

Seattle
City Light
Tacoma
Power
Portland
General
Electric

WESTERN

EIIM



2022

IMPLEMENTATION WORKSHOP

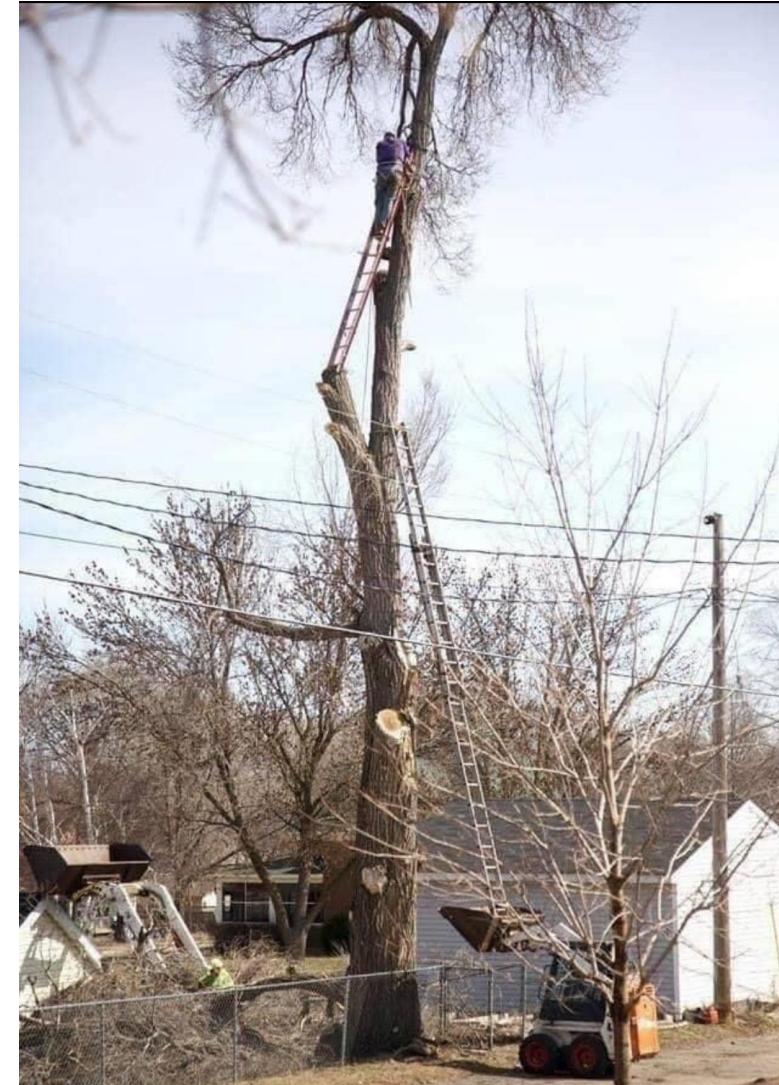
Nov. 17, 2021

INTRODUCTION

Michelle Cathcart, *Vice President of
Transmission System Operations*



SAFETY MOMENT



SAFETY MOMENT



SAFETY TIPS

- Wear protective gear like a hard hat, gloves, non-slip boots, safety goggles and hearing protection. If you need to climb ensure correct tools as needed such as safety harness, ropes or carabineers.
- Inspect tree before you start – Are there animals living in it? Is there poison ivy or poison oak? And look to see if cracks or splits may cause issues.

AGENDA

Time	Topic	Presenter
9 to 9:05 a.m.	Introductions	Michelle Cathcart
9:05 to 9:15 a.m.	Roadmap	Nita Zimmerman
9:15 to 9:30 a.m.	Program Update	Roger Bentz
9:30 to 9:45 a.m.	EIM Customer Impact Summary Updates	Roger Bentz, Todd Kochheiser, Eric King
9:45 to 10:15 a.m.	Testing	Jim Viskov
10:15 to 10:30 a.m.	Break	
10:30 to 11:15 a.m.	Settlements	Rasa Keanini
11:15 to 11:45 a.m.	EIM Reporting	Allie Mace
11:45 a.m. to noon	Open question and answer	

ROADMAP




Nita Zimmerman, *Chief Business
Transformation Officer*



EIM PARTICIPATION PRINCIPLES

- 1 Bonneville's participation is consistent with its statutory, regulatory and contractual obligations.
- 2 Bonneville will maintain reliable delivery of power and transmission to its customers.
- 3 Bonneville's participation is discretionary and Bonneville retains its ability to effectively exit the market in the event participation is no longer consistent with these principles.
- 4 Bonneville's participation is consistent with a sound business rationale.
- 5 Bonneville's participation is consistent with the objectives of Bonneville's Strategic Plan.
- 6 Bonneville's evaluation of EIM participation includes transparent consideration of the commercial and operational impacts on its products and services.

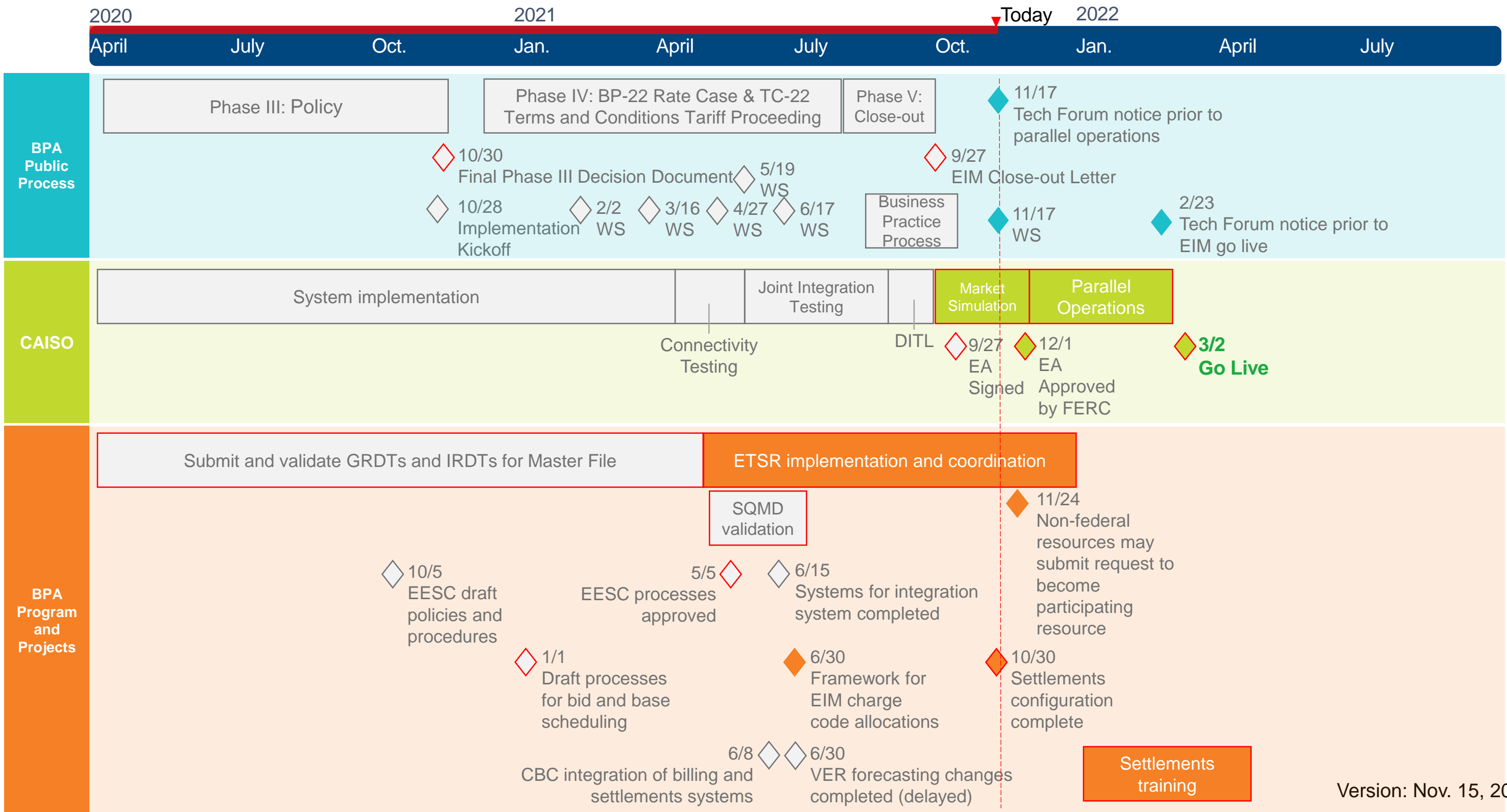
MILESTONES KEY

	Critical path activity or milestone	These activities have a marginal room for error and delay and have the highest risk of impacting the go-live date.
	Partial EIM project milestones	These milestones represent a cross-project coordination point that is critical to the EIM program.
	Completed activity or milestone	These activities have been completed.

ACRONYMS IN THE ROADMAP

CBC	Customer Billing Center Replacement
DITL	Day in The Life (CAISO)
EA	EIM Entity Agreement
EESC	EIM Entity Scheduling Coordinator
ETSR	Energy Transfer System Resource
GRDT	Generator Resource Data Template
IRDT	Intertie Resource Data Template
PR	Participating Resource
SQMD	Settlement Quality Meter Data
VER	Variable Energy Resources
WS	Workshop
Additional resource: CAISO's Glossary	

BPA EIM INTEGRATED PROGRAM ROADMAP



EIM PROGRAM UPDATE

Roger Bentz, *EIM Program Manager*



EIM PROGRAM UPDATE

- Overall on track for March 2, 2022, go-live.
- Development and refinement of processes and procedures underway.
- Working through the formal CAISO and FERC readiness steps.
- Testing and training well underway and will continue all the way to go-live.

BPA MILESTONES COMPLETED

- ✓ Phase V EIM Final Close-out Letter.
- ✓ VER API and forecast changes.
- ✓ AGC integration with EIM.
- ✓ Transmission donation development.
- ✓ Production schedules provided to test systems.
- ✓ EESC staff hired and consoles added in dispatch.
- ✓ EESC settlements staff hired.
- ✓ EIM Business Practice.

CAISO COORDINATION MILESTONES

- ✓ EIM Agreements signed and filed with FERC.
- ✓ SQMD attestations approved by CAISO.
- ✓ Meter validations with completed.
- ✓ VER forecasts provided to CAISO.
- ✓ Completed Connectivity, Joint Integration and Day-in-the-Life testing phases.
- ✓ Market Simulation structured scenario testing is underway.

NEXT STEPS

- New Meter Data Management system will go-live. The system enables SQMD submittal to CAISO.
- Continue internal training activities.
- Parallel Operations testing, including ETSR testing.
- Completion of EIM readiness criteria and internal readiness certification.

EIM CUSTOMER IMPACT SUMMARY

Roger Bentz, *EIM Program Manager*

Eric King, *Electrical Engineer*



EIM CUSTOMER IMPACT SUMMARY POSTED

- The *EIM Customer Impact Summary* documents what is and is not changing for customers. It also provides whether a final decision has been made and where that decision has been or will be made.
- This document has been updated to reflect final BP-22, TC-22 and the associated EIM Business Practice changes.
- The following slide highlights clarifications that may have changed since the completion of Phase III and initial proposals.
- The updated Customer Impact Summary document is on BPA's website [here](#).

CHANGES TO CUSTOMER IMPACT SUMMARY

- Status of decisions referencing BP-22 and TC-22 changed to “Final.”
- Base Schedule Timeline – Day Ahead
 - Clarified that the CAISO requires schedules/estimates for seven days out.
 - CDE is being modified to enable meeting that requirement for those that submit generator estimates instead of e-tags.
- Transmission Donations – EIM Transfer Paths
 - Diagram of transfer paths updated to reflect delay to EIM transfers on the PDCI.

EIM TESTING PROGRAM

Jim Viskov, *Manager Critical Business Systems
Operations and Development*



PROJECT DESCRIPTION

GRID Modernization 

Ensures readiness

Implements a structured and focused testing program to ensure BPA is prepared for participation in the Western Energy Imbalance Market.

Manages end-to-end testing

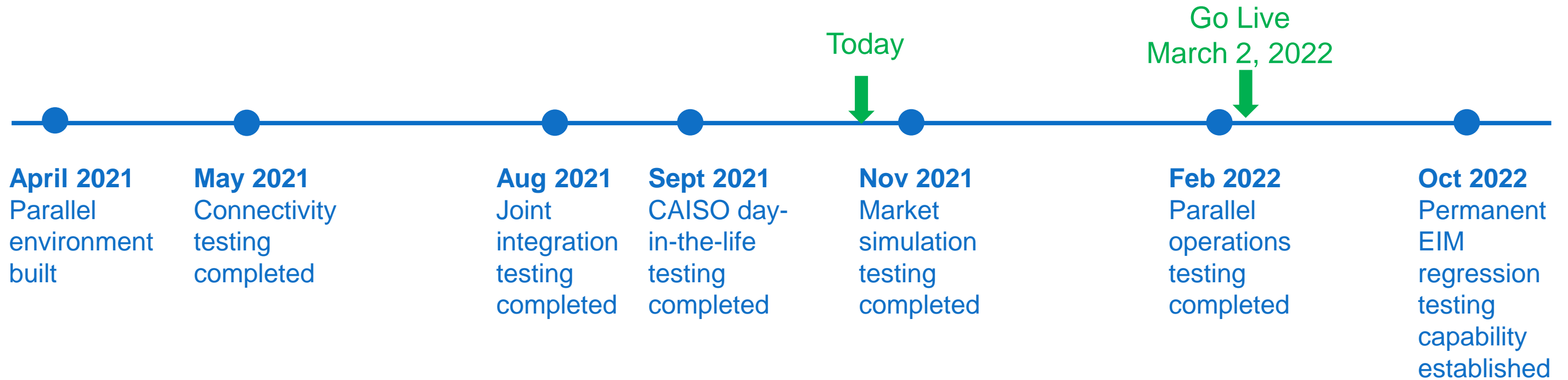
Creates and executes a testing plan that includes connectivity testing, integration testing, day-in-the-life testing, market simulation testing and parallel operations testing.

Creates a repeatable and permanent testing capability for BPA

Creates a repeatable testing capability and will provide long-term support of BPA's participation in the EIM.

KEY MILESTONES

GRID Modernization



Milestone due at the **end** of each month denoted above.

TESTING SUCCESSES



Completed Connectivity, Joint & Functional Integration and Day-in-the-Life testing on time.

Forecasting to complete Market Simulation on time.



Led weekly testing sessions across multiple EIM projects supporting these business functions: IT, Generation Support, Duty Scheduling, Real Time Trade & Scheduling, Metering, Billing, Transmission Dispatch, and EIM Settlements.



Kept Federal partners engaged.



Partnered with adjacent BAs to validate test data.

TESTING PHASES GOALS

MARKET SIMULATION



CAISO's Goal: Satisfy a FERC obligation to execute / demonstrate 13 specific scenarios which primarily relate to CAISO software functionality.



BPA's Goal: Confirm CAISO software functions as intended in the scenarios while continuing to execute integration testing and to intensify daily usage of the systems by production personnel.

PARALLEL OPERATIONS



CAISO's Goal: Ensure a clean, timely, and complete filing which includes attestation that the 33 readiness criteria are satisfied and the both CAISO and BPA are ready.



BPA's Goal: Complete full end-to-end closed loop testing, validation that there are no Production showstoppers, and confirmation that, with 30 days or more of Parallel Operations, all critical business functions can be performed with an acceptable level of errors.

CAISO Formal Structured Scenarios

Status as of 11/12/21

Market Simulation Structured Scenarios	Real Time Execution	Settlement Validation
Scenario 1 Day Ahead Market Feasibility Test Results	Complete	NA
Scenario 2 BAA Flex ramp sufficiency test upward direction	Complete	Complete
Scenario 3 BAA Flex ramp sufficiency test downward direction	Complete	Complete
Scenario 4 EIM Real Time – Congestion Management within EIM Entity BAAs	Complete	In Progress
Scenario 5 Manual Dispatches for EIM Resources	Complete	In Progress
Scenario 6 Real Time mitigation for new EIM BAA	Complete	In Progress
Scenario 7 Green House Gas Charges	Complete	In Progress
Scenario 8 EIM Real Time Neutrality	Complete	In Progress
Scenario 9 Contingency Event in the EIM BAA	Complete	In Progress
Scenario 10 Contingency Event in the ISO BAA	Complete	In Progress
Scenario 11 EIM Entity BAA isolation	Complete	In Progress
Scenario 12 Real Time Unit Commitment on new EIM Entity	NA	NA
Scenario 13 Available Balancing Capacity (ABC regulation reserves)	Complete	In Progress

PARALLEL OPERATIONS

Dec. 2021 – Feb 2022: Parallel Operations testing

- Goal: Complete full end-to-end closed loop testing, validation that there are no Production showstoppers, and confirmation that, with 30 days or more of Parallel Operations, all critical business functions can be performed with an acceptable level of errors.
- Parallel Operations testing is the final formal testing stage with the CAISO before go-live.
- BPA is in a pre-production environment using replicated actual production data to test market readiness.
- BPA test new VER 5-min forecasts to make sure data is flowing appropriately into the market results.
- **Testing involvement with Customers:**
 - **Adjacent EIM entities** that have EIM transfers with BPA: Expect to be able to support testing of EIM transfers via CMRI (Customer Market Results Interface) and ADS (Automatic Dispatch System). BPA will create small TSRs (e.g. 2MW or 3 MW) to test the EIM Transfer mechanics (e.g., ensure e-Tag creation, CAISO limit submittals, ADS/ICCP signals, AGC integration, e-Tag adjustments, and energy accounting processes are all working properly).
 - **Generators:** Generator base schedules will support testing the parallel feed of e-Tags & CDE schedules and see the results in the Base Schedule Aggregation Portal (BSAP). BPA will coordinate as needed if we see data issues for Base Schedule submissions, such as not being able to meet the T-77/57 timing requirements.

EIM SETTLEMENTS

Rasa Keanini, *EIM Settlements Product Owner*



SETTLEMENTS PROJECT OVERVIEW

Validate and submit settlement quality meter data

- Submit data to the CAISO for generation, load and interchange consistent with the approved SQMD plans.

Review and validate settlements

- Review participating resource settlement statements from the CAISO for federal resources bid into the market.
- Review EIM Entity Scheduling Coordinator settlement statements from the CAISO.

Calculate sub-allocations

- For any EESC settlement charge codes BPA determines to sub-allocate in the rate and tariff proceedings.

Support transmission customers

- Billing of sub-allocated EESC charge codes.
- Enable access to relevant settlement statement and invoice causational data for sub-allocated EIM charge codes.

Manage disputes

- Manage EESC and PRSC invoice disputes with the CAISO.
- Administer and manage transmission customer disputes of sub-allocated EIM charge codes.

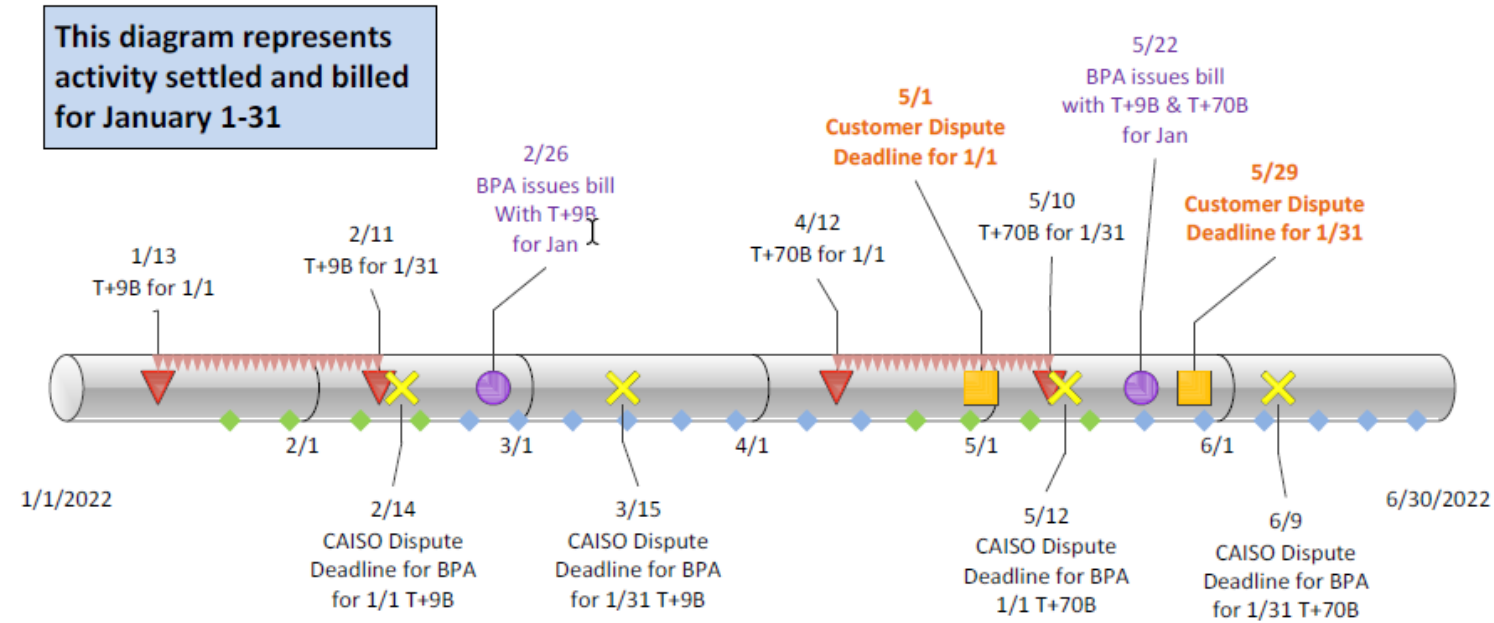
KEY MILESTONES



EIM SERVICE BILLS

- EIM Services (EIM-S) bills will:
 - Be issued monthly.
 - Be completely separate from other BPA bills. EIM Charge Codes will not show up on either the Power or Transmission bills customers currently receive.
 - Include Energy Imbalance associated with EIM charge codes. EI (Energy Imbalance for Load) and GI (Generation Imbalance) will no longer appear on the Transmission bill.
 - Include Intentional Deviation and Persistent Deviation penalties. These penalties will no longer appear on the Transmission bill.
 - Be distributed from BPA's billing department like Power and Transmission bills.
 - Include contact information for any questions related to the EIM-S bill (emails to EESSettlements@bpa.gov).
 - Follow the same initial starting point for bill disputes – customers will contact their Transmission Account Executives to file a bill dispute.

DISPUTE TIMELINE



- Daily CAISO settlement statements
- Weekly detail data for Jan 1-31 operation dates
- Weekly detail data for other dates
- CAISO settlement statement milestones
- CAISO dispute deadline
- Issue EIM services bill
- BPA Tariff required deadline for Customer disputes to be submitted to CAISO

- BPA will issue monthly Transmission customer bills based on sub-allocation of T+9B & T+70B settlement statements
- In order for customer disputes with BPA to be considered for a dispute with CAISO, customers will need to submit disputes to BPA at least 7 business days prior to the CAISO T+92B deadline (i.e. T+85B) as stated in BPA’s tariff language
- Customers may dispute charges on their EIM services bill up to 6 years after receiving their bill

SAMPLE BILL

U.S. Department of Energy



Bonneville POWER ADMINISTRATION

EIM SERVICES BILL

EIM Sample Participant

Jane Doe
1000 BPA Street
Portland, OR 22222
ATTN: Account Payable

Bill ID: SEP21-EIM-99998
Issue Date: October 29, 2021
Bill Period: September 2021
Period Ending: September 30, 2021

AMOUNT DUE TO:

Bonneville Power Administration	\$602,832.67
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Due Date: **November 23, 2021**

EIM SERVICES BILL

Customer Name:	EIM Example Participant	Bill Period:	September 2021
Bill ID:	SEP21-EIM-99998	Period Ending:	September 30, 2021
Issue Date:	October 29, 2021		

INITIAL: 09/02/2021 to 09/09/2021

Charge Code	Description	Current Amount	Previous Amount	Net Amount
15	Intentional Deviation Penalty	\$0.00	\$0.00	\$221.05
20	Persistent Deviation Penalty	\$0.00	\$0.00	(\$15.00)
6045	Over/Under Sched Settle	\$0.00	\$0.00	(\$235,723.52)
6046	Over/Under Sched Alloc	\$0.00	\$0.00	\$0.00
64600	FMM IIE EIM Settlement	\$0.00	\$0.00	\$4,057.19
64700	RT IIE EIM Settlement	\$0.00	\$0.00	(\$44,787.73)
64750	RT UIE EIM Settlement	\$0.00	\$0.00	(\$36,168.39)
64770	RT Imb Energy Offset EIM	\$0.00	\$0.00	\$856,817.39
6478	RT Sys Imb Energy Offset	\$0.00	\$0.00	(\$227.44)
67740	RT Congestion Offset	\$0.00	\$0.00	(\$212,486.23)
69850	RT Marg Losses Offset	\$0.00	\$0.00	\$0.00

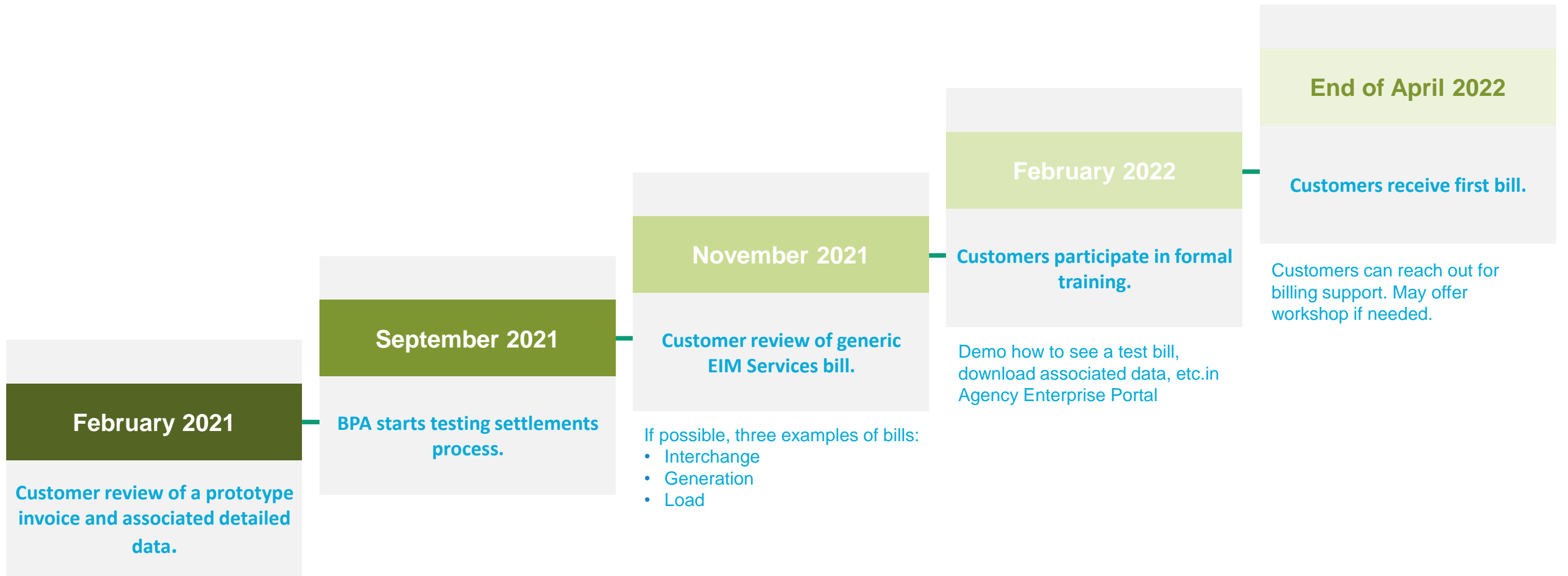
RECALC: 07/05/2021 to 07/10/2021

Charge Code	Description	Current Amount	Previous Amount	Net Amount
15	Intentional Deviation Penalty	\$0.00	\$0.00	\$0.00
20	Persistent Deviation Penalty	\$0.00	\$0.00	\$0.00
6045	Over/Under Sched Settle	\$0.00	\$0.00	\$37,270.87
6046	Over/Under Sched Alloc	\$0.00	\$0.00	\$0.00
64600	FMM IIE EIM Settlement	\$0.00	\$0.00	\$0.00
64700	RT IIE EIM Settlement	\$0.00	\$0.00	\$0.00
64750	RT UIE EIM Settlement	\$0.00	\$0.00	(\$74,132.68)
64770	RT Imb Energy Offset EIM	\$0.00	\$0.00	\$288,292.12
6478	RT Sys Imb Energy Offset	\$0.00	\$0.00	(\$46.84)
67740	RT Congestion Offset	\$0.00	\$0.00	\$19,726.88
69850	RT Marg Losses Offset	\$0.00	\$0.00	\$0.00

Questions concerning this bill may be directed to the EESC Settlement Analyst in EIM Settlements at EESCSettlements@bpa.gov

SETTLEMENTS TRAINING

GRID Modernization



Review revised version on 6/17 workshop

Note: Timeline subject to change. Assumes Agency Enterprise Portal goes live in January.

EIM REPORTING

Allie Mace, *Market Analysis and Policy
Manager*



REPORTING BACKGROUND

- BPA committed to quarterly updates in the Final EIM Close-out Letter and working with stakeholders to determine the contents of reporting.
- BPA had proposed:
 - Quarterly updates via the QBR Technical Workshop.
 - Reporting metrics from the CAISO Quarterly Benefit report.
 - Qualitative updates on market activity.

REPORTING PROPOSAL AND PLAN

- Thank you for specific requests provided in spring workshops and comments to the Draft EIM Close-out Letter.
- BPA formed a new reporting team, including staff from the rate and tariff cases, to evaluate the requests.
- Requests have been prioritized to identify metrics BPA does not plan to pursue and for those it will pursue, when BPA believes metrics can be in place.

PHASE “0” METRICS

- BPA does not plan to pursue Phase 0 metrics. Explanations for why BPA is not pursuing is provided here.

PHASE “0” METRICS

Phase 0 Metric	BPA Response
<p>Provide a comparison of prices for the Load Aggregate Point/Locational Marginal Price to Mid-C index to identify the impact on ancillary service prices.</p>	<p>BPA does not plan to provide a comparison of prices for ancillary services. Information on LAP, LMP and Mid-C index prices is publically available information. LAP and LMP information can be found on CAISO’s OASIS site.</p>
<p>Develop metric that supports further development of customer-side resources to improve system flexibility and EIM.</p>	<p>NWEC “believe[s] that further development of customer side resources including energy efficiency, demand response, storage and self-generation (in particular, rooftop solar) can add to system flexibility for Bonneville in its role as balancing authority area as well as the EIM.” Resource development in the region is outside the scope of BPA’s EIM efforts. BPA does not plan to address resource development in its reporting or develop a metric to track.</p> <p>If customers are interested in adding participating resources in the EIM within BPA’s balancing authority, BPA is happy to work with customers to better understand the requirements for participating resources as outlined in the EIM Business Practice.</p>

PHASE “0” METRICS

Phase 0 Metric	BPA Response
<p>Establish a methodology to track EIM costs and report on them.</p>	<p>BPA does not plan to track EIM costs post go-live. Today, BPA tracks the EIM costs associated with the EIM-specific grid modernization projects and EIM program management which are specific to the implementation of new systems and tools. These EIM systems and tools will be incorporated into daily operations and planning. Going forward, EIM will simply be a part of the daily power and transmission operations. Expenses related to the EIM will be reflected in the budgets for operations.</p> <p>In the Final EIM Close-out Letter, BPA provided an update on expected ongoing costs. BPA anticipates ongoing costs for the EIM to be \$7.1 million per year. More details can be found on page 55 of the letter.</p>

PHASE “0” METRICS

Phase 0 Metric	BPA Response
<p>Demonstrate the protection and enhancement of fish and wildlife resources specifically the impact of flex spill on EIM participation (i.e. doe it allow more advantageous use of flex spill).</p>	<p>BPA received a request to report on “the interaction between EIM participation and the ongoing conduct of the flexible spill program.” BPA’s first participation principle is that its EIM participation is consistent with its statutory, regulatory and contractual obligations. BPA’s flexible spill program falls within these obligations. BPA currently ensures that all obligations are met prior to determining if there is surplus capability available to offer. BPA will continue to do this when it considers whether or not to offer its capability into the EIM. BPA does not plan to provide additional analysis on the interaction of EIM and the flex spill program as meeting these obligations occur before decisions on secondary sales are made.</p>

PHASE “0” METRICS

Phase 0 Metric	BPA Response
<p>Provide asset controlling supplier (ACS) emissions factor more frequently than annually.</p>	<p>In the Final EIM Close-out Letter, BPA committed to “provide reporting on carbon content of Bonneville’s system mix in a meaningful form and with appropriate frequency, but details of reporting are dependent on outside factors that are yet to be determined.” The outside factors include emerging carbon policies that are outside the scope of BPA’s EIM participation.</p> <p>BPA remains committed to pursuing more frequent reporting of the ACS emissions factor. However, this reporting commitment will be determined outside the scope of the EIM reporting project and will be discussed in other forums.</p>

PHASE “0” METRICS

Phase 0 Metric	BPA Response
<p>Demonstrate how BPA is supporting state energy and climate policy.</p>	<p>BPA received a request to assess EIM participation to “help inform compliance with [state energy and climate policies] and other relevant state policies and help shape future policy additions and refinements.” BPA remains committed to engaging in state and regional conversations about evolving energy and climate policies. BPA will consider the impact of its EIM participation on these policies as appropriate.</p> <p>However, reporting on these policy changes is outside the scope of BPA’s EIM participation. These policies apply to more than BPA’s EIM participation. BPA may hold forums to discuss these broader policy changes in the future.</p>

PHASE “0” METRICS

Phase 0 Metric	BPA Response
<p>Provide EIM participation assessment to inform Western market and program development such as the CAISO’s Extended Day-Ahead Market initiative and the Western Resource Adequacy Program.</p>	<p>BPA believes that participating in the EIM will provide it with valuable information about market participation that may inform future market or program development. BPA is committed to evaluating new market and program development. BPA is also committed to engaging with customers to discuss potential frameworks for these new opportunities. However, discussion of future market or program development is outside the scope of EIM reporting.</p> <p>BPA is planning to start a series of monthly workshops on the Western Resource Adequacy Program in January. Visit the Resource Adequacy web page for more details.</p>

PHASE “0” METRICS

Phase 0 Metric	BPA Response
<p>Design and report on performance metrics. These metrics could be used to determine when BPA should exit the market.</p>	<p>BPA plans to monitor its EIM performance to ensure that its participation is effective as well as to monitor if process or policy changes may be needed in the future. BPA will also monitor its participation to ensure the six participation principles continue to be met in the market.</p> <p>BPA does not plan to establish specific performance metrics for external reporting, nor does it plan to establish metrics to determine when it should exit the market, whether it is a temporary or permanent exit. BPA provided an overview of the steps and evaluation it would take if it determined to leave the market in the June 2021 EIM Implementation Workshop. BPA also provided a more detailed response to this question in the Final EIM Close-out Letter under Issue 7.3.1.</p>
<p>Provide a report for market-sensitive data under a non-disclosure agreement for transparency.</p>	<p>BPA does not see a compelling business ready to provide market-sensitive data at this time. In the past, BPA has not found a compelling reason to pursue non-disclosure agreements for recurring reports. BPA will not pursue this data request.</p>

PHASE “0” METRICS

Phase 0 Metric	BPA Response
<p>Provide an analysis of resource sufficiency test trends.</p>	<p>BPA does not plan to provide detailed analysis of resource sufficiency test trends. BPA may provide additional information on its resource sufficiency performance in an extreme weather or operations event. BPA will also consider requests for analysis as part of the pre-rate case workshops for discussions relating to resource sufficiency.</p> <p>The CAISO has recently committed to publishing a monthly EIM Resource Sufficiency Evaluation report. Customers are encouraged to check out this report for more information on the resource sufficiency evaluation and how BPA has performed as a balancing authority.</p>

PHASE “0” METRICS

Phase 0 Metric	BPA Response
<p>Provide reporting on what forecast BPA uses to meet resource sufficiency (CAISO v. BPA load forecast).</p>	<p>BPA does not plan to share which load forecast it is using. Each entity in the balancing authority area is expected to schedule to its own best forecast of its load obligation, including Power Services. BPA expects to periodically review how load entities, including Power Services, are performing in their load scheduling practices. BPA’s BA-level resource sufficiency performance will be available in the CAISO’s RS reports, which BPA would be open to discussing with customers if there are questions.</p>

PHASE 1 METRICS

- BPA is committing to having Phase 1 metrics in place within six months of EIM go-live (September 2022).

Phase 1 Metrics:

- Provide the quantity of unspecified purchases made through the EIM. BPA will also consider a metric on the amount delivered to California and the associated premium/costs.
- Provide how frequently BPA passes the RS balancing test, RS capacity test and RS flexibility test.
- Provide data on EIM transfer limits and use.

PHASE 2 METRICS

- BPA is committed to providing Phase 2 metrics but may need more time to put in place. The goal is to have these metrics in place by BP-26.

Phase 2 Metrics:

- Provide data on charge code allocations.
- Provide data on transmission donations and how often they are used.

BENEFITS METRICS

- Customers requested BPA develop a metric to track the incremental EIM benefits, which will not be included in the EIM reporting effort.
- The CAISO quarterly benefits report will be publicly available.
- BPA will address how EIM benefits will be captured in future rates cases during pre-rate case workshops, which may or may not include developing a metric.
- Pre-rate case workshops will kick off in early 2022 and customers will have a good indication of what will be included in the initial proposal by September 2022.

REPORTING FEEDBACK

- Please share feedback on the following:
 - If there is a metric you would like to see that you do not see captured here today.
 - If you have a concern about how BPA prioritized a metric.
- Feedback can be sent to gridmod@bpa.gov.

QUESTIONS?



COMMENTS

Please send your feedback to techforum@bpa.gov by Wednesday Dec. 1.

Thank you for participating in today's workshop. For more information, visit www.bpa.gov/goto/eim.

