Reserve Sharing Program - Operations

WECC Performance Subcommittee

July 2024

NWPP RSG
POWERED BY WPP

Overview Items

- NWPP RSG and Program Basics
- Zones and Cut Planes
- Qualifying Events
- Questions

NWPP RSG

- As permitted by NERC and WECC standards, Participating Balancing Authorities within the region have instituted a Reserve Sharing Program for Contingency Reserve.

- NWPP RSG – NCR05281

- By sharing Contingency Reserve, participants are entitled to use not only their own "internal" reserve resources, but to call on other participants for assistance if internal reserve does not fully cover a contingency or disturbance.

<Public>

NWPP RSG

- 33 Balancing Authorities
- 35 Balancing Authority Areas

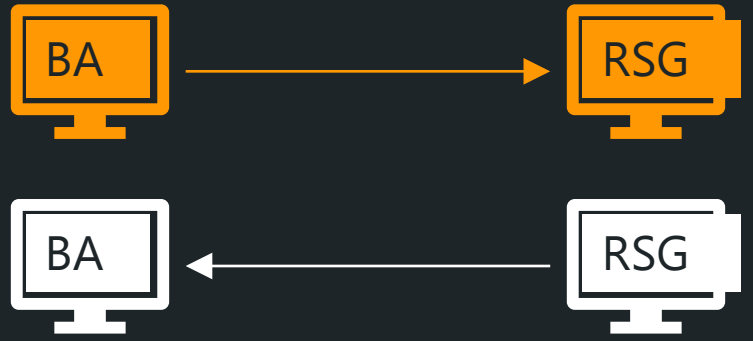
NWPP RSG
POWERED BY WPP

Program Basics

- The NWPP Reserve Sharing Program operates in accordance with:
  - NERC/FERC Standards, Policies, and Procedures
  - WECC Standards, Criteria, Policies, and Procedures
  - NWPP Reserve Sharing Program
- Whichever is more Stringent or Specific

- Follow NERC Definitions:
  - Balancing Contingency Event (BCE)
  - Most Severe Single Contingency (MSSC)
  - Reportable Balancing Contingency Event (RBCE)
  - Contingency Reserve

Program Basics



- RSG Program operates continuously
- Participants update the program via ICCP
- Program recalculates every 4 seconds
- Assistance Reserves must be dispatchable and deployed within 10 minutes
- Participants maintain a share of RSG reserves available for any participant to use during a Qualifying Event
- Reserves must be requested within 4 minutes of an event
- Reserves requested are available for up to 60 minutes

Participation Flag

- Status point that signals to the program that a Participant can / cannot be counted on to provide automated reserves

Note: A Participant can still request reserves

Heartbeat

- Continuously changing number that signals to the program that a BA's EMS is actively communicating
- If this stops updating for more than 1 minute, the program will remove the BA from getting requested to provide reserves

Reporting ACE & its Components

- Reporting ACE is used for measuring recovery from an RBCE
- Components of Reporting ACE are used for validation

Real Time MSSC

- All Participants provide their Real Time MSSC, which should evaluate loss of imports as well as generation
- A Participant's MSSC should take into account current system configuration

Total Generation

- Total amount of generation in a BAs footprint
- Whether dynamically transferred or statically transferred, all generation must be accounted for regardless of ownership
- Used in CRO Calculation

Total Load

- Total amount of load in a BAs footprint
  - Load = BAA Net Generation - Actual Net Interchange
- Used in CRO Calculation

Contingency Reserve Available

- The amount of Reserves that can be deployed within 10 minutes and sustained for 60 minutes
  - Can be spinning or non-spinning
- The program will request the lesser of:
  - Contingency Reserve Obligation – Amount shown as Used

    Or
  - Contingency Reserve Available
- These are the NWPP RSG Contingency Reserves to be committed for use in defined situations

Contingency Reserve Obligation

- Generally, 3% of load + 3% of generation
- Can be increased to protect each zone or the RSG if:
  - MSSC of the Reserve Sharing Group is greater than the sum of all 3&3s
  - Zonal MSSC is greater than CRA within and deliverable to the zone
  - Reserve Sharing Group CRA is less than CRO

Zones and Cut Planes

Zones

- Zones have been implemented into the RSG Program to account for:
  - Size of the footprint
  - Known transmission constraints
  - Historical context

Cut Planes

- Cut Planes refer to the Transmission between zones
  - Not necessarily WECC Rated Paths
  - Determined by BAs after feasibility study identifies areas of concern
- Intentionally called Cut Planes to ensure compliance obligations are not included, but operated to ensure TOPs can meet their compliance obligations
- Described in detail in non-public document available to RSGC Reps

Cut Planes

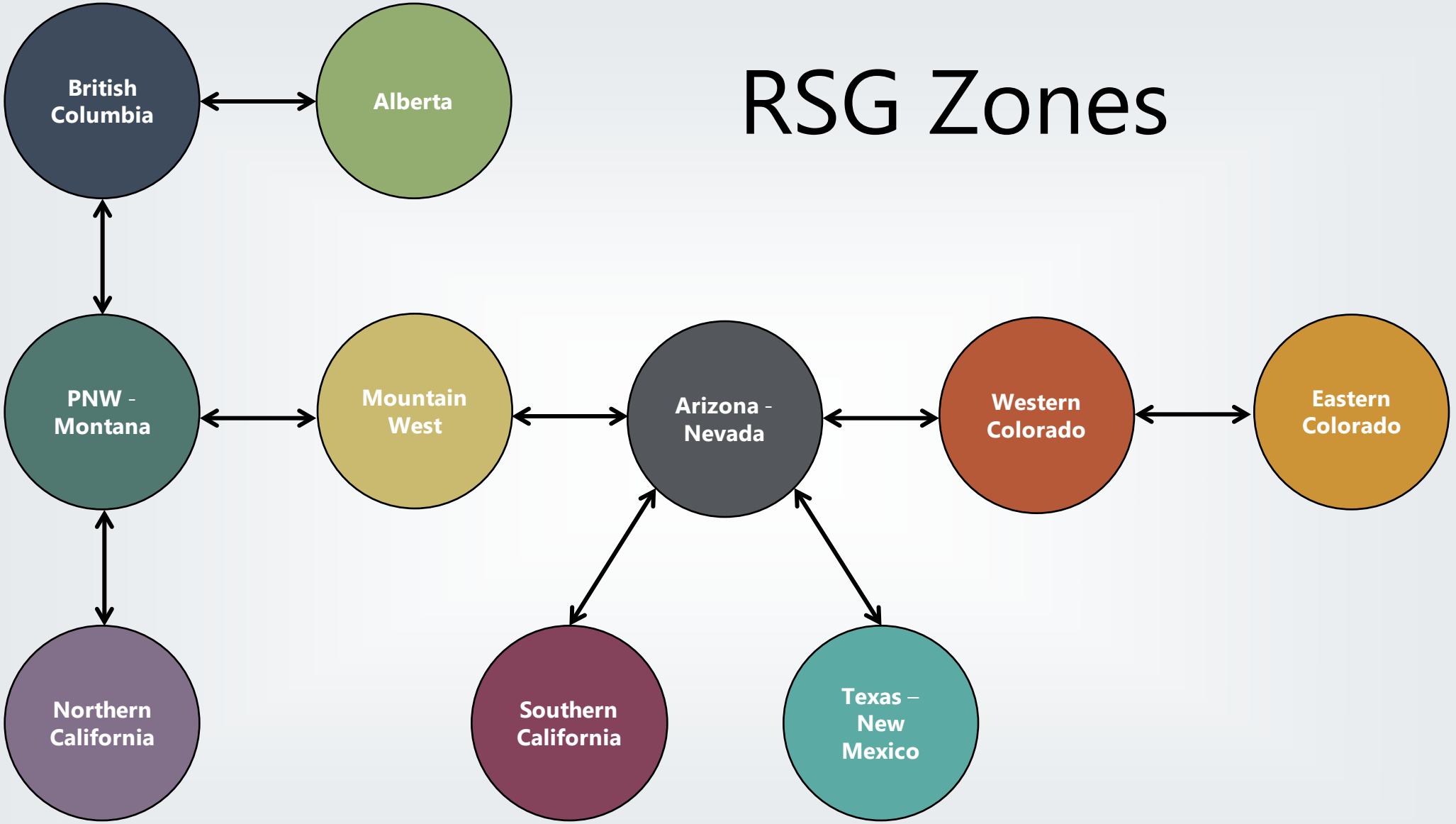
- Generally includes all lines between adjacent zones
  - May be more complex to protect a weak link within the connection without unnecessarily limiting delivery of Assistance Reserves
- Monitored to ensure that delivery of Assistance Reserves does not cause the flow to exceed the limit
  - Limit is not necessarily Scheduling limit or SOL

Ten Zones

NWPP Reserve Sharing Zones

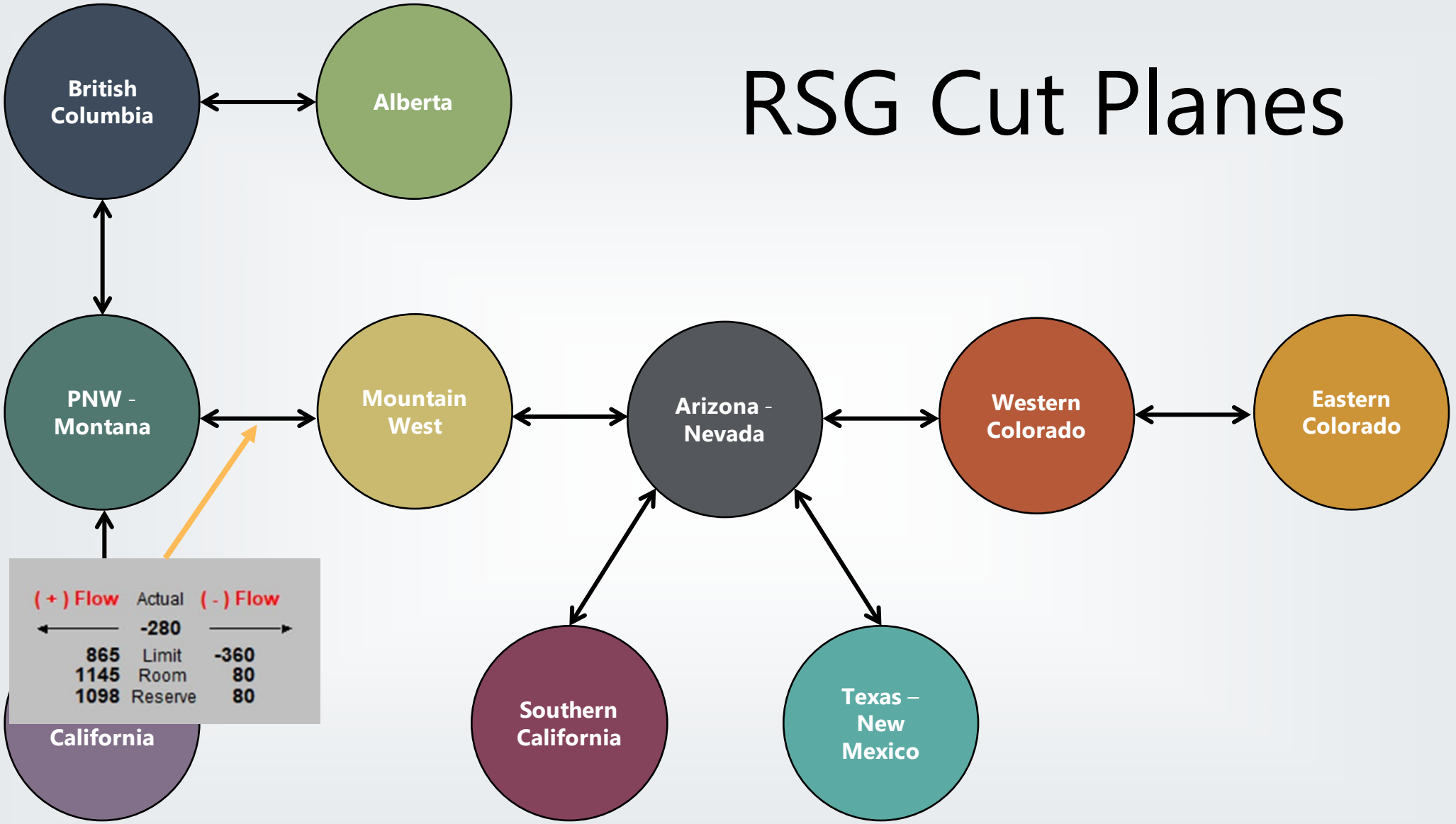
- Alberta (AB)
- Arizona – Nevada (AZPS, DEAA, GRID, HGMA, SRP, TEPC, WALC, and NVE)
- British Columbia (BCHA)
- Eastern Colorado (PSCO)
- Mountain West (IPC and PACE)
- Northern California (BANC and TID)
- Pacific Northwest – Montana
  (AVA, AVRN, BPA, CHPD, DOPD, GRID, GWA, NWMT, PACW, PGE, PSE, SCL, TWPR, WAUW and WWA)
- Southern California (IID)
- Texas – New Mexico (EPE and PNM)
- Western Colorado (WACM)

RSG Zones


British Columbia
Alberta
PNW - Montana
Mountain West
Arizona - Nevada
Western Colorado
Eastern Colorado
Northern California
Southern California
Texas – New Mexico

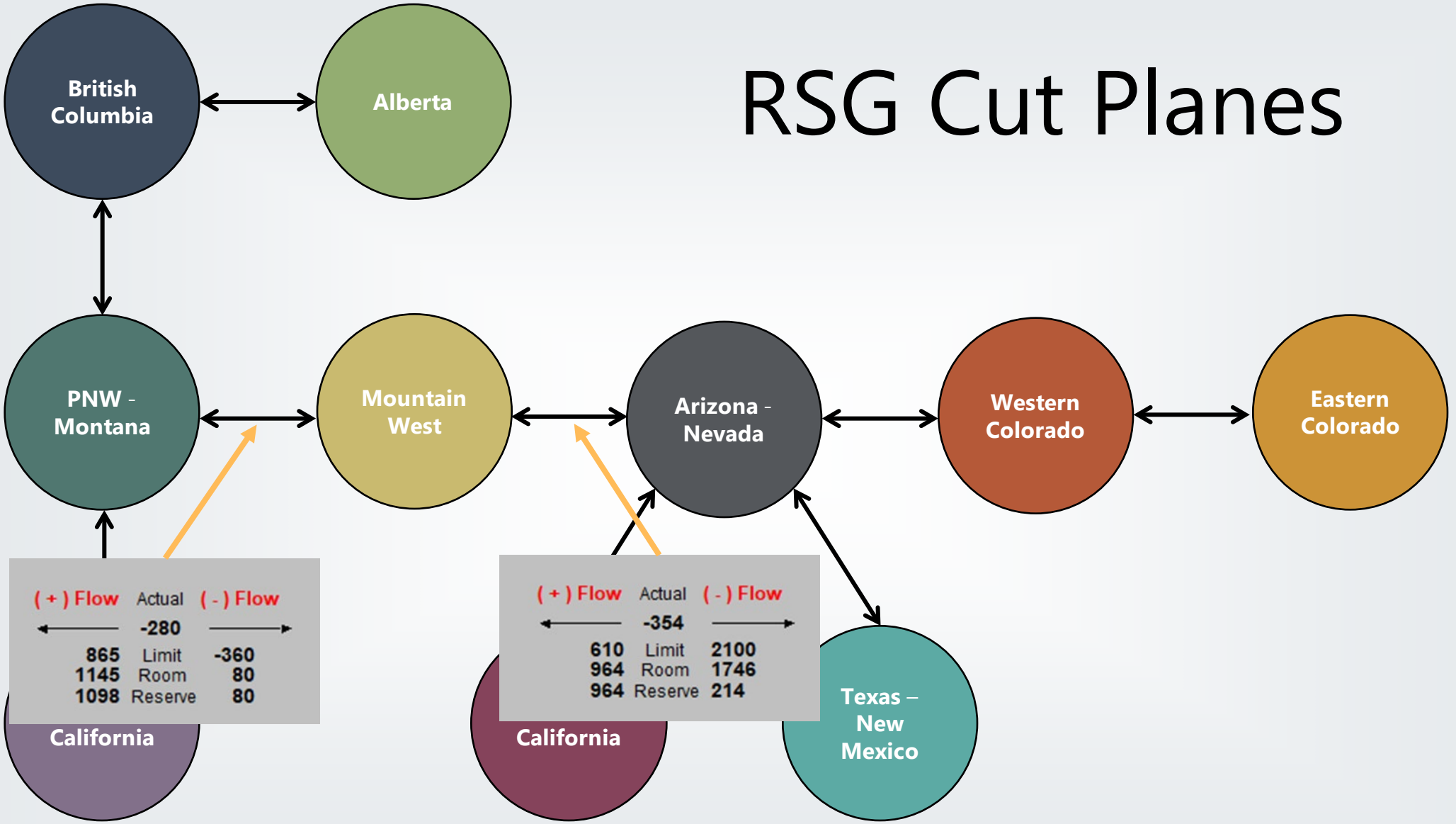
<Public>

RSG Cut Planes

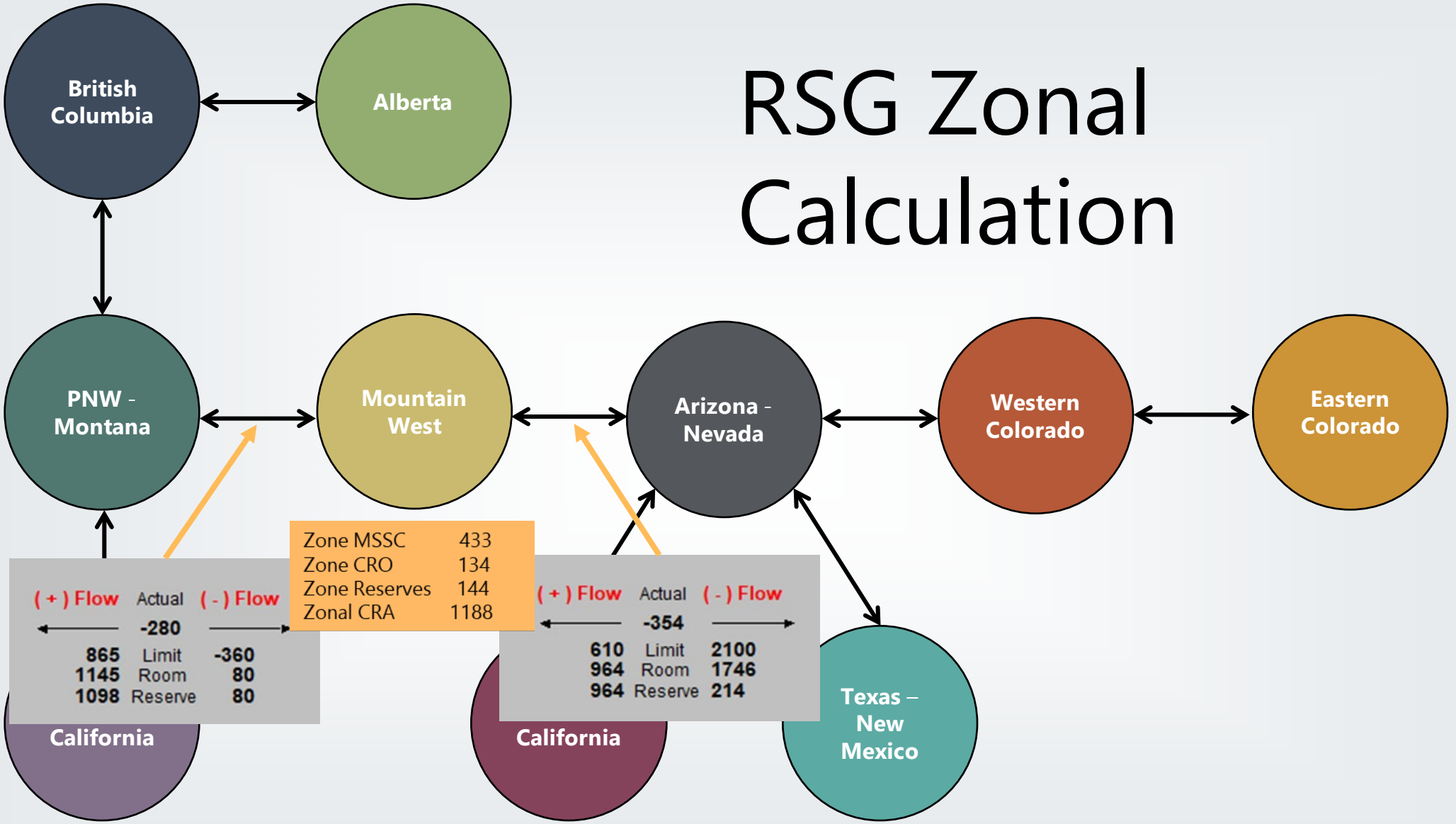


NWPP RSG
POWERED BY WPP

RSG Cut Planes

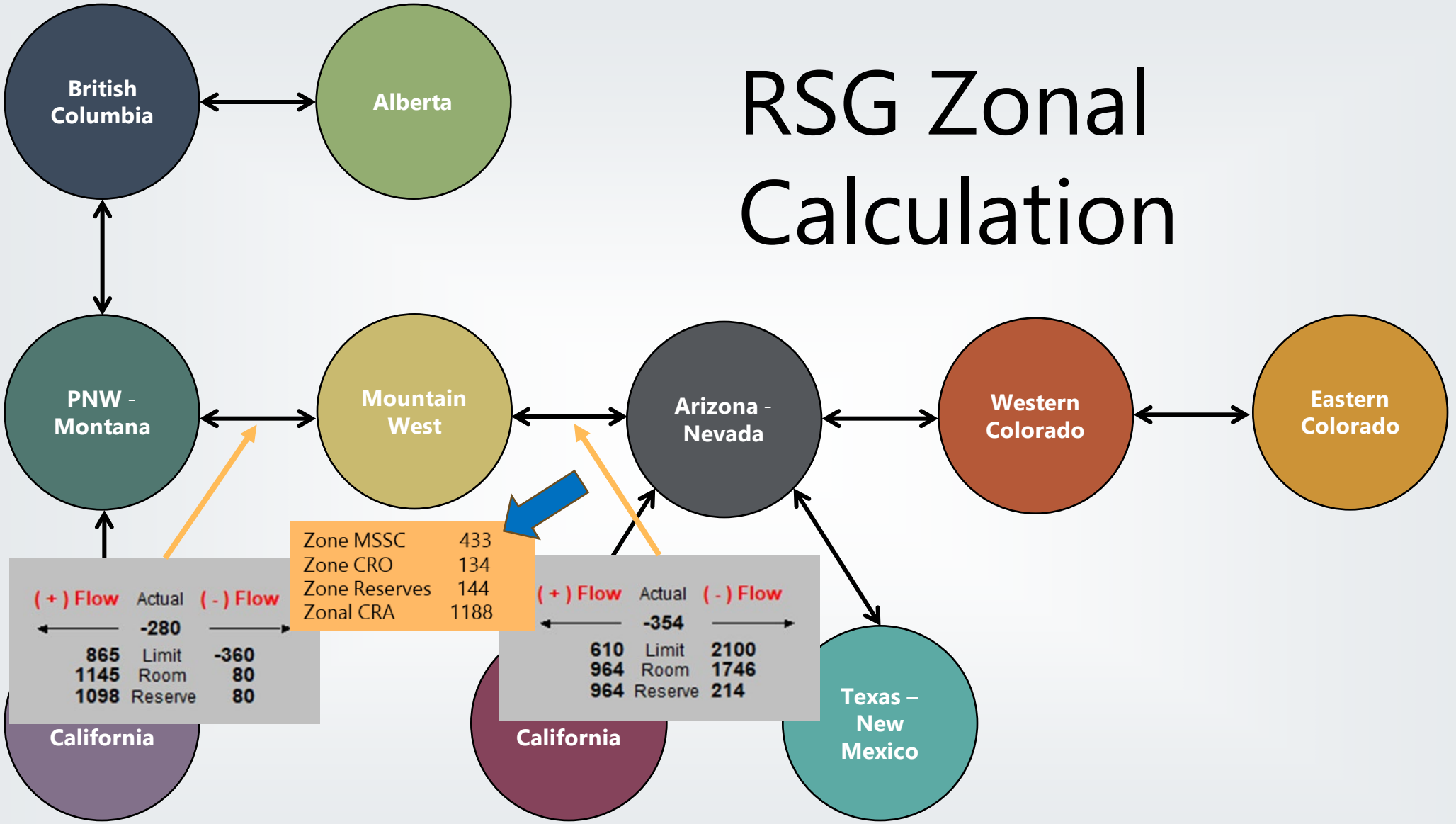


RSG Zonal Calculation



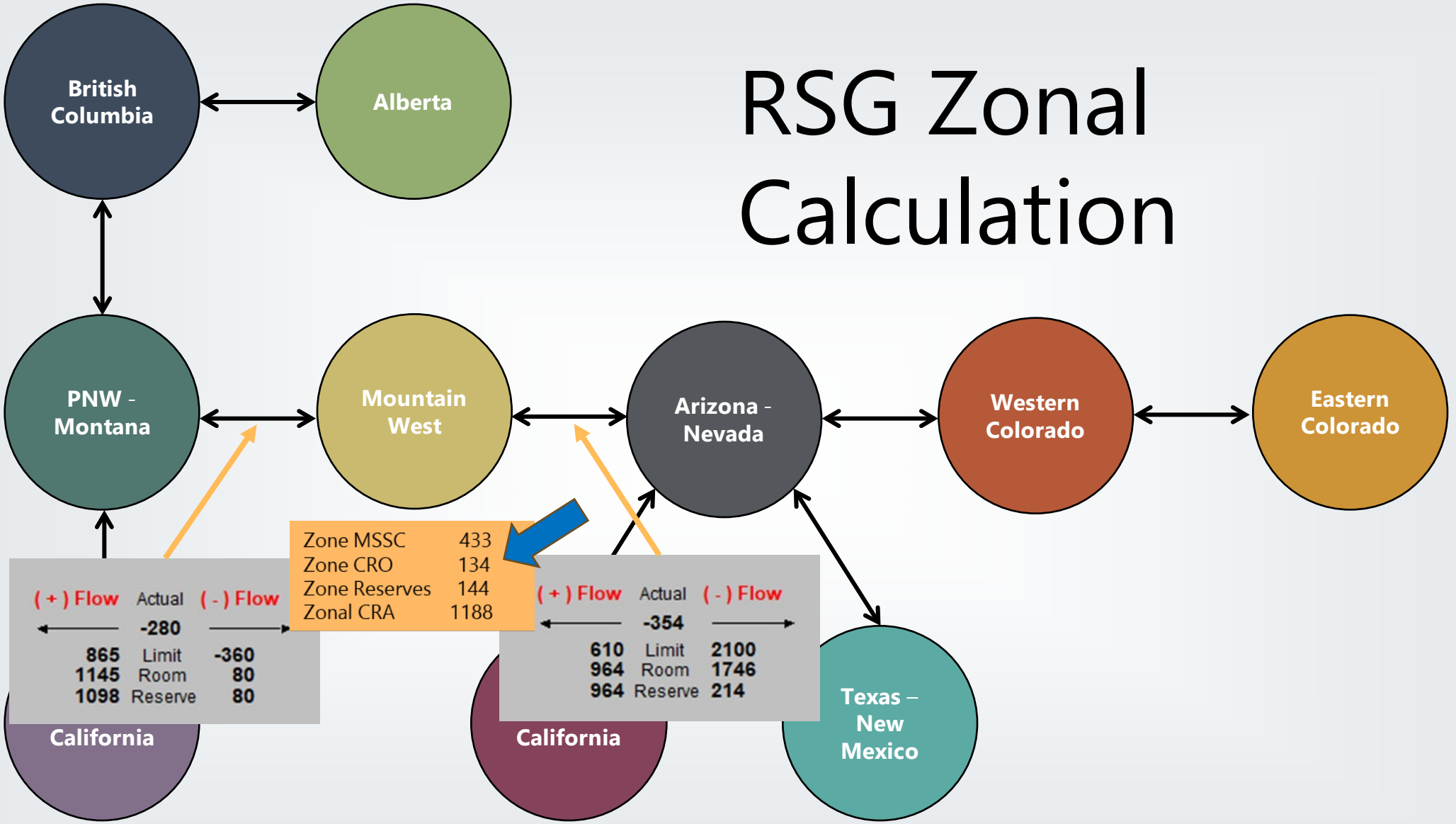
NWPP RSG
POWERED BY WPP

RSG Zonal Calculation



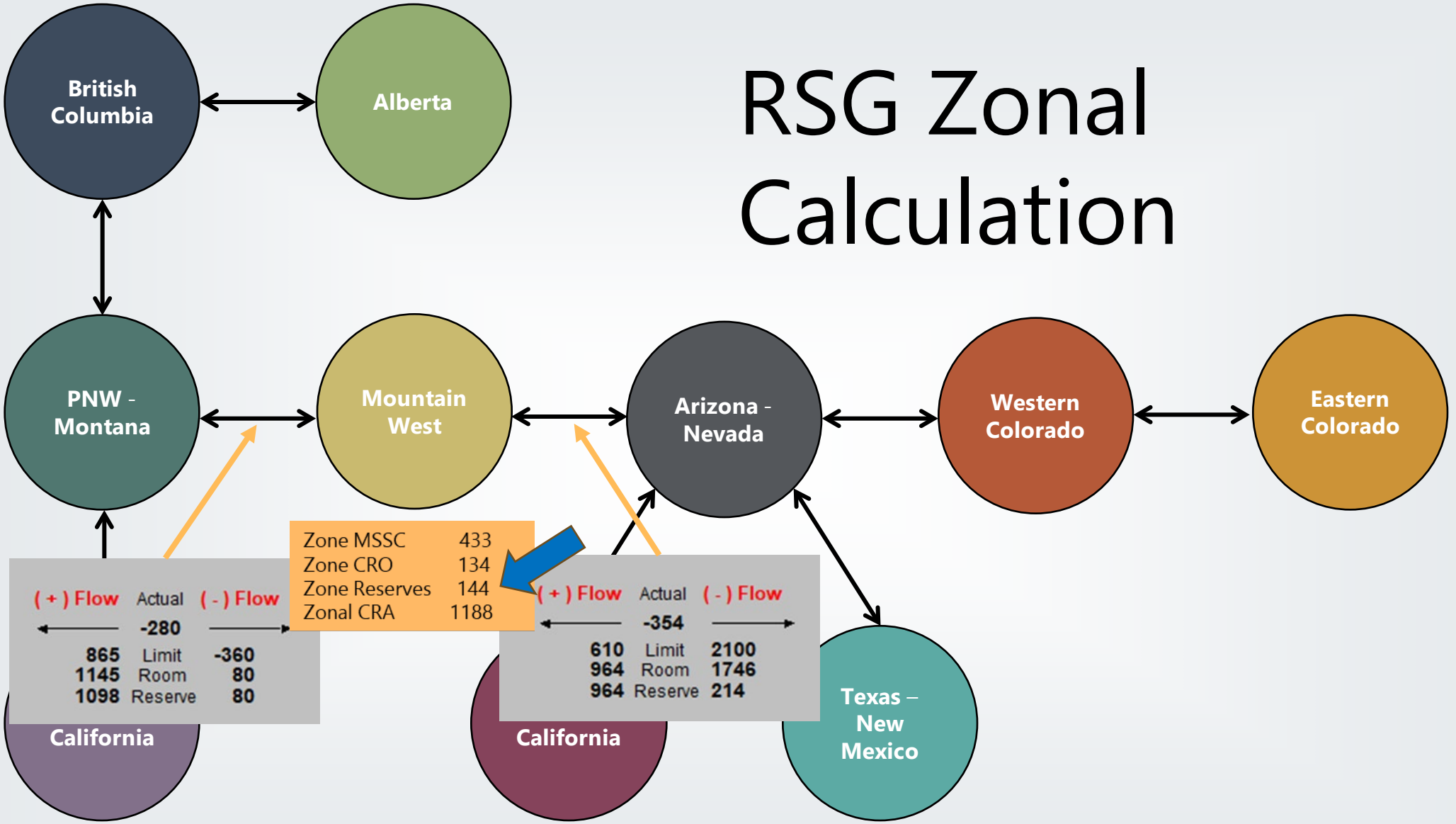
NWPP RSG
POWERED BY WPP

RSG Zonal Calculation



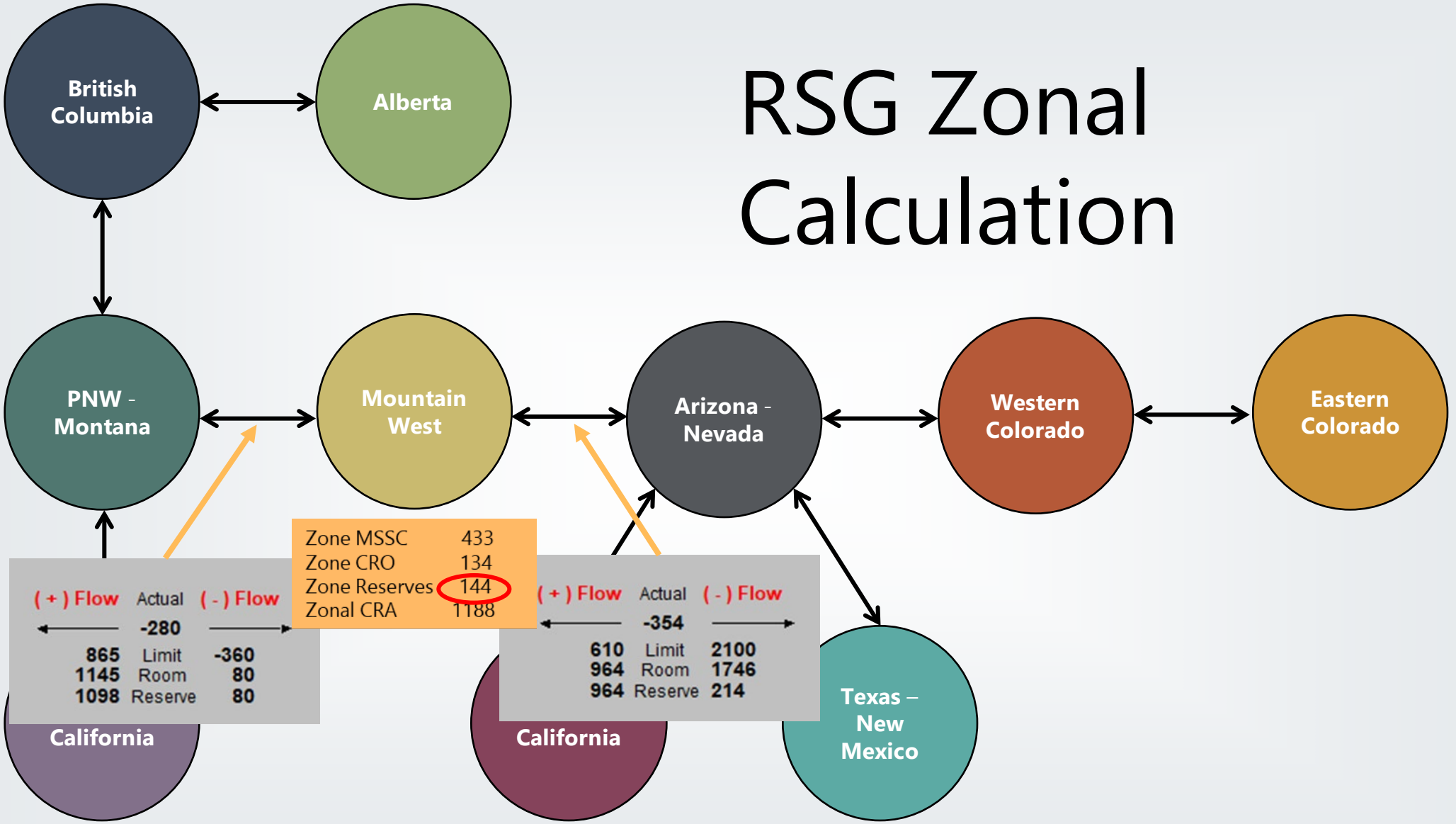
NWPP RSG
POWERED BY WPP

RSG Zonal Calculation



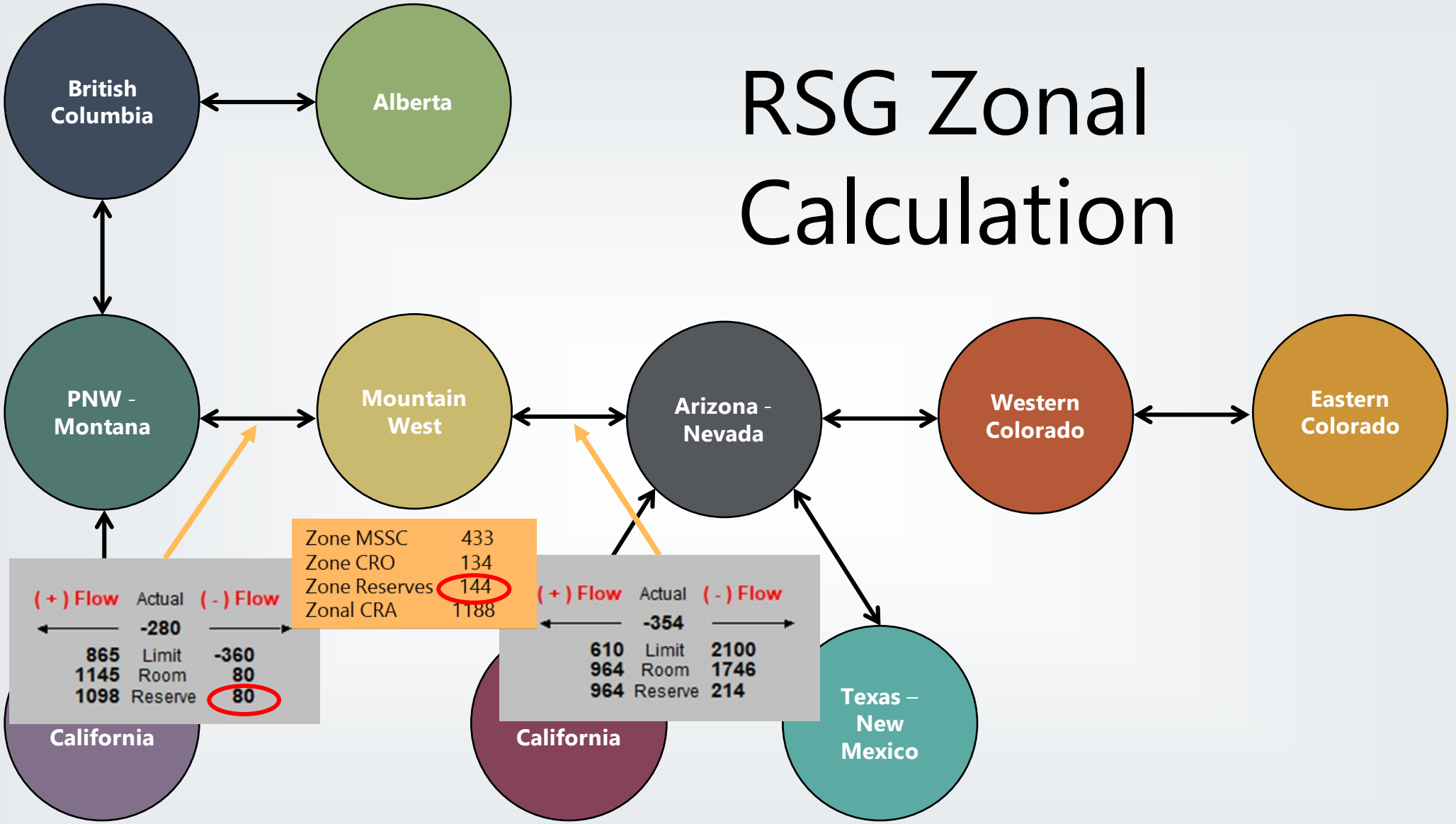
NWPP RSG
POWERED BY WPP

RSG Zonal Calculation



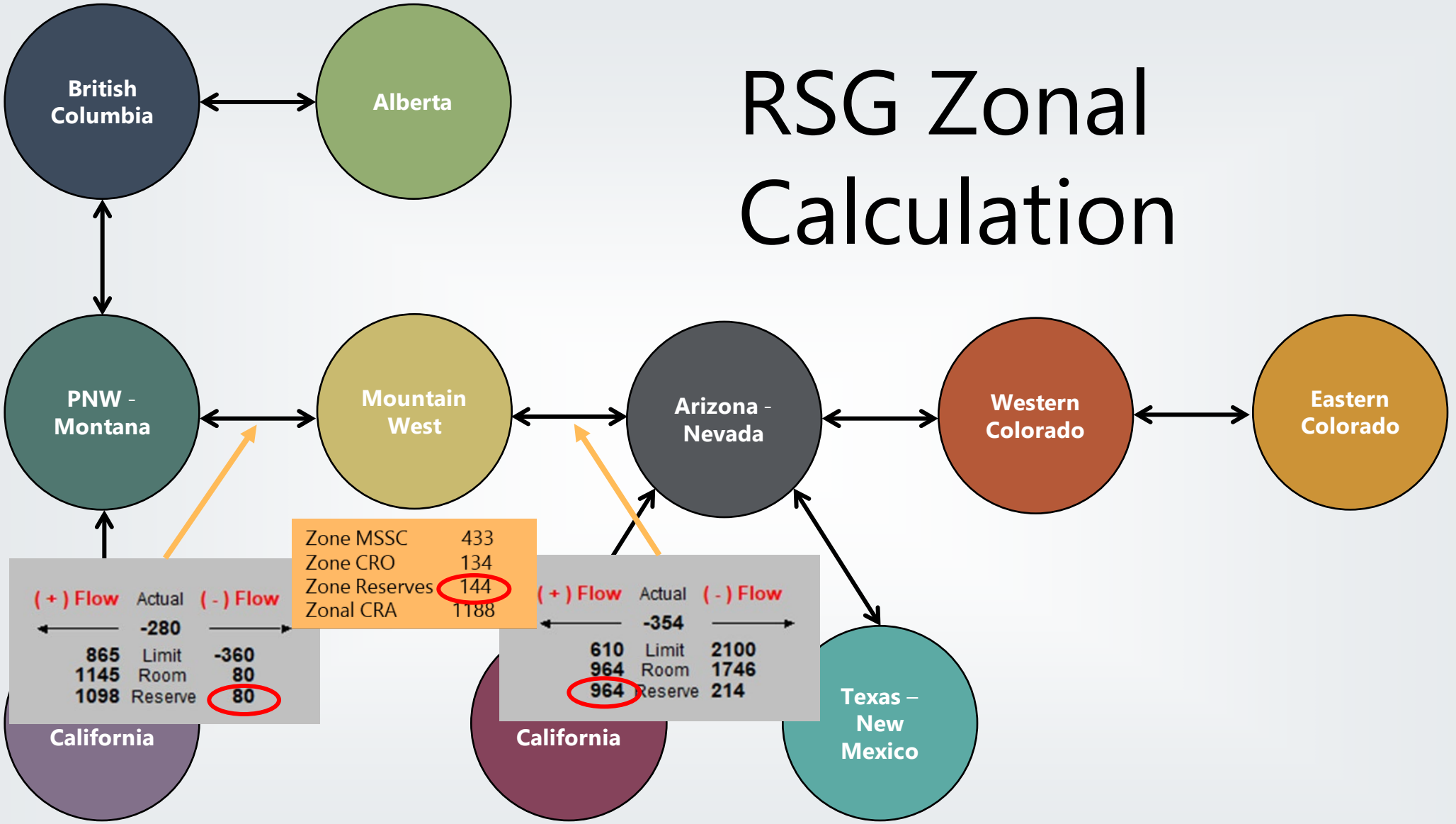
NWPP RSG
POWERED BY WPP

RSG Zonal Calculation



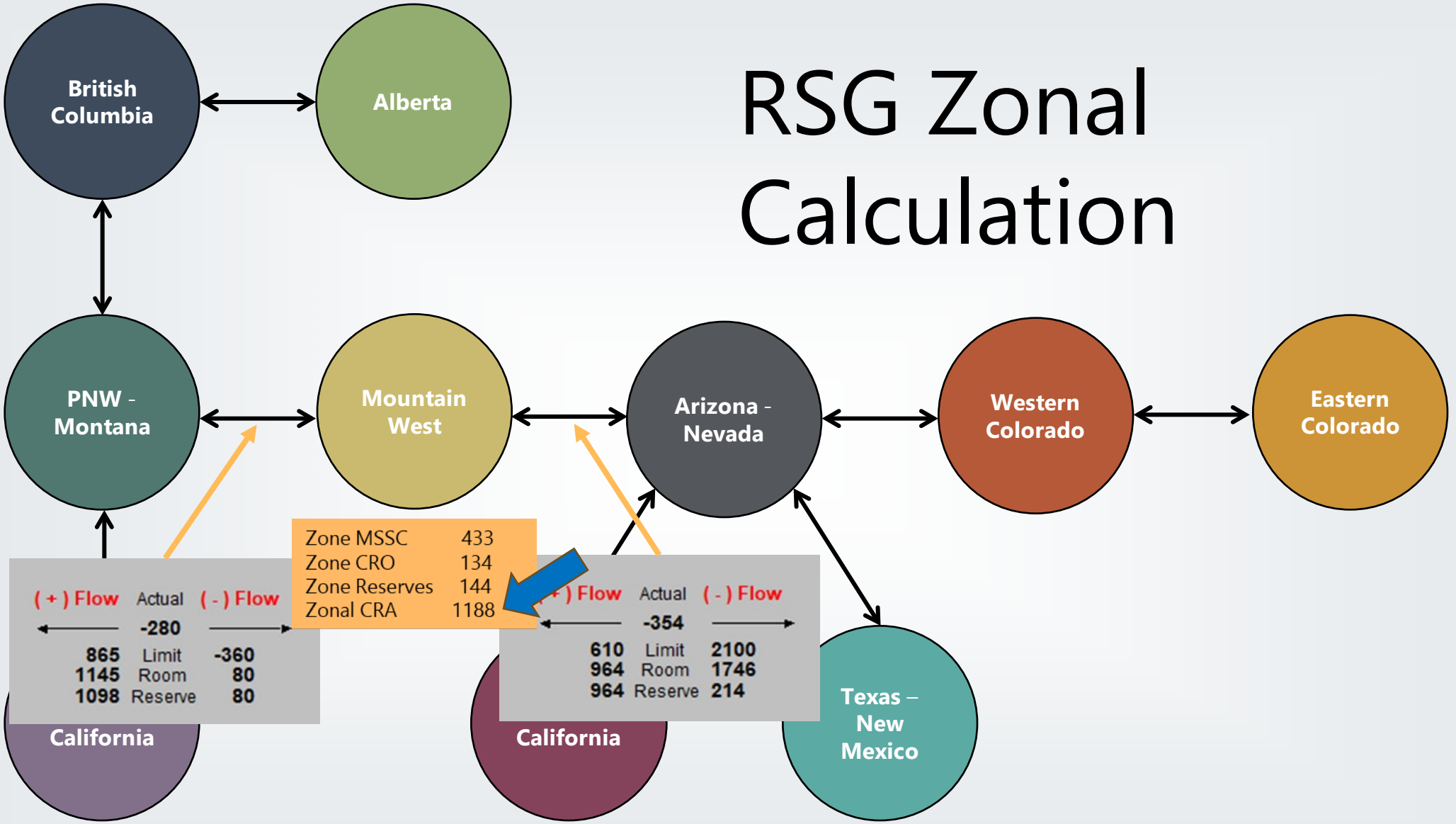
NWPP RSG
POWERED BY WPP

RSG Zonal Calculation



NWPP RSG
POWERED BY WPP

RSG Zonal Calculation

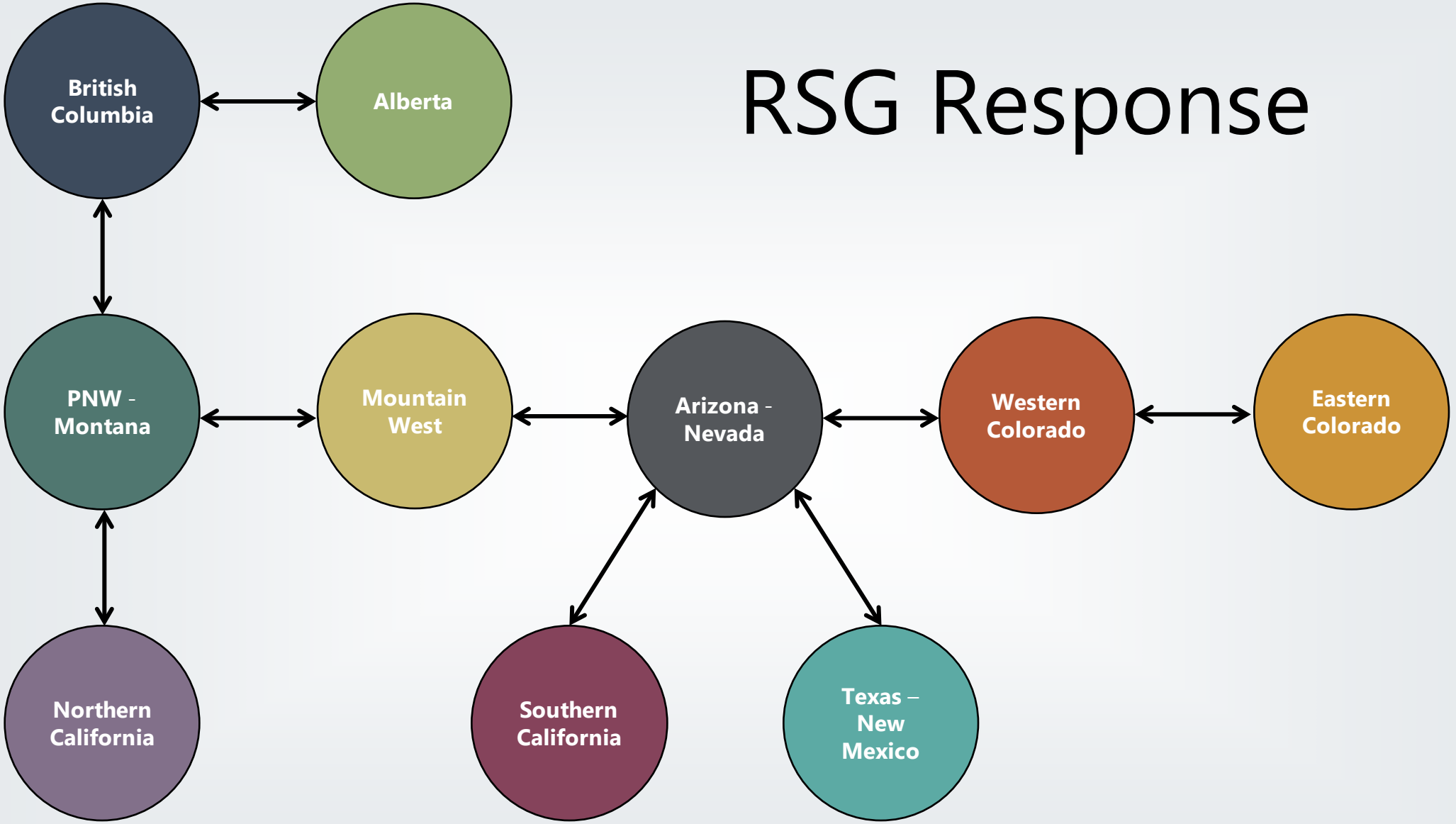


NWPP RSG
POWERED BY WPP

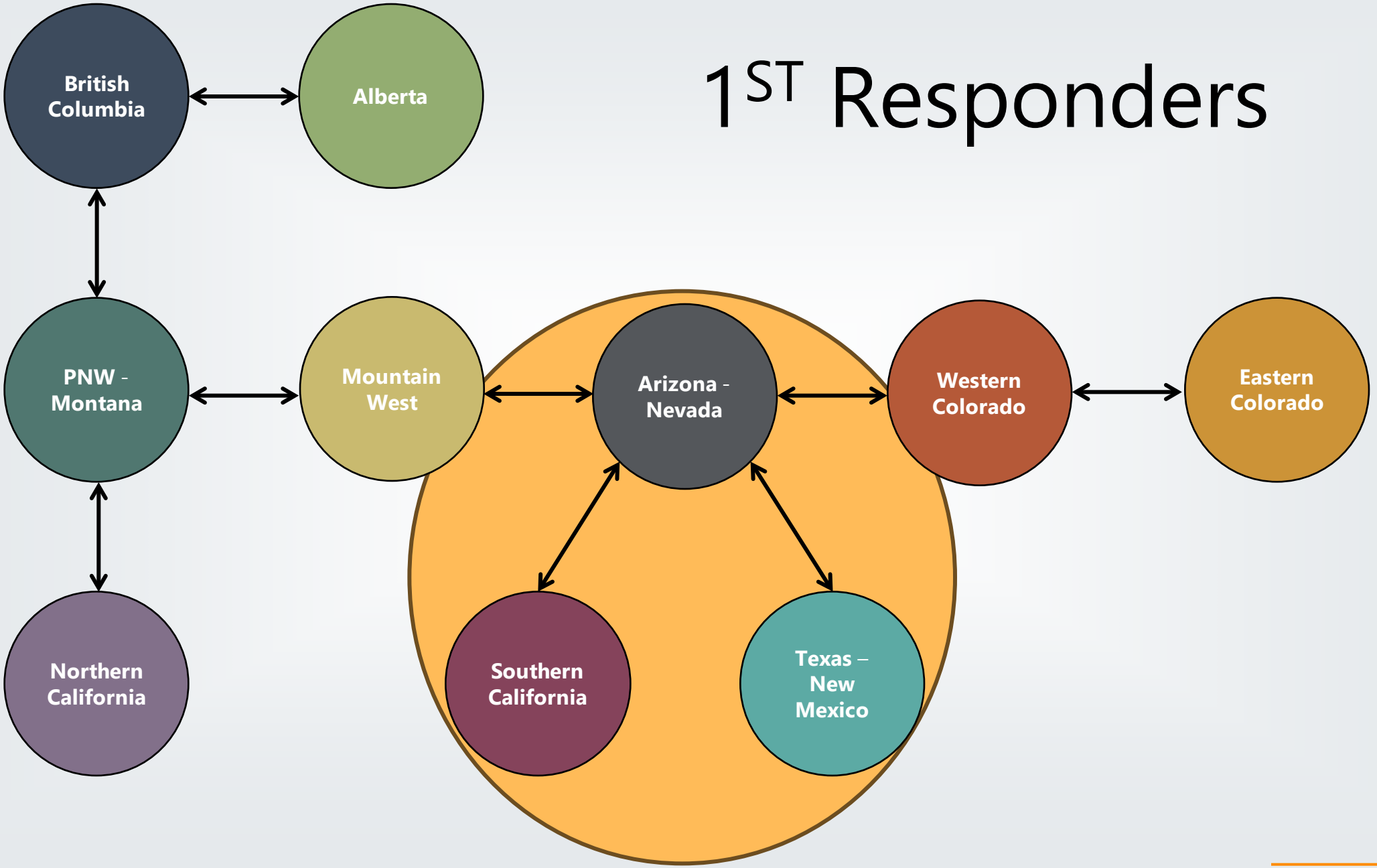
Responders

- Response to a request for Assistance Reserve is handled by a subset of zones
  - Protect Transmission
  - Efficiency – No need for Alberta to respond to a request in Colorado
- The program starts out with a predetermined set of zones (first responders) to fill the request first
- If this is not enough it will go one additional zone in each direction (second responders) and see if that is enough
- Continue to iterate out until request is served, transmission limitations are reached, or entire footprint is responding

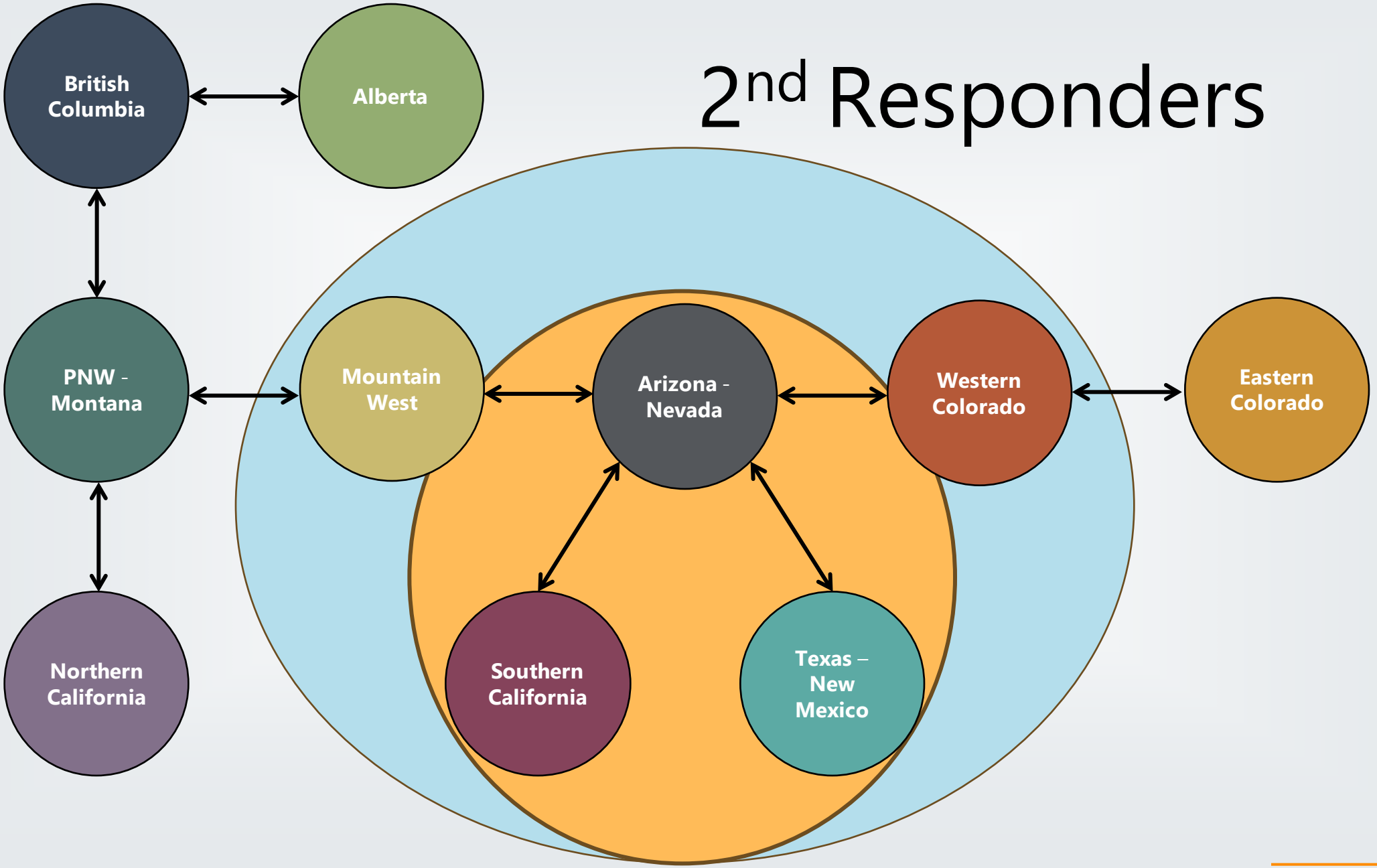
RSG Response



1ST Responders



2nd Responders



Qualifying Events

Qualifying Events

- **Sudden Loss of Generation**
  - Similar to NERC term: Balancing Contingency Event
  - Unexpected, Unplanned, and causes change to responsible entities ACE
  - Includes: Unit Protection Equipment
  - Excludes: Lack of Fuel
- **Sudden Loss of an Import**
  - Schedules cut due to forced outage of transmission equipment
- **Sudden Restoration of Demand**
  - Curtailed Demand, used as resource, that is suddenly restored and causes an unexpected change to the entity's ACE
- **EEA3**
  - When a Participant can no longer meet Firm Demand

Event Occurs

- Is it Qualifying Event for Reserve Sharing?

Note: When in Doubt Call on Reserves!

  - **If it isn't**, recover as needed using reserves other than those committed to the Reserve Sharing Group
  - **If it is**, was the amount lost (including reserves carried on the unit) more or less than your CRO?
    - **If less** – Enter the amount lost as used contingency reserves, and deploy internal reserves
    - **If more** – Commit your portion of CRO and request RSG Reserves
    - Reserves are available for 60 minutes following the start of the Qualifying Event

Steps for Making a Request

1. Reflect “Contingency Reserves Used” in greater than or equal to the CRO
2. Fill in “Requested MW” value (The MWs lost less the CRO)
3. Set “Request Flag” to “Yes”

How much time does a Participant have?

- To make a request
  - Expectation is within 4 minutes from the start of the Qualifying Event
    - Can be after 4 minutes and up to an hour after the start of the QE, but it could become a compliance issue
  - Any time after an EEA 3 is declared to serve firm demand
- To use reserves
  - 60 minutes from the start of the Qualifying Event
  - ~~60 minutes from time of request for an EEA 3 for Assistance Reserves (internal reserves can be used for the duration of an EEA 3)~~
  - For EEA3 declarations, one 60-minute request is allowed anytime while the participant is in an EEA3, and during the whole EEA3, the participant ~~has no~~ may utilize its Contingency Reserve Obligation to serve Firm Demand.
    - This does not include restoration of Contingency Reserve
    - Shedding Firm Demand to maintain Reporting ACE may be required until no longer in EEA
- Requests will be ramped out over 10 minutes beginning at 55 minutes after request

Adjustments

- Requests can be adjusted up or down throughout the request period
- Requests should not exceed what is needed for recovery
- If 0 MWs is requested, the program will terminate the request

Additional Requests

- If another Qualifying Event occurs during the recovery period after an event that was less than a Participant's CRO:
  - The Participant is to ensure internal CRO reserves are depleted, and shown as "Contingency Reserves Used" used in the program
  - If combined loss exceeds CRO, the Participant would proceed by calling on Assistance Reserves as needed
  - Participant is required to manage when the Reserves used for the first event time out

Additional Requests

- If another Qualifying Event occurs while a Participant is receiving Assistance Reserves
  - Use the "Additional Request Flag" to communicate that to the program
    - Set the Flag to "Yes"
    - Increase Requested MW to new total
    - See timer reset to 65
    - Reset "Additional Request Flag" to "No" to prepare for next event
  - First request will still ramp out at its conclusion

Terminating Request

- If the termination is before the automatic ramp out:
  - Remove Requested MW & set flag to “No”
  - Can leave CRU in until 60 minutes have elapsed
- If the request will go to the ramp out
  - Remove the “CRU” value
  - Zero out the “Requested MW”
  - Set “Request Assistance Flag” to “No”

Providing Assistance Reserves

- There will be an alarm when Assistance Reserves are requested
  - ACE will drop when the dynamic schedule starts
  - AGC will handle the recovery if there is enough AGC dispatchable reserves to cover the request
  - **If there is not enough AGC dispatchable reserves a Participant will have to start adequate generation or implement tags**
    - **Note: All reserve resources must be deployed within 10 minutes**
  - Either way – the Participant must verify that ACE crosses 0, or what it was before the request

<Public>

Contingency Reserves

PRRS Heartbeat:
71252
6/11/2024 7:13:00 AM

Active Requests: 1
Time Remaining: 50.00

	Participating	Requested	Delivered	Add. Req.	Time Rem.	Total CR Oblig.	Used	Total CR Avail.	Net Gen	Net Load	MSSC	ACE
Zone 6												
BA 23		0	14 / 14		0	224	0	1284	3718	3771	1001	32
BA 24		0	0 / 0		0	0	0	0	0	0	125	-1
BA 25		0	1 / 1		0	13	0	13	440	0	446	-150
BA 26		0	0 / 0		0	0	0	0	0	0	143	-2
BA 27		0	17 / 17		0	281	0	351	4942	4432	586	-20
BA 28		0	15 / 15		0	238	0	1369	4312	3629	676	-4
BA 29		0	6 / 6		0	91	0	402	1593	1480	327	34
BA 30		0	3 / 3		0	49	0	403	578	1082	197	-39
Zone 7												
BA 31		0	2 / 2		0	22	0	239	339	414	128	5
Zone 8												
BA 32		60	-64 / -64		50	73	78	250	1405	1065	215	-36
BA 33		0	6 / 6		0	89	0	410	1523	1478	419	-6
	Participating	Requested	Delivered	Add. Req.	Time Rem.	Total CR Oblig.	Used	Total CR Avail.	Net Gen	Net Load	MSSC	ACE

NWPP RSG
POWERED BY WPP

Questions?

Email: nwpprsg@westernpowerpool.org