utilities
  - Natural gas efficiency programs
  - Portland General for DR activities
- Budget levels were developed based on ensuring core needs of library maintenance and addition of a few projects intended to support regional programs
- Funders agreed to managing the funding as a 5-year budget, allowing unspent funds to rollover to future years within this cycle

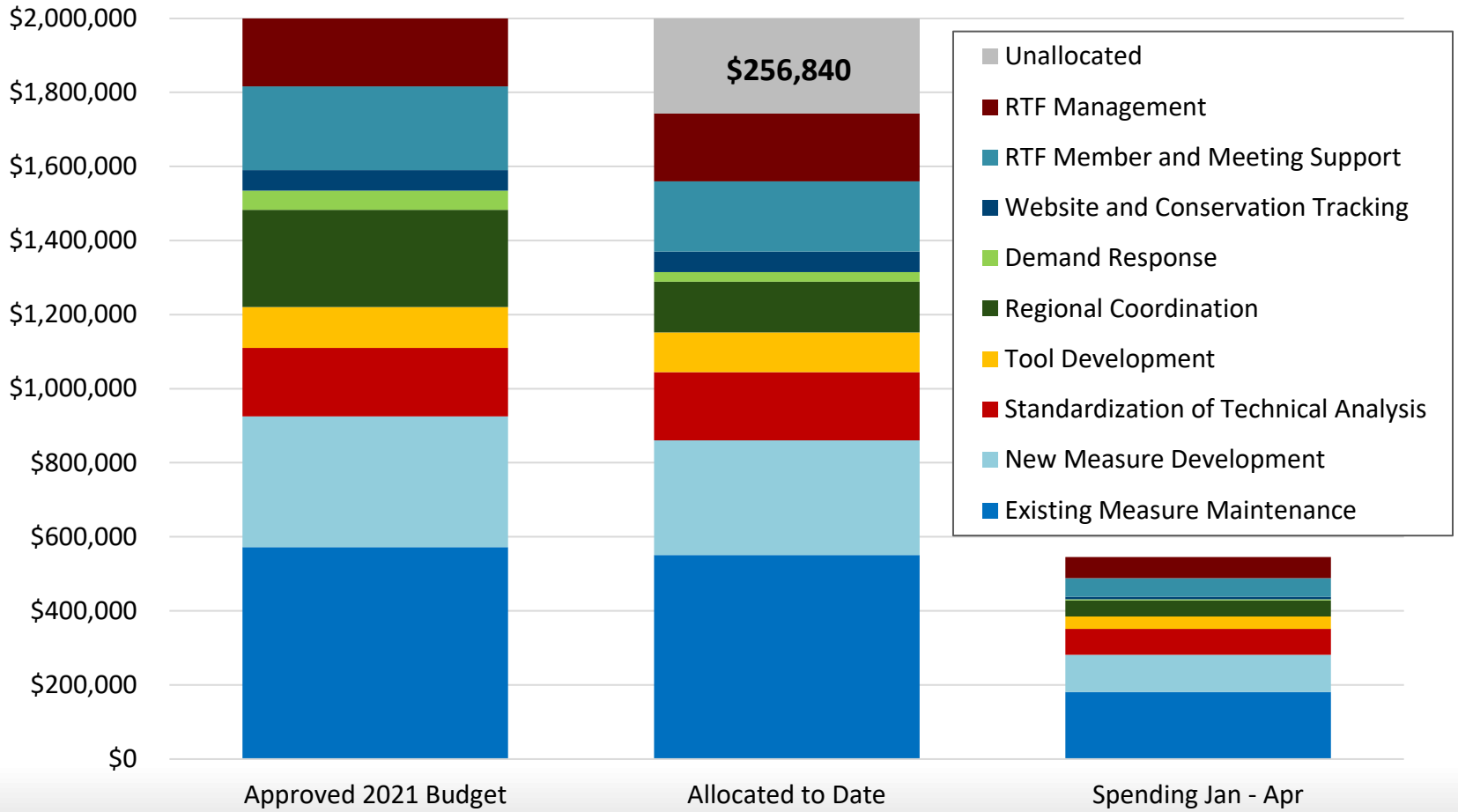
2020-2024 Funding Levels



2020 Year End Financials



2021 Funding and Spending To Date



- More work planned, but do not anticipate allocating all funds in 2021
- One significant project put on hold due to COVID
- Spending for allocated contracts on track

Questions

Regional Technical Forum
2020 Annual Report

Regional Technical Forum

Northwest Power and Conservation Council

Letter from the Council Chair

On behalf of the Council, I'm pleased to present the Regional Technical Forum's 2020 Annual Report.

The Regional Technical Forum—RTF for short—is the indispensable group of technical experts who make it possible for the region's utilities to meet the energy efficiency goals set forth in the Council's regional power plan. You might say, they help us overcome the technical roadblocks on the path to the secure, reliable, and clean energy system envisioned by the Northwest Power Act.

This past year was one of unprecedented challenges, and yet the RTF moved forward on many fronts: updating the region's library of energy efficiency measures; expanding its expertise to help improve the efficiency of natural gas use; addressing new areas of importance like air conditioning as the climate warms; and supporting the development of the Council's regional power plan—to name a few.

And let's be sure to note the long-term fruits of their labors, too. Since 1978, the region has saved almost 7,000 average megawatts of energy and avoided emitting over 22 million metric tons of carbon dioxide into the atmosphere. To be sure, this is the result of many points of effort, but the dedicated collaborative work of the RTF cannot be overstated.

There is much more detail to discover, and I hope you'll take the time to peruse this review of their past year's work. We all benefit from this dedicated network of professionals and I offer my appreciation for a job well done.

Richard Devlin, Chair
Northwest Power and Conservation Council

Letter from the RTF Chair

I doubt anyone will dispute that 2020 was a challenging year. But reflecting on what we've accomplished at the RTF, despite all the barriers and complications 2020 has thrown at us, I am left feeling grateful for all the good work we've been able to do and all the great people we've been able to do it with. The RTF members and our many stakeholders have been endlessly flexible and patient as we figured out how to keep working outside our normal format, and they have maintained the same engagement and passion for the work in a year when it would have been easy to let things slip. As Chair, I've felt lucky to witness the care and attention this body brings to every new technical challenge it faces.

We started the year with a new funding cycle, with new funders and new work, most notably in the area of natural gas. Then in March, like the rest of the world, we had to adapt to wholly unexpected challenges. We were able to transition to a virtual format, quickly figuring out the most productive way to use our time and make our meetings accessible to members who were also operating from home. And while we miss meeting around our big circle of tables with the finicky microphones, we've been able to accomplish the full extent of our work plan, and then some, thanks to the dedication of our members, contract analysts, and stakeholders.

Having been an advisory body to the Council for 21 years now, the RTF has maintained its original mission while broadening its scope to help fill the evolving needs of the region. We've worked to maintain our current suite of measures, drawing on new regional data and research to keep our products current, added new measures, striving to remain responsive to regional needs, and worked to expand our core competencies in an effort to provide value beyond simple unit energy savings workbooks. Recognizing that the world of energy efficiency is becoming more complex, and that many of the easy opportunities have been tackled, we want to adapt to that world and continue to support the region's conservation programs as best we can.

At the publishing of this report, the RTF's 2021 is already in full swing. With the impending publishing of the Council's regional power plan, the RTF has also been lending its technical expertise to support its conservation staff as needed and is poised for any recommended actions that will come out of the final plan. We've otherwise been staying the course, developing and updating measures, and providing the region with reliable, impartial energy savings estimates. We're already enjoying this RTF member class's third year, and we are looking forward to capitalizing on their expertise for the final year of their term.

Over the following pages of this annual report, we'll review and celebrate everything the RTF accomplished over 2020 and look forward to what we can do in 2021.

Introduction

In 1980, Congress passed the landmark Northwest Power Act, which formed the Northwest Power and Conservation Council, an interstate compact among Washington, Oregon, Idaho, and Montana. The Act charges the Council with ensuring that the region has an adequate, efficient, economical, and reliable power system. It does this by developing a 20-year power plan, reviewed every five years. This regional collaboration has become a model to the rest of the nation for meaningful, effective power planning.

Energy efficiency has been a cornerstone of the Council's work since its inception. The Act defines energy efficiency as a resource and requires the Council to prioritize cost-effective conservation over all other resources in its power planning. Due to this emphasis on energy efficiency, it is now the region's second largest resource after hydropower. Over the past four decades, utilities, program implementers, and countless other engaged stakeholders have been integral to this success, utilizing energy efficiency's potential to help meet regional load, reduce customer costs, cut power sector carbon emissions, and improve system reliability.

The Regional Technical Forum was created as an advisory committee to the Council in 1999 to support these regional efforts by developing and maintaining a list of eligible energy efficiency resources. A goal was to create a library of energy efficiency opportunities that outline reliable and consistent ways of estimating energy savings. This is intended to ease the planning and evaluation burden of energy efficiency programs in the region. As a technical body, the RTF can objectively generate peer-reviewed energy savings estimates through robust and unbiased analysis in a public forum. The RTF engages stakeholders from across the Pacific Northwest, and from all sectors of the energy efficiency industry, to ensure that the work they produce speaks directly to the region's needs. This commitment to collaboration informs all the RTF's work and results in widely respected technical analysis that is looked to for its accuracy, reliability, and consistency.

The following report details the RTF's many accomplishments in 2020. This includes maintaining and updating their measure library, expanding into natural gas analysis, looking for opportunities to provide new value to the region beyond the traditional energy savings by unit, and supporting the Council's Regional Power Plan. As the world of energy efficiency becomes more complex, the RTF looks forward to continuing its role in supporting the region's conservation achievements.

Accomplishments in 2020

Adding to the RTF Library of Measures

One of the central tenants of the RTF's mission is to ensure that its library of measures is up to date with opportunities of greatest importance to the region. To support this, the RTF allocates a portion of every year's work plan to expanding the measure library. Here are some highlights from 2020:

Residential High Efficiency Central Air Conditioning

The RTF's first cooling focused measure, installing a new high efficiency single-speed or dual-speed central air conditioner, was adopted by the RTF in early 2020. For summer-peaking utilities in the warmer parts of the region, efficient cooling has always been an important measure. As the climate warms, the rest of the region is now starting to see increased demand for this equipment as well. These increased cooling loads, and the promise of warmer summers to come, has prompted the RTF to look at efficiency opportunities for this market.

Currently, from a regional perspective, this measure is not cost-effective, primarily because the energy savings occur in the summer rather than the winter when there is a regional power need. However, for summer-peaking utilities, this measure is likely to have greater value. It may become more important regionally, as the region shifts to greater summer loads. Because summer cooling has

not been a large priority across the region, much less is known about the actual loads on the system. Additionally, not much work has been done to understand how different air conditioning units perform in the Northwest. Given these unknowns, the RTF recognizes this uncertainty and encourages regional research. The RTF will revisit this measure when there is more data.

Pump and Fan System Improvements

Thanks to some great work coming out of the Northwest Energy Efficiency Alliance around efficient motor-driven pumps and circulators and their extended motor products (XMP) program, the RTF was able to improve existing analysis and adopt new measures. The RTF library includes four different measures related to this work: 1) efficient pumps used in commercial and industrial system; 2) circulating pumps that are used in home or commercial settings; 3) fans used in commercial and industrial systems; and 4) variable frequency drives that can be added to the large pump or fan systems for improved efficiency.

NEEA's research enabled the RTF to update the hours of use, the baseline assumption, and pump efficiency index measure identifiers. The RTF was also able to use the research to update other assumptions to provide a more representative estimate of power consumption. With these updates, the RTF has deemed the measure savings reliable and not in need off additional research at this time.

The RTF also updated the circulator pumps measure for hydronic heating and cooling and domestic water recirculation using the new NEEA research. The RTF still considers these savings to be uncertain and hopes the region will conduct additional research to inform the analysis.

NEEA's XMP work also enabled the RTF to approve two new measures, variable speed drives and commercial and industrial fans. First, they approved the fans measure, which encompasses the purchase of an efficient commercial or industrial efficient standalone fan. Savings depend on fan type, drive type, speed control, and the fan system's efficiency rating. Because efficient fans have a relatively small increase in cost compared to the alternative, the fans measure is very cost-effective. There are still questions about how fans are sized for actual loads, the operating hours of fans, and the variability of loads.

The RTF has approved an analytical approach to answer these questions.

Later in the year, the RTF approved a new measure for variable speed drives focused on pump and fan system applications designed with mid-stream programs in mind—those programs targeting distributors of the equipment, rather than working with the facilities themselves. The measure refers to the installation of variable speed motor controls on a fan or pump where variable speed controls are not required by code. These controls can be either standalone drive or integrated with the measure. Savings for this measure are highly variable and depend on application, usage patterns, hours of use, and current practice. The RTF believes this is a promising measure that requires new data to improve its savings estimates. It plans to review this measure again next year.

Launching the Natural Gas Work

2020 marked the first year of the RTF's expanded scope in natural gas analysis. Before tackling specific measure analysis, the RTF had to update the infrastructure and tools to ensure the analysis would be comparable to the analysis on the electric side. The RTF created a natural gas subcommittee to ensure the work aligns with industry needs. This subcommittee met several times through 2020 to review the gas work before it was presented to the RTF. The group provided valuable insight and helped the RTF determine which dual-fuel and gas-only measures would be most useful to their utilities and programs.

The RTF uses a building simulation model to help estimate energy savings for weatherization and heating measures. As the RTF's work before this year has been primarily focused on electrically heated homes, the model was calibrated to focus on electric measures. With the introduction of natural gas, the RTF needed to update the model to ensure it could provide useful outputs for gas-heated homes. The RTF was able to use NEEA's Residential Building Stock Assessment, which had a good sample of

gas-heated homes, to update the model for weatherizing gas homes and any future gas heating equipment measures.

The RTF also updated its tools for characterizing the costs and benefits of conservation measures and programs to accommodate natural gas analysis. Since there is no regional power plan for natural gas efficiency, the RTF needed to find another approach to represent regional cost-effectiveness. Rather than relying on a single regional study, the RTF used findings from utility specific cost-effectiveness studies to provide a reasonable approximation of value regionally.

Once the tools were updated, the RTF updated existing dual-fuel measures and adopted its first gas-only measure, the commercial boiler systems standard protocol. This new measure was built with support from the natural gas subcommittee and supports programs by reliably estimating savings for boiler systems more accurately. It includes seasonal efficiency, estimates of loads and load shapes by building type, area of the building served, end use, and applies to both space heating and water heating. The RTF made several assumptions about how boiler efficiency will respond to overall system design based on known parameters, including understanding how multiple boilers are used together in the system. Future evaluations are expected to help improve these assumptions and additional research may be needed. The RTF may consider other boiler systems efficiency opportunities like distribution system upgrades should there be sufficient interest.

The RTF has several gas-only measures in its 2021 work plan including Residential Gas Water Heaters and Residential Gas Furnaces and intends to expand its natural gas work in the coming years

Beyond Unit Energy Savings

As the world of energy efficiency evolves, the RTF could provide value on savings reliability beyond the unit energy savings. This year,

the group took several steps to broaden its analysis and foresees continuing this work into the future.

Traditionally, the RTF spends most of its time updating UES—measures whose average savings by unit are stable and can be reliably forecast. The RTF also develops another kind of measure, standard protocols, which have widely varying savings that are more site specific but where data collection and analysis can be standardized. For example, the RTF would produce a UES measure for a refrigerator because it is going to save roughly the same amount of energy no matter where it goes.

On the other hand, for something like a boiler system, the RTF chose to develop a standard protocol because the savings will be very different based on site-specific factors. Standard protocols can be slightly more involved and require more resources from the program perspective but are necessary if a measure cannot produce reliable and stable average savings. In 2020, the RTF updated a few standard protocols, but as markets transform and the world of energy efficiency opportunities become more complex, the RTF anticipates relying more on site-specific work products.

The RTF also updated its guidelines to improve guidance to utility programs for estimating savings on custom projects where savings need to be estimated per site. In 2021, the RTF is looking to expand this guidance for specific custom projects, starting with strategic energy management. The RTF is planning to build on the general guidance with information that will be particularly useful for estimating energy savings from these types of programs. This will hopefully develop into another way for the RTF to provide value to the region.

Supporting the Council's Power Plan Analysis

In 2020, the Council began developing its regional power plan, slated to be completed in 2022. As a technical advisory body to the Council, the RTF provides analytical assistance to the Council on energy efficiency and demand response. The RTF spent much of the first quarter of 2020 supporting Council staff in developing efficiency inputs for the upcoming plan, with several contract analysts providing direct analytical help on specific measures as needed.

Preliminary plan findings show a different world than the last plan, especially for energy efficiency. Renewable resources, which are both inexpensive and can turn on and off with system needs, are being built to quickly lower carbon emissions. It is a much tougher competitive space for energy efficiency. The RTF is often given specific guidance from the power plan that directs future RTF work. Historically, these action items have included addressing findings from the analysis, supporting implementation of the conservation programs or improving technical understanding of energy efficiency. The new picture of conservation that the plan is painting might mean these actions will be different than they have been in the past. Regardless, the RTF is ready to take on the work required by the region.

Regional Conservation Achievements

In its charter, the RTF is tasked with annually surveying the region's utilities, Bonneville Power Administration, NEEA, and system benefit charge administrators like Energy Trust of Oregon on their efficiency achievements. These data are compiled into the Regional Conservation Progress Report and presented to the Council and the region

Subcommittees

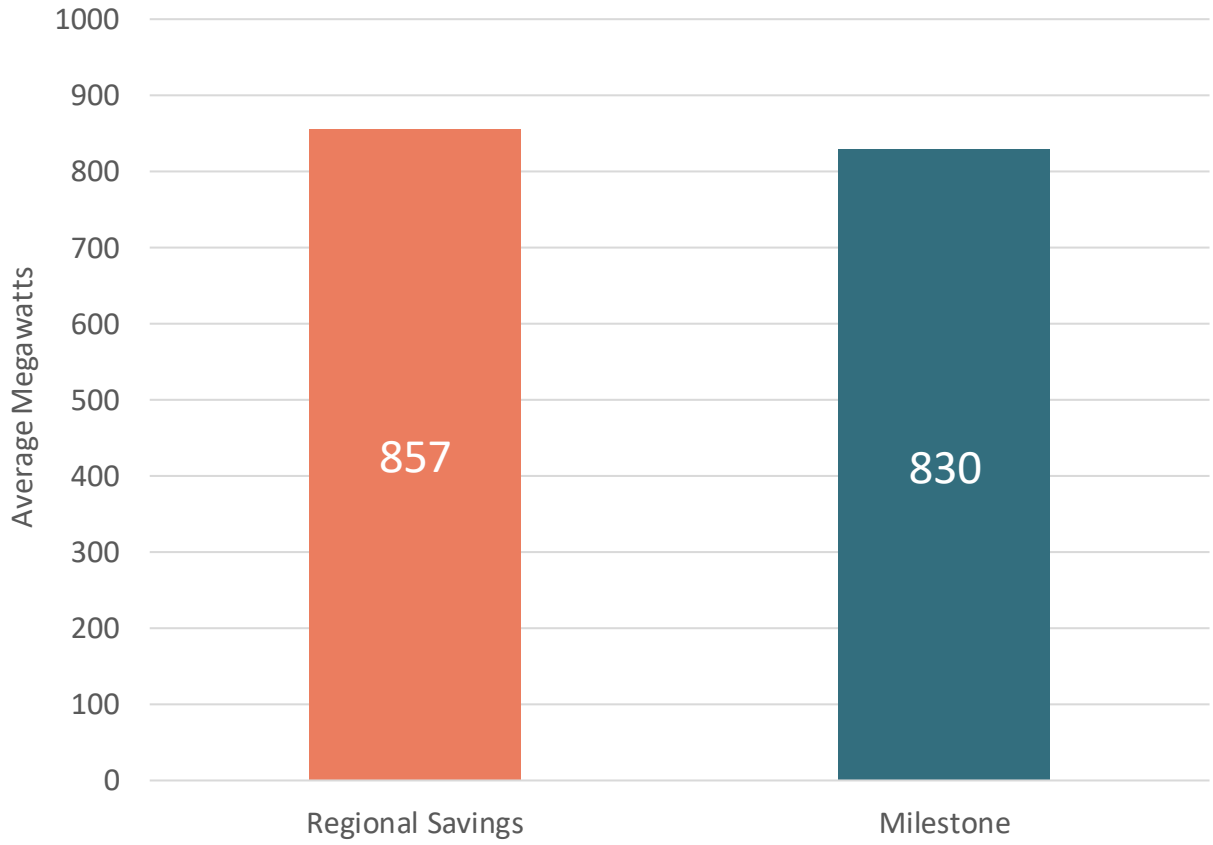
While the RTF makes final decisions on analysis at its monthly RTF meetings, subcommittees provide valuable insight and support along the way. The RTF convenes a variety of subcommittees, from those that provide deep technical expertise for a specific measure to those that provide guidance across all measures. Active subcommittees in 2020 are shown below, with more Information at **rtf.nwcouncil.org/subcommittees**.

- Air Source Heat Pumps Subcommittee
- Guidelines Subcommittee
- Heat Pump Water Heaters Subcommittee
- Implementers Subcommittee
- Market Analysis Subcommittee
- Natural Gas Subcommittee
- New Homes Standard Protocol Subcommittee
- Non-Residential Lighting Subcommittee
- Operations Committee
- Research and Evaluation Subcommittee
- Small Rural Utilities Subcommittee

to track progress toward the Council's Power Plan targets.

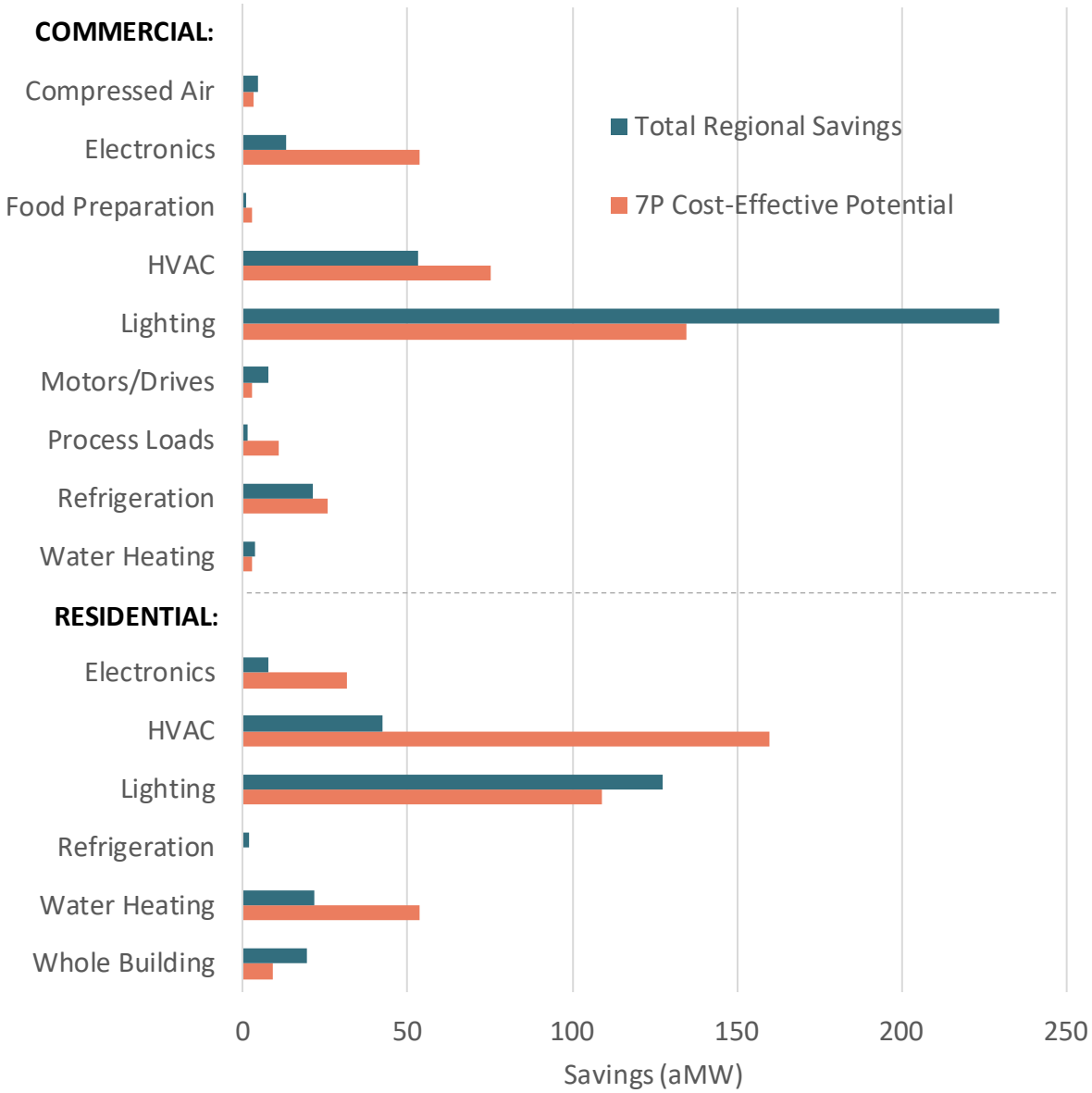
In the Seventh Power Plan, the Council set a target of 1,400 average megawatts of energy efficiency to be achieved through the first six years of the plan (2016 through 2021). Over the past four years, the Northwest has saved 857 average megawatts from utility program savings, NEEA alliance savings, momentum savings, and savings from codes and standards. These results show that the region is currently on track to meet the Seventh Power Plan's energy efficiency acquisition milestones.

Figure 1. Regional Energy Efficiency Accomplishments Compared to Plan Milestone (2016-2019)



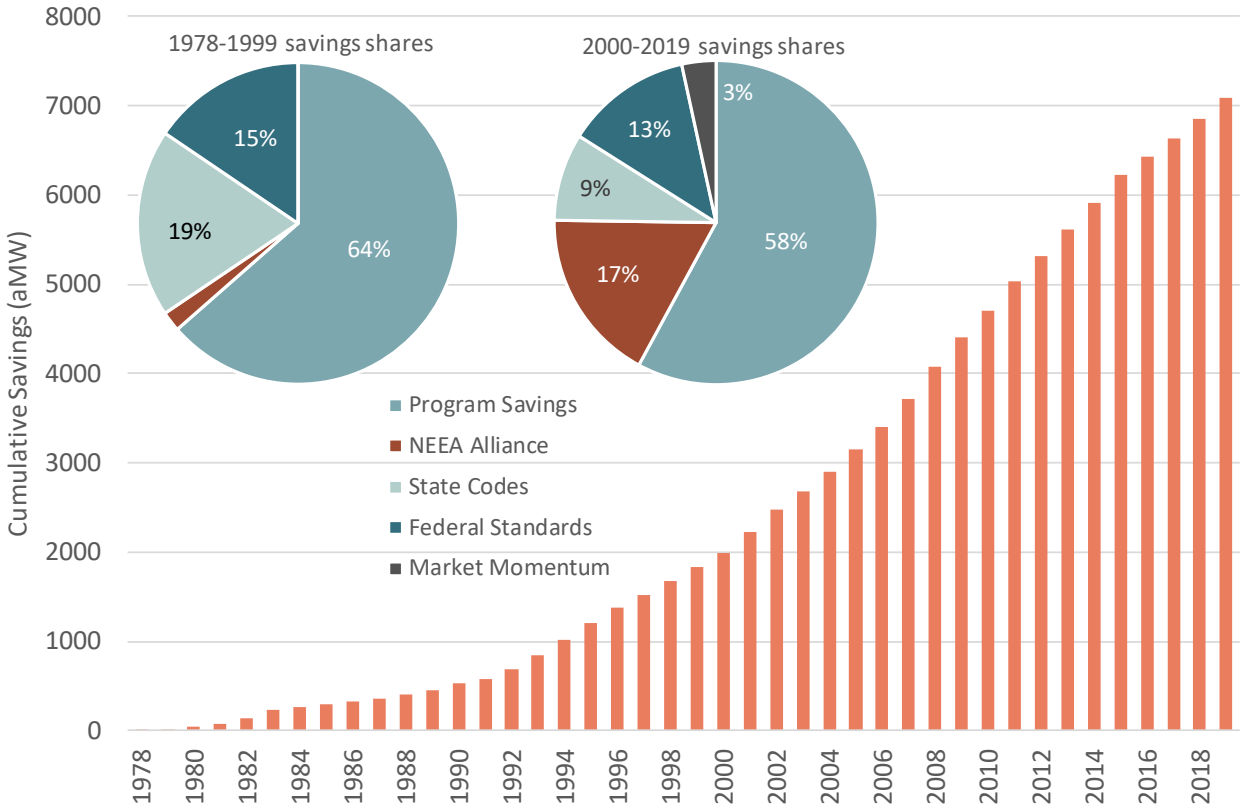
As in years past, the region has had great success achieving lighting savings across sectors. It's a relatively low-cost opportunity that is easy to implement across building types. Despite this success, significant potential remains, especially in the residential sector. Looking closer at savings by end-use, it becomes clear that there is significant untapped HVAC and water heating potential. A regional shift in emphasis toward these end-uses will help in meeting this potential.

Figure 2. 2016-2019 Regional Savings Compared to Seventh Plan Cost-Effective Potential



Energy efficiency has served as a central pillar of the Northwest's energy system. It has provided almost 7,000 average megawatts of savings since 1978. It has helped the region avoid more than 22.2 million metric tons of carbon dioxide emissions and has saved the equivalent of 5.1 million homes' annual energy consumption. The RTF will continue to track the region's progress in the coming years.

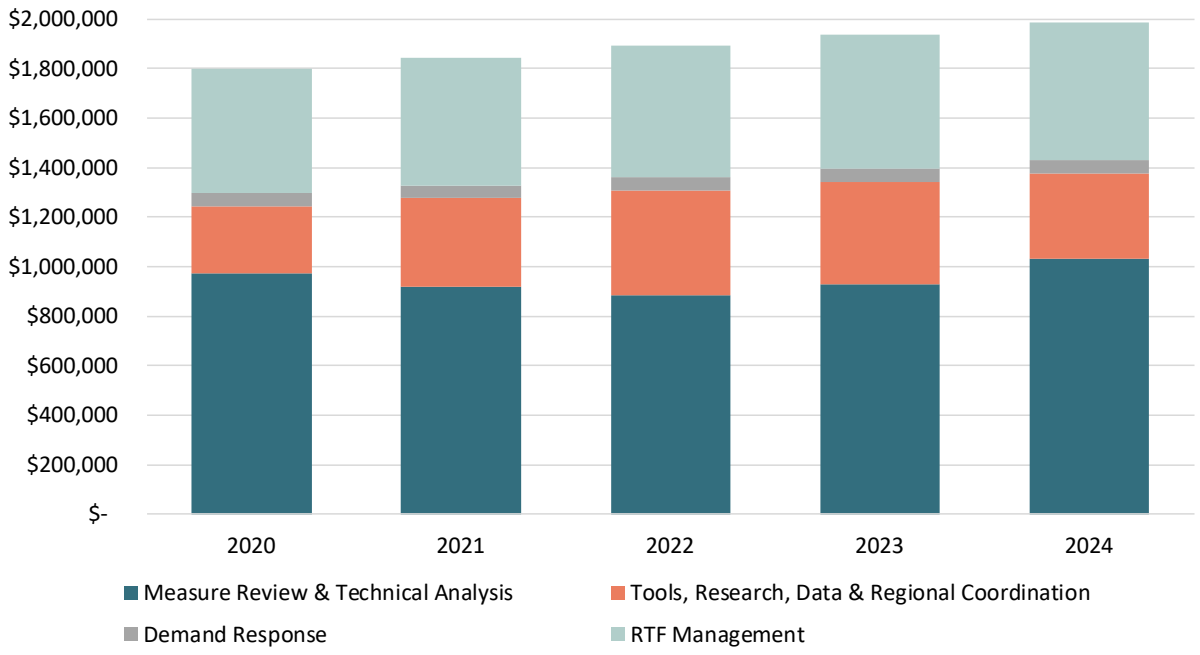
Figure 3. Cumulative Regional Savings, all Mechanisms



Financial Information

In 2019, the RTF Policy Advisory Committee secured new five-year funding commitments for the RTF to cover operations in 2020 through 2024. At the same time, the RTF expanded its funding to support the natural gas analysis added to the charter. The funding commitment for 2020 through 2024 totals $9,461,300, starting out at $1.8 million in 2020 and increasing annually at 2.5 percent to account for inflation. The RTF Policy Advisory Committee agreed to manage the total funding across the five years to allow flexibility, while also meeting regional needs on an annual basis.

Figure 4. 2020-2024 RTF Work Plan by Category



As with previous funding agreements, the RTF Policy Advisory Committee agreed to use the allocation method developed by the Northwest Energy Efficiency Alliance for funding. With the additional natural gas funding, the RTF Policy Advisory Committee agreed to share the costs of work accordingly:

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

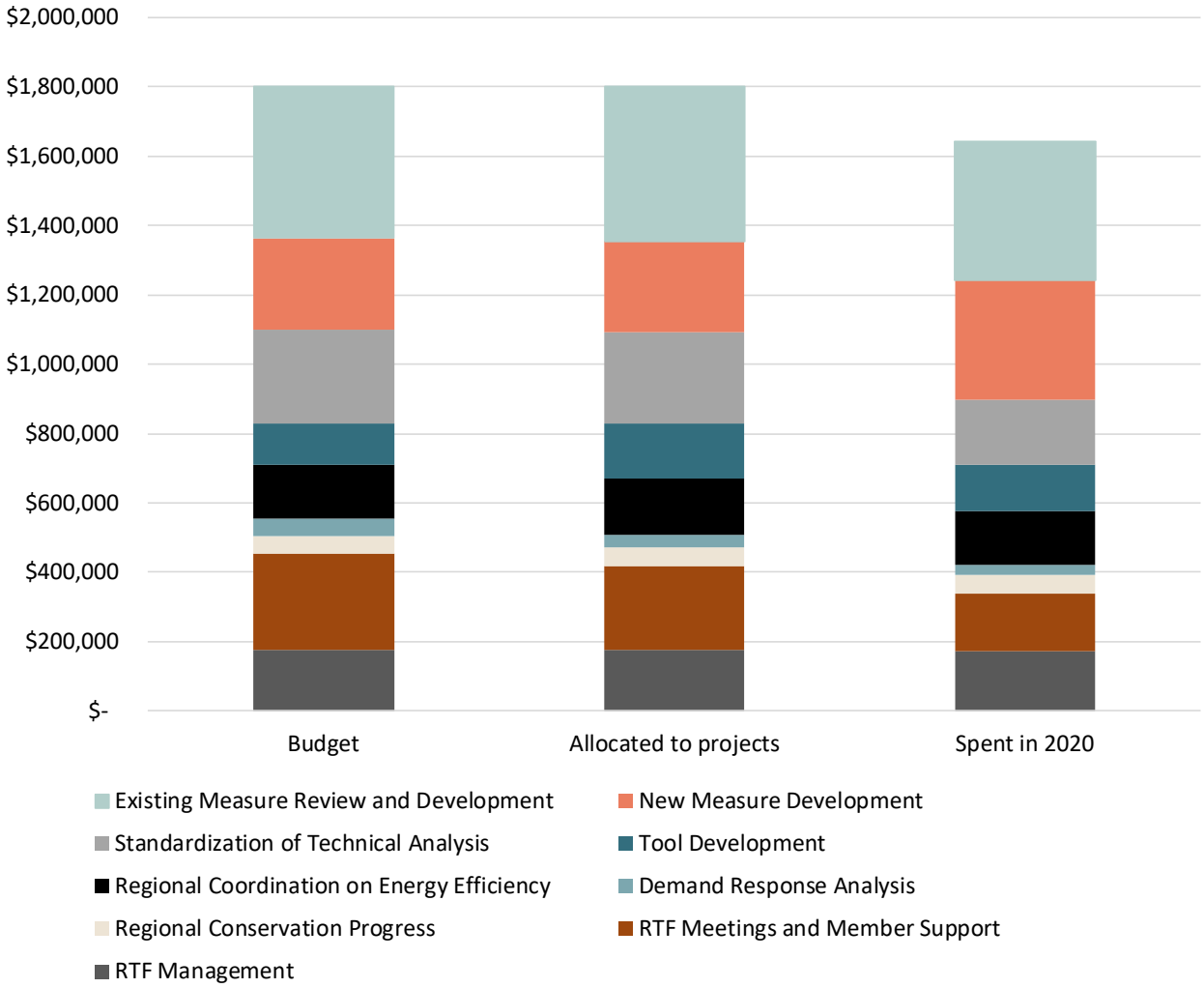
2020 Budget and Spending

The total approved budget for 2020 was $1.8 million, and almost 100 percent of the budget was allocated to contracts. Of this budget, the RTF spent approximately 91 percent of its funding. The primary reason for unspent funds in 2020 was the impact of COVID. The budget required to support member and contract analyst travel and time at meetings was reduced as the RTF transitioned to virtual meetings in March. Additionally, contract analyst time was slightly underspent due to balancing needs of working from home during the pandemic. The $158,170 of unspent funds will be allocated to future work.

Roughly 70 percent of the budget was for measure development by the RTF. This included funding to support updates to existing measures that were sunsetting and required RTF review and development of new measures to add to the library of resources. Part of what makes the RTF work successful is the review of measure analysis. Therefore, a portion of the budget is allocated to the contract analyst team to review each other's work for consistency ("standardization of technical analysis") and RTF member engagement and meeting time ("RTF member and meeting support").

To support measure development, the RTF invests in analytical tools that support modeling energy use in buildings or enable cost-effectiveness analysis of measures. In 2020, roughly 8 percent of the budget was used to enhance these tools. Part of this effort was ensuring that the existing tools were updated to support the additional natural gas work. The RTF also looked into potential new tools to enhance analysis of energy efficiency and demand response opportunities in the future.

Figure 5. 2020 Workplan and Spending



With the expansion of the RTF charter to include demand response analysis, the RTF's five-year work plan included roughly $50,000 annually to support these activities. In 2020, the demand response work was focused on tool development. Roughly only 60 percent of the approved demand response budget for 2020 was spent, and the remainder will be carried forward to future years to expand these tools and enhance the analysis.

Another area of focus is regional coordination. Because the RTF does not conduct primary research, the contract analyst team works closely with regional entities on research related questions. This includes answering questions around

RTF data needs that support research design or reviewing results that will ultimately feed into RTF analysis. Additionally, one of the RTF's responsibilities is to support Council analysis around energy efficiency. In 2020, the RTF allocated contract analyst time to support the development of energy efficiency supply curves used in the 2021 Power Plan analysis. Collectively, these tasks represented roughly 9 percent of the RTF budget.

The remaining budget was focused on management and other administrative tasks. This includes supporting the RTF manager and fielding the annual regional conservation progress survey in support of the Council.

The work of the RTF is made possible from sponsor funding.

Thanks to these organizations for providing funding:

Avista Utilities

Bonneville Power Administration

Cascade Natural Gas

Chelan County PUD

Clark County PUD

Cowlitz County PUD

Energy Trust of Oregon

Eugene Water and Electric Board

Idaho Power

NorthWestern Energy

NW Natural

PacifiCorp

Portland General Electric

Puget Sound Energy

Seattle City Light

Snohomish County PUD

Tacoma Power

A Look Ahead

At the publishing of this report, the RTF is already well into the second quarter of 2021, and much of the work described in this report has been achieved. With members entering their third and final year, we're excited to round out their terms with a full agenda. The RTF will continue to maintain its measure library and hopes to respond to regional needs in that endeavor. The group has already taken on more natural gas work and has a few more gas-only and dual-fuel measures still to come. The current year also promises to include more support for the draft power plan and the RTF prepares to respond to any direction or recommendations that comes out of that work. The RTF will continue its work to support the Northwest energy efficiency community by providing robust, unbiased technical energy efficiency analysis.

RTF Staff

The RTF is an advisory committee to the Northwest Power and Conservation Council and shares several staff members.

- Jennifer Light, RTF Chair/Manager
- Charlie Grist, Vice Chair
- Annika Roberts, RTF Assistant

In addition to RTF staff, several members provide operational and administrative leadership to the forum by serving on the Operations Subcommittee. For 2020, those members are: Sarah Castor, Jennifer Finnigan, Eric Miller, and Bill Welch.

The RTF also contracts a team of analysts who provide dedicated support throughout the year. The 2020 contract analysts include:

- Gregory Brown
- Christian Douglass
- Ryan Firestone
- Josh Rushton
- Paul Sklar
- Adam HAdley

2019 – 2021 Regional Technical Forum Members

Name	Organization
Jennifer Light (RTF Chair)	Northwest Power and Conservation Council
Charlie Grist (RTF Vice-Chair)	Northwest Power and Conservation Council/Independent*
Rebecca Blanton	Independent
David Baylon	Independent
Sarah Castor	Energy Trust of Oregon
Mohit Chhabra	Natural Resources Defense Council
Rachel Clark	Tacoma Power
Bob Davis	Ecotope
Bryce Eschenbacher	Avista Utilities
Jennifer Finnigan	Seattle City Light
Lauren Gage	Apex Analytics
Kevin Geraghty	Independent
Jackie Goss	Energy Trust of Oregon
Mark Jerome	CLEAResult
Don Jones Jr.	PacifiCorp
Josh Keeling	Cadeo Group
Phillip Kelsven	Bonneville Power Administration
Rick Knori	Lower Valley Energy
Eric Miller	Benton REA
Graham Parker	Independent
Janice Peterson	Independent
Jessica Raker	Puget Sound Energy
Cory Read	EcoMetric
Mark Rehley	NEEA
Jes Rivas	Illume Advising
Peter Therkelsen	Lawrence Berkeley Lab
Kevin Watier	Snohomish PUD
Bonnie Watson	Bonneville Power Administration
Bill Welch	Independent
Sarah Widder	Cadeo Group
Jim Woodward	Washington UTC**

* Retired from the Council midway through the year ** Ex officio, non-voting, member

ALL REGIONAL TECHNICAL FORUM REPORTS AVAILABLE AT RTF.NWCOUNCIL.ORG.
PHOTOS COURTESY OF UNSPLASH.COM/@HEYTOWNER, @DANLEFEB

Regional
Technical Forum

Northwest **Power** and
Conservation Council
www.nwcouncil.org