Western Interconnection Regional Advisory Body

2022 Business Plan and Budget

June 25, 2021

Approved by

Appointed Members of the

Western Interconnection Regional Advisory Body

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Introduction

The Western Interconnection Regional Advisory Body (WIRAB) proposed budget for 2022 is $918,900. This amount is $286,600 (23.8%) lower than the amount in WIRAB's approved 2021 budget. Total proposed full-time equivalents (FTEs) for 2022 have decreased from 4.75 to 3.0. WIRAB's total funding requirement is $699,700. As shown in Table 1 below, this amount represents the total statutory expenses of $918,900 less $219,200 in statutory working capital requirement. WIRAB's proposed funding assessment is $698,700, a decrease of $287,600 from the 2021 funding assessment. WIRAB proposes to allocate the funding assessment as follows: $586,773 (84%) to the U.S. portion; $99,937 (14.3%) to the Canadian portion; and $11,990 (1.7%) to the Mexican portion of the Western Interconnection. The following table summarizes the WIRAB proposed budget for 2022.

Table 1. WIRAB Budget for 2022

WIRAB - Total Resources (in whole dollars)	2022 Budget	U.S.	Canada	Mexico
Statutory FTEs	3.00			
Non-statutory FTEs				
Total FTEs	3.00			
Statutory Expenses	$ 918,900			
Non-Statutory Expenses				
Total Expenses	$ 918,900			
Statutory Inc(Dec) in Fixed Assets				
Non-Statutory Inc(Dec) in Fixed Assets				
Total Inc(Dec) in Fixed Assets	$ -			
Statutory Working Capital Requirement	$ (219,200)			
Non-Statutory Working Capital Requirement	0			
Total Working Capital Requirement	$ (219,200)			
Total Statutory Funding Requirement	$ 699,700			
Total Non-Statutory Funding Requirement	$ -			
Total Funding Requirement	$ 699,700			
Statutory Funding Assessments	$ 698,700	$ 586,773	$ 99,937	$ 11,990
Non-Statutory Fees				
NEL	855,793,369	718,701,162	122,407,031	14,685,176
NEL%	100.00%	84.0%	14.3%	1.7%

Organizational Overview

The Federal Energy Regulatory Commission (FERC or Commission) created WIRAB in April 2006, upon petition of ten Western Governors and in accordance with Section 215(j) of the Federal Power Act (FPA). The Governors invited all U.S. states, Canadian provinces, and Mexican jurisdictions with territory in the Western Interconnection to join WIRAB and to participate in WIRAB's activities as a regional advisory body charged with advising the FERC, the North American Electric Reliability Corporation (NERC) and the Regional Entity (i.e., the Western Electricity Coordinating Council or WECC) on matters of electric grid reliability.

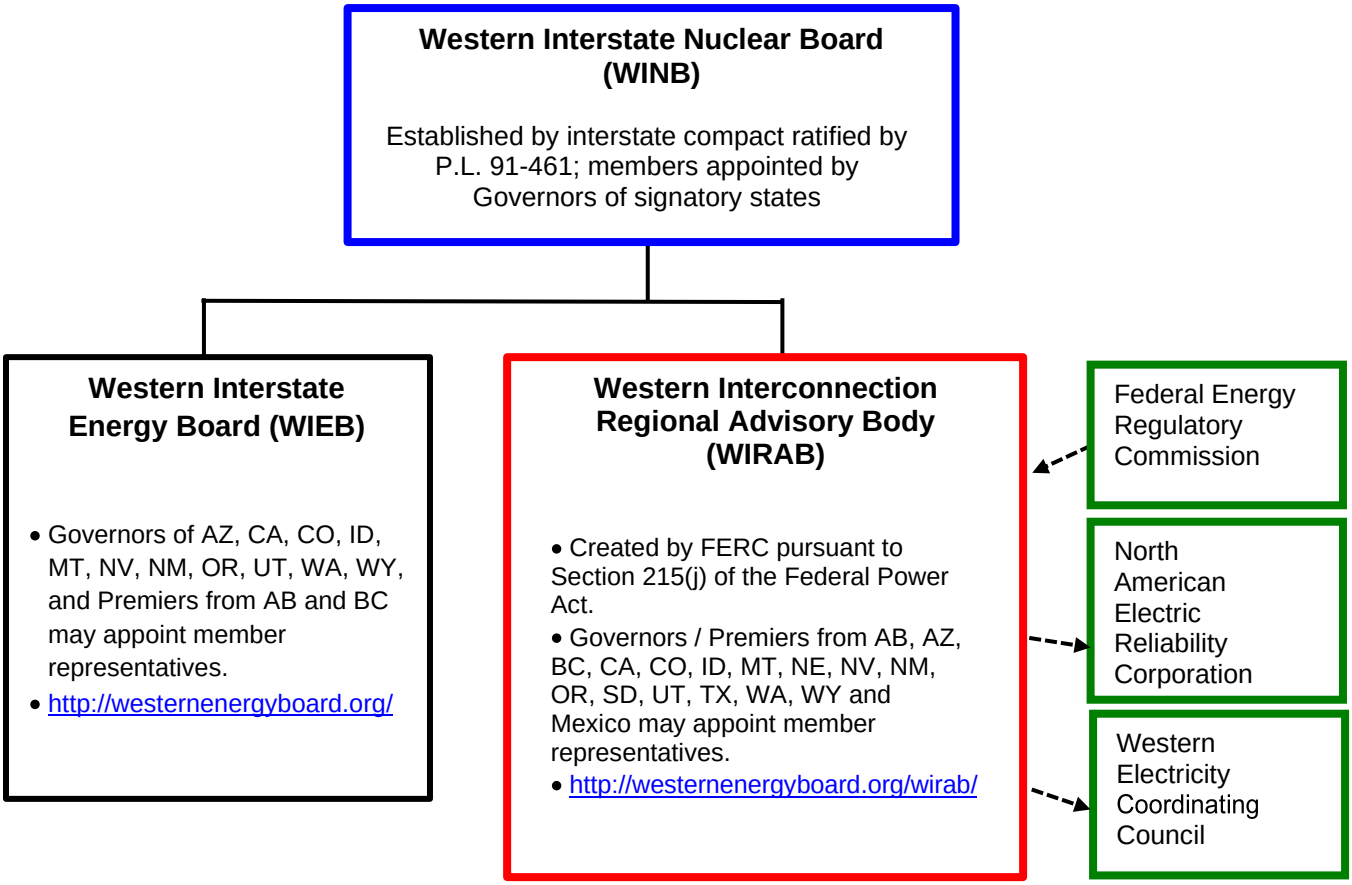
In July 2006, the FERC issued an order granting the Governors' petition to establish WIRAB.[1] In its order, the FERC determined that WIRAB should receive funding for its Section 215(j) activities and directed WIRAB to annually develop a budget and related information for submittal through the Electric Reliability Organization (ERO) budget approval process. The Commission instructed WIRAB to develop a budget in a form similar to that specified for regional entities as set forth in Order 672.[2] The FERC also required WIRAB to identify the portion of its funding to be received from Canada and Mexico.

The Governors created WIRAB as a standing advisory committee to the Western Interstate Nuclear Board (WINB), which was formed pursuant to the Western Interstate Nuclear Compact, P.L. 91-461. WIRAB has the same status under the compact as the Western Interstate Energy Board (WIEB). Below is a chart that illustrates these organizational relationships.

1 Order on Petition to Establish a Regional Advisory Body for the Western Interconnection, 116 FERC ¶ 61,061, Docket No. RR06-2-000, July 20, 2006.

2 Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Reliability Standards, Order 672, Docket RM05-30-000, Feb. 3, 2006, P. 228. "Each Regional Entity must submit its complete business plan, entire budget and organizational chart to the ERO for it to submit to the Commission. The complete business plan and the entire budget will provide the Commission with necessary information about any non-statutory activities, the source of their funding, and whether the pursuit of such activities presents a conflict of interest for the Regional Entity. For a Cross-Border Regional Entity, this information will also inform the Commission as to what portion of the budget is expended upon activities within the United States."

Figure 1. Organizational Relationships



Membership and Governance

All U.S. states with territory in the Western Interconnection (AZ, CA, CO, ID, MT, NE, NV, NM, OR, SD, TX, UT, WA, WY), the Canadian provinces of Alberta and British Columbia, and the Mexican state of Baja California are eligible to appoint members to WIRAB. Member representatives of WIRAB are appointees of the respective Governors and Premiers, or representative-designated alternates. Below is the list of current WIRAB member representatives:

Figure 2. WIRAB Membership List

WIRAB Member Representatives		
Alberta	Andrew Buffin	Executive Director, Generation, Transmission and Markets Policy, Alberta Energy
Arizona	Lea Márquez Peterson	Chairwoman, Arizona Corporation Commission
British Columbia	Amy Sopinka	Director, Transmission and Interjurisdictional Branch Ministry of Energy, Mines and Low Carbon Innovation
California	Andrew McAllister	Commissioner, California Energy Commission
Colorado	Vacant	-
Idaho	Kristine Raper	Commissioner, Idaho Public Utilities Commission
Montana	Michael Freeman	Natural Resources Policy Advisor, Montana Office of the Governor
Nebraska	Tim Texel	Executive Director, Nebraska Power Review Board
Nevada	David Bobzien	Director, Nevada Governor's Office of Energy
New Mexico	Cynthia Hall	Commissioner, New Mexico Public Regulation Commission
Oregon	Megan Decker	Chair, Oregon Public Utility Commission
South Dakota	Greg Rislov	Commission Advisor, South Dakota Public Utility Commission
Utah	Thom Carter	Executive Director, Utah Governor's Office of Energy Development
Washington	Elizabeth Osborne	Senior Energy Policy Analyst, Washington State Energy Office
Wyoming	Mary Throne	Commissioner, Wyoming Public Utilities Commission

WIRAB holds two in-person meetings each year, usually in April and October. These meetings are open to the public. WIRAB also holds monthly conference calls to discuss current and emerging issues and hosts periodic webinars with presentations from subject matter experts on key electric grid reliability topics.

Statutory Functional Scope

The FERC established WIRAB as a Regional Advisory Body under section 215(j) of the FPA. The language in Section 215(j) specifically provides for WIRAB's authority to advise the FERC, NERC, and WECC on whether reliability standards, budgets and fees, governance, compliance, assessments, strategic direction and other activities conducted pursuant to Section 215 are just, reasonable, not unduly discriminatory or preferential, and in the public interest.

WIRAB's advice to the FERC, NERC, and WECC can be grouped into four categories that

are appropriately funded under Section 215 of the FPA, including:

1. Governance and Strategic Planning;
2. Emerging Trends and System Risks;
3. Periodic Reliability Assessments; and
4. Reliability Standards and Proactive Enforcement.

WIRAB's activities in each of these categories are described in Section A – Statutory Activities.

2022 Strategic Priorities and Initiatives

The resource mix of the Western power system is rapidly changing. Environmental policy, regulatory efforts to transition to a lower carbon economy, and shifting market forces have resulted in announced retirements of coal-fired, natural gas-fired, and nuclear generating units. Utility-scale wind and solar generation is being built in many parts of the West. California and the Desert Southwest are experiencing rapid growth in the installation of distributed solar photovoltaic generation. State energy storage procurement mandates are also incentivizing a broader implementation of energy storage technologies that may support higher penetrations of asynchronous, variable energy resources (VER). New and promising carbon-free technologies like advanced nuclear reactors and green hydrogen are emerging to fill the gap created by VERs as the electric system in the West continues to decarbonize. These changes to the generation resource mix will present reliability challenges and opportunities for the Western Interconnection. Short and long-term flexibility on both the supply-side and demand-side will be needed to ensure reliability under a changing resource mix.

Reliability challenges associated with climate change are becoming more evident. Widespread heat and cold waves have made load forecasting for utility planning and operations more difficult. Wildfires and droughts have become more severe and impactful on communities and utility infrastructure. Energy policymakers and regulators are increasingly incorporating environmental and climate change factors into decisions about electricity generation and grid infrastructure. With these changes, a renewed focus on grid reliability must be front and center as the grid transforms to meet current and future needs of grid users throughout the Western

Interconnection.

Grid modernization efforts also present reliability challenges and opportunities for the Western Interconnection. Efforts to increase electrification of energy end uses, such as transportation and space and water heating, and increased reliance on distributed energy resources (DER) are creating a need for better coordination among Bulk Power System (BPS) operators and distribution system operators. Improvements to coordination will require additional research, development, and the implementation of new technologies and operational tools that can be used to improve system reliability throughout the Western Interconnection. Grid modernization also necessitates an increased focus on cyber security and physical hardening of electric grid infrastructure against human-caused and natural threats like wildfires. Physical and cyber threats to the grid will continue to impact the availability of data and the transparency of periodic reliability assessments, creating a need for better data sharing protocols to improve information sharing, coordination, and overall situational awareness.

The structure of Western power markets also continues to undergo significant change, creating additional reliability challenges and opportunities for the Western Interconnection. The California Independent System Operator (ISO) Western Energy Imbalance Market (EIM) continues to gain new participants and the ISO is working to offer day ahead market services to EIM participants (Extended Day Ahead Market, or EDAM). The Southwest Power Pool (SPP) is also offering market services, including energy imbalance market services (WEIS), to Balancing Authorities (BAs) and Transmission Operators (TOPs) within the Western Interconnection. These market reforms could result in significant changes to system operations (e.g., transmission scheduling, congestion management, and reliability coordination).

In response to these on-going changes in the Western Interconnection, WIRAB has identified four strategic initiatives that it will pursue in 2021:

Initiative 1: Advise WECC to improve regional coordination and information sharing to mitigate risks associated with wildfires and the impacts on and from the bulk electric system in the Western Interconnection.

The West experiences extreme natural events, including wildfires, drought, earthquakes, wide-spread heat, and cold temperature events that can impact utility operations. Wildfires are

unique to the West. In recent years, the wildfire season has had a devastating impact on utilities and their communities. With climate change, these events are only becoming more severe and frequent. Three states, California, Oregon, and Colorado, experienced their worst wildfire seasons on record in 2020.

Wildfire risk threatens the reliability and security of the electric grid. Society relies on the grid to perform essential functions such as heating and cooling homes, operating water delivery systems, powering telecommunications networks, and other critical services. Utility infrastructure is impacted by these events and, in some cases, is a root cause of the wildfires. Utilities in the West have initiated strategies like Public Safety Power Shutoffs (PSPS) to minimize wildfire ignition risks from utility infrastructure, diminishing end-use customer reliability in exchange for the potential benefit of increased safety from wildfires. In 2019, over 2 million customer accounts in California and about 5,000 in Oregon experienced PSPS events, which in some cases lasted multiple days and resulted in significant human and economic impacts.

WECC should explore opportunities to mitigate risks associated with wildfires and the bulk electric system in the Western Interconnection. WECC should work with its stakeholder community to encourage broader information sharing among utilities. This initiative would expand regional cooperation and increase the sharing of lessons learned in sectionalization, vegetation management, grid hardening, and PSPS practices. This initiative aligns with WECC's adopted Reliability Risk Priority to prepare for and evaluate impacts on the Bulk Power System caused by extreme natural events (e.g., wildfires) and share best practices and lessons learned from individual state and utility experiences across the Interconnection.

The goals of this initiative are to:

- Improve regional cooperation on wildfire mitigation measures for wildfires that are caused by and impact utility infrastructure.
- Create and disseminate lessons learned among Western utilities, policymakers, and stakeholders to promote best practices.
- Disseminate findings to electric utility regulators, policymakers, industry, and other stakeholders regarding the opportunities to decrease the risks associated with wildfires and the bulk electric system in the Western Interconnection.

The actions that WIRAB staff will take to achieve these goals will be to:

- Encourage WECC to open a dialog with stakeholders about adopting a WECC-wide Wildfire Mitigation Data System.
- Work with WECC and its members to identify and address implementation barriers to a wildfire mitigation data system.
- Educate state and provincial regulators and policymakers on the importance of this kind of information sharing.

Initiative 2: Advise WECC to conduct a reliability assessment, identifying the services and capabilities that long-duration energy storage could provide to support ongoing system reliability in the Western Interconnection.

Across the West, the resource mix continues to change as states, provinces, municipalities, corporations, and utilities continue to adopt clean and renewable energy policy goals aimed at decarbonizing the electric sector; many endeavoring to ultimately attain a "100 percent clean" or zero carbon electricity portfolio. These policies are driving an increase in the integration of variable energy resources (VER), such as wind and solar, and the continued retirement of traditional baseload (i.e., fossil fueled generation or nuclear) assets. These changes to the resource mix impact grid operations and create new challenges and opportunities for electric system reliability. Coal generation has traditionally been a baseload resource and natural gas generators provide baseload and flexibility services. More recently both coal and gas generators have been operated to provide more flexibility in order to integrate increasing levels of VER that are not consistently available to meet load.

As electric utilities continue to move closer to achieving long-term decarbonization objectives, new, clean technologies capable of storing energy for long periods (e.g., green hydrogen storage, pumped hydro storage, and flow batteries) may be essential to providing grid balancing services and maintaining grid reliability. Today, almost all battery storage assets in use, under development, or contracted for have a duration of four hours or less. Although these short-term energy storage resources will continue to provide important grid services, a better understanding of the characteristics of various long duration energy storage (LDES) resources and the services they are uniquely capable of providing will become increasingly important. LDES could potentially serve to reduce VER curtailments, storing and enabling the use of previously

generated clean energy at a later time (especially during multi-day weather events when renewable generation is limited), thereby providing clean, flexible, and dispatchable capacity, supporting electric system reliability, and reducing the West's reliance on traditional baseload resources to provide these services.

In 2022, WIRAB will encourage WECC to conduct a qualitative assessment of LDES and the reliability services and capabilities that LDES could provide to support ongoing electric system reliability in the Western Interconnection as the resource mix continues to change.

The goals of this initiative are to:

- Identify the reliability services and capabilities needed to support aggressive decarbonization efforts in the Western Interconnection.
- Identify the reliability services and capabilities that LDES is best or uniquely capable of providing.
- Disseminate findings to electric utility regulators, policymakers, industry, and other stakeholders in the West.

The actions that WIRAB staff will take to achieve these goals will be to:

- Encourage WECC to conduct a qualitative assessment of the reliability services and capabilities needed to support aggressive decarbonization efforts in the Western Interconnection and to identify which services and capabilities LDES may be uniquely capable of providing.
- Work with WECC and industry stakeholders to frame and scope an assessment that explores the reliability services needed in the Western Interconnection that LDES may be able to provide and identify any rules and regulations that may serve as a barrier to potential advances in the technology.
- Work with WECC to disseminate findings to electric utility regulators, policymakers, industry and other stakeholders.

Initiative 3: Advise WECC to produce a preliminary summary of grid-forming inverter technology and its potential to support the stable operation of the Western Interconnection.

The resource mix of the electric grid continues to change from primarily traditional

synchronous generation to asynchronous inverter-based resources such as wind generation, solar PV, and battery electric storage. These changes raise important questions about the reliability of the grid. Grid-forming inverters may become an important technology to ensure reliability of the electric grid of the future.

In a grid driven primarily by synchronous generation, inverter-based resources can rely on the synchronous generation to create the grid's Alternating Current (AC) frequency and use that signal to match their output with the grid. With inverter-based resources accounting for increasing shares of the overall electricity supply, the frequency signal that is essential for the coordinated operation of the electric grid may become weak in certain locations. Weak grid issues can be especially prevalent in electric systems with long distance transmission lines between generating units. Grid forming inverters are capable of providing the appropriate frequency signal on their own and can potentially support the stable operation of the electric grid.

Grid-forming inverters are an emerging research topic for the industry, academics, and government. The National Renewable Energy Laboratory (NREL) recently produced a report titled, "Research Roadmap for Grid Forming Inverters." The Energy Systems Integration Group has held a series of technical workshop sessions exploring grid-forming inverter technology and its potential application to the grid.

WECC should produce a preliminary summary document on grid forming inverter technology and the potential uses and reliability benefits of grid-forming inverters. The document should be accessible to stakeholders in the Western Interconnection, including industry, policymakers, regulators, about the potential uses and reliability benefits of grid-forming inverters. WECC should identify if grid-forming inverters may provide unique opportunities in the Western Interconnection to enhance future grid reliability and identify areas of future study.

The goals of this initiative are to:

- Produce a neutral unbiased summary of grid forming inverter technology and its potential to support the stable operation of the Western Interconnection.
- Educate and inform stakeholders in the Western Interconnection about an emerging technology that may contribute to electric grid reliability.
- Disseminate the preliminary summary of this emerging technology to a broad group of

stakeholders in the Western Interconnection.

The actions that WIRAB staff will take to achieve these goals will be to:

- Encourage WECC to engage with other entities and researchers exploring and developing grid-forming invertor technology.
- Work with WECC and industry stakeholders to frame and scope a technical brief that describes how grid-forming inverters can enhance reliability in the Western Interconnection and identify barriers to their deployment.
- Work with WECC to educate state and provincial regulators and policymakers about the potential role of grid-forming invertors to support the stability and reliability of the Western Interconnection with a changing resource mix.

Initiative 4: Advise WECC to continue to improve its "Western Assessment of Resource Adequacy" and to complement this planning work with additional education and outreach on how resource adequacy problems impact real-time system operations.

With its December 2020 publication of the "The Western Assessment of Resource Adequacy Report," WECC significantly improved its assessment of resource adequacy in the Western Interconnection. The WECC Board of Directors and WECC Executive Team considered advice from WIRAB and other stakeholders and effectively prioritized meaningful work on this issue in 2020. The outcome of this collaboration between WECC and WIRAB demonstrates the successful achievement of goals and objectives identified in WIRAB strategic initiatives on resource adequacy and included in its 2020 and 2021 Business Plan and Budget.

WECC has improved its collection and reporting of generation capacity data, now including future generation retirements and additions in its analysis and providing a robust and independent assessment of long-term resource adequacy in the Western Interconnection. Additionally, WECC has effectively conducted a series of webinars to disseminate the findings of this report to regulators, policymakers, industry, and other stakeholders in the Western Interconnection. WIRAB continues to emphasize that WECC is uniquely positioned to use its expertise to perform quality, independent, and robust assessments of resource adequacy in the six subregions of the Western Interconnection.

Even with these recent successes, resource adequacy continues to be a significant reliability risk in the Western Interconnection. The potential impacts of this reliability risk warrant keeping resource adequacy as a strategic initiative in WIRAB's 2022 Business Plan and Budget. WIRAB believes further improvement is possible in two areas. First, in the area of planning, WIRAB believes WECC can continue to improve its "Western Assessment of Resource Adequacy" by refining its analysis of dynamic planning reserve margins, its analysis of demand at risk, and its analysis of transmission congestion and regional imports and exports under extreme conditions. Second, in the area of operations, WIRAB believes WECC can provide education and clarity by producing a technical brief describing how "planning reserves" become "operating reserves" in the operational timeframe and by further describing how Balancing Authorities manage operating reserves during system contingencies. WIRAB will continue to work closely with WECC to further frame and scope these important efforts.

The goals of this initiative are to:

- Improve the "Western Assessment of Resource Adequacy" by continuing to refine the analysis of dynamic planning reserve margins, the analysis of demand at risk, and the analysis of transmission congestion and regional imports and exports under extreme conditions.
- Provide education and clarity by producing a technical brief that describes how "planning reserves" become "operating reserves" in the operational timeframe and describing how Balancing Authorities manage operating reserves during system contingencies.
- Disseminate the improved analysis and information regarding operational reserves to regulators, policymakers, industry, and other stakeholders in the Western Interconnection.

The actions that WIRAB staff will take to achieve these goals will be to:

- Work with WECC and its stakeholders to continue to refine the Western Assessment of Resource Adequacy.
- Work with WECC and industry stakeholders to frame and scope a technical brief that describes how "planning reserves" become "operating reserves" in the operational timeframe and describing how Balancing Authorities manage operating reserves during system contingencies.

- Work collaboratively with WECC to disseminate key findings to regulators, policymakers, industry, and other stakeholders in the West.

2022 Budget and Assessment Impacts

The WIRAB proposed budget for 2022 is $918,900. This amount is $286,600 (23.8%) lower than the amount in WIRAB's approved budget for 2021. Total proposed FTEs for 2022 are 3.0, which reflects a decrease of 1.75 FTEs from 2021. WIRAB's total funding requirement is $699,700. WIRAB's proposed funding assessment is $698,700. This funding assessment is $287,600 lower than the 2021 funding assessment.

Personnel and Indirect Expenses

Salary expenses (exclusive of Indirect expenses) decreased from $453,300 in the 2021 Budget to $314,400 (30.6%) in the 2022 Budget due to the decrease in FTE measurement to more accurately account for actual work hours associated with WIRAB business. WIRAB uses a single rate method for indirect expenses. The indirect expenses include office expenses, medical and retirement expenses as well as holiday, vacation, and sick leave for WIRAB staff. The indirect rate is a percent of direct staff time spent on WIRAB. The indirect rate slightly decreases from 113% of direct labor costs in the 2021 Budget to 112.9% in the 2022 Budget. Table 2 shows personnel and indirect expenses per FTE for the approved 2021 Budget and the proposed 2022 Budget.

Table 2. Personnel and Indirect Expense Analysis, 2021-2022

WIRAB - Personnel and Indirect Expense Analysis 2021-2022					
STATUTORY					
	Budget 2021	Projection 2021	Budget 2022	Variance 2022 Budget v 2021 Budget	Variance %
Salary Expense	$ 453,300	$ 453,300	$ 314,400	$ (138,900)	-30.6%
FTEs	4.75	4.75	3.00	(1.75)	-36.8%
Cost per FTE	$ 95,432	$ 95,432	$ 104,800	$ 9,368	9.8%
Indirect Rate	113.0%	113.0%	112.9%		
Indirect Expense	$ 512,200	$ 512,200	$ 354,900	$ (157,300)	-30.7%
FTEs	4.75	4.75	3.00	(1.75)	-36.8%
Cost per FTE	$ 107,832	$ 107,832	$ 118,300	$ 10,468	9.7%

Meeting Expense

Meeting costs remained flat at $56,100 for the proposed 2022 Budget. WIRAB will hold two major in-person meetings per year that include participation by state/provincial agencies with electric power responsibilities in the Western Interconnection. Wherever feasible, WIRAB meetings will be coordinated with other meetings of the Western states and provinces. Webinars on topics of concern will continue to be utilized between in-person meetings. WIRAB also conducts monthly conference calls to update members on current activities and to develop positions on reliability issues in the Western Interconnection.

Travel Expense

Travel costs increased by $9,600 to $93,500 to resume anticipated and historical travel costs. A decrease in the 2021 Budget was made due to COVID-19 impacts. WIRAB members travel to biannual meetings and reliability conferences accounts for $30,200. WIRAB staff travel to attend meetings of WIRAB, WECC and NERC accounts for $63,300. Hotel and travel costs are based on experience from previous years and in consideration of pandemic conditions.

Consultants and Contracts

The budget includes $100,000 in contract funding for technical expertise on issues related to improved grid operating practices, reliability standards and compliance; the same amount as budgeted for 2022. This expertise will assist WIRAB in preparing and providing technically-sound advice to be submitted to the FERC, NERC, and WECC as authorized under Section 215(j).

Table 3. Budget Comparison 2021 to 2022

WIRAB - Statement of Activities and Change in Working Capital
2021 Budget & Projection, and 2022 Budget

STATUTORY

	2021 Budget	2021 Projection	Variance 2021 Projection v 2021 Budget Over(Under)	% Change	2022 Budget	Variance 2022 Budget v 2021 Budget Over(Under)	% Change
Funding							
WIRAB Funding							
Assessments	$ 986,300	$ 986,300	$ -	0.0%	$ 698,700	$ (287,600)	-29.2%
Penalty Sanctions	-	-	-		-	-	
Total WIRAB Funding	**$ 986,300**	**$ 986,300**	**$ -**	**0.0%**	**$ 698,700**	**$ (287,600)**	**-29.2%**
Membership Dues	-	-	-		-	-	
Testing Fees	-	-	-		-	-	
Services & Software	-	-	-		-	-	
Workshops	-	-	-		-	-	
Interest	3,000	3,000	$ -	0.0%	1,000	$ (2,000)	-66.7%
Miscellaneous	-	-	-		-	-	
Total Funding (A)	**$ 989,300**	**$ 989,300**	**$ -**	**0.0%**	**$ 699,700**	**$ (289,600)**	**-29.3%**
Expenses							
Personnel Expenses							
Salaries	453,300	453,300	-	0.0%	314,400	$ (138,900)	-30.6%
Payroll Taxes			-			-	
Benefits			-			-	
Retirement Costs			-			-	
Total Personnel Expenses	**$ 453,300**	**$ 453,300**	**$ -**	**0.0%**	**$ 314,400**	**$ (138,900)**	**-30.6%**
Meeting Expenses							
WIRAB Meetings	$ 56,100	$ 10,000	$ (46,100)	-82.2%	$ 56,100	$ -	0.0%
State Travel	30,200	-	$ (30,200)	-100.0%	30,200	$ -	0.0%
Staff Travel	53,700	-	$ (53,700)	-100.0%	63,300	$ 9,600	17.9%
		-	$ -		-	$ -	
Total Meeting Expenses	**$ 140,000**	**$ 10,000**	**$ (130,000)**	**-92.9%**	**$ 149,600**	**$ 9,600**	**6.9%**
Operating Expenses							
Consultants & Contracts	$ 100,000	$ 75,000	$ (25,000)	-25.0%	$ 100,000	$ -	0.0%
Office Rent	-	-	-	-	-	-	-
Office Costs	-	-	-	-	-	-	-
Professional Services	-	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	-
Depreciation	-	-	-	-	-	-	-
Total Operating Expenses	**$ 100,000**	**$ 75,000**	**$ (25,000)**	**-25.0%**	**$ 100,000**	**$ -**	**0.0%**
Total Direct Expenses	**$ 693,300**	**$ 538,300**	**$ (155,000)**	**-22.4%**	**$ 564,000**	**$ (129,300)**	**-18.6%**
Indirect Expenses	**$ 512,200**	**$ 512,200**	**$ -**	**0.0%**	**$ 354,900**	**$ (157,300)**	**-30.7%**
Other Non-Operating Expenses	**$ -**	**$ -**	**$ -**	-	**$ -**	**$ -**	-
TOTAL BUDGET (B)	**$ 1,205,500**	**$ 1,050,500**	**$ (155,000)**	**-12.9%**	**$ 918,900**	**$ (286,600)**	**-23.8%**
CHANGE IN WORKING CAPITAL (=A-B)[1]	**$ (216,200)**	**$ (61,200)**	**$ 155,000**	**-**	**$ (219,200)**	**$ (3,000)**	**-**
FTEs	4.75	4.75	-	0.0%	3.00	(1.75)	-36.8%

[1] Fixed Assest included in Indirect Expenses.

Statutory Assessments

WIRAB's proposed funding assessment of $698,700 is allocated at $586,773 (84%) to the U.S. portion; $99,937 (14.3%) to the Canadian portion; and $11,990 (1.7%) to the Mexican portion of the Western Interconnection.

Key Assumptions

The WIRAB 2022 Business Plan and Budget is based on the following assumptions:

- There will be no significant expansion of the FERC, NERC, or WECC responsibilities as a result of legislation or administrative actions.
- WIRAB will monitor reliability coordination activities at the RC West, SPP, the AESO, and BC Hydro.
- WIRAB will hold two in-person meetings in 2022.
- WIRAB will organize and sponsor webinars and workshops on key reliability issues for WIRAB members, state and provincial representatives, industry representatives, and other interested stakeholders.
- WIRAB will attend all WECC Board of Directors and Member Advisory Committee (MAC) meetings.
- WIRAB will attend selected NERC meetings and workshops on relevant topics.
- WIRAB will annually visit with the FERC in its offices.
- WIRAB will monitor all FERC business meetings.
- WIRAB will attend the FERC technical conferences on reliability issues.

Section A – Statutory Activities

2022 Business Plan and Budget

WIRAB's advice to the FERC, NERC, and WECC can be grouped into four categories that are appropriately funded under Section 215 of the FPA:

1. **Governance and Strategic Planning:** Section 215(j) of the FPA authorizes WIRAB to provide advice to the FERC on the governance, strategic direction, budget, and fees of WECC.

2. **Emerging Trends and System Risks:** WIRAB must maintain awareness of system conditions, emerging trends, and system risks in order to provide effective and technically sound advice regarding the strategic direction of the FERC, NERC, and WECC. WIRAB also uses knowledge of emerging trends and risks to provide advice to WECC on reliability readiness activities and proactive compliance efforts. These activities are appropriately funded under Section 215(j) of the FPA.

3. **Periodic Reliability Assessments:** Section 215(g) of the FPA requires NERC to conduct periodic assessments of the reliability and adequacy of the BPS. WECC assists NERC in performing this statutory activity. WIRAB works closely with WECC to improve reliability and resource adequacy assessments in the Western Interconnection.

4. **Reliability Standards and Proactive Enforcement:** Section 215(j) of the FPA authorizes WIRAB to provide advice to the FERC on whether reliability standards are just, reasonable, not unduly discriminatory, or preferential, and in the public interest. WIRAB works closely with WECC to identify emerging problems or conditions that should be considered in the course of requesting, drafting, and voting on amendments to existing standards and in developing new standards.

WIRAB's activities in each of these categories are described in the following subsections.

Governance and Strategic Planning

Section 215(j) of the FPA authorizes WIRAB to advise the FERC and the regional entity (i.e., WECC) on the governance, strategic direction, budget, and fees of WECC. The WIRAB staff engages with the WECC Board of Directors, management, WECC standing committees, and WECC's Member Advisory Committee (MAC). Through this engagement, WIRAB monitors developments related to WECC's organizational governance, strategic direction, and business plan and budget. This engagement informs WIRAB's efforts to evaluate the effectiveness and efficiency of operations at WECC and to ensure that all "activities conducted pursuant to Section 215 are just, reasonable, not unduly discriminatory or preferential, and in the public interest."

The WIRAB staff also conducts monthly meetings with WIRAB Members. During these webinar meetings, WIRAB staff provides WIRAB Members, WECC's Class 5 Representatives (i.e., representatives of state and provincial governments), and other interested stakeholders with regular updates on current and upcoming activities at WECC. These meetings provide WIRAB Members an opportunity to develop and review WIRAB's written advice and guidance to the WECC Board of Directors. During these webinars, the WIRAB staff also provides opportunities for WECC representatives to engage with and discuss governance-related activities with WIRAB Members. WIRAB provides WECC with independent expert advice on operational practices and performance, annual business plans and budgets, strategic planning, committee charters, proposed bylaw amendments, fees, and other matters. Additionally, WIRAB is deeply involved in WECC's quinquennial organizational review required by Section 4.9 of the WECC Bylaws. Once the organizational review is completed, WIRAB monitors and participates in the implementation of the recommendations that the WECC Board develops during the organizational review. WIRAB and the WIRAB staff will continue to engage with WECC and to provide advice and guidance to the organization as appropriate.

Emerging Trends and System Risks

WIRAB staff engages in the following ongoing activities in order to provide independent expert advice on emerging reliability trends and system risks:

Event Analysis and Situational Awareness:

Understanding important operational issues confronting the BPS today, as well as in the past, is key to maintaining and improving reliability in the Western Interconnection. Event analysis and situational awareness matters need to be discussed in open and transparent forums, when appropriate. These types of discussions bring together utility operators, who deal with these types of issues on a day-to-day basis, with thought leaders to provide different perspectives that can add value to tackle reliability challenges. It is important to share lessons learned and to promote best practices to ensure that system operators have access to the tools and knowledge necessary to maintain a reliable grid in real-time.

WIRAB members and the WIRAB staff engage in relevant discussions and activities by attending and participating in WECC's standing committee meetings, monitoring the western Reliability Coordinators, and monitoring reliability activities in other forums. The WIRAB staff also provides leadership by conducting periodic outreach webinars and develops panel sessions for WIRAB's in-person meetings. These outreach opportunities are designed to promote discussions among Western regulators, policymakers, and other stakeholders regarding emerging trends and risks associated with system events.

Expanding Market Operations:

Organized markets continue to expand in the Western Interconnection. The Western EIM, operated by the California ISO, began operation in 2014 and has grown to include participants from 11 Western states and the Canadian Province of British Columbia, and continues to expand participation. The California ISO, in partnership with the EIM Entities and other stakeholders, is developing an approach to extend participation in their day-ahead market to the EIM Entities. The SPP launched its Western Energy Imbalance Service (WEIS) for several entities in the eastern part of the Western Interconnection, which have announced their intention to take those services. SPP also announced the that it has received letters from several western utilities committing to evaluate full RTO membership. These market reforms could result in significant changes to system operations (e.g., transmission scheduling, congestion management) and create new reliability challenges and opportunities for the Western Interconnection.

The WIRAB staff monitors market reform efforts in the Western Interconnection and provides a forum for discussions about reliability-related issues associated with developing multiple markets in the Western Interconnection. The WIRAB staff monitors and participates in forums that are exploring these reliability issues associated with markets taking place at public utility commissions, regional TOP meetings, and ISO/RTO workshops. Additionally, the WIRAB staff engages in relevant WECC committee meetings and activities, such as those of WECC's MIC. WIRAB will continue to provide advice to WECC and to make recommendations as appropriate on reliability challenges and opportunities associated with expanding market operations in the Western Interconnection.

Essential Reliability Services:

As the resource mix continues to change, some reliability services that have traditionally been provided by synchronous generating resources may not be available to the same extent in the future as the BPS is becoming increasingly reliant on variable inverter-based resources. The electric utility industry must examine alternative opportunities to provide these essential reliability services and develop practices today that support ongoing BPS reliability under a new paradigm. Inverter-based resources, specifically solar PV generation, have historically been regarded as unable to provide the grid supporting services, such as frequency support and voltage control, traditionally provided by synchronous resources. However, new power electronic technologies available through advanced inverters and other grid-enhancing technologies now enable inverter-based generation to provide grid support similar to synchronous generators if programmed correctly. New policies and practices accounting for these emerging technologies need to continue to be developed to support grid reliability in the future.

WIRAB Members and the WIRAB staff develop expertise by attending, participating in, and monitoring WECC's standing committees, NERC's Reliability Issues Steering Committee (RISC), Reliability and Security Technical Committee (RSTC), the FERC's Reliability Technical Conferences; and other forums within the industry. WIRAB provides leadership and written advice to WECC and the FERC on policies regarding the risks associated with the provision of essential reliability services in the Western Interconnection. WIRAB staff also provides periodic outreach webinars and develops panel sessions for WIRAB's in-person meetings to discuss emerging trends. These forums provide an opportunity to inform Western policymakers and other interested

stakeholders of the emerging risks associated with the changing resource mix and the importance of maintaining essential reliability services in the Western Interconnection.

Periodic Reliability Assessments

High priority reliability topics for the Western Interconnection is the changing resource mix, including the increasing penetration of variable renewable resources, increasing retirements of baseload coal generation that would reduce inertia on the grid, and the growth of distributed energy resources that interface with the BPS. WIRAB strives for high quality resource assessments that address the reliability implications of the changing resource mix in the Western Interconnection over a 10- to 20-year timeframe. Production cost modeling can identify economic dispatch of a potential new resource mix for every hour over a future year and identify critical hours of system stress. Power flow analysis then examines these critical stress hours for traditional reliability parameters. The integrated use of production cost modeling and power flow analysis will be an essential tool for future reliability assessments of the Western Interconnection.

WIRAB monitors, advises, and participates in WECC's RAC to promote improved reliability assessments of the Western Interconnection. WIRAB will encourage and support the RAC in its efforts to integrate WECC's data and modeling capability to perform roundtrip reliability assessments that combine power flow analysis and production cost modeling. WIRAB will also monitor, engage, and communicate findings on leading research about the integration of variable energy resources into the Western Interconnection, such as the work of NERC's Inverter-Based Resource Performance Work Group. Further, WIRAB staff monitors and engages with National Laboratories, industry trade organization such as the Energy Systems Integration Group (ESIG), Registered Entities, and other researchers and organizations investigating the flexibility and reliability of the power system. WIRAB also provides outreach to Western states and provinces on the policy implications associated with new research.

Reliability Standards and Proactive Enforcement

WIRAB staff engages in the following ongoing activities in order to provide independent expert advice on the development and proactive enforcement of reliability standards:

Operations and Planning Reliability Standards:

The reliability standards were created to provide the minimum requirements for planning and operating the electric grid. The compliance and enforcement of these reliability standards ensure there is oversight and accountability of BPS owners and operators to maintain system-wide reliability. Reliability standards must be strict enough to guarantee that system reliability is maintained, but flexible enough to respond to the changing industry. It is essential to develop and review reliability standards to ensure they effectively preserve reliability while not being overly burdensome on the entities required to comply.

WIRAB staff develops WIRAB advice on the development and proactive enforcement of reliability standards by contracting with subject matter experts with direct knowledge of the efficacy of reliability standards and the burden of compliance on regulated entities. WIRAB staff attends, participates, and monitors WECC's Standing Committee meetings, WECC's Standards Committee meetings, WECC's Reliability and Security Workshop, NERC's standard development process, and other industry forums. When necessary, WIRAB provides written advice to WECC, NERC and the FERC on the implementation of specific standards within the Western Interconnection. WIRAB staff also conduct periodic outreach webinars and in-person panel discussions for WIRAB's meetings to consider emerging trends that may require changes to reliability standards in the Western Interconnection.

Physical and Cyber Security:

Physical and cyber security of the electric grid continues to represent issues of growing concern in the Western Interconnection and across the ERO. The Western Interconnection has experienced physical and cyber incidents that have had the potential to impact system reliability. Experiences from around the world demonstrate there is a greater threat to the electric grid reliability related to physical and cyber security. The Critical Infrastructure Protection (CIP) standards provide a baseline level set of requirements for registered entities to maintain the protection of critical assets of the BPS. The CIP standards must be risk-based to ensure that critical assets are protected while maintaining the flexibility to respond to the changing nature of potential threats. It is essential to develop and review the CIP standards to ensure they effectively preserve reliability while not being overly burdensome on the entities required to comply.

WIRAB stays abreast of significant incidents that have compromised both the physical and cyber security of the grid through secure briefings and updates from security experts. WIRAB works with WECC and subject matter experts to educate regulators on the steps registered entities take to maintain the physical and cyber security of the grid. WIRAB continues to monitor the development of NERC's CIP standards and will provide advice when appropriate. WIRAB continues to observe NERC's GridEx exercises, which give utilities the opportunities to demonstrate how they would respond to coordinated cyber and physical security events. WIRAB encourages entities to share lessons learned and best practices broadly across the Western Interconnection.

Section B – WIRAB Supplemental Financial Information

2022 Business Plan and Budget

Working Capital Reserve

WIRAB projects it will have a working capital reserve of $908,400 on December 31, 2021, as compared to a desired working capital reserve on December 31, 2022, of $689,200. The surplus working capital reserve results in a $219,200 reduction in WIRAB's funding requirement for 2022.

In its 2018 Business Plan and Budget, WIRAB changed its reserve policy to stabilize statutory assessments while reducing its surplus financial reserve over several budget cycles. The FERC allows WIRAB to carry a financial reserve under the proviso that any excess reserves be used to offset future assessments. WIRAB's funding assessments are calculated roughly nine months in advance of each budget year. This assessment is fixed, meaning that, once approved, it cannot be decreased or increased mid-year to match actual expenses more closely. The financial reserve allows for some budgetary flexibility.

Table B-1. Working Capital Reserve Analysis 2021 – 2022

WIRAB - Working Capital Reserve Analysis 2021-2022	
STATUTORY	
Beginning Working Capital Reserve (Deficit), December 31, 2020	969,581
Plus: 2021 Funding (from LSEs or designees)	986,300
Plus: 2021 Other funding sources	3,000
Minus: 2021 Projected expenses & capital expenditures	(1,050,500)
Projected Working Capital Reserve (Deficit), December 31, 2021	**908,400**
Desired Working Capital Reserve, December 31, 2022	689,200
Minus: Projected Working Capital Reserve, December 31, 2021	(908,400)
Increase(decrease) in funding requirement to achieve Working Capital Reserve	(219,200)
2022 Expenses and Capital Expenditures	918,900
Less: Penalty Sanctions	0
Less: Other Funding Sources	(1,000)
Adjustment: To achieve desired Working Capital Reserve	(219,200)
2022 NERC Assessment	698,700

Table B-2. 2022 Budget with 2023 & 2024 Projections

WIRAB - Statement of Activities and Change in Working Capital
2022, 2023, and 2024 Budget Projections

STATUTORY

	2022 Budget	2023 Projection	Variance 2023 Projection v 2022 Budget Over(Under)	% Change	2024 Projection	Variance 2024 v 2023 Projections Over(Under)	% Change
Funding							
WIRAB Funding							
Assessments	$ 698,700	$ 764,800	$ 66,100	9.5%	$ 841,800	$ 77,000	10.1%
Penalty Sanctions	-	-	-		-	-	
Total WIRAB Funding	**$ 698,700**	**$ 764,800**	**$ 66,100**	**9.5%**	**$ 841,800**	**$ 77,000**	**10.1%**
Membership Dues	-	-	-		-	-	
Testing Fees	-	-	-		-	-	
Services & Software	-	-	-		-	-	
Workshops	-	-	-		-	-	
Interest	1,000	1,000	$ -	0.0%	1,000	$ -	0.0%
Miscellaneous	-	-	-		-	-	
Total Funding (A)	**$ 699,700**	**$ 765,800**	**$ 66,100**	**9.4%**	**$ 842,800**	**$ 77,000**	**10.1%**
Expenses							
Personnel Expenses							
Salaries	314,400	327,000	12,600	4.0%	340,100	$ 13,100	4.0%
Payroll Taxes			-			-	
Benefits			-			-	
Retirement Costs			-			-	
Total Personnel Expenses	**$ 314,400**	**$ 327,000**	**$ 12,600**	**4.0%**	**$ 340,100**	**$ 13,100**	**4.0%**
Meeting Expenses							
WIRAB Meetings	$ 56,100	$ 57,800	$ 1,700	3.0%	$ 59,500	$ 1,700	2.9%
State Travel	$ 30,200	$ 31,100	$ 900	3.0%	$ 32,000	$ 900	2.9%
Staff Travel	$ 63,300	$ 53,700	$ (9,600)	-15.2%	$ 55,300	$ 1,600	3.0%
Total Meeting Expenses	**$ 149,600**	**$ 142,600**	**$ (7,000)**	**-4.7%**	**$ 146,800**	**$ 4,200**	**2.9%**
Operating Expenses							
Consultants & Contracts	$ 100,000	$ 100,000	$ -	0.0%	$ 100,000	$ -	0.0%
Office Rent	-	-	-	-	-	-	-
Office Costs	-	-	-	-	-	-	-
Professional Services	-	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	-
Depreciation	-	-	-	-	-	-	-
Total Operating Expenses	**$ 100,000**	**$ 100,000**	**$ -**	**0.0%**	**$ 100,000**	**$ -**	**0.0%**
Total Direct Expenses	**$ 564,000**	**$ 569,600**	**$ 5,600**	**1.0%**	**$ 586,900**	**$ 17,300**	**3.0%**
Indirect Expenses	**$ 354,900**	**$ 369,100**	**$ 14,200**	**4.0%**	**$ 383,900**	**$ 14,800**	**4.0%**
Other Non-Operating Expenses	**$ -**	**$ -**	**$ -**	-	**$ -**	**$ -**	-
TOTAL BUDGET (B)	**$ 918,900**	**$ 938,700**	**$ 19,800**	**2.2%**	**$ 970,800**	**$ 32,100**	**3.4%**
CHANGE IN WORKING CAPITAL (=A-B)[1]	**$ (219,200)**	**$ (172,900)**	**$ 46,300**	**-**	**$ (128,000)**	**$ 44,900**	**-**
FTEs	3.00	3.00	-	0.0%	3.00	-	0.0%

[1] Fixed Assest included in Indirect Expenses.

WIRAB projects a 2.2% increase to its annual budget in 2023 and a 3.4% increase in 2024. These increases reflect expected cost-of-living adjustments to personnel expenses for employees working in Denver, Colorado, and increased costs for meetings and travel.

Section C – Non-Statutory Activities

2022 Business Plan and Budget

WIRAB does not engage in non-statutory activities.

Section D – Additional Consolidated Financial Statements

2022 Business Plan and Budget

Statement of Financial Position

Table D-1 provides WIRAB's Statement of Financial Position as of the following dates:

- As of June 30, 2020, per audit
- As of December 31, 2021, projected
- As of December 31, 2022, as budgeted

Table D-1. Statement of Financial Position, Three-Year Comparison

WIRAB - Statement of Financial Position			
STATUTORY			
	As of June 30, 2020 (Audit)	As of December 31, 2021 (Projected)	As of December 31, 2022 (Budgeted)
Assets			
Cash and Investments	$ 1,123,869	$ 908,400	$ 689,200
Total Assets	**$ 1,123,869**	**$ 908,400**	**$ 689,200**

Appendix A – Organization Chart

2022 Business Plan and Budget

The WIRAB Staff Organization Chart is shown below.