## Welcome, Call to Order

Chifong Thomas, Reliability Assessment Committee (RAC) Chair, called the meeting to order at 1:00 p.m. MT on February 16, 2022. A quorum was present to conduct business. A list of attendees is attached as Exhibit A.

## Review WECC Antitrust Policy

Enoch Davies, Manager of System Stability Planning, read aloud the WECC Antitrust Policy statement. The meeting agenda included a link to the posted policy.

## Approve Agenda

Mr. Davies introduced the proposed meeting agenda.

**On a motion by Jamie Austin, the RAC approved the agenda.**

## Review and Approve Previous Meeting Minutes

Laura Cuagliotti, Administrative Assistant, introduced the minutes from the meeting on June 29, 2021, July 9, 2021, and October 21, 2021, minutes.

**On a motion by Peter Mackin, the RAC approved the minutes from June 29, 2021, July 9, 2021, and October 21, 2021.**

## Review Previous Action Items

Ms. Cuagliotti reviewed action items carried over from the RAC meeting on October 21, 2021. Action items that are not closed and will be carried forward can be found [here](https://www.wecc.org/Administrative/RAC%20Action%20Items.pdf?Web=1).

## RAC Three-year Work Plan

Mr. Davies reviewed the 2021-2023 RAC Three-year Work Plan and described the changes being pursued for future work plans.

**On a motion by Chelsea Loomis, the RAC approved the Three-year Work Plan.**

The work plan is posted to the [WECC website](https://www.wecc.org/RAC/Pages/Default.aspx#Three-yearWorkPlan).

## Proposed RAC Charter Revisions

Ms. Thomas reviewed the revisions to the RAC Charter. The committee discussed the redline version of the planning horizon wording within the proposed charter. The RAC also reviewed changes to the chair and vice chair structure and terms. Ms. Thomas will send the changes to the committee and seek approval at the RAC meeting in June.

## Reliability Workshop Review Victoria Ravenscroft

Victoria Ravenscroft, Senior Policy and External Affairs Manager, reviewed the Risk Priorities Workshop. The top risks will be available for comment from March 1, 2022, through April 1, 2022.

The presentation is posted to the [WECC website](https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/20211022_RACComments_2021-12-16.xlsx&action=default&DefaultItemOpen=1).

## Committee Categorization Chelsea

Chelsea Loomis, Western Power Pool, presented the Committee Categorization being discussed by the Joint Guidance Committee (JGC). Ms. Loomis pointed out the reliance on temporary groups rather than permanent and clarity on the groups with more focused work groups.

The presentation is posted to the [WECC website](https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/Loomis%20-%20Committee%20Categorization_Feb_2022.pdf&action=default&DefaultItemOpen=1).

## Odessa Disturbance Quint

Ryan Quint, NERC, presented the Odessa Disturbance findings from the 2021 events.

The presentation is posted to the [WECC website](https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/Quint_2022%2002%20-%20WECC%20RAC%20Meeting%20-%20Odessa.pdf&action=default&DefaultItemOpen=1).

## Studies Subcommittee 2021 Study Program Assessments

Jon Jensen, System Adequacy Engineer, presented an update on the Studies Subcommittee 2021 Study Program Assessments. Three of the five studies have been approved, the other two are in the review process.

Mr. Jensen, BK Ketineni, System Adequacy Engineer, and Bhavana Katyal, Senior System Adequacy Engineer, presented the results of the studies.

The presentation is posted to the [WECC website](https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/Jensen_Subgroup%20Update-StS%20to%20RAC.pdf&action=default&DefaultItemOpen=1).

## ADS Strategic Review Follow-up

Ms. Thomas presented the Anchor Data Set (ADS) Strategic Review survey results and the proposed action to address the issues identified. These items are in column G — consolidated potential action items of the spreadsheet.

The presentation is posted to the [WECC website](https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/20211022_RACComments_2021-12-16.xlsx&action=default&DefaultItemOpen=1).

## Production Cost Data Subcommittee

Jamie Austin, PacifiCorp, presented the Production Cost Data Subcommittee (PCDS) progress in creating the 2032 ADS. The subcommittee has been working to develop the data needed for the ADS. There is a lot of complexity in building the 2032 ADS.

Tyler Butikofer, System Adequacy Engineer, presented the development process for the behind-the-meter solar data for the 2032 ADS. They are working with National Renewable Energy Laboratory (NREL) to develop that data.

Nathalie Voisin, Pacific Northwest National Laboratory (PNNL), presented an update on the hydro data development. The hydro data is being built based on the 2018 data.

Dave Angell, Western Power Pool, provided an update on the Anchor Power Flow Work Group (APFWG). The APFWG is working to get the power flow case ready for import into the production cost model.

The presentation is posted to the [WECC website](https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/Austin_2022-02-17%20PCDS%20Progress%20Report%20to%20RAC.pdf&action=default&DefaultItemOpen=1).

## System Review Subcommittee

Tracy Rolstad, Public Utility District No. 2 of Grant County, presented an update on the System Review Subcommittee (SRS). The SRS is working to eliminate data errors in the Steady-state and Dynamics Dashboard (SADD). They were successful for the 2022 HS3 specialized case, but the improvements did not stay for the next cases such as the 2023-24 HW3 operating case.

The SRS is working to establish the Electromagnetic Modeling Transients Task Force (EMTPTF). The charter is drafted, and a chair has been selected. The EMTPTF will research and document the tools, data, and techniques associated with the performance of electromagnetic transients modeling activities.

The presentation is posted to the [WECC website](https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/Rolstad_SRS%20Chair%20Report%20February%202022.pdf&action=default&DefaultItemOpen=1).

## Production Cost Modeling Subcommittee

Yi Zhang, California Independent System Operator, presented an update on the Production Cost Modeling Subcommittee (PCMS). The PCMS is providing updates for several generator types. Validation results on the first group will be discussed at the next PCMS meeting. Other enhancements are planned for 2022.

The presentation is posted to the [WECC website](https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/Ketineni%20PCMS_Update_Feb_2022.pdf&action=default&DefaultItemOpen=1).

## Data Management Project

Mr. Davies presented an update on the data management project. This project will work to cover the data from collection to sharing the data. There is an internal team creating a scope for the project. The project will start with the Loads and Resources data.

## Model and Validation Subcommittee

Song Wang, PacifiCorp, presented an update on the Model and Validation Subcommittee. The MVS is working to approve the WECC Composite Load Model Specification. The subcommittee recently approved a white paper for the REPC model, generator model GENTPJ retirement plan, and some renewable modules including REPC\_C, WGO, IBFFR, WTGP\_B and WTGT\_B.

The MVS is working to convert the IPP DC line model, retire GENTPJ, hold a workshop on GENQEC, develop a grid-forming inverter model, and develop a guideline for modeling offshore wind plants.

The presentation is posted to the [WECC website](https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/Wang_MVS%20Feb%2017%202022_RAC.pdf&action=default&DefaultItemOpen=1).

## 2040 Clean Energy Sensitivities

Mike Bailey, Senior System Adequacy Engineer, presented the results of the 2040 Sensitivities. The assumptions in the case were based on trends, but the model was allowed to make the dispatch decisions.

The presentation is posted to the [WECC website](https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/Jensen_Subgroup%20Update-StS%20to%20RAC.pdf&action=default&DefaultItemOpen=1).

## National Transmission Planning

Hamody Hindi, U.S. Department of Energy, presented an update on the National Transmission Planning Study. The project is looking to identify interregional transmission planning opportunities. The results should help prioritize future funding and fill tranmission gaps.

The presentation is posted to the [WECC website](https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/Hindi_National%20Transmisson%20Planning%20Study%20Intro%20-%20WECC%20RAC.pdf&action=default&DefaultItemOpen=1).

## Public Comment

The WECC TPL-001-WECC-CRT 3.2 drafting team does not have enough involvement. If any members are interested, please contact Mr. Davies.

## Review New Action Items

* Provide suggested adjustments to the RAC Charter to modify item 7 specifically on the “proposed legislation.”
  + Assigned to: Tracy Rolstad, Peter Mackin
  + Due Date: February 22, 2022
* Discuss with the planning regions. 1) the role of the regions in the Anchor Data Set and 2) the regions expectations from the Anchor Data Set.
  + Assigned To: Chifong Thomas, Chelsea Loomis
  + Due Date: April 1, 2022
* Develop business case for near-term production cost modeling data set. Describe benefits to WECC and stakeholders, potential obstacles, and define timing of when it could happen. (From ADS Strategic Review)
  + Assigned To: Chifong Thomas, Enoch Davies, Chelsea Loomis
  + Due Date: December 1, 2022
* Investigate if the APFWG work plan needs to be modified to ensure a successful round-trip. (From ADS Strategic Review)
  + Assigned To: Jamie Austin, Byron Woertz, Dave Angell
  + Due Date: June 30, 2022
* Explore opportunities to collaborate on the EMT efforts and report back any identified opportunities
  + Assigned To: Tracy Rolstad, Song Wang
  + Due Date: June 1, 2022

## Upcoming Meetings

June 28-30, 2022 Salt Lake City, UT; Hybrid

October 18-20, 2022 Salt Lake City, UT, Hybrid

*\*Meeting may be virtual due to the COVID-19 pandemic.*

## Adjourn

Ms. Thomas adjourned the meeting without objection at 1:03 p.m.

## **Exhibit A: Attendance List**

### Members in Attendance

Ravi Aggarwal Bonneville Power Administration—Transmission

Sharmen Andrew MATL Canada L.P.

Hamid Atighechi Powerex, Inc.

Jamie Austin PacifiCorp

Jeffrey Billinton California Independent System Operator

Lorissa Cardoza Bonneville Power Administration—Transmission

Thomas Carr Western Interstate Energy Board

Laurie Hammack Seattle City Light

Nadine Hanhan Oregon Public Utility Commission

Fred Heutte NW Energy Coalition

Peter Jones Puget Sound Energy, Inc.

Chelsea Loomis Western Power Pool

Peter Mackin GridBright, Inc.

John Nierenberg Tacoma Power

Nathan Powell Deseret Generation & Transmission Cooperative

Tracy Rolstad Public Utility District No. 2 of Grant County

Hari Singh Public Service Company of Colorado (Xcel Energy)

Robert Smith TransCanyon LLC

Spencer Tacke Auriga Corporation

Chifong Thomas Thomas Grid Advisor

David Tovar El Paso Electric Company

Gary Trent Tucson Electric Power

Guy Van Uytven Guy Van Uytven

Jerod Vandehey Public Utility District No. 1 of Cowlitz County

David Wiley Arizona Public Service Company

Kenneth Wilson Siemens Energy, Inc.

### Members not in Attendance

Abbas Abed TransCo Energy, LLC

John Armenta Farmington Electric Utility System

Paul Arnold EnTranTek LLC

Robin Arnold Renewable Northwest

Manuel Avendano Southern California Edison Company

Ehsan Azordegan Kinectrics US

Nathan Barcic California Public Utilities Commission

Constance Bergmark Imperial Irrigation District

Mitchell Betonie Farmington Electric Utility System

Scott Beyer Western Power Pool

Aseem Bhatia California Department of Water Resources

Bryan Black Utah Associated Municipal Power Systems

Brett Bodine Turlock Irrigation District

Chad Bowman Public Utility District No. 1 of Chelan County

Lindsay Briggs Black Hills Corporation

Marcus Brown NaturEner USA, LLC

Ben Brownlee Energy Strategies

Jeremy Brownrigg Platte River Power Authority

Shawn Carlson Basin Electric Power Cooperative

Tim Cherry Metropolitan Water District of Southern California

Tom Christensen Basin Electric Power Cooperative

Tim Cook DesertLink, LLC

Bryce Dininger Central Arizona Water Conservation District

Gordon Dobson-Mack Powerex, Inc.

Rodica Donaldson EDF Renewable Energy

Thomas Duane Public Service Company of New Mexico

Kathryn Eklund Absaroka Energy, LLC

Jared Ellsworth Idaho Power Company

Greg Engels British Columbia Utilities Commission

Jonathon Flores Los Angeles Department of Water and Power

Thomas Flynn California Energy Commission

Ellie Foruzan Transmission Agency of Northern California

Shaun Foster Portland General Electric Company

Bryce Freeman Wyoming Office of Consumer Advocate

Logan Gernet Arizona Electric Power Cooperative, Inc. (Arizona G&T Cooperatives)

William Gibson Hetch Hetchy Water and Power

Ron Grife Leeward Renewable Energy, LLC

John Gross Avista Corporation

Mike Guité British Columbia Hydro and Power Authority

Val Guzman Ridad Silicon Valley Power (City of Santa Clara)

Jeff Hanson Colorado Springs Utilities

Jonathan Hayes Southwest Power Pool

David Hodder Pend Oreille County PUD #1

Bill Hosie PSI Power System Innovation Corp.

Ryan Hubbard Tri-State Generation and Transmission—Reliability

Rhett Hurless Absaroka Energy, LLC

Richard Jackson U.S. Bureau of Reclamation

Robert Jackson Burns & McDonnell

Jason Jett Birch Infrastructure, PBLLC

Harley Johnson Tacoma Power

Holly Johnson City of Redding

Robert Jones Seattle City Light

Lesley Kayser-Sprouse Hetch Hetchy Water and Power

Cathy Kim Birch Infrastructure, PBLLC

Ruth Kloecker ITC Grid Development, LLC

Mike Larsen Public Utility District No. 1 of Cowlitz County

Justin Lee Salt River Project

John Leland Northern Tier Transmission Group

John Liang Public Utility District No. 1 of Snohomish County

Todd Lichtas Tucson Electric Power

Patrick Ma Energy Exemplar, LLC

Richard Maguire Public Utility District No. 2 of Grant County

Habibou Maiga San Diego Gas and Electric

Sarah Majok Sarah Aggrey Consulting Engineers LLC

Mark Mallard NorthWestern Energy

Jessica Markovich Eugene Water & Electric Board

Tiana Marmitt Energy Exemplar, LLC

Jesus Martinez Imperial Irrigation District

John D. Martinsen Public Utility District No. 1 of Snohomish County

Diana McMahon Salt River Project

Jerry Melcher California Public Utilities Commission, Office of Ratepayer Advocates

Pete Mensonides Turlock Irrigation District

Keegan Moyer Energy Strategies

Julie Myerholtz First Solar

Ramya Nagarajan DesertLink, LLC

George Nail Public Service Company of New Mexico

Tyler Nice Eugene Water & Electric Board

James O'Brien Power System Consultants, Inc.

Andrey Olennikov Portland General Electric Company

Valeriy Jr. Oleshko Western Area Power Administration

Erik Olson Puget Sound Energy, Inc.

Vishal Patel Southern California Edison Company

Dave Peck California Public Utilities Commission, Office of Ratepayer Advocates

Mateusz Pena Delta-Montrose Electric Association

Chris Pink Tri-State Generation and Transmission—Reliability

Michael Pulskamp U.S. Bureau of Reclamation

Justin Radl EDF Renewable Energy

Sunny Raheem Southwest Power Pool

Michael Rein Public Service Company of Colorado (Xcel Energy)

Marco Rios Pacific Gas and Electric Company

Rob Robertson Leeward Renewable Energy, LLC

Philip Roice Pend Oreille County PUD #1

Faranak Sarbaz Los Angeles Department of Water and Power

Roy Sashwat Renewable Northwest

Steve Schaarschmidt Colorado Springs Utilities

Ronald Schellberg Northern Tier Transmission Group

Erik Schellenberg Idaho Power Company

Matt Scheppers Platte River Power Authority

Tim Schiermeyer Transmission Agency of Northern California

Masoud Shafa California Department of Water Resources

Tom Siegel Longroad Energy Holdings, LLC

Phillip Solomon Deseret Generation & Transmission Cooperative

Jonathan Stahlhut TransCo Energy, LLC

Rachel Stanford Utah Associated Municipal Power Systems

Quincy Stormer Electrical Consultants, Inc.

Jan Strack San Diego Gas and Electric

Tom Studer First Solar

Aaron Tang MATL Canada L.P.

Angela Tanghetti California Energy Commission

Holly Taylor Western Interstate Energy Board

Mark Thompson TransCanada Energy Ltd.

Edwin Tso Metropolitan Water District of Southern California

Boris Tumarin Arizona Electric Power Cooperative, Inc. (Arizona G&T Cooperatives)

Darrel G. VanCoevering EnTranTek LLC

Pushkar Wagle Flynn Resource Consultants, Inc.

Jonathan Walcott Delta-Montrose Electric Association

Jeffery Watkins NV Energy

Steve Wickel Public Utility District No. 1 of Chelan County

Scott Wilson Avista Corporation

Wes Wingen Black Hills Corporation

David Withrow California Public Utilities Commission

Jeff Wyman ITC Grid Development, LLC

Brian Young Central Arizona Water Conservation District

Nick Zettel City of Redding

Janice Zewe Sacramento Municipal Utility District

Kevin Zhang British Columbia Hydro and Power Authority

### Others in Attendance

Rachel Allen Tacoma Power

Dave Angell Western Power Pool

Michael Bailey WECC

Tyler Butikofer WECC

Keith Carman Tri-State Generation and Transmission—Reliability

Tyler Cooper Black Hills Corporation

Alexis Cortez Transmission Agency of Northern California

Enoch Davies WECC

Lisa DeCarlo California Energy Commission

Nick Hatton WECC

Hamody Hindi U.S. Department of Energy

Stan Holland WECC

Jon Jensen WECC

Bhavana Katyal WECC

BK Ketineni WECC

David Le California Independent System Operator

Luis Leon Arizona Public Service Company

Saad Malik WECC

Carl Mas U.S. Department of Energy

CD Mclean California Energy Commission

Rafael Molano Bonneville Power Administration—Transmission

Kirha Quick WECC

Ryan Quint NERC

Abe Rais WECC

Victoria Ravenscroft WECC

Amir Sajadi WECC

Hudson Sangree RTO Insider

Cory Smith Quanta Technology, LLC

Alejandro Solis El Paso Electric Company

Radha Soorya Longroad Energy Holdings, LLC

Mike Stussy Public Utility District No. 2 of Grant County

Shilpa Toppo Hanwha Energy USA Holdings Corporation

Natalie Voisin Pacific Northwest National Laboratory

Song Wang PacifiCorp

Byron Woertz WECC

Yi Zhang California Independent System Operator