

WESTERN

EIIM



2022

IMPLEMENTATION WORKSHOP

June 17, 2021

INTRODUCTION

Kieran Connolly, *Vice President of Generation
Asset Management*



SAFETY MOMENT



SAFETY MOMENT

- Ensure windows are visible. Do not block sight lines.
- Secure cargo.
- Place heaviest items on the bottom.
- Do not create a tower on your roof.
- Check traffic laws to ensure you are in compliance with towing or overhang laws.

AGENDA

Time	Topic	Presenter
9:05 to 9:25 a.m.	Roadmap and Comment Review	Allie Mace, Rachel Dibble
9:25 to 10:10 a.m.	EIM Customer Impact Summary	Roger Bentz, Eric King
10:10 to 10:25 a.m.	EIM Program Overview	Allie Mace, Roger Bentz
10:25 to 10:35 a.m.	Break	
10:35 to 10:55 a.m.	EIM Bid and Base Scheduling	Roger Bentz
10:55 to 11:20 a.m.	EIM Real Time Operations	Cameron Hunziker
11:20 a.m. to 12:10 p.m.	EIM Settlements	Rasa Keanini
12:10 to 12:15 p.m.	Break	
12:15 to 12:30 p.m.	EIM Testing	Jim Viskov, Roger Bentz
12:30 to 12:40 p.m.	EIM Training	Jamey Turner
12:40 to 1:00 p.m.	Open question and answer	

ROADMAP

Allie Mace, *Director of Grid Modernization*



Five Phases to EIM Decision






- Exploration** July 2018–June 2019
- Implementation agreement** June–Sept. 2019
- Policy decisions** Oct. 2019–Oct. 2020
- BP-22 & TC-22** Dec. 2020–July 2021
- Close-out** Aug.–Sept. 2021

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



BPA Public Process

Phase III: Policy (April 2020 - Oct 2020)

Phase IV: BP-22 Rate Case & TC-22 Terms and Conditions Tariff Proceeding (Jan 2021 - July 2021)

Phase V: Close-out (Oct 2021 - July 2022)

Business Practice Process (July 2021 - Oct 2021)

10/30 Final Phase III Decision Document

10/28 Implementation Kickoff

2/2 WS

3/16 WS

4/27 WS

5/19 WS

6/17 WS

9/30 EIM Close-out Letter

CAISO

System implementation (April 2020 - Oct 2020)

Connectivity Testing (Oct 2020 - Dec 2020)

Joint Integration Testing (Jan 2021 - Feb 2021)

DITL (Feb 2021 - Mar 2021)

Market Simulation (Mar 2021 - Apr 2021)

Parallel Operations (Apr 2021 - July 2022)

10/1 EA Signed

12/1 EA Approved by FERC

3/2 Go Live

BPA Program and Projects

Submit and validate GRDTs and IRDTs for Master File (April 2020 - Oct 2020)

ETSR implementation and coordination (Jan 2021 - July 2021)

SQMD validation (Jan 2021 - Feb 2021)

10/5 EESC draft policies and procedures

1/1 Draft processes for bid and base scheduling

5/5 EESC processes approved

6/8 CBC integration of billing and settlements systems

6/15 Systems for integration testing completed

6/30 Framework for EIM charge code allocations

6/30 VER forecasting changes completed

10/30 Settlements configuration complete

11/24 Non-federal resources may submit request to become participating resource

Settlements training (July 2021 - July 2022)

COMMENT REVIEW

Rachel Dibble, *Director of Market Initiatives*



COMMENTS

Topic	Comment Summary	BPA Response
Business Practice	Request BPA publish the draft EIM business practice with the Phase V draft letter ahead of the formal business practice process.	BPA is not able to publish the business practice ahead of the timeline provided in the May workshop as it will not be ready for public review at that time. Customers will have an opportunity to comment on the business practice during the formal business practice process .
Business Practice	Request BPA publish a list of existing business practices that will need to be updated if BPA participates in the EIM as well as a description of the EIM business practice being developed.	BPA is evaluating what business practices will need to change. More information will be provided in the business practice process as information becomes available.
Post go live reporting	Request BPA provide written feedback to April comments on reporting that were shared during the May workshop.	See slide 15 and 16 for responses to April workshop comments.
Post go live reporting	BPA should only report on CAISO benefits if those benefits will be reflected in future rates.	How benefits are captured in future rate cases is a rate case issue, and therefore will be discussed in future pre-rate case workshops and rate cases. Customers will have an opportunity to provide input on proposed benefits in the rate case process.

COMMENTS

Topic	Comment Summary	BPA Response
Post go live reporting	BPA should work with customers to develop a benefits methodology to identify benefits associated with meeting imbalance needs within the balancing authority area and separately identify benefits to secondary revenues through a more efficient dispatch of the Federal Columbia River Power System beyond balancing needs.	BPA has not yet evaluated if the categories of benefits will be easily separable, but BPA will evaluate the data that comes from participation in the EIM.
Post go live reporting	BPA should make data related to EIM participation available to customers.	BPA will evaluate the data available from participation in EIM. As with all other marketing activity, we will not make market sensitive data used for internal marketing decisions available.
Phase V	BPA should commit to reporting in the Phase V letter including a commitment to work with customers to develop a methodology to assess costs and benefits.	BPA has committed to post go live reporting and will document that commitment in the Phase V Close-out Letter. Expected content for the reports has been shared in workshops and will evolve over time.

COMMENTS

Topic	Comment Summary	BPA Response
Phase V	BPA should provide a list of market changes that could be "deal breakers" if those market elements change in the future.	BPA cannot predict all possible market changes that would impact its decision to join. BPA will continue to monitor proposed changes to EIM policies and market structure.
Phase V	In the Phase V letter, BPA should provide justification for using the E3 analysis for the business case rationale when it did not use the E3 analysis to set benefits in the rate case.	BPA's rationale for using the E3 analysis in its business case is included in the 2019 EIM Policy Record of Decision. BPA's reasoning for using a different analysis in the rate case is a rate case issue.

COMMENTS FROM APRIL REPORTING FEEDBACK

Topic	Comment Summary	BPA Response
Asset Controlling Supplier Emission Factor	BPA should provide ACS data more frequently than annual published number.	BPA is evaluating if it can meet this request and would include the metric in reporting updates if possible.
Benefits	BPA should provide benefit estimates calculated by Power Services.	BPA will report the CAISO quarterly benefits which is the consistent practice amongst other EIM entities.
Benefits	BPA should provide an EIM benefits forecast for power rates.	BPA intends to discuss with stakeholders post-EIM implementation metrics for measuring costs/benefits of EIM participation in the context of the overall net secondary revenue forecast.
Benefits	BPA should provide the allocation of Power Services actual EIM dispatch charges and credits between the composite and non-slice cost pool.	BPA intends to discuss with stakeholders post-EIM implementation metrics for measuring costs/benefits of EIM participation in the context of the overall net secondary revenue forecast.

COMMENTS FROM APRIL REPORTING FEEDBACK

Topic	Comment Summary	BPA Response
Charge Code Allocation	BPA should report on the allocation of congestion rents and charge codes.	BPA will consider this recommendation as its market participation evolves. This topic could also be a good candidate for pre-rate and tariff workshops for the BP-24 and TC-24 proceedings.
Resource Sufficiency	BPA should provide information on how frequently it passes the RS tests and when mitigation actions are taken to pass the test.	BPA will consider this recommendation as its market participation evolves. This topic could also be a good candidate for pre-rate and tariff workshops for the BP-24 and TC-24 proceedings.
Transmission Donation	BPA should provide details on transmission donation.	Transmission donations are completed by individual customers. As it pertains to the open access transmission tariff, information will be will be available on OASIS.

RESPONSES

Question	BPA Response
<p>What is the right forum to discuss new VER software and testing the new API? Is there a POC?</p>	<p>BPA has reached out to existing contacts at the staff level for VER resources that currently receive data from BPA via web API. For VER resources without a current API interface with BPA, BPA staff are working through the Transmission Account Executives to establish the correct contacts. BPA will use that staff to staff level communication channel to further discussions as the web API is finalized and testing begins. While a final POC has not yet been identified, please contact Vincent Minden (vlminden@bpa.gov) for questions about the new system and transition plans, or Frank Puyleart (frpuyleart@bpa.gov) for questions about related business processes.</p>
<p>Is BPA on track to complete VER changes by the end of June?</p>	<p>BPA's progress has slipped by about 2-3 weeks from dates shared in BPA's April EIM workshop for delivering the API specification and test API. BPA is working on a detailed project plan to share with staff level contacts with the production level API is still on target for being delivered by the end of August.</p>

RESPONSES

Question	BPA Response
<p>Will the current settlement process for NR Energy Shaping Service for New Large Single Load Charge move towards a nodal settlement? Currently the methodology has 2 steps followed by establishing 1 of 3 thresholds.</p>	<p>The rate schedules state we will use the Intercontinental Exchange Mid-C Day Ahead Power Price Index (or its replacement) under ESS energy rate treatment B. If BPA joins the EIM and the ICE price index no longer represents power prices at Mid-C, then BPA can replace the index with a more representative market price, such as the load aggregation point price for BPA.</p>
<p>Will customers be billed 5-minute generation imbalance for non-participating resources within their service territory? If so, will this include NPRs they do not own? Also, will each NPR generator within the service territory have different locational marginal prices?</p>	<p>The EIM settlements will be allocated to the transmission customer for the generator schedules. Yes. Imbalance in EIM is applied based on the 15-minute and 5-minute market solutions' locational marginal price for each generator interconnection node in the market model.</p>

RESPONSES

Question	BPA Response
<p>If BPA is the entity supplying the Day Ahead forecasts for the wind projects, why can't BPA use their own DA forecast for each plant to enter a BSAP schedule versus needing to use an e-Tag?</p>	<p>Day Ahead (DA) submittals will be required per the Tariff and scheduled transactions by 10 a.m. DA is how BPA has chosen to uniformly capture the DA Submittals. All resources types, including VERs, will be providing the DA submittals in the same manner. VERs shall complete the DA Submittals using the BA Official Forecast provided, their own DA knowledge of their planned operations and maintenance of the VER facility and their ability to sell and schedule output of the VER facility on a DA basis.</p>
<p>Is BPA still planning to maintain its super forecast versus using the CAISO supplied forecast?</p>	<p>BPA has chosen to use the BPA official VER forecast as the forecast supplied to the EIM to meet the 5-min forecast requirements, though BPA will utilize the EIM VER Persistence option for binding 5-min dispatches in the EIM. BPA will also provide the hourly BPA official VER forecasts to VER customers for scheduling purposes. BPA's official VER forecast will be the forecast provide by BPA's VER forecast vendor, as BPA is retiring the BPA Super Forecast in light of the time delays it would cause in delivering forecasts to the EIM.</p>

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 will continue to be updated as information is available and decisions are finalized.
- At workshops, specific items from the summary will be discussed with an opportunity for questions.

TRANSMISSION DONATIONS – INTERCHANGE RIGHTS HOLDER METHODOLOGY

Objective: The EIM requires that interchange capacity between adjacent EIM entities be made available to the market to support EIM transfers between Bonneville and other EIM entity balancing authority areas.

Analysis: BPA staff have analyzed the two transmission models offered by the CAISO and discussed the pros and cons with customers. BPA has selected the Interchange Rights Holder Methodology to support making interchange capacity available to the EIM.

Customer Impact:

BPA transmission customers may donate transmission rights to facilitate EIM Transfers between the BPA BAA and other EIM entity BAAs.

Source

Phase I workshops, Phase II ROD

Status of decision

Final

TX DONATIONS – TRANSMISSION PRODUCT

Objective: Determine which transmission products should be eligible for Interchange Rights Holder Methodology donation of transmission for EIM transfers.

Analysis: BPA staff analyzed whether to allow only firm point-to-point transmission donations (as other EIM entity tariffs require) or to also allow donations of non-firm PTP transmission. Stakeholder input was sought through the Phase III workshops. In BPA’s initial proposal, BPA staff proposed to allow both non-firm and firm PTP transmission donations for EIM.

Customer Impact:
 Customers can donate firm or non-firm PTP transmission for BPA EIM transfers.

Source	Status of decision
Phase III workshops, draft tariff	Pending TC-22

TX DONATIONS – EIM TRANSFER PATHS

Objective: In order to identify and manage EIM transfers, directional EIM transfer paths need to be uniquely defined and modeled in the EIM consistently by adjacent EIM entities.

Analysis: BPA staff have collaborated with all adjacent BAAs who are or will be EIM entities at the planned go-live date to model the interchange for purposes of administering EIM transfers between the BAAs. A specific set of directional EIM interchange paths have been collaboratively developed.

Customer Impact:

Transmission customers will need to be aware of the specific EIM transfer paths that have been established.

All available paths will be published in the EIM business practice.

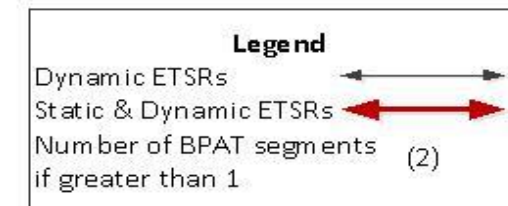
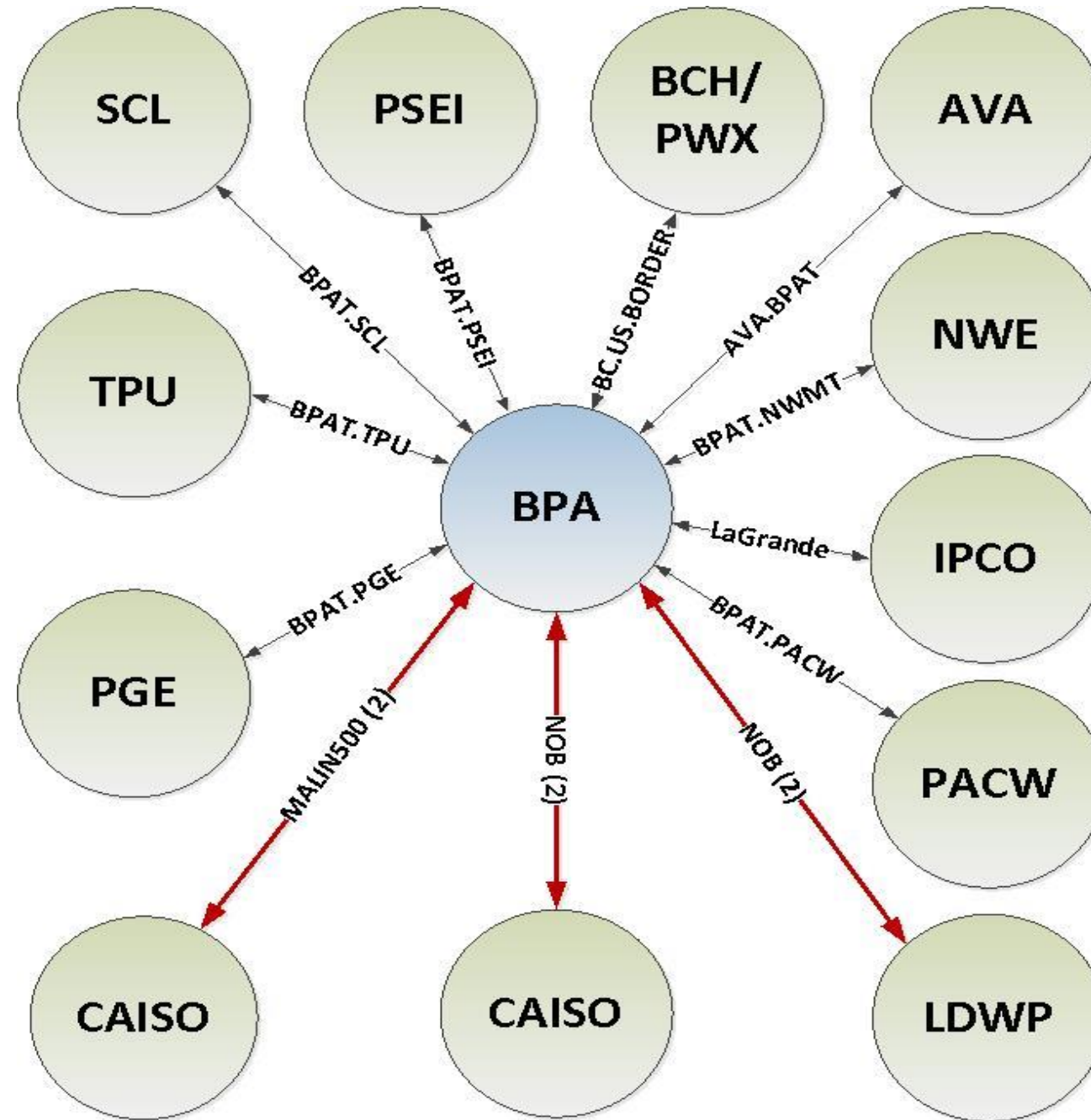
Source

Phase III workshops, draft tariff

Status of decision

Pending TC-22

BPA EIM PLANNED TRANSFER PATHS



TX DONATIONS – DONATING TRANSMISSION

Objective: In order to enable EIM transfers between Bonneville and adjacent EIM BAAs, transmission capacity will need to be donated by BPA transmission customers for each EIM Transfer path, for each direction, and for each hour.

Analysis: To donate Bonneville transmission for EIM use, BPA transmission customers will simply need to establish PTP reservations via redirects or purchases on the specified EIM transfer paths. Because BPA is doing all of the downstream processing to convey information to the CAISO, including authoring of e-Tags and after-the-fact accounting, the reservations need to be confirmed no later than T-77 of each operating hour. If no transmission is donated for a particular path, EIM transfers on that path will not be available for that time period.

Customer Impact:

Transmission customers wanting to donate transmission capacity for EIM transfers will need to complete reservation transactions for each specific transfer path by T-77 each hour.

Source

Phase III workshops, draft tariff

Status of decision

Pending TC-22

TX DONATIONS – CONVEYING LIMITS TO CAISO

Objective: The donated transmission capacity being made available for EIM transfers must be conveyed to CAISO consistent with market model configurations and within market timelines.

Analysis: BPA will collect the EIM donated reservation capacity at T-77 for each EIM transfer path, author e-Tags, and submit the EIM transfer limits to CAISO each hour. The market will use this donated capacity as a limiting factor in the market dispatch solutions.

Customer Impact:

None

Source

Phase III workshops, draft tariff

Status of decision

Pending TC-22

TX DONATIONS – E-TAGS AND LOSSES

Objective: The market uses e-Tags as the vehicle for documenting interchange resulting from market dispatches. Transmission loss returns are typically required for transmission across BPA’s system.

Analysis: BPA will develop automation that accumulates the donated transmission and create (or update) e-Tags reflecting the path, megawatt and transmission customer(s) in advance of the hour. Bonneville will update those tags to reflect EIM transfer energy dispatches and accordingly convey that change in interchange flows to the market. BPA also discussed transmission losses for EIM transfers with customers and determined to exempt them from loss returns.

Customer Impact:

The BP-22 and TC-22 Initial Proposals propose there will be no transmission loss return required for BPA EIM transfers (includes wheel-through and BPA EIM transfers) if and when BPA joins and participates in the EIM.

Source

Phase III workshops, draft tariff

Status of decision

Pending TC-22

TOPICS COVERED IN WORKSHOPS TO DATE

- ✓ Metering Requirements
- ✓ Settlements Processes
- ✓ Settlement Sub-allocation
- ✓ Losses for EIM transfers
- ✓ VER Scheduling
- ✓ Scheduling Timing
- ✓ Intentional Deviation
- ✓ Persistent Deviation
- ✓ Participating Resources
- ✓ Generators in EIM
- ✓ Resource Sufficiency
- ✓ Transfer Service Costs
- ✓ EI for Load
- ✓ EI for Generation
- ✓ Over/Under Scheduling Charges
- ✓ Interchange/Intrachange Imbalance
- ✓ Energy Transfer Resource Schedules
- ✓ Transmission Donation

EIM PROGRAM UPDATE

Allie Mace, *Director of Grid Modernization*

Roger Bentz, *EIM Program Manager*



EIM PROGRAM

- The Business Transformation Office provides the overall EIM program management. This includes:
 - EIM Implementation Sponsor Team.
 - EIM program manager.
 - Oversight of five EIM-specific grid modernization projects.
 - Oversee Utilicast support for EIM integration.

VOLUNTARY ELEMENTS OF EIM

The voluntary nature of EIM is a key risk mitigation feature for participants and there are several ways to exercise this option by voluntarily:

- Bidding and offering volumes and pricing (every hour).
- Making transmission available for EIM transfers (every hour).
- Forego engaging in EIM Transfers in one or more specified operating intervals (reliability function of BPA BA).
- Exiting or entering the market.

FEDERAL PARTNERSHIP

- Working closely with federal partners at the U.S. Army Corps of Engineers and Bureau of Reclamation.
- Ensuring EIM participation will not interfere with water management or other river obligations.
- Most coordination and change being implemented through BPA's Automatic Generation Control Modernization project.
- Will be conducting training with federal partners.

CAISO COORDINATION

- Coordinating regularly with CAISO.
 - Six tracks of project management cover project management, legal/contracts, EIM network model, system integration, metering/settlements, and operational readiness.
 - Positive collaboration automating BAAOP API features.
- Northwest Coordination
 - Working with other EIM entities in the Northwest.
 - Primary focus is on energy transfer system resources.

EIM BID AND BASE SCHEDULING

Roger Bentz, *EIM Program Manager*



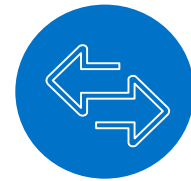
PROJECT DESCRIPTION

GRID Modernization



Maintain & Submit Base Schedules

Establishes the capability to maintain and submit base schedules for resources (both participating and non-participating), interchange and EIM transfers.



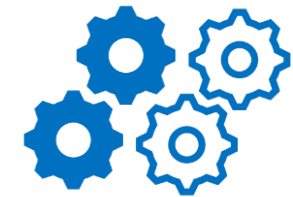
Bid Participating Resources

Delivers the organizational and system capabilities required to allow BPA to bid federal participating resources into the EIM.



Implements Transmission Donations

Develops the ability to implement transmission donations.



Synchronizes Processes Internally

Synchronizes processes with other grid modernization projects including:

- Price and Dispatch Analysis.
- Load and Renewable Forecasting.
- Federal Data and Generation Dispatch Modernization.
- EIM Real-Time Operations.

WHAT IS CHANGING FOR CUSTOMERS?

Basis for imbalance	Schedules received prior to T-57 establish the basis for imbalance (based on current proposal).
Customer e-tags CDE submissions	Customers e-tags will be used to create an EIM Base Schedule. CDE schedule submissions will be used for resources that do not have an e-tag.
Interchange rights	Transmission rights holders may voluntarily donate interchange rights to the market for interchange EIM awards.
Non-federal owners	Non-federal generation owners may designate a resource as “participating” and submit bids to the EIM.
Bid submission	Participating resource owners submit bids into the market by T-75.
Market awards	Participating resources receive market awards as per CAISO’s EIM timelines.

BALANCING TEST

- Balancing the balancing authority area in the T-57 to T-40 window.
 - BPA is refining the criteria and procedures for making adjustments to federal generation as needed to ensure reliable operations.

BUSINESS PRACTICE

- BPA developing EIM business practice.
- The BP will include information such as:
 - Designating participating resources.
 - Bid creation.
 - Transmission donation.

EIM REAL TIME OPERATIONS

Cameron Hunziker, *IT Specialist*



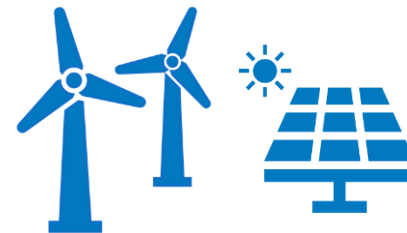
PROJECT DESCRIPTION

GRID Modernization

Enables BPA's power and transmission operations to:



Provide operational limits to the market.



Provide variable energy forecasts to the market as well as plant operators.



- Communicate operational conditions to the EIM.
- Integrate market dispatches through automatic generation control.
- Convey impacts of real-time events to the market.

NEW EESC DESK AND STAFF

- New EIM Entity Scheduling Coordinator Desk hires are:
 - Bringing EIM experience and are contributing significantly to our understanding of how EIM works at a practical level.
 - Reviewing processes and applications under development.
 - Working with other implementation projects to ensure that software will support EESC.
 - Ensuring reliability while supporting EIM. A large part of the project is looking at operating scenarios, and ensuring that reliability is maintained while also supporting the EIM.

EIM “EXIT CRITERIA”

Background: At previous workshops, participants raised questions about how BPA would exit the market (temporarily) in case of an abnormal market issue or reliability concern.

Transmission operations’ primary focus continues to be on ensuring reliability.

- In the event that an EIM-related issue impacts reliability, Transmission Operations will attempt to use the method least impactful to the EIM to ensure continued reliability.
- Market isolation would be a last resort option.

MITIGATION ACTIONS

- There are many other actions that may be performed to avoid or minimize the impact of an event before this action (market isolation) is taken including:
 - Real-time investigation to identify and correct any issues that may be causing a market or reliability issue.
 - Manual overrides or submissions to correct any inconsistent data.
 - Submission of manual dispatches to generation.
 - Load conformance to account for market imbalances or deviations
 - Limiting or locking dynamic ETSRs.
 - Utilizing NET ITC (Intertie Constraints) to limit NET dynamic transfers in the market.
 - Working with CAISO Real-time Market Operator to identify and block dispatches.

MARKET SEPARATION

- Transmission Operations expects market isolation to be solely the result of a reliability event or in anticipation of an impending reliability event.
 - This will most likely be triggered by a software or connectivity issue, or where the market has or is expected to cause a reliability issue or the market is unable to dispatch resources within the given reliability constraints.
- All aspects of market isolation will be documented in BPA Transmission's operation procedures, and consistent with CAISO procedures for market isolation.

MARKET SEPARATION

- The time-line for a full market isolation process is dependent on when this process is started. Generally speaking, a market isolation process can technically take between 75 or 135 minutes as determined by the ability to withdraw bids before T-75.
- Market isolation would end when the issue that triggered the reliability issue is identified and resolved.
- Expect information related to market isolation to be updated on OASIS.

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.

DATA PROTOTYPE UPDATE

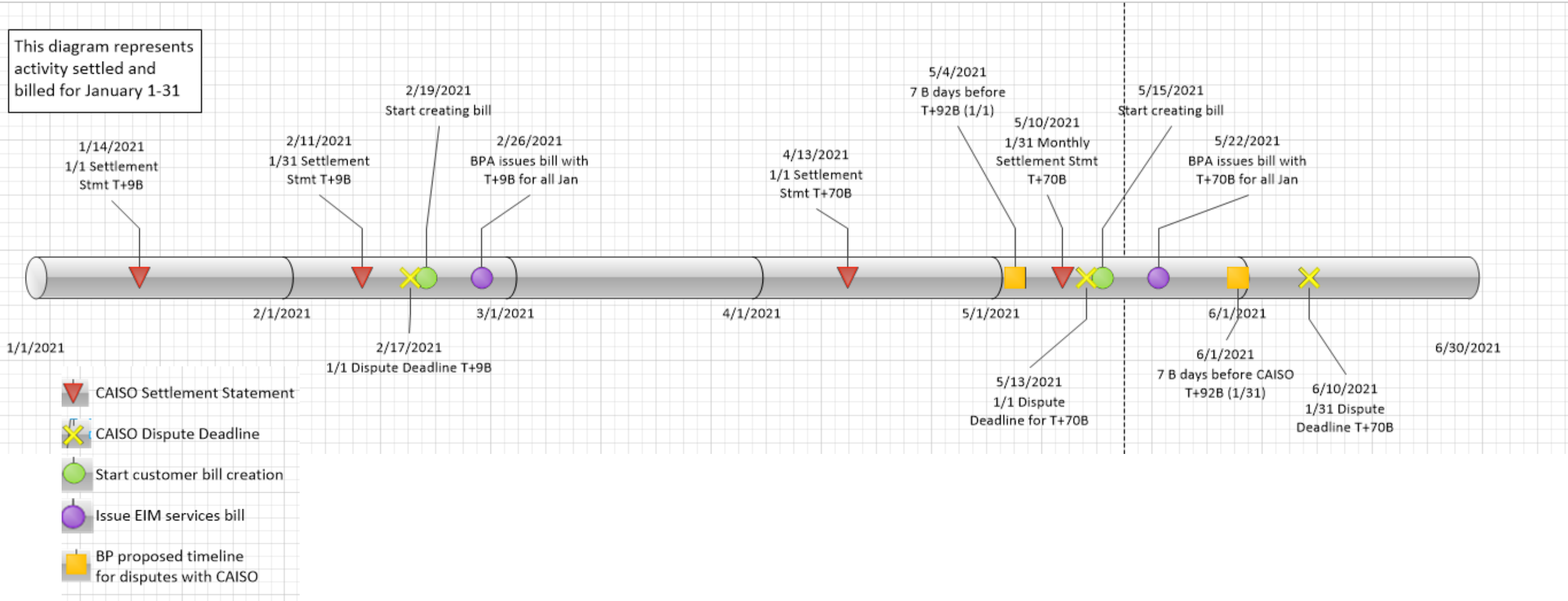
- Changes made to the data prototype:
 - To the extent possible, each table has its own tab.
 - At least one tab representing three tables.
 - It will have additional tabs based on participation in the market
 - Will have separate table/tab for each generating resource.
- Exploring the format and feasibility of a summary tab.

DATA PROTOTYPE UPDATE

- The supplemental data will include subtotals for load, for interchange and each non-participating resource and will indicate which EIM Charge Code applies.
- For interchange data, the weekly data spreadsheet will provide a way to associate tag with detailed data.

DISPUTE TIMELINE

This diagram represents activity settled and billed for January 1-31



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

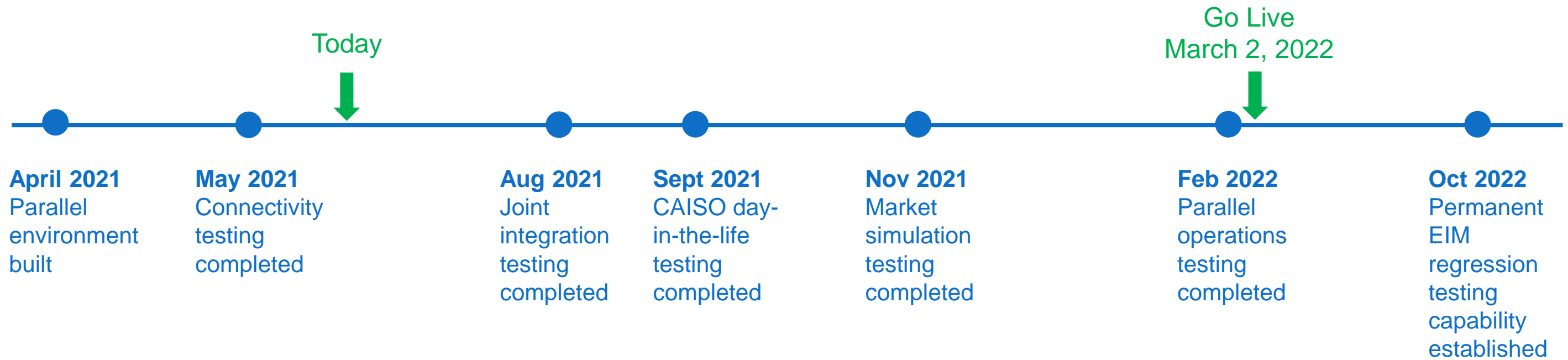
Creates and executes a testing plan that includes connectivity testing, integration testing, day-in-the-life testing, market simulation testing and parallel operations testing.

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 PHASES

April – May 2021: Connectivity testing

- Goal: Ensure BPA and CAISO systems connect and all users have access.
- This is the first foundational step of testing.
- **Testing involvement with Customers:** None at this stage.

June – Aug. 2021: Joint Integration and functional testing

- Goal: Ensure all data is moving to and from BPA applications/systems and CAISO.
- Software must be ready, processes in place for users and all integrations need to test successfully to enter the next phase.
- Super users are trained and become testers.
- The level of automation incrementally increase throughout the tests in this phase.
- **Testing involvement with Customers:** None at this stage.

Sept. 2021: Day-in-the-life testing

- Goal: Successfully test EIM operations from end to end to result in a test settlements statements once a week at minimum.
- This end to end does not necessarily need to be fully automated but the cycle must be complete.
- It allows BPA to check its systems, update processes, and ensure everything is working as expected before Market Simulation.
- **Testing involvement with Customers:** None at this stage.

TESTING PHASES

Oct. – Nov 2021: Market Simulation testing

- Goal: Demonstrate the full integration in an automated manner.
- CAISO will simulate the market by producing data sets for BPA via structured and unstructured test scenarios.
- This allows BPA to verify it is set up and capable to respond to market actions to produce test settlement statements.
- BPA evaluates all new VER 5-min forecasts are 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). Focus is on end to end system integration, less so on data quality.
 - **Generators** – Expect to be able to support testing the submittal of e-Tags & CDE schedules and see the results in the Base Schedule Aggregation Portal (BSAP).

TESTING PHASES

Dec. 2021 – Feb 2022: Parallel Operations testing

- Goal: must demonstrate that it can meet the resource sufficiency balancing test for 30 days.
- 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 reruns test from 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.
 - **Power and Transmission Customers:** Test settlement related data including invoices and weekly data files, which now contain more meaningful data.

Recap

- Recap on where we are:
 - √ Successfully completed connectivity testing.
 - √ Just started joint integration testing on June 1.
 - √ BPA hired regression testers to ensure repeatable testing capability and provide long-term support of BPA's participation in the EIM.
- We are managing this large effort diligently:
 - Tracking and reporting readiness via multiple internal data driven tools.
 - Coordinating work amongst projects, reporting out to internal teams.
 - Communicating frequently with customers during EIM Implementation workshops.
 - Engaging federal partners on a regular basis.
 - Coordinating work with the CAISO on a weekly basis.

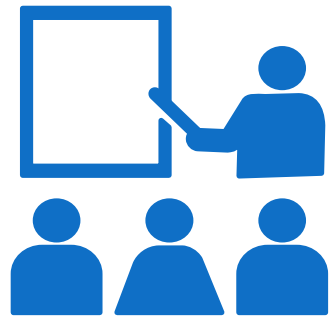
EIM TRAINING PROGRAM

Jamey Turner, *Program Analyst*



PROJECT DESCRIPTION

GRID Modernization

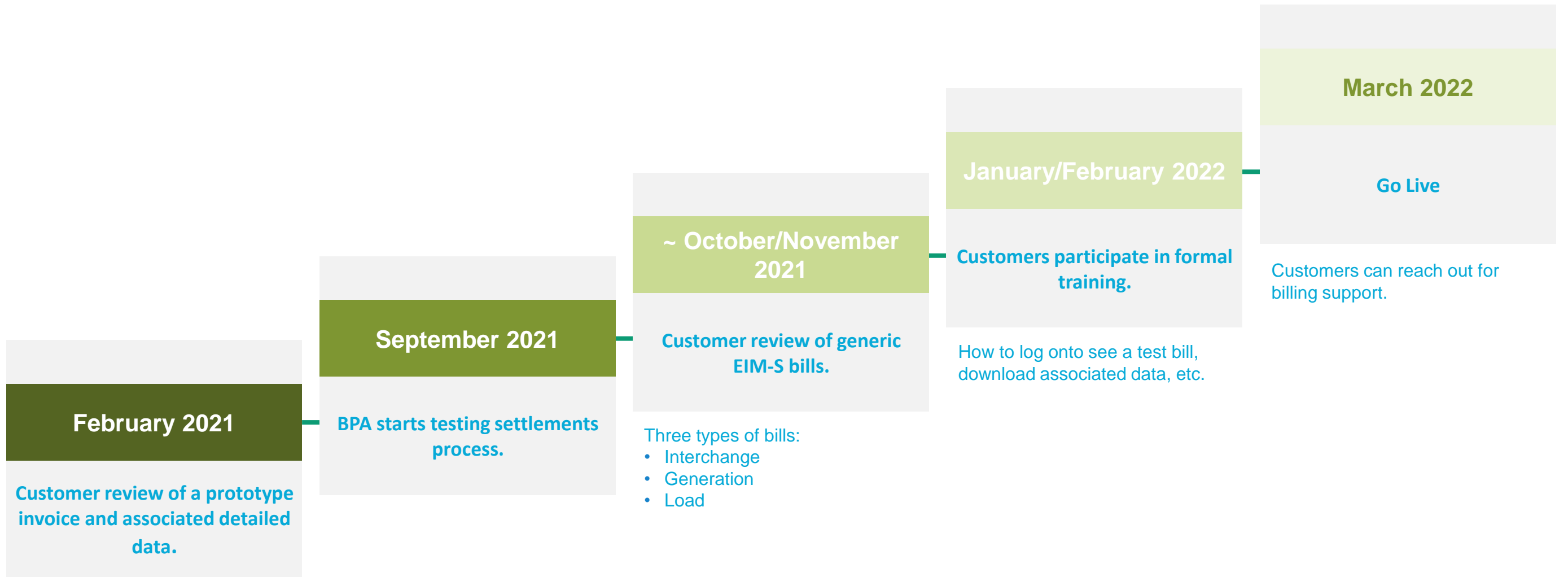


The EIM Training program will:

- Create a **structured and coordinated approach** to training BPA managers and staff involved in EIM activities.
- Provide the **right amount of EIM knowledge** and skill at the right times.
- Include mechanisms to **retain and grow capabilities** over time.
- Offer **settlements training** to customers.

SETTLEMENTS TRAINING

GRID Modernization



Review revised version on 6/17 workshop

Note: Timeline subject to change. Assumes BPA decides to join the EIM in September 2021 and Agency Enterprise Portal goes live September 2021.

EXISTING TRAINING RESOURCES

GRID Modernization

- BPA's External EIM Site
 - BPA hosted EIM 101 (Sept. 13, 2019)
 - EIM Fact Sheet (November 2020)
 - EIM Implementation Roadmap (January 2021)
- CAISO's Western EIM Site
 - Foundational Computer Based Trainings
 - Detailed Business Practice Manuals
 - Subscribe to CAISO's new releases and notices

QUESTIONS?



COMMENTS

Please send your feedback to techforum@bpa.gov by Thursday July 1.

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

