

MARKETS



Development Update

September 28, 2022



*Working together to responsibly and economically
keep the lights on today and in the future.*



SouthwestPowerPool



SPPorg



southwest-power-pool



Southwest Power Pool
**WESTERN
ENERGY
SERVICES**

WELCOME AND OVERVIEW

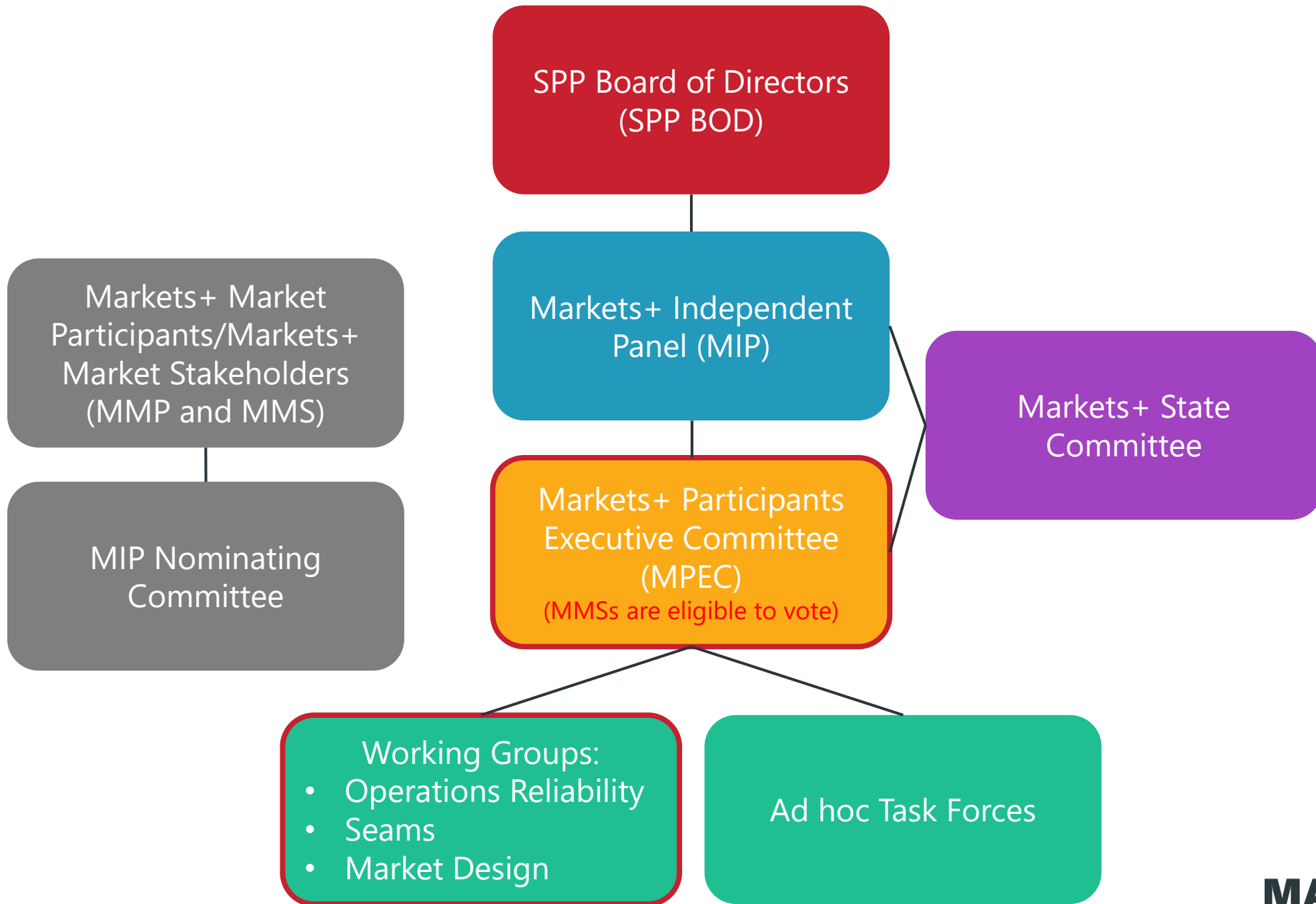
BRUCE REW, SPP

TODAY'S AGENDA – DRAFT SERVICE OFFERING

Welcome and Overview
Introduction
Governance
Market Design
Transmission
Market Settlements
Market Monitor
Stakeholder Relations
Implementation – Phase I: Tariff Development
Next Steps and Schedule

GOVERNANCE

PAUL SUSKIE, SPP



GROUP CATEGORIES - DEFINITIONS

- **Markets+ Market Participant (MMP)**
 - Executed Participant Agreement
 - Contributes generation and/or load to market
- **Markets+ Market Stakeholder (MMS)**
 - Executed Stakeholder Agreement
 - Does not contribute generation or load
 - Voting rights: **MPEC**, MIP Nominating Cmte, MIP Selection Meeting, Working Groups/Task Forces
 - Annual fee of \$5,000 **with waiver option for eligible entities**
- **Markets+ Non-Voting Stakeholder (MNVS)**
 - Participate in stakeholder meetings
 - No voting rights
 - No annual fee

SPP BOARD OF DIRECTORS

- Ultimate oversight of SPP's administration of Markets+
- Will give significant recognition to the MIP decisions
- Shall review and determine:
 - Material changes to Markets+ agreements (Participant and Stakeholder)
 - Markets+ budgets, issuance of debt or material changes to SPP staffing
 - Appeals from MIP (per MIP provision discussed later)
 - MIP decisions that have a material effect (financial or corporate risk)
 - **If SPP BOD asserts authority because something is material, then must provide a statement as to why it is considered material**

MARKETS+ INDEPENDENT PANEL (MIP)

- Comprised of 5 persons, one of which is SPP Independent Director. ~~who shall serve as MIP Chair~~ **MIP selects its Chair.**
- Recent and relevant senior level management expertise and experience: electric industry, markets, utility regulation
- Comply with FERC approved standards of conduct
- Four year terms, no term limits
 - Initial terms will be staggering
- Simple majority voting (no secret ballot)

MIP (CONT)

- Highest level of Markets+ authority with SPP BOD oversight
- Actions taken will be filed with FERC, unless appealed
- Absent appeal, SPP Staff is authorized to submit regulatory filings
- Appeals:
 - Any MIP member may request review of MIP action or inaction
 - Only members of the MIP can appeal to SPP BOD
 - If an item is appealed to SPP BOD, then SPP BOD will work with MIP to remand the issue, provided time allows

MIP NOMINATING COMMITTEE

- **Eleven Ten** sector based representatives:
 - MIP representative **not up for re-nomination** shall serve as Chair
 - **SPP Independent Director serves on initial nominating committee**
 - Independent Power Producers
 - Markets+ State Committee Member
 - Public Interest Organizations
 - Cooperatives
 - Municipal Utilities, **including Public Utility Districts and Joint Action Agencies**
 - Federal Agency
 - Investor Owned Utilities
 - Competitive Marketers
 - ~~Trade Groups~~
 - **Large Energy and Industrial Customers**
 - **Residential and Small Commercial Retail Customers**
- Election Process mirrors SPP BOD process
- Approval: Meeting of MMP and MMS

MARKETS+ PARTICIPANTS EXECUTIVE COMMITTEE (MPEC)

- Each MMP **and MMS** will appoint a representative
 - Senior level management employee
 - Financial decision making authority
- Authority:
 - Make recommendations to MIP
 - Proposed amendments to the Markets+ tariff
 - Markets+ market protocols to support filed tariff
 - Administrative rate charged to Market Participants
 - Propose amendments to M+ Participant Agreement and Stakeholder Agreement
 - Establish Working Groups and Task Forces
- Voting Structure:
 - **1/3 Investor Owned Utilities, 1/3 Public Power, 1/3 Other**
 - **67% approval threshold**

	IOU	Public Power	Other
Committed w/ letter	4	7	0
Likely to commit	3	1	0
Total	7	8	0
2021 Load (NEL MWH)	145,281,282	174,339,891	0

MARKETS+ STATE COMMITTEE (MSC) - NO CHANGE

- One Commissioner from the utility regulatory commission of each state where a M+ Market Participant has load/gen
- Simple majority voting
- Funding – SPP facilitate retention of independent staffing
 - MIP annually approves MSC's budget
 - MSC budget costs allocated to MMPs
- Data Access

WORKING GROUPS AND TASK FORCES

- MPEC may establish and appoint representatives
- Comprised of MMPs and MMSs representatives
 - Each Working Group will have a Chair (two year term)
 - Nominated by the MPEC; Appointed by the MIP
 - MPEC Chair recommends representatives to the MPEC
 - Following a solicitation of nominations
- Simple majority voting

SPP STAFF INDEPENDENCE AND SUPPORT - NO CHANGE

- Each Committee, Working Group or Task Force shall be assigned a SPP staff secretary
- Non-voting
- Keep minutes of discussions, decisions and actions
- SPP staff advises MPEC of any budgetary impacts related to expected level of support

APPEALS TO MPEC - NO CHANGE

- Any MMP or MMS who disagrees with an action taken or recommended by a Working Group or Task Force can appeal to the MPEC
- Submit alternate recommendation
- Within 7 days of the Working Group or Task Force action or inaction

GOVERNANCE REVIEW

- Upon MPEC request
- No later than three years after M+ launch
- **If market moves to include RSC authorities within Markets+**
- **To accomplish this review, the MIP shall appoint a sector-based working group to develop recommendations for any governance revisions .**
- **Any modification to Markets+ governance requires a super majority of the MIP**

QUESTIONS/DISCUSSION

MARKET DESIGN

JIM GONZALEZ, SPP
YASSER BAHBAZ, SPP

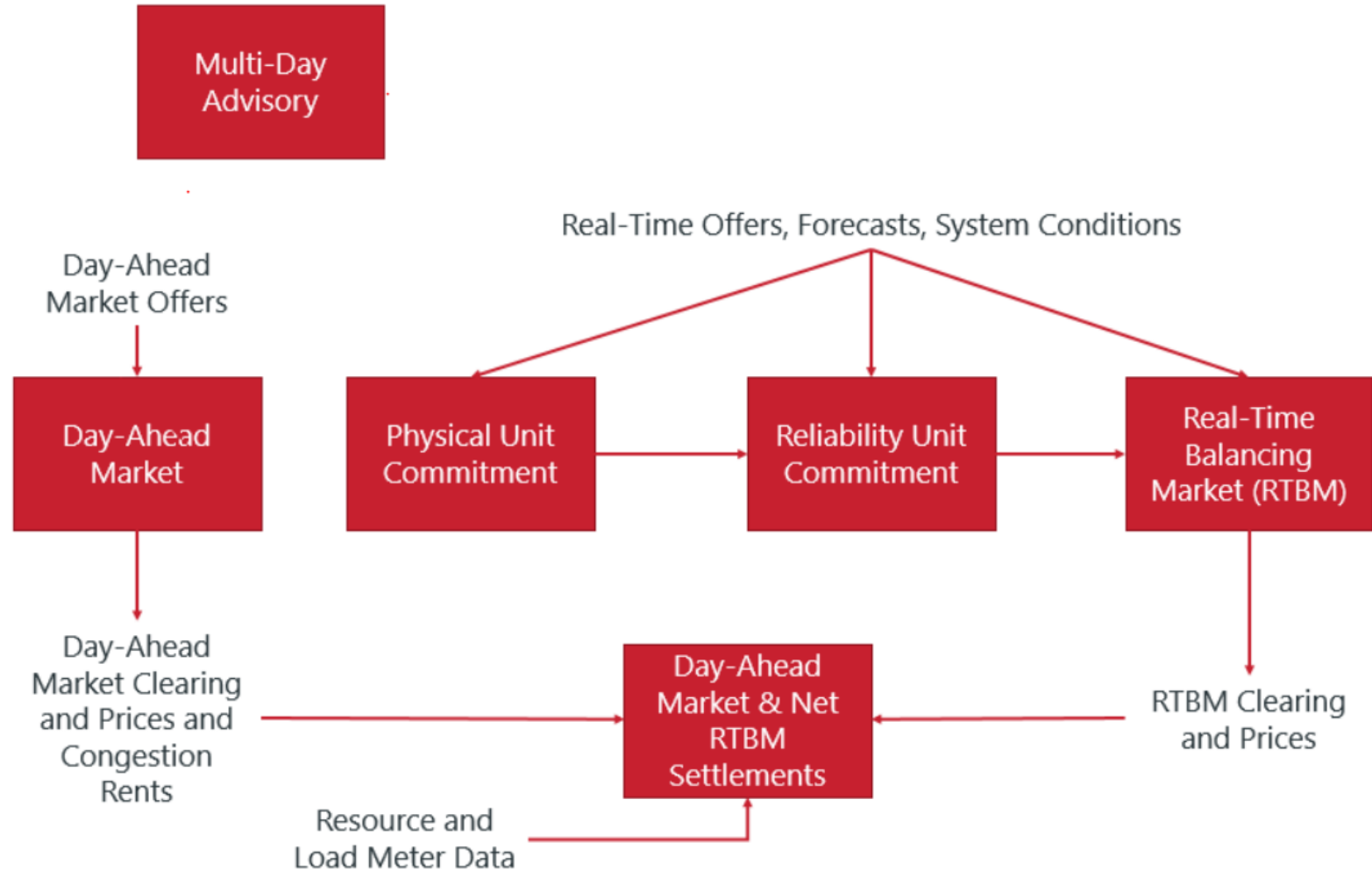
MARKETS+ MARKET DESIGN

- Overview of Markets+ processes
- Key features
- Compatibility with existing constructs
- GHG Component

OVERVIEW

JIM GONZALEZ, SPP

OVERVIEW OF MARKETS+ MARKET DESIGN

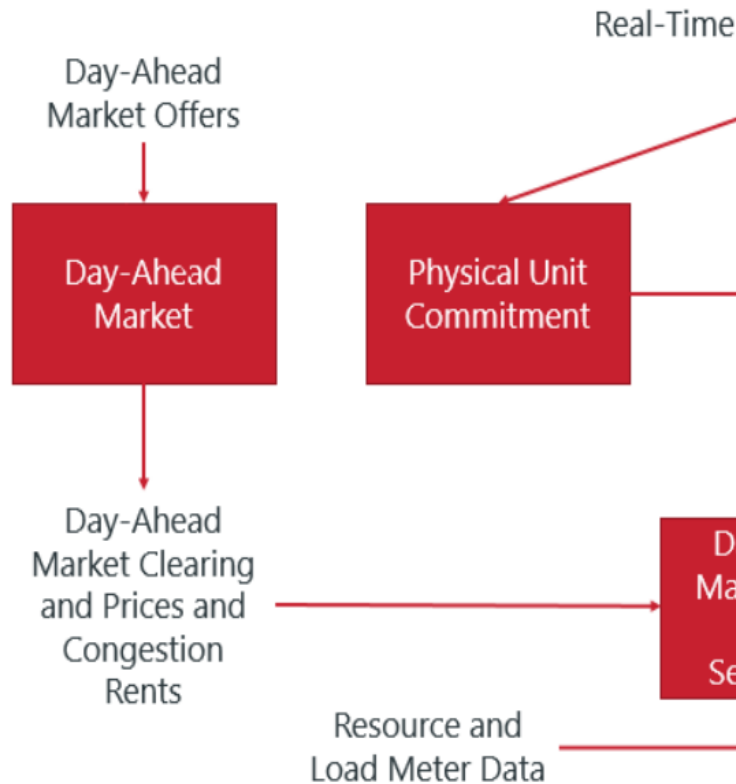


MULTI-DAY ADVISORY



- Non-binding
- Commitment & Price Forecast

DAY-AHEAD MARKET & PHYSICAL UNIT COMMITMENT



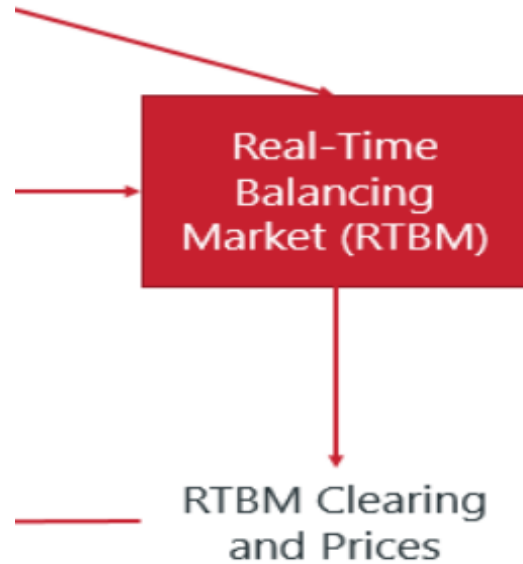
- Voluntary, financially binding market
- Physical resources optimized to meet all needs of grid simultaneously
- Separate offers for DA
- Co-optimized clearing of energy and flexibility reserves

RELIABILITY UNIT COMMITMENT



- After Day-Ahead
- Continuous validation of existing unit commitments
- Forecast-driven
- Collaboration with BAs

REAL-TIME BALANCING MARKET



- 5-minute granularity & frequency
- Co-optimized clearing of energy and flexibility reserves

KEY FEATURES

JIM GONZALEZ, SPP

PARTICIPATION MODEL

- Entity must be a BA or receive BA services from participating BA
- Opportunity to fully participate
 - (i.e., register assets, submit offers, financially settle with SPP, make available transmission capabilities when appropriate, etc.)
- No required intermediary for non-BAs

RESOURCE PARTICIPATION MODEL

Specific participation models for resources with unique operating characteristics and physical capabilities:

- Multi-Configuration Combine Cycle
- Market Storage Resource
- Joint Operating Resource
- Demand Response
- Hybrid Storage Resource
- Variable Energy Resource
- Grouped-Hydro Resources?

MARKET PRODUCTS

Energy:

- Hourly in DA Market
- 5-minute in RTBM

Operating Reserves:

- Not procured or priced in Markets+.

Flexibility Reserves:

- Energy reserve to respond to uncertainties
- Short-term & long-term likely for Markets+
- Details dependent on Markets+ footprint

PRICE FORMATION - GENERAL

- Nodal, Locational Marginal Price (LMP) co-optimized with flexibility products
 - Marginal cost of energy
 - Marginal congestion
 - Marginal losses
- Zonal delivery constraints for flexibility reserves

PRICE FORMATION –FAST START PRICING

- Markets+ will include fast-start pricing logic
 - Generally consistent with FERC's directives to SPP, NYISO, and PJM
- Key elements:
 - Relax economic minimum and treat fast-start resources as dispatchable from zero for calculating prices
 - Incorporate commitment costs (start-up and no-load) of fast-start resources in energy and flexibility reserve prices.

PRICE FORMATION – SCARCITY PRICING

- Markets+ will have transparent and informative pricing during shortage or scarcity conditions.
- Short-term price signal much reflect current system conditions, including scarce conditions
- Demand Curve details to be determined in detailed market design
 - Demand Curves derived based on the cost of the next action to resolve the shortage as starting point for discussion.

PHYSICAL SUFFICIENCY IN MARKET+: RESOURCE ADEQUACY REQUIREMENT

- SPP believes a common RA requirement prerequisite is required for Markets+ participation.
 - Ensures reliability and that each LRE contributes its individual share of the overall capacity needs of Markets+ footprint.
- SPP proposes LREs in Markets+ either:
 - Participate in common, FERC-approved RA program, or
 - Meet equivalent standard with metrics defined by said program
- SPP anticipates WRAP will be the default RA program for Markets+

PHYSICAL SUFFICIENCY IN MARKETS+: ENSURE RESOURCE SUFFICIENCY THROUGH A MUST OFFER QUANTITY

- Must offer quantity for Markets+ compliments RA requirement
 - Each entity offers enough total supply in DA Market to meet its own needs
 - Adjusted based on WRAP holdback obligation/requests
- Additional Resource sufficiency tests unnecessary due to combination of common RA requirement and DA Market must offer quantity

PHYSICAL SUFFICIENCY IN MARKETS+: NEXT STEPS

- SPP proposes joint task force:
 - Discuss physical sufficiency in Markets+
 - Determine necessary coordination between Markets+ and WRAP
 - Explore options to maximize interoperability between Markets+ and WRAP

COMPATIBILITY WITH EXISTING CONSTRUCTS

JIM GONZALEZ, SPP

SCHEDULING AND BILATERAL TRANSACTIONS

- No required changes to current scheduling practices
 - Schedules that source external, sink internal or have a source and sink external with a POR/POD with a participating BA impact Markets+ pricing and have settlement impacts in Markets+
- Market Schedules require valid TSR before consideration
- Imports/exports/wheels settle at the interface point where entering or exiting Markets+ footprint.

CONGESTION MANAGEMENT

- Markets+ process assess transmission deliverability when making commitment and dispatch decisions
 - Transmission constraints modeled as flowgates that represent system limitations
 - Service contractual limitations modeled as service flow constraints
- Markets+ design flexible, able to provide relief requested from coordinated processes (WIUFMP) or as assigned by appropriate RC, TOP, BA.

RESERVE SHARING GROUP

- Markets+ does not intend to interfere with any RSG construct
- Markets+ does not include Contingency Reserve co-optimization
 - BA maintain responsibility to clear and deploy reserves
- Markets+ will not commit or dispatch the capacity held back by Contingency Reserve.

GHG COMPONENT

YASSER BAHBAZ, SPP

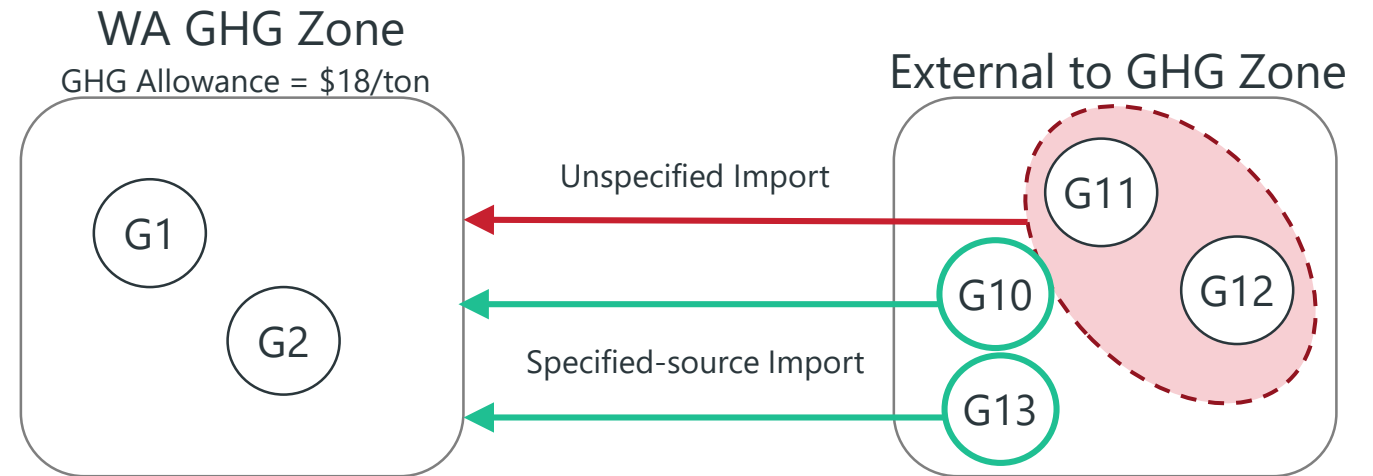
GHG DESIGN OBJECTIVES

- Minimize total production costs with GHG costs considered
- Provide a framework for any capacity to be dispatched to the zone
- Properly account for MWs serving the zone, both from specified and unspecified sources
- Implement a solution that meets the intent of GHG policies
- Ensure that GHG costs associated with imports into the GHG zone only apply to load in that zone.

GHG ZONES

3 TYPES OF RESOURCES FOR A GHG PRICING ZONE

- The 3 types are defined in the
 - ✓ *GHG Internal Resources*
 - ✓ *Specified-source Imports*
 - ✓ *Unspecified Imports*
- GHG zone imports allow resources outside the zone to participate in supplying the GHG zone. These MWs are accounted for and allocated.



GHG PRICING ZONES

GHG Zone Internal Generation

Is subject to GHG costs

Satisfies GHG zone load first.

GHG Rates

resources within GHG zone resources

source for Specified-source imports

A pre-determined rate for unspecified-source imports

Tracking GHG Zone MW

MWs serving load in the zone from external or internal resource/fleet are accounted for

MW RE-DESIGNATION CONCERNS

- Imagine a zero-carbon resource in M+ (outside the GHG Zone) assigned to serve the GHG Zone load
- The M+ BA now has to make up for the loss of supply and dispatches a carbon-emitting resource upwards
- Result:
 - Lowering a zone's GHG as designated to the zone but not achieved across the entire market

ADDRESSING THE CONCERNS

- Continue to work stakeholders to discuss options and approaches to resolve MW Re-designation issue.
- SPP has proposed a “baseline” approach to measure incremental energy produced because of the GHG pricing zone
- Other proposals considering resource sufficiency designations, transmission service priority as well as GHG program requirement are other elements are relevant to this issue

ACCOUNTING & REPORTING

GHG ZONE ACCOUNTING ASSOCIATED WITH GHG PAYMENTS

- Accounting for MWs are due for GHG payments is important to allocate the costs associated with importing or generating in a GHG zone.
- Need to determine a designated appropriate entity responsible for collecting the GHG payments associated with Unspecified Source Imports

ID	Dispatch MW	LMP \$/MWh	Energy \$	WA Assign MW	WA GHG (\$/MWh)	WA GHG \$	Total Payment (\$)	Total Costs (\$)
G1	200	36	7,200	200	9	1,800	9,000	8,800
G2	150	36	5,400	150	9	1,350	6,750	300
G10	50	36	1,800	50	9	450	2,250	2,165
G11	400	36	14,400	50	9	450	14,850	14,850
G12	200	36	7,200	100	9	900	8,100	1,500
WA Ld	-550	36	-19,800	-550	9	-4,950	-24,750	N/A
Rest Ld	-450	36	-16,200	0	N/A	0	-16,200	N/A

Equal at all Locations since no congestion or losses
Dispatch MW * LMP
WA GHG price applies to any resource which may participate
WA Assign MW * WA GHG Price
Energy \$ + WA GHG \$
Energy Dispatch Cost + WA Assign MW * WA GHG Rate
WA GHG Price per ton

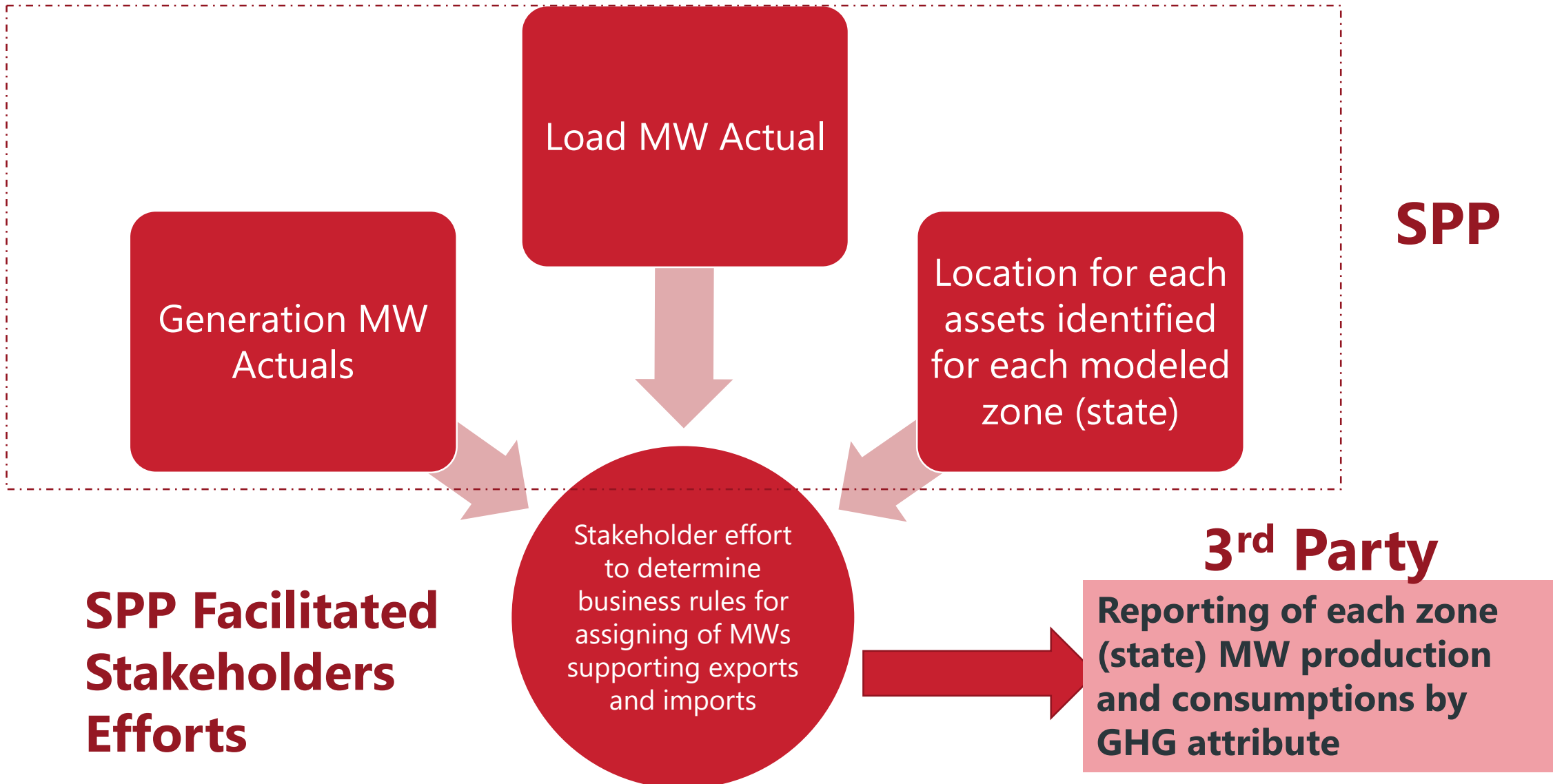
This payment (\$1350) for the Unspecified Imports MWs would be allocated to an entity with compliance obligation to the GHG zone

Resource Energy + GHG payments ≥ Energy + GHG costs

OTHER STATES GHG MW TRACKING & REPORTING

- SPP Markets+ will dispatch resources across the footprint; this includes resources of various fuel types.
- Data needed to associate MWs states with GHG goals production, consumption, including imports can be made available.
 - Business rules for the association of MWs generated and consumed by each state will be required.
- SPP plans to facilitate discussions to determine the needed data, common format, metrics, and the mechanism to transfer the information to a portal/entity for reporting
 - TBD on the entity that would be the liaison for implementing the rules for tracking and reporting MWs to state agencies.

TRACKING AND REPORTING FOR ANY ZONE WITH GHG TARGETS



QUESTIONS/DISCUSSION

TRANSMISSION

STEVE JOHNSON, SPP

MICHA BAILEY, SPP

MARKETS+ TRANSMISSION DESIGN AND AVAILABILITY

- Market Transmission Service
- Congestion Rents



MARKET TRANSMISSION SERVICE

STEVE JOHNSON, SPP

MARKET TRANSMISSION SERVICE

- Recognizes market use of transmission and provides revenue to mitigate loss of short-term firm and non-firm sales due to market activity
- Five concepts defined in service offering:
 - MTS Qualified Recovery Amount
 - MTS Qualified Revenue Ratio
 - MTS Recovery Scaling Factor
 - MTS Revenue Recovery Amount
 - MTS Revenue Distribution

MTS QUALIFIED RECOVERY AMOUNT

- Based on an entity's short-term firm and non-firm revenue only, not total ATRR
- Initial QRA based on average of previous three years of short-term firm and non-firm revenue
- Markets+ Transmission Working Group will determine future QRA determination process

MTS QUALIFIED REVENUE RATIO

- A ratio of a TSP's short-term firm and non-firm will be calculated
- Applied to current and future year ATRR
- Update process to be determined by Markets+ Transmission Working Group

$$QRR = \frac{\text{Avg}(TSP's \text{ previous } 3 \text{ years } STF + NF \text{ Revenue})}{\text{Avg}(\text{ Previous } 3 \text{ years total Markets} + ATRR)}$$

MTS RECOVERY SCALING FACTOR

- QRR = ratio of STF+NF vs. total ATRR (e.g. 10%)
- Determine Recovery Scaling Factor to apply to ratio (50% used in this example)
- Apply ratio to future year to account for changes in ATRR
- M+ Transmission Working Group to set RSF

Example RSF calculation:

Year 1
ATRR=\$120M
STF+NF=\$12M; QRR=10%
Recovery Scaling Factor is .5
.5*(QRR of \$12M)=\$6M

Year 2
ATRR=\$130M
10% QRR is maintained from
initial baseline
Recovery Scaling Factor is .5
.5*(10% of \$130M)=\$6.5M

Recovery Scaling Factor (RSF) = Factor between 0 and 100%

MTS REVENUE RECOVERY AMOUNT AND DISTRIBUTION

- MTS Revenue Recovery Amount is calculated based on the following formula:

$$\text{MTS Revenue Recovery Amount (RRA)} = (\text{QRA} * \text{QRR}) * \text{RSF}$$

- The MTS Recovery Amount is distributed based on a ratio of TSP RRA vs. total RRA

$$\text{MTS Revenue Distribution} = \frac{\text{TSP MTS RRA}}{\text{Total MTS RRA}}$$

ADDITIONAL CONSIDERATIONS

- Short-term transmission sales continue up to and after day-ahead market run
- Transmission requests made during market run will be placed in a TSP's OASIS queue to be processed after market run and associated transmission use is determined and communicated to TSP
- Transmission not committed to market use can continue to be offered through real-time window

CONGESTION RENTS

MICHA BAILEY, SPP

CONGESTION RENTS

DA Congestion Rents

- Sum up all Generators
- Sum up all Loads
- Net out losses



Allocation of DA Congestion Rents

GENERAL CONSENSUS ON THE ALLOCATION OF CONGESTION RENT

- Allocation, no market functions
 - No Simultaneous Feasibility Testing (SFT) in allocation
 - SFT occurs in Transmission Service process
- Allocation cap
 - Network = 103% * (Average last three **years** of peak load)
 - PTP = MWs on PTP reservation
- No uplift calculations
 - What is collected, allocate back
- All positions will be options not obligations
 - Counter flow positions will have a value of \$0

ADDITIONAL CONSIDERATIONS

- Allocation equation:
 - $[\text{Sum of MP's TSR MWs} * (\text{Source MCC minus Sink MCC})] / \text{Sum of Total [TSR MWs} * (\text{Source MCC minus Sink MCC})]$
- TSR submittal
 - Monthly vs Daily
 - Resource Plans submittal
- Allocation Cap for Network service (Average last three years of peak load)
- Zonal Allocation of Congestion Rents – limits uplift to other areas
- Tier approach: example priority 7 TSRs are allocated 100% of the value of the rents followed by any additional monies being paid to priority 6 TSRs

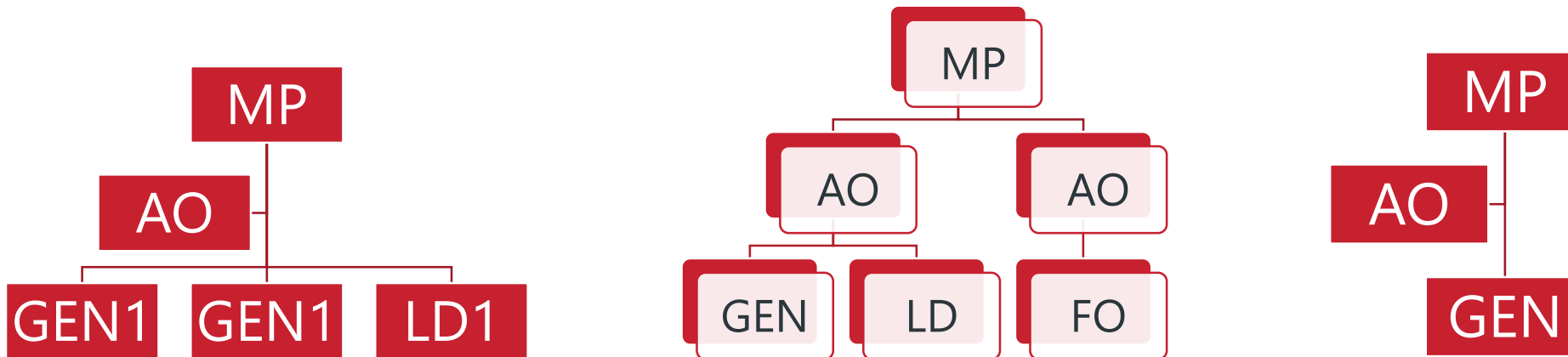
QUESTIONS/DISCUSSION

MARKET SETTLEMENTS

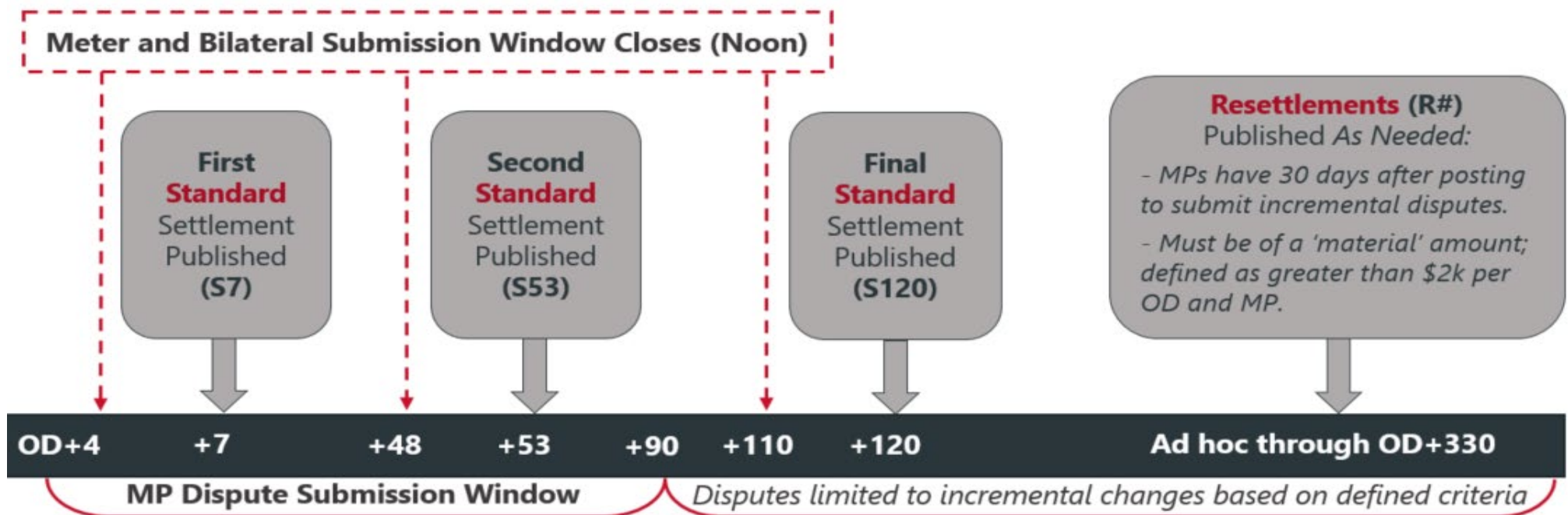
STEVE WHITE, SPP

COMMERCIAL MODEL

- Financial Market Relationship
 - Market Participant – Financially Responsible
 - Asset Owner – Settlement Locations or Financial Only (FO)
 - Settlement Location – Gen, Load (LMPs calculated)



TIMELINES



- Three standard daily postings: S7, S53, S120
 - Number indicates calendar days after the operating day; S7 posts 7 days after the operating day.
 - No postings on weekends or holidays; move to the next business day
- Meter data due OD+4 (S7), OD+48 (S53), OD+110 (S120)

METER DATA

- Can be submitted at a granularity of 5-minute or hourly
 - State Estimator data is used if meter data is not submitted
- Meter Reports available near real-time or as of posting
 - Missing Meter
 - Calibration (unaccounted energy)
 - State Estimator Value
 - Billable Meter
 - Interchange

REPORTING - PRIVATE

- **Determinant Report (Daily)**
 - Most granular, includes all determinants and charge types
- **Statement (Daily)**
 - Roll-up at the Asset Owner and Market Participant Level
- **Invoice (Weekly)**
 - Only for Market Participants since they are financially responsible
- **FERC Reports**
 - In our current market, SPP creates these reports in the format FERC has requested as a convenience for the Members. They can download these reports and submit them to FERC.

SETTLEMENT MANAGEMENT SYSTEM

- Maintained in-house, no vendors
 - Minimizes implementation time, provides flexibility, and cuts costs
- Adaptable and scalable
 - One system for different Settlement types (market, transmission)
- Shadow Calculation
 - Use a separate in-house program
 - Runs for all postings
 - Shadows 100% of the calculations for all entities

SETTLEMENT DESIGN

Day Ahead

- Hourly

Real Time

- 5 Minute

Energy
(Physical/Virtual)

Make Whole
Payment

Market
Transmission
Service (MTS)

Over Collected
Losses

Revenue
Neutrality Uplift
(RNU)

Out Of Merit
Energy

Flex Products

Congestion
Rents

Distribution

Miscellaneous
Adjustment

Import/Export
Transactions

Green House
Gas (GHG)

WRITTEN COMMENTS RECEIVED

- Meter Data Submission of OD+4 may be too quick
- Members like the idea of Settling directly with the Entity and not just the BA
- Aligning time zones since the Market will be spread out
- Daylight Savings Time – Not recognized in all areas
- How will Imports/Exports be Settled?

QUESTIONS/DISCUSSION

MARKET MONITOR

JODI WOODS, SPP MARKET MONITORING UNIT

MARKET MONITORING UNIT

- Background and experience
 - Integrated Marketplace
 - WEIS Market
- Mission statement and objectives
 - Mission of MMU
 - Obligations
- Independence
- Communication

SCOPE OF RESPONSIBILITIES

- Monitoring and surveillance
- Mitigation
 - Mitigation design
- Reporting and transparency
 - Annual, quarterly and monthly reporting
 - Ad-hoc reports
- Special projects

MARKET ENGAGEMENT AND RECOMMENDATIONS

- Integrated Marketplace
 - Engagement in stakeholder processes
 - Comments and recommendations on market issues
 - Examples include initiatives related to effective mitigation, efficient commitment and dispatch, and price formation
- WEIS Market
 - Engagement in stakeholder processes
 - Comments and recommendations on market issues
 - Market power study

QUESTIONS/DISCUSSION

IMPLEMENTATION PHASE I – TARIFF DEVELOPMENT

BRUCE REW, SPP

DRAFT SERVICE OFFERING

- Purpose of Phase I – Tariff Development
- Scope of Activities
- Tasks
- Deliverables
- Timeline & Budget
 - Schedule to make initial filing at FERC
 - Fixed Price for initial term
 - Monthly Rate while Pending at FERC

QUESTIONS/DISCUSSION

NEXT STEPS SCHEDULE

NEXT STEPS/SCHEDULE

- September 30: Draft Service Offering Issued
- October 28: Written Comments Due
 - marketsplus@spp.org
- November 15-16: In-Person Meeting in Denver
 - Register at spp.org
- Late November: Final Service Offering Issued

MARKETS



*Working together to responsibly and economically
keep the lights on today and in the future.*



SouthwestPowerPool



SPPorg



southwest-power-pool



Southwest Power Pool
**WESTERN
ENERGY
SERVICES**