Western Interconnection Regional Advisory Body

2021 Business Plan and Budget

June 19, 2020

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 2021 is $1,205,500. This amount is $49,700 (4%) lower than the amount in WIRAB's approved 2020 budget. Total proposed full-time equivalents (FTEs) for 2021 has been decreased from 5.0 to 4.75. WIRAB's total funding requirement is $989,300. As shown in Table 1 below, this amount represents the total statutory expenses of $1,205,500 less $216,200 in statutory working capital requirement. WIRAB's proposed funding assessment is $986,300, the same amount as the 2020 funding assessment. WIRAB proposes to allocate the funding assessment as follows: $826,979 (83.8%) to the U.S. portion; $143,163 (14.5%) to the Canadian portion; and $16,158 (1.6%) to the Mexican portion of the Western Interconnection. The following table summarizes the WIRAB proposed budget for 2021.*

Table 1. WIRAB Budget for 2021

WIRAB - Total Resources (in whole dollars)	2021 Budget	U.S.	Canada	Mexico
Statutory FTEs	4.75			
Non-statutory FTEs				
Total FTEs	4.75			
Statutory Expenses	$ 1,205,500			
Non-Statutory Expenses				
Total Expenses	$ 1,205,500			
Statutory Inc(Dec) in Fixed Assets				
Non-Statutory Inc(Dec) in Fixed Assets				
Total Inc(Dec) in Fixed Assets	$ -			
Statutory Working Capital Requirement	$ (216,200)			
Non-Statutory Working Capital Requirement	0			
Total Working Capital Requirement	$ (216,200)			
Total Statutory Funding Requirement	$ 989,300			
Total Non-Statutory Funding Requirement	$ -			
Total Funding Requirement	$ 989,300			
Statutory Funding Assessments	$ 986,300	$ 826,979	$ 143,163	$ 16,158
Non-Statutory Fees				
NEL	860,533,524	721,528,287	124,907,837	14,097,400
NEL%	100.00%	83.8%	14.5%	1.6%

* The allocation of the statutory assessments was updated to reflect 2019 NEL data on August 18, 2020.

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.

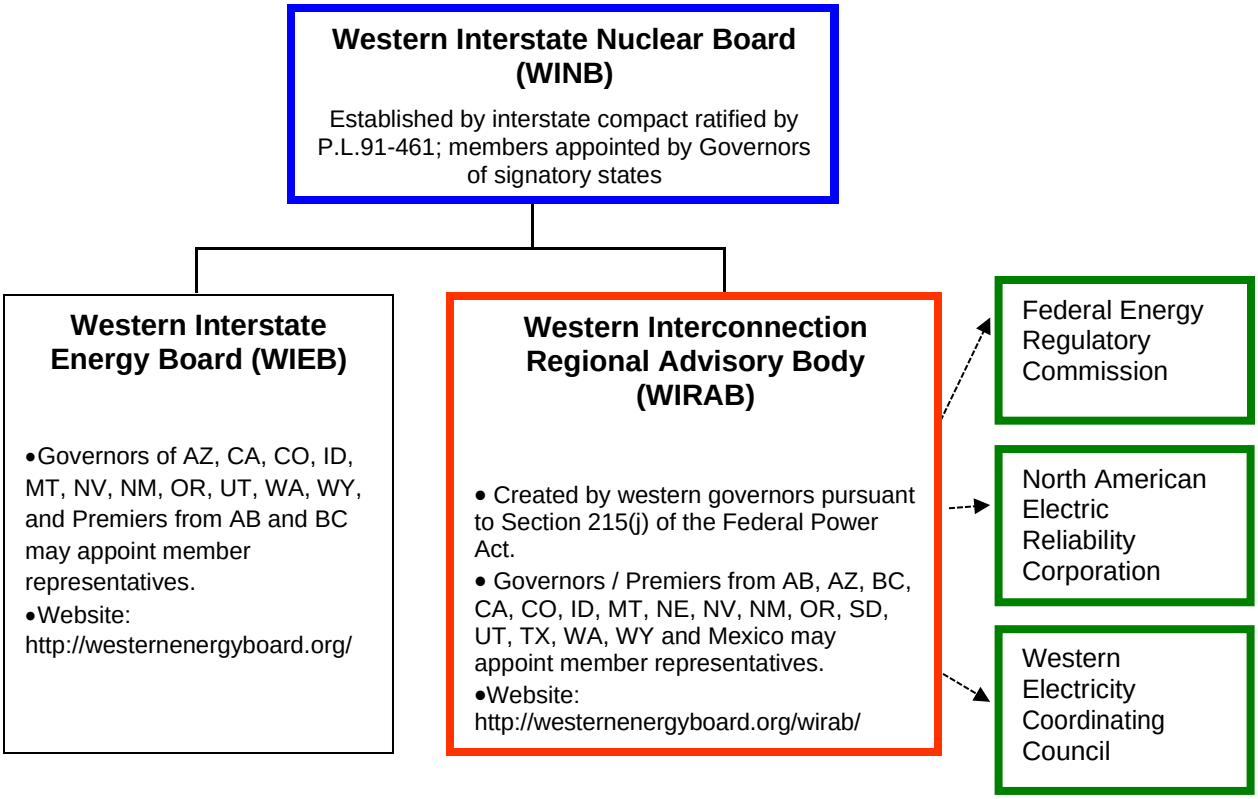
In July 2006, the FERC issued an order granting the Governors' petition to establish WIRAB.[1] In its order, the FERC determined that WIRAB should receive funding for its Section 215(j) activities and directed WIRAB to annually develop a budget and related information for submittal through the Electric 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	Bob Burns	Chair, Arizona Corporation Commission
British Columbia	Les MacLaren	Assistant Deputy Minister, Ministry of Energy, Mines and Petroleum Resources
California	Janea Scott	Vice Chair, California Energy Commission
Colorado	Jeffrey Ackermann	Chairman, Colorado Public Utilities Commission
Idaho	Kristine Raper	Commissioner, Idaho Public Utilities Commission
Mexico	Marcos Valenzuela	Comision Federal de Electricidad
Montana	Jeff Blend	Economist, Montana Department of Environmental Quality
Nebraska	Tim Texel	Executive Director, Nebraska Power Review Board
Nevada	David Bobzien	Director, Nevada Governor's Office of Energy
New Mexico	Stephen Fischmann	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	Vacant	
Washington	Elizabeth Osborne	Senior Energy Policy Analyst, Washington State Energy Office
Wyoming	Kara Fornstrom	Chairman, Wyoming Public Service 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.

2021 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). These changes to the generation resource mix will present reliability challenges and opportunities for 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, grid resilience, and physical hardening of electric grid infrastructure. 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 California 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 its assessment of resource adequacy to ensure that state and provincial regulators, FERC, and NERC have access to accurate, consistent, and timely information to inform capacity expansion decisions in the West.

In the Western Interconnection, determinations of resource adequacy and capacity expansion are primarily made in utility Integrated Resource Plans (IRPs). State and provincial regulators oversee the development of utility IRPs and have the authority to approve, acknowledge or accept, depending on state law, the capacity resources a utility includes in its IRP action plan. The WECC assessment of resource adequacy in the six subregions of the Western Interconnection has primarily been used in utility IRPs to inform utility decisions to rely on market transactions (commonly called Front Office Transactions or FOTs) to meet future capacity needs. Reliance on FOTs can be a prudent capacity strategy for a utility located in a subregion of the Western Interconnection that is expected to have surplus capacity over the relevant time period. In a subregion with surplus capacity, a utility with a capacity shortfall can prudently purchase capacity from its neighboring utilities. The market reliance strategy creates a potential reliability risk when multiple utilities in the subregion simultaneously plan to rely on FOTs to meet their future resource adequacy requirements. WECC's assessment of resource adequacy in the six subregions of the Western Interconnection is an important input to utility IRPs.

Utility executives and resource planners need access to accurate, consistent, and timely information on long-term resource adequacy (i.e., over a 5- to 10-year planning horizon) to determine whether the subregions of the Western Interconnection will have sufficient generation resources available to meet future loads and to inform near-term decisions about capacity expansion. Overbuilding of generation capacity encumbers customers with unnecessary costs and may result in stranded assets. Underbuilding of generation capacity, on the other hand, causes an

increase in electricity costs, interferes with utilities' ability to serve load, and creates risks to reliability.

A robust assessment of long-term resource adequacy in each of the six subregions of the Western Interconnection is essential to informing utility decisions about capacity expansion. However, questions of resource adequacy are complicated by a number of factors, including the retirement of existing resources, the addition of future resources, and the intermittent capacity contribution of wind, solar, and hydroelectric resources. As the Regional Entity for the Western Interconnection, WECC is uniquely positioned to use professional judgment and expertise to perform quality, independent, and robust assessments of resource adequacy in the six subregions of the Western Interconnection. In 2021, WIRAB will advise WECC on ways to refine its data collection, review, and scenario development for long-term resource adequacy to ensure that state and provincial regulators, the FERC, and NERC have access to accurate, consistent, and timely information to inform capacity expansion decisions in the Western Interconnection.

The goals of this initiative are to:

- Improve collection and reporting of data on generation capacity within the Western Interconnection, including future generation retirements and additions.
- Ensure consistent assessment of the intermittent capacity contribution of solar, wind, and hydroelectric resources across the six subregions of the Western Interconnection.
- Produce robust and independent assessments of long-term resource adequacy.
- Disseminate findings 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 identify and overcome obstacles to detailed reporting of generation capacity in the Western Interconnection, including future generation retirements and additions.
- Engage directly with WECC and its Reliability Assessment Committee (RAC) to develop a robust and consistent methodology for determining the intermittent capacity contribution of solar, wind, and hydroelectric resources across the six subregions of the Western Interconnection.

- Work with WECC and its stakeholders to revise the tables and charts included in WECC's resource adequacy assessments to improve their applicability in utility Integrated Resource Planning (e.g., communicate the size of capacity surpluses and deficits in terms of megawatts of capacity instead of reserve margin percentages).
- Work collaboratively with WECC to disseminate key findings to regulators, policymakers, industry, and other stakeholders in the West.

Initiative 2: Advise WECC to assess the reliability benefits and risks in implementing Dynamic Line Ratings (DLRs) throughout the Western Interconnection.

There is an opportunity to improve BPS reliability and market efficiency in the Western Interconnection by implementing Ambient-Adjusted Ratings (AAR) and Dynamic Line Ratings (DLR). These ratings maximize the use of real-time data (e.g., topology, scheduled outages, generation and load levels, phasor measurements data, etc.) in the calculation of Total Transfer Capabilities (TTC) and System Operating Limits (SOL), which in turn provides for significantly improved planning studies and real-time system operations.

Under the current system, long-term Facility Ratings and SOLs are based on a static set of scenarios that may not accurately represent actual system conditions. These conservative ratings are adjusted seasonally to reflect traditional maximum temperatures and low-wind conditions, rather than real-time system conditions. The current system was designed primarily to manage large and generally predictable flows of energy across transmission lines. Today, these static line ratings are proving insufficient as grid operators work to balance a dynamic resource mix that includes increasing amounts of variable energy resources.

Utilizing AAR and DLR to gather more accurate and timely data is a critical and achievable initiative that would greatly improve grid reliability and market efficiency in the Western Interconnection. Currently, there are roughly 14,000 transmission line segments that are monitored by Reliability Coordinators (RC). Unfortunately, only a small percentage of those line segments have AARs or DLRs available for use in real-time applications. To that end, WIRAB believes it is important to encourage and support further implementation of adoption of AARs and DLRs.

In 2021, WIRAB will encourage WECC to conduct AAR and DLR-related reliability assessments, to develop a roadmap for implementing AAR and DLR in the Western

Interconnection, and to work with WIRAB to convene electric utility regulators, policymakers, industry, and other stakeholders to share WECC's findings and discuss opportunities and incentives for expanding the use of AARs and DLRs in the Western Interconnection.

The goals of this initiative are to:

- Complete reliability assessments evaluating the reliability benefits, barriers, and direct costs of implementing AAR and DLR processes in real-time operations.
- Develop a roadmap for implementing AAR and DLRs in the West.
- Identify and implement incentives promoting the adoption of AAR and DLRs in the Western Interconnection.
- Disseminate findings to electric utility regulators, policymakers, industry and other stakeholders regarding opportunities and incentives for advancing the adoption and implementation of AAR and DLRs in the West.

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

- Encourage WECC to conduct AAR and DLR-related reliability assessments.
- Work with WECC to develop a roadmap for implementing AAR and DLRs in the Western Interconnection.
- Convene stakeholders to disseminate findings and discuss opportunities and incentives for expanding the use of AAR and DLRs within the Western Interconnection.

Initiative 3: Advise Western Reliability Coordinators on opportunities to improve operational performance metrics to ensure consistency, to identify best practices, and to strive for exceptional reliability in the Western Interconnection.

In 2019, the Reliability Coordinator (RC) function for most of the Western Interconnection, transitioned from Peak Reliability to three new entities: California ISO's RC West, SPP's Western RC, and the BCHydro RC. These new entities are now responsible for maintaining the system-wide situational awareness of the BPS within all or parts of fourteen western states, British Columbia, and the northern reaches of Baja California, Mexico. The Alberta Electric System Operator (AESO) continues to provide RC services for the province of Alberta. This transition occurred smoothly, but triggered concerns that reliability performance may potentially deteriorate with multiple entities providing RC services across the Western Interconnection.

In 2019, WIRAB encouraged the new RCs to adopt a set of consistent metrics, similar to those established by Peak Reliability (Peak), to measure operational performance. In its efforts to improve system-wide reliability, Peak invested a significant amount of time and resources to develop and improve a set of effective RC performance metrics, which measured Peak's performance of the RC function and the quality of information being provided by Balancing Authorities (BAs) and Transmission Operators (TOPs). Peak's effort affected behavioral change within the Western Interconnection, advanced the operational performance of the RC, BAs, and TOPs, and significantly improved the overall level of reliability in the Western Interconnection. The new RCs heeded WIRAB's call to establish metrics, using the Peak metrics as a guide, and will use operations during 2020 to establish baseline levels for their performance metrics going forward.

In 2021, WIRAB will advise all western RCs to review their performance metrics and identify opportunities for improvement. WIRAB will encourage the RCs to establish a similar set of performance metrics, while conducting transparent evaluations of operational performance to identify best practices in an effort to maintain or improve the overall level of reliability in the Western Interconnection. The use of a consistent set of performance metrics across all RCs would allow stakeholders to evaluate and determine whether system-wide reliability has been maintained or improved. These performance metrics will also provide a benchmark for continuous improvement. Performance metrics should be used to inform and incentivize the implementation of best practices.

The goals of this initiative are to:

- Ensure a set of consistent metrics to measure and track RC performance in the Western Interconnection.
- Maintain or improve the overall level of reliability in a new RC environment.
- Identify and disseminate best practices for RC service providers in the Western Interconnection.

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

- Engage with RCs to understand the current performance evaluation framework.
- Encourage RCs to develop a consistent set of RC performance metrics to ensure consistent measurement of performance.

- Encourage RCs to identify and share best practices with each another.
- Work with WECC's Performance and Event Analysis programs to identify potential power system events that produce unique lessons learned to be shared with all RCs.
- Advise WECC to develop and improve real-time indicators of interconnection health.
- Work with WECC to disseminate findings to state regulators and policymakers, industry, and other stakeholders in the Western Interconnection.

Initiative 4: Advise WECC to perform comprehensive and forward-looking assessments of the provision of essential reliability services as many states and provinces set goals addressing a possible "100% clean" or zero carbon energy future in the West.

Many states and provinces in the Western Interconnection have adopted goals to attain or move towards "100 percent clean" or zero carbon energy in support of reducing carbon and other pollutants. An increasing number of municipalities, corporations, and utilities have adopted these policy goals, each with a distinct definition of what economic sectors and timeframes the goal applies to. California, for example, has a policy goal of 100% zero carbon electricity by 2045, a goal supported by a statutory requirement for 60% renewable electricity retail sales by 2030. Other states have their own detailed combination of goals, target years, definitions of "clean" and specific statutory requirements.

Over time, as specific implementation programs and statutory requirements are developed, the Western Interconnection will see continued trends in changing generation resource mix and loads, with increasing penetrations of inverter-based renewable generation, more storage and demand response resources, and a shift towards the electrification of other sectors in the economy. To date, no entity has performed a comprehensive reliability assessment of how these major electricity-related changes will collectively impact the reliability of the Western Interconnection if implemented by their mid-century target dates. This is particularly true because existing reliability standards largely focus on a 1-5 year planning horizon and overlook the longer-term planning horizon in the 10-20 year timeframe reflected in utility resource planning.

WECC has taken important initial steps to perform reliability assessments through the formation of the Reliability Assessment Committee (RAC). Over the past two years, the RAC developed the Anchor Data Set and produced an initial round of reliability assessments in 2020. The RAC studies examined the reliability risks of changes to system inertia, increased

electrification, wildfire impacts, natural gas disruptions, and scenarios of technology advancements and adoption. While these studies are a positive first step, a great deal of additional work needs to be pursued to model and analyze critical reliability issues associated with attaining clean electricity/energy policy targets in the Western states.

In 2021, WIRAB will encourage WECC, as the reliability entity in the Western Interconnection, to conduct long term (10-20 year) reliability assessments that investigate a comprehensive list of essential reliability services necessary to maintain reliability in the operational timeframe as identified by leading experts of power system operations. An illustrative set of reliability parameters to be studied are: frequency response; transient stability; dynamic stability; voltage stability; weak grid issues as measured by short circuit ratios, and small-signal stability issues.

The goals of this initiative are to:

- Advance WECC's technical capability to perform high quality and comprehensive reliability assessments on the changing resource mix consistent with existing and foreseeable clean energy policies of states and provinces in the Western Interconnection.

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

- Encourage WECC to develop, manage, and house a transparent and respected high-quality database that provides the foundation for reliability studies in the 10- and 20-year time horizon.
- Encourage WECC to build its modeling capability to better integrate the use of production cost models and power flow models over a 10- and 20-year time horizon.
- Work with WECC to produce timely and comprehensive reliability assessments on the changing resource mix that meet existing and foreseeable policy targets in the Western Interconnection in the 10- and 20-year time horizon.
- Promote the collaboration of leading technical experts and National Laboratories into the work performed by WECC's staff and stakeholders in the RAC.

2021 Budget and Assessment Impacts

The WIRAB proposed budget for 2021 is $1,205,500. This amount is $49,700 (4%) lower than the amount in WIRAB's approved budget for 2020. Total proposed FTEs for 2021 are 4.75,

which reflects a decrease of 0.25 FTEs from 2020. WIRAB's total funding requirement is $989,300. WIRAB's proposed funding assessment is $986,300. This funding assessment was held constant with no change from the 2020 funding assessment.

Personnel and Indirect Expenses

Salary expenses (exclusive of Indirect expenses) decreased from $478,300 in the 2020 Budget to $453,300 (5.2%) in the 2021 Budget due to personnel changes. 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 increases from 111% of direct labor costs in the 2020 Budget to 113% in the 2021 Budget. The increase is due to increased expenses for office rent, medical insurance, employee retirement, and other office costs. Table 2 shows personnel and indirect expenses per FTE for the approved 2020 Budget and the proposed 2021 Budget.

Table 2. Personnel and Indirect Expense Analysis, 2020-2021

WIRAB - Personnel and Indirect Expense Analysis 2020-2021					
STATUTORY					
	Budget 2020	Projection 2020	Budget 2021	Variance 2021 Budget v 2020 Budget	Variance %
Salary Expense	$ 478,300	$ 457,000	$ 453,300	$ (25,000)	-5.2%
FTEs	5.00	5.00	4.75	(0.25)	-5.0%
Cost per FTE	$ 95,660	$ 91,400	$ 95,432	$ (228)	-0.2%
Indirect Rate	111.7%	112.0%	113.0%		
Indirect Expense	$ 534,100	$ 511,800	$ 512,200	$ (21,900)	-4.1%
FTEs	5.00	5.00	4.75	(0.25)	-5.0%
Cost per FTE	$ 106,820	$ 102,360	$ 107,832	$ 1,012	0.9%

Meeting Expense

Meeting costs increased by $3,200 to $56,100 for the proposed 2021 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. WIRAB switched conference call service providers in 2019 and is no longer billed on a per minute basis. The fixed charge for the new service is $70 per month and is reflected in WIRAB's indirect expenses. Direct conference call costs decreased 100% from $3,200 in the 2020 Budget to $0 in the 2021 Budget.

Travel Expense

Travel costs decreased by $2,800 to $83,900. 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 $53,700. Hotel and travel costs are based on experience from the last year.

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 2021. 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 2020 to 2021

WIRAB - Statement of Activities and Change in Working Capital 2020 Budget & Projection, and 2021 Budget							
STATUTORY							
	2020 Budget	2020 Projection	Variance 2020 Projection v 2020 Budget Over(Under)	% Change	2021 Budget	Variance 2021 Budget v 2020 Budget Over(Under)	% Change
Funding							
WIRAB Funding							
Assessments	$ 986,300	$ 986,300	$ -	0.0%	$ 986,300	$ -	0.0%
Penalty Sanctions	-	-	-		-	-	
Total WIRAB Funding	**$ 986,300**	**$ 986,300**	**$ -**	**0.0%**	**$ 986,300**	**$ -**	**0.0%**
Membership Dues	-	-	-		-	-	
Testing Fees	-	-	-		-	-	
Services & Software	-	-	-		-	-	
Workshops	-	-	-		-	-	
Interest	600	3,000	$ 2,400	400.0%	3,000	$ 2,400	400.0%
Miscellaneous	-	-	-		-	-	
Total Funding (A)	**$ 986,900**	**$ 989,300**	**$ 2,400**	**0.2%**	**$ 989,300**	**$ 2,400**	**0.2%**
Expenses							
Personnel Expenses							
Salaries	478,300	457,000	(21,300)	-4.5%	453,300	$ (25,000)	-5.2%
Payroll Taxes			-			-	
Benefits			-			-	
Retirement Costs			-			-	
Total Personnel Expenses	**$ 478,300**	**$ 457,000**	**$ (21,300)**	**-4.5%**	**$ 453,300**	**$ (25,000)**	**-5.2%**
Meeting Expenses							
WIRAB Meetings	$ 52,900	$ 31,200	$ (21,700)	-41.0%	$ 56,100	$ 3,200	6.0%
State Travel	30,200	12,500	$ (17,700)	-58.6%	30,200	$ -	0.0%
Staff Travel	56,500	25,000	$ (31,500)	-55.8%	53,700	$ (2,800)	-5.0%
Conference Calls	3,200	-	$ (3,200)	-100.0%	-	$ (3,200)	-100.0%
Total Meeting Expenses	**$ 142,800**	**$ 68,700**	**$ (74,100)**	**-51.9%**	**$ 140,000**	**$ (2,800)**	**-2.0%**
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	**$ 721,100**	**$ 600,700**	**$ (120,400)**	**-16.7%**	**$ 693,300**	**$ (27,800)**	**-3.9%**
Indirect Expenses	**$ 534,100**	**$ 511,800**	**$ (22,300)**	**-4.2%**	**$512,200**	**$ (21,900)**	**-4.1% Other**
Non-Operating Expenses	**$ -**	**$ -**	**$ -**	**-**	**$ -**	**$ -**	**-**
TOTAL BUDGET (B)	**$ 1,255,200**	**$ 1,112,500**	**$ (142,700)**	**-11.4%**	**$ 1,205,500**	**$ (49,700)**	**-4.0%**
CHANGE IN WORKING CAPITAL (=A-B)[1]	**$ (268,300)**	**$ (123,200)**	**$ 145,100**	**-**	**$ (216,200)**	**$ 52,100**	**-**
FTEs	5.00	5.00	-	0.0%	4.75	(0.25)	-5.0%

[1] Fixed Assets included in Indirect Expenses.

Statutory Assessments

WIRAB's proposed funding assessment of $986,300 is allocated at $826,979 (83.8%) to the U.S. portion; $143,163 (14.5%) to the Canadian portion; and $16,158 (1.6%) to the Mexican portion of the Western Interconnection.

Key Assumptions

The WIRAB 2021 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 2021.
- 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

2021 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 are 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 SPP is developing a 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. 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. 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 a

regional ISO, expanding the California ISO's EIM to new participants, extending the California ISO's day-ahead market services to EIM participants, and identifying potential seams issues associated with 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 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 Task Force. 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

2021 Business Plan and Budget

Working Capital Reserve

WIRAB projects it will have a working capital reserve of $786,900 on December 31, 2020, as compared to a desired working capital reserve at December 31, 2021, of $570,700. The surplus working capital reserve results in a $216,200 reduction in WIRAB's funding requirement for 2021.

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 more closely match actual expenses. The financial reserve allows for some budgetary flexibility.

Table B-1. Working Capital Reserve Analysis 2020 – 2021

WIRAB - Working Capital Reserve Analysis 2020-2021	
STATUTORY	
Beginning Working Capital Reserve (Deficit), December 31, 2019	910,114
Plus: 2020 Funding (from LSEs or designees)	986,300
Plus: 2020 Other funding sources	3,000
Minus: 2020 Projected expenses & capital expenditures	(1,112,500)
Projected Working Capital Reserve (Deficit), December 31, 2020	**786,900**
Desired Working Capital Reserve, December 31, 2021	570,700
Minus: Projected Working Capital Reserve, December 31, 2020	(786,900)
Increase(decrease) in funding requirement to achieve Working Capital Reserve	(216,200)
2021 Expenses and Capital Expenditures	1,205,500
Less: Penalty Sanctions	0
Less: Other Funding Sources	(3,000)
Adjustment: To achieve desired Working Capital Reserve	(216,200)
2021 NERC Assessment	986,300

Table B-2. 2021 Budget with 2022 & 2023 Projections

WIRAB - Statement of Activities and Change in Working Capital
2021 Budget & 2022 and 2023 Projections

STATUTORY

	2021 Budget	2022 Projection	Variance 2022 Projection v 2021 Budget Over(Under)	% Change	2023 Projection	Variance 2023 v 2022 Projections Over(Under)	% Change
Funding							
WIRAB Funding							
Assessments	$ 986,300	$ 1,089,600	$ 103,300	10.5%	$ 1,203,700	$ 114,100	10.5%
Penalty Sanctions	-	-	-		-	-	
Total WIRAB Funding	**$ 986,300**	**$ 1,089,600**	**$ 103,300**	**10.5%**	**$ 1,203,700**	**$ 114,100**	**10.5%**
Membership Dues	-	-	-		-	-	
Testing Fees	-	-	-		-	-	
Services & Software	-	-	-		-	-	
Workshops	-	-	-		-	-	
Interest	3,000	1,500	$ (1,500)	-50.0%	1,500	$ -	0.0%
Miscellaneous	-	-	-		-	-	
Total Funding (A)	**$ 989,300**	**$ 1,091,100**	**$ 101,800**	**10.3%**	**$ 1,205,200**	**$ 114,100**	**10.5%**
Expenses							
Personnel Expenses							
Salaries	453,300	471,400	18,100	4.0%	490,300	$ 18,900	4.0%
Payroll Taxes			-			-	
Benefits			-			-	
Retirement Costs			-			-	
Total Personnel Expenses	**$ 453,300**	**$ 471,400**	**$ 18,100**	**4.0%**	**$ 490,300**	**$ 18,900**	**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	$ 53,700	$ 56,500	$ 2,800	5.2%	$ 58,200	$ 1,700	3.0%
Total Meeting Expenses	**$ 140,000**	**$ 145,400**	**$ 5,400**	**3.9%**	**$ 149,700**	**$ 4,300**	**3.0%**
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	**$ 693,300**	**$ 716,800**	**$ 23,500**	**3.4%**	**$ 740,000**	**$ 23,200**	**3.2%**
Indirect Expenses	**$ 512,200**	**$ 532,700**	**$ 20,500**	**4.0%**	**$ 554,000**	**$ 21,300**	**4.0%**
Other Non-Operating Expenses	**$ -**	**$ -**	**$ -**	**-**	**$ -**	**$ -**	**-**
TOTAL BUDGET (B)	**$ 1,205,500**	**$ 1,249,500**	**$ 44,000**	**3.6%**	**$ 1,294,000**	**$ 44,500**	**3.6%**
CHANGE IN WORKING CAPITAL (=A-B)[1]	**$ (216,200)**	**$ (158,400)**	**$ 57,800**	**-**	**$ (88,800)**	**$ 69,600**	**-**
FTEs	4.75	5.00	0.25	5.3%	5.00	-	0.0%

[1] Fixed Assets included in Indirect Expenses.

WIRAB projects a 3.6% increase to its annual budget in 2022 and a 3.6% increase in 2023. 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

2021 Business Plan and Budget

WIRAB does not engage in non-statutory activities.

Section D – Additional Consolidated Financial Statements

2021 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, 2019, per audit
- As of December 31, 2020, projected
- As of December 31, 2021, as budgeted

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

WIRAB - Statement of Financial Position			
STATUTORY			
	As of June 30, 2019 (Audit)	As of December 31, 2020 (Projected)	As of December 31, 2021 (Budgeted)
Assets			
Cash and Investments	$ 1,129,690	$ 786,900	$ 570,700
Total Assets	**$ 1,129,690**	**$ 786,900**	**$ 570,700**

Appendix A – Organization Chart

2021 Business Plan and Budget

The WIRAB Staff Organization Chart is shown below.