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

June 7, 2016

MEMORANDUM

TO: **Council members**

FROM: **Jennifer Light**

SUBJECT: **Regional Technical Forum 2015 Annual Report**

BACKGROUND:

Presenter: Jennifer Light

Summary The Regional Technical Forum (RTF) recently published its 2015 Annual Report. This report highlights the many ways the RTF has improved, evolved, and expanded its core functions over the past year. This work includes wrapping up a four year process of ensuring that all unit energy savings measures are in compliance with the RTF Guidelines, meaning all measures meet the same high standards for quality and transparency set by the RTF. In 2015, the RTF continued to build its library of measures, providing more opportunities for achieving cost-effective conservation in the region. Additionally, 2015 marked a year of increased engagement with regional stakeholders that enhanced public engagement and the value of RTF work products for Northwest utilities.

In 2016, the RTF continues to support the evolving needs of efficiency programs. With the newly appointed membership, the RTF is set to explore ways of ensuring consistent assessment of energy savings for complicated systems, controls measures, and behavior programs. After the adoption of the Seventh Power Plan, the RTF dove into implementation of Action Items related to RTF work including valuation of capacity impacts of efficiency and taking up consideration of non-energy

impacts. The RTF is also increasing emphasis on understanding markets for efficiency products and services through rigorous review of the regional market research. This focus will inform both RTF savings estimates and regional conservation planning.

Relevance The RTF is an advisory committee to the Council, funded by Bonneville, Energy Trust of Oregon, regional utilities, and Council in-kind support.

Workplan: A.1.4. 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 June. The 2015 Annual Report provides work highlights and financials for the 2015 calendar year. It also provides a sneak preview of progress in 2016. The annual report will be provided to the Council at its June meeting and available on the RTF website.

More Info: n/a

Regional Technical Forum
2015 Annual Report

Regional Technical Forum

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

Letter from Council Chair Henry Lorenzen

Since its formation in 1999, the work of the Regional Technical Forum has been a quietly diligent force behind the Northwest's energy efficiency revolution.

Efficiency is now a major resource in the region's clean, affordable power supply, second only to hydropower, and growing. We could not have achieved this without the Forum's work to verify and evaluate energy savings. They make it possible to literally, count on energy efficiency as a resource.

The Regional Technical Forum's 2015 Annual Report provides an overview of its past accomplishments and priorities for the year ahead. A key theme for the Forum is the need to continue to evolve as an organization, for the future of energy efficiency promises to unfold on many fronts. The Council's Seventh Power Plan found that almost half of residential efficiency will come from new measures. Enhancing the Forum's ability to reach and engage with its partners will be critical to meeting its goal to capture the next generation of energy efficiency.

I invite you to take a moment to learn more about the Forum, for in their work, you may begin to see the future take shape.

Henry Lorenzen, Chair
Northwest Power and Conservation Council

Letter from the RTF Chair Tom Eckman

2015 marked my final year as chair of the Regional Technical Forum. Since its formation back in 1999, the RTF has attempted to maintain a high standard of transparency and objectivity while continuing to evolve.

Throughout its 16 years of existence, the RTF has been a body that strived to be unbiased, removed from self-interest or politics. It exists with a singular mission: To find the numerical truth and accuracy of each question brought before it, and then present those facts and findings in the most accurate light. For those of you who have observed the RTF in action, you know that its deliberations are both thorough and public. Evolution has kept the RTF relevant since its inception; evolution necessary to meet technological developments, economic realities, and societal pressures head on in order to develop measures that empower the utilities of the region as they work to save energy and create a more efficient power system.

In 2015, the RTF continued to evolve and improve every aspect of its operations, from the quality and structure of its work products to expanding regional collaboration and engagement. This past year was the first full year of convening the RTF's recently formed Implementers Group. This group brings together energy efficiency program implementers from across the region, and was invaluable in informing RTF analysis and offering a previously underrepresented perspective on RTF proceedings. Also, this group gave program implementers a direct line to RTF staff to answer questions on changes to measures, protocols, guidelines, or any other item of concern.

2015 was also the first year the RTF began creating research strategies for measures that require additional data before reliable savings estimates can be adopted. These strategies send clear signals to organizations throughout the Northwest about research questions the RTF must answer before it can move forward on a measure, while simultaneously offering them flexibility to mold their research efforts to fit their organizational needs.

Finally, 2015 was also my final full year serving as staff of the Northwest Power and Conservation Council. Reflecting back, participating in the evolution of the RTF, from its formation in 1999 until today where it serves as an essential component in the region's energy efficiency ecosystem, has been one of the most rewarding endeavors of my 35-year career with the Council. I am confident that its emphasis on high quality, objective analysis, and transparency will continue as it evolves over the coming decades.

Tom Eckman, Chair
Regional Technical Forum

Introduction

Energy efficiency is a major resource in the region's energy portfolio.

Since the passage of the landmark Northwest Power Act in 1980, which authorized the states of Idaho, Montana, Oregon, and Washington to form the Northwest Power and Conservation Council, the region has become a model to the rest of the nation for effective and innovative regional power planning. At the heart of that planning is energy efficiency.

The Act defines energy efficiency as a resource and requires the Council to give cost-effective energy efficiency first priority. Over the past three decades efficiency has become a cornerstone resource in the region, helping to mitigate load growth, while simultaneously saving consumers billions of dollars each year and reducing power sector carbon emissions. The region's success on this front can be attributed to years of cooperation and dedication on the part of utilities, program implementers, and a multitude of other stakeholders.

The Regional Technical Forum was created to further this effort by providing a platform for analysis, discussion, and collaboration aimed at ensuring consistency and reliability of energy savings, while easing the evaluation burden of energy efficiency programs in the region. Since 1999, the RTF has generated increasingly reliable energy savings estimates for program implementers through an analytically stringent and transparent public process, one which is informed by stakeholders across every sector and geographic area of the Pacific Northwest.

Sixteen years since its inception, the RTF has stayed busy performing rigorous analysis and facilitating collaboration in the region. It has continued to be diligent in work product updates and reviews, always looking to improve the accuracy, reliability, and uniformity of what it creates. It has increased dialogue between groups in the efficiency community, building stronger communication across a variety of involved groups. Moreover, the RTF has sustained a steady broadening of focus in the form and function of the work it performs, while simultaneously remaining competent and focused on its core goals.

As RTF staff and members are in the midst of another year of supporting the region's energy efficiency programs, it will be important looking forward to remember both what we have created and what we have improved over the previous year gone by. Undoubtedly, the Forum will continue to evolve in years to come, and has already done so in many ways. However, the core role of the RTF in the region remains largely unwavering. This report highlights ways in which the RTF improved, evolved, and expanded its core functions in 2015, and how these efforts aided efficiency and analysis in the region, while leading into the work already underway in 2016.

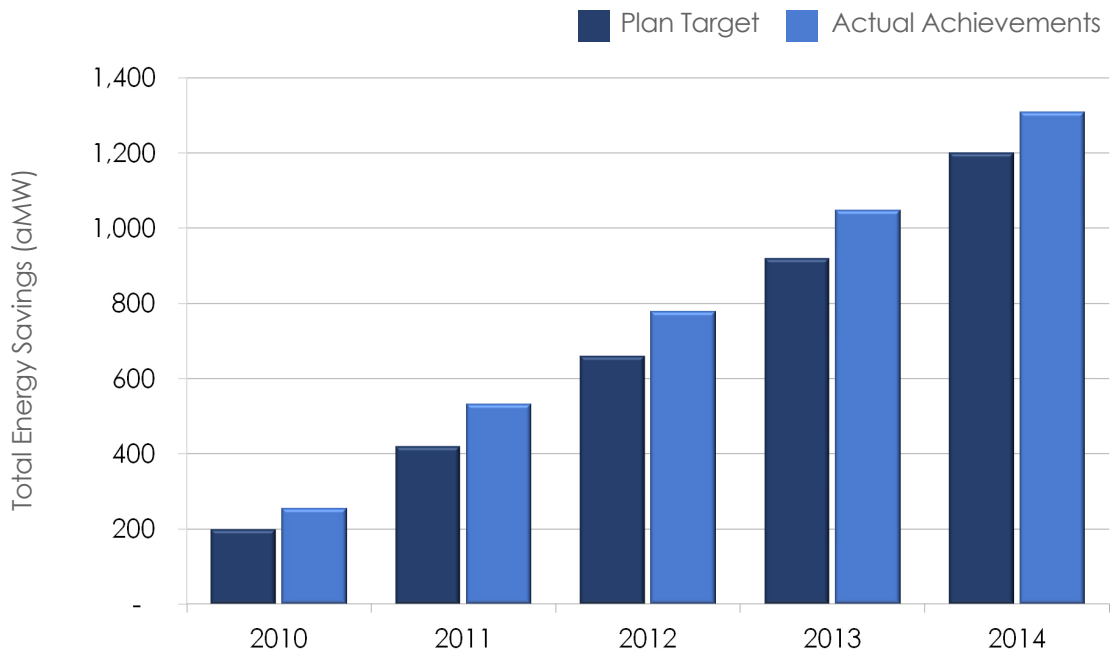
Accomplishments in 2015

Region Surpasses Five-Year Conservation Targets

Since 2000, the RTF has annually surveyed the region's utilities, the Bonneville Power Administration, and systems benefit charge administrators, like the Energy Trust of Oregon, on their efficiency achievements.

These collected data are then compiled into a Regional Conservation Progress (RCP) report and presented to the Council to offer a full picture of the region's progress against the power plan's efficiency goals.

Figure 1: Total Energy Savings Relative to Sixth Power Plan Targets (2010-2014)



As in other areas of its work, the RTF continued to enhance and improve upon previous years' methods when it came time for data collection for the 2015 survey. In past RCP reports, the RTF focused on gathering data on efficiency achievements and spending at the sector level. In 2015, the RTF took a deeper dive, asking instead for data on program-level savings, down to the specific end uses and applications generating savings throughout the region. This more targeted data collection has allowed the RTF to better understand where programs are investing time and money, and which specific end uses are yielding the largest payoff for effort. A more complete picture of efficiency programs in the region will enable the RTF to more effectively develop measures in future years.

The results of the RCP showed that by the end of 2014, the region had surpassed the Council's Sixth Northwest Power Plan's five-year energy efficiency target. The Sixth Plan called for the region to develop 1,200 aMW of energy efficiency by 2014. Utility-funded programs cumulatively achieved 1,309 aMW of energy efficiency savings for this five-year period.

Over and above the savings from utility-funded programs, the region achieved a significant amount of energy efficiency through codes and standards, as well as other market effects. This points to an obvious shift in the types of products available and common practices used in the Pacific Northwest (Figure 2).

In 2014, total utility and systems benefit charge resource allocations to energy efficiency reached over $360 million. With this investment and the corresponding efficiency achievements, energy efficiency remains the region's second largest resource, dwarfed only by hydroelectric power (Figure 3),that has met 57 percent of the region's load growth since 1980.

Figure 2: Total Energy Savings, Including Codes and Standards, and Market Induced Savings (2010-2014)

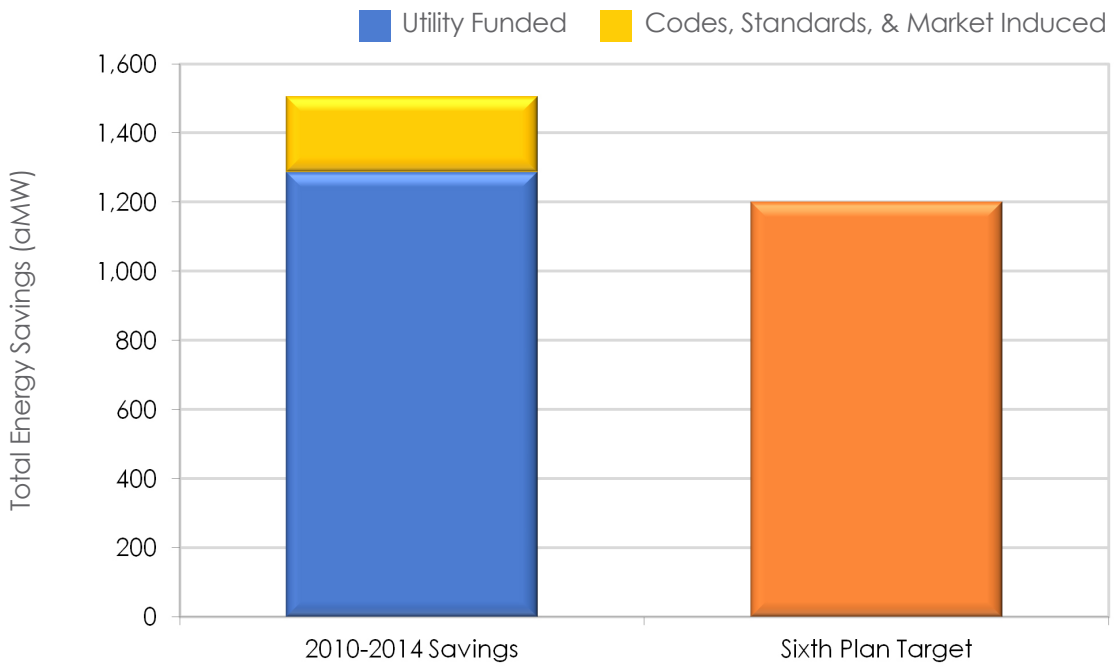
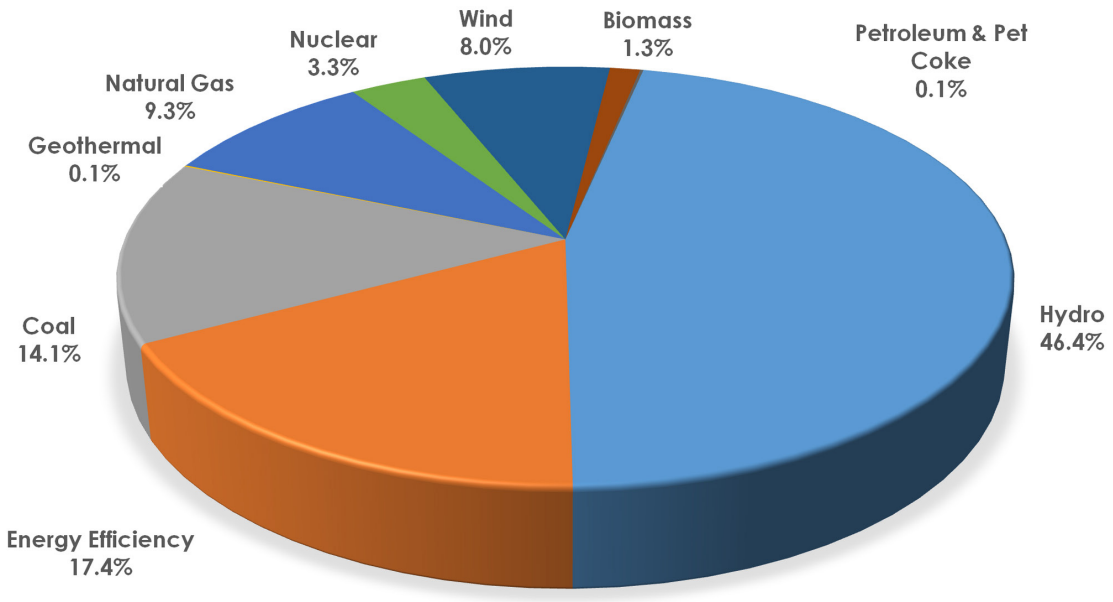


Figure 3: Dispatched aMW in 2014



The consistent role of efficiency in the region is due in large part to an overarching commitment shared by many organizations and utilities, including the RTF. More information on how the RTF helped the region continue these trends in 2015 can be found in much of the following sections.

Improving Reliability, Consistency, and Transparency of Energy Savings Estimates

Throughout the analytical process leading up to the development of a useable measure or protocol, the RTF makes every effort to ensure consistency and transparency in its work. A key part of this is relying on the RTF Guidelines, a core document to the Forum's process, which describes how the RTF selects, develops, and maintains methods for assessing the lifetime costs and benefits of measures. As the RTF evolves and improves its analytical methods, it continues to update these Guidelines to best capture how the decision making behind work products is made.

After the first set of RTF Guidelines were adopted by the Forum in 2013, the RTF began a full review of all previously generated measures and standard protocols in order to identify which were in compliance with the document. The RTF then began the process of updating those measures and protocols that were found to be out of compliance. This significant effort was completed in 2015 for all measures. The remaining handful of standard protocols will be the focus in 2016. Completing this work signifies a great amount of progress in improving the uniformity of the RTF's analysis, allowing stakeholders greater predictability and understanding of how the RTF works. Table 1 illustrates the measure

status and category of all unit energy savings measures at the end of 2015.

Historically, the focus of the RTF has largely been on developing unit energy savings measures. These measures are estimates created to describe the savings associated with an individual action or technology for which the amount of energy savings can be measured regardless of application. For example, the same type of LED bulb will save a consistent amount of energy when compared to an incandescent bulb. These single unit estimates are generated through a rigorous and transparent, data-driven process and are used by utilities and other efficiency program implementers throughout the region to ease the evaluation and planning burden of operating an efficiency program.

Due to the flexibility of the RTF's annual work plan, the Forum often has the opportunity to update these measures when new standards come into effect, markets change, or better data and analysis methods become available. This past year, the RTF adopted updates to a number of significant unit energy savings measures, including residential lighting, heat pump water heaters, and the duct sealing measure for manufactured housing. In most of these cases where a measure update occurred, regional collaboration and vigilance for new data were essential to ensuring the continued usability and timeliness of RTF work products.

Expanding the RTF's Resource Library

Every year, the RTF builds time and resources into its work plan for new measure development. This ensures that the RTF will be able to support the emerging and evolving needs of efficiency programs in the region, without having to divert attention away from other planned objectives. The RTF selects which proposed new measures to work on based on input from program operators and utilities, as well as the estimated energy savings potential of the measure. This ensures that RTF resources are allocated to work that provides the most value for the region as a whole. In 2015, the RTF chose to allocate resources to develop several new measures

Table 1: Current category and status designations for the RTF's portfolio of unit energy savings measures at the end of 2015.

Measure Category*	MEASURE STATUS				Grand Total
	Active	Deactivated	Non-Compliant	Under Review	
(none)	–	34	–	–	**34**
Proven	22	–	–	–	**22**
Provisional	1	–	–	–	**1**
Small Saver	29	1	–	–	**30**
Planning	17	–	–	2	**19**
Grand Total	**69**	**35**	–	**2**	**106**

*Proven savings estimation methods are those the RTF considers supported by reliable data, based in a significant research effort; Provisional and Planning methods are those the RTF has determined lack the research required for a Proven measure, but approves with special conditions requiring the collection of additional data; Small Saver measures are too small to warrant the resources needed to meet the Proven or Provisional standards.

across several sectors, increasing the applicability and scope of its resources.

A major addition this past year to the RTF's unit energy savings measures catalogue was the development and adoption of a residential low-e storm window measure. This technology is essentially an easy and quick fix to improve a home's energy efficiency, and involves simply applying the new low-e storm window to the exterior of a home's existing windows. Given the cost-effectiveness challenges of replacing all or several of a home's windows, this added a great option for energy efficiency programs in all parts of the region.

Another new measure reviewed by the RTF this past year was related to residential clothes dryers. In 2015, the federal government's ENERGY STAR® appliance program created its first specification for clothes dryers, which produced a potentially exciting new prospect for efficiency programs. The creation of this ENERGY STAR specification, coupled with the Northwest Energy Efficiency Alliance's (NEEA) efforts to enhance heat pump clothes dryer technology, offered key drivers for the RTF to take up work in this area. At present, the RTF's current estimates of energy savings are considered "Planning", meaning more data are needed to support development of reliable measure.

Implementers Group Enhances Regional Connection

2015 marked the first full year of activity for the RTF's newly formed Implementers Group, a standing subcommittee created to increase interaction and dialogue between program implementers and the RTF. This group was formed to build understanding among implementers on the effects of RTF decisions on their programs. It also serves to help inform the RTF of program needs in the region and inform upcoming agenda items.

This group has continued to meet monthly throughout the year, engaging the attention of program implementers in the Council's four member states. The input received from program implementers through this group has been invaluable in informing measure development, updating, and planning, and will continue to be an asset for the RTF going forward.

Low-Emissivity Storm Windows

The RTF approved a new low-e storm windows measure in 2015. This was the result of a major regional research effort that supported the development of reliable energy savings estimates. This measure is a nice addition to the residential weatherization mix, as low-e storm windows are easy to install and cost-effective for homeowners. What produces the energy savings is the window is coated in an ultra-thin layer of metal that is translucent, and reflects heat back into the home. This coating makes the window act as a form of insulation for the home, keeping the home at a more constant temperature throughout the year, thus lowering the amount of energy necessary for heating and cooling.

The Impacts of Lighting Measures

Updates to residential lighting measures are extremely important to calculating the overall energy savings of the region's efficiency programs, as lighting measures make up a large portion of many efficiency program portfolios. Based on the Regional Conservation Progress report, in 2014, approximately 34 percent of total residential energy savings was attributable to lighting measures. Similarly, commercial energy savings were dominated by lighting measures as well, with approximately 44 percent derived from those efficiency improvements.

Figure 4: Total Residential Sector Energy Savings by End-Use (2010-2014)

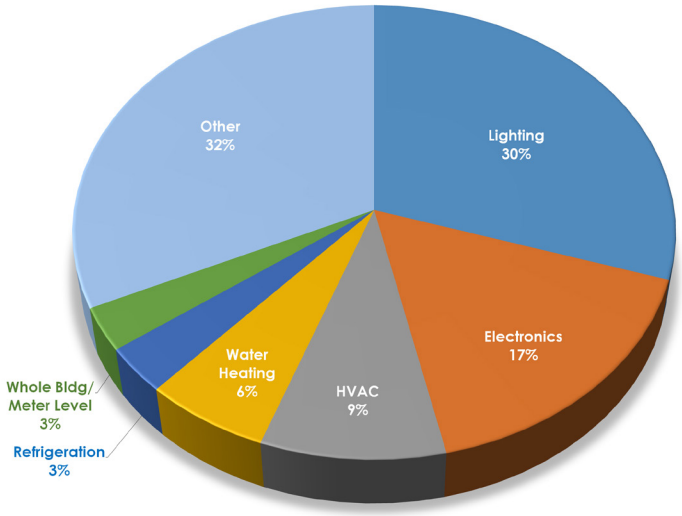
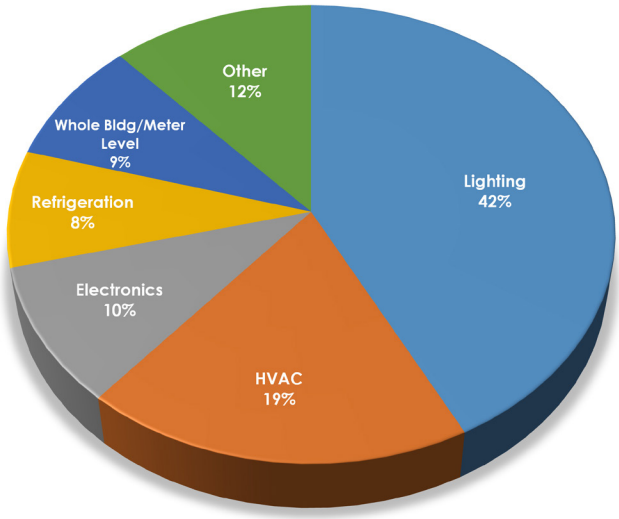


Figure 5: Total Commercial Sector Energy Savings by End-Use (2010-2014)



Engaging Stakeholders on Barriers to Efficiency

The RTF's Small and Rural Utilities Subcommittee was created as a means to address issues and concerns unique to small and rural utilities implementing energy efficiency programs. The group met several times throughout 2015 to provide a point of contact and information tailored to these utilities, aimed at increasing their understanding of how changes to RTF measures would affect their programs. In August of 2015, the subcommittee held a special, half-day meeting to facilitate a candid discussion on the barriers to efficiency program implementation that exist uniquely in small and rural communities. From this meeting the RTF was able to develop a list of action items for both itself and other external organizations to better engage small and rural utilities and aid them in overcoming these barriers. This work is part of an ongoing process the RTF will be pursuing in the years to come.

Rethinking the Research Process

The RTF has always been a research consumer, not a research performer. Yet, as an entity, the Forum depends on data to continue to produce the rigorous analysis that informs its work. This fact has made it essential for the RTF to stay engaged with research performing organizations in the region. In 2015, the Forum made a concerted effort to better engage and coordinate with these organizations. In this role, the Forum's approach shifted slightly this past year to provide more flexibility, while offering a clear signal to researchers about the size, scale, and research approach the RTF will find most useful to further measure development. This outreach has helped leverage existing research efforts to advance the RTF's broader regional interests and improve the reliability and accuracy of its measures.

Financial Information

Financial Information

In 2014, the RTF Policy Advisory Committee (PAC) recommended funding commitments starting at $1.67 million for 2015 and increasing to $1.91 million by 2019. The PAC recommended the funding shares from each of the RTF sponsors follow the allocation method developed for the current NEEA funding cycle. Thanks to the diligence of the PAC, the RTF was able to secure letters of agreement with all of its funders for a five-year commitment. This has allowed for stable, long-term budget, removing the previous uncertainty of year-to-year budgets.

Table 2: Summary of 2015 Budget

Recommended Budget	$1,670,000
Actual Budget*	$1,637,600

*Adjustment for NorthWestern Energy service territory

The RTF's final 2015 budget was $1,637,600. By the end of 2015, the RTF had obligated in contracts 97 percent of its budget. When the last of the 2015 contracts were completed in April 2016, the RTF had spent a total of $1,442,585, or 88 percent of its budget. The remaining $195,015 unspent in 2015 will be credited toward funders' future contributions.

Thank You Funders!

The work of the RTF is made possible through funding it receives from its sponsors. The RTF would like to thank the following organizations for providing funding for RTF activities in 2015:

Avista Utilities
Bonneville Power Administration
Clark County PUD
Cowlitz County PUD
Energy Trust of Oregon
Eugene Water and Electric Board
Idaho Power
NorthWestern Energy
PacifiCorp
Puget Sound Energy
Seattle City Light
Snohomish County PUD
Tacoma Power

Figure 6: Allocation of Final 2015 Budget Compared to Work Plan

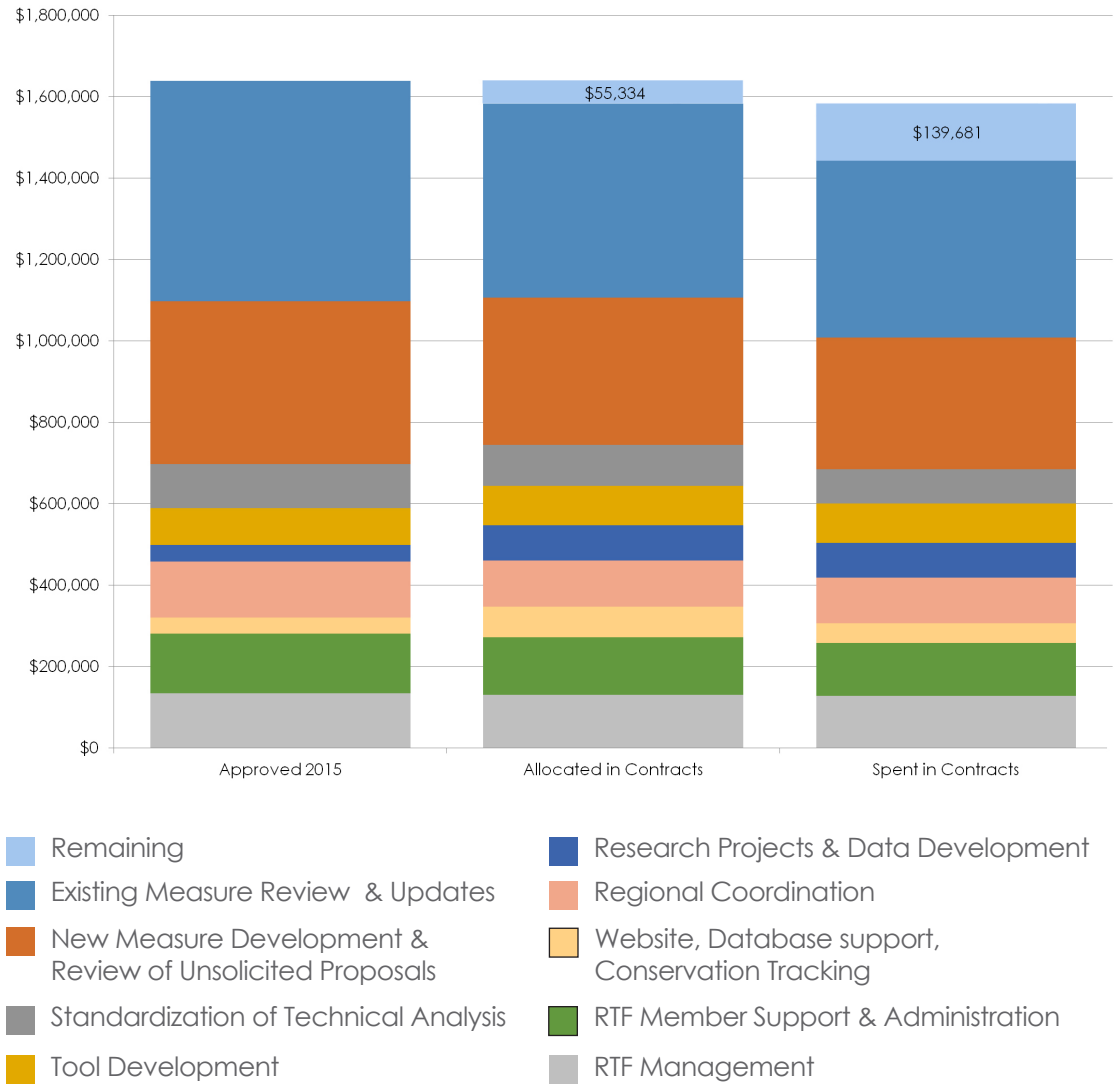


Table 3: The 2015 budget allocated into general categories of the work plan, along with actual funds spent.

Category	Projected Allocation in Work Plan	Actual Funds Spent	% Spent Compared To Allocated
Existing Measure Review & Updates	$540,500	$434,814	80%
New Measure Development & Review of Unsolicited Proposals	$400,000	$324,227	81%
Standardization of Technical Analysis	$109,000	$84,045	77%
Tool Development	$90,500	$96,377	106%
Research Projects & Data Development	$40,000	$85.694	214%
Regional Coordination	$137,500	$111,544	81%
Website, Database Support, Conservation Tracking*	$40,000	$48,429	121%
RTF Member Support & Administration	$146,800	$130,104	89%
RTF Management	$133,300	$127,351	96%
Total	$1,637,600	$1,442,585	88%

* Council in-kind contribution

An OMB Circular A-133 audit for fiscal year 2015 was conducted by Moss-Adams. The auditor's report did not identify any deficiencies. A copy of the report can be found on the Council's website: http://www.nwcouncil.org/reports/financial-reports/2014audit/.

The Council makes an in-kind contribution to the RTF each year in terms of staff and meeting resources and the RTF webpage. Although the annual RTF work plan attempts to quantify this staff time and associated in-kind funding, it is not included in the budget figures. With the introduction of the RTF Manager, the RTF has been able to reduce this in-kind funding.

Progress Continues in 2016

New Members for 2016

Approximately every three years, the Northwest Power and Conservation Council solicits new RTF membership. 2015 was the final year for a group of members that helped the region make significant strides in energy efficiency. As 2016 approached, it was time once again to solicit members for another three-year term. Based on the extremely high caliber of interested volunteers, the Council was able to put together a strong new RTF membership, continuing the tradition of expertise and professional excellence the RTF has come to depend on. These experts from across the region and beyond will enable the RTF to continue to improve and evolve by offering their knowledge and applying their professional judgement on the tough questions that face the Forum.

To help the Forum address the changing nature of energy efficiency, a higher level of program evaluation and statistical expertise was added to this newest group of members. Half of the voting members selected for the 2016-2018 RTF are entering their first year in this role, although many have previous experience with the RTF in some capacity, whether by bringing their expertise to monthly meetings or specific subcommittees. This change in membership

In January the RTF welcomed a new membership class with a half day new member orientation session. During this time, newly appointed RTF Chair Jennifer Light reviewed the RTF's foundational documents, and discussed with the members the role of the Forum, its processes, and topics that would likely be addressed in the coming years. In the photo, new RTF members are being reminded to "wear their RTF hats" whenever doing RTF-related tasks.

Behavior modification and energy controls technologies have come to the forefront in recent years as the "low hanging fruit" of energy efficiency opportunity has become increasingly scarce in the Pacific Northwest. As the RTF continues operations into this new era, it will inevitably have to adjust its processes to handle these more complex devices. Currently, the RTF is pursuing the development of a connected thermostat measure. These thermostats learn user temperature setting behavior and automatically adjust to the user's schedule over time, with the potential to adapt these settings to achieve further energy savings.

demographics points to the developing face of efficiency markets throughout the Northwest, marked by the rise of big data programs, behavior and controls programs, and broader systems approaches that are now coming to the forefront of program implementation.

Gearing Up for Seventh Plan Implementation

In February 2016, the Northwest Power and Conservation Council approved its Seventh Regional Power Plan, which led to important changes at the RTF. The first course of business was to move all RTF measures into the "Seventh Plan World" by adopting updated cost-effectiveness inputs. Key to this is the greater emphasis on the capacity benefit of energy efficiency, which makes measures that provide savings during critical peak hours relatively more attractive for programs. These changes have also been accompanied by formatting updates to all measure workbooks in an attempt to increase the uniformity and transparency of RTF work products. Over the coming year, the RTF will continue to improve its understanding of the capacity benefit in energy efficiency, as well as exploring energy efficiency's non-energy impacts.

The Changing Face of New Measure Development

Throughout the years, the RTF has developed a substantial library of unit energy savings measures. While the RTF will continue to develop these new measures as emerging technologies come to market, many new opportunities do not fit this mold. With the shift to more complex energy efficiency opportunities, the RTF is developing other evaluation approaches to ensure consistent and reliable measurement of energy savings. This includes developing standard protocols, essentially a simplified method for measuring energy savings from a sample of project sites for things like non-residential lighting projects or new homes. Other efficiency opportunities, such as behavior programs, are so unique that the RTF is exploring the creation of impact evaluation guidance to reflect the uniqueness of each program, while improving regional consistency where possible. These efforts demonstrate the RTF's interest in building on its core functions, while continuing to improve and evolve with the rest of the industry.

Formation of a Market Analysis Subcommittee

These days, a lot of energy efficiency happens outside of direct program interaction. Some efficiency results from efforts to improve codes or standards, but there are many other market factors at play. Understanding what is happening in the market is important to understanding the potential for energy savings going forward. Bonneville and NEEA have taken the lead to research and quantify these market changes. To add value and ensure robustness of this work, the RTF will convene a new subcommittee aimed at reviewing regional market analysis research. Bringing additional review and expertise to this process will increase transparency and help the entire region understand where markets are today and how they are changing.

2013 – 2015 Regional Technical Forum Members

Voting Members	Affiliation
Brad Acker	University of Idaho, Integrated Design Lab
Rich Arneson	Tacoma Power
Andie Baker	Independent
John Bogert**	OPALCO Board
David Bopp	Flathead Electric
Eric Brateng**	Puget Sound Energy
Wade Carey	Central Lincoln PUD
Bob Davis	Ecotope
Tom Eckman	Northwest Power and Conservation Council
Michele Friedrich	Sacramento Municipal Utility District
Lauren Gage	Bonneville Power Administration
Danielle Walker	Bonneville Power Administration
Charles Grist	Northwest Power and Conservation Council
Jeff Harris	Northwest Energy Efficiency Alliance
Erin Hope	Bonneville Power Administration
Mark Jerome	CleaResult
Don Jones, Jr.	PacifiCorp
Ken Keating	Independent
Greg Kelleher	Eugene Water and Electric Board
Rick Knori	Lower Valley Energy
Bill Koran	NorthWrite
Tom Lienhard	Avista
Jim Maunder	Ravalli Electric Cooperative
Peter Miller	Natural Resources Defense Council
David Nightingale*	Washington UTC
Graham Parker	Pacific Northwest National Laboratory
Kerstin Rock**	PECI
Eugene Rosolie	Cowlitz PUD
Paul Sklar	Energy Trust of Oregon
David Thompson	Avista
Bill Welch	Independent

*Ex Officio
**Resigned as RTF member in 2014

Both Council and RTF staff would like to offer the sincerest gratitude to all outgoing RTF members, both voting and corresponding, for their hard work and dedication over the past three years. It is through their intellectual contributions and continued involvement in the RTF that energy efficiency has grown as a resource in the region.

RTF Staff

The RTF is an advisory committee to the Northwest Power and Conservation Council and shares several staff members. The asterisks on the list below indicate Council funded staff members who play a major role in the RTF.

Tom Eckman, Chair*
Charlie Grist, Vice Chair*
Jennifer Light, RTF Manager
Aggar Assefa, RTF Assistant (in 2015)*
Garrett Herndon, RTF Assistant (starting in 2016)*

The RTF also contracts a team of contract analysts who provided dedicated support throughout the year. The 2015 contract analysts include:

Christian Douglass, RTF Contractor
Ryan Firestone, RTF Contractor
Adam Hadley, RTF Contractor
Josh Rushton, RTF Contractor
Mohit Singh-Chhabra, RTF Contractor

In addition to RTF staff, several members provide operational and administrative leadership to the Forum by serving on the Operations Subcommittee. For 2015, those members are: Danielle Walker, Tom Lienhard, David Nightingale, Eugene Rosolie, and Bill Welch.

Subcommittees

Subcommittees contribute valuable review and technical guidance on measure analysis and development. Much of the in-depth technical work is done outside of the monthly RTF meetings in subcommittees that are measure/topic specific and meet as needed. Currently, there are 15 active subcommittees, including the following.

Ductless Heat Pumps for New Construction Guidelines
Heat Pump Water Heater
Implementers Group
Market Analysis Subcommittee
New Homes Standard Protocol
Non-Residential Lighting
Operations
Residential Behavior
Residential Lighting
Research and Evaluation
Rooftop Unit Work Group
Scientific Irrigation Scheduling
Small & Rural Utilities
Variable Capacity Heat Pump

Regional Technical Forum

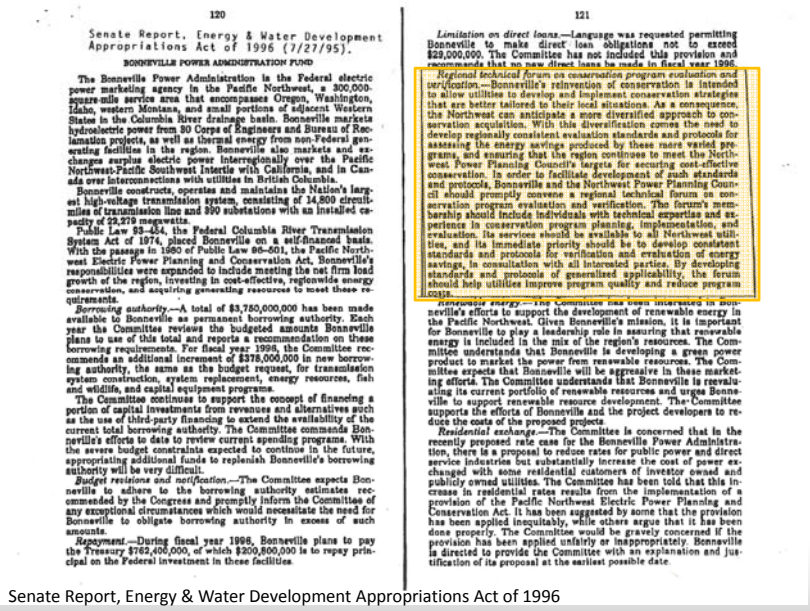
Regional Technical Forum

Regional Technical Forum 2015 Annual Report

June 2015 Council Meeting

Redmond, Oregon

Northwest Power and Conservation Council



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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 22,379 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.

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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 recommends that no new direct loans be made in fiscal year 1996.

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 costs.

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, Energy & Water Development Appropriations Act of 1996

Northwest Power and Conservation Council

Origins of the RTF

- **Driver:** Bonneville shifted to allowing utilities to develop and implement conservation better tailored to local areas
- **Resulting Need:** Formation of a regional technical forum to develop consistent evaluation standards and protocols for assessing energy savings and ensure region continues to meet Council targets for cost-effective conservation
- **Attributes of RTF**:
  - Composed of individuals with technical expertise in planning, implementation, and evaluation
  - Work developed through a public process available to all Northwest utilities
  - Goal of improving program quality at a reduced cost

Annual Report Overview

- Highlights from 2015
  - Significant work areas
  - Year end financials
- Progress so far in 2016
  - Focus to date
  - Progress against work plan

Fulfilling Core Mission in 2015

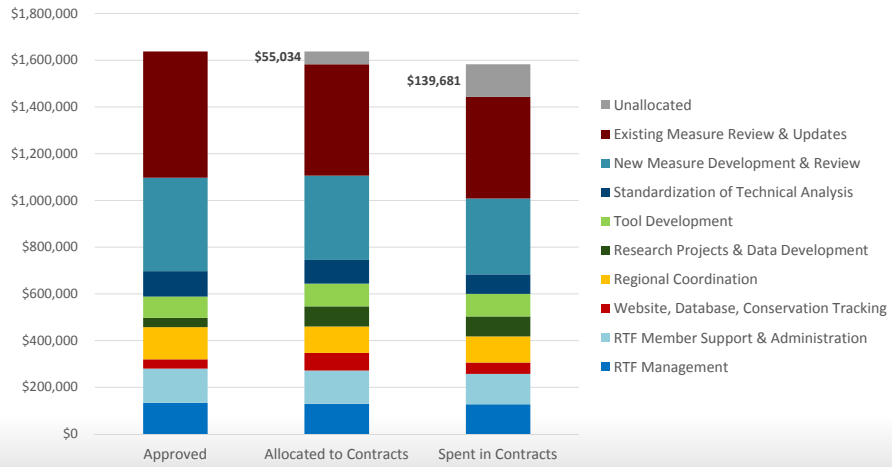
Category	Active	Under Review	Non-Compliant
Proven	22	0	**0**
Provisional	1	0	**0**
Planning	17	2	**0**
Small Saver	29	0	**0**
Total	69	2	**0**

Increased engagement with research community

Increased engagement with program implementers

- All measures in compliance with the Guidelines ensures high quality analysis that is transparent and consistent across measures
- Identifying "Planning" measures, or those that need more research helps to ensures sufficient rigor
- Enhanced engagement with research community helps to leverage existing research to reduce costs
- Engagement with researchers and implementers broadens the public process and resulting benefit

2015 Year End Financials

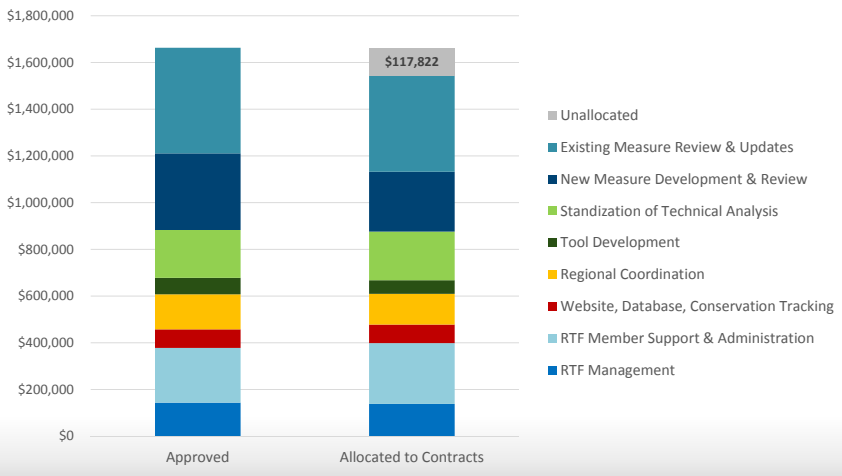


2016 Membership Brings New Perspectives and Expertise

Expanding Market Analysis Research

- RTF added a new subcommittee to provide review of market analysis research
- Robust market analysis is critical for:
  - Baseline development
  - Tracking market changes over time, in particular activity outside of efficiency programs
  - Load forecasting
  - Program planning
- Exemplifies one way the RTF is enhancing and evolving it's core mission

2016 Work Plan Status



Northwest Power and Conservation Council

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